



TIN No.: 06502242447  
PAN No.: AHMPM-4627 L

**M.P. TRADERS**  
Deals in : All Kinds of Building Materials

## OBSERVATION AND REPLY

To,  
Member Secretary,  
**State Level Environment Impact Assessment Authority**  
Haryana Bays no. 55-58, Paryantan Bhawan  
Sector-2, Panchkula

Date: \_\_\_\_\_

**Subject: Reply of Observation raised during 22<sup>nd</sup> EAC meeting dated 08.09.2017 for Environment Clearance for Sand Minor Minerals at Nagli Block YNR/B-15 (Area-77.25 Ha.) Village- Nagli, Tehsil- Radaur, District-Yamuna Nagar, Haryana for the production capacity of 28.00 Lakh TPA By M/s M.P. Traders.**

Dear Sir,

With reference to above subjected project which was considered in 22<sup>nd</sup> EAC meeting held on 08.09.2017 for appraisal of Environmental Clearance. During the EAC meeting the members member of EAC have raised certain points for their reply before granting the environment clearance. The point wise reply of the same is given below for your kind perusal and for grant of Environment Clearance

#	Observation	Reply/ Document
1.	Comments of the Department of Mines and Geology, Haryana on the replenishment of the downstream area.	Comments of the Department of Mines and Geology, Haryana on the replenishment of the downstream area is attached as <b>Annexure-A</b> .
2.	Revised EIA Report after incorporating the correct emission rate, GLC of PM <sub>10</sub> & PM <sub>2.5</sub> , water requirement for the project, monitoring plan for free silica, assessment of impact on environment due to transportation on the five haul roads along with mitigation plan and budget for the same, summary of EIA report needs to be revised as the mining is not permitted outside the riverbed.	<b>1. Revised EIA-Complied</b> and attached as <b>Annexure-B</b> <b>2. GLC of PM<sub>10</sub> &amp; PM<sub>2.5</sub></b> , - Given in Chapter-4 of revised EIA at page -84-89 <b>3. Water requirement for the project-</b> Given in chapter 2 of revised EIA at page 24-25. <b>4. Monitoring plan for free silica_</b> Given in revised EIA at page 91 and preventive measure elaborated at page 143 <b>5. Assessment of impact on environment due to transportation</b> on the five haul roads along with mitigation plan and budget for the same is given in Chapter 4 of revised EIA at Page 102. <b>6. Summary of EIA report</b> has been revised accordingly.
3.	The worst case scenario needs to be submitted (i.e. level of pollutants without using any mitigation measures).	Detail of the worst case scenario given in the chapter 4 of revised EIA at page 91.
4.	Legal Status of the bore-wells from which water will be withdrawn and permission of Central Ground Water Control Board for withdrawal of ground water.	We have applied for permission for withdrawal of ground water to Central Ground Water Control Board, the proof of submission of Application is attached as <b>Annexure-IV-B in EIA Report</b> .

We hope you would find the same in order your kind perusal as necessary action.

For, **M/s M.P. Traders.**

*(Signature)*  
Prop.

(Authorized Signatory)

Encl :As above.

From

The Director,  
Mines and Geology, Haryana,  
30-Bays Building, Sector-17, Chandigarh.

To

The Director,  
Ministry of Environment, Forest and Climate Change,  
(Impact Assessment Division),  
Indira Paryavan Bhawan, Jorbagh Road,  
New Delhi-110003.

Memo No. DMG/HY/Cont./Nagli Block/YNR B-15/2016/  
Dated Chandigarh, the **29.09.2017**

Subject:- **Environmental Clearance of Sand Mine of M/s M. P. Traders, located at 'Nagli Block/YNR B-15' of district Yamuna Nagar, Haryana for the production capacity of 28 Lakh TPA of Sand in ML of 77.25 hectares.**

Kindly refer to the minutes of the meeting of the EAC (Non coal mining) held on 18.09.2017 relating to mining project cited in the subject noted above.

2. The mineral concession / mining contract for extraction of "**Sand**" a minor mineral from '**Nagli Block/YNR B-15**' over an area of 77.25 hectares in village **Nagali** of district Yamuna Nagar **M/s M. P. Traders** was granted for a period of 10 years after accepting their highest bid offered in the e-auction held on 30- 31<sup>st</sup> august 2016. The LoI was issued on 20.10.2016 and the period of contract was/ is to commence from the date of grant Environmental Clearance by the competent authority or on expiry of the period of 12 months from the date of issuance of LoI, whichever is earlier.
3. The mining contractor firm vide their letter dated 27.09.2017 has informed this office that the case for grant of Environmental Clearance to the mining project located in the river bed area in village Nagali of district Yamaunanagar in respect of '**Nagli Block/YNR B-15**' for the annual production capacity of **28 Lakh of Sand** from leased / contracted area of 77.25 hectares was taken up by the EAC in its meeting held on 18.09.2017. The contractor firm has enclosed the minutes of the meeting of the EAC held on 18.09.2017 and has informed that the committee after detailed deliberations sought certain additional information.
4. The perusal of the minutes of the meeting as downloaded from the website of the MoEF,CC, Gol indicate that the committee found that as per District Survey



Report there are around **17 other sand mining lessees** in the upstream of this project. Accordingly the committee desired to have comments of the Department of Mines and Geology Haryana on the replenishment of the downstream area.

5. In the light of above following the comments of the Mines and Geology department are as under for consideration of the EAC / MoEf, Cc, goI :

- 5.1 That in the area of project under consideration in question falls in the area of river Yamuna, it may be appreciated that a part area of the river bed falls within the jurisdiction of the state of Haryana and part area in UP side.
- 5.2 The river bed area of this part is situated in the foothills of the Shivalik Hills and enormous quantity of sediments/ minerals in the form of Boulder, Gravel and Sand and/or sand deposits are brought every year during the rainy season.
- 5.3 The mineral deposits of bigger size (boulder and gravel) gets settled in the upstream side and finer and finer size of mineral in the form of sand gets deposited in the downstream side.
- 5.4 The sand deposits so brought by the fluvial action are found much beyond the area in question on the downstream side. The deposits are not only found/ gets deposited within the state of Haryana but beyond the territory of Haryana in downstream side.
- 5.5 As far as replenishment of the area of the project under consideration i.e proposed to be used for mining in the village Nagali deposits despite the fact that other mining areas on the up stream side it is clarified that:
  - A. Though the project proponent/s in all cases by and large suggests/ sought for clearances for excavation of mineral based on the maximum mine-able reserves. But the past practice/ records shows those actual mining remains much less than that of optimum capacity of a mine.
  - B. The document relating to DSR of the district Yamunanagar as also explains the same and it also contain the details of the actual mineral production of the last 10 years ( from 1999-2000 to 2008-09). The perusal of which would show that actual mining / production remains on lower side than that of the capacity of mine (mine-able reserves). The actual production of any mine/ area is depends on the demand on the mineral. The demand the mineral is

again dependent on the development works in and around area. Further. The production of any particular mine also depends on the other mines operating in an around the same.

C. The following facts may also be considered to clear the factual position with regards to areas of river bed in the district and river Yamuna ( wherein the project of applicant is situated):

- (i) In District Yamaunanaagr total area of **1385.58 hectares** was selected for mining in the **river bed areas**. The same were proposed for granting mineral concessions in **20 different mining units/ blocks**
- (ii) The area of **554.13 hectares** (about **5.54 square km** )of the mining unit ( Yamaunanagr Unit 2 ) falls in the rivers other than river Yamuna – which are tributaries of river Yamauna itself as finally merge in river Yamauna.
- (iii) Needless to state that the above said area selected for mining in the river bed is very small part of areas under river/s. the total areas of about 28 to 30 square km area of river bed are passing through district Yamaunanagar.
- (iv) Accordingly in river Yamauna there are 19 proposed mining sites/ areas having total area of 831.45 hectares for extraction of mineral- Boulder Gravel and sand or sand alone.
- (v) Even out of these 19 mines/ areas 02 areas ( of village Odhari ) have not been granted on mineral concessions as the areas are being sought to be further studied for examining as to whether the same can be areas /possible areas for turtle nesting zone).
- (vi) In this way total of 17 areas having total areas of 764.47 hectares as on date are being offered for mining in the river Yamuna.
- (vii) Further mineral concession for excavation of mineral/ sand has been given subject to condition that that mining shall be undertaken only in the cental 3/4th part of the river bed



and excavation at any point of time shall not go beyond 3 meter of the existing bed level.

- (viii) In the light of above actual area for mining gets further reduced. In this way if the total available mineral reserves of the 17 areas calculated based on the area and restriction of depth are considered then maximum mineral deposits can be 332.48 Lakh MT.
- (ix) Out of above said 17 areas falling in Haryana side of the river Yamuna, 16 areas have already been granted on mineral concessions.
- (x) Out of 16 mining projects 11 have already obtained EC and out of which 10 have already come under operation.
- (xi) Out of 10 river bed projects having EC 09 have commenced mining on different dates after from June, 2016.
- (xii) To illustrate the quantum of production as compared to capacity or approved capacity of the mines it stated that the total approved quantity of annual production of these 09 mines is **1,48,94,000 MT**.
- (xiii) Till July ,2017 total mineral excavated by these 09 mines (river bed areas falling in the river Yamuna) remained to be **21,57,307 MT**. however keeping in view that all of these 09 mines have not undertaken actual mining for full 12 months, there average monthly productions have been calculated on the basis total months operated. In that case total average monthly production from the above said 09 mines had been **4,49,780 MT** only. The details of total production of each of the operational mine in river bed area of river Yamuna along with approved annual capacity and average monthly production is attached as **Annexure 'A'**.
- (xiv) It may be pointed out that in case all of the above mines if are considered to have operated all 09 and half months, (2.5 month ,period from 1<sup>st</sup> July to 15<sup>th</sup> September not available for mining in river bed) , would have excavated **about 43 lakh MT of mineral**.

- (xv) Whereas if total annual approved capacity ( **1,48,94,000 MT** ) if is considered for excavation average monthly production could have been **15.67 lakh MT**. hence, average actual production remains much lower than estimated.
- (xvi) It is not denied that with the grant of additional approvals the total approved capacity of mines of the district will increase and it may also increase the total excavation from the district. But it may be stated here that the same shall not be more than that of total demand of the mineral. With approval of new mines for mining the supply gets re-distributed in all mines operating in the area and not increases the demand rather only improves the supply.
- (xvii) The details given in the above paras / enclosed table shows that actual production may remains on lower side than that of maximum capacity of a mine / area/ district. Needless to explain here that in river bed areas mines remains closed during rainy season i.e from 1<sup>st</sup> July to 15th September.
- (xviii) However, it is further clarified that on the basis of restriction of maximum permissible depth of 3 meters the mineral concession holder at any point of time can not go beyond said limit- i.e. can not undertake mining below 3 metre of the existing bed level.
- (xix) As we are aware that during every rainy season when mineral / sediments are brought and gets deposited due to fluvial action and the mined out areas are replenished. As a natural course the mineral first gets deposited in the low lying area (depression created due to excavation in the central 3/4th of river bed). This process will first take place in the up stream side areas used for mining/ excavation and then in the pits/ depressions created in downstream side.
- (xx) The sediments over and above the same will get deposited in the other parts of the river bed depending upon the force in water stream. The mining in the upstream side of the project in question in no way affects the replenishment of



the project under consideration or other projects in the downstream side of the project. As huge quantity of sediments are brought during rainy season.

(xxi) It may further be explained that in case the mineral excavated during any season (pre-monsoon) in the river results in creation of depression of bed level say of 3 meters ( i.e in case the mineral is excavated for full permissible depth of 3 meters ) and after monsoon season the mined out area.

(xxii) However, for argument sake if it is considered that it gets partly replenished/ filled up only up to 2 metres. In that case in next season (post monsoon) the project proponent will not be able to excavate mineral beyond 2 meters depth. The project proponent will be under obligation to take and maintain record of the river bed level after regular intervals to ensure that his mining operations at no point of time go beyond the level of 3 meter from the original level of river bed.

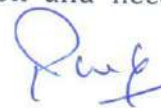
(xxiii) It is worth pointing out that the process of making records of the river bed levels by the project proponents may be considered to be stipulated as additional condition under EC as it will also act as replenishment study of the area during the contracted period.

6. In the light of above the EAC may please consider the project for grant of environmental clearance subject to an additional condition that the project proponent shall maintain the records of the river bed level of the area before mining and during mining and submit the same to the authorities for monitoring along with six monthly reports. It is proposed that the readings of the bed level shall be taken from upstream side of the project area to downstream side after every 500 meters or any distance as may considered appropriate by the EAC.

-sd-  
State Mining Engineer,  
For Director, Mines and Geology,  
Haryana.

Endst. No. DMG/HY/Cont./Nagli Block/YNR B-15/2016/**6394** Dated:**29.09.2017**

A copy is forwarded to M/s M. P. Traders, Near Nirankari Colony, Karnal Raod, Indri w.r.t. their letter dated 27.09.2017 for information and necessary action.



State Mining Engineer,  
For Director, Mines and Geology,  
Haryana,





TIN No.: 06502242447  
PAN No.: AHMPM-4627 L

**M.P. TRADERS**  
Deals in : All Kinds of Building Materials

To,  
The Director  
**Expert Appraisal Committee (Non-coal Mining)**  
Ministry of Environment Forest and Climate Change  
Indira Paryavaran Bhawan, Jor Bagh Road  
New Delhi-110003

Date:

**Subject:** Submission of Revised Final EIA/EMP Report of proposed Sand Mining at Nagli Block YNR/B-15 (area- 77.25 Ha.) with Production Capacity-**28,00,000 TPA** in District Yamunanagar Haryana, Environmental Clearance regarding.

**Reference:** As per MOM of 22<sup>nd</sup> EAC meeting held on 18.09.2017

Sir,

With respect to the EIA notification dated 14.09.2006 and consecutive amendments, the final EIA report was submitted online on 08.06.2017 and 17.08.2017 and the proposal was considered during the EAC meeting held during 18-19<sup>th</sup> September, 2017 for consideration of the EC. After due deliberation the committee decided that the PP should submit the revised EIA in line of suggested observations, accordingly we are submitting revised EIA report and point wise replies for kind perusal and necessary action.

Thanking You  
Yours Faithfully  
For **M/s M.P. TRADERS**

  
Prop.

(Authorized Signatory)

Encl: As Above

**REVISED FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT  
AND ENVIRONMENTAL MANAGEMENT PLAN  
FOR  
MINING OF SAND FROM YAMUNA RIVER BED  
AT  
VILLAGE- NAGLI, TEHSIL- RADAUR,  
DISTRICT- YAMUNA NAGAR, HARYANA  
MINE LEASE AREA- 77.25 HA  
MINE LEASE PERIOD - 10 YEARS  
PRODUCTION CAPACITY-28.00 LAKHS TONS PER ANNUM  
STUDY PERIOD: 1<sup>ST</sup> DECEMBER TO 28<sup>TH</sup> FEBUARY, 2017  
[CATEGORY 'A' AS MINING AREA IS MORE THAN 50 HACTARE]**



**APPLICANT**  
**VEDPAL MANDHAN**  
**M/s M.P. TRADERS**  
Near Nirankari Colony, Karnal Road Indri,  
Yamuna Nagar Haryana-135001



**ENVIRONMENT CONSULTANT**  
**VARDAN ENVIRONET**  
(QCI/NABET ACCREDITED NO. NABET/EIA/1619/RA 0037)  
D-142, SUSHANT LOK-III, SECTOR 57  
GURGAON (HARYANA)  
E-Mail: [vardanenviro165@gmail.com](mailto:vardanenviro165@gmail.com)  
Contact: 0124-4291036, 09899651342, +91 9810355569

**FINAL EIA  
(2017)**





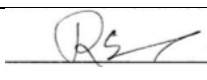
## REVIEW AND REVISION HISTORY

History of revisions of the present report:

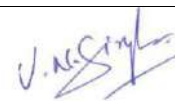

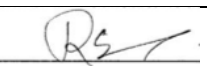
**Table I: History of the Revisions**

S.No.	Rev.	Date	Modifications	Remarks
1.	Rev.00 Draft	03.03.2017	Draft EIA /EMP Report	Report has been prepared by Team Vardan and all the comments of reviewers have been incorporated in Draft EIA/EMP Report.
2.	Rev.01 Final	07.06.2017	Final EIA /EMP Report	Report has been prepared by Team Vardan and all the comments of reviewers have been incorporated in Final EIA/EMP report.


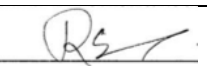
**Table II: Record of Review**

Rev.	Date	Description	Review-1	Review-2	Approval
Rev.00	03.03.2017	Draft EIA /EMP Report	Dr. V.N Singh	Mr. S.K. Sharma	Mr. R.S. Yadav
-	-	-			

**Table III: Record of Review**

Rev.	Date	Description	Review-1	Review-2	Approval
Rev.01	07.06.2017	Final EIA /EMP Report	Dr. V.N Singh	Mr. S.K. Sharma	Mr. R.S. Yadav
-	-	-			

**Table III: Record of Review**

Rev.	Date	Description	Review-1	Approval
Rev.02	Oct.2017	Final EIA /EMP Report	Mr. S.K. Sharma	Mr. R.S. Yadav
-	-	-		

This Report has been prepared by **Vardan EnviroNet** on behalf of and for the use of **Sh. Vedpal Mandhan Prop. M/s M.P. Traders** with due consideration and skill as per our general terms and conditions of business and terms of agreement with the **Sh. Vedpal Mandhan Prop. M/s M.P. Traders**.

### DISCLAIMER

Vardan EnviroNet has taken all reasonable precautions in the preparation of this report as per its auditable quality plan. Vardan EnviroNet also believes that the facts presented in the report are accurate as on the date it was written. However, it is impossible to dismiss absolutely, the possibility of errors or omissions. Vardan EnviroNet therefore specifically disclaims any liability resulting from the use or application of the information contained in this report. The information is not intended to serve as legal advice related to the individual situation.



## DECLARATION BY CONSULTANT

### NABET Annexure – VII

**Declaration by Experts contributing to the EIA of M/s M.P. Traders** at Nagli Block/YNR B-15 village Nagli, Tehsil-Raradur, District- Yamunanagar.

#### Declaration by Experts contributing to the EIA:

I, hereby, certify that I was part of the EIA team in the following capacity that developed the above EIA.

#### EIA Co-ordinator:

**Name** : Mr. S.K Sharma

**Signature & Date**

: 


**Period of involvement** : December, 2016 – Till date

**Contact information** : D-142, Sector-57, Sushant Lok-III, Golf Course Extension Road, Gurgaon (Haryana)

Contact no: 9899651342

Email: [vardanenviro165@gmail.com](mailto:vardanenviro165@gmail.com)


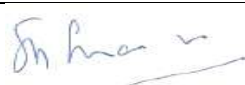
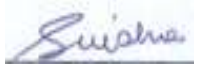


#### Functional Area Experts (FAEs):

S.No.	Functional Areas	Name of the expert/s	Involvement during December , 2016 – Till date	Signature & Date
1.	AP	Mr. S.k Sharma  FAA  Monika Gupta	a) Identifying the sources of emissions and mitigation measures.  b) Site-specific micro meteorology monitoring.  C) Ambient Air Quality (AAQ) monitoring  Impact predictions and mitigations.	



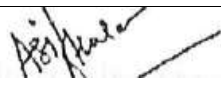
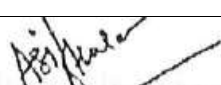
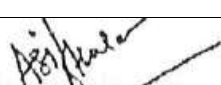
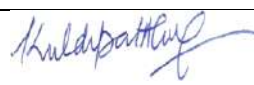
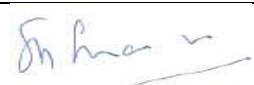


## DECLARATION BY CONSULTANT

			d) Impact identification	
2.	WP	Mr. S.k Sharma	a) selection of sampling locations b) Ground water quality monitoring and assessment, impacts on water environment and mitigations. b) Identification, characterisation of effluent and treatments there of c) Water balance and conservation measures	
3.	SHW	Mr. SK Sharma	a) Identification of haz, solid w.g, and their disposal and mitigation measure. b) Recycling and disposal	
4.	SE	Ms. Shilpa Mishra <u>FAA</u> Mr. Bhagwan Sahay	a) Determination of demographic profile including socio economy & livelihood b) Assessing the changes in socio econom pattern	
5.	EB	Dr. Vivek Naryan singh	<u>Involvement during</u> <b>December , 2016 – Till date</b> a) Biological environment status in respect of terrestrial fauna and aquatic eco system b) Impact on ecological environment	
6.	HG/Geo	Mr. R.S Yadav	a) Ground water resource assessment b) Impact on ground water potential and mitigation measures for avoiding ground water contamination.	



## DECLARATION BY CONSULTANT

7.	AQ	Mr. Asif Hussain  <u>FAA</u> Avi	a) Processing of site specific micro-meteorological data.  b) Collection and use of data for modelling.  c) Air dispersion modelling for prediction of GLCS due to PM <sub>10</sub> , SO <sub>2</sub> and Nox	
8.	NV	Mr. Asif Hussain  <u>FAA</u> Ms. Neha Jain	a) Analysis of ambient noise quality data  b) Impact due to plant noise and abatement measures	
9.	LU	Mr. Asif Hussain  <u>FAA</u> Mr. Bhagwan Sahay	a) Analysis of data related to land use pattern  b) Land use map development.  c) Impact on land environment in respect to land form change	
10.	RH	Mr. Kuldipak Ahuja	a) Identification of hazardous prone areas  b) Environment risk evaluation  c) On-site and Off-site emergency planning	
11.	SC	Mr. S. K Sharma	a) Monitoring, analysis and characterisation of soil  b) Assessment of impact on soil quality and mitigation measure.	



## DECLARATION BY CONSULTANT

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### Declaration by the Head of the accredited consultant organization/ authorized person

I, R.S. Yadav, hereby, confirm that the above mentioned Sand mining case of **M/s M.P. Traders** at Nagli Block/YNR B-15.

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

I also confirm that I shall be fully accountable for any mis-leading information mentioned in this statement.

Name: **R.S.Yadav**



Signature

Designation: **Managing Director**

Name of the EIA Consultant Organization: Vardan Environet, QCI/NABET Accredited Environment Consultancy

NABET Certificate No. & Issue Date: NABET/EIA/1619/RA0037 valid up-to 09.11.2019.





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III	Mining Plan and Progressive Mine Closure Plan Approval Letter	
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VI(a)	Air Report	
VI(b)	National Ambient Air Quality Standards, 2009	
VII(a)	Noise Report	





VII(b)	Ambient Air Quality Standardsin Respect of Noise
VIII(a)	Water Report
VIII(b)	Indian Standard Drinking Water Specification
IX(a)	Soil Report
IX(b)	Standard Soil Classification
X	Traffic Study
XI	Environmental Policy
XII	Public Hearing Proceedings

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ABBREVIATIONS	
AAQM	Ambient Air Quality Monitoring
CM	Centimeter
CPCB	Central Pollution Control Board
dB	Decibel
DG	Diesel Generator
E	East





ABBREVIATIONS	
EIA	Environmental Impact Assessment
EMC	Environmental Management Cell
EMP	Environmental Management Plan
ENE	East Of North- East
EPA	Environmental Protection Agencies
ESE	East Of South East
FCC	False Colour Composite
GIS	Geological Information System
GPS	Global Positioning System
HP	Horse Power
Hr	Hour
IMD	Indian Meteorological Department
IRS	Indian Remote Sensing Satellite
ISCST	Industrial Source Complex, Short Terms
ISO	International Organization Of Standardization
ISS	Indian Standard Specification
KLD	Kilo Litre Per Day
Km	Kilometer
KVA	Kilo Volt Ampere
KW	Kilo Watt
M	Meter
M asl	Mean Sea Level
MCDR	Mining Conservation & Development Rules
M bgl	Meter Below Ground Level
mg	Milligram
MoEF&CC	Ministry Of Environment Forest and Climate Change
mRL	Mean Reference Level
MT	Million Tonne
MTPA	Million Tonn s Per Annum
N	North
NE	North-East
NH	National Highway
NNE	North Of North-East
NNW	North Of North-West
NO <sub>2</sub>	Nitrogen Dioxides
NTU	Naphelo Turbidity Unit
NW	North-West
OB	Over Burden
OHSAS	Occupational Health & Safety Assessment
PPE	Personal Protective Equipment
PPM	Part Per Million
Pvt.	Private
R&R	Rehabilitation & Resettlement
RDS	Respirable Dust Sampler
RPM	Respirable Particulate Matter
RSPM	Respirable Suspended Particulate Matter



ABBREVIATIONS	
SE	South- East
SEIAA	State Level Environmental Assessment Authority
SO <sub>2</sub>	Sulphur-di-Oxide
SOI	Survey Of India
SOPs	Standard Operating Procedures
SPCB	State Pollution Control Board
SPM	Suspended Particulate Matter
SSE	South Of South-East
SSW	South Of South-West
TPA	Tone Per Hour
TDS	Total Dissolve Solid
TOR	Terms Of Reference
TPH	Tones Per Hour
TS	Total Solid
US EPA	United State Environmental Protection Agencies
w.e.f.	With Effective From
w.r.t.	With Reference To
W/W	Weight By Weight
WNW	West Of North-West
WSW	West Of South-West
LOS	Level of Service
PCU	Passenger Car Unit
AAQM	Ambient Air Quality Monitoring
CM	Centimeter
CPCB	Central Pollution Control Board
dB	Decibel
DG	Diesel Generator



### COMPLIANCE TO TOR CONDITIONS

Point wise compliance of ToR issued by Ministry of Environment & Forests, New Delhi vide file No. **J-11015/214/2016-IA.II (M)** on dated 16.01.2017 for the project Mining of Sand (minor mineral) Mine-“Nagli Block/YNR B-15” Mine Lease Area –77.25 Ha. Capacity **28,00,000 TPA** by M/s M.P. Traders.

ToR	Description	Reply	Citation
1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification, 1994 came into force w.r.t. the highest production achieved prior to 1994.	This is a fresh Mining Lease area auctioned by Govt. of Haryana and <b>LOI</b> was issued vide letter. <b>DMG/HY/Cont/Nagli Block/YNR B-15//2016/5414</b> dated <b>20.10.2016</b> attached as <b>Annexure II</b> , no production is started yet. Production will be commenced only after obtaining Environmental Clearance from MOEF & CC GOI, Delhi and CTE/CTO from Haryana State Pollution Control Board, Panchkula. Hence, this is not applicable for the proposed Mining Project.	<b>Annexure-II.</b>
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	The copy of letter of intent ( <b>LOI</b> ) of mining lease issued by Director of Mines & Geology Department, Chandigarh, Haryana, vide letter no. <b>DMG/HY/Cont/Nagli Block/YNR B-15//2016/5414</b> dated <b>20.10.2016</b> was issued in favor of <b>M/s M. P. Traders</b> who has applied for Environmental Clearance, is enclosed as <b>Annexure-II.</b>	<b>Annexure-II.</b>
3	All documents including approved mine plan, EIA and public hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management and mining technology and should be in the name of the lessee.	All documents are synchronizing with one another in terms of mine lease area, production levels, waste generation, its management and mining technology and both the Final mining plan and ML area in the name of. <b>M/s M. P. Traders Prop. Vedpal Mandhan</b> who is the lessee of this project.	







6	Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.	As per revenue record land proposed for mining is riverbed area. The proposed area is 77.25 ha. falls in Nagli Block, Tehsil-Radaur, District-Yamunanagar, Haryana. The mining is carried out in Yamuna riverbed and mineral rights vest with Mining Department, Govt. of Haryana. Hence, there is no need of land diversion in this case.	<b>Annexure II</b>
7	It should be clearly stated whether the proponent company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA report with description of the prescribed operating process/ procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances/ violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large may also be detailed in the EIA report.	<p>Yes, The company has formulated Environmental policy which is approved by <b>M/s M.P. Traders</b> and has been incorporated in EIA report. The operating process or the implementation of policy will be as follows:</p> <ul style="list-style-type: none"> <li>▪ Compliance with all applicable environmental laws and regular maintenance of their records.</li> <li>▪ Acquaintance of all employees and contractors with their environmental responsibilities.</li> <li>▪ Focus on continuous improvement.</li> <li>▪ Continuous review of environmental achievements.</li> <li>▪ Half yearly submission of Compliance reports.</li> <li>• Closing of NCs and Conducting MRM.</li> </ul> <p>The Policy contains the hierarchical system of the company to deal with the environmental issues and for ensuring the compliance with EC conditions. All the non compliances/violations of environmental laws will be reported to the Project Proponent.</p>	<p><b>Annexure XI</b></p> <p><b>Chapter-6, Item 6.1 at Page 109.</b></p>
8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study	Mines safety for workers working at the site has been taken care of. Safety measures related to risks during mining activity, natural disasters, etc has been proposed. The details are incorporated in the EIA/EMP Report. This is an inside riverbed mining. There will be no underground mining; hence subsidence study is not required.	<b>Chapter 7, Item 7.3 at Page 124.</b>



	etc. should be detailed. The proposed safeguard measures in each case should also be provided.	<b>Slope Study</b> As working will be done in the river bed to maximum depth of 3.0 m only, thus slope study is not required. <b>Blasting Study</b> This is a Sand (minor mineral) mining project, no blasting is proposed.																									
9	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc should be for the life of the mine/ lease period.	Study area comprises of 10 Km radius around the mine lease boundary. Map showing 10 Km radius of the ML area has been furnished in the EIA report and 10 Km radius of mine lease. All the data contained in the EIA/EMP Report are for lease period of mine. Minerals are generally depleting asset once mined; but minerals like sand will be replenished naturally. Lease period is <b>10 years</b> .  There will be no waste generation from mining operation as per mining plan.	<b>Chapter-1, Figure 1.1 and Page 5.</b>       <b>Chapter-2, Item 2.12 and Page 24.</b>																								
10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and Post-operational phases and submitted. Impact, if any, of change of land use should be given.	Land Use of the 10 Km study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, National park, migratory routes of fauna, water bodies, human settlements and other ecological features has been incorporated. <table border="1"><thead><tr><th>Land use</th><th>Area (In Ha.)</th><th>% Area</th></tr></thead><tbody><tr><td>Agricultural</td><td>17670.78</td><td>56.00</td></tr><tr><td>Grazing Land</td><td>10850.76</td><td>34.38</td></tr><tr><td>fallow land</td><td>979.38</td><td>3.10</td></tr><tr><td>Sand/river Bank</td><td>778.32</td><td>2.46</td></tr><tr><td>Settelment</td><td>958.26</td><td>3.03</td></tr><tr><td>Water bodies</td><td>318.87</td><td>1.01</td></tr><tr><td><b>Total</b></td><td><b>31556.37</b></td><td><b>100</b></td></tr></tbody></table> Land use plan of the mine lease area showing the preoperational, operational and post operational phases is incorporated in the EIA/EMP Report.	Land use	Area (In Ha.)	% Area	Agricultural	17670.78	56.00	Grazing Land	10850.76	34.38	fallow land	979.38	3.10	Sand/river Bank	778.32	2.46	Settelment	958.26	3.03	Water bodies	318.87	1.01	<b>Total</b>	<b>31556.37</b>	<b>100</b>	<b>Chapter-3, Table 3.1 at page 28 &amp; Figure 3.1 at Page 30.</b>       <b>Chapter-2, Table-2.13 at Page 24.</b>
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11	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.	<p><b>River Bed:</b> There is no generation of Overburden / waste material in case of river bed mining.</p> <p>There is no human settlement in lease area.Hence R&amp;R is not applicable on this project.</p>	<p><b>Chapter-2, Item 2.12 at Page 23.</b></p> <p><b>Chapter-1, figure 1.1 at Page 5.</b></p>
12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	The Mining Lease area does not involve any forest land. The same has been confirmed by Forest Department vide letter No <b>7892 on dated 30.03.2017</b> is attached as <b>Annexure IV.</b>	<b>Annexure-IV</b>
13	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	The land of the Mining lease area is Government land on the river bed of Yamuna and this area is free from any reservation of Forest Department Haryana Government. Letter from DFO, Yamuna Nagar vide letter No <b>7892 on dated 30.03.2017</b> attached as <b>Annexure IV.</b> Hence Forest Clearance is not applicable for the proposed project.	<b>Annexure-IV</b>

14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	There is no involvement of forest land in the project area as per Letter No. <b>7892 on dated 30.03.2017</b> attached as <b>Annexure IV</b> . Hence it is not applicable.	<b>Annexure-IV</b>
15	The vegetation in the RF/ PF areas in the study area, with necessary details, should be given.	Project area not falling under forest reserve. So, no approval is required. There is no National Park, Wild Life Sanctuary Biosphere Reserve within 10 km of project site as per DFO Letter No. <b>7892 on dated 30.03.2017</b> attached as <b>Annexure IV</b> .	<b>Annexure-IV</b>
16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly detailed mitigative measures required, should be worked out with cost implications and submitted.	EB Study has been carried out by the Ecology and Biodiversity Expert in and around the lease area. There is no protected area in 10km radius of the proposed mine, however 2 species of Schedule I (Indian Peafowl ( <i>Pavo cristatus</i> ) and Goh ( <i>Varanus Bengalensis</i> ) and 2 species of Schedule II (Common Mongoose, <i>Herpestes edwardsi</i> and Rhesus macaque, <i>Macaca mulatta</i> ) were recorded. The conservation Plan has been prepared and submitted to PCCF Panchkula on dated 07.03.2017 and has been approved vide letter no. <b>7892 on dated 30.03.2017</b> and the budget provision was revised from Rs. 10 Lakhs to Rs. 15 Lakhs.	<b>Para 3.10 of Chapter 3 at Page 56.</b>  <b>Chapter 4, Item 4.10 Table 4.3 at Page 96 &amp; Annexure-IV</b>
17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Tiger/ Elephant Reserves/ (existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the State Wildlife Department/ Chief Wildlife Warden	No National Parks, Sanctuaries, Biosphere Reserves Wildlife Corridors, Tiger/Elephant Reserves/Critically Polluted areas/Aravali are falling within 10 Km of the study area.  Same has been confirmed by Forest Department vide letter No <b>7892 on dated 30.03.2017</b> attached as <b>Annexure IV</b> .	<b>Chapter-1, Figure 1.1 at Page 5</b>  <b>Annexure IV</b>



	under the Wildlife (Protection) Act, 1972 and copy furnished.		
<b>18</b>	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.	A detailed biological study (of 10 Km radius study area) was conducted by Ecology and Biodiversity Expert and the details are incorporated in the EIA/EMP Report. List of Flora and Fauna has been prepared based on primary survey species of Schedule I (Indian Peafowl ( <i>Pavo cristatus</i> ) and Goh ( <i>Varanus Bengalensis</i> ) and 2 species of Schedule II (Common Mongoose, <i>Herpestes edwardsi</i> and Rhesus macaque, <i>Macaca mulatta</i> ) were recorded. The conservation Plan has been prepared and submitted to PCCF Panchkula on dated 07.03.2017 and has been approved vide letter no. 7897-99 dated 30.03.2017 and the budget provision was revised from Rs. 10 Lakhs to Rs. 15 Lakhs. The proper mitigation measures have been proposed to mitigate negative impacts due to the proposed mining project.	<b>Para 3.10 of Chapter 3 at page 56-71.</b>  <b>Para 10.11 of Chapter 10 at Page 144-149.</b>
<b>19</b>	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities	The project site is neither falling in proximity to area declared as Critically Polluted nor falling in Aravali Range. The valid and lawful Lol of this project site has been granted to the lease holder by the Mining Department of Haryana Government is enclosed as <b>Annexure-II</b> .  Letter from DFO, Yamuna Nagar vide letter No <b>7892 on dated 30.03.2017</b> is attached as <b>Annexure IV</b> stating that the mine lease area is neither falling under Aravali Plantation nor in forest under section 4 and 5 PLPA 1900 as per record of Forest Department, Govt. of Haryana.	<b>Annexure-II</b>  <b>Annexure-IV</b>






	could be considered.		
20	Similarly, for coastal projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t. CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Not Applicable, since the project site does not comes under coastal area.	See Table 1.1 of Chapter-1 at Page 5.
21	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/ National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action program prepared and submitted accordingly, integrating the sectoral program of line departments of the State Government. It may be clearly brought out whether the village located in the mine lease area will be shifted or not. The issues relating to shifting of Village including their R&R and socio-economic aspects should be discussed in the report.	There is no Project Affected Person (PAP) by the proposed mining activities. Hence, there is no need of R&R Plan. However, as per the point xiv of LoI the lease holder will deposit 10% of the annual contract money <i>i.e.</i> <b>40.15 Lakhs</b> to the <b>Mines and Minerals Development, Restoration and Rehabilitation Fund</b> . This amount will be spent by lease holder for the protection of environment in the nearby surrounding area. The officers of the State Government Haryana will strictly monitor the compliance of lease holder in this regard.	See Table 1.1 of Chapter-1 at Page 5.  Para 10.10 of Chapter -10 at page 143.

22	One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant Downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM <sub>10</sub> , particularly for free silica, should be given.	Baseline data of study area within 10 Km radius of the project site was collected during Winter season (1 <sup>st</sup> December, 2016- 28 <sup>th</sup> February, 2017) as per <b>ToR no. J-11015/214/2016-IA.II(M) approved from MoEF&amp;CC dated 27.01.2017.</b> <b>Ambient Air :</b> PM <sub>10</sub> – 68.7 µg/m <sup>3</sup> to 88.8 µg/m <sup>3</sup> PM <sub>2.5</sub> – 31.2 µg/m <sup>3</sup> to 49.4 µg/m <sup>3</sup> SO <sub>2</sub> – 6.3 µg/m <sup>3</sup> to 14.6 µg/m <sup>3</sup> NO <sub>x</sub> – 11.6 µg/m <sup>3</sup> to 28.3 µg/m <sup>3</sup> Free Silica- 2.48 % to 3.1 %. <b>Ground Water:</b> TDS (229.0 to 335.0 mg/L) pH (8.28 to 8.52) Total Hardness (132.25 to 172.35 mg/L) <b>Surface Water:</b> TDS (227.00 to 288.0 mg/L) pH (7.54 to 7.86) Total Hardness (150.23 to 202.32 mg/L) <b>Noise Level:</b> Noise Level in Day Time 50.50 L <sub>eq</sub> dB to 53.60 L <sub>eq</sub> dB Noise Level in Night Time – 41.40 L <sub>eq</sub> dB to 44.10 L <sub>eq</sub> dB <b>Soil Quality:</b> pH – 7.45 to 8.10 Texture – Clay to Sandy Organic Matter – 0.42 % to 3.1 %	<b>Chapter-3 Item 3.5 at Page 35-39.</b>
			<b>Annexure-VI (a)</b>
			<b>Annexure-VIII (a)</b>
			<b>Annexure-VII (a)</b>
23	Air quality modeling should be carried	Site specific meteorology data was collected and incorporated in EIA/EMP Report.	<b>Table 3.3 of Chapter 3 at Page 34.</b>
		The location of Air Monitoring stations was selected to represent the whole mine lease area (10 Km radius). One Location is also selected in 500 m of dominant downwind direction.	<b>Chapter 3, Table 3.5 at Page 36, Figure 3.9 at Page 40.</b>
		Mineralogical composition of PM <sub>10</sub> particularly for Free silica is incorporated in the EIA/EMP Report. The range of Free Silica in PM <sub>10</sub> was found to be 2.4% to 3.1%.	<b>Table 3.8 of Chapter 3, at Page 37.</b>
23	Air quality modeling should be carried	Air quality modeling was carried out and impact of Air quality has been incorporated	<b>Chapter 4, Item 4.3 at</b>



	out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing predominant wind direction may also be indicated on the map.	in the EIA/EMP report. The maximum incremental concentration of PM10 viz 1.42099 ug/m3 was predicted inside the core zone near active mining area (loading locations).The predicted highest incremental concentration due to loading was found at A1 (located inside mining lease) viz. 0.2824µg/m3 (24-hourly average). The second highest incremental concentration was found at A2 (located in southern direction at 400m distance) viz. 0.2024µg/m3 (24-hourly average). The predominant wind direction recorded during study period was from WNS to ESE Direction as per Wind rose diagram.	<b>Page 83-90</b>  <b>Figure 3.4 of Chapter 3, at Page 35.</b>
<b>24</b>	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	Water requirement in this project site is 45 KLD. The details are incorporated in the EIA/EMP report. <b>Total Water Requirement= 45 KLD</b> Dust Suppression = 22 KLD Plantation= 15 KLD Domestic Purpose= 8 KLD	<b>Chapter 2 Figure 2.10 at Page 24</b>
<b>25</b>	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	We have applied for Ground water extraction from CGWB and proof of application submission is attached as Annexure IV B.	<b>Annexure-IV B</b>
<b>26</b>	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	The project do not consume any process water except for drinking, dust suppression and plantation. Plantation is proposed, which will increase the water holding capacity and help in recharging of ground water. No artificial rainwater harvesting is proposed for the present project.	<b>----</b>




27	Impact of the project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.	<p><b><u>Surface Water</u></b> No permanent infrastructure will be developed which may obstruct the river flow, the proposed sand (minor mineral) mining will not be done in rainy days hence there will not be any adverse impact on the surface water.</p> <p><b><u>Ground Water</u></b> The ground water quality will not be changed because mining activity will not intersect the ground water table as it is restricted to 3m depth in river bed. Impact of the project on the water quality and its mitigation measures has been incorporated in the EIA/EMP report.</p>	<b>Chapter 4, Item 4.6 at page 93 Figure 4.5 at Page 93.</b>
28	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	<p>The maximum working depth of mining will be 3 m bgl in river bed where the groundwater table exists at an average depth of 5-10 m bgl. So mining depth will not intersect the ground water table. Hence permission is not required from CGWA. Systematic diagram of mining depth also incorporated in the EIA/EMP report. Water will be sourced from the hired tankers; hence permission from CGWA is not applicable.</p>	<b>Chapter 4, Item 4.6 at page 93 &amp; Figure 4.5 at Page 93.</b>
29	Details of any stream, seasonal or otherwise, passing through the lease area and modification /diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	<p>There is no stream modification/ diversion due to prposed mining activity. It is opencast mining of sand (minor mineral) located on the river bed and mining is permitted only upto depth of 3 meter; hence, there will be no stream diversion/ modifications.</p>	
30	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A	<p>Maximum Working Depth : 3m bgl Ground water Table: 5-10 m bgl Site elevation: 258 to 261 m amsl</p>	<b>Chapter 2, Table 2.4 and Page 13</b>

	schematic diagram may also be provided for the same.	Schematic diagram of mining depth also incorporated in <b>Chapter-4</b> .	<b>Chapter 4, Item 4.6 at page 93 &amp; Figure 4.5 at Page 93.</b>																											
<b>31</b>	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	<p>A suitable combination of trees that can grow fast and also have good leaf cover shall be adopted to develop the greenbelt. It is proposed to plant <b>3900</b> number/annum of native species along with some fruit bearing and medicinal trees during the plan period</p> <p>Schedule of Plantation for the Five Years has been given in EIA/ EMP Report.</p> <table><tr><th>Year</th><th>Sapling to be planted</th><th>Survival (@ 70%)</th><th>Species</th><th>Place of Plantation</th></tr><tr><td>I</td><td>3900</td><td>2730</td><td rowspan="5">Neem, Peepal, Ber, Shisham, Sirish, and other native species as per DFO Yamunanagar.</td><td rowspan="5">Along the roads, in barren area, Plantation in nearby Village: Nagli and also along the Haul road. Plantation in schools like Maharaja Agrasain Public School. Plantation in surrounding office &amp; rest shelter and other social forestry program.</td></tr><tr><td>II</td><td>3900</td><td>2730</td></tr><tr><td>III</td><td>3900</td><td>2730</td></tr><tr><td>IV</td><td>3900</td><td>2730</td></tr><tr><td>V</td><td>3900</td><td>2730</td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></table>	Year	Sapling to be planted	Survival (@ 70%)	Species	Place of Plantation	I	3900	2730	Neem, Peepal, Ber, Shisham, Sirish, and other native species as per DFO Yamunanagar.	Along the roads, in barren area, Plantation in nearby Village: Nagli and also along the Haul road. Plantation in schools like Maharaja Agrasain Public School. Plantation in surrounding office & rest shelter and other social forestry program.	II	3900	2730	III	3900	2730	IV	3900	2730	V	3900	2730						<b>Para 10.6 and Table 10.1 of chapter 10 at page 138.</b>
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V	3900	2730																												
<b>32</b>	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of	Cumulative impact of transportation due to all existing mines with in 10 Km area has been assessed. The LOS of SH-6 network will change i.e. from Excellent to Good and for MDR-1 and MDR3 it will change from Excellent to v. good and for MDR-2 network will change from Excellent to poor. Traffic density from the proposed mining activity has been incorporated in the EIA/EMP report and traffic study is enclosed as <b>Annexure-X</b> .	<b>Chapter 4, Item 4.14 Page 101</b>  <b>Para. 3.9 of Chapter 3 at Page 51-55.</b>																											



	handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.		<b>Figure 3.15 of Chapter 3 at Page 54.</b>  <b>Annexure X</b>
<b>33</b>	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA report.	Adequate infrastructure and other facilities will be provided to mine worker. Information about onsite shelter and facilities for workers has been incorporated in the EIA/EMP Report.	<b>Chapter 2 , Item 2.15 at Page 24</b>
<b>34</b>	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Conceptual post mining Land use is incorporated in the EIA/EMP Report. The land use of the lease area will remain same as the proposed activity for extraction of deposited Sand (minor mineral) from river bed which will get replenished during succeeding monsoon seasons.	<b>Chapter 2, Table 2.12 at Page 24</b>
<b>35</b>	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area May be detailed.	The impact on OHS of employee and proper mitigation along with budgetary provision incorporated in the EIA/EMP Report.  Person protective measures, pre-placement medical examination and periodical medical examination schedules, management plan have been furnished in the EIA/EMP Report.	<b>Para 4.13 of Chapter 4, Page-101</b>  <b>Table 7.2 of Chapter-7 atPage 130.</b>
<b>36</b>	Public health implications of the Project and related activities for the	Public health implication like respiratory disorder, noise induced problems are major issues which will be addressed properly. Study has been performed which includes to	<b>Table 10.5 of Chapter 10, Page 142.</b>

	population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	gain an understanding of the source, identification of exposure pathway and determination of likely receptor. The impact will not be concentrated and confined to particular zone. Periodic health camps will be undertaken under ESR activities in the villages. Rs 20 Lakhs will be spent on Health check up camps, for the Public, Sanitation and drinking water facilities. The ESC budget will be distributed as per the discussion with Gram panchayat.	
<b>37</b>	Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	Socio economic measures for the local people have been proposed under the component of the Enterprise social commitment along with the budgetary allocation have been incorporated in the EIA/EMP Report. Proposed project will provide the employment opportunity to the local community hence project will have positive impact on the surrounding local community. An amount of <b>Rs. 30.00 Lakhs</b> per year is allocated for ESC activities. Detailed break up is incorporated in the EIA/EMP Report.	<b>Chapter 10, Table 10.4,10.5 Page 141-142.</b>
<b>38</b>	Detailed environmental management plan to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	Environmental management plan to mitigate the environmental impacts which inter-alia included the impacts of change of land use, loss of agricultural and grazing land, occupational health, air, water soil, noise, Socioeconomic and ecology; incorporated in chapter 4 and 10 of EIA/EMP.	<b>Chapter-10, Item 10.1 -10.5 at Page 136-137.</b>  <b>Para 4.4-4.15 of Chapter 4,Page 91-103.</b>
<b>39</b>	Public hearing points raised and commitment of the project proponent on the same along with time bound action plan to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	Public hearing points raised and commitment of the project proponent on the same along with time bound action plan is attached in the Ch-7 of EIA/EMP report.	<b>Para 7.1 of Chapter-7 at 114-122.</b>  <b>Annexure- XII.</b>
<b>40</b>	Details of litigation pending against the project, if any, with direction /order	There is no court case against this project, however there is a court case in the matter of M/s Om minerals v/s State of Haryana and others [CWP No. 7991 of 2014], wherein	



	passed by any Court of Law against the project should be given.	the petitioner had challenged the demand/levy of stamp duty on execution of (Contract Agreement). The State Government (Dept. of Mines and Geology) has issued Lol subject to the outcome of this case. The above mentioned case is still pending before Hon’ble Punjab and Haryana High Court for adjudication. <b>The Project Proponent has not filed any court case against any department neither he is a party in this case.</b>														
41	The cost of the project (capital cost and recurring cost) as well as the cost towards implementation of EMP should clearly be spelt out.	<table><tr><th>Head</th><th>Cost</th></tr><tr><td>Project I cost</td><td>Rs.9.0 Crores</td></tr><tr><td>EMP</td><td>Rs. 30.00 Lakhs/ year</td></tr><tr><td>ESC</td><td>Rs. 30.00 Lakhs/ year</td></tr><tr><td>OH&amp;S</td><td>Rs. 10.00 Lakhs/year</td></tr><tr><td>Budget for Conservation Plan</td><td>Rs. 15.00 Lakhs</td></tr></table>		Head	Cost	Project I cost	Rs.9.0 Crores	EMP	Rs. 30.00 Lakhs/ year	ESC	Rs. 30.00 Lakhs/ year	OH&S	Rs. 10.00 Lakhs/year	Budget for Conservation Plan	Rs. 15.00 Lakhs	Para 9.0 & 9.1 of Chapter 9 at Page 134.
Head	Cost															
Project I cost	Rs.9.0 Crores															
EMP	Rs. 30.00 Lakhs/ year															
ESC	Rs. 30.00 Lakhs/ year															
OH&S	Rs. 10.00 Lakhs/year															
Budget for Conservation Plan	Rs. 15.00 Lakhs															
42	A Disaster Management Plan shall be prepared and included in the EIA/EMP report.	The Disaster Management Plan for sand mining and mine closure has been prepared and incorporated in <b>EIA/EMP report</b> .		Para 7.3 of Chapter 7 at Page 124												
43	Benefits of the project if the project is implemented should be spelt out. The benefits of the project shall clearly indicate environmental, social, economic, employment potential etc.	Physical, social and ecological benefits of the proposed sand mining project has been prepared and incorporated in the of EIA/EMP report.		Chapter 8 at Page 132-133.												
General Points																
44.	Besides the above, the below mentioned general points are also															
a)	All documents to be properly referenced with index and continuous page numbering.			Compiled												
b)	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.			Indicated												
c)	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All original analysis/testing reports should be available during appraisal of the project.			Enclosed												
d)	Where the documents provided are in language other than English, an English translation should be provided.			Provided												



<b>e)</b>	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall be filled and submitted.	Enclosed
<b>f)</b>	While preparing the EIA report, the instructions for the proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.	Followed
<b>g)</b>	Changes, if any made in the basic scope and project parameters (as submitted in Form-1 and the PFR for securing TOR) should be brought to the attention of MoEF&CC with reasons for such changes and the permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the Final EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.	No Modifications done
<b>h)</b>	A per the circular No.-J-11011/618/2010-IA.II (I) dated 30.05.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.	Complied
<b>i)</b>	The EIA report also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	Included



## CHAPTER-1

# INTRODUCTION

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### PRELUDE

EIA is different from other decision-making tools like environment audit, which is conducted on existing projects, while the EIA is applied to new projects and the expansion of existing projects. EIA uses the techniques of science, economics, sociology, geology etc while assessing the project because it is dealing with events, which have not yet occurred, may not occur, but whose chances of occurrence may be strong in future. There are various other tools like cost-benefit analysis, environment management systems and risk analysis. EIA is by far the most suitable tool for any proposed project. It is also one of the most popular decision-making tools and has been integrated in the regulatory system of many countries.

### 1.0 PURPOSE OF REPORT

The Environmental Impact Assessment Report has been prepared to assess the current environmental scenario of the area and then based on the activities of the proposed mining; prepare carry out Environment Management Plan (EMP). This plan will identify and address the impacts, where these are adverse in nature, and thereafter design mitigative measures to manage such impacts in a manner as to conserve environment and ecology of the area. The EMP has been prepared with a view to ultimately ensure that the adverse impacts are minimized if these cannot be prevented altogether.

**Category “A”-** As per EIA Notification dated 14<sup>th</sup> September, 2006 and new amendment in EIA Notification dated 15.01.2016 this project falls under Category “A”, 1(a), due to lease area more than 50 hectare. In this

context, Form-I and Pre-Feasibility Report has been submitted to Ministry of Environment & Forests, New Delhi on date 24.10.2016 online and on date 04.11.2016 hard copy requesting for issue of “Terms of Reference” (ToR). The request for baselinedata collection has been submitted to MoEF&CC dated 25<sup>th</sup> Oct. 2016. The ToR Presentation was held on 23.11.2016/15.12.2016 before EAC of MoEF&CC New Delhi. Subsequently, the ToR was issued on date **16.01.2017** by Honorable MoEF&CC vide letter no **J-11015/214/2016-IA.II (M) (enclosed as Annexure-I)**. We have collected data for one season *i.e.* from 1<sup>st</sup> December 2016 to 28<sup>th</sup> February 2017.

### 1.1 DETAILS OF MINING ACTIVITY AND LOI

In the **Auction** held on 30.08.2016 and 31.08.2016 on the State Government Web Portal <https://haryanaeaprocurment.gov.in> M/s M.P. Traders, Yamuna Nagar Haryana has offered highest bid of Rs. 04,01,50,000/- as against the reserve price of Rs. 04,01,00,000/- per annum for obtaining the mining Contract of Sand minor minerals mines namely “Nagli Block” for extraction of sand having tentative area of 77.25 Ha. falling in Village-Nagli, Tehsil Radaur, District- Yamuna Nagar (Haryana).

**Letter of Intent:** The letter of intent (LoI) has been issued by the Director of Mines & Geology department, Haryana vide Memo no. **DMG/HY/Cont/Nagli Block/YNR B 15/2016/5414** dated **20.10.2016** in favor of **M/s M.P. Traders** for mining of Sand (Copy of LOI has been enclosed as **Annexure-II**).

**Lease Period:** 10 Years.

**Mine Plan and Progressive Mine Closure Plan:** Approved Mining Plan of proposed mining lease area was submitted to the Director General of Mines and Geology Department, Haryana and they have approved the mining plan vide letter no. **DMG/HY/MP/Nagli Block/ YNR B-15/2016/927** on dated **06.03.2017** (Copy enclosed as **Annexure-III**).





## 1.2 IDENTIFICATION OF PROJECTAND PROJECT PROPONENT

#	Name of the Mine lease area	Applicant	Proponent Name
1.	Nagli Block YNR/B-15 Area-77.25 Ha. District- Yamuna Nagar (Haryana).	M/s M.P. Traders Near Nirankari Colony, Karnal Road, Indri, Karnal	Sh. VedpalMandhan Mob No: +91-9896670267, 9896248266 Email id:pradeepmandhan1981@gmail.com

## 1.3 BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION OF THE PROJECTAND ITS IMPORTANCE TO THE COUNTRY REGION

**Table1.1 Brief Description of the Project**

S. No.	Particulars	Details			
A.	Nature and Size of the Project	Mining of Sand Minor Minerals with Production Capacity of 28,00,000 TPA (M.L. Area- 77.25 ha).			
B.	Location				
Name of Unit		Khasra Number		Area of Block in ha	
Nagli Block YNR/B-15		1//18 min, 19, 21, 22, 23 min 5//1, 2,3 min,8 min, 9, 10, 11, 12, 13 min,18 min, 19, 20, 21, 22, 23 min. 6//5, 6, 15, 16, 25 11//5, 6, 14, 15, 16, 17, 18, 19, 20 min, 21, 22, 23, 24, 25. 12//1, 2, 9, 10, 11, 12 min,19 min, 20, 21, 22 min 21//1, 2 min, 9 min, 10, 11, 20, 21 22//1 to 25 23//4 min, 5, 6, 7 min, 14 min, 15,16,17 min, 24 min, 25 28//4 min, 5, 6, 7 min, 14 min, 15, 16, 17 min, 24 min, 25 29//1 to 25 30//1, 10, 11, 20, 21 37//1, 10,11, 20, 21 min 38//1 to 24, 25 39//4 min, 5, 6, 7, 8 min,12 min, 13,14, 15, 16, 17, 18, 19, 20 min, 21, 22, 23,24,25. 40// 16 min, 17 min, 24, 25 41//5, 42//1 to 9, 10,12,13, to 17, 18, 24, 25, 43//1, 2, 3, 4, 8, 9, 10, 11, 12,20,19,21, 44//1, 45//5.		77.25	
Total				77.25	
	Village	Nagli			
	Tehsil	Pillar No.	Latitude	Longitude	
		A	N 29° 58’ 29”	E 77° 13’ 47”	
		B	N 29° 58’ 30”	E 77° 13’ 50.5”	
		C	N 29° 58’ 16”	E 77° 13’ 48.5”	
		D	N 29° 58’ 02”	E 77° 13’ 46”	
		E	N 29° 58’ 02”	E 77° 13’ 45”	
		F	N 29° 57’ 38”	E 77° 13’ 45”	
		G	N 29° 57’ 24”	E 77° 13’ 37”	
		H	N 29° 57’ 38”	E 77° 13’ 13”	
		I	N 29° 57’ 40”	E 77° 13’ 20.5”	
		J	N 29° 57’ 46”	E 77° 13’ 27”	
		K	N 29° 58’ 06”	E 77° 13’ 28”	



		L	N 29° 58' 10"	E 77° 13' 32"	Raduar
		M	N 29° 58' 10"	E 77° 13' 39"	
		N	N 29° 58' 15"	E 77° 13' 43"	
		O	N 29° 58' 15"	E 77° 13' 42"	
		P	N 29° 58' 25"	E 77° 13' 42"	
	District	Yamuna Nagar			
	State	Haryana			
Geogra phical Coordi nates	Latitude and Longitude of				
	Toposheet (OSM) No.	H43L8, H43L5, H43R1, H43L4			
C.	Lease Area Details				
	Lease Area	77.25 ha			
	Type of Land	Yamuna River			
	Topography	Undulated (Riverbed)			
	Site Elevation Range	258 m RL to 261 m RLs per approved <i>Mining Plan</i>			
D.	Cost Details				
	Cost of the project	Rs. 9.00 Crore/-			
	Cost for EMP	Rs.30.00Lakhs/Yr			
	Cost for ESC	Rs. 30.00Lakhs/Yr			
	OH&S	Rs. 10.00 Lakhs/Yr			
	Mines and Minerals Development, Restoration &Rehabilitation Fund.	40.15 Lakhs/Yr			
	Cost For Biodiversity Conservation	Rs.15.00 Lakhs/-			
E.	Environmental Settings of the area				
	Ecological Sensitive Areas (National Park, Wild Life Sanctuary, Biosphere Reserve, Reserve/ Protected Forest etc.) within 10 Km radius	There is no any National Park and Biosphere Reserve within 10 Km radius. Nearest National Park/ Wildlife Sanctuary is Kalesar which is about 45 km in NE direction from mine lease area.			
	Interstate boundary within 5 Km radius	Interstate boundary situated at 1.0 Km away towards East direction (Haryana and Uttar Pradesh) from mine lease boundary.			
	Archaeological Important Place	Sheikh Chilli Tomb, Kurukshetra Haryana approx 37.00Km towards W.			
	Nearest Town/ 	Radaur- 9.1 Km in NW direction (Popultaion-13,690)			

	Major City with 200000 population	
	Nearest Railway Station	Kalanaur (~16 km in NE direction).
	Nearest State Highway	SH- 6 (~4 km in North direction).
	Nearest Airport	Chandigarh (~ 88 km in NW direction).
	Nearest Post Office	Gumthala Post office (~1.5 km in SW direction).
	Nearest Police Station	Jathlana police station (~7 km in North direction).
	Medical Facilities	Sh.HeeraNand Memorial Health Care Centre, Gumthala (~0.5 km in SW direction).
	Education Facilities	Maharaja Agrasain Public School (~2 km in SW direction).
	Seismic Zone	Zone III (IS 1893: 2002)
	Water Body	Yamuna River(Riverbed) Augmentation Canal(~ 9 km in NW direction) BudhiNadi(~ 1 km in SE direction) PuraniNadi(~ 6.1 Km in SW) KunjpuraBandh(~ 6.1 Km in SW)

***(Source: Site visit /Baseline Data and Pre-feasibility Report)***

All corner-coordinates of ML area are superimposed on Toposheet(OSM No.) H43L8, H43L5, H43R1, H43L4 of survey of India **Figure 1.1.**

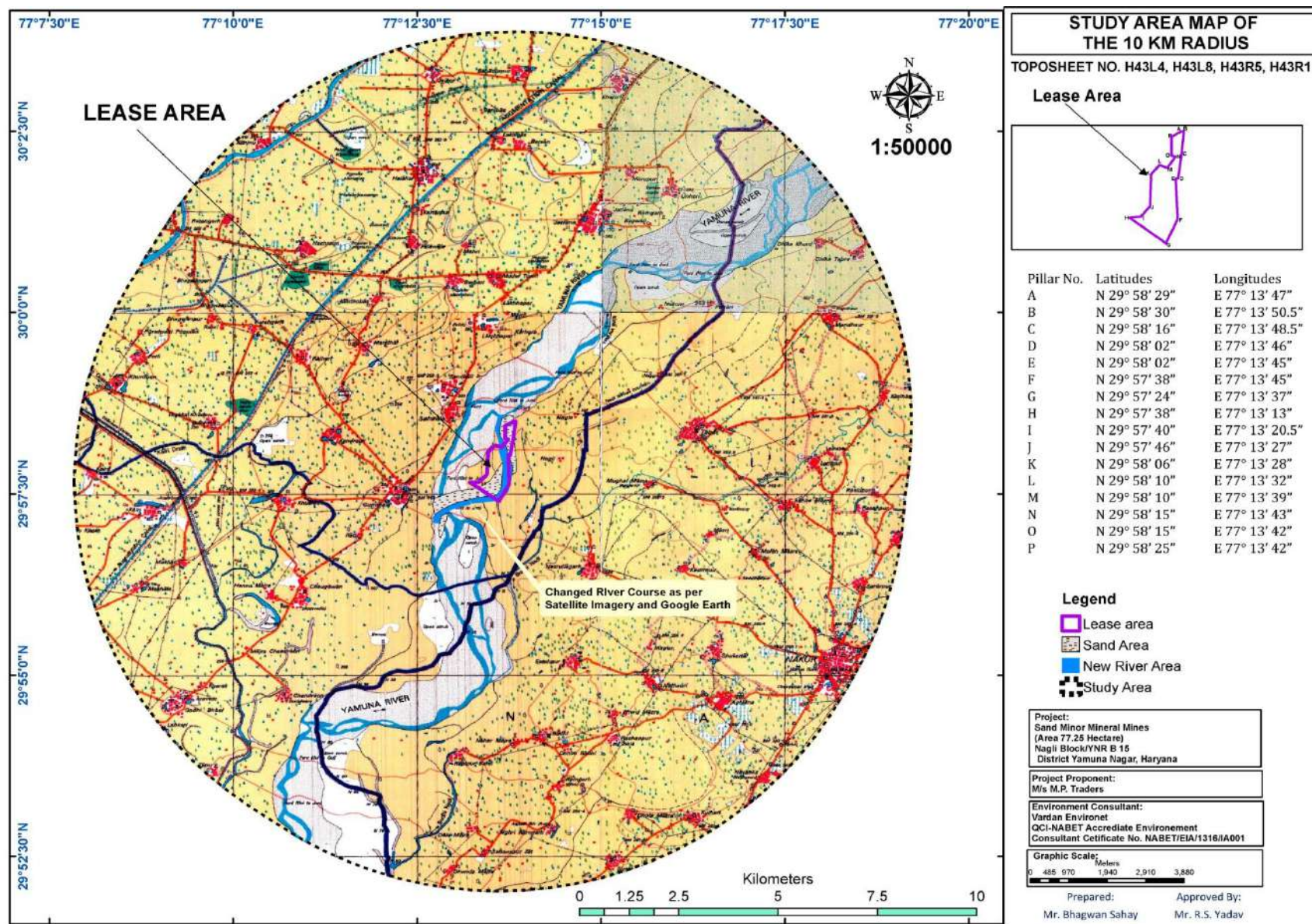


Figure 1.1: Key Plan showing the Study area(10 km radius) along with the Coordinates of Mine Lease area



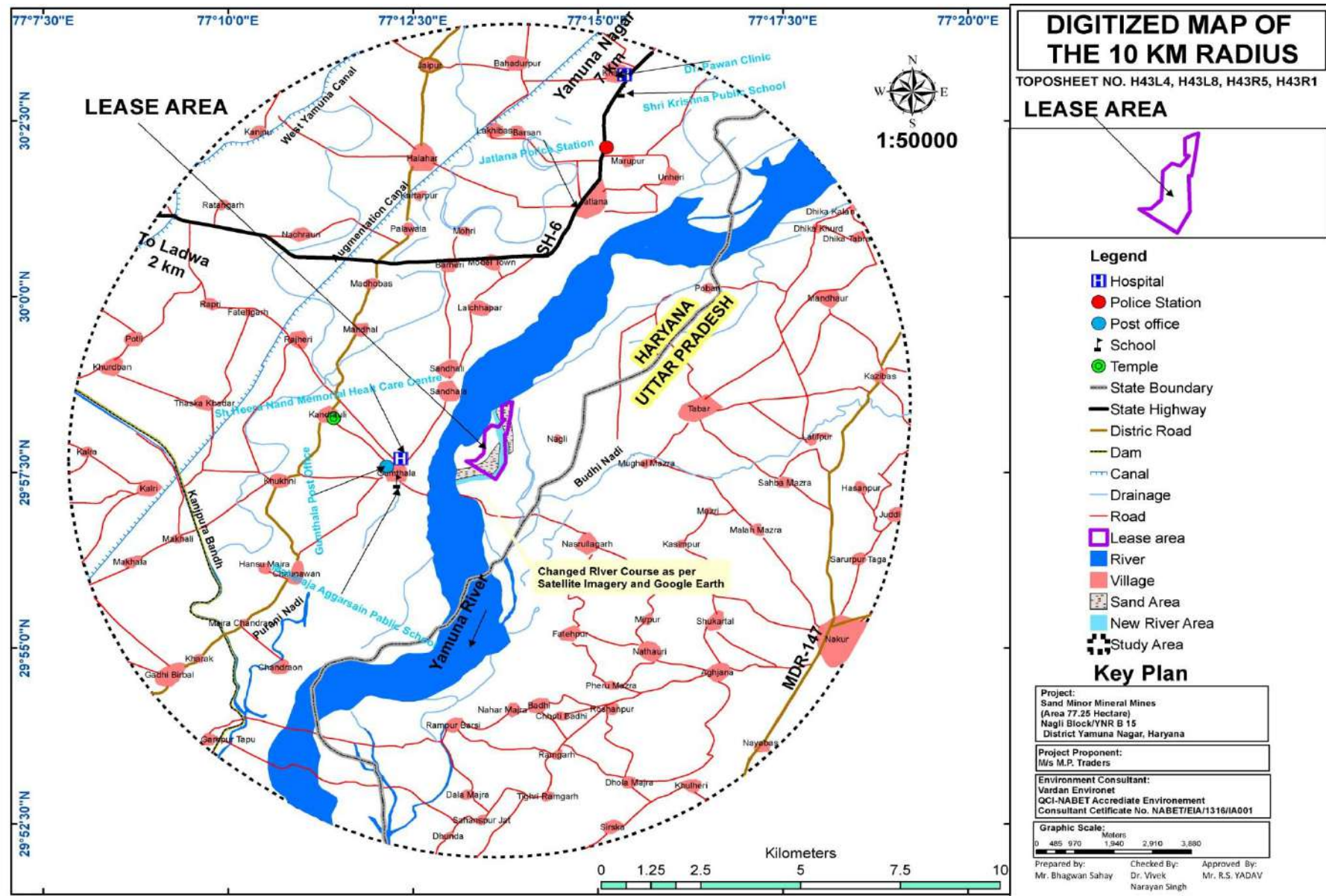


Figure 1.2: Digitized map showing the Environmental Settings of the Study area



#### **1.4. SCOPE OF STUDY**

The scope of the study includes a detailed characterization of the environment in an area of 10 Km. radius of the Mine Lease Area for various environmental parameters like Air, Water, Noise, and Land, Biological and Socio-economic aspects.

##### **1.4.1 Preparation of EIA**

The EIA includes the following details:

- 1) Study of the reports like Geological report, Pre-Feasibility Report (PFR) or mining plan made available by the client.
- 2) Present Environmental Setting
- 3) Identification, prediction and evaluation of Anticipated Environmental Impact due to the proposed mine and related facilities.

The environmental impacts would be anticipated in core and buffer zone on:

- Topography and drainage,
- Climate,
- Water quality (Surface/Ground),
- Hydro-geological Regime,
- Air quality,
- Noise Levels,
- Soil Quality,
- Flora and Fauna,
- Traffic density survey,
- Land-Use,
- Socio-Economic Conditions,
- Habitat,
- Health, culture, human environment including public health, occupational health and safety
- Sensitive Places/Historical Monuments.

This EIA Report is prepared in accordance with has been divided into twelve chapters (in addition to Executive Summary) as briefed hereunder:

##### **Chapter 1 – Introduction**

The chapter provides description of project background, site and surroundings, objectives, scope and organization of the study and format of this report.

##### **Chapter 2 – Project Description**

This chapter provides information on project and capacity; need for the project; location; size or magnitude of operation; technology and process description; maps showing project layout, component of projects etc.

##### **Chapter 3– Description of the Environment**

This chapter deals with the methodology and findings of field studies undertaken with respect to ambient air, meteorology, water, soils, noise levels, ecology to define the various existing environmental status in the area of the project. This also deals with the infrastructural development as a part of project and sources of pollution from the proposed mining project.

##### **Chapter 4 – Anticipated Environmental Impacts and Mitigation Measures**

In this chapter, the potential impacts of the proposed mining and allied activities, which could cause significant environmental concerns, are identified and discussed. This discussion will form the basis for environmental management activities.



### **Chapter 5 – Analysis of Alternatives (Technology and Site)**

This chapter will include a comparison of alternatives in this chapter to determine the best method of achieving the project objectives with minimum environmental impacts or indicates the most environmentally friendly and cost effective options, if any.

### **Chapter 6 – Environmental Monitoring Program**

This chapter will include ascertaining the environmental impacts; state of pollution within the mine lease and in its vicinity; planning for predictive or corrective actions in respect of pollution to keep it within permissible limits.

### **Chapter 7 – Additional Studies**

This chapter will include outcomes of public consultation, risk assessment, social impact assessment, R&R action plan, biodiversity conservation plan, watershed management etc.

### **Chapter 8 – Project Benefits**

This chapter deals with improvements in the physical infrastructure, social infrastructure, employment potential and other tangible benefits due to proposed project activity.

### **Chapter 9 – Environmental Cost Benefit Analysis**

This chapter includes environmental value enhancement (biodiversity, crop productivity, eco-tourism etc.)

### **Chapter 10 – Environmental Management Plan**

This chapter will include the description of administrative aspects of ensuring that the mitigation measures suggested are implemented and their effectiveness is monitored, after approval of the EIA.

### **Chapter 11 – Summary**

This will constitute the summary of EIA Report.

### **Chapter 12 – Disclosure of Consultant**

This will include the names of the consultants engaged in preparation of EIA and nature of consultancy rendered.

## **1.5 LAWS APPLICABLE TO THIS PROJECT**

The Acts, Notifications, Rules and Amendments applicable for setting up a new mining industry or its expansion of an existing mine and for operation of a mine include the following:

- Haryana Mines and Mineral Concession, Stock, Transportation of Mineral and Prevention of Illegal Mining Rules, 2012.
- The Mines and Mineral (Development and Regulation) Act, 1957.
- The Mines Act, 1952.
- Mines Rules, 1955.
- Mineral Concession Rules, 1960.
- Mineral Conservation and Development Rules, 1968
- The Water (Prevention & Control of Pollution) Acts1974/ Rules1975
- The Air (Prevention & Control of Pollution) Acts1981/ Rules1982
- The Environment (Protection) Acts1986/Rules 1986
- The Forest (Conservation) Act, 1980.

**Note:** In addition to the above, MoEF&CC notification dated 18.11.2009 has also given National Ambient Air Quality Standards (NAAQS) for residential, commercial, industrial and sensitive zones for the country as a whole.



## CHAPTER-2

# PROJECT DESCRIPTION

### 2.0 GENERAL

This chapter gives broad description of the project, location, type of mineral deposit(s), quality of reserve, Mining methodology, various site utilities and infrastructure, etc. The downstream use of sand for value addition and its importance is also described.

### 2.1 TYPE OF THE PROJECT

The project is proposed for mining of “Sand” located at Nagli Block/ YNR B 15 over an area of **77.25 ha** with production capacity of **28,00,000 TPA** in Village- Nagli, Tehsil- Radaur, District- Yamunanagar (Haryana) by **M/s M.P. Traders**. It is an opencast semi mechanized mining project to excavate Sand (minor minerals).

### 2.2 NEED FOR THE PROJECT

River channels and their floodplains are important sources of construction grade aggregate materials like sand. The durability of river-borne coarser clastics and their sorting by fluvial action make them best suitable raw materials/ingredients for building constructions. The market demand of river sand is high throughout the country for construction of infrastructure projects.

The project lies on bed of Yamuna and also on the palaeochannels (derived from “palaeo” or “old”, and channel ; ) of the river. The sediment in the form of river bed material *i.e.* sand has deposited in the last many years as a process of sedimentation in the palaeochannels. Sand bars have been formed at various places hindering the flow of water and excess deposition had changed the shape of the river bed. Because of this, during monsoon season, the water may rise above the high flood level causing heavy and devastating floods. Such disasters may damage large tracts of land laying on both the banks of the river especially the agricultural lands. Hence, it is necessary to remove the materials so that the river gets channelized.

Apart from this the project will also serve the following:

- Generate various employment opportunities especially to the local people hosting the mining project
- Economic development of the state by contributing to state exchequer.

### 2.3 DESCRIPTION OF MINE LEASE AREA

The proposed activity of sand mining is located at Nagli Block/YNR B15 over an area of **77.25 ha** in Yamuna riverbed in Tehsil-Radaur and District-Yamuna Nagar, Haryana. The lease area falls in Survey of India Toposheet (OSM) No. **H43L8, H43L12, H43R1, H43L4**.

#### 2.3.1 Location of Project

The general location is given below: The proposed Sand (minor minerals) mining project has lease area of **77.25 ha** and the status of the land is given below:

Particular	Area (ha)
Yamuna River (GairMumkinNadi, Nala).	77.25
<b>Total</b>	<b>77.25 ha</b>

*Source: Mining Plan*

The general location is given below:



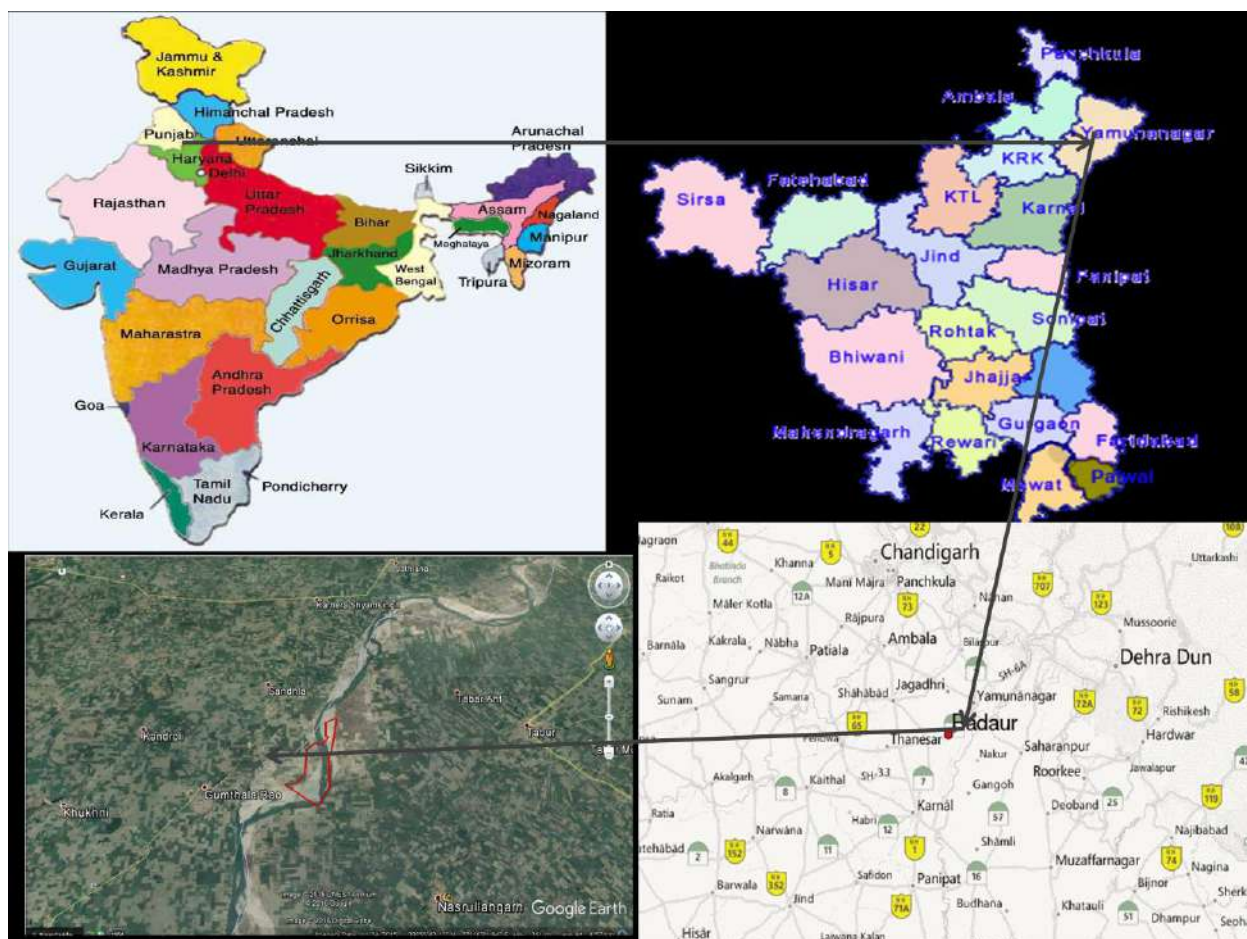


Figure 2.1: Location Map of the Project Site



Figure-2.2: Site visit Photographs



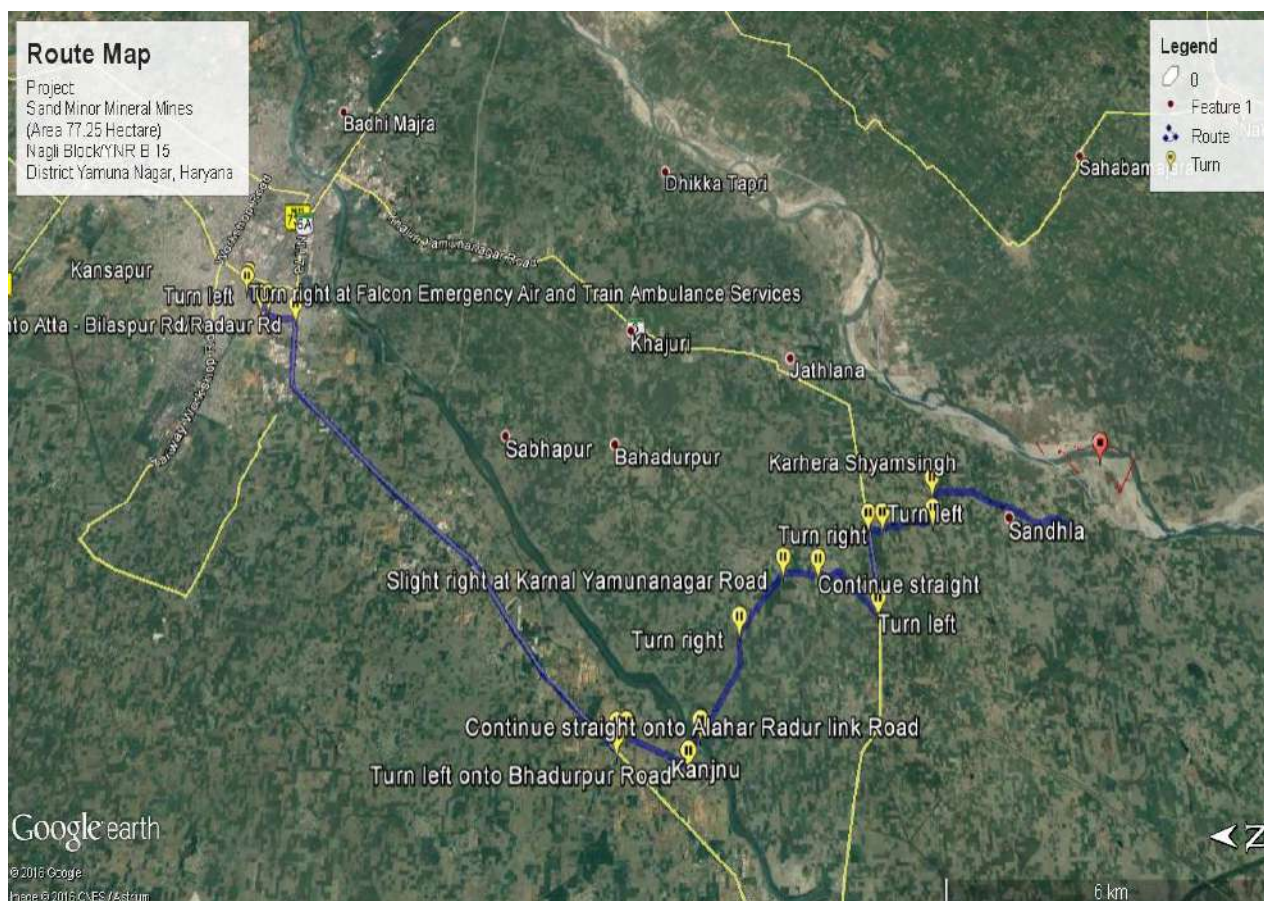


Figure-2.3: Connectivity route Map from proposed mine site to Tehsil Radaur

### 2.3.2 Site Location

Naglivillage is located inTehsil- Radaur, District- Yamuna Nagar (Haryana). It is situated 9.1Km away from sub-district headquarter Radaur and 18.6 Km away from District Headquarter Yamuna Nagar. The Rout Map is given in Figure- 2.2.

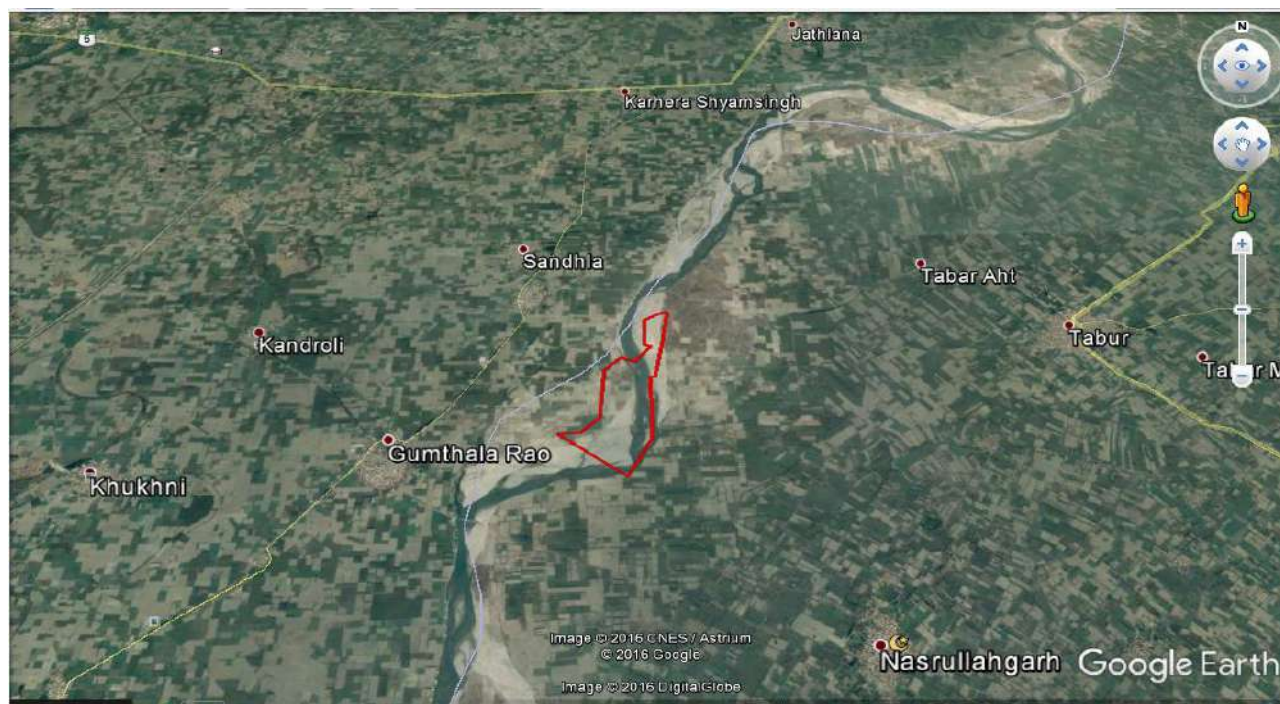


Figure-2.4: Google Image (Short View) of the Project Site



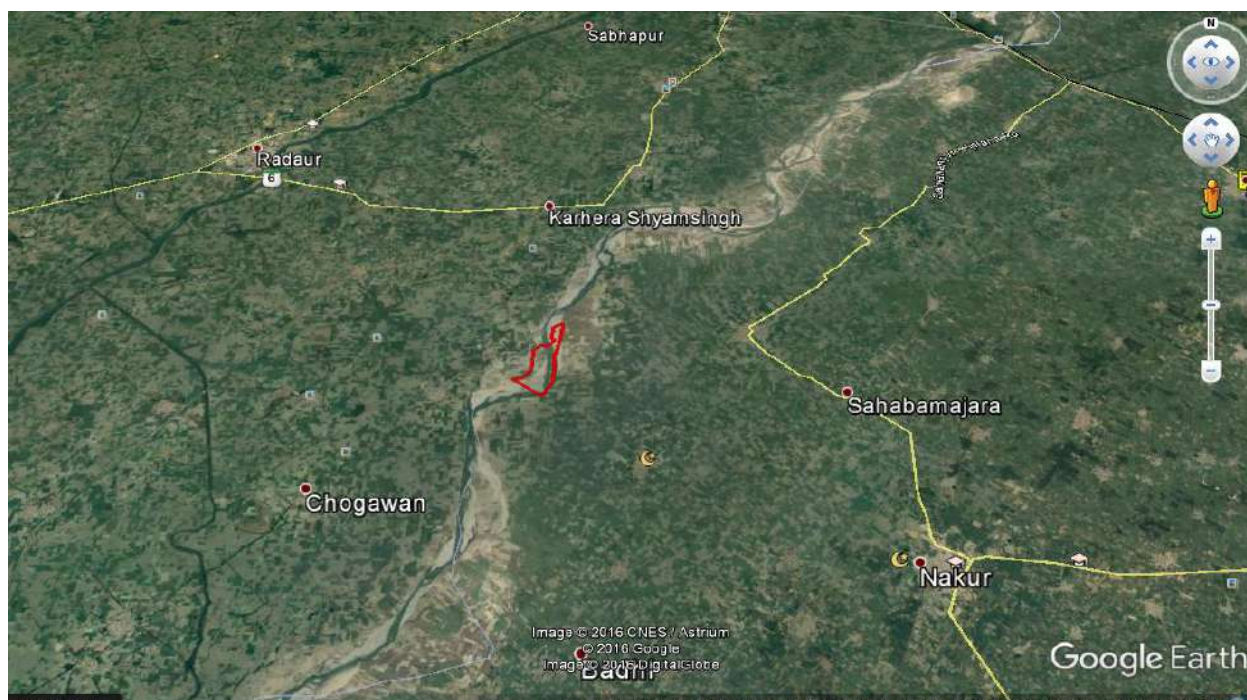


Figure-2.5: Google image (Long View) of the Project Site

Table-2.1: Five Mining project are present in 10 Km radius-

S.No.	Name of the Mine	Applicant	Direction	Distance	Area (Ha.)	Production (TPA)	Minerals
1.	Jathlana YNR B-12	M/S P.S. Buidtech	Upstream	2.7 Km	101.27	45,00,000	Sand
2.	Pobari Block/YNR B11	M/s Development strategies India Pvt. Ltd.	Upstream	4.4 Km	23.05	11,00,000	Sand
3.	Gumthala North Block/YNR B16	M/s Joginder Singh	Downstream	250m	44.62	21,00,000	Sand
4.	Nagli Block YNR/B-15	M/s M.P Traders	Mine site	Mine site	77.25	28,00,000	Sand
5.	M.T. Karhera Block YNR/B-13	M/s KawaljeetsinghBatra	Upstream	1.3 Km	67.79	2360000	Sand



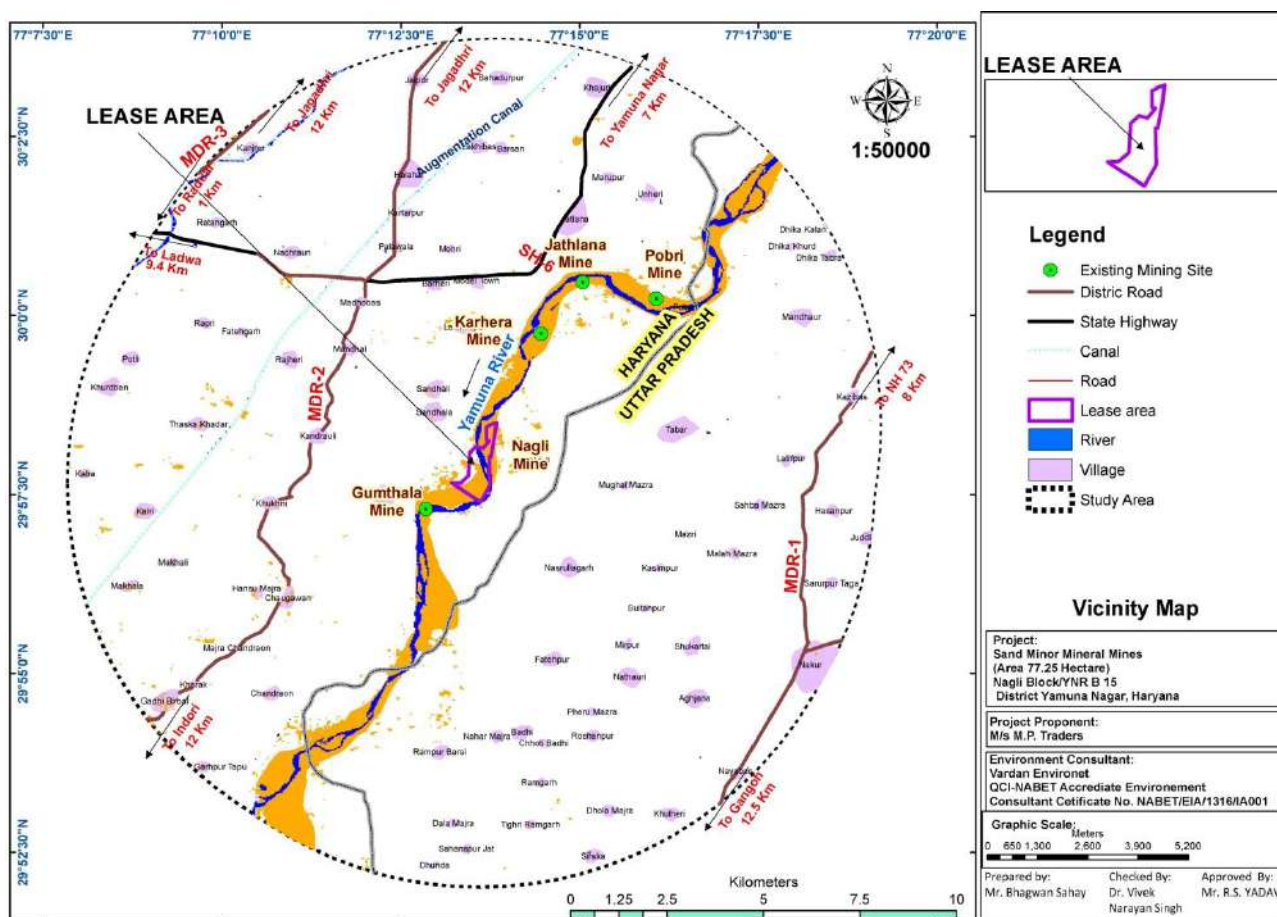


Figure 2.6: Map of the Proposed Mining Project are present in 10 Km Radius

## 2.4 SIZE OR MAGNITUDE OF OPERATION (Incl. Associated activities required by or for the project)

The proponent has taken an area of **77.25 ha.** on contract as per LoI. The mining department has taken prior clarification from the Forest department before putting it into the auction. Hence this area is free from the forest. However, the NOC from the DFO Yamuna Nagar is attached as **Annexure IV** which clearly shows that the area is free from forest.

Table 2.2: Details of Mining

S. No.	Particulars	Details
1.	Method of Mining	Open Cast Semi-mechanized
2.	Geological Reserves	46,35,000 MT
3.	Mineable Reserves	35, 22,600 MT
4.	Proposed Production	28,00,000 TPA
5.	Elevation Range of the Mine Site	From 258 to 261 mRL
6.	Bench Height	3 m in Riverbed
7.	Bench Width (Average)	Width of the bench around 20 m
8.	Bench Slope	45°

### 2.4.1 Topography of the Area

The topography of the district is flat terrain and the elevation ranges from 258 to 261 m amsl. The general slope is from North towards south.

### 2.4.2 Geology

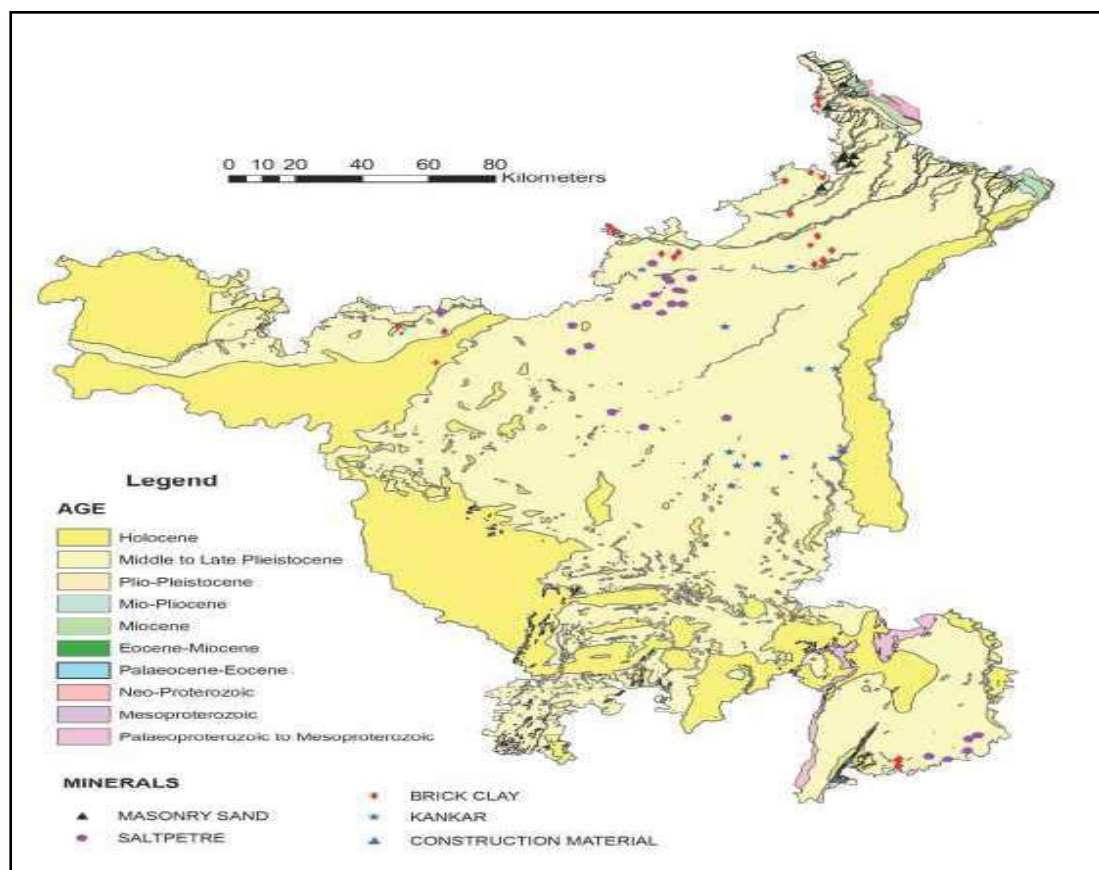
#### 2.4.2.1 Regional Geology

The north-eastern and central part of Haryana is predominantly characterized by sedimentary litho logy in

the Sub-Himalayan zone comprising Subathus, Dagshais, Kasaulis and Siwaliks. A general Regional stratigraphic sequence in the area is given in Table-2.3.

**Table 2.3: Regional stratigraphic sequence**

Age	Super group	Group	Formation	Lithology
Holocene			Newer alluvium and Newer Aeolian Deposits	Gravel, Sand, silt, clay, limestone, gypsum
Lower to upper Pleistocene			older alluvium and Older Aeolian Deposits	Gravel, grey sand, silt, clay, brown sand, calcrete
Lower to Middle Pleistocene	S I W A L I K	Upper Siwalik	Boulder Conglomerates formation	Conglomerate, sandstone, silt, clay
Upper Pliocene			Pinjore Formation	Coarse grit, red sand stone and clay, conglomerate
			Tat rot Formation	Friable Sandstone and variegated clay
		Middle Siwalik	Dhokpathar Formation	Brown sandstone and orange clay
Middle Miocene			Nagri Formation	Hard grey sand stone, mudstone and minor shale
		Lower Siwalik	Nahan Formation	Coarse gritty ,clay and red sandstone often calcareous, brownish shale with lignite lenticels, greenish white Quartzite
Lower Miocene		Sirmur	Kausauli Formation	Grey and stone, green shale and grey clay
			Dagsai Formation	Purple and green sand stone, deep red gritty, clay, white sandstone with ferruginous concretions
Upper Eocene			Subathu formation	Sandstone with grit clay. Impure fossiliferous limestone calcareous slate, greenish shale and dark brown quartzite
Pre-proterozoic			Tundapathar	Thickly bedded,stromatolite limestone with carboniferous shale and quartzite.



**Figure 2.7: Geomorphology of Haryana (Source: GSI)**

#### 2.4.2.2 Local Geology

The litho units encountered in the riverbed and surrounding areas belongs to the Shivalik super groups. The sediments are river borne and has deposited in the riverbed and the flood plains. The different formations of the area belong to Shivalik Super group and are a mixture of boulders, pebbles, sand, silt and clay.

The following sequences have been observed in the area.

- Soil/Alluvium,
- Sand

There is no clear demarcation between the litho units. They have been deposit in a mixed form. The Litho-units exposed around the riverbed belong to Shivalik Super- Group. The mineral sand have formed by weathering of rocks and then deposition on the flood plains of the rivers originated from the Shivaliks. These have been washed by rainwater during rainy season and deposited in river bed in the form of sand of different sizes and shapes. These minerals are sorted by screening. The max depth of the minerals is not known.

Soil/ alluvium varying in thickness from 0.50-1.50 m constitute the top horizons in the area suitable for agriculture. Yamuna River meanders through the area exposing the alluvium and soil at the banks. Sand is found in the river bed. Sand is deposited up to great depths. This bed is presently dry and water flows only during the rainy season The Sand exposed in the River bed of Yamuna and surrounding areas is the product of the deposition of the sediments brought and deposited in the flood plains of River Yamuna. These sediments are of recent geological formation. The litho-units exposed within the river and surrounding areas have formed as water borne sediments brought by flood water during rainy season every year and deposited in riverbed.

#### 2.4.3 Sediment Composition

Most sand is made of quartz or its microcrystalline cousin chalcedony, because that common mineral is

resistant to weathering. The farther from its source rock sand is, the closer it is to impure quartz. But Yamuna sands contain quartz grains, tiny bits of rock (lithics), or dark minerals like limestone and ferruginous concretions. The size of the sediments is variable. The grains whether small or large area rounded in the shape. Sand is grey, brown in color, coarse to fine grained. The present deposits are of good quality and can be used for building industries. There is no other use of this material.

#### 2.4.4 Physiography

The district is divided into four Physiographic units:

- Siwaliks,
- Dissected Rolling Plains,
- Interfluvial Plains,
- Active And Recent Flood Plains,
- Relict Plains.

**Siwaliks hills** - Siwalik hill ranges occupy the northern fringe of Yamuna Nagar district and attain the height up to 950m amsl. The hills are about 500m high with respect to the adjacent alluvial plains. These are characterized by the broad tableland topography that has been carved into quite sharp slopes by numerous ephemeral streams come down to the outer slopes of the Siwaliks and spread much of gravels boulders, pebbles in the beds of these streams.

**Kandi Belt** - A dissected rolling plain in the northern parts of district is a transitional tract between Siwaliks hills and alluvial plains. It is about 25 Km wide and elevation varies between 250 and 375m amsl.

**Interfluvial plains** - This tract is part of higher ground between Ghaggar and Chautang and includes high mounds and valleys. In general, the slope is from northeast to southwest.

**Active and recent flood plains**-This plain is narrow tract along river Yamuna in the district.

**Relict wedge plain**-This is almost in alignment to the surface water divide between the westward flowing Ghaggar and eastward flowing Yamuna River.

#### 2.4.5 Drainage

The Yamuna River Flow from North to South which originates from the Himalayas Provides the major drainage in the mining area. The general sloop of the land surface is from N to S and elevation of the Mining area varies from 258mRL in the north end side of the mining area to 261m RL in south end side of the mining area.

There is flow of water in the river bed in a narrow area in post monsoon period. Area is having 1067 mm rainfall in a year. During rainy season, Catchment water flows in the river. During dry period the Sand is excavated which gets replenished during rainy period. No mining activities will be carried out during rainy season when there is water flowing in the working area. There will be no intersection of water table as working will be carried out upto 3.0 m depth only from surface of river bed while the water level is 5-10 m below the surface of river bed.

**Table 2.4: Catchment of River Yamuna**

Name of state	Total catchment area in Yamuna (Sq.Km.)	Percentage contribution
U.P. (including Uttrakhand)	74208	21.5
Himachal Pradesh	5799	1.6
Haryana	21265	6.5
Rajasthan	102883	29.8
Madhya Pradesh	14028	40.6
Delhi	1485	0.4

Source: CPCB, 2006



**Table 2.5: Details of Site Elevation**

Lowest Elevation (mRL)	Highest Elevation (mRL)	Working Depth (in meters)	Ground Water Table
258	261	River Bed: 3 m bgl	River Bed: 5-10 m bgl

(Source: Mining Plan and Progressive Mine Closure Plan)

#### 2.4.6 Climate

The climate of Yamuna Nagar district can be classified as subtropical monsoon, mild and dry winter, hot summer and sub-humid which is mainly dry with hot summer and cold winter except during monsoon season when moist air of oceanic origin penetrates into the district. There are four seasons in a year. The hot weather season starts from mid-March to last week of the June followed by the southwest monsoon which lasts up to September. The transition period from September to November forms the post monsoon season. The winter season starts late in November and remains up to first week of March.(Source: [http://cgwb.gov.in/District\\_Profile/Haryana/Yamuna%20Nagar.pdf](http://cgwb.gov.in/District_Profile/Haryana/Yamuna%20Nagar.pdf)).

#### 2.4.7 Rainfall

The normal annual rainfall of the district is 1067 mm, which is unevenly distributed over the area in 44 days. The south west monsoon sets in from last week of June and withdraws in end of September, contributed about 81% of annual rainfall. July and August are the wettest months. Rest 19% rainfall is received during non-monsoon period in the wake of western disturbances and thunderstorms. Generally rainfall in the district increases from southwest to northwest. The Mean temperature is 40.8°C (May and June) and Mean Minimum is 6.8°C (January) of the district. Normal Annual Rainfall: 1076 mm and Normal monsoon Rainfall 879 mm(Source: [http://cgwb.gov.in/District\\_Profile/Haryana/Yamuna%20Nagar.pdf](http://cgwb.gov.in/District_Profile/Haryana/Yamuna%20Nagar.pdf)).

### 2.5 SEISMICITY OF THE AREA

Many parts of the Indian subcontinent have historically high Seismicity. Seven catastrophic earthquakes of magnitude greater than 8 (Richter scale) have occurred in the western, northern and eastern parts of India and adjacent countries in the past 100 years. By contrast, peninsular India is relatively less seismic, suffered only infrequent earthquakes of moderate type. The main seismogenic belts are associated with the collision plate boundary between the Indian and Eurasian plates. The project site falls under seismic **zone IV** which is a high damage risk zone (**MSK VIII**). The IS code assigns zone factor of **0.24** for **zone IV**. Source:<http://www.imd.gov.in/section/seismo/dynamic/welcome.htm>.

The loss estimation outcome based on the census data of Haryana State, projected deaths and injuries calculated by researcher are tabulated below.

**Table 2.6: Loss Estimation at State Level**

State	Population (Census, 2011)	Injuries	Deaths
Haryana	2,53,53,081	15,04,200	3,23,400

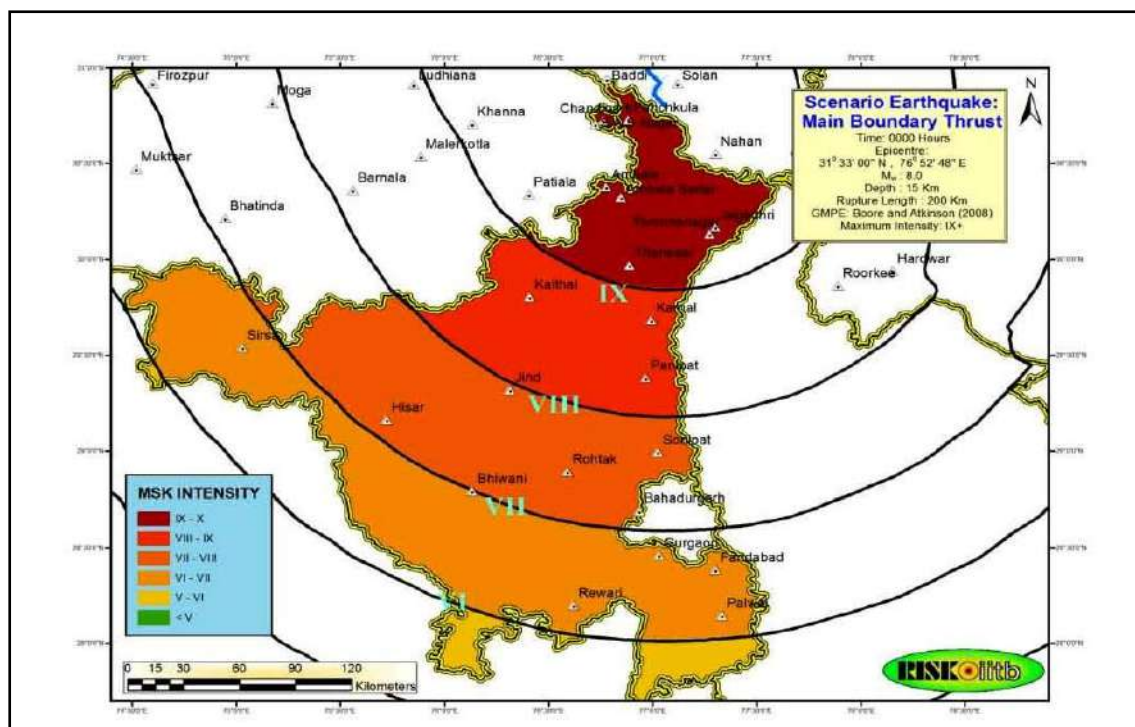
**Table 2.7: Loss Estimation at District Level**

S.No.	District	Population (Census, 2011)	Injuries	Injuries (%)	Deaths	Deaths (%)
1.	Panchkula	5,58,890	51,900	9.2	11,400,	2.0
2.	Ambala	11,36,784	121,700	10.7	26,200	2.3
3.	YamunaNagar	12,14,162	114,000	9.3	25,500	2.1
4.	Kurukshetra	9,64,231	85,200	8.8	19,500	2.0
5.	Kaithal	10,72,861	93700	8.7	20400	1.9
6.	Karnal	15,06,323	125700	8.3	28400	1.8



7.	Panipat	12,02,811	85100	7.0	19200	1.5
8.	Sonipat	14,80,080	86700	5.8	19800	1.3
9.	Jind	13,32,042	91600	6.8	21200	1.5
10.	Hisar	17,42,815	88500	5.0	20100	1.1
11.	Bhiwani	16,29,109	71100	4.3	15000	0.9
12.	Rohtak	10,58,683	55500	5.2	12700	1.1
13.	Jhajjar	9,56,907	46200	4.8	9700	1.0

Source: NDMA, Government of India, 2014.



Source: NIDM, Haryana, 2014

Figure 2.8: Map of Intensity of Injured in Haryana

### 2.5.1 Largest Instrumented Earthquake in Haryana

The instrumental earthquakes in this region are listed in Table given below. General locations are provided for historical events for which generalized epicentral co-ordinates are available. Some events which were significant for other reasons are also included.

Table-2.8: Major Earthquake in Haryana

S. No.	Date	Time	Latitude	Longitude	Depth (Km)	Magnitude	Region
2006							
1.	February, 15	1:37:47.5 HRS (UTC)	29.1° N	76.6° E	05.0	3.2	Sonipat, Haryana
2.	March, 31	11:25:39.3 HRS (UTC)	28.7° N	76.8° E	22.0	3.4	Jhajjar, Haryana
3.	April, 07	18:56:38.0 HRS (UTC)	29.0° N	77.0° E	11.5	3.0	Sonipat, Haryana
4.	May, 01	5:13:47.9 HRS (UTC)	29.0° N	76.7° E	10.0	3.6	Rohtak, Haryana
5.	May, 07	16:1:0.5 HRS (UTC)	28.7° N	76.6° E	20.2	4.1	Jhajjar, Haryana
6.	December, 09	18:52:03.7 HRS (UTC)	29.0° N	76.7° E	06	2.8	Rohtak, Haryana



<b>2007</b>							
7.	April, 03	15:35:10.3 HRS (UTC)	29.0° N	76.6° E	8.8	2.8	Rohtak, Haryana
8.	May, 14	7:22:47.4 HRS (UTC)	29.0° N	76.6° E	5.0	3.2	Rohtak, Haryana
9.	November, 20	17:11:5.6 HRS (UTC)	28.0° N	76.6° E	1.2	3.3	Rajasthan- Haryana Border Region
<b>2008</b>							
10.	February, 27	11:13:55.2 HRS (UTC)	28.9° N	76.6° E	15.0	2.8	Rohtak, Haryana
11.	November, 1	22:34:49 HRS (UTC)	28.9° N	76.8° E	10	2.7	Rohtak, Haryana
12.	October, 19	07:56:48 HRS (UTC)	29.1° N	76.9° E	7	3.2	Sonipat, Haryana
<b>2009</b>							
13.	May, 10	11:02:47.0 HRS (UTC)	30.3° N	76.9° E	11	3.5	Ambala, Haryana
<b>2010</b>							
14.	February, 24	19:20:52 HRS (UTC)	28.6° N	76.9° E	17	2.5	Rohtak , Haryana
15.	March, 03	11:48:18.0 HRS (UTC)	28.8° N	77.0° E	15	2.3	Delhi- Haryana Border Region
16.	October, 12	10:27:25 HRS (UTC)	28.2° N	76.0° E	6	3.5	Rajasthan- Haryana Border Region
17.	September, 07	17:58:18 HRS (UTC)	28.6° N	77.0° E	8	4.2	Delhi- Haryana Border Region
18.	November, 24	19:09:22 HRS (UTC)	28.8° N	77.0° E	10	2.5	Delhi- Haryana Border Region
<b>2011</b>							
19.	March, 05	07:41:03 HRS (UTC)	28.7° N	76.7° E	10	4.9	Haryana- Delhi Border Region

**Source:** <http://www.imd.gov.in/section/seismo/dynamic/welcome.htm>

### 2.5.2 Conclusion

As per outcome of the data collected from IMD, Haryana, only three earthquakes were observed more than 4.0 magnitudes. Due to low intensity of these earthquakes it can be concluded there will be no major impact on the environment due to proposed activity.

## 2.6 FLOODS

Floods have been a recurrent phenomenon in Haryana from time immemorial. Many part of the state of Haryana are prone to flooding. The devastating floods hit Haryana many times. In 1977, 1978, 1980, 1983, 1988, 1993 and 1995, 1996 floods occurred in Haryana. Floods have been causing extensive damage not only to standing crops but also loss of lives and cattle. The floods in Haryana can occur because of some natural reasons such as its physiographic situation which makes a depressional saucer shape zone around the Delhi-Rohtak-Hisar-Sirsa axis and it has a poor natural drainage system and sometimes the heavy precipitation becomes a major contributing factor in causing flood as such in case of Rohtak flood, 1995. The state receives an average rainfall of about 650 mm. In flood manual of Haryana, there are 102 vulnerable points in Haryana which need special attention during monsoon.

### 2.6.1 History of Flood in Yamuna Nagar

Situation of Yamuna Nagar District is such that the northern part of the district falls in the foothills of Shiwalik ranges while remaining part lies on the hill-slopes and plains. A number of Streams and rivulets flow



through this district and these cause damage to crops in the monsoon season in many ways. River Yamuna Passes along the eastern boundary of this district dividing it from district Saharanpur of U.P. State. The important rivers, streams and rivulets passing through this district are Somb, Pathrala, Chautang, SadhuraNadi part of the Markanda River etc. Whenever there are heavy rains, large areas of the district are affected by heavy discharge from HathaniKund Barrage in the catchment areas of Himachal Pradesh. On the basis of information available, heavy rains/ floods affected the district badly in the years 1978, 1988, 1989, 1990, 1995, 1998, 2008, 2010, 2011 and 2013. Khadar area of this district along river Yamuna was affected by high floods. It has been experienced that people of this area have always taken the floods in their stride and they hardly faced any difficulty before 1978. It was in this year that villages like Kalesar, Mandewala, Mamdubas, Kaniawala, Bhilpura, LakarmaiPartappur, Nawajpur, MandoliGaggar, Kanalsi, Bhogpur, BibipurLapra, Karera, Model Town, KamalpurTapu, Bagwali, Jathlana, LalChappra, Sandhala, Gumthala, Pobari etc. were cut off due to over flow of water in river Yamuna as its discharge exceeded 8 Lakhs cusecs. The discharge in river Yamuna reaches to 8.63 Lakhs cusecs in the year 2013 Khadar area in this district is affected whenever there is more than 2.00 Lakhs cusecs of water in river Yamuna. The situation becomes alarming when it increases beyond 2.5 Lakhs cusecs. After the year 1965, bunds were constructed and protection works completed hence there was no such village which could be termed as dangerously exposed, but during the floods of 1978, 1988 and 1998, 2005 and 2008 villages namely Bhilpura, Kaniawala, Sandhala, Sandhali, Jathlana, GhoronPipli, TapuMajri, Lakkar Mai Partappur, Mali Majra, Nawajpur, Mandouli, GhaggarKanyawala, Odri, Lapra, TapuKamalpur, Gumthala etc. were affected. There are still some vulnerable villages which required special attention / vigilance for the sake of safety. They are as under:

**Table-2.9: List of Flood Prone Villages**

S.No.	Chhachhrauli Tehsil	Jagadhri Tehsil	Bilaspur Tehsil
1.	Kalesar	Gadhaula	Ranjitpur
2.	Mandewala	Rajpura	Jaitpur
3.	Lakkar Mai Partappur	Kanalsi	Bihta
4.	Nawajpur	Bhogpur	Mujafat
5.	MandouliGaggar	Bibipur	Bhamnauli
6.	Urjani	Odri	Chintpur
7.	BaroliMajra	Lapra	Khanuwala
8.	KotSarkari	Jathlana	Lalhari
9.	KotBasawa Singh	Sandhala	
10.	Naggal Patti	Sandhali	
11.	MuzafatKalanandMuzafatKhurd	Gumthala	
12.	Khanuwala	Naharpur	
13.	Chintpur	GhoronPipli	
14.	Khizri	TapuMajri	

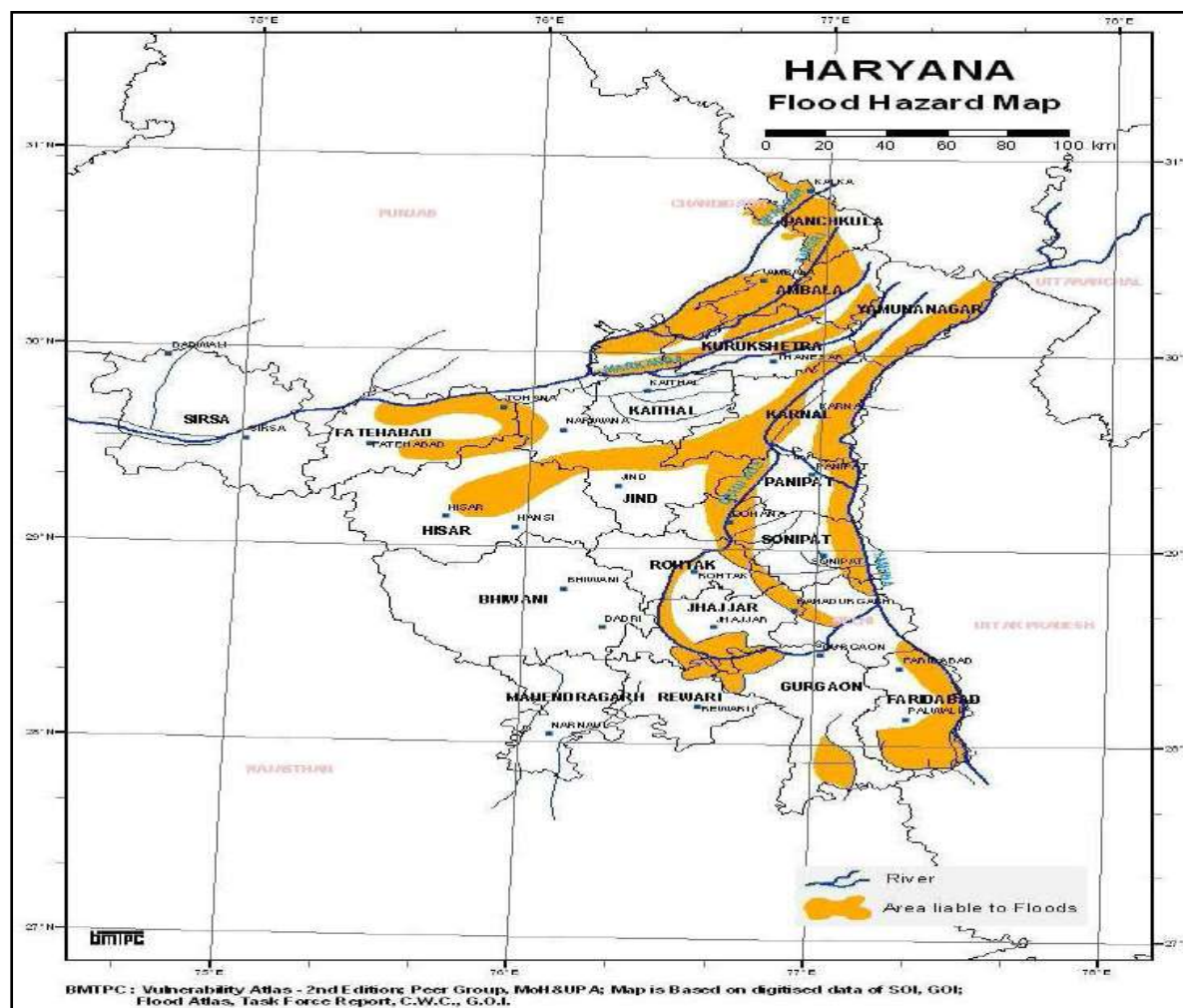


Figure-2.9: Flood Hazard Map of Haryana

## 2.7 EXPLORATION AND RESERVES

### 2.7.1 Method of Estimation of Reserve

Survey was conducted in the proposed area of Yamuna River bed as per the area allocated in different villages vide list given by Director of Mines and geology, Haryana. This is the basic document provided by the authorities. Khasra plan was provided by the applicant.

**For River bed:** Mineral reserves are calculated up to 3 m depth from existing river bed.

All reserves are proved reserves. Details are given as below:

### 2.7.2 Reserve Estimation

For estimating the reserve of sand the following parameters are considered:

1. The reserves are calculated on the basis of established width, thickness and strike length/influence of the mineralized formation in the area.
2. The entire reserves of Sand up to the depth of 3.0 m are calculated for river bed area.
3. The bulk density of Sand is considered 2.0.
4. Mineral Reserves falling in the river bed area has been calculated taking the maximum permissible depth of 3 m from the river bed surface RL.
5. It is considered that river bed Sand shall be replenished every year as evident from preceding paragraph (3.2.6) on "Annual Replenishment of Mineral in River Bed Area vis-à-vis Sedimentation"

### 2.7.3 Geological Reserves: -

The reserves of Sand calculated by volumetric method and are summarized here below: -

**Table 2.10:Geological Reserves Estimation**

S.No.	Nature of land	Lease area Inha.	Total proved Geological reserves MT=Area x depth x BD (A )	Blocked area of 50m strip after each km, 25% blocked in riverbanks,railways,r oads/bridges/lease boundary etc.	Blocked Geological Reserves in blocked area (B)	Total Mineable reserves A-B=C	Minable Reserve (Per Year)
1.	Riverbed	77.25	46,35,000	18.54	11,12,400	35,22,600	28,00,000

#### 2.7.4 Mineable Reserves: -

**A)Geological and Proved Reserves as Per UNFC Code (111)**

Total Reserves = 46,35,000 MT

**B)Blocked Reserves as Per UNFC Code (211 and 222) = 11,12,400MT**

**C)Mineable Reserves = A-B = 35,22,600MT**

#### 2.7.5 Details of Production and Dispatches of Five Years

This is a new mining area allotted to the applicant. Mining Contract has been allotted for a period of **10 years** only. Mining area consist of 77.25 Ha. area in Nagli Block/YNR B-15out of which about 18.54 Ha. area is under restricted zone. About58.71 Ha. area is free from restriction and the mining is proposed in this area only.

**Daily production proposed= 9,333 MT from River bed/day**

**Production** program is 373 trips/ day @ 25 ton per trip.

**Working days** have been taken as 300 days per annum.

**Projected Production per Year =28,00,000MT**

**Table 2.11: Five Years Proposed Production Details (Tons/annum)**

Year	Production From River bed (TPA)
I	28,00,000
II	28,00,000
III	28,00,000
IV	28,00,000
V	28,00,000

**Source: Mining Plan and Progressive Mine Closure Plan at Page NO. 30**

#### 2.7.6 Life of mine

The period of contract for mining will be for 10 years commencing with effect from the date of grant of Environmental Clearance or an expiry of a period of 12 months from issuance of LOI. Mine area will be worked in blocks for ease of operation. This will be further replenishment during rainy season. Hence, new mineral will be added every year in the River bed.

### 2.8 MINING METHODOLOGY

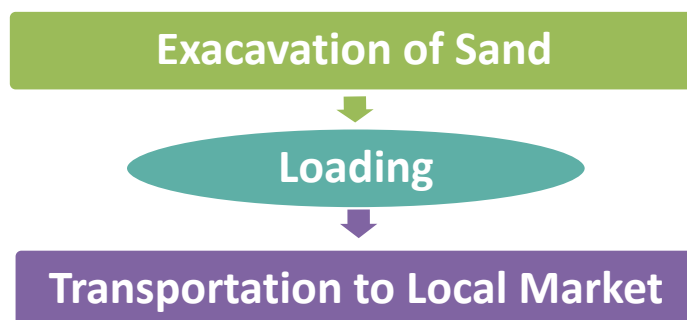
Mining is proposed up to 3.0 m in river bed.River bed mining is for extracting Sand from Yamuna River bed. As per Haryana Minor Mineral Concession Rule, 2012 extraction is limited to 3.0 m depth only in river bed. Mining area allotted is 77.25 in District- Yamuna Nagar. Mining activity will be carried out in allocated areas only.

#### 2.8.1 Mining in River Bed

- Light weight excavators will be deployed for extraction.
- Mineral will be removed in 3.0 m layer only forming one bench and then it will be loaded in trucks of 25 tons capacity. There will be no overburden or waste generation as the Sand is exposed in the river bed.
- Bench will advance parallel to the banks of the river. Height of bench will be 3.0 m. Width of the bench

will be around 20.0 m. Workings will be restricted within the mining area/ khasra as per the description report given by Mining Department.

- Mining activities will be carried out in a manner so that there is no obstruction to the movement of water flow, if any, during rainy season. The bench will be in the form of slices/ strips parallel to the banks of the river. Roads in the mining area for the movement of loaded trippers/ trucks will not have slopes more than 1 in 20. However, movement of trucks after mineral loading will be towards both sides through approach roads connecting to tar roads. Every block will have its own approach roads, well connected to main highways. No processing of mineral will be done.
- Total production envisaged is **9333.33 TPD** (3-4 trips of 105 trucks of 25 MT capacity) from River bed.



**Figure-2.10: Process Flow Chart of Mining of Sand**

### 2.8.2 Reclamation of Mined out Area

There is no generation of over burden/ waste material in case of river bed mining. No backfilling has been proposed in the excavated zone in river bed. River bed will be replenished by sediments during rainy season.

## 2.9 EXTENT OF MECHANIZATION

This is a new mining contract. Following equipments are proposed to be deployed for the desired production.

**Table 2.12: List of Machineries**

S. No.	Name of machinery	Capacity	Nos.
1	Light weight excavator	1.0 m <sup>3</sup>	10
2	Tippers/ Trucks	25 tons	105 hf
3	Water Tanker	4000 liters	2
4	Light vehicles /jeep	--	1
5	Maintenance Van	--	1

## 2.10 TRANSPORTATION

Mineral river sand will be transported by hired trucks. Light weight excavators/JCB will be deployed for extraction. Mineral will be loaded in trucks of 25 tons capacity. Loaded trucks will travel on Kuccha road made for plying of trucks. No. of such temporary road will provide access to the river bed and the movement of loaded trucks.

## 2.11 DRAINAGE NEAR MINE SITE

The River Yamuna flow from N to S which originates from the Himalayas provides the major drainage in the mining area. The general slope of the land surface is From NE to S and elevation of the mining area varies from 261amsl in the north endside of the mining area to 258mRL in south end side of the mining area.

There is flow of water in the river bed in a narrow area in post monsoon period. During rainy season, catchment water flows in the river. During dry period the Sand is excavated which gets replenished during rainy period. No mining activities will be carried out during rainy season when there is water flowing in the working area. There will be no intersection of water table as working will be carried out up to 3.0 m depth only from surface of river bed while the water level is 5 -10 m below the surface of river bed.

## 2.12 WASTE MANAGEMENT

As stated in mining method, there will be no waste of any kind. Therefore no waste management s required.

## 2.13 USE OF MINERAL

- Sand Minor Mineral is mainly consumed in construction work in infrastructure, housing, road projects and other development projects.
- Virtually there is no construction or infrastructure building work possible without this minor mineral, hence the same can be assumed as back bone of the infrastructural growth of India.

## 2.14 LAND USE PATTERN OF MINING AREA AT VARIOUS STAGES

**Table 2.13: Land Use Pattern at Various Stages**

S. No.	Particulars		Present Land use (Ha)	At the End of 5 <sup>th</sup> year of Mining (Ha)	At the end of mining
1.	Safety Zone	Bridge and anicuts, roads, 7.5 m mining area boundary, 25% restricted area of river banks, 50 m barrier at each Km.	0.00	18.54	0.00
2.	Infrastructure (Office, Temporary Shelters etc)		0.00	0.02*	0.00
3.	Area available for mining in River Bed/ Naturally reclaimed		77.25	58.71	77.25
Total			77.25	77.25	77.25

## 2.15 UTILITIES AND SITE FACILITIES

### 2.15.1 Water Requirement

Total water requirement for the mining project is **45.00 KLD** that quantity will be fulfilled from ground water resource. Application has been submitted for getting prior permission from CGWB Haryana. (Attached as annexure-IV-B)

#### Water Requirement

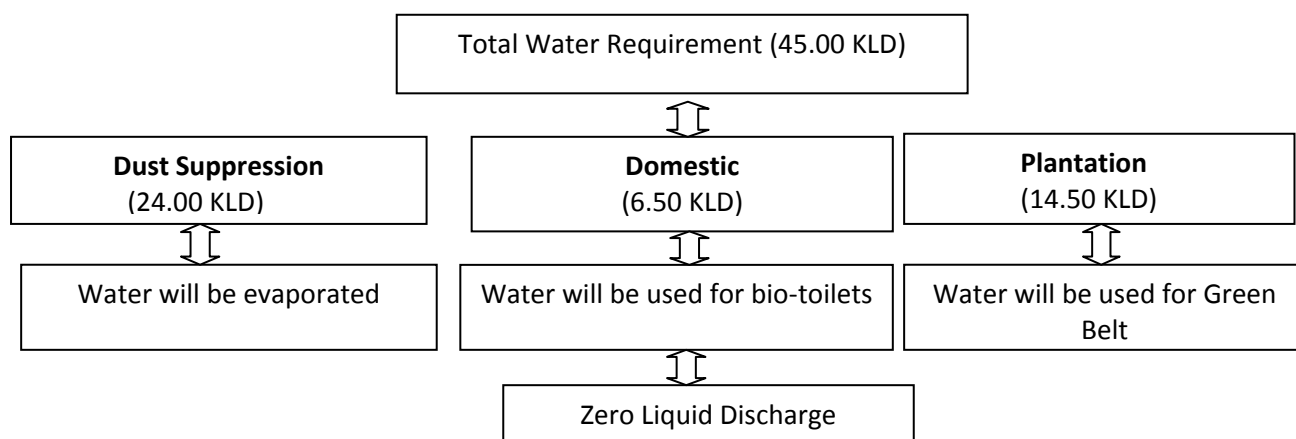
Domestic water requirement for the proposed project has been calculated on the basis of total 210 man power (115 (Mining staff as per mining plan) @ 45 L/day each = 5175 (105 truck drivers will require @ 10 L/day = 1050 L/day) which requires 6.50 KLD water.

The water requirement for dust suppression during operation phase of mine and along the haul road (Motorable connecting road) has been calculated on the basis of 1 KLD water requires for 1 Km haul road (Motorable connecting road). As per transportation route the total length of haul road (Motorable connecting road) for the entry and exit from mine lease area to mettle road will be around 8.9 Km maximum. Water requirement for dust suppression of 8.9 Km haul road (Motorable connecting road) requires ~8 KLD in single turn therefore maximum turn will be 3 in a day so 24 KLD water will be utilized in dust suppression.

The water requirement for plantation as per statutory norms total 33% area will be covered by plantation which is 25.5 ha. As far as the proposed project total area 77.25 ha. has been allotted under riverbed in such condition there is no plantation will be done in riverbed so plantation will be done both the side of river (pollution prone side) and haul road (Motorable connecting road). 3560 plants will be planted on haul road (Motorable connecting road) for which 14.5 KLD water will be used.



Total water requirement for the mining project is 45.00 KLD.



**Figure 2.11: Water Balance**

### 2.15.2 Man Power

Requirement of Technical and other supervisory staff will be as follows for the proposed systematic and scientific mining:

**Table 2.14: Employment Details**

S. No.	Category	Numbers
1.	Manager 1 <sup>st</sup> class	1
2.	Assistant Manager	1
3.	Foreman/Mates	3
4.	Skilled personnel	15
5.	Semi-skilled personnel	90
6.	Unskilled	5
<b>Total</b>		<b>115</b>

### 2.15.3 Power

Electric connection shall be taken for office and security purpose from the near bye sub-station of Haryana Electricity Board. All the activities will be carried out in a mechanized manner. The material will be excavated and loaded directly into, dumpers etc by the diesel run excavator cum loaders. The electricity required for the project will be sources from nearby villages.

### 2.15.4 Infrastructure/Site Services

The workers are mostly locals living in the close proximity of area and will work in shifts during day time only thus there is no requirement of major infrastructural facilities at the site. The following infrastructure facilities will be made available for the workers.

#### (i) Manager's Office

One competent Manager and one Assistant Manager will be required to supervise the mining operations. An office for Manager 5 x 3 meters shall be provided at the central location of quarry. An additional room for other supervisory staff is also proposed at each mine.

#### (ii) Canteen -cum-rest shelter

In order to provide the rest shelter for the workers working in the mine and also to provide tea etc. the arrangement shall be made to install a rest shelter-cum-canteen at each quarry and shall be utilized by the workers. The rest shelter will be for having rest during the lunch hours by the workers/ labor. The size of rest shelter shall be about 10 x 3 meter to accommodate the workers.

### **(iii) First Aid Room**

To provide the first aid for any sort of injuries encountered during the mining operation, one small first aid room shall be provided at each sub block. First aid kit and sufficient stock of material/medicines needed for first aid shall be provided as per requirement. As the Mining Engineer/Manager and Mining Mates are qualified first aides, they can provide first aid to the labor on the spot.

### **(iv) Crèche**

No woman employment is proposed in mine operation. However, in case of women workers are employed for other ancillary works like minor road repair, plantation etc, arrangement for a small crèche shall be made as per requirement.

### **(v) Water Supply**

The water supply for drinking purpose proposed will be made available by hired tanker.

## **2.16 STATUTORY OBLIGATIONS AND LITIGATION**

### **2.16.1 Litigation**

There is no court case against this project, however there is a court case in the matter of M/s Om minerals v/s State of Haryana and others [CWP No. 7991 of 2014], wherein the petitioner had challenged the demand/levy of stamp duty on execution of (Contract Agreement). The State Government (Dept. of Mines and Geology) has issued LoI subject to the outcome of this case. The above mentioned case is still pending before Hon'ble Punjab and Haryana High Court for adjudication. **The Project Proponent has not filed any court case against any department neither he is a party in this case.**

## **2.17 SUMMARY**

The proposed project is for mining of Sand (Minor Mineral) by open cast semi-mechanized method in riverbed over an area of **77.25 Ha.** by **M/s M.P. Traders** in Tehsil-Radaur and District-Yamuna Nagar, Haryana with proposed production capacity of **28, 00,000 TPA** of Sand (Minor Mineral). The climate of the district is characterized by the dryness of the air with an intensely hot summer and a cold winter. About 76% of the annual rainfall is recorded during the southwest monsoon from June-September. The project site falls under seismic zone IV which is a high damage risk zone (MSK VIII). Many part of the state of Haryana are prone to flooding. The total geological reserve is **46,35,000Tons** and total mineable reserve is **35,22,600Tons**. Mine lease area will be worked in blocks and the digging depth will be restricted to 3.0 m only in riverbed. Riverbed block will be further replenished during rainy season. Mineral Sand will be transported by trucks. The deposit is moderate to good quality sand. It is widely used in construction, buildings, bridges and other infrastructure. It is free from clay and non-sticky in nature. Total water requirement for the project is **45 KLD**. Total man power requirement for the project is **115**. The site facilities like canteen, rest-shelter, first aid facility, water and electricity supply etc. will be provided as per requirement. There is no litigation pending against this project.



## CHAPTER-3

# DESCRIPTION OF THE ENVIRONMENT

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### 3.0 GENERAL

The main objectives of describing the environment, which may be potentially affected, are (i) to assess present environmental quality and the environmental impacts and (ii) to identify environmentally significant factors that could preclude Mine development. This chapter discuss about the present scenario of the study area with reference to the prominent environmental attributes. The study area covers 10 Km radius of the mine lease area. Baseline data has been collected out during the **Post- Monsoon Season 1<sup>st</sup> December to 28<sup>th</sup> February 2017 by M/s Vardan Envirolab, Gurgaon {NABL Accredited Lab, Certificate No. T-2629 (Certificate enclosed as Annexure V)}** in accordance with the Guidelines for EIA issued by the Ministry of Environment Forests and Climate Change, Govt. of India and CPCB, New Delhi. The impact identification always commences with the collection of baseline data such as Ambient Air Quality, Micro-Meteorology, Ground and Surface Water Quality, Noise levels, Soil Quality, Land use pattern, Biological Environment and Socio-economic aspects, Solid and Hazardous waste, Risk Assessment, Geology and Hydrology within the study zone of 10 Km. radius. Long term meteorological data recorded at the nearest IMD station, Karnal was also collected. Micrometeorological data at site was recorded using automatic weather station. Apart from these, secondary data have been collected from Census Handbook, Revenue Records, Statistical Department, Soil Survey and Land use Organization, District Industries Centre, Forest Department, Central Ground Water Authority, Botanical Survey of India, Zoological Survey of India, Geological Survey of India etc. The generation of primary data as well as collection of secondary data and information from the site and surroundings was carried out during post monsoon season.

The EIA study is being done for the Mine Lease (core zone) and area within 10 Km distance from mine lease boundary (buffer zone), both of which together comprise the study area. The following data, through field survey and other sources, has been collected by Vardan Environet, for preparing the EIA/EMP for the proposed mining area with related facilities.

Following environmental attributes has been assessed during baseline study are;

- Physical environment (Air, Water, Soil and Noise) baseline data.
- Relevant meteorological data, for previous decades from Indian Meteorological Department (IMD) and primary data.
- Land use pattern within core zone (Mine lease area) and buffer zone (10 Km radial area around the core zone) based on Survey of India Toposheet map, ground truth and satellite image.
- Identification of water bodies, hills, roads etc. within 10 Km radius.
- Eco-sensitive places, sanctuaries, biosphere reserves within 10 Km radius.
- Religious places / historical monuments and tourist places within 10 Km radius.
- Details of fauna and flora within a distance of 10 Km from the project site and information about forests, if any.
- Demography and Socio-economic study related information is based on Census, 2011 (Ministry of Home Affairs).
- Major industries within 10 Km radius.
- Study of present environmental protection and mitigation measures in nearby operating similar projects, if any.



### 3.1 LAND ENVIRONMENT

Area statistics of land use classes has been generated within 10 Km radius from mine lease area (Core zone and Buffer zone) .

#### 3.1.1 Data Used

Indian Remote Sensing satellite IRS-P6, LISS III, multi-spectral digital data has been used for the preparation of land use/ land cover map of present study. Survey of India reference map on 1:50,000 scales have been used for the preparation of base map and geometric correction of satellite data. Ground truth has been carried out to validate the interpretation accuracy and reliability of remotely sensed data, by enabling verification of the interpreted details and by supplementing with the information, which cannot be obtained directly on satellite imagery.

#### 3.1.2 Methodology

The methodology used for the study consists of following components.

##### (i) Base Map Preparation

Base map was prepared using Survey of India reference map on 1:50,000 scale. Interpreted thematic details were transferred on the base map. Besides, other supporting data like project report and statistical data published by various Government departments have also been used.

##### (ii) Ground Truth Data Collection

Ground data on geo-environmental components of the study area was collected for verification of information about the different features on the study areas, which are responsible for the occurrence of specific spectral reflectance behavioral patterns. During the ground truth detailed information on agricultural practices, wastelands, mining, industrial area etc. were collected along with other land features.

##### (iii) Interpretation of Remote Sensing Data

A hybrid technique has been used *i.e.* visual interpretation and digital processing for identification of different land use /land cover classes based on the image characteristics like tone, size, shape, pattern, texture, location and association etc. An image interpretation key was developed based on such image characteristics, which enables interpretation of satellite images for land use/land cover features. Further, the land use / land cover and other baseline layers was put in GIS database for integration, analysis, statistics generation and final out in the form of land use land cover map.

#### 3.1.3 Observation of Land Use Study

In the present study, both digital image processing and using visual interpretation technique were used to generate output of Land use / Land cover map of study area on 1: 50,000 scale.

**Table-3.1: Land Use Pattern of the Study Area**

Land use	Area (In Ha.)	% Area
Agricultural	17670.78	56.00
Grazing Land	10850.76	34.38
8-fallow land	979.38	3.10
Sand/river Bank	778.32	2.46
Settlement	958.26	3.03
Water bodies	318.87	1.01
<b>Total</b>	<b>31556.37</b>	<b>100</b>

(Source: Land use map)

#### 3.1.4 Topography

The mine lease area exhibits plain to undulated topography. The maximum elevation of the mine lease area is 261 m amsl (above mean sea level).



### **3.1.5 Mine Drainage**

The drainage pattern is already discussed in Chapter- 2 of this EIA/EMP Report.

### **3.2 SEISMICITY OF THE AREA**

The details of the seismicity of the area have been already discussed in Para 2.5 in Chapter 2 of this EIA report. As per outcome of the data collected from IMD, Haryana, only two earthquakes of 3.0-3.2 intensity in richer scale were observed in past 10 years. Hence, there will be no major impact on the environment due to proposed activity.



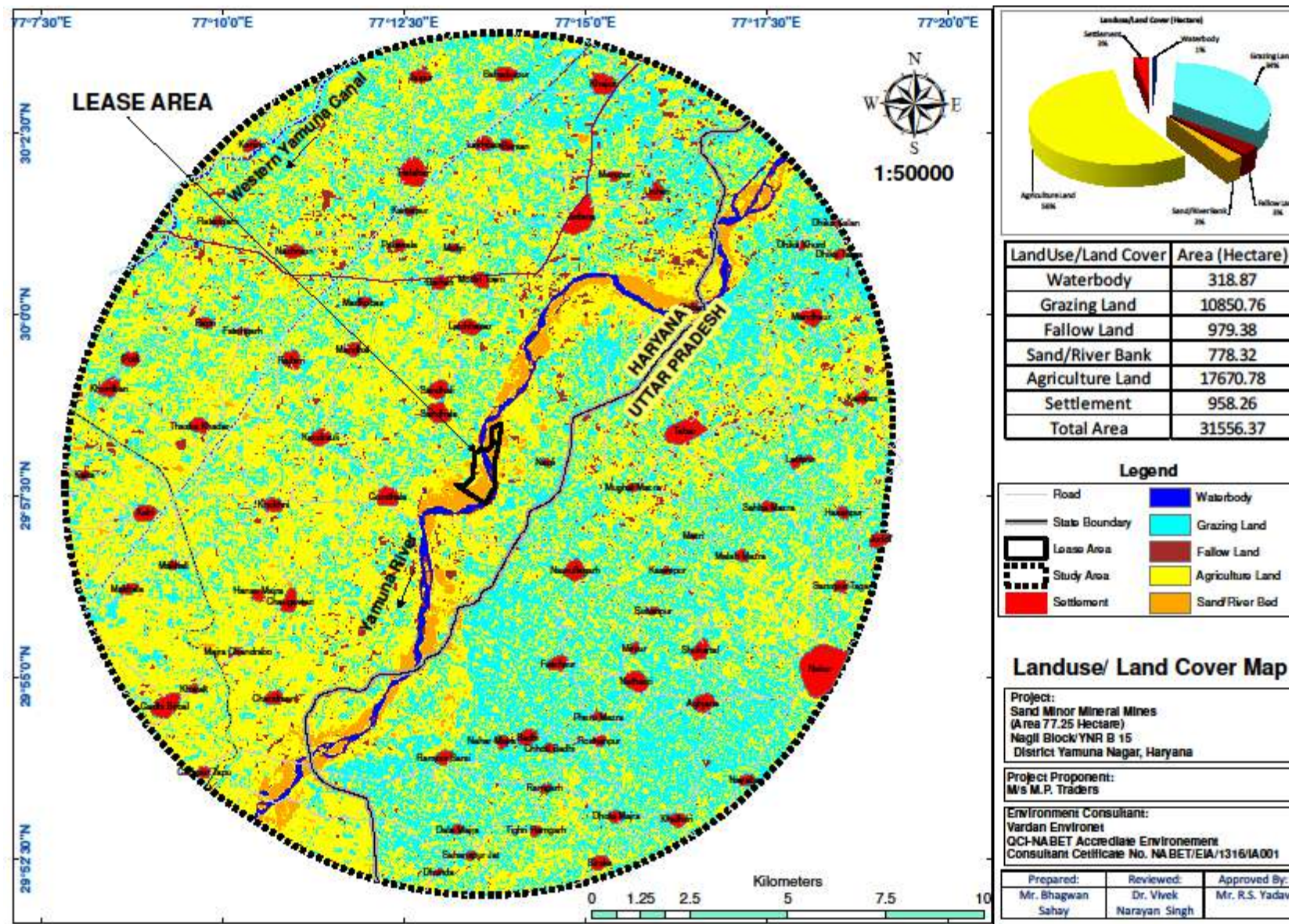


Figure 3.1: Land Use Pattern of the Study Area (10 Km Radius from the Mine Site)



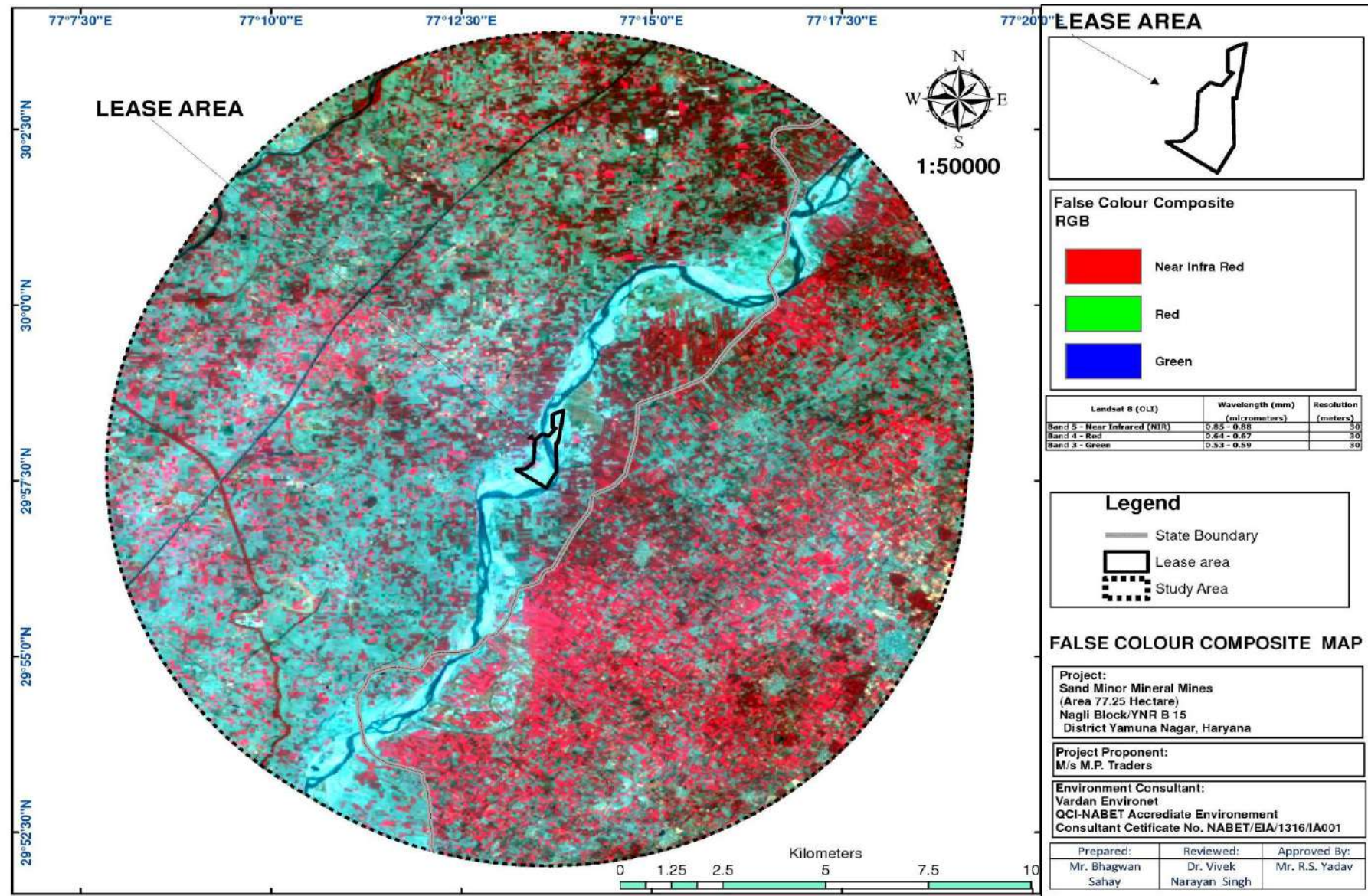


Figure 3.2: FCC Map of the Study Area (10 Km Radius from the Mine Site)



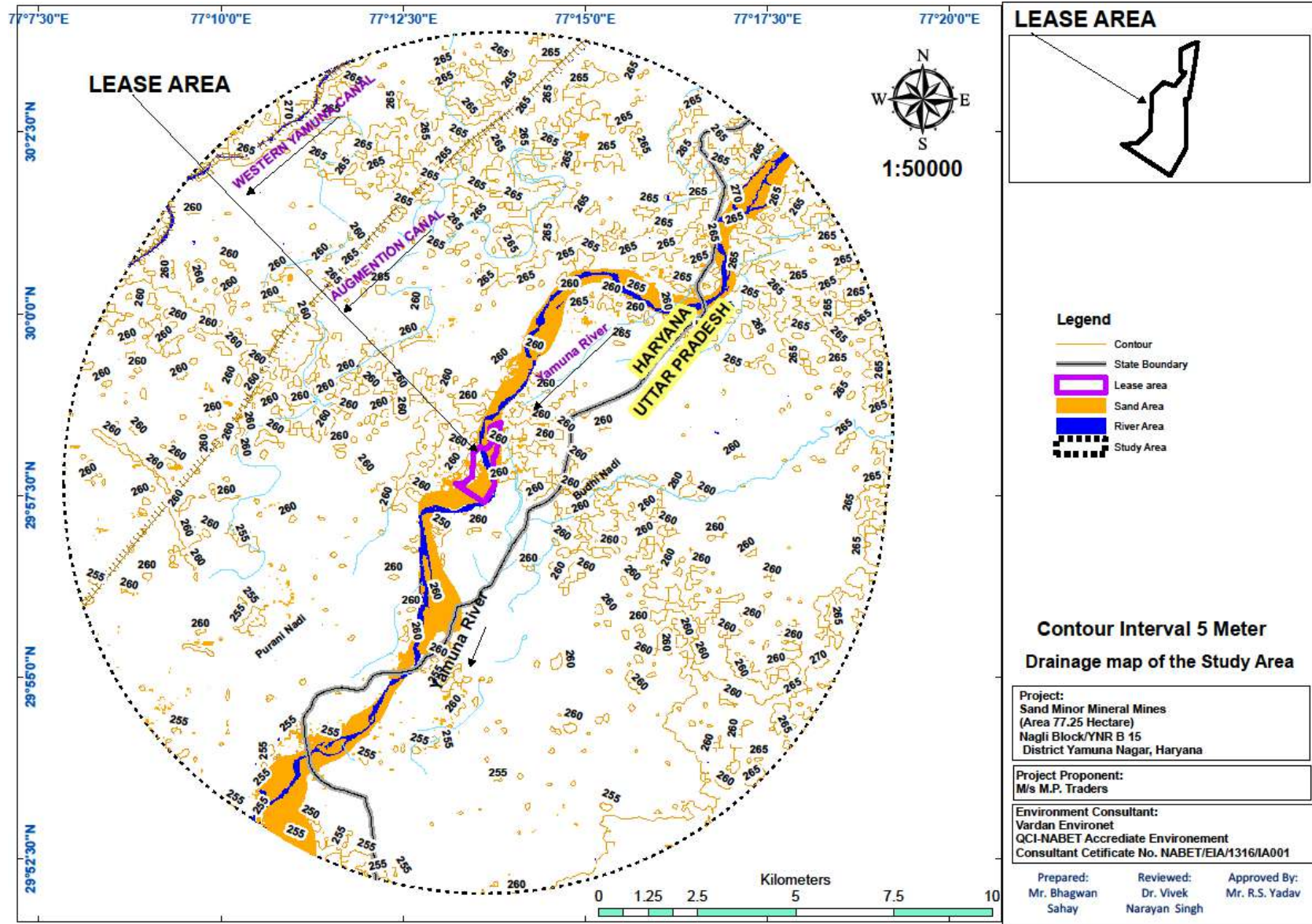


Figure 3.3: Drainage Map of the Study Area

### 3.3 FLOODS

The flood in the area has been discussed in details in the Chapter 2 of this EIA report. Floods have been a recurrent phenomenon in Haryana from time immemorial. Many part of the state of Haryana are prone to flooding. In flood manual of Haryana, there are 102 vulnerable points in Haryana which need special attention during monsoon.

### 3.4 METEOROLOGY

Meteorology plays a vital role in affecting the dispersion of pollutants, once discharged into the atmosphere cannot be controlled. Since meteorological factors show wide fluctuations with time, meaningful interpretation can be drawn only from long-term reliable data. Such source of data is the India Meteorological Department (IMD), which maintains a network of meteorological stations at several important locations. The nearest IMD station to the study area is located at Karnal. The Meteorological parameters obtained from this station are temperature, humidity, rainfall, wind speed, and wind direction etc. A micro meteorological station was installed at site to record micrometeorological parameters on hourly basis during study period to understand the wind pattern, temperature variation, relative humidity variation etc.

#### 3.4.1 Climate of the Area

The climate of Yamunanagar district can be classified as subtropical monsoon, mild and dry winter, hot summer and sub-humid which is mainly dry with hot summer and cold winter except during monsoon season when moist air of oceanic origin penetrates into the district. There are four seasons in a year. The hot weather season starts from mid March to last week of the June followed by the southwest monsoon which lasts up to September. The transition period from September to November forms the post monsoon season. The winter season starts late in November and remains up to first week of March.

#### 3.4.2 Rainfall of the Area

The normal annual rainfall of the district, based on the record for the period 2009-2013 is 686.1-1367.7 mm. About 88.5% of the annual rainfall is recorded during the southwest monsoon from June-September. August is the wettest month of the year with 1566.9 mm rainfall.

**Table-3.2: Monthly Average Rainfall (in mm) (for year 2009-2013)**

Months/Year	2009	2010	2011	2012	2013
January	3.5	7	2.8	9.0	76.0
February	20.5	27	19.5	0	142.4
March	4.0	0	14.2	2.0	9.9
April	20	0	4.9	12.1	1.4
May	0	8.3	55.4	0.3	17.7
June	7	25.4	303.5	4.7	330.6
July	159	459.4	225.9	179.3	121.2
August	220	357.1	228.5	347	414.3
September	308	437.1	65.9	122	98.3
October	6	11	0	0	15.7
November	0	6.7	0	0	7.8
December	0	28.7	1.6	9.7	23.9
<b>Total Rainfall</b>	<b>748</b>	<b>1367.7</b>	<b>922.2</b>	<b>686.1</b>	<b>1259.2</b>

(Source: <http://imd.gov.in/section/hydro/distrainfall/webrain/haryana/yamunanagar.txt>)

As we can see that the average annual rainfall of the district from the year 2009-2013 shows a variable pattern and will make a curved graph with decreasing and increasing heights.

#### 3.4.3 Meteorological Status at the Project Site

Meteorological station was set-up at site to record surface meteorological parameter during study period; **1<sup>st</sup> December 2016 to 28<sup>th</sup> February, 2017**. The nearest IMD station is taken at Karnal.



### Site specific climatology during study period (1<sup>st</sup> December 2016 to 28<sup>th</sup> February, 2017)

- Maximum Temperature : 29 °C
- Minimum Temperature : 5.6 °C
- Relative humidity : 73 %
- Wind speed : 3.5 Km/hr

**Table-3.3: Meteorological Condition of the Study Area**

Month	Temperature °C		Relative Humidity %		Wind Speed (Km/Hr)	
	Max	Min	Max	Min	Max	Min
Dec. 2016	29.0°C	10.3 °C	72	45	0.55	0.19
Jan.. 2017	23.4°C	5.6 °C	74	51	0.46	0.15
Feb. 2017	27.0°C	7.4°C	71	45	0.42	0.14

### 3.4.4 Relative Humidity

The humidity is highest in July, August and September.

**Table-3.4: Monthly Average Relative Humidity (%)**

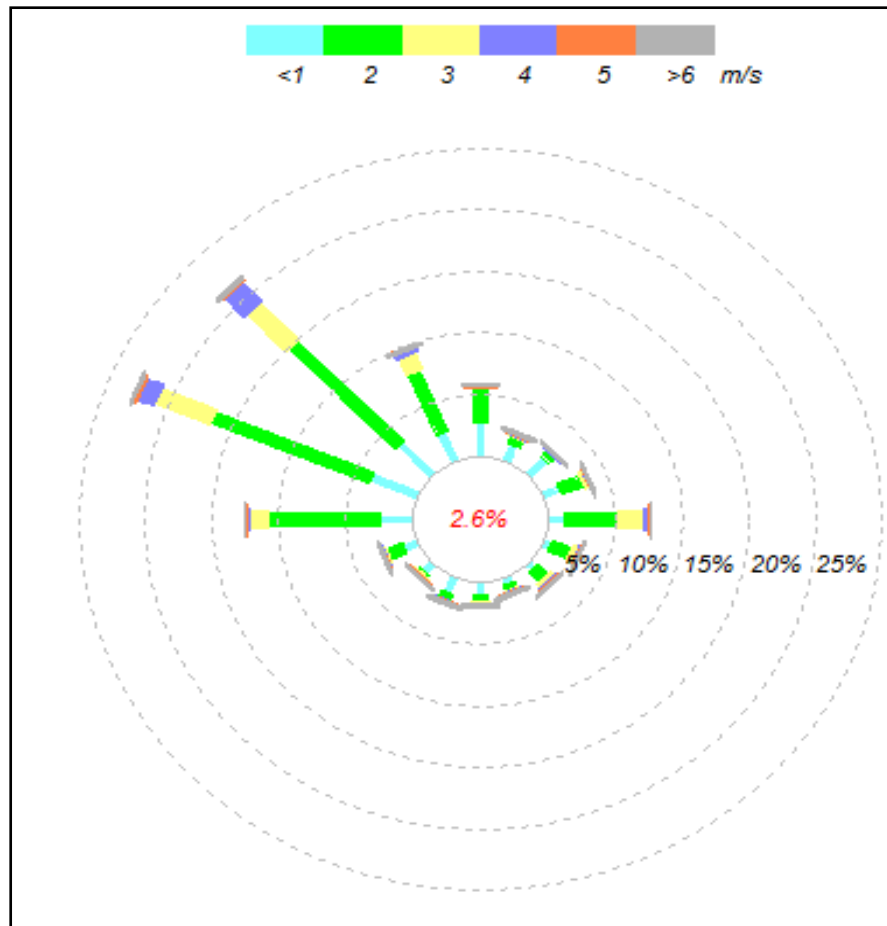
Months	Maximum	Minimum
January	75	48
February	70	44
March	61	34
April	44	25
May	42	27
June	55	38
July	75	64
August	80	69
September	71	56
October	61	40
November	63	41
December	72	47
<b>Average</b>	<b>64</b>	<b>44</b>

(Source: Climatological Table – 1961 to 1990, IMD, Gol, New Delhi)

### 3.4.5 Wind Speed / Wind Rose Diagram

Wind speed and wind direction data recorded during the study period is useful in identifying the influence of meteorology on the air quality of the area. Based on the collected meteorological data, relative percentage frequencies of different wind directions are calculated and plotted as wind roses of Sixteen directions viz., N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW and NNW for twenty four hour duration respectively. Maximum and minimum temperatures including percentage relative humidity were recorded simultaneously.

The average wind speed recorded was 1.3 m/s. wind rose diagram from the monitored data shows that the predominant wind direction during the study period was mainly from west of north-west (WNW) to east of south-east (ESE) direction.



**Figure-3.4: Wind Rose Diagram of Study Area**

### 3.5 AMBIENT AIR QUALITY

The ambient air quality with respect to the study area of 10 Km radius around the lease area forms the baseline information. The various sources of air pollution in the region are dust rising from unpaved roads, domestic fuel burning, vehicular traffic, agricultural activities etc. The prime objective of baseline air quality monitoring is to assess existing air quality of the area. This will also be useful in assessing the conformity to standards of the ambient air quality during the operations.

#### 3.5.1 Selection of Sampling Station

The baseline status of the ambient air quality has been assessed through scientifically designed Ambient Air Quality Network. The design of monitoring network in the air quality surveillance program has been based on the following considerations:

- Representation of Mine leases area.
- Representation of the down wind direction and cross-sectional distribution.
- Representation of residential areas.
- Representation of regional background levels.
- Representation of sensitive receptor.
- Meteorological conditions (predominant wind direction and wind speed).
- Topography of the study area.

Keeping in view above mentioned points, 06 nos. of Ambient Air Quality Monitoring Stations were established within the study area. It can be observed from the wind rose diagram, that the predominant wind direction during the study period was from West. Villages/locations have been selected in downwind direction as well as in the upwind direction for AAQ monitoring from the proposed activity site.



**Table-3.5: Ambient Air Quality Monitoring Sampling Stations**

Stations	Sampling Locations	Coordinates		Aerial Distance (Km) and Direction from Mine Site
		Latitude	Longitude	
A1	Project Site	29°57'55.543"N	77°13'30.27"E	Project Site
A2	500m from Mine Site	29°57'17.193"N	77°13'24.988"E	0.4 Km South
A3	Rajheri	29°59'27.528"N	77°10'58.906"E	4.5 Km North West
A4	Tabar	29°58'27.452"N	77°16'19.312"E	3.5 Km East
A5	Model Town	30°0'26.863"N	77°13'32.929"E	3.5 Km North
A6	Shukartal	29°55'25.74"N	77°16'35.382"E	5.8 Km South East

(Source: SOI Toposheet and Field Visit)

### 3.5.2 Baseline Data

Ambient air monitoring at 06 locations were carried out on during 1<sup>st</sup> December to 28<sup>th</sup> February 2017 (winter Season) in the study area to assess the ambient air quality at the source. Major air pollutants viz., Particulate Matter (PM<sub>10</sub>), Sulphur Dioxide (SO<sub>2</sub>), Nitrogen Dioxide (NO<sub>2</sub>), representing the basic air quality in the region were identified for Ambient Air Quality Monitoring (AAQM).

#### 3.5.2.1 Sampling and Analytical Techniques and Instruments Used for Sampling

The various instruments used and technique adopted for sampling is given in table below:

**Table-3.6: Testing Procedure Used for Determining Various Air Quality Parameters**

Parameters	Testing Procedure
PM <sub>10</sub>	Gravimetric Method by using Repairable particulate matter sampler "Repairable Dust Sampler" (RDS)
PM <sub>2.5</sub>	Cyclonic Method by using Fine particulate sampler.
NO <sub>2</sub>	Absorption in diluted NaOH and then estimated calorimetrically with sulphanilamide and N (I-Nephthyle) Ethylene Diamine Dihydrochloride and Hydrogen Peroxide (IS: 5182 1975, Part-VI).
SO <sub>2</sub>	Absorption in Sodium Tetra Chloromercurate followed by Colorimetric estimation using P-Rosaniline hydrochloride and Formaldehyde (IS: 5182 Part – II, 2001).
Free Silica	Colorimetric method by Spectrophotometer

**Table-3.7: Ambient Air Quality Monitoring Results**

Station	Description	SO <sub>2</sub> (µg/m <sup>3</sup> )	NO <sub>2</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>2.5</sub> (µg/m <sup>3</sup> )
<b>CORE ZONE</b>					
A1	Max.	14.6	24.1	88.2	48.8
	Min.	7.8	11.6	68.7	34.2
	98th % tile	14.1	23.7	86.55	48.7
A2	Max.	12.7	22.6	87.6	45.6
	Min.	7.8	14.3	70.6	32.1
	98th % tile	12.55	22.05	84.94	45.6
<b>BUFFER ZONE</b>					
A3	Max.	14.3	22.4	85.4	46.5
	Min.	6.3	14.3	75.3	36.2
	98th % tile	14.2	22.35	85.4	46
A4	Max.	13.2	28.3	86.3	46.1
	Min.	7.8	15.3	74.2	34.1
	98th % tile	12.8	26.85	85.95	45.75

<b>A5</b>	<b>Max.</b>	13.6	24.7	85.7	49.4
	<b>Min.</b>	8.3	15.2	74.3	32.5
	<b>98th % tile</b>	<b>13</b>	<b>24.3</b>	<b>85.4</b>	<b>47.4</b>
<b>A6</b>	<b>Max.</b>	13.2	23.3	88.8	46.1
	<b>Min.</b>	7.8	15.2	74.3	31.2
	<b>98th % tile</b>	<b>13.05</b>	<b>22.85</b>	<b>87.15</b>	<b>45.85</b>
	<b>CPCB Standard</b>	<b>80 (24 hrs)</b>	<b>80(24 hrs)</b>	<b>100 (24 hrs)</b>	<b>60 (24 hrs)</b>

(Source: Vardan envirolab report)

Table-3.8: Mineralogical composition of free Silica in PM<sub>10</sub>\*

Station	PM <sub>10</sub> (µg/m <sup>3</sup> )	Free Silica (% in PM <sub>10</sub> )	Ca (µg/m <sup>3</sup> )	Mg (µg/m <sup>3</sup> )	Ni (ng/m <sup>3</sup> )	Pb (µg/m <sup>3</sup> )
<b>CORE ZONE</b>						
<b>A1</b>	76.3	3	1.66	0.51	<0.5	0.11
<b>A2</b>	80.7	2.4	1.31	0.54	<0.5	0.08
<b>BUFFER ZONE</b>						
<b>A3</b>	78.2	2.9	1.49	0.69	<0.5	0.09
<b>A4</b>	80.2	2.7	1.51	0.58	<0.5	0.07
<b>A5</b>	80.7	2.8	1.68	0.46	<0.5	0.12
<b>A6</b>	79.6	3.1	1.57	0.75	<0.5	0.15

(Source: Vardan envirolab report)

### 3.5.3 Interpretation of Results

Ambient Air Quality Monitoring reveals that the minimum and maximum concentrations of SO<sub>2</sub> were found to be **6.3 µg/ m<sup>3</sup>** and **14.6 µg/ m<sup>3</sup>** respectively. The minimum and maximum concentrations of NO<sub>2</sub> were found to be **11.6 µg/ m<sup>3</sup>** and **28.3 µg/ m<sup>3</sup>** respectively. The prescribed CPCB limit of SO<sub>2</sub> and NO<sub>2</sub> is 80 µg/m<sup>3</sup> for residential and rural areas has never surpassed at any monitoring station. The minimum & maximum concentrations of PM<sub>10</sub> for all the 6 AAQM stations were found to be **68.7 µg/ m<sup>3</sup>** and **88.8 µg/ m<sup>3</sup>** respectively and minimum and maximum concentrations of PM<sub>2.5</sub> for all the 6 AAQM stations were found to be **31.2 µg/ m<sup>3</sup>** and **49.4 µg/ m<sup>3</sup>** respectively. The range of Free Silica in PM<sub>10</sub> was found to be **2.4% to 3.1 %**. Detailed Air Quality Monitoring Lab report is attached as **Annexure-VI (a)**. Ambient Air Quality Standards are enclosed as **Annexure- VI (b)**.

From the above study and discussions, it can be concluded that air quality of the area is good as the levels are well within the prescribed limits as prescribed by CPCB.

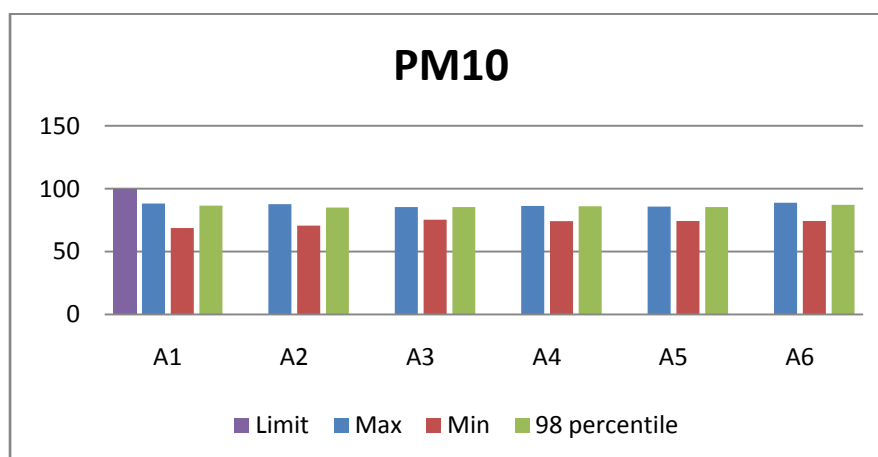


Figure-3.5: PM<sub>10</sub> Concentration in µg/m<sup>3</sup>

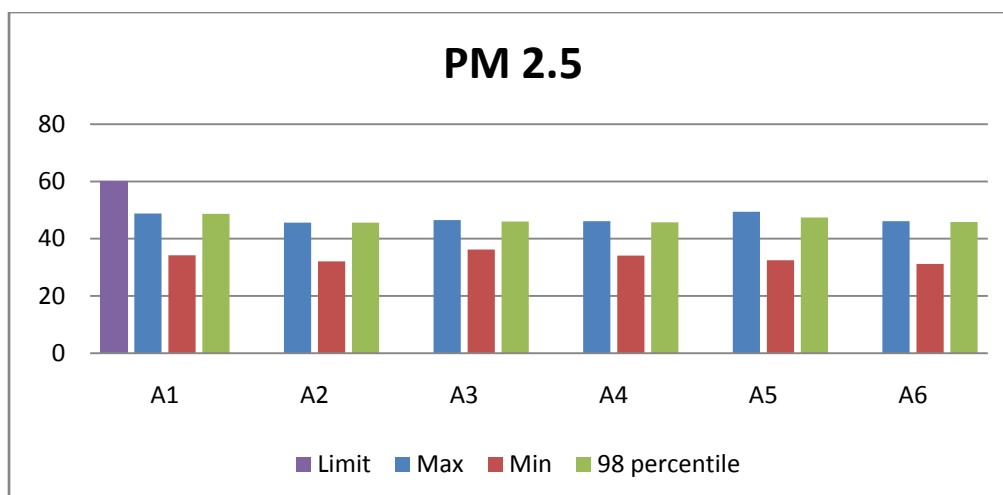


Figure-3.6: PM<sub>2.5</sub> Concentration in µg/m<sup>3</sup>

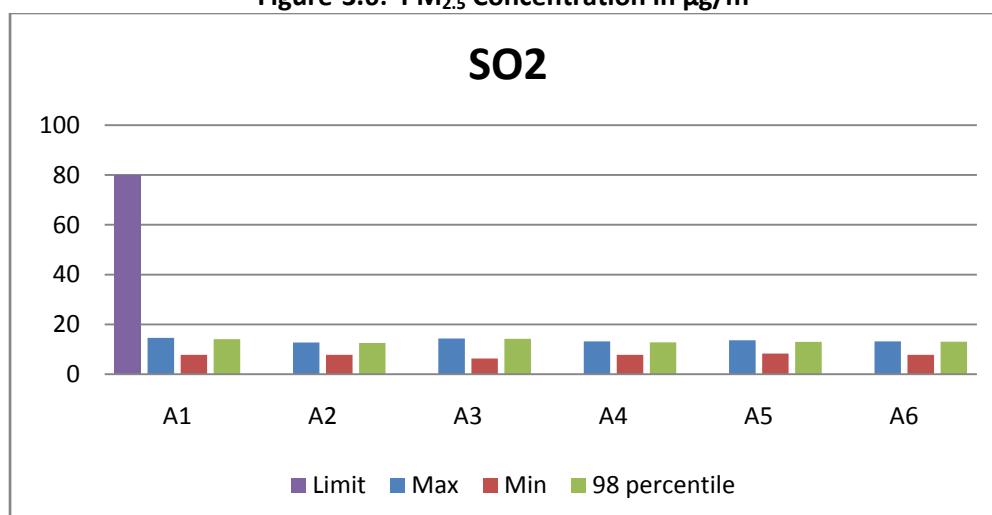


Figure-3.7: SO<sub>2</sub> Concentration in µg/m<sup>3</sup>

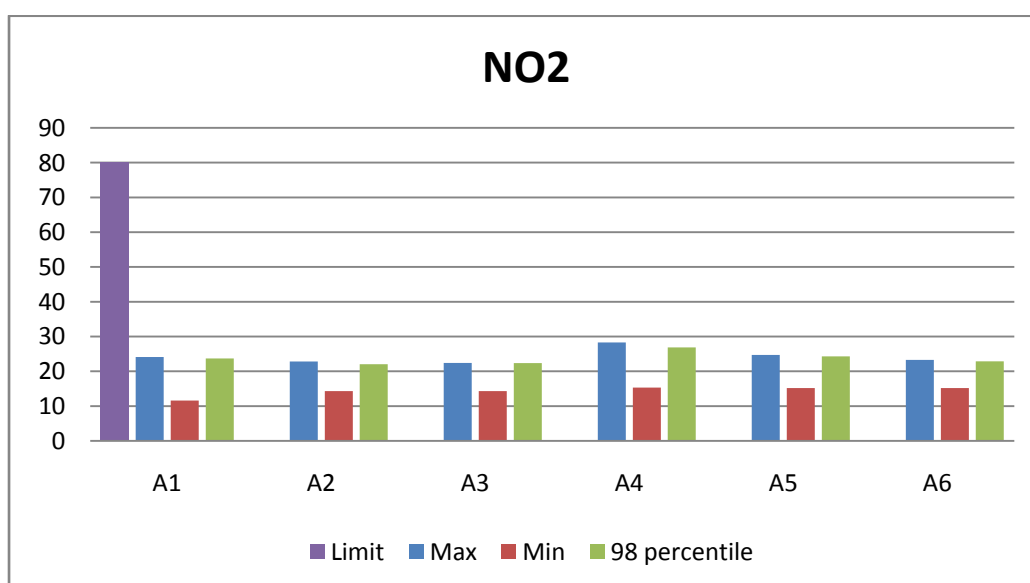


Figure-3.8: NO<sub>2</sub> Concentration in µg/m<sup>3</sup>

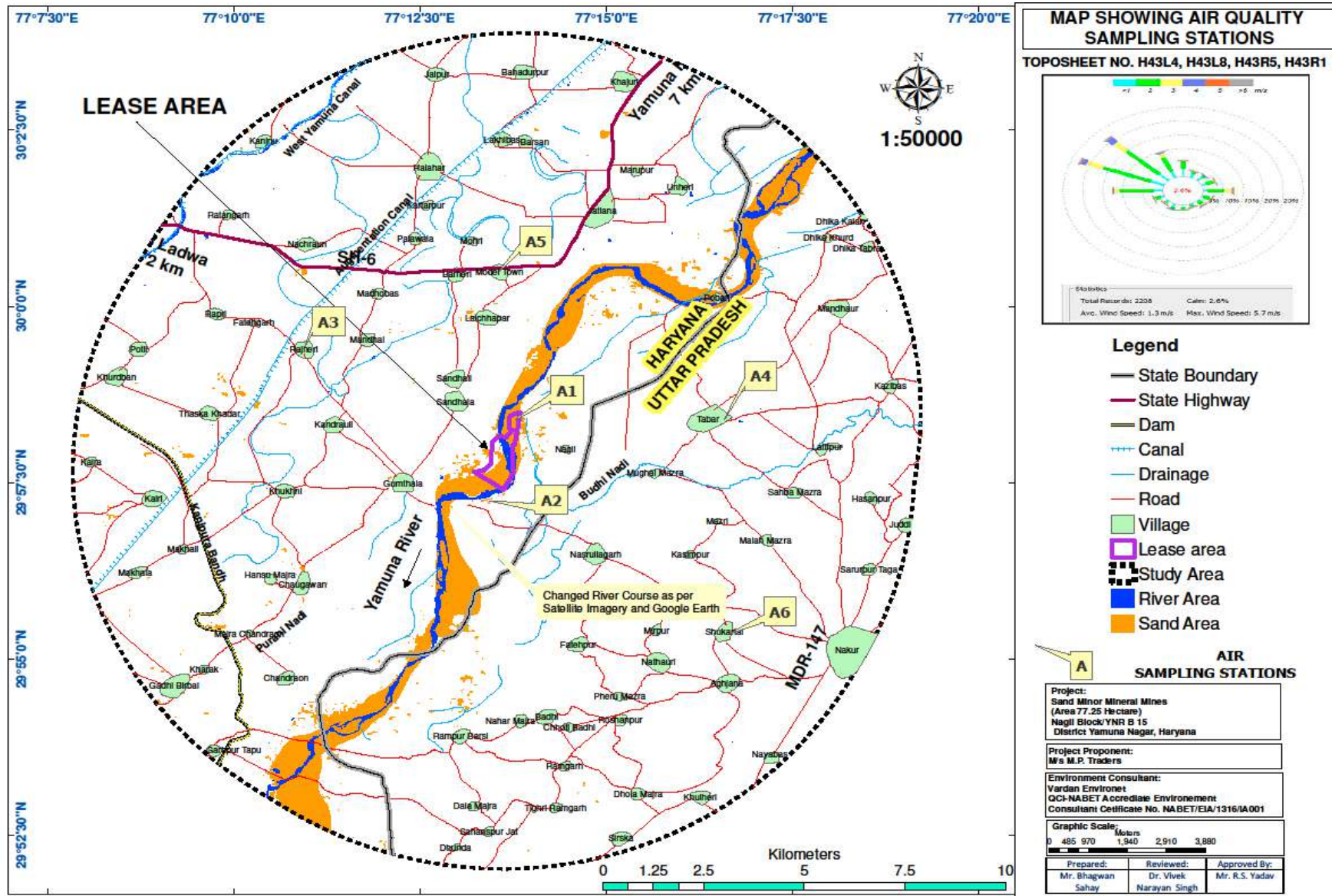


Figure-3.9: Key plan of Air Monitoring Stations

### 3.6 NOISE ENVIRONMENT

Noise in general is sound, which is composed of many frequency components of various loudness distributed over the audible frequency range. Various noise scales have been introduced to describe, in a single number, the response of an average human being to a complex sound made up various frequencies at different loudness levels. The most common and heavily favored of those scales is the A weighted decibel (dBA). This is more suitable for audible range of 20 to 20,000 Hertz. The scale has been designed to weigh various components of noise according to the response of a human ear.

The main objective of the noise level monitoring is to assess the background noise levels in different zones viz., industrial, commercial, residential and silence zones within the study area.

Noise levels were measured in residential areas, bus stands and other settlements located within 10 Km radius around the site.

#### 3.6.1 Noise Analysis within the Study Area

The noise analysis within the study area was recorded using 4012 Maxtech sound level meter. The instrument was calibrated with a Standard Acoustic calibrator before using in the field. The measurements were carried out continuously for the 24-hour period to obtain hourly equivalent sound pressure level, 1 hour Leq. From these values, day and night time as well as 24-hour Leq values were also calculated. The Leq value is the equivalent continuous sound level, which is equivalent to the same sound energy as the fluctuating sound measured in the same period.

#### 3.6.2 Methodology adopted for Selection of Sampling Station

Noise levels are more annoying in the night time particularly in the residential areas. The environmental impact of noise can have several effects varying from annoyance to hearing loss depending on loudness of noise levels. The monitoring for noise levels were done in 4 locations keeping considering the population and traffic of the area.

**Table-3.9: Noise Monitoring Sampling Stations**

Stations	Sampling Locations	Coordinates		Aerial Distance (Km) and Direction from Mine Site
		Latitude	Longitude	
N1	Sandhala	29°58'39.937"N	77°12'57.714"E	0.9 km North West
N2	Gumthala	29°57'27.024"N	77°12'17.871"E	0.4 Km South
N3	District Road (Near Nakur Village)	29°55'27.933"N	7°18'12.201"E	8.2 Km North West
N4	State Highway (Near Model Town Village)	30°0'33.448"N	77°13'30.188"E	3.5 Km East

**Table-3.10: Noise Levels in Study Area**

S. No.	Average Day Time Noise Level Leq. dB (A)	Average Night Time Noise Level Leq. dB (A)
	Day Time (6:00 a.m. to 10:00 p.m.)	Night Time (10:00 p.m. to 6:00 a.m.)
N1	52.40	41.40
N2	53.60	43.60
N3	50.50	44.10
N4	53.30	42.50

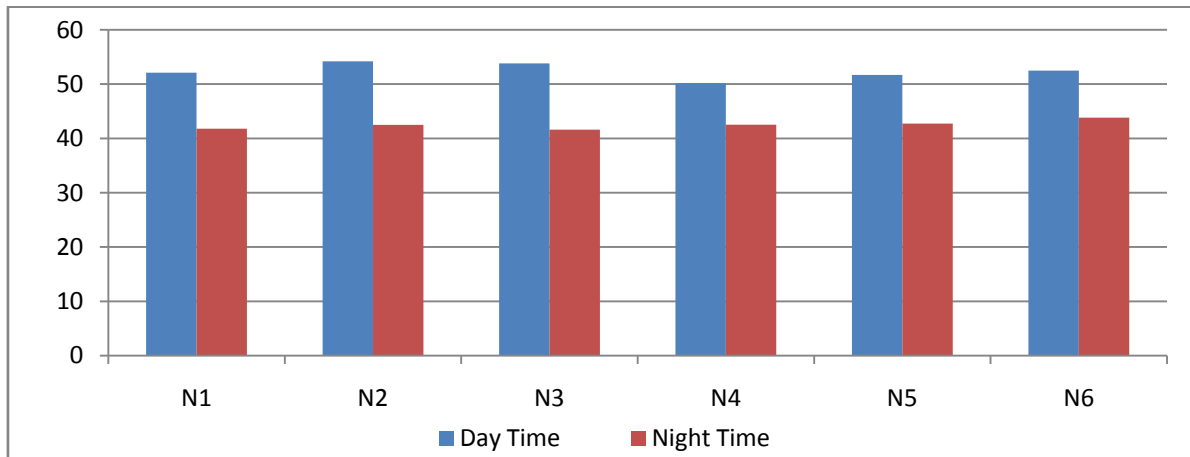
#### 3.6.3 Result of Noise Monitoring

Ambient noise levels were measured at 4 locations around the proposed project site. The noise levels recorded during the day time were from 50.50 Leq dB to 53.60 Leq dB respectively and level of noise during night time were from 41.40 Leq dB to 44.10 Leq dB respectively. Thus noise levels at all



locations were observed to be within the prescribed limits. Noise Quality data and CPCB standard is attached as **Annexure VII (a)** and **AnnexureVII (b)** respectively.

From the above study and discussions it can be concluded that noise levels in the study area are well within the prescribed limits as prescribed by the CPCB and State Pollution Control Board.



**Figure-3.10: Noise Monitoring Result**

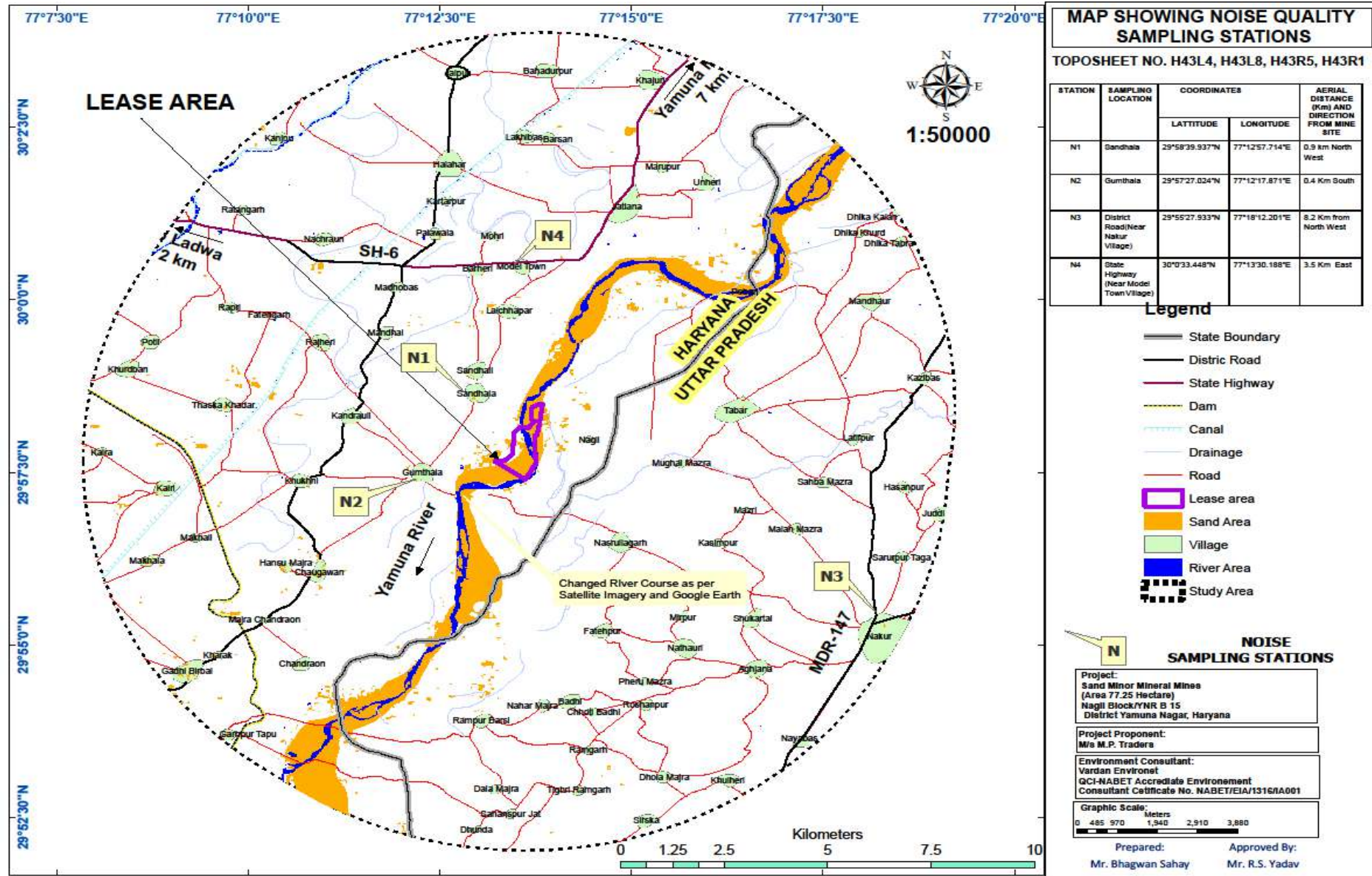


Figure-3.11: Key plan of Noise Monitoring Station

### 3.7 WATER ENVIRONMENT

#### 3.7.1 Methodology Adopted for Selection of Sampling Station

The sampling was done both for surface water and underground water. The samples were taken from the identified monitoring locations within the 10 Km radius of the study area.

Total of 9 samples were taken (6 for ground water and 3 for surface water).

**Table-3.11 (a): Ground Water Sampling Stations**

Station	Sampling Location	Coordinates		Aerial Distance (Km) and Direction from Mine Site
		Latitude	Longitude	
<b>GW1</b>	Project Site	29°57'55.543"N	77°13'30.27"E	Mine Site
<b>GW2</b>	500m from	29°57'17.193"N	77°13'24.988"E	0.4 Km South
<b>GW3</b>	Rajheri	29°59'27.528"N	77°10'58.906"E	4.5 Km from North West
<b>GW4</b>	Tabar	29°58'27.452"N	77°16'19.312"E	3.5 Km East
<b>GW5</b>	GW5 Model Town	30°0'26.863"N	77°13'32.929"E	3.5 Km North
<b>GW6</b>	Shukartal	29°55'25.74"N	77°16'35.382"E	5.8 Km South East

Source: SOI Toposheet and Field Visit

**Table-3.11 (b): Surface Water Sampling Stations**

Station	Sampling Location	Coordinates		Aerial Distance (Km) and Direction from Mine Site
		Latitude	Longitude	
<b>SW1</b>	Near River Mine site	29°57'33.547"N	77°13'2.857"E	0.4 km South West
<b>SW2</b>	Down -wind (Near Rampur Barsi	29°54'18.453"N	77°12'42.081"E	6.0 Km South
<b>SW3</b>	Up Wind (Near Dikha Khurd Village	30°1'6.118"N	77°17'26.102"E	7.4 Km from North



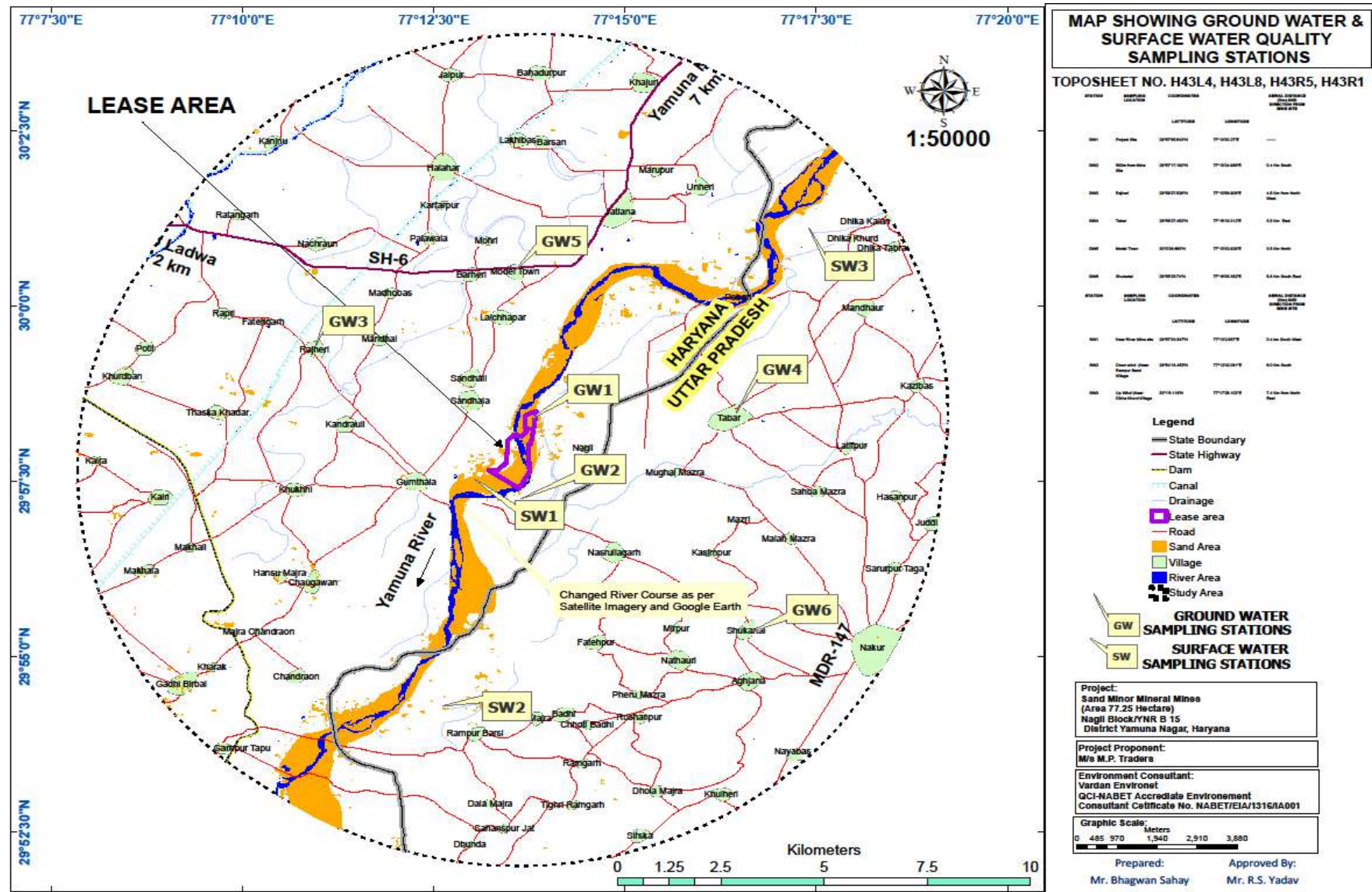


Figure-3.12: Key Plan of Water Sampling Station

**Table-3.12: Water Analysis Result (Ground Water)**

S. No.	Parameter	GW1	GW2	GW3	GW4	GW5	GW6
1.	pH (at 25 °C)	8.31	8.37	8.52	8.26	8.44	8.30
2.	Colour (Hazen)	<5	<5	<5	<5	<5	<5
3.	Turbidity (NTU)	<1	<1	<1	<1	<1	<1
4.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5.	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
6.	Total Hardness as CaCO <sub>3</sub> (mg/L)	142.56	141.63	139.60	132.25	157.90	172.35
7.	Calcium as Ca (mg/L)	26.30	24.36	30.25	28.45	40.09	43.25
8.	Alkalinity as CaCO <sub>3</sub> (mg/L)	163.26	126.00	135.00	128.00	180.00	142.00
9.	Chloride as Cl (mg/L)	43.63	58.09	28.45	27.36	51.48	36.25
10.	Cyanide as CN (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
11.	Magnesium as Mg (mg/L)	18.70	19.65	15.58	14.89	14.06	15.66
12.	Total Dissolved Solids (mg/L)	312.00	290.00	234.00	229.00	335.00	260.00
13.	Sulphate as SO <sub>4</sub> (mg/L)	32.25	26.57	24.8	27.14	39.88	18.12
14.	Fluoride as F (mg/L)	0.45	0.41	0.43	0.38	0.56	0.34
15.	Nitrate as NO <sub>3</sub> (mg/L)	26.3	19.15	18.36	20.14	16.35	24.17
16.	Iron as Fe (mg/L)	0.35	0.37	0.37	0.22	0.40	0.37
17.	Aluminium as Al (mg/L)	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
18.	Boron (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19.	Hexa Chromium as Cr <sup>+6</sup> (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
20.	Conductivity mS/cm	0.524	0.492	0.393	0.386	0.561	0.443
21.	Phenolic Compounds (mg/L)	<0.001	<0.03	<0.03	<0.03	<0.03	<0.03
22.	Mineral Oil(mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
23.	Anionic Detergents as MBAS (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
24.	Zinc as Zn (mg/L)	0.75	0.64	0.72	0.66	0.39	0.63
25.	Copper as Cu (mg/L)	0.09	0.17	0.36	0.14	0.10	0.15
26.	Manganese as Mn (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
27.	Cadmium as Cd (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001



28.	Lead as Pb (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
29.	Selenium as Se (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
30.	Arsenic as As (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
31.	Mercury as Hg (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
32.	Total Coliform (MPN/100 mL)	<2/100	<2/100	<2/100	<2/100	<2/100	<2/100
33.	<i>E. coli</i> (mpn/100 mL)	Absent	Absent	Absent	Absent	Absent	Absent

**Note:** There are more than 60 parameters as per IS 10500:2012, here 33 parameters have been analyzed as per discussed by team. IS 10500:2012

**Table-3.13: Water Analysis Result (Surface Water)**

S. No.	Parameter	SW1	SW2	SW3
1.	pH (at 25 °C)	7.86	7.54	7.62
2.	Colour Hazen	<5	<5	<5
3.	Turbidity NTU	10	15	13
4.	Odour	Agreeable	Agreeable	Agreeable
5.	Total Hardness as CaCO <sub>3</sub> (mg/L)	176.06	202.32	150.23
6.	Calcium as Ca (mg/L)	29.55	38.64	27.45
7.	Alkalinity as CaCO <sub>3</sub> (mg/L)	156	146.00	126.00
8.	Chloride as Cl (mg/L)	41.23	55.76	38.65
9.	Residual free Chlorine (mg/L)	<0.20	<0.20	<0.20
10.	Cyanide as CN (mg/L)	<0.02	<0.02	<0.02
11.	Magnesium as Mg (mg/L)	24.87	25.74	19.86
12.	Total Dissolved Solids (mg/L)	258.00	288.00	227.00
13.	Total Suspended solids (mg/L)	50.00	76.00	47.00
14.	Dissolved Oxygen (mg/L)	7.0	6.9	7.2
15.	Sulphate as SO <sub>4</sub> <sup>2-</sup> (mg/L)	27.65	35.12	21.09
16.	Fluoride as F (mg/L)	0.40	0.29	0.31
17.	BOD (3 Days at 27°C) (mg/L)	5.85	6.92	<5.0
18.	COD (mg/L)	13.36	19.08	11.8

19.	Conductivity mS/cm	0.433	9.53	0.380
20.	Nitrate as NO <sub>3</sub> (mg/L)	12.08	20	10.97
21.	Sodium as Na (mg/L)	18	4	23
22.	Potassium as K (mg/L)	2	0.19	1
23.	Iron as Fe (mg/L)	0.25	0.482	0.26
24.	Aluminium as Al (mg/L)	<0.03	<0.03	<0.03
25.	Boron (mg/L)	0.39	0.32	0.18
26.	Chromium as Cr (mg/L)	<0.01	<0.01	<0.02
27.	Phenolic Compounds (mg/L)	<0.001	<0.001	0.15
28.	Mineral Oil (mg/L)	<0.01	<0.01	<0.02
29.	Anionic Detergents as MBAS (mg/L)	<0.02	<0.02	<0.10
30.	Zinc as Zn (mg/L)	0.39	0.63	0.58
31.	Copper as Cu (mg/L)	0.12	0.09	0.17
32.	Manganese as Mn (mg/L)	<0.10	<0.10	<0.10
33.	Cadmium as Cd (mg/L)	<0.001	<0.001	<0.001
34.	Total Coliform (MPN/100ml)	2100	2500	1700
35.	Fecal Coliform (MPN/100ml)	1700	1400	800

### 3.7.2 INTERPRETATION

Analysis results of Ground water reveal the following;

- pH varies from to **8.26 to 8.52.**
- Total Hardness varies from **132.25 to 172.35 mg/L.**
- Total Dissolved Solids varies from **229.00 to 335.00 mg/L.**
- **Fluoride** varies from **0.34 to 0.56 mg/L**
- **Chloride** varies from **27.36 to 58.09 mg/L**

Analysis results of Surface water reveal the following;

- pH varies from to **7.54 to 7.86**
- Total Hardness varies from **150.23 to 202.32 mg/L.**
- Total Dissolved Solids varies from **227.00 to 288.00 mg/L.**
- **Fluoride** varies from **0.29 to 0.40 mg/L**
- **Chloride** varies from **38.65 to 55.76 mg/L**
- **COD** varies from **11.8 to 19.08 mg/L**
- **BOD** varies from **<5.00 to 6.9 mg/L**

A review of the above chemical analysis reveals that there is some variation in chemical composition of water tapped from different sources but the ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed for drinking water standards promulgated by Indian Standards (IS: 10500). Water Quality data and CPCB standard for water quality parameters is attached as **Annexure VIII (a) and Annexure VIII (b)**.

### 3.8 SOIL ENVIRONMENT

#### 3.8.1 Soil Profile of District Yamuna Nagar

The soil is generally alluvial in nature which prone to water logging. Also nature of recently alluvial calcareous has been observed.

#### 3.8.2 Soil Quality

Assessment of soil quality is an important aspect with reference to tree plantations, percolation of water, ground water impact etc. The information on soils has been collected from various secondary sources and also through primary soil sampling analysis of which is described in this section.

#### 3.8.3 Methodology adopted for Selection of Sampling Station

Random soil samples were collected up to depth of 15 cm and homogenized samples were then sent to the laboratory for analysis. The physical and chemical characteristics of the soil of the study area have been assessed by analyzing various parameters as per the methods described in "Soil Chemical Analysis" (Jackson, 1967). The soil quality of the study area has been assessed by collecting samples from 4 different locations.

**Table-3.14: Soil Monitoring Station Details**

Stations	Sampling Location	Coordinates		Aerial Distance (Km) And Direction From Mine Site
		Latitude	Longitude	
<b>S1</b>	Rajheri	29°59'27.528"N	77°10'58.906"E	4.5 Km from North West
<b>S2</b>	Tabar	29°58'27.452"N	77°16'19.312"E	3.5 Km East
<b>S3</b>	Model Town	30°0'26.863"N	77°13'32.929"E	3.5 Km North
<b>S4</b>	Shukartal	29°55'25.74"N	77°16'35.382"E	5.8 Km South East

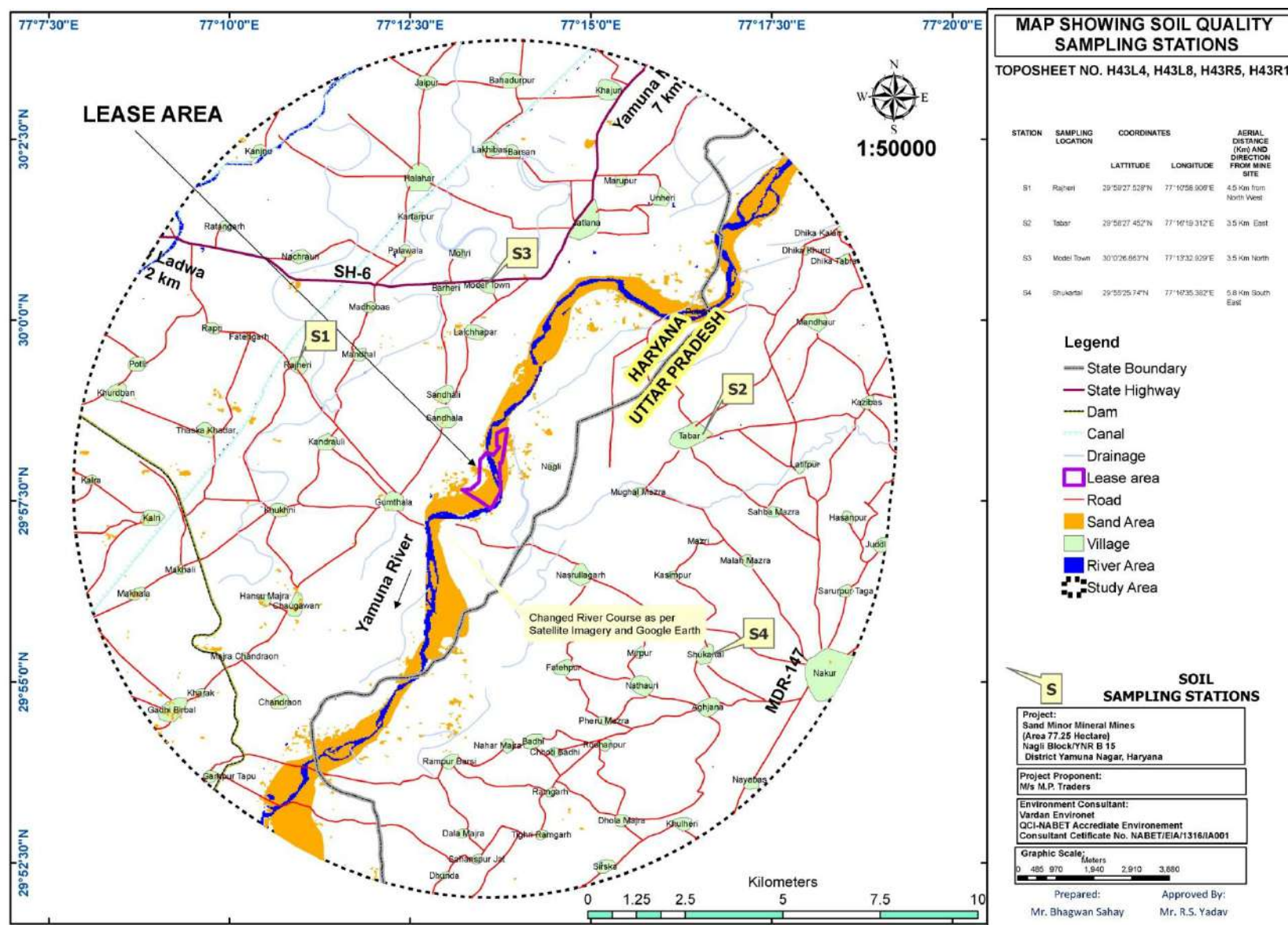


Figure-3.13: Key Plan of soil Sampling Stations

**Table-3.15: Soil Analysis Result**

S.No.	Parameter	S1	S2	S3	S4
1.	pH (at 25 °C)	7.45	7.86	8.10	8.05
2.	Conductivity (mS/ cm)	0.310	0.295	0.325	0.288
3.	Soil Texture	Sandy Loam	Silty Loam	Sandy Loam	Sandy Loam
4.	Color	Brownish White	Brownish White	Brownish White	Brownish White
5.	Water holding capacity (%)	28.63	34.62	36.24	32.36
6.	Bulk density (gm/cc)	1.45	1.38	1.42	1.37
7.	Chloride as Cl (mg/100g)	35.12	30.16	40.12	44.12
8.	Calcium as Ca (mg/100g)	30.24	32.64	35.41	33.24
9.	Sodium as Na(mg/100g)	42.30	46.35	44.71	47.12
10.	Potassium as K(kg/ha)	140.30	155.30	176.00	210.00
11.	Organic Matter (%)	0.45	0.42	0.47	0.46
12.	Magnesium as Mg (mg/100g)	13.36	17.21	28.16	26.54
13.	Available Nitrogen (kg/ha)	224.00	240.32	246.00	236.00
14.	Available Phosphorus (kg/ha)	14.12	21.53	35.42	27.63
15.	Zinc as Zn (mg/100g)	2.53	2.42	1.78	1.86
16.	Manganese as Mn (mg/100g)	3.21	4.32	3.26	3.14
17.	Chromium as Cr (mg/100g)	0.42	1.06	1.05	1.02
18.	Lead as Pb (mg/100g)	0.16	0.20	0.23	0.26
19.	Cadmium as Cd (mg/100g)	0.53	0.37	0.47	0.46
20.	Copper as Cu (mg/100g)	1.20	1.16	1.10	1.16

### 3.8.4 Interpretation of Results

The analysis results show that soil is basic in nature as pH value ranges from **7.45 to 8.10** with organic matter **0.42 % to 0.47 %**. The concentration of Nitrogen, Phosphorus and Potassium has been found to be in good amount in the soil samples. Soil texture is clay to Sandy. Soil Quality data and CPCB standard for Soil Parameters is attached as **Annexure- IX (a) and Annexure-IX (b)**.





Figure-3.14: Sampling Photographs for Air, Water, Noise and Soil

### 3.9 TRAFFIC STUDY

Traffic study measurements were performed at State Highway-6, MDR-1, MDR-2 & MDR-3 and Major District Road-1 to assess impact on local transport infrastructure due to this mining project. Traffic study measurements were performed at three locations of these highways. The cumulative traffic study has been conducted in August 2017.

Table 3.16: Roads and Highways in the Study Area

Name of State Highway/District Road	Direction		Dispatched Ratio in Percentage
	Up	Down	
SH-6	Yamunanagar	Ladwa	40 %
MDR-1	NH-73	Gangoh	10%
MDR-2	Jagadhri	Indri	40%
MDR-3	Radure	Jagadhari	10%
<b>Total Mineral transported through the Highways</b>			<b>100 %</b>

Traffic data collected continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., heavy motor vehicles, light motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station during each shift-one person on each of the two directions for counting the traffic. At the end of each hour, fresh counting and recording was undertaken. Total numbers of vehicles per hour under the three categories were determined.

V/C	LOS	Performance
0.0-0.2	A	Excellent
0.2-0.4	B	Very Good
0.4-0.6	C	Good/ Average/ Fair
0.6-0.8	D	Poor
0.8-1.0	E	Very Poor

**Table-3.17: Number of Vehicles in existing road**

Vehicles Distribution	Numbers of vehicles in one day				PCU	Total Number of Vehicle in PCU				Total Number of Vehicle (PCU)/Hour			
	SH-6	MDR-1	MDR-2	MDR-3		SH-6	MDR-1	MDR-2	MDR-3	SH-6	MDR-1	MDR-2	MDR-3
Cars	1235	579	500	970	1	1235	579	500	480	51	24	21	40
Buses	60	30	28	48	3	180	90	84	144	8	4	4	6
Trucks	800	350	335	405	3	2400	1050	1215	900	100	43	42	50
Two wheelers	1230	1080	987	1100	0.5	615	540	494	499	26	23	21	23
Three wheelers	618	400	370	750	0.75	464	300	278	328	19	13	12	23
Total	3943	2439	2220	3238		4894	2559	2361	2351	204	107	100	142

**Table-3.18: Existing Traffic Scenario and LOS**

Road	V (Volume in PCU/hr)	C (Capacity in PCU/hr)	Existing V/C Ratio	LOS
SH-6	204	1250	0.16	A
MDR-1	107	900	0.12	A
MDR-2	100	900	0.11	A
MDR-3	142	900	0.16	A
Total material will be transported through available existing MDR (1,2 &3) and State Highways (SH-6)				

### During Mine Operation

#### Total PCU in POBRI

Total Capacity of mine	: 11,00,000 TPA
Extraction and Transportation of mineral	: 3667 MT/day
Working hours per day	: 8 hour
Truck Capacity	: 25 Tons
Frequency of trucks/tankers deployed /day (50x 3 trips/day x 2(up/dwn)	: 300
Frequency of trucks deployed/hr	: 38
Increase in PCU/hr	: 114

#### Total PCU in Gumthala

Total Capacity of mine	: 21,00,000 TPA
Extraction and Transportation of mineral	: 7000 MT/day
Working hours per day	: 8 hour
Truck Capacity	: 25 Tons



Frequency of trucks/tankers deployed/  
day (70 x 4 trips/day x 2 up/down) : 560  
Frequency of trucks deployed/hr : 70  
Increase in PCU/hr : 210

#### Total PCU in Jathlana

Total Capacity of mine : 45,00,000 TPA  
Extraction and Transportation of mineral : 15000 MT/day  
Working hours per day : 8 hour  
Truck Capacity : 25 Tons  
Frequency of trucks/tankers deployed/  
day (200 x 3 trips/day x 2(up/dwn) : 1200  
Frequency of trucks deployed/hr : 150  
Increase in PCU/hr : 450

#### Total PCU in Nagli

During Mine Operation  
Total Capacity of mine : 28,00,000 TPA  
Extraction and Transportation of mineral : 9333 MT/day  
Working hours per day : 8 hour  
Truck Capacity : 25 Tons  
Frequency of trucks/tankers deployed/  
day (105 x 4 trips/day x 2 up/down) : 840  
Frequency of trucks deployed/hr : 105  
Increase in PCU/hr : 315

#### Total PCU in Karhera

Total Capacity of mine : 23,60,000 TPA  
No. of working days : 300  
Extraction and Transportation of mineral : 7867 MT/day  
Working hours per day : 8 hour  
Truck Capacity : 25 Tons  
Frequency of trucks/tankers deployed/  
day (90 x 4 trips/day x 2 up/down) : 720  
Frequency of trucks deployed/hr : 90  
Increase in PCU/hr : 270

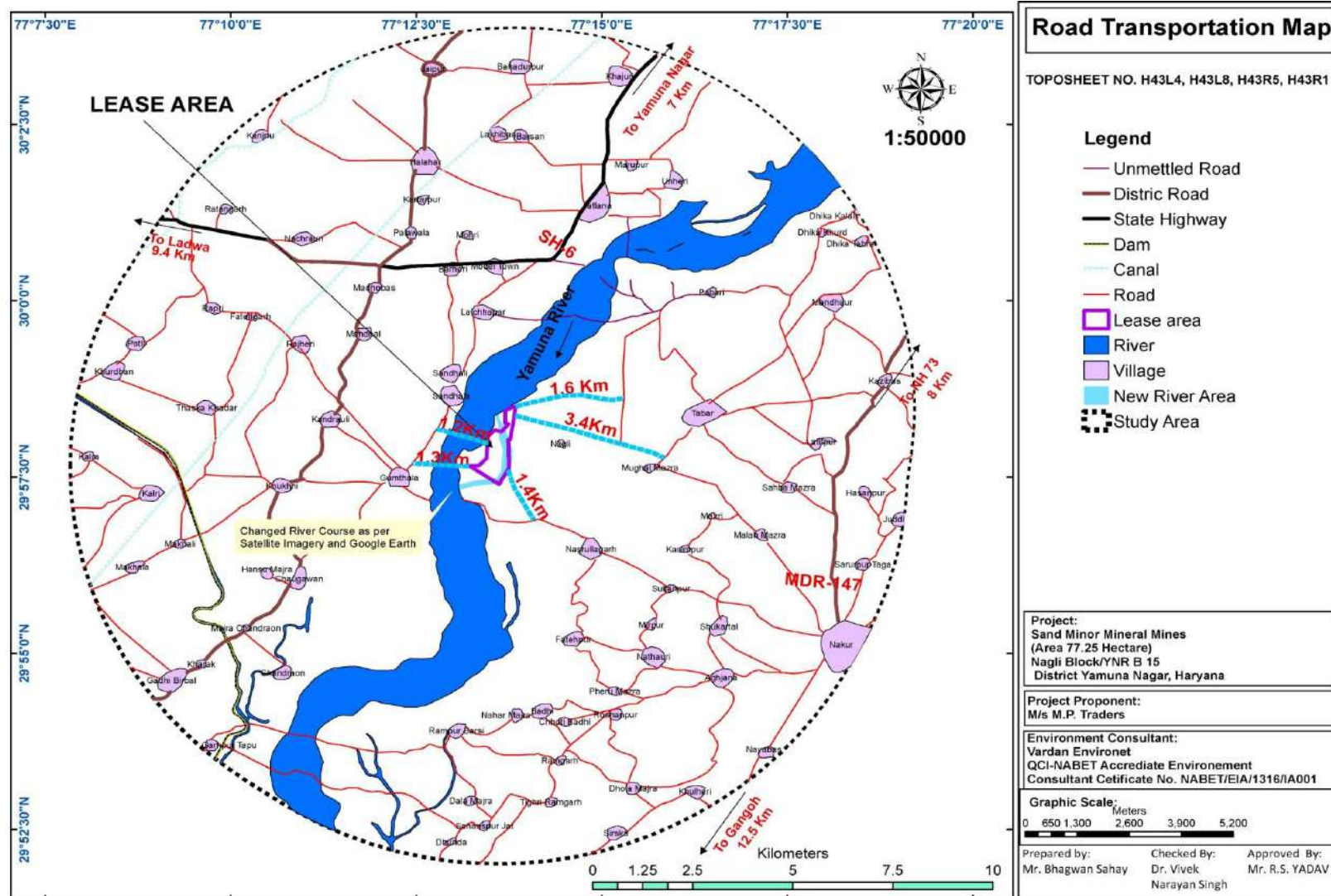
Total PCU of above 5 lease area will be 1359

**Table-3.19: Modified Traffic Scenario and LOS**

Roads	V (Volume in PCU/Hr)	C(Capacity in PCU/Hr)	V/C Ratio	LOS
SH-6	748	1250	0.59	C
MDR-1	244	900	0.27	B
MDR-2	643	900	0.71	D
MDR-3	277	900	0.30	C

#### 3.8.1 Conclusion

Cumulative impact of transportation due to all existing mines with in 10 Km area has been assessed. The LOS of SH-6 network will change i.e. from Excellent to Good and for MDR-1 and MDR3 it will change from Excellent to v. good and for MDR-2 network will change from Excellent to poor. So the additional load on the carrying capacity of the concern roads is not likely to have major affect. The details of Traffic study is attached as **Annexure X**.





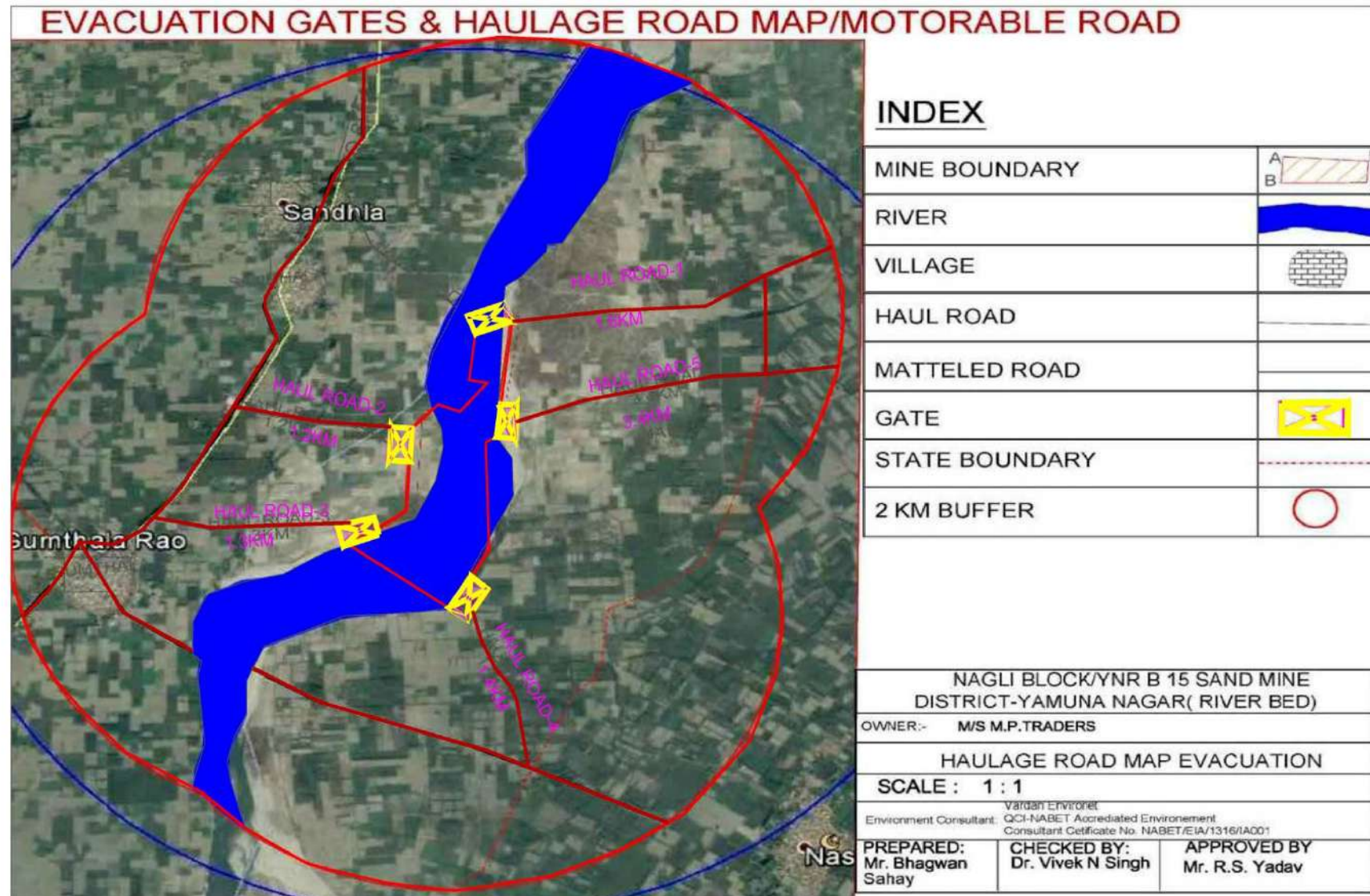


Figure 3.16: Showing the Evacuation Gates and Haulage Road /Motorable Road Map



### 3.10 BASELINE STATUS FOR FLORA AND FAUNA

The baseline study was conducted for the evaluation of the floral and faunal biodiversity of the terrestrial and aquatic environment of the study area (10 Km radius from the lease mine area- Refer **Figure 3.16 & 3.17**) and The study area within the 10 km covers 80 villages of Radaur Tehsil of Yamuna Nagar District, Indri Tehsil of Karnal District and Nakur Tehsil of Saharanpur District of Uttar Pradesh.

**Field study period:** The ecological survey has been conducted for one season. The ground truthing has been conducted on 13<sup>th</sup>, 14<sup>th</sup> and 15<sup>th</sup> December, 2016.

**Survey sites:** Project site.

**Core zone:** Mining Lease Area

**Buffer zone:** Around the project site in 10 Km radius.

#### 3.10.1 Methodology for Terrestrial Ecology

The primary objective of survey was to describe the floral and faunal communities within the study area. The sampling plots for floral inventory were selected randomly in the suitable habitats (Anderson, 1867; Jain and Rao, 1983; Dixit, 1984; Wilson and Reeder, 2005; Kumar, 2013; Kumar *et al.*, 2013).

The methodology adopted for faunal survey involve random survey, opportunistic observations, diurnal bird observation, active search for reptiles, faunal habitat assessment, active search for scats and foot prints, animal call, and review of previous studies. The aim was to set baselines in order to monitor and identify trends after the commissioning of the mining activity. Emphasis has been placed on presence of endemic species, threatened species if any present in the study area. The qualitative study has been carried out only.

Desktop literature review was conducted to identify the representative spectrum of threatened species, population and ecological communities listed by IUCN, WCMC, ZSI, BSI and Indian Wild life Protection Act, 1972 (Bentham and Hooker, 1862-1883; Hunter, 1879; Dixit, 1984; Ghosh *et al.*, 2004; Lushington, 1915; Wilson and Reeder, 1993; BirdLife International, 2000; BirdLife International, 2004a, b; Wilson and Reeder, 2005; BirdLife International, 2010; Kumar and Srivastava, 2012; Kumar, 2013; Kumar *et al.*, 2013; Kumar and Aggarwal, 2013a,b). The status of individual species was assessed using the revised IUCN/SSC category system (WCMC, 1988; IUCN, 1994; WCMC, 2000; IUCN, 2001, 2003, 2008, 2010).

**Table-3.20: List of Villages for Baseline study**

S.No.	Name of Village	S.No.	Name of Village
<b>Yamunanagar (HR)</b>			
1.	Nagli	42.	Chogawan
2.	Majri Dayalgarh	43.	Hanso Majra
3.	Karhera	44.	Makhala
4.	Lal Chhappar	45.	Makhali
5.	Jathlana	46.	Garhi Birbal
6.	Pobari	47.	Kharak
7.	Bagwali	48.	Chandraon
8.	Unheri	49.	Labkari
9.	Marrupur	<b>Saharanpur (U.P.)</b>	
10.	Khajuri	1.	Mandhaur Must.
11.	Bahadurpur	2.	Kazi Bans
12.	Khurdban	3.	Tabar Must
13.	Potli	4.	Tabar Aht
14.	Bhagwanpur	5.	Nasrulla Garh Must.
15.	Rapri	6.	Mugal Mazra
16.	Bhagwargarh	7.	Kasampur

17.	Nachraon	8.	Malha Mazra
18.	Rattangarh	9.	Narayanpur
19.	Palewala	10.	Latifpur
20.	Kanjnon	11.	Sahaba Mazra
21.	Kartarpur	12.	Meharpur
22.	Alahar	13.	Saroorpur Taga
23.	Lakhi Bans	14.	Saroorpur Taga
24.	Barsan	15.	Nakur(Dehat)
25.	Mohri	16.	Ladde Bans
26.	Barheri	17.	Shukartal
27.	Madho Bas	18.	Nathauri
28.	Rajheri	19.	Sultanpur
29.	Fatehgarh	20.	Meerpur
30.	Thaska Khadar	21.	Fatehpur Jat Must.
31.	Kandrauli	22.	Badhi Must.
32.	Mandhar	23.	Feru Mazra
33.	Sandhali	24.	Roshanpur
34.	Sandhala	25.	Nahar Mazra Must.
35.	Gumthala Rao	26.	Ranipur Barsi Must.
36.	Rao	27.	Dala Mazra
<b>Karnal District (HR)</b>		28.	Sahaspur Jat
37.	Dhanora Jagir	29.	Tigri Ramgarh
38.	Kalri Jagir	30.	Dola Mazra
39.	Dhano Kheri	31.	Sirsaka
40.	Kalra		
41.	Khokhni		

**Table-3.21: Mode of data collection and parameters considered during the Survey**

#	Aspect	Data	Mode of Data collection	Parameters monitored	Remarks
1.	Terrestrial Ecology	Primary data collection	By field survey	Floral and Faunal diversity	Random survey, opportunistic observations, diurnal bird observation, active search for reptiles, faunal habitat assessment, active search for scats and foot prints, animal call
2.		Secondary data collection	From authentic sources like Forests department of Haryana and available published literatures from ZSI, BSI etc.	Floral and Faunal diversity and study of vegetation, forest type, importance etc.	Bentham and Hooker, 1862-1883; Hunter, 1879; Dixit, 1984; Ghosh <i>et al.</i> , 2004; Lushington, 1915; Wilson and Reeder, 1993; BirdLife International, 2000; BirdLife International, 2004a, b; Wilson and Reeder, 2005; BirdLife International, 2010; Kumar and Srivastava, 2012; Kumar, 2013;

					Kumar <i>et al.</i> , 2013; Kumar and Aggarwal, 2013a,b). The status of individual species was assessed using the revised IUCN/SSC category system (WCMC, 1988; IUCN, 1994; WCMC, 2000; IUCN, 2001, 2003, 2008, 2010.
3.	Aquatic Ecology	Primary data	By field survey	Floral and Faunal diversity	<b>For Plankton Study-</b> Lackey's drops method and light microscope <b>For other aquatic-</b> Random survey, opportunistic observations
4.		Secondary data collection	From authentic sources like Forests department of Haryana.	Floral and Faunal diversity and study of vegetation, forest type, importance etc.	Desktop literature review to indentify the representative spectrum of threatened species, population and ecological communities.

### 3.10.2 Methodology for Inland Water Sampling

The samples for qualitative and quantitative analysis of planktons were collected from the sub surface layer at knee depth. Water samples were filtered through plankton net of 20 $\mu$  mesh size (APHA, 1971). The filtered samples were concentrated by using the centrifuge. By using Lackey's drops method and light microscope (Lackey, 1938), the qualitative analysis was carried out for phytoplankton and zooplankton. The standard flora and other literature were followed for the qualitative evaluation of Plankton (Welch, 1948; Vollenweider, 1969; Edmondson, 1974).

### 3.10.3 Terrestrial Floral and Faunal Components of the Study Area

The area of for the present biological baseline study falls under 36 villages of Yamuna Nagar District and 11 villages of District Karnal of Haryana state and 31 villages of Saharanpur of Uttar Pradesh State. The study area belongs to almost plain without much undulation, a fallow land; hence not much vegetation covers, except scattered forest (reserve and protected). The entire region is filled with bio-diversity having thick Sal woodland, Khair woodland and coverings of sward lands, which supports rich diversity of flora and fauna. Flora of the park include different species of trees such as sal, small sindoor, khair, shisham, sain, jhingan, chhal (*Anogeissus latifolia*) along with many varieties of medicinal plants.



**Figure-3.17: Aquatic Habitat of the Study Area**



**Figure-3.18: Terrestrial Habitat of the Study area**

Most of villages in the study area (Yamuna Nagar and Saharanpur) are engaged in agriculture practice and people are depending on the same, major crops are wheat and sugar cane (winter), while in summer paddy is the major crops. Major source of irrigation water is Western Yamuna Canal and its subsidiary canals. Villages are scattered in between the large patches of agriculture lands. The tree cover in the study area is scanty restricted only in the habituated areas of the village and few along the boundary of the agricultural fields and road sides. It was observed that some of the villages in the study area are with talabs (pond) used in rain water harvesting. The study area is also characterized by many water logged regions occupied by hydrophytes. Some people are engaged in poultry farming while many people are engaged in domestic animal for milk production like Buffalo and cows.





Figure-3.19: Agriculture Land of Study Area



Figure-3.20: Non agriculture Land of Study area





Figure-3.21: Scenario of Project site



Figure-3.22: Scrub Area

#### 3.10.4 FLORAL DIVERSITY OF THE STUDY AREA

The objective this floral inventory of the study area, is to provide necessary information on floristic structure in the study area for formulating effective management and conservation measures. The climatic, edaphic and biotic variations with their complex interrelationship and composition of species, which are adapted to these variations, have resulted in different vegetation cover, characteristic of each region (Ohasi, 1975). The tree species, herbs, shrubs, climbers and major crops, were documented during this base line study (Jain, 1968; 1991).

**Riparian vegetation:** Riparian vegetation is found along the river side. In stagnant water growth of hydrophytes likes *Hydrolea zeylanica*, *Ipomoea carnea*, *Ludwigia adscendens*, *Marsilea minuta*, *Sagittaria sagittifolia*, *Spilanthes paniculata*, *Typha latifolia*, etc. can be commonly observed.

**3.10.4.1 Trees:** The dominant trees in the study area are *Azadirachta indica* (Neem), *Mangifera indica* (Aam), *Acacia nilotica*, *Butea monosperma*, *Terminalia arjuna*, *Bombax ceiba* (Semal), *Delonix regia* (Gaulmor), *Prosopis cineraria*, *Lantana camara*, sal, small sindoor, khair, shisham, sain, jhingan, chhal (*Anogeissus latifolia*) along with many varieties of medicinal plants. Total 42 tree species were observed.

Table-3.22: Trees in the Study area

S. No.	Scientific Name	Family	Common name
1.	<i>Acacia nilotica</i>	Fabaceae	Babul
2.	<i>Acalypha ceylon</i>	Euphorbiaceae	Fire Dragon

3.	<i>Adenanthera pavonina</i>	Fabaceae	Barbados Pride
4.	<i>Aegle marmelos</i>	Rutaceae	Bel
5.	<i>Azadirachta indica</i>	Meliaceae	Neem Tree
6.	<i>Bambusa arundinacea</i>	Poaceae	Giant Thorny Bamboo
7.	<i>Bambusa polymorpha</i>	Poaceae	Bamboo
8.	<i>Bombax ceiba</i>	Malvaceae	Cotton Tree
9.	<i>Broussonetia papyrifera</i>	Moeaceae	Paper Mulberry
10.	<i>Butea frondosa</i>	Fabaceae	Bastard Teak
11.	<i>Butea monosperma</i>	Fabaceae	Flame of the Forest
12.	<i>Cassia fistula</i>	Fabaceae	Golden Shower Tree
13.	<i>Cedrela toona</i>	Meliaceae	Indian Mahogany
14.	<i>Dalbergia sissoo</i>	Fabaceae	Sisam
15.	<i>Delinia pentagyna</i>	Dilleniaceae	Fox-Tail Palm
16.	<i>Delonix regia</i>	Fabaceae	Flamboyant
17.	<i>Eucalyptus camaldulensis</i>	Myrtaceae	Gum Tree
18.	<i>Ficus bengalensis</i>	Moeaceae	Indian Fig
19.	<i>Ficus religiosa</i>	Moraceae	Sacred Fig
20.	<i>Ficus retusa</i>	Moraceae	Cuban Laurel
21.	<i>Jacaranda mimosifolia</i>	Bignoniaceae	Nil Mohar
22.	<i>Jatropha curcas</i>	Euphorbiaceae	Biodiesel Plant
23.	<i>Koelreuteria paniculata</i>	Sapindaceae	Varnish Tree
24.	<i>Mangifera indica</i>	Anacardiaceae	Mango
25.	<i>Melia azedarach</i>	Meliaceae	China Berry
26.	<i>Milletia pinnata</i>	Fabaceae	Indian Beech Tree

27.	<i>Mimusops elengi</i>	Sapotaceae	Bullet wood Tree
28.	<i>Murraya koenigii</i>	Rutaceae	Curry Plant
29.	<i>Polyalthia longifolia</i>	Annonaceae	False Ashoka
30.	<i>Populus ciliata</i>	Salicaceae	Poplar
31.	<i>Psidium guajava</i>	Myrtaceae	Common Guava
32.	<i>Pterospermum acerifolium</i>	Malvaceae	Bayur Tree
33.	<i>Saraca indica</i>	Fabaceae	Ashoka
34.	<i>Strychnos nux - vomica</i>	Loganiaceae	Strychnine Tree
35.	<i>Syzigium cumini</i>	Myrtaceae	Jambolan Plum
36.	<i>Tectona grandis</i>	Lamiaceae	Sal
37.	<i>Terminalia arjuna</i>	Combretaceae	Arjun
38.	<i>Terminalia bellirica</i>	Combretaceae	Bastard Myrobalan
39.	<i>Thevetia peruviana</i>	Apocynaceae	Punjab Fig/ Anjiri
40.	<i>Typha angustata</i>	Typhaceae	Cat Tail
41.	<i>Ziziphus mauritiana</i>	Rhamnaceae	Indian Plum
42.	<i>Ziziphus jujuba</i>	Rhamnaceae	Jujube

**3.10.4.2 Shrubs:** Shrubs encountered during the present survey are given in the table below. The dominant shrub community in this area was represented by Kaner (*Thevetia peruviana*), *Prosopis juliflora* (Bilayati babool), *Calotropis procera*, *C. gigantea* (Akoda), *Ipomoea fistulosa* and *Abutilon indicum*, etc.

**Table-3.23: Lists of Shrubs in the Study Area**

S.No.	Family and Scientific name	Vernacular name
<b>1</b>	<b>Apocynaceae</b>	
1/1	<i>Oxypetalum acerosum</i>	-
2/2	<i>Thevetia peruviana</i> Merr.	Pili Kaner
<b>2</b>	<b>Asclepiadaceae</b>	
3/1	<i>Calotropis gigantea</i> (L.) R. Br	Akoda
4/2	<i>Calotropis procera</i> (Ait.) R.Br	Akoda
<b>3</b>	<b>Balanitaceae</b>	
5/1	<i>Balanites aegyptiaca</i> (L.) Del.	-
<b>4</b>	<b>Bignoniaceae</b>	

6/1	<i>Tecoma stans</i> (L.) H.B. and K.	Peilafol
<b>5</b>	<b>Cactaceae</b>	
7/1	<i>Cereus peruvianus</i>	Cactus
<b>5</b>	<b>Caesalpinaceae</b>	
8/1	<i>Cassia auriculata</i> L.	-
<b>6</b>	<b>Capparaceae</b>	
9/1	<i>Capparis decidua</i> (Forsk.) Edgew	Kerda
<b>7</b>	<b>Compositae</b>	
10/1	<i>Xanthium strumarium</i> L.	Gokhru
<b>8</b>	<b>Convolvulaceae</b>	
11/1	<i>Ipomoea fistulosa</i> Mart.ex Choisy	Besharm
<b>9</b>	<b>Euphorbiaceae</b>	
12/1	<i>Euphorbia neriifolia</i> L.	Thor
13/2	<i>Jatropha curcas</i> L.	Ratanjot
14/3	<i>Ricinus communis</i> L.	Arand
<b>10</b>	<b>Lythraceae</b>	
15/1	<i>Decodon verticillatus</i>	Water willow
<b>11</b>	<b>Malvaceae</b>	
16/1	<i>Abelmoschus manihot</i> (L.) Medic.	Jagali bhindi
17/2	<i>Abutilon indicum</i> (L.) Sw.	Khapat
18/3	<i>Hibiscus rosasinensis</i>	Gurhal
<b>12</b>	<b>Musaceae</b>	
19/1	<i>Musa paradisiaca</i> L.	Kela
<b>13</b>	<b>Mimosaceae</b>	
20/1	<i>Prosopis juliflora</i> DC	Bilayati babool
<b>14</b>	<b>Nyctaginaceae</b>	
21/1	<i>Bougainvillea spectabilis</i> Willd.	Bougainvelia
<b>15</b>	<b>Papilionaceae</b>	
22/1	<i>Sesbania sesban</i> (L.) Merr.	Sesban
<b>16</b>	<b>Rhamnaceae</b>	
23/1	<i>Zizyphus nummularia</i> (Burm.f.) W. and.	Jharbera
<b>17</b>	<b>Solanaceae</b>	
24/1	<i>Datura metel</i> L	Datura
25/2	<i>Solanum incanum</i> L	Junglee baigan

**3.10.4.3 Herbs:** The herbaceous cover observed in this region is given in the table below. The most of the undergrowth was dried up, except near water logged regions and along the periphery of the village ponds. Total 33 species belongs to 18 family were recorded from the study area.

**Table-3.24: List of Herbaceous species observed in the study area**

S.No.	Family and Scientific name	Vernacular name
<b>1</b>	<b>Acanthaceae</b>	
1/1	<i>Hygrophila auriculata</i> (Schum.)	Kokilaksha
<b>2</b>	<b>Asteraceae</b>	
2/1	<i>Blumea</i> sps.	-
3/2	<i>Eclipta prostrata</i> (L.) L.	Bhangro
4/3	<i>Echinops echinatus</i> Roxb	Shulia
5/4	<i>Tridax procumbens</i> L	Pardesi bhangra
<b>3</b>	<b>Boraginaceae</b>	
6/1	<i>Trichodesma indicum</i> L.	Undha fuli
<b>4</b>	<b>Chenopodiaceae</b>	

7/1	<i>Suaeda nudiflora</i> (willd) Moq.	Moras
8/2	<i>S. fruticosa</i> L.	-
<b>5</b>	<b>Cyperaceae</b>	
9/1	<i>Cyperus bulbosus</i> Vahl.	-
10/2	<i>Cyperus difformis</i> L.	-
11/3	<i>Cyperus stoloniferus</i> Retz.	-
12/4	<i>Cyperus rotundus</i> L.	-
<b>6</b>	<b>Lamiaceae ( Labiatae)</b>	
13/1	<i>Ocimum basilicum</i> L.	Damaro
14/2	<i>Ocimum sanctum</i> L.	Tuli
<b>7</b>	<b>Liliaceae</b>	
15/1	<i>Aloe barbadensis</i> Mill.	Kunvarpato
<b>8</b>	<b>Nymphaeaceae</b>	
16/1	<i>Nymphaea pubescens</i> Willd	Kamal
17/2	<i>Nymphaea stellata</i>	-
<b>9</b>	<b>Nyctaginaceae</b>	
18/1	<i>Boerhavia diffusa</i> L.	-
19/2	<i>Boerhavia chinensis</i> Druce	-
<b>10</b>	<b>Papaveraceae</b>	
20/1	<i>Argemone mexicana</i> L.	Darudi
<b>11</b>	<b>Papilionaceae</b>	
21/1	<i>Cortalaria medicaginea</i> Lam	Ran methi
22/2	<i>Indigofera oblongifolia</i> Forks.	-
<b>12</b>	<b>Poaceae (Gramineae)</b>	
24/2	<i>Aeluropus lagopoides</i> Trin	-
25/3	<i>Cynodon dactylon</i> Pers.	-
26/4	<i>Pennisetum typhoides</i> (Burm.)	Bajri
<b>13</b>	<b>Poligonaceae</b>	
27/1	<i>Poligonum</i> sp.	-
<b>14</b>	<b>Pontederiaceae</b>	
28/1	<i>Eichhornia crassipes</i> (Mart.)	Jalkumbhi
<b>15</b>	<b>Potamogetonaceae</b>	
29/1	<i>Potamogeton</i> sp.	-
<b>16</b>	<b>Solanaceae</b>	
30/1	<i>Solanum surattense</i> Burm.	Bhoringini
31/2	<i>Datura metel</i>	Dhatura
<b>17</b>	<b>Typhaceae</b>	
32/1	<i>Typha angustata</i> Bory and Chaub	-
<b>18</b>	<b>Zygophyllaceae</b>	
33/1	<i>Tribulus terrestris</i> L	Gokhru

**3.10.4.4 Climbers and Twiners:** The climbers and twiners observed along the agricultural hedges and road side hedges of the study area are given in the table. Total 6 species of climbers/ twiners belongs to 3 families are recorded from the area.

**Table-3.25: List of Climbers Observed in the Study Area**

S.No.	Family and Scientific name	Vernacular name
<b>1.</b>	<b>Convolvulaceae</b>	
1/1	<i>Ipomoea pes-caprae</i>	Dariani vel
2/2	<i>Ipomoea obscura</i> (L.) Ker – Gawl.	Vad fudardi
<b>2.</b>	<b>Cucurbitaceae</b>	
3/1	<i>Citrulus colocynthis</i> (L)	Indravarna



4/2	<i>Coccinia grandis</i> (L.) Voigt	Ghiloda
5/3	<i>Luffa cylindrica</i> (L.) M.J.Roem	Galku
3.	<b>Cuscutaceae</b>	
6/1	<i>Cuscuta chinensis</i> Lam.	Amarval

### 3.10.5 Cultivated Plants in the Study Area

The soil is more alluvial, the typical riverine basin characteristics and is mixed with sand making it more useful for agricultural purposes. The crop occupying the highest percentage of the sown area of this region is taken as the major crop and all other possible alternative crops which are sown in this region either as substitutes of the base crop in the same season or as the crops which fit in the rotation in the subsequent season, are considered as minor crop. The yields for most of the crops are one of the best in India. The major produces are that of wheat, rice, maize, sugarcane and oilseeds.

**a. Major Crops:** Mainly people of Yamunanagar area are dependent on Wheat (*Triticum aestivum*) and Sugar cane (*Saccharum officinarum*). Other crops in the study area are Mustard (*Brassica rapa*), Paddy (*Oryza sativa*), Maize (*Zea mays*) and Barley (*Hordeum vulgare*).

**b. Minor crops:** The minor crops of this region are Mustard (*Brassica campestris* var.), Green gram (*Vigna radiate*), Sesamum (*Sesamum indicum*), Pigeon Pea (*Punica granatum*) Jowar (*Sorghum bicolor*) and Black Gram (*Vigna mungo*).

**c. Major horticultural crops:** Aam (*Mangifera indica* L.), Papaya (*Carica papaya* L.), Banana (*Musa Paradisiaca* L.), Lime (*Citrus aurantifolia*), Guava (*Psidium guajava*), Jack-fruit (*Artocarpus heterophyllus*), Jujube (*Ziziphus mauritiana*), Myriobalan (*Phyllanthus emblica*) and Palmgranate (*Punica granatum*).

**d. Major Vegetable corps:** The major vegetables grown in the study area are:

1. Amari: *Hibiscus subderifa*.
2. Brinjal: *Solanum melongena*.
3. Cabbage: *Brassica oleracea*.
4. Carrot: *Daucus carota*.
5. Cauliflower: *Brassica oleracea*.
6. Chilli: *Capsicum annum*.
7. Coriander: *Coriandrum sativum*
8. Garlic: *Allium sativum*
9. Potato: *Solanum tuberosum*.
10. Radish: *Raphanus sativus*.
11. Spinach: *Beta olirecia*.
12. Sponge gourd: *Luffa cylindrica*.
13. Tomato: *Lycopersicum esculantum*
14. White gourd (winter melon): *Benincasa hispida*.

**e. Major Ornamental Plants:** Following is the list of ornamental plants in the study area.

1. Marigold: *Tagates erecta*.
2. Periwinkle: *Catharanthus roseus*.
3. China rose: *Hibiscus rosinensis*.
4. Chrysanthemum: *Chrysanthemum americanum*.
5. Rose: *Rosa indica*.
6. Jasmin: *Jasminum sambac*.
7. Stick Rose: *Polyanthes tuberosa*.

**3.10.6 Rare and Endangered Flora in the Study Area:** The IUCN Red List is the world's most comprehensive inventory of the global conservation status of plant and animal species. It uses a set of criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are

relevant to all species and all regions of the world. With its strong scientific base, the IUCN Red List is recognized as the most authoritative guide to the status of biological diversity. Out of 17000 species of higher plants known to occur in India, nearly 614 higher plant species were evaluated by IUCN. Among them 247 species are under threatened category (IUCN, 2008).

Among the enumerated flora in the study area, none of them were assigned any threat category by Red data book of Indian Plants (Jain and Sastry, 1984; Nayar and Sastry, 1987; 1988; 1990; Oldfield *et al.*, 1998; Kholia and Bhakuni, 2009) and Red list of threatened Vascular plants (IUCN, 2010).

**3.10.7 Endemic Plants of the Study Area:** De Candolle (1855), Swiss botanist, first used the concept of Endemic, which is defined as an area of a taxonomic unit, especially a species which has a restricted distribution or habitat, isolated from its surrounding region through geographical, ecological or temporal barriers. Out of 17000 species of known flowering plants of India nearly 5000 species are said to be endemic. Nearly 58 genera and 1932 taxa are found to be endemic to peninsular India (Nayar, 1980; Ahmedullah and Nayar, 1986; 1987; Jain 1992; Nayar, 1996; Vijaya Shankar *et al.*, 2005; Nautiyal *et al.*, 2009a,b; Shendage *et al.*, 2010).

Among recorded plant species none can be assigned the status of endemic plant of this region.

### 3.10.8 FAUNAL BIODIVERSITY OF STUDY AREA

For the documentation of the faunal biodiversity of the study area with respect to mammals, birds, reptiles, amphibians, and butterfly species, a baseline survey had been conducted. The study area falls under two States Haryana and Uttar Pradesh (interstate boundary).

**Birds:** The sighting of bird species was very less during the study period during December 2016 to February 2017. The most commonly spotted bird species of this area are; Cattle Egret, Intermediate Egret, Black-winged Stilt, Red-wattled Lapwing, Rock Pigeon, Eurasian Collared-Dove, Spotted Dove, Chestnut-headed Bee-eater, Bank Myna and Common Myna. Only one bird species, Indian Peafowl was observed which is listed as schedule –I as per IWPA, 1972.

**Table-3.26: Schedule –I Bird(s) of Study Area**

Species	As IWPA 1972	IUCN	CITES
Indian Peafowl ( <i>Pavo cristatus</i> )	Schedule I	Least Concern ver 3.1	Not listed
GOh ( <i>Varanus Bengalensis</i> )	Schedule I	Least Concern ver 3.1	Not listed

**Table-3.27: Systematic Lists of Birds in the Study Area with Its Distribution and Migratory Status**

Old Common name	New Common Name	Scientific Name	Distribution
<b>I ORDER: APODIFORMES</b>			
<b>Family: Apodidae (swifts)</b>			
Common Swift	Common Swift	<i>Apus apus</i>	R
House swift	Little Swift	<i>Apus affinis</i>	R
<b>II ORDER: FALCONIFORMES</b>			
<b>Family: Accipitridae (vulture, Sparrow hawk, Eagle, Harrier, Kite and Vulture)</b>			
Shikra	Shikra	<i>Accipiter badius</i>	R
Black-winged Kite	Black-winged Kite	<i>Elanus caeruleus</i>	R
<b>III. ORDER: : CICONIIFORMES</b>			
<b>Family: Ardeidae (heron, Egret, Bittern)</b>			
Cattle Egret	Cattle Egret	<i>Bubulcus ibis</i>	R
Median or Smaller Egret	Intermediate Egret	<i>Mesophoyx intermedia</i> <i>Egretta intermedia</i>	R
Little Egret	Little Egret	<i>Egretta garzetta</i>	R
Pond Heron	Indian Pond-Heron	<i>Ardeola grayii</i>	R

<b>Family: Charadriidae (Plover, Stilt, Oystercatcher, Lapwing, Avocet )</b>			
Black-winged Stilt	Black-winged Stilt	<i>Himantopus himantopus</i>	R
Red-wattled Lapwing	Red-wattled Lapwing	<i>Vanellus indicus</i>	R
<b>Family: Threskiornithidae (Spoonbill and Ibis)</b>			
Black Ibis	Red-naped Ibis	<i>Pseudibis papillosa</i>	R
<b>IV ORDER: COLUMBIFORMES</b>			
<b>Family: Columbidae (Pigeon, Dove)</b>			
Blue Rock Pigeon	Rock Pigeon	<i>Columba livia</i>	R
Ring Dove	Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	R
Rufous Turtle Dove	Oriental Turtle-Dove	<i>Streptopelia orientalis</i>	R
Spotted Dove	Spotted Dove	<i>Streptopelia chinensis</i>	R
<b>V : ORDER: CORACIFORMES</b>			
<b>Family: Dacelonidae (Kingfishers)</b>			
White breasted Kingfisher	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	R
<b>Family: Coraciidae (Roller)</b>			
BlueJay or Roller	Indian Roller	<i>Coracias benghalensis</i>	R
<b>Family: Meropidae (Bee Eater)</b>			
Chestnut-headed Bee-eater	Chestnut-headed Bee-eater	<i>Merops leschenaulti</i>	R
Blue-cheeked Bee-eater	Blue-cheeked Bee-eater	<i>Merops persicus</i>	R
Olive Bee eater	Olive Bee eater	<i>Merops superciliosus</i>	W
<b>VI. ORDER: CUCULIFORMES</b>			
<b>Family: Centropodidae (Cocucal)</b>			
Crow-Pheasant or Coucal	Greater Coucal	<i>Centropus sinensis</i>	R
<b>Family: Cuculidae (cuckoo, Koel)</b>			
Koel	Asian Koel`	<i>Eudynamys scolopacea</i>	R
Indian Drongo Cuckoo	Drongo Cuckoo	<i>Surniculus lugubris</i>	R
<b>VII. ORDER: GALLIFORMES</b>			
<b>Family: Phasianidae (Peafowl, Partridge, Quail, francolin, Spur fowl, Jungle fowl, Monal)</b>			
Common Peafowl	Indian Peafowl	<i>Pavo cristatus</i>	R
Grey Partridge	Grey Francolin	<i>Francolinus pondicerianus</i>	R
Common Quail	Common Quail	<i>Coturnix coturnix</i>	R
Red jungle fowl	Red jungle fowl	<i>Gallus gallus</i>	R
<b>VIII. ORDER: GRUIFORMES</b>			
<b>Family: Rallidae (Waterhen, coot, crake water cock, Moorhen, Rail)</b>			
White-breasted Water hen	White-breasted Water hen	<i>Amaurornis phoenicurus</i>	R
Indian Moorhen	Common Moorhen	<i>Gallinula chloropus</i>	R
<b>XI. ORDER: PASSERIFORMES</b>			
<b>Family: Paridae (Tit )</b>			
Grey Tit	Great Tit	<i>Parus major</i>	R
<b>Family: Corvidae</b>			
Raven	Common Raven	<i>Corvus corax</i>	R
House Crow	House Crow	<i>Corvus splendens</i>	R
Black drongo- King Crow	Black Drongo	<i>Dicrurus macrocercus</i>	R
Tree Pie	Rufous Treepie	<i>Dendrocitta vagabunda</i>	R
<b>Family: Muscicapidae (Short wing, Chat, Robin, Shama)</b>			
Indian Robin	Indian Robin	<i>Saxicoloides fulicata</i>	R
Pied Bushchat	Pied Bushchat	<i>Saxicola caprata</i>	R
<b>Family: Nectariniidae (Sun Birds, Flower pecker, Spider hunter )</b>			

Purple Sunbird	Purple Sunbird	<i>Nectarinia asiatica</i>	R
Small Sunbird	Crimson-backed Sunbird	<i>Nectarinia minima</i>	R
<b>Family: Passeridae (Avadavat, Pipit, Wagtail, Munia, Snowfinch, Sparrow, Accentor)</b>			
House Sparrow	House Sparrow	<i>Passer domesticus</i>	R
Grey Tit	Great Tit	<i>Parus major</i>	R
<b>Family: Pycnonotidae (Bulbul)</b>			
Red-whiskered Bulbul	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	R
Red-vented Bulbul	Red-vented Bulbul	<i>Pycnonotus cafer</i>	R
<b>Family: Sturnidae (Myna, Starling)</b>			
Bank Myna	Bank Myna	<i>Acridotheres ginginianus</i>	R
Indian Myna	Common Myna	<i>Acridotheres tristis</i>	R
<b>Family: Sylviidae (Warbler, Browning, Fulvetta, Babbler, Laughing thrush, Tailor birds)</b>			
Common Babbler	Common Babbler	<i>Turdoides caudatus</i>	R
Jungle Babbler	Jungle Babbler	<i>Turdoides striatus</i>	R
Tailorbird	Common Tailorbird	<i>Orthotomus sutorius</i>	R
<b>X. ORDER: PSITTACIFORMES</b>			
<b>Family: Psittacidae (Parrot and Parakeet)</b>			
Rose-ringed Parakeet	Rose-ringed Parakeet	<i>Psittacula krameri</i>	R
<b>Family: Ploceidae</b>			
Baya	Baya weaver	<i>Ploceus philippinus</i>	R
<b>XI. ORDER: STRIGIFORMES</b>			
<b>Family: Strigidae (Owl and Owlet)</b>			
Owl	Indian Great Horned owl	<i>Bubo bubo</i>	R

Note: **R** = Widespread Resident, **r** = Very Local Resident, **W** = Widespread Winter Visitor, **w** = Sparse Winter Visitor, **RW** = Resident and winter visitor as per the distribution given in WCMC, Check list of Indian Birds.

**3.10.8.1 Butterflies from the study area:** Butterflies observed during the present study are documented in the table below.

**Table-3.28: Butterflies in the Study Area**

Scientific name and family	Common name
<b>Family Papilionidae</b>	
<i>Papilio polytes</i>	Common Mormon
<b>Family Pieridae</b>	
<i>Eurema hecabe</i>	Common Grass yellow
<i>Ixias Marianne</i>	White orange tip
<b>Family: Nymphalidae</b>	
<i>Danaus genutia</i> Cramer	Stripped Tiger
<i>Hypolimnastis misippus</i>	Danaid egg fly
<i>Mycalesis perseus</i>	Common bush brown

**3.10.8.2 Herpetofauna:** Frog, toad, Common Garden Lizard, Indian Monitor, etc. were sighted during the study period during Dec. 2016. The reptiles' document in the region is given in the table below.

**Table-3.29: Reptiles and Amphibian in the Study Area**

S. No.	Common Name	Scientific name	Schedule as IWPA, 1972
1.	Toad	<i>Bufo bufo</i>	Not listed
2.	Marbled toad	<i>Bufo stomaticus</i>	-
3.	Common Toad	<i>Bufo melanostictus</i>	-



4.	Frog	<i>Rana tigrina</i>	Schedule IV
5.	Skink	<i>Mabuya macularia</i>	-
6.	Common Garden Lizard	<i>Calotes versicolor</i>	Not listed
7.	Fan-Throated Lizard	<i>Sitana ponticeriana</i>	Not listed
8.	House Gecko	<i>Hemidactylus flaviviridis</i>	Not listed
9.	Goh	<i>Varanus Bengalensis</i>	Schedule I

**3.10.8.3 Mammals:** The wild mammals observed other than the domesticated ones are given in the table below.

**Table-3.30: Mammals in Study area**

S. No.	Common Name	Scientific name	Status as per IWPA 1972
1.	Bat	<i>Rousettus leschenaulti</i>	Schedule IV
2.	Common House rat	<i>Rattus rattus</i>	Schedule V
4.	Five striped Palm Squirrel	<i>Funambulus pennanii</i>	Schedule IV
5.	Spotted Deer	<i>Axis axis</i>	Schedule III
6.	Indian Mole Rat	<i>Bandicota bengalensis</i>	Schedule IV
7.	Hare	<i>Lepus nigricolis dayanus</i>	Schedule IV
8.	Indian field mouse	<i>Mus booduga</i>	Schedule IV
9.	Monkey (Rhesus macaque)	<i>Macaca mulatta</i>	Schedule II
10..	Nilgai (Blue Bull)	<i>Boselaphus tragocamelus</i>	Schedule-III

**3.10.8.4 Fishes:** The fishes observed are given in the table below:

**Table-3.31: Fishes in Study area**

S.No.	Local Name	Scientific name
1.	Calbasu	<i>Labeo calbasu</i>
2.	Kali Machali	<i>Barbus chilinadea</i>
3.	Mahseer	<i>Tor barakae</i>
4.	Rohu	<i>Labeo rohita</i>
5.	Singi	<i>Clarias batrachus</i>

#### 3.10.8.5 Domestic Animals

The domestic animals observed in the study area are given in the table below.

**Table-3.32: Domestic Animals in Study area**

S.No.	English/Hindi Name	Scientific name
1.	Buffalo/ Bhains	<i>Bulbalus bulbalis</i>
3.	Cow/Gai	<i>Bos primigenius</i>
5.	Dog/Kutta	<i>Canis lupus familiaris</i>
2.	Goat/Bakri	<i>Capra aegagrus hircus</i>
4.	Sheep/Bhed	<i>Ovis aries</i>

**3.10.8.6 Endemic Fauna of the Study Area:** None of the sighted animal species can be assigned endemic species category of the study area.



**Table-3.33: List of Schedule –I and II Fauna observed During the Study**

S.No.	Scientific Name	Local Name	Schedule As Per (WPA, 1972)	IUCN Category	CITES Listing
1.	<i>Pavo cristatus</i>	Indian Peafowl	Schedule I	Least Concern ver 3.1	Not listed
2.	<i>Varanus Bengalensis</i>	Goh	Schedule I	Least Concern ver 3.1	Not listed
3.	<i>Herpestes edwardsi</i>	Common Mongoose	Schedule II	Least Concern ver 3.1	Appendix III
4	<i>Macaca mulatta</i>	Rhesus macaque	Schedule II	Least Concern ver 3.1	Not listed

### 3.10.9 Conclusion

The study area comprise of two districts of two states *i.e.* Yamuna Nagar (Haryana) and other part falls in Saharanpur (Uttar Pradesh). The current study reveals that the study area has most of agriculture land and vegetable corps.

### 3.11 SOCIO-ECONOMIC ENVIRONMENT

Any developmental activity exerts a direct impact on the socio-economic environment of the region. Usually, the beneficial impacts such as better job opportunities, improved education, communication, energy, housing, health, transportation facilities etc. outweighs the adverse impacts, if any.

The study of socio-economic component of environment is incorporating various facets, viz. demographic structure, availability of basic amenities such as housing, education, health and medical services, occupation, water supply, sanitation, communication and power supply, prevailing diseases in the region as well as features such as places of tourist attraction and monuments of archaeological importance. The study of these parameters helps in identifying predicting and evaluating the likely impacts due to project activity in the surrounding region.

LOI over an area of 77.25 ha of Mining lease has been granted in favor of M/s. M.P. Traders by The Director General, Department of Mines & Geology, Haryana vide memo no.- DMG/ HY/ Cont/ Nagli Block/ YNR B-15/ 2016/ 5414 dated 20.10.2016 for a period of 10 years. The proposed production capacity of sand is 28 Lakhs TPA. The lease area lies on riverbed of Yamuna River in District- Yamuna Nagar (Haryana). Total mining lease area is 77.25 ha which is non- forest land. The proposed mining project land has been allotted as a single unit for mining of Sand (Minor Mineral) through the riverbed of District Yamuna Nagar (Haryana).

The land for mining lease area is mostly barren land therefore there are no issues involved like land acquisition, displacement, compensation, resettlement & rehabilitation.

Baseline data such as demographic pattern, occupational status, educational, health and other amenities as existing in the study area have been studied.

#### Baseline Status

The latest available data has been compiled to generate the existing socio-economic scenario of the study area. Information on socio-economic profile was collected from the Primary Census Abstract CD 2011 including the population details of the region.

#### Village

The basic unit for rural areas is the revenue village which has definite surveyed boundaries. The revenue village may comprise of one or more hamlets but the entire village is treated as one unit for presentation of data.

### **Demographic Structure**

Demographic structure of the study area was estimated for the selected parameters as households, population, sex ratio, scheduled caste, scheduled tribes, literacy from primary census abstract, CD 2011. The summarized demographic structure of the study area is presented in Table, while the village wise demographic pattern is shown in Table. The study area within the 10 km covers 80 villages of Jagdhari Tehsil of Yamunanagar District, Indri Tehsil of Karnal District and Nakur Tehsil of Saharanpur District of Uttar Pradesh.

### **Household and Population**

As per Census 2011 the total number of household in the study area is about 22091 with the total population of about 124251 with Male-65702 i.e. 52.87% and Female 58549 (47.12%) and the household ratio i.e. person per family is about 5.6. The population of children in the age group of 0-6 in the study area is about 15757 (12.68%)

### **Sex Ratio**

Sex ratio (number of female per thousand male) figure of the study is 891.

### **Scheduled Castes & Scheduled Tribes Population**

The ratios of scheduled caste and scheduled tribe as compared to the total population of the Study area is about 29574 (23.80%) while the scheduled tribe population is nil.

### **Literacy**

A person who can both read and write with understanding of any one language is treated as "Literate". The literacy rate within the study areas is on an average of about 81484 (65.58%) with 57.95 % male literates and 42.04 % female literates.

### **Occupational Pattern**

Occupational Pattern of any region mainly depends upon its economically active group i.e. the working population involved in productive work. 'Work' has been defined as participation in any economically productive activity. Such participation may be physical or mental. Persons on leave and under training are also treated as workers. However, rent receivers and pensioners are not treated as workers.

There are different types of workers that may be classified as:

### **Main Workers**

Main workers are those who have worked for a major part of the year (i.e. at least six months or 183 days). Main activity of a person who was engaged in more than one activity was reckoned in terms of time disposition. The main worker population within the study area is 32146 (25.87%) out of which 13876 (43.16%) are engaged as cultivators, 10485 (32.61%) as agricultural laborers, only 1.21% are engaged as Household Laborers, and the other worker population is about 7316 i.e.23%.

### **Non-Workers**

Non-Workers may be defined as those persons who have not worked at all during the entire year under the reference period. The proportion of non workers may show the unemployment level of the region. The non worker population in the study area is very high of about 83829 (67.46%).

### **Infrastructure Resource Base**

The details of infrastructure resources base of the study area with reference to education, medical facility, water supply, post and telegraph, transportation, communication facility, power supply, existence of nearest town etc. are presented in Table. The significant features of these important parameters for each study area are discussed as below:

### **Educational Facility**

The numbers of educational institution in the study area are primary schools (58), Middle school (37), and Secondary schools (15). There are 6 Public Senior secondary school and 6 private schools in the study area. For further studies people have to avail the facility from the nearest town i.e. Radaur, Karnal and Nakur.

### **Drinking Water Facility**

The numbers of major sources of drinking water in the study area are treated Tap water (58) village, Covered Wells ( 11), uncovered wells ( 4) Hand Pump (64), Tube Wells in 57 villages of the study area.

### **Medical Facility**

Medical institutions in rural parts of the region are inadequate, as per the data recorded in the village amenities CD there is Primary health Centre in 4 villages (Alahar village of Radaur Tehsil, Khokni village of Indri Tehsil of Karnal district and Tabar Must and Tabar Aht village of Nakur Tehsil of Uttar Pradesh), Primary health sub-centre in 13 villages, Maternal Child Welfare Centre in 9 villages and Dispensary in 5 villages. People generally prefer private hospitals because of the inadequate and poor facilities at government hospitals.

### **Sanitation & Drainage Facility**

Sanitation facility is poor in the villages of the study area. Villages only have the open drainage system available in 71 villages.

Community Waste Disposal system after house to house collection is available only in 4 villages that are Bahadurpur, Ratangarh Sandhali and Sandhala village of Jagdhari Tehsil and Kazi Bans village of Nakur Tehsil.

### **Communication Facility**

Communication facility is available in the form of Post office is available only in 3 villages (Alahar 9kms from project site, Sandhala approx.2 kms and Gumthala village about 1.6 km from village Nagli). ATM facility is also available in Gumthala village. At the present time most of the villagers have mobile phones for communication.

### **Power Supply**

Electricity is available for domestic in most of the villages of the study area but is available for only 10-11 hours a day. Electricity is not available for agriculture and commercial purpose.

### **Economic Resource Base**

#### **Minerals and Mining:**

Major part of the district is formed of alluvium rocks of recent period. The underground water in the district is generally fresh and suitable for domestic and irrigation purposes. The part of outer Himalayas confined to a narrow belt along northern boundary of the district contains traces of placer gold, deposits of cement, chemical grade limestone, shale, building material and clay minerals. Sand, bajri, pebbles, gravel and boulders are found in the river bed of the Yamuna, the Saraswati, the Chautang, the Somb and the Pathrala rivers/Nadis. Ordinary clay suitable for manufacturing of bricks is available in plenty in all parts of the district. Agriculture and its allied activities are the major income sources of the people in the rural region of the study areas. Major crops are grown in both Kharif & Rabi seasons. Major Kharif crops are cotton & tur. Major Rabi crops are Jawar, tur, soyabean & channa. Due to poor irrigation facilities, the productivity of land is mostly low in the study areas. However, most of the local populations are engaged in the sand mining either as contractors or laborers. Mining activities plays an important role in increasing the economic resource base for the people in the region.

### **Cultural and Aesthetic Attributes**



As such no culturally and aesthetically important places are located within the seven study areas.

### **3.11.1 Socio-economic Survey**

In order to access and evaluate likely impacts arising out of any development projects on socio economic environment, it is necessary to gauge the apprehensions of the people in the study areas.

#### **Methodology applied for selection of sample & data collection**

The methodology which is applied for primary source of data collection i.e. gathering data through field survey for socio-economic environment is depicted below:

##### **Sampling Method**

A judgmental and purposive sampling method was used for choosing respondents of various sections of the society i.e. Sarpanch, adult males and females, teachers, medical practitioners, businessmen, agriculture laborers, unemployed group etc. Judgmental and purposive sampling method includes the right cases from the total population that helps to fulfill the purpose of research needs.

##### **Data Collection Method**

For the process of data collection through primary source certain methods are used among that are:

###### **a) Field Survey and Observations**

Field survey and observations is made at each sampling village and the socioeconomic status of that region is studied. Visits are made at hospitals, primary health centers and sub-centers to know the health status of the region. Various governmental organizations such as statistical department, department of census operations are visited to collect the population details of that region.

###### **b) Interview Method**

Structured interview method is used to collect data regarding the awareness and opinion from the samples selected of the various socio- economic sections of the community. Structured interviews involve the use of a set of predetermined questions that includes fixed and alternative questions. The questionnaire mainly highlights the parameters such as income, employment and working conditions, housing, food, water supply, sanitation, health, energy, transportation and communication, education, environment and pollution to assess the standard of living of that particular region and general awareness, opinion and expectation of the respondents about the proposed project. Interview method helps to collect more correct and accurate information as the interviewer is present during the field survey.

Socio-economic survey was conducted in the villages within the study areas located in all directions with reference to the clusters. 6 villages were surveyed from study area.

The respondents were asked for their awareness / opinion about the existing sand mining and also of their opinion about the impacts of the sand mining which are an important aspect of socio-economic environment, viz. job opportunities, education, health care, housing, transportation facility and economic status.

The salient observations recorded during socio economic survey in the study areas are depicted below:

- Livelihood of the villagers is primarily based on agriculture sector. Majority of main workforce are engaged either in cultivation in own land & or in laboring activities in other agricultural land owners.
- About 58% of the farmers are practicing farming activities through irrigation source such as Tube well, river etc.
- Most of the villages have Primary School (PS) while in some villages it is extended up to Middle School (MS). While for further education villagers go to the town places such as Radaur town.

- The main source of drinking water supply is through tap, dug well, bore well & hand pump. But majority of respondents expressed unsatisfactory opinion regarding the availability of drinking water facility i.e. Scarcity of drinking water is a major problem in the surveyed villages.
- The Government medical facilities in the form of primary health sub- centre and private medical representatives are available in the villages. Villagers expressed positive opinion regarding the facilities available at the centre. ANM (Auxiliary Nurse Midwife) frequently visits all the villages and regular vaccination and health checkup camps are organized by the health centre.
- Two wheelers, auto rickshaws & bus facility are the main mode of transportation used by natives in the study area
- Power supply is available in mostly all the sampling villages. Street lights are also available in all villages but frequent power cut/ load shedding problem is experienced by the people in the area.
- Wood, kerosene and LPG gas is a major fuel used for cooking purpose.
- Availability of Post office and banking facilities in the surveyed villages.
- Majority of surveyed population opted positive response regarding the stone quarry activities as most of the local population are employed in the stone crushers either as contractors, drivers, or laborers and the activity has helped in development of auxiliary as well as ancillary jobs in the region.
- 

**Table-3.34: List of the Villages Surveyed during the Study**

S. No.	Villages	Direction
1.	Nagli	Project Site
2.	Gumthala	S
3.	Barheri	N
4.	Hansu Majra	W
5.	Fatehgarh	NE
6.	Sandhala	N

*Source: SOI Toposheet and Field Survey*

**Table-3.35: Summarized Demographic Structure of the Study Area**

S. No.	Parameter	Study Area
1.	No. of Villages	80
2.	Household	22091
3.	Household Ratio	5.6
4.	Total Population	124251
5.	Male Population%	65702(52.87)
6.	Female Population%	58549(47.12)
7.	Population (0-6 Years.)%	15757(12.68)
8.	Sex Ratio	891
9.	Scheduled Caste %	29574(23.80)
10.	Literates %	81484(65.58)
11.	Main Workers %	32146(25.87)
12.	Marginal Workers %	8276(6.66)
13.	Non-Workers %	83829(67.46)

*Source: Primary Census Abstract-CD; 2011, Haryana & Uttar Pradesh State*



**Table-3.36: Demographic Structure of the Study Area**

S.No.	Villages	Households	Total Population	Population (0-6 Years)	Scheduled Caste	Literates
<b>Yamunanagar District ,Haryana State</b>						
1.	Nagli (23)	9	47	5	7	28
2.	Majri Dayalgarh(29)	21	180	22	14	128
3.	Karhera (30)	348	1941	238	783	1316
4.	Lal Chhappar (28)	154	900	115	199	615
5.	Jathlana (4)	1342	7018	887	1557	4847
6.	Pobari (35)	76	443	103	0	9
7.	Bagwali (36)	20	111	14	0	80
8.	Unheri (38)	430	2516	326	671	1638
9.	Marrupur (39)	119	658	64	131	494
10.	Khajuri (159)	535	3003	312	763	2111
11.	Bahadurpur (162)	325	1791	197	577	1199
12.	Khurdban (17)	448	2299	250	863	1548
13.	Potli (16)	266	1473	158	675	1004
14.	Bhagwanpur (12)	44	230	36	195	154
15.	Rapri (13)	94	494	71	222	314
16.	Bhagwangarh (11)	86	467	60	72	331
17.	Nachraon (9)	480	2876	381	560	1906
18.	Rattangarh (10)	127	669	73	167	462
19.	Palewala (7)	234	1354	141	271	964
20.	Kanjnon (42)	321	1887	210	427	1254
21.	Kartarpur (6)	78	461	46	24	339
22.	Alahar (1)	728	3760	407	1300	2694
23.	Lakhi Bans (2)	141	761	86	180	556
24.	Barsan (3)	210	1221	138	134	914
25.	Mohri (5)	172	896	127	267	481
26.	Barheri (27)	243	1403	140	459	1004
27.	Madho Bas (8)	131	749	99	284	500
28.	Rajheri (15)	284	1566	208	199	1092
29.	Fatehgarh (14)	140	836	62	50	598
30.	Thaska Khadar (18)	258	1325	145	335	955
31.	Kandrauli (19)	236	1314	150	419	861
32.	Mandhar (26)	220	1198	111	117	905
33.	Sandhali (25)	302	1703	195	125	1231
34.	Sandhala (24)	250	1397	141	441	995

35.	Gumthala Rao (21)	832	4455	582	1525	2947
36.	Rao (20)	47	339	39	61	229
<b>Total</b>		<b>9751</b>	<b>53741</b>	<b>6339</b>	<b>14074</b>	<b>36703</b>
<b>Indri Tehsil, Karnal District</b>						
37.	Dhanora Jagir (1)	414	2155	279	250	1406
38.	Kalri Jagir (5)	431	2310	240	398	1593
39.	Dhano Kheri (4)	277	1546	196	301	1047
40.	Kalra (3)	106	565	55	231	382
41.	Khokhni (6)	422	2344	302	533	1543
42.	Chogawan (7)	530	2788	353	574	1826
43.	Hanso Majra (8)	156	808	99	98	545
44.	Makhala (13)	207	1256	173	429	845
45.	Makhali (9)	212	995	151	185	606
46.	Garhi Birbal (32)	739	4129	457	596	2808
47.	Kharak (12)	107	551	64	87	378
48.	Chandraon (10)	422	2269	309	508	1342
49.	Labkari (34)	323	1851	193	263	1320
<b>Total</b>		<b>4346</b>	<b>23567</b>	<b>2871</b>	<b>4453</b>	<b>15641</b>
<b>Saharanpur District, Uttar Pradesh State</b>						
50.	Mandhaur Must.	403	2367	320	723	1489
51.	Kazi Bans	267	1536	254	24	1007
52.	Tabar Must	1099	6259	857	2048	3901
53.	Tabar Aht	6	35	2	0	21
54.	Nasrulla Garh Must.	630	3982	575	714	2413
55.	Mugal Mazra	114	653	96	229	394
56.	Kasampur	106	659	68	16	464
57.	Malha Mazra	398	2201	402	690	1025
58.	Narayanpur	48	300	44	151	203
59.	Latifpur	286	1813	259	168	1150
60.	Sahaba Mazra	229	1411	176	346	920
61.	Meharpur	13	81	11	0	56
62.	Saroorpur Taga	267	1534	191	22	1040
63.	Saroorpur Taga	19	100	21	71	35
64.	Nakur(Dehat)	358	1845	254	727	1229
65.	Ladde Bans	66	400	49	109	234
66.	Shukartal	368	2162	258	549	1429
67.	Nathauri	185	1158	119	274	825
68.	Sultanpur	125	770	99	463	461
69.	Meerpur	28	161	21	7	106
70.	Fatehpur Jat	362	2204	346	478	1379

	Must.					
71.	Badhi Must.	392	2089	282	789	1330
72.	Feru Mazra	149	860	121	281	529
73.	Roshanpur	126	892	113	3	643
74.	Nahar Mazra Must.	108	695	72	191	510
75.	Ranipur Barsi Must.	316	1788	275	160	985
76.	Dala Mazra	110	809	128	13	524
77.	Sahaspur Jat	233	1295	205	69	736
78.	Tigri Ramgarh	433	2475	390	391	1371
79.	Dola Mazra	261	1392	152	277	924
80.	Sirsaka	489	3017	387	1064	1807
<b>Total</b>		<b>7994</b>	<b>46943</b>	<b>6547</b>	<b>11047</b>	<b>29140</b>
<b>Grand Total</b>		<b>22091</b>	<b>124251</b>	<b>15757</b>	<b>29574</b>	<b>81484</b>

Source: Primary Census Abstract-CD; 2011, Haryana & Uttar Pradesh State

**Table-3.37: Occupational Structure of the Study Area**

S.No.	Villages	Total Main Workers	Main Workers				Marginal Workers	Non- Workers
			Cultivators	Agricultural Laborers	Household Laborers	Other Workers		
Jagdhari Tehsil , Yamunanagar District								
1.	Nagli (23)	14	12	2	0	0	0	33
2.	MajriDayalgarh(29)	8	0	0	0	8	38	134
3.	Karhera (30)	421	172	132	2	115	151	1369
4.	Lal Chhapar(28)	250	83	115	0	52	47	603
5.	Jathlana (4)	1477	356	326	22	773	571	4970
6.	Pobari (35)	103	0	101	0	2	21	319
7.	Bagwali (36)	40	20	1	0	19	1	70
8.	Unheri (38)	782	239	445	7	91	35	1699
9.	Marrupur (39)	162	92	3	7	60	80	416
10.	Khajuri (159)	779	176	243	3	357	97	2127
11.	Bahadurpur (162)	455	189	158	10	98	187	1149
12.	Khurdban (17)	660	128	396	9	127	10	1629
13.	Potli (16)	443	123	272	8	40	6	1024
14.	Bhagwanpur (12)	73	10	35	0	28	1	156
15.	Rapri (13)	168	18	98	2	50	5	321
16.	Bhagwangarh (11)	134	28	68	2	36	25	308
17.	Nachraon (9)	830	325	359	0	146	75	1971
18.	Rattangarh (10)	220	46	140	5	29	6	443
19.	Palewala (7)	342	177	85	4	76	45	967
20.	Kanjnon (42)	399	179	44	4	172	291	1197
21.	Kartarpur (6)	136	83	33	0	20	27	298

22.	Alahar (1)	937	301	141	7	488	318	2505
23.	Lakhi Bans (2)	216	92	61	0	63	2	543
24.	Barsan (3)	311	109	34	1	167	220	690
25.	Mohri (5)	226	84	105	1	36	159	511
26.	Barheri (27)	419	148	130	7	134	66	918
27.	Madho Bas (8)	239	92	94	1	52	4	506
28.	Rajheri (15)	617	192	325	5	95	11	938
29.	Fatehgarh (14)	244	207	13	0	24	7	585
30.	Thaska Khadar (18)	356	212	79	5	60	35	934
31.	Kandrauli (19)	400	148	119	27	106	15	899
32.	Mandhar (26)	292	227	30	1	34	71	835
33.	Sandhali (25)	439	216	122	1	100	37	1227
34.	Sandhala (24)	413	132	189	4	88	13	971
35.	Gumthala Rao (21)	1105	275	433	9	388	351	2999
36.	Rao (20)	101	46	43	1	11	24	214
<b>Total</b>		<b>14211</b>	<b>4937</b>	<b>4974</b>	<b>155</b>	<b>4145</b>	<b>3052</b>	<b>36478</b>
<b>Indri Tehsil, Karnal District</b>								
37.	Dhanora Jagir (1)	681	355	218	4	104	233	1241
38.	Kalri Jagir (5)	799	273	353	21	152	50	1461
39.	Dhano Kheri (4)	485	169	206	1	109	212	849
40.	Kalra (3)	168	118	12	1	37	3	394
41.	Khokhni (6)	691	248	285	11	147	167	1486
42.	Chogawan (7)	792	403	273	2	114	330	1666
43.	Hanso Majra (8)	254	135	57	7	55	22	532
44.	Makhala (13)	228	155	14	3	56	155	873
45.	Makhali (9)	402	124	216	1	61	11	582
46.	Garhi Birbal (32)	1122	455	283	11	373	139	2868
47.	Kharak (12)	135	49	43	0	43	47	369
48.	Chandraon (10)	626	188	327	7	104	194	1449
49.	Labkari (34)	365	189	7	3	166	166	1320
<b>Total</b>		<b>6748</b>	<b>2861</b>	<b>2294</b>	<b>72</b>	<b>1521</b>	<b>1729</b>	<b>15090</b>
<b>Nakur Tehsil, Saharanpur District</b>								
50.	Mandhaur Must.	431	200	186	0	45	314	1622
51.	Kazi Bans	431	285	95	2	49	9	1096
52.	Tabar Must	1682	799	674	41	168	463	4114
53.	Tabar Aht	11	11	0	0	0	0	24
54.	Nasrulla Garh Must.	832	557	99	49	127	292	2858
55.	Mugal Mazra	15	0	1	0	14	139	499
56.	Kasampur	198	155	13	8	22	2	459
57.	Malha Mazra	620	136	440	1	43	48	1533
58.	Narayanpur	93	39	5	1	48	4	203

59.	Latifpur	508	172	170	2	164	17	1288
60.	Sahaba Mazra	403	270	46	5	82	1	1007
61.	Meharpur	28	20	5	0	3	0	53
62.	Saroorpur Taga	428	292	55	6	75	137	969
63.	Saroorpur Taga	5	2	0	0	3	23	72
64.	Nakur(Dehat)	359	69	149	21	120	179	1307
65.	Ladde Bans	99	60	17	0	22	39	262
66.	Shukartal	486	290	111	0	85	221	1455
67.	Nathauri	252	223	0	4	25	123	783
68.	Sultanpur	237	137	88	0	12	2	531
69.	Meerpur	26	19	7	0	0	30	105
70.	Fatehpur Jat Must.	618	316	246	0	56	110	1476
71.	Badhi Must.	393	258	42	2	91	239	1457
72.	Feru Mazra	219	70	99	4	46	85	556
73.	Roshanpur	203	71	91	2	39	68	621
74.	Nahar Mazra Must.	113	80	4	0	29	90	492
75.	Ranipur BarsiMust.	458	232	166	1	59	95	1235
76.	Dala Mazra	234	178	16	0	40	99	476
77.	Sahaspur Jat	372	227	93	3	49	23	900
78.	Tigri Ramgarh	621	364	141	3	113	292	1562
79.	Dola Mazra	389	235	115	2	37	8	995
80.	Sirsaka	423	311	43	5	64	343	2251
<b>Total</b>		<b>11187</b>	<b>6078</b>	<b>3217</b>	<b>162</b>	<b>1730</b>	<b>3495</b>	<b>32261</b>
<b>Grand Total</b>		<b>32146</b>	<b>13876</b>	<b>10485</b>	<b>389</b>	<b>7396</b>	<b>8276</b>	<b>83829</b>

### 3.12 SUMMARY

The generation of primary data as well as collection of secondary data and information from the site and surroundings was carried out during Post Monsoon Season *i.e.* **1<sup>st</sup> December 2016 to 28<sup>th</sup> February 2017**. The EIA study is being done for the Mine Lease (core zone) and area within 10 Km distance from mine lease boundary (buffer zone), both of which together comprise the study area. The mine lease area exhibits plain to undulated topography. The project site falls under seismic zone IV which is a high damage risk zone (MSK VIII). Many part of the state of Haryana are prone to flooding. In flood manual of Haryana, there are 102 vulnerable points in Haryana which need special attention during monsoon. Meteorological station was set-up at site to record surface meteorological parameter during study period; Post Monsoon Season, *i.e.* 1<sup>st</sup> December to 28<sup>th</sup> February, 2017. Ambient Air Quality Monitoring reveals that the minimum and maximum concentrations of PM<sub>10</sub> for all the 6 AAQM stations were found to be **68.7 µg/m<sup>3</sup> and 88.8 µg/m<sup>3</sup>** respectively, PM<sub>2.5</sub> were found to be **31.2 µg/m<sup>3</sup> and 49.4 µg/m<sup>3</sup>** respectively, for SO<sub>2</sub> it is found to be **6.3 µg/m<sup>3</sup> and 14.6 µg/m<sup>3</sup>** respectively. The minimum and maximum concentrations of NO<sub>2</sub> were found to be **11.6 µg/m<sup>3</sup> and 28.3 µg/m<sup>3</sup>** respectively. The range of free Silica was found to be from **2.4 % to 3.1 %**. Ambient noise levels were measured at 6 locations around the proposed project site. minimum and maximum noise levels recorded during the day time were from **50.50 L<sub>eq</sub> dB to 53.60 L<sub>eq</sub> dB** respectively and level of noise during night time were from **41.40 L<sub>eq</sub> dB to 44.10 L<sub>eq</sub> dB** respectively. Thus noise levels at all locations were observed to be within the prescribed limits. Analysis results of ground water reveal that pH varies from **8.26 to 8.52**, Total Hardness varies from **132.25 to 172.35 mg/L** and Total Dissolved Solids varies from **229 to 335 mg/L**. The Analysis results of surface water reveal that pH



varies from **7.54 to 7.86**, Total Hardness varies from **150.23 to 202.32 mg/L**, Total Dissolved Solids varies from **227 to 288 mg/L**. The LOS value from the proposed mining will be change *i.e.* LOS value for MDR-1, MDR-2, MDR-3 and SH-6 will change from 'excellent' to 'very Good'. So the additional load on the carrying capacity of the concern roads is not likely to have major affect. Random soil samples were collected up to depth of 15 cm and homogenized samples were then sent to the laboratory for analysis. The analysis results show that soil is basic in nature as pH value ranges from **7.45 to 8.10** with organic matter **0.42% to 0.47 %**. The concentration of Nitrogen, Phosphorus and Potassium has been found to be in good amount in the soil samples. Soil texture is Clay to Sandy. The study area comprise of two districts of two states *i.e.* Yamuna Nagar (Haryana) and other part falls in Saharanpur (Uttar Pradesh). The implementation of this mining project will generate both direct and indirect employment. Yamuna Nagar district in which the mine contract area falls is an agriculturally based district. All the basic facilities like road and rail network, medical facilities, post and telegraph, market, drinking water facilities and education facilities are available. The project will also provide impetus to industrialization of the area and mining would be boon for the district as it will not only result in employment opportunity but also infrastructure development and overall growth of the area. At present agriculture is the main occupation of the people as more than half of the population depends on it. It was found that most of the parameters were within the limits as per the Indian Standards. In general, there is no major threat to the quality of these parameters. Similarly, the study for the biotic factors was conducted. Hence it can be concluded that the present environment status of the study area is good enough for the project activity. Adoption of adequate pollution control measures will protect the surrounding environment.



## CHAPTER-4

# ANTICIPATED ENVIRONMENTAL IMPACT AND ITS MITIGATION MEASURES

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### 4.0 INTRODUCTION

The environmental parameters likely to be affected by mining are related to many factors, *i.e.* physical, social, economic, agriculture and aesthetic. Opencast mining involves drilling, blasting, loading and transport of overburden and ore. The excavated sand will be transported via trucks to outsiders. The operations may disturb environment of the area in various ways, such as removal of mass, change of landscape, flora and fauna of the area, surface drainage, and change in air, water and soil quality. While for the purpose of development and economic up-liftment of people, there is need for establishment of mining industries, but these should be environment friendly. Therefore, it is essential to assess the impacts of mining on different environmental parameters, before starting the mining operations, so that abatement measures could be planned in advance for eco-friendly mining in the area.

### 4.1 ENVIRONMENTAL IMPACT ASSESSMENT

Environment and development should be considered as mutually complementary, interdependent, and an instrument of reinforcing the quality of life. Environmental Impact Assessment (EIA) is the important aspect of overall environmental management strategy and an important tool for sustainable development. It identifies major impacts of mining and associated activities on environment and provides guideline to prepare the necessary control measure termed as Environmental Management Plan (EMP).

Alteration or modification of the above attributes may cause hazardous impact on ecological equilibrium of site. Besides this there will be some other reasons which will affect the environment viz. traffic network, and other vehicular movements, impacts on flora and fauna of that area, surface drainage, and change in air, water and soil quality. While for purpose of development and economic upliftment of people, there is need for establishment of industries and mining, but these have to be environmental friendly. Therefore, it is essential to assess the impacts of mining on different environmental parameters, before starting the mining operations, so that abatement measures could be planned in advance for eco-friendly mining in the area. The increasing awareness among the people about ecological imbalance and environmental degradation has raised many apprehensions. The impacts on different environmental parameters due to this mining project are discussed below:

#### 4.1.1 CONSTRUCTION PHASE

This is a sand mining project in riverbed. There will be no impacts as no construction stage is envisaged in this project.

#### 4.1.2 OPERATION PHASE

Some of the impacts identified in various phases of operation are insignificant and do not warrant much attention whereas some others are important especially with respect to the present context. Therefore objective is to identify those impacts, which are significant and require a detailed analysis for decision making or formulating adequate management measures. This section deals with an assessment of impact of various mining activities on the existing environmental conditions. The methodology of assessment is based upon identification and description of the existing project activities as well as environmental components followed by evaluating the impact of mining and associated activities on the environment. The environmental components that are likely to be influenced or modified by the continuation of project activities are:



- Air Environment
- Noise and Vibration Environment
- Water Environment
- Land use
- Soil Environment
- Hydrology
- Geology
- Biological Environment
- Socio-economic status of the area
- Solid Waste/overburden

#### 4.2 PREDICTION OF IMPACTS AND MITIGATION MEASURES

The area pollution is in the form of dust, fumes and gases generated by mining machineries and during different mining operations. The dust once allowed to go into atmospheric cannot be controlled hence it's desirable not to allow them to be formed and Suppressed at the generating source.

#### 4.3 AIR QUALITY MODELING

##### 4.3.1 A) ISCST3 Dispersion Model

The Industrial Source Complex (ISC) Short Term model provides options to model emissions from a wide range of sources that might be present at a typical industrial source complex. ISCST3 is US-EPA approved model to predict the air quality. The model uses urban dispersion and regulatory defaults options as per guidelines on air quality models (PROBES/70/1997-1998). Emission sources are categorized into four basic types of sources, i.e., point sources, volume sources, area sources, and open pit sources. The volume source option and the area source option may also be used to simulate line sources. The model assumes receptors on flat terrain. The ISC short term area source model is based on a numerical integration over the area in the upwind and cross wind directions of Gaussian plume formula. This can be applied to the Point, Area, Line or Volume sources simultaneously and their resultant incremental concentration of the pollutant can be predicted.

##### 4.3.1.1 Model Options Used For Computations

The options used for short-term computations are:

- The plume rise is estimated by Briggs formulae, but the final rise is always limited to that of the mixing layer;
- Stack tip down-wash is not considered;
- Buoyancy Induced Dispersion is used to describe the increase in plume dispersion during the ascension phase;
- Calms processing routine is used by default;
- It is assumed that the pollutants do not undergo any physio-chemical transformation and that there is no pollutant removal by dry deposition;
- Washout by rain is not considered;
- Flat terrain is assumed / used for computations;
- Cartesian co-ordinate system has been used for computations; and
- The model computations have been done for 10 km with 100 m grid interval.

##### 4.3.2 Model Setup

##### 4.3.2.1 Emission of PM<sub>10</sub>

The major sources of PM<sub>10</sub> emission in case of sand mining project are the loading activity at mine site (loading of material over trucks / trucks by excavators) and the movement of vehicles on unpaved haul



roads. The emission rates for these sources are given in latest USEPA's AP-42 guidelines.

#### 4.3.2.2 Loading of Material

The sand will be loaded on trucks/tippers using excavators. Ten light weight excavators/JCBs will be used for loading total 9334 MT of sand during the working shift of 8 hours/day. The PM10 emission rate due to loading activity is calculated using below equation.

$$E = k \times 0.0016 \times \left( \frac{\left( \frac{U}{2.2} \right)^{1.3}}{\left( \frac{M}{2} \right)^{1.4}} \right) \quad (\text{USEPA's AP42, (Nov 2006)})$$

Where,

E = Emission Factor, kg/ton

k = Particle size multiplier, 0.35 for PM10

M = Moisture Content, %

u = Mean wind speed, m/s

#### 4.3.2.3 Emission of PM10 due to Transportation

The hauling of sand from the mining pit to outside via unpaved roads (haul roads and connecting roads) will cause emission of particulate matters. The emission generated gets settled in proximity of the unpaved road only. As per the mining plan, transportation of 9334 tonnes of mineral will be carried out for 8 hours/day. Each day maximum 105 trucks will do about 374 trips for transporting sand. The following empirical expression is used to estimate the quantity in pounds (lb) of size-specific particulate emissions from an unpaved road in industrial sites, per vehicle mile traveled (VMT).

$$E = k \left( \frac{s}{12} \right)^a \left( \frac{W}{3} \right)^b + C \quad \text{--- AP42 (Nov 2006)}$$

Where,

k, a, b are empirical constants i.e. different for different particle size.

E = size-specific emission factor (lb/VMT)

s = surface material silt content (%)

W = mean vehicle weight (tons)

C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear, 0.0047 lb/VMT for PM10.

The source characteristics S and W are referred to as correction parameters for adjusting the emission estimates to local conditions. The effective emission rate after considering reduction in emission potential of haul roads due to water sprinkling was calculated for use in model.

#### 4.3.2.4 Emission of CO from Vehicles

The sand will be transported outside the mining area for end use. Each day maximum 105 trucks will do about 374 trips for transporting sand. In order to estimate the emission of CO from these vehicles exhaust ARAI-2007 emission factors were used. The ARAI emission factors for CO emitting from heavy vehicles (diesel) is 3.92 gm/km or 6.32 g/mile.

#### 4.3.2.5 Summary of calculated Emission Rates

Table-4.1: Emissions Rates

S. No.	Activities	Units	Emission Rates
1.	Loading of Material (Worst Case – Without using mitigation measures)	g/s	0.003168
2.	Transportation on Haul Road (PM10 Emission) (Worst Case – Without using mitigation measures)	g/mile	1267.981544
3.	Transportation on Haul Road (PM10 Emission) (With mitigation measures)	g/mile	316.995386
4.	Transportation (CO Emission)	g/mile	6.32



### 4.3.3 Meteorological Data

The meteorology of the project area plays very important role in dispersion of pollutants and build-up of pollution within the atmosphere. In the present study, one season (December 2016 – February 2017) meteorological data has been taken to find the dispersion of pollutant concentration. The mixing height for study period, which is an important parameter to express the dispersive potential of atmosphere, has been taken from the atlas of hourly mixing height and assimilative capacity of atmosphere in India (S.D. Attri *et al.*, 2008). Windrose diagram of one season meteorological data used for modelling is shown in **Chapter-3**.

### 4.3.4 Input Parameters

#### 4.3.4.1 ISCST3 Model Input Parameters

The ISCST3 model was used to predict the GLC of PM<sub>10</sub> due to loading activity at mine site. Excavators will be used to load total 28,00,000 TPA of Sand on dumpers for further transportation to end users. Point source resembling loading activity at mine site and having equivalent emission rates were setup in mining lease to predict the maximum incremental concentration of PM<sub>10</sub> at baseline monitoring location (as shown in **Figure 4.1**). The predicted incremental concentration PM<sub>10</sub> was added to baseline concentration to obtain the cumulative concentration level at baseline stations.

#### 4.3.4.2 CALINE4

Line sources resembling the proposed transportation routes were setup inside and outside the mining lease. Point receptors resembling baseline monitoring stations were setup for prediction of incremental concentrations. The model was run in 1-hour worst case conditions. Since CALINE4 has options to predict only 1-hour and 8-hour pollutant concentration, the model was used to predict 1-hour worst case PM<sub>10</sub> GLC which was later converted into 24-hour GLC using Turner Equation. The predicted incremental concentration PM<sub>10</sub> was added to baseline concentration to obtain the cumulative concentration level at baseline stations.

#### 4.3.4.3 Results

The maximum incremental concentration of PM<sub>10</sub> viz. 1.42099 µg /m<sup>3</sup> was predicted inside the core zone near active mining area. A section depicting variation in predicted PM<sub>10</sub> concentration from upwind to pre-dominant wind direction is presented in **Figure 4.1**. As evident from Figure-4.1, the incremental concentration of PM<sub>10</sub> drops drastically with distance due to settling of PM<sub>10</sub> particles under gravity. The maximum impact of loading activities will take place within 500m radius. The predicted highest incremental concentration due to loading was found at A1 (located inside mining lease) viz. 0.2824µg/m<sup>3</sup> (24-hourly average). The second highest incremental concentration was found at A2 (located in southern direction at 400m distance) viz. 0.2024µg/m<sup>3</sup> (24-hourly average).

The predicted concentrations due to transportation were much higher than loading activities. The worst-case predicted maximum incremental concentration due to transportation was found at A1 (Project Site) viz. 25.5780µg/m<sup>3</sup> (24-hourly average). The second highest incremental concentration was found at A2 (falling at about 500m distance from nearest transportation routes) viz. 17.3420µg/m<sup>3</sup> (24-hourly average). The incremental concentration at all other locations was significantly less due to large distances.

The predicted maximum cumulative GLC of PM<sub>10</sub> was found to be 114.060 µg/m<sup>3</sup> at A1, which is located inside mining lease and close the transportation route modeled. The second highest predicted cumulative GLC of PM<sub>10</sub> was found to be 105.144 µg/m<sup>3</sup> at A2. At both locations, the predicted cumulative concentrations are exceeding the prescribed NAAQ standard for PM<sub>10</sub> concentration (100µg/m<sup>3</sup>). However, these levels are predicted based on worst case scenario without applying





mitigation measures.

The predicted 24 hours GLCs at baseline air quality monitoring locations are presented in **Table 4.2** below. The graphical representation is given in **Figure 4.2**. The predicted concentration for CO was insignificant (<0.1ppm) owing to very less traffic to and from the mining lease.

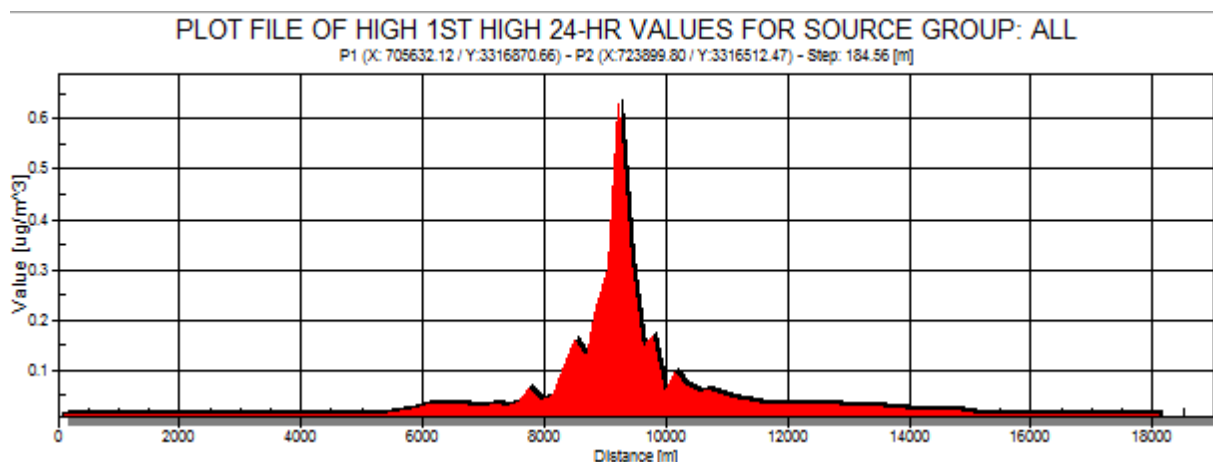


Figure-4.1: Section showing variation in PM<sub>10</sub> concentration in Pre-dominant direction

Table-4.2: Predicted GLC of PM<sub>10</sub> at Ambient Air Quality Monitoring Stations  
(WORST CASE)

Location Code	Location Name	Max Baseline Conc. (µg/m <sup>3</sup> )	Predicted GLC (µg/m <sup>3</sup> ) – Loading	Predicted GLC (µg/m <sup>3</sup> ) – Transportation	Cumulative GLC (µg/m <sup>3</sup> )
A1	Project Site	88.2	0.2824	25.5780	114.060
A2	500 m from Mine Site	87.6	0.2024	17.3420	105.144
A3	Village Rajheri	85.4	0.0013	7.5400	92.941
A4	Village Tabar	86.3	0.0024	4.7560	91.058
A5	Model Town	85.7	0.0017	5.8000	91.502
A6	Village Shukartal	88.8	0.0166	3.3640	92.181

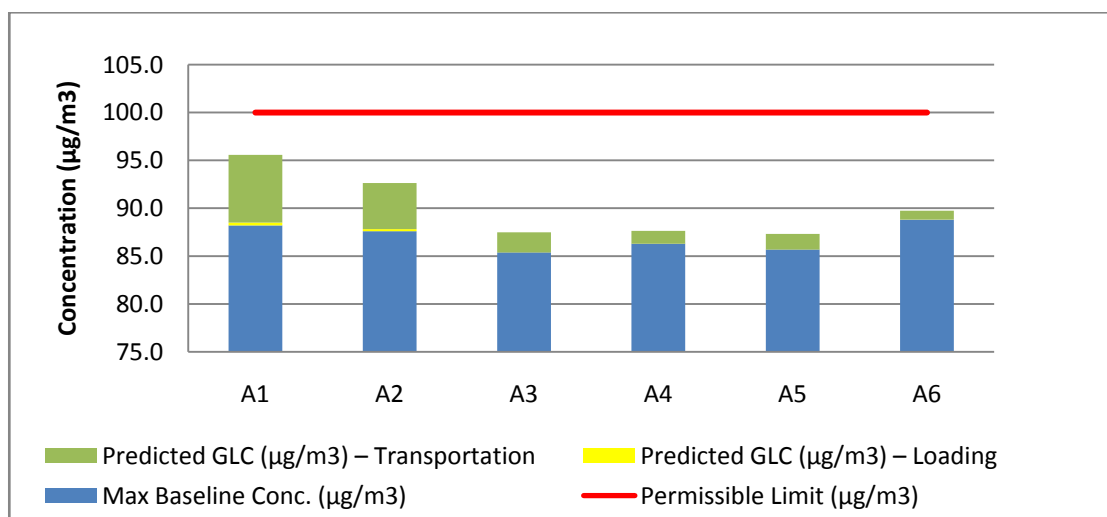


Figure-4.2: Graphical representation of model results

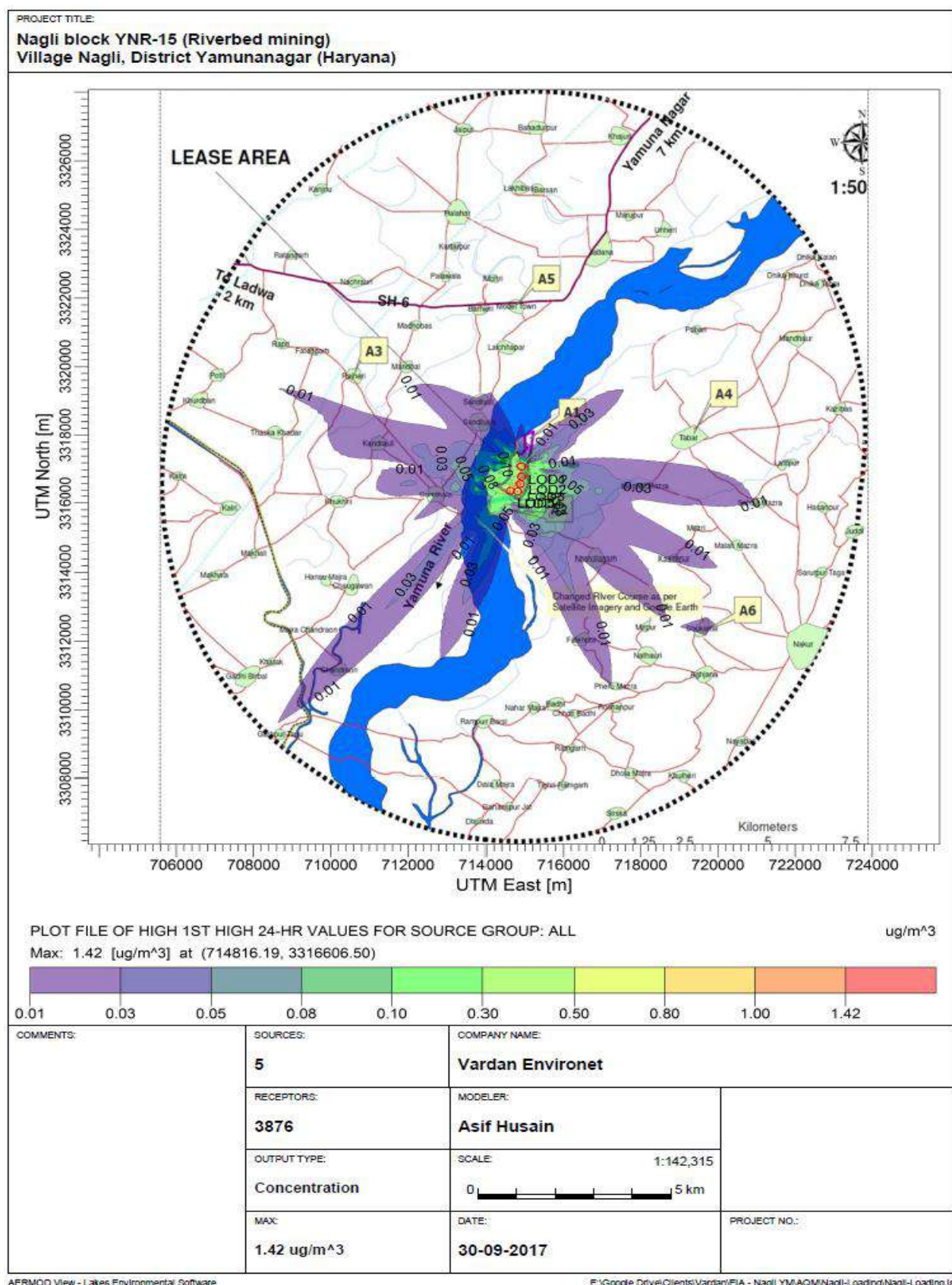
The contour maps showing the predicted concentration levels of PM<sub>10</sub> are presented in **Figure 4.3.and Figure 4.4.**

The predicted 24 hours GLCs at baseline air quality monitoring locations predicted under controlled conditions by application of mitigations measures are presented in Table 4.3 below.

**Table-4.3: Predicted GLC of PM<sub>10</sub> at Ambient Air Quality Monitoring Stations  
 (WITH MITIGATION MEASURES)**

Location Code	Location Name	Max Baseline Conc. (µg/m <sup>3</sup> )	Predicted GLC (µg/m <sup>3</sup> ) – Loading	Predicted GLC (µg/m <sup>3</sup> ) – Transportation	Cumulative GLC (µg/m <sup>3</sup> )
A1	Project Site	88.2	0.3026	6.3800	94.862
A2	500 m from Mine Site	87.6	0.2169	4.3500	92.152
A3	Village Rajheri	85.4	0.0014	1.8560	87.257
A4	Village Tabar	86.3	0.0025	1.2180	87.520
A5	Model Town	85.7	0.0019	1.4500	87.152
A6	Village Shukartal	88.8	0.0178	0.8700	89.687

The predicted concentration for CO was insignificant (<0.1ppm) owing to very less traffic to and from the mining lease.



**Figure-4.3: Spatial distribution of predicted GLCs of PM<sub>10</sub> (ISCST3)**



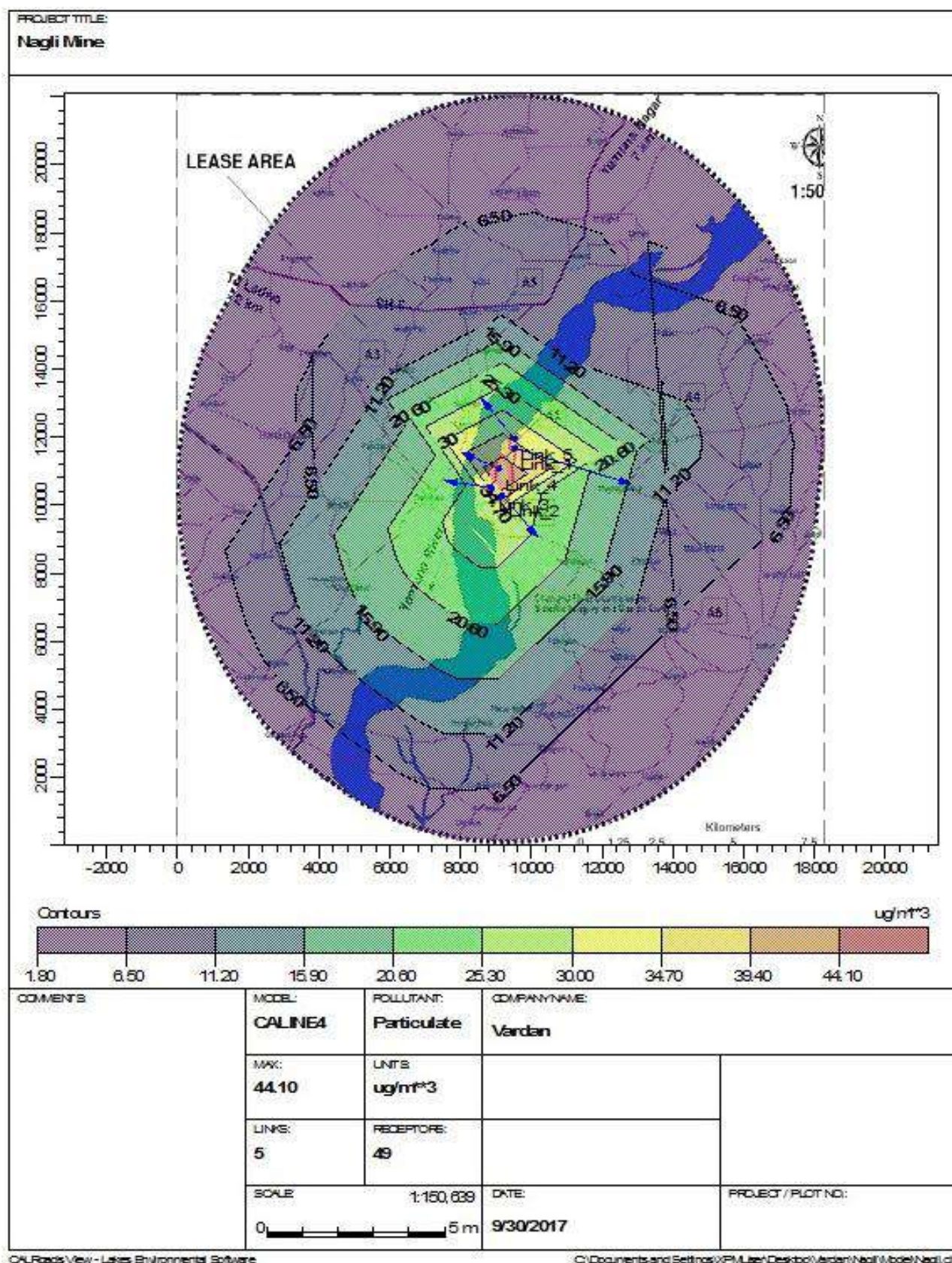


Figure-4.4: Spatial distribution of predicted GLCs of PM<sub>10</sub> (CALINE4)

#### 4.3.5 Conclusion

- The predicted concentrations from mining activities are insignificant; whereas transportation is the major source of dust emission.
- Under worst case conditions with no mitigation measure, the predicted cumulative concentrations at A1 (Project Site) and A2 (500m from Mine Site) are exceeding the prescribed NAAQ standard for PM<sub>10</sub> concentration (100µg/m<sup>3</sup>).
- Under controlled conditions (with mitigation measures), all predicted cumulative concentrations are meeting the prescribed NAAQ standard for PM<sub>10</sub> concentration (100µg/m<sup>3</sup>).
- The concentration of CO due to vehicle exhaust is negligible due to small number of vehicles plying on haul road.
- The concentrations of SO<sub>x</sub> and NO<sub>x</sub> generated from mining area are expected to be low due to absence of any major source.
- The predicted concentrations are due to proposed sand mine only and higher pollutant concentrations may be observed in the study area due to simultaneous operations of other mines / anthropogenic activities, data for which is not available.
- The overall impact on air quality due to proposed mining project is expected to be high with 500m radius of mining lease.

#### 4.3.6 Mitigation Measures

The proposed mining operations are not anticipated to raise the concentration of the pollutants beyond prescribed limits. However, the following measures are suggested to mitigate any harmful impacts of pollutants -

- Planning multiple transportation routes in different direction to minimize the dust generation.
- Planning paved roads outside mine lease area to minimize the dust generation. Alternatively, planning transportation routes so as to reach the nearest paved roads by shortest route. (minimize transportation over unpaved road);
- Frequent water sprinkling on unpaved roads (>2L/m<sup>2</sup>)
- Plantation of trees along haul roads, especially near settlements, to help to reduce the impact of dust on the nearby villages;
- Dust mask shall be provided to the workers engaged at dust generation points like excavations and loading points;
- Transportation of material shall be carried out during day time only;
- The speed of trucks plying on the haul road should be limited to avoid generation of dust;
- Covering of material during transportation on trucks to prevent spillage of sand from the trucks. The trucks shall be covered by tarpaulin. Overloading shall be avoided.



#### 4.4 IMPACTS OF AIR POLLUTION AND MITIGATION MEASURES

Attributes	Impact	Mitigation Measure	Budget/annum
Human	<p><b><u>WORST CASE without using Mitigation Measures</u></b> A predicted cumulative GLC of PM<sub>10</sub> was 114.060 µg/m<sup>3</sup> at proposed Mine site (<b>WORST CASE</b>) against the threshold limit of 100 µg/m<sup>3</sup> which can cause adverse effect on human health.</p> <p><b><u>WORST CASE after Mitigation Measures</u></b> After implementation of suggested mitigation measures the Worst Case cumulative value would be 94.862 µg/m<sup>3</sup> which is under threshold limit.</p> <p>Dust generation due to loading and unloading of mineral and due to transportation can also affect the workers as well as nearby villagers.</p> <p>The excess of Free silica content in the air may cause health related issues (Silicosis) in human being.</p>	<p>24 KLD water will be proposed for dust suppression at mine site and haul road (Mortable Connecting road) by sprinklers to avoid dust generation during mining activity and transportation.</p> <p>Personal Protective Equipments like Eye Goggles, Dust Mask, Leather gloves, safety Shoes &amp; Boots will be provided to the workers engaged at dust generation points like excavation and loading points.</p> <p>Planning transportation routes of sand so as to reach the nearest paved roads by shortest route (minimize transportation over unpaved road).</p> <p>Alternatively, new haul road (8.9 Km) will be constructed by Project Proponent for transportation of excavated minerals from mine to nearest approach road.</p> <p>The speed of trucks plying on the haul road will be limited to avoid generation of dust and covering of material during transportation on trucks to prevent sand leak from the trucks. The trucks will be covered by tarpaulin. Overloading will be avoided.</p> <p>It is proposed to plant <b>3900 Nos.</b> of local species per year with consultation of Forest department with some fruit bearing and medicinal trees, along the haul roads, outer periphery within the lease area to prevent the impact of dust in the nearby village.</p> <p>Periodic Heath Check-up Camp will be organized by Project Proponent for Mine workers.</p> <p>Medical control measures will be taken for the miners with a view to protect their health. The medical officer will visit the mine site once in a month and shall undertake the following need based functions.</p>	<p>Rs. 6.0 Lakhs under Dust Suppression</p> <p>Rs. 10.00 Lakhs under OH&amp;S.</p> <p>45.00 Lakhs (@ 5.00 Lakhs /KM) proposed for the Construction of haul road (8.9 Km) and 5.00 Lakhs/annum (in EMP budget) will be used for regular maintenance.</p> <p>Other fund for this activity will be utilized from 'Mines and Mineral Development, Restoration and Rehabilitation fund' i.e. <b>Rs. 40.15*</b> Lakhs per year.</p>
Animal	Grassing land will be reduced.	<p>It is proposed to plant <b>3900 Nos.</b> of local species per year with consultation of Forest department with some fruit bearing and medicinal trees, along the haul roads, outer periphery within the lease area to prevent the impact of dust in the nearby village.</p> <p>Periodic Heath Check-up Camp will be organized by Project Proponent for Mine workers.</p> <p>Medical control measures will be taken for the miners with a view to protect their health. The medical officer will visit the mine site once in a month and shall undertake the following need based functions.</p>	Rs. 6.00 Lakhs per year (Plantation)
Plant	Stomatal index may be minimized due to dust deposit on leaf.		
Crops	Crop yield will be reduced.		Rs. 3.00 Lakhs per year (under OH&S Budget)

\*Note:- proposed amount submitted to Department of Mines & Geology, Haryana as MMDRR Fund by project proponent for various activity under MMDRR scheme executed by DMG, Haryana.



#### 4.4.1 Conclusion

In this mining project the only source of emission of air pollution is excavation, transportation, loading, hauling operation and handling of sand etc. The proposed mining operations are not anticipated to raise the concentration of the pollutants beyond prescribed limits. However, the measures are suggested to mitigate any harmful impacts of pollutants like plantation of trees along haul roads, specially near settlements, to help to reduce the impact of dust on the nearby villages; planning transportation routes of mined material so as to reach the nearest paved roads by shortest route (minimize transportation over unpaved road); regular water sprinkling on unpaved roads to avoid dust generation during transportation etc.

#### 4. 5 IMPACTS OF NOISE/VIBRATIONS AND MITIGATION MEASURES

Attributes	Impact	Mitigation Measure	Budget/annum
Human	Noise from the machinery can cause hypertension, high stress level, hearing loss, sleep disturbance etc due to prolonged exposure.	The machinery (Light Weight Excavator) will be maintained in good running condition so that noise will be reduced to minimum possible level. Vehicles with PUC Certificate will be hired. Regular maintenance of vehicles will be done to ensure smooth running of vehicle.	Rs.10.00 lakhs/year under OH&S
Animals	No. of 315 PCU/hr will increase in the existing traffic due to this mining activity hence vehicle collision may occur unwanted sound and can also cause impact on human health of neighboring villagers like effect on breathing and respiratory system, damage to lung tissue, cancer and premature death, influenza or asthma.  Accidents may be occur due to fast movement of vehicles.	Awareness will be imparted to the workers about the permissible noise level and effect of maximum exposure to those levels. Personal protective equipment will be provide to prevent the noise exposure. Personal Protective Equipment will be provided during mining activity. In addition, truck drivers will be instructed to make minimum use of horns in the village area and sensitive zones. It is proposed to plant <b>3900 Nos.</b> of local species per year with consultation of Forest department with some fruit bearing and medicinal trees, along the haul roads, outer periphery within the lease area to reduce the impact of noise in the study area. The trucks will be diverted on different roads viz. SH-6 and district roads to avoid traffic congestion. Regular Health checkup camps will be organized.	
Crops	There is no major impact on plants and crops due this mining operation.		Rs. 5.00 Lakhs per year (under ESC Budget)

#### 4.5.1 Conclusion

In summary, it can be stated that the impact on the present noise levels due to mining operations will be restricted to the work zone areas only. The impact on the ambient noise levels will not be felt at the settlement areas due to masking effect with the existing noise levels. There is no drilling and blasting envisaged in the sand mining so there is no impact of vibration due to this project. Hence, the noise levels and vibration impact due to the proposed mining operations on community will be minimal.



#### 4.6 IMPACTS OF WATER POLLUTION AND ITS MITIGATION MEASURES

Attributes	Impact	Mitigation Measure	Budget/annum
Human	The mining in the riverbed area may cause the ground water contamination due to intersection of the water table. The municipal waste water disposed from the mining activity may cause contamination of surface water. Ground Water contamination due to discharge of mine run off.	The water table will not be intersected during mining in the riverbed as ultimate depth is limited upto 3 meters as the water table is 5-10 m bgl.  Proper analysis/Monitoring will be done to check the ground water.	Rs. 1.25 Lakhs (Monitoring)
Animals			
Crops	Waste water discharges through mining operation direct affect the crops and plants.	The municipal wastewater will be disposed off into septic tanks. No chemical having toxic elements will be used for carrying out mining activity. Waste water will be disposed off in septic tank. There are 7 Nos. of septic tank of capacity 1 KL (Total 7KL capacity). Water required for domestic use= 8 KLD. Waste water generation= 7 KLD.	Rs. 3.00 Lakhs (Wastewater Treatment)
Plants			

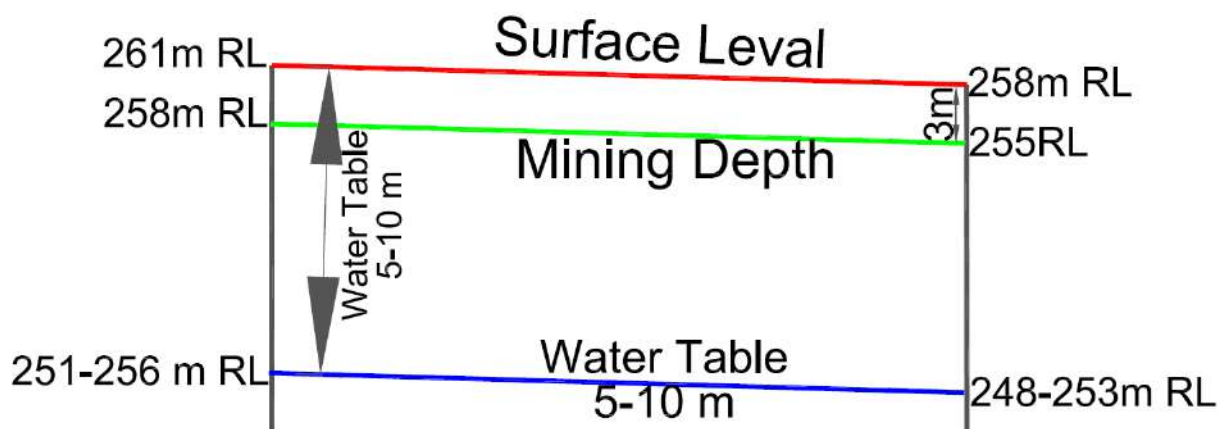


Figure-4.5: Impact of Mining on Ground Water

##### 4.6.1 Conclusion

In this mining project in the entire lease period the ground water table will not be intersected hence there will be no impact on the water environment.

#### 4.7 IMPACTS ON LAND USE AND MITIGATION MEASURES

The project area does not consist of any forest land. It does not consist of any human habitations. Land use plan of the mining lease area during pre-operational, operational and post operational is shown in the **Chapter 2**.

Impact	Mitigation Measure	Budget
The mining activity in the mine site will be converted into the pit. which may cause soil erosion, soil degradation etc.	It is proposed to plant <b>3900 Nos.</b> of local species with consultation of Forest department with some fruit bearing and medicinal trees, along the haul roads, outer periphery within the mining area which enhances the binding property of the soil.	6.00 Lakhs per year (Plantation)
Reclamation of land affected by mining activities during and at the end of mining lease period.	It is proposed to improve the effected land wherever possible for better land use, so as to support forestry and creation of water reservoir etc. Accordingly, the land reclamation portion shall be done by planting trees on the dumps along the roads surroundings the office building on the waste barren land and in the open pits when they reach their ultimate stage. The regular health checkup camp will be organized.	—

##### 4.7.1 Conclusion

The most of the land of this lease area is in the riverbed and the entire excavated land will get replenished every year hence there will be no impact on the land use. It is a eco-friendly mining project. Every year the sediments in the riverbed accumulated, if these are not removed/excavated then riverbed level may be increased and the river may change its course which may cause heavy losses to the life of nearby villagers and habitants.

#### 4.8 IMPACTS ON SOIL ENVIRONMENT AND MITIGATION MEASURES

Attributes	Impact	Mitigation Measure	Budget/annum
Human	Mining in the riverbed may change complete land use pattern including channel geometry, bed elevation, sediment transportation capacity which can reduce flow of the river and downstream erosion.	The mined out area river bed block will be reclaimed naturally every year. The mining is planned in non monsoon seasons only so that the excavated area will be replenished naturally during the subsequent rainy season for the river bed mining block. The regular health checkup camp will be organized.	
Crops	Mining activity may increase the soil erosion and soil	Mine lease area has been proposed leaving a safety distance of 1/4 <sup>th</sup> of	

Plantation	degradation which have adverse impact on soil fertility.	the width of the river from the bank inwards which will protect the banks so channel geometry will not be disturbed. <b>Pre and post monsoon survey</b> for sedimentation in the riverbed will be done regularly.	Rs 5.00 Lakhs per year (under EMP Budget)
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#### 4.9 IMPACTS ON HYDROLOGY AND MITIGATION MEASURES

Impact	Mitigation Measure	Budget
The mining in the riverbed area may cause the ground water contamination due to intersection of the water table.	The water table will not be intersected during mining in the riverbed as ultimate depth is limited up-to 3 meters as the water table is 5-10 m bgl. Proper analysis/Monitoring will be done to check the ground and surface water.	1.25 Lakhs per year (monitoring)
Change in topography will divert the river flow.	There is no proposal of any stream modification/diversion due to this mining activity hence there will be no any impact on flow of the river.	The fund for this activity will be utilized from 'Mines and Mineral Development, Restoration and Rehabilitation fund' i.e. 40.15 Lakhs per year.

##### 4.9.1 Conclusion

The flow of surface/ground water (sub surface flow) is following the trend of topography, which is in the North to South direction. There is no proposal of any stream modification/diversion. Hence, there will be no any impact on hydrology of the study area. The depth of excavation in riverbed where ground water table is at 5-10 m bgl hence the water table is not expected to be intersected at any stage of mining.



#### 4.10 IMPACTS ON ECOLOGY & BIODIVERSITY AND ITS MITIGATION MEASURES

**Table-4.3: Ecological Impact Assessment**

Ecological Criteria	Identified Impacts	Ecological significance of Impact	Magnitude	Duration /Timing/ Frequency	Reversibility	Mitigation	Cumulative Impact
<b>Zone of Influence</b>	<b>Project site habitat Due to Site clearance.</b>	The proposed mining lease is located in Yamuna River. No site clearance is required. Only some scrub area will be cleared.	<b>Low impact</b>	-	<b>Reversible</b>	-	<b>No Cumulative impact</b>
<b>Zone of Influence</b>	<b>Ecological Impact Surrounding habitat due to fugitive emission.</b>	Not much impact on the surrounding habitat is envisaged due to the transportation activity except some fugitive emission.	<b>Temporary Impact</b>	Only during the transportation activity.	<b>Reversible</b>	The green belt/community forestry near river bank and approach road will restrict the fugitive emission.	<b>No cumulative impact</b>
<b>Accessibility</b>	<b>Ecological Impact due to road construction</b>	No Road construction is required to access the project site. The existing internal Roads are connected the project site to the existing SH road and then to the highway.	<b>Low impact</b>	-	<b>Reversible</b>	-	<b>No Cumulative impact</b>
<b>Zone of Influence</b>	<b>Ecological Impact on Surrounding/ Eco sensitive habitat due to waste water generated from the project activity.</b>	During operation phase daily water requirement of the proposed mining activity will be 45 KLD of which 6.5 KLD will be required for drinking which will be met through Borewells. No waste water will be	<b>No impact</b>	<b>During operation Phase</b>	<b>No</b>	The waste water will be disposed off into septic tanks.	<b>No impact</b>

		discharged in the nearby area.					
<b>Zone of Influence</b>	<b>Ecological Impact on Surrounding/Eco sensitive habitat due to Noise generated from the project activity.</b>	The Noise level during the operation phase is around 65 dB. The impact on ambient noise level will be restricted only on the factory premises. The ambient air quality of the surrounding villages may not have any significance increase due to the project activity.	<b>Low impact on Flora and fauna</b>	<b>During operation Phase</b>	<b>No</b>	As given in The EMP section.	<b>No impact</b>
<b>Zone of Influence</b>	<b>Ecological Impact on Surrounding/Eco sensitive habitat due to Transportation</b>	Transportation of Sand in the trucks/dumper will disturb the movement of Wild animals like jungle cat, jackal, and other reptiles. Fugitive emission from vehicle movement will form a layer in leaves thus reducing the gaseous exchange process. This ultimately affects the growth of plants. Chances of vehicle collisions with wildlife attempting to cross roads are possible.	<b>Moderate Impact</b>	<b>During operation Phase</b>	<b>No</b>	As given in EMP. Access roads will not encroach into the riparian zones. To the extent practicable, the right-of-way (ROW) to avoid residential areas and important wildlife habitat areas (e.g. rookeries, raptor nesting areas, and calving areas) will be provided.	<b>Low Cumulative impact</b>

**Table-4.4: Impact on Ecology due to Mining Activity**

S.No	Impact	Mitigation Measure	Budget
1.	Mining on the streambed, braided flow or subsurface inter-sand flow may hinder the Movement of fishes between pools. Transportation of Sand in the trucks/dumper will disturb the movement of Wild animals and reptiles.	Transportation of mineral will be minimize in the morning and evening and cannot be done in night. Access roads will not encroach into the riparian zones. Plantation will be carried out on approach roads and nearby vicinity at river banks areas. It is proposed to include <i>Azadirachta indica</i> , <i>Ficus religiosa</i> , <i>Pongamia glabra</i> and <i>Ficus recimosa</i> in the plantation program as they serve as sinks for gaseous emissions.	Rs.6.00 Lakhs per year
2.	Fugitive emission from vehicle movement will form a layer in leaves thus reducing the gaseous exchange process. This ultimately affects the growth of plants.	Haul roads will be sprinkled with water which would reduce the dust emission, thus avoiding damage to the crops. Annual bio-monitoring of roadside plants exposed to vehicular pollution will be done to check the dust load and Air Pollution Tolerance Index (APTI).	Rs. 6.00 Lakhs per year
3.	Chances of vehicle collisions with wildlife attempting to cross roads are possible.	Transportation of mineral will be minimize in the morning and evening and cannot be done in night.	--
4.	Any human settlement in the mining area will disturb the vegetation cover and reptiles.	No human settlement will be permitted in the lease mining or nearby area.	--
5.	Indiscriminate mining from active channels of rivers causes many adverse effects on the benthic fauna, which inhabits the bottom sandy substratum.	Scientific mining will be done	--
6.	Excessive mineral extraction from rivers affects the eco-biology of many terrestrial insects whose initial life history begins in aquatic environments.	No mining will be carried out during the rainy season to minimize impact on aquatic life.	--
7.	The Indian peafowl movement is very common in the area; the noise from sand mining will hinder the same.	Wild life conservation plan for schedule-I species (WPA, 1972) has been given in chapter 10.	Rs. 15.00 Lakhs

#### 4.11 SOCIO ECONOMIC IMPACT OF THE PROJECT AND SAFETY MEASURES

Socio Economic Impact Assessment (SEIA) refers to systematic analysis of various social and economic characteristics of human being living in a given geographical area during a given period. SEIA is carried out separately but concurrently with Environment Impact Assessment (EIA). It focuses the effect of the project on social and economic well being of the community.

##### a) Impact on Demographic Composition

The proposed project will hardly make any difference in the demographic composition of the study area as the additional employment it envisages to create will be met locally to the maximum extent. Hence, the chances of im-migration of people from outside the study area are remote. Accordingly, there will be no variation in the total population of the study area including that of sex ratio, when the mine starts operating.



#### **b) Employment Opportunities**

The proposed project will provide employment to the local people. It has been estimated that 200 people will get direct employment in this mining project. It is a positive impact of the project since it is providing employment opportunities to the local people.

#### **c) Increased Supply of Sand in the Market**

With the commencement of the proposed mining project the supply of sand will increase and the gap between demand and supply will decrease to some extent, if not fully.

#### **d) Impact on Agriculture**

The entire mining area is part of river bed and the entire land is Government Revenue Land. It is a non forest land and the proposed activity is to take place in the bed of river Yamuna. Scientific mining will be adopted in the proposed mining project the area will be free from annual floods, which destroy standing crops, land and property. This is a positive impact of the proposed mining project.

#### **e) Impact on Road Development**

Movement of tractor-trolleys and other vehicles to and fro the mining site is expected to increase substantially, when mining will start. The existing roads connecting the quarry with the National and State Highways are mostly narrow mud roads. There will be mud slide and traffic bottle neck if these roads are not widened and their conditions are not improved. Hence, there is good scope for road development in the mining area. Further, there are risks of accidents during loading of extracted minerals into tractor-trolleys and transportation to markets for sell. However, accidents can be avoided by taking due care and precautions.

#### **f) Income to Government**

The proposed mining activity will benefit the State in the form of royalty, dead rent, fees and earning from taxes.

#### **g) Impact on Law and Order**

As most of the workers to be employed in the proposed mining project are local residents no law and order problem is envisaged. It is expected that the workers will attend to their duties from their residence and return to their homes after the day's work. There would have been law and order problem if the workers were migrants and lived in shanties closed to the mining area. However, to meet any untoward incident one police post may be set up closed to the mining area.

#### **h) Impact on Health**

There are no chances of occurring diseases, due to manual mining of sand. Sand is non-toxic. However, sand using activities such as sand blasting require precautions since it create respiratory problems among mine workers. Excessive inhalation of sand is a serious health concern. To avoid respiratory problem from sand necessary protection will be taken.

**Table-4.5: Impacts On Socio Economy And Mitigation Measures**

<b>Impact</b>	<b>Mitigation Measure</b>	<b>Budget/annum</b>
Due to mining and transportation of sand will generate the small shops, dhabas, garage, restaurant, vegetable shops etc. along the road and generate direct employment.	Positive Impact	--

Mining activity will generate direct employment by recruiting 120 people which will be employed locally and preference will be given to local people.	Positive Impact	--
Extraction from river banks and beds and the resultant generation of fugitive dust cause workers of the mine to suffer from occupational hazards like skin allergies, eye and respiratory problems etc	<p>Mine lease area has been proposed leaving a safety distance of 1/4<sup>th</sup> of the width of the river from the bank inwards which will protect the banks.</p> <p>Dust mask will be provided to the workers engaged at dust generation points like excavation and loading points.</p> <p>Regular water sprinkling on unpaved roads to avoid dust generation</p>	<p>Rs. 2.00 Lakh/ year ( for worker safety equipments under OH&amp;S)</p> <p>Rs. 6.00 Lakhs/year (for water sprinkling on haul road under EMP budget)</p>
Further, the pits created in the channel also can contribute to an increase in accidents in the working environment. This creates serious threat to residents in the area who depend on river water for their domestic purposes.	<p>The mined out area in river bed block will be reclaimed naturally every year.</p> <p>The mining is planned in non monsoon seasons only so that the excavated area will be replenished naturally during the subsequent rainy season for the river bed mining block.</p>	The fund for this activity will be utilized from 'Mines and Mineral Development, Restoration and Rehabilitation fund' i.e. 40.15 Lakhs per year.
The major source of socio-health impacts of transportation will generate from truck, dust etc. Increase in accidents as a result of rash driving of dumpers carrying mineral through the roads may be possible.	<p>It is proposed to plant <b>3900 Nos.</b> of local species per year with consultation of Forest department with some fruit bearing and medicinal trees, along the haul roads, outer periphery within the mining area to control the dust.</p> <p>Planning transportation routes of mined material so as to reach the nearest paved roads by shortest route (minimize transportation over unpaved road). Alternatively, graveled road may be constructed between mine lease area and nearest paved road connectivity; The speed of trucks plying on the haul road should limited to avoid generation of dust; and Covering of material during transportation on trucks to prevent spillage of sand from the trucks. The trucks will be covered by tarpaulin. Overloading will be avoided.</p> <p>Regular water sprinkling on unpaved roads to avoid dust generation during transportation.</p>	<p>Rs. 6.00 Lakhs/ year (Plantation under EMP Budget)</p> <p>Rs. 6.00 Lakhs /year (for maintenance of haul road under EMP Budget )</p> <p>Rs. 6.00 Lakhs/year (for water sprinkling on haul road under EMP budget)</p>



#### 4.12 IMPACTS DUE TO SOLID WASTE/OVERBURDEN AND MITIGATION MEASURES

Impact	Mitigation Measure	Budget
The mine worker will generate municipal solid waste of about 29 Kg per day which will have adverse impact on human health.	6 Nos. of Garbage bins will be provided for the safe disposal of solid waste as per MSW, 2016.	The fund for this activity will be utilized from 'Mines and Mineral Development, Restoration and Rehabilitation fund' i.e. 40.15 Lakhs per year.

#### 4.13 IMPACTS ON OCCUPATIONAL HEALTH AND SAFETY

Impact	Mitigation Measure	Budget
The mining of sand (minor mineral) from the river bed can cause the lung disease and respiratory disorder due to dust exposure.	Dust masks will be provided as additional personal protection equipment (helmet and safety shoes) to the workers working in the dust prone area. Regular water sprinkling will be done and dust masks will be provided to the workers.	2.0 Lakhs
Due to noise exposure, hearing disorder may be resulted.	Ear-muffs will be provided to the workers and good maintenance of vehicles will be provided	
The accident at the site due to mining operation may be anticipated	Workers are informed, kept aware and trained about possible accidents during the mining operation and personal protective equipments will be provided viz. gloves, safety shoes, dust mask, safety jackets, helmet etc. In addition to, the awareness about the occupational health hazards due to mining activities to avoid any incident will be provided to the workers Pre- placement health checkup will be made mandatory and periodic health checkup will be done quarterly.	Other fund for occupational health safety will be utilized from 'Mines and Mineral Development, Restoration and Rehabilitation fund' i.e. 40.15 Lakhs per year.

The details of the proposed budget for the Occupational Health and Safety are given as in Chapter 10 of this EIA/EMP report.

#### 4.14 TRAFFIC ENVIRONMENT

Impact	Mitigation Measure	Budget
No. of 315 PCU/hr will increase due to mining in existing traffic scenario lead to air pollution which can cause adverse effect on human health of neighboring villagers like effect on breathing and respiratory system, damage to lung tissue, cancer and premature death, influenza or asthma.	Vehicles with PUC Certificate will be hired. Regular maintenance of vehicles will be done to ensure smooth running of vehicle.  It is proposed to plant 3900 Nos. of local species during five years with consultation of Forest department with some fruit bearing and medicinal trees, along the haul roads, outer periphery within the lease area to prevent the impact of dust in the nearby village.	The fund for this activity will be utilized from 'Mines and Mineral Development, Restoration and Rehabilitation fund' i.e. 40.15 Lakhs per year.  6.00 Lakhs/year (Plantation under EMP Budget)



<p>No. of 315 PCU/Hr will increase in the existing traffic due to this mining activity hence vehicle collation may occur unwanted sound and can also cause impact on human health.</p>	<p>Regular Health checkup camps will be organized.</p>	<p>5.0 Lakhs per year</p>
	<p>In addition, truck drivers will be instructed to make minimum use of horns in the village area and sensitive zones.</p> <p>It is proposed to plant 3900 Nos. of local species during five years with consultation of Forest department with some fruit bearing and medicinal trees, along the haul roads, outer periphery within the lease area to reduce the impact of noise in the study area.</p> <p>The trucks will be diverted on three roads viz SH-6 and a district road to avoid traffic congestion.</p>	<p>The fund for this activity will be utilized from 'Mines and Mineral Development, Restoration and Rehabilitation fund'</p> <p>6.00 Lakhs per year</p>
<p>Accidents may be occurring due to fast movement of vehicles.</p>	<p>Regular Health checkup camps will be organized.</p> <p>To avoid accidents the speed of vehicles will be low near habitation areas.</p>	<p>5.0 Lakhs per year</p> <p>The fund for this activity will be utilized from 'Mines and Mineral Development, Restoration and Rehabilitation fund' i.e. 40.15 Lakhs per year.</p>

#### 4.14.1 Traffic Density Impact on Haul Roads (Motorable Connection Roads)- Nagli Mine Project

S. No.	Road Name	Road Length (m)	Road Connectivity		Total Number of Dumpers/ Day (8Hrs.)	Total Trips (Up/ Down)	Total Volume of Mineral Transported (MT)
			From	To			
1.	Haul Road 1	1600	Mine Site	Nagla Village	72	144	1800
2.	Haul Road 2	1200	Mine Site	Sandhala Village	78	156	1950
3.	Haul Road 3	1300	Mine Site	Gumthla Village	77	154	1925
4.	Haul Road 4	1400	Mine Site	Nasrullahgarh Village	70	140	1750
5.	Haul Road 5	3400	Mine Site	Mughal Majra Village	76	152	1908
<b>Total</b>		<b>8900</b>	--	--	<b>373</b>	<b>746</b>	<b>9333</b>

Total Production Capacity	=	28 TPA
Production/ day	=	9333 MT/ Day
Dumper Capacity	=	25 MT
Total No. of Haul Roads (Motorable Connecting Roads)	=	5
Total Dumper required	=	373 Dumpers

In this mining project there are 5 haul roads originating from mine site and connecting to MDR (all are metalled). The details of haul roads with the length and transportation of dumpers (trips)/MT/Day are mentioned in the above table.

These haul roads will be constructed by the lease holders from their own expenses and he will pay the due compensation to the land owners for using assess for transportation of minerals as per **Rule 62 & 63 (Chapter-9) of Haryana Mineral Concession Rules, 2012**. It is also clarified that these haul roads will be exclusively used for the minerals loaded dumpers of this lease area only to transport the mineral, **Hence the impact of traffic density on these haul/ motorable roads will be quite negligible.**

#### Budget

A budget of INR 40 Lakhs per year i.e. 10% of the annual contract money will also be deposited in **“Restoration & Rehabilitation Fund”** by the lease holder in the mining department for protection of environment of nearby area and maintenance as well as repair of roads. In addition to above INR 30 Lakhs per year as EMP budget is also proposed for protection of environment of nearby area and part amount of the same will be used for road maintenance.

#### Mitigation Measures

1. These motorable roads will be regularly repaired and maintained on their own expenses and also to control the air and noise pollution.
2. In peak hours. of traffic the transportation of dumpers will be suspended.
3. Speed of dumpers will be limited to 20km/hr on these haul roads.
4. Dumpers will be transported during day time only.

#### Budget

Approx 8.9 Km haul road will be constructed to connect the mine lease to nearest approach roads for transportation of minerals and a budget of **Rs. 45.00 Lakhs (@ Rs.5.00 Lakhs/Km)** proposed for the Construction of haul road.

#### 4.15 IMPACTS ON GEOLOGY AND MITIGATION

Impact	Mitigation Measure	Budget
Slope of mining area will change which can create soil erosion and divert rain water runoff channel.	The maximum depth of mining in the river bed will not exceed 3 meters and the maximum depth of mining. In riverbed, more than 100 % replenishment will be done every year hence no slope will be changed due to mining.	The fund for this activity will be utilized from ‘Mines and Mineral Development, Restoration and Rehabilitation fund’ i.e. 40.15 Lakhs per year.

Soil weathering due to dumping and mining.	Mine lease area has been proposed leaving a safety distance of 1/4 <sup>th</sup> of the width of the river from the bank inwards which will protect the banks.	The fund for this activity will be utilized from 'Mines and Mineral Development, Restoration and Rehabilitation fund'
	It is proposed to plant 3900 No. of local species per year with consultation of Forest department with some fruit bearing and medicinal trees, along the haul roads, outer periphery within the mining area which enhances the binding properties of the soil.	6.00 Lakhs per year
	24.00 KLD water will be proposed for sprinkling on unpaved roads to avoid soil weathering.	6.00 Lakhs per year
Change in topography can change the river flow and flood may occur.	Scientific mining has been proposed hence no any topographical change will occur during mining activity. Mining will be prohibited in monsoon season.	The fund for this activity will be utilized from 'Mines and Mineral Development, Restoration and Rehabilitation fund' i.e. 40.15 Lakhs per year.

#### 4.16 MINE CLOSURE PLAN

##### 4.16.1 General

Mine closure plan is one of the most important requirements in the environment management of mining projects. The closure operation is a continuous series of activities right from the commencement to decommissioning of the project. Therefore, progressive mine closure plan is specifically included in the mining plan, which is to be reviewed every five years in the scheme of mining. The primary aim is to ensure that the following broad objectives along with the abandonment of the mine can be successfully achieved:

- Creation of a productive and sustainable after-use for the site, acceptable to mine owners, regulatory agencies, and most importantly to the community.
- Protection of public health and safety of the surrounding habitation.
- Minimization of environmental damage.
- Conservation of valuable attributes and aesthetics.
- Counter balancing the adverse socio-economic impacts.

##### 4.16.2 Reason for Closure

The progressive mine closure plan has been prepared in compliance of Haryana Minor Mineral Concession Rules 2012 under MMCR 1986. No immediate closure is planned as sufficient reserves are available to carry on the activities. There is market potential in domestic demands.

##### 4.16.3 Statutory Obligations

- As per LOI condition No. XIV, the lease holder is bound to deposit additional amount equal to 10 % of the due contract money in along with monthly installments towards the "Mines and Minerals, Development, Restoration and rehabilitation Fund" i.e. Rs. 40.15 Lakhs per annum. To the mining department, Haryana (Haryana Minor Mineral Concession, Stocking, transportation of Mineral and Prevention of Illegal Mining Rule-2012). Hence, accordingly after the mine closure the mining department will spend the fund for the same.
- The mining contractor is bound to submit the Progressive mine closure plan either with Mining plan or Scheme of Mining.



- iii. Mining contractor is bound to follow the terms and conditions as will be stipulated in the mining contract.
- iv. In addition to it the rules pertaining to the Protection of Environment *i.e.* Environment Act, Environment Rules and other associated rules for the protection of environment will have to be followed.
- v. During the course of mining the rules stipulated in Mines Act, Mines rules Metalliferous Mines Regulation 1961 and HMMCR, 2012 will be followed.
- vi. All other rules pertaining to the mining existing at that time will be followed during the course of mining activities.

#### **4.16.4 Disposal of Mining Machinery**

Machinery is proposed on hire basis. Hence no de-commissioning of mining machinery is proposed.

#### **4.16.5 Safety and security**

Safety measures to be implemented to prevent access to excavations area by un-authorized persons as per Mines Act 1952, MMR, 1961.

- i. Safety measures will be implemented as per Mines Act 1952, MMR, 1961, Mines Rules 1955.
- ii. Provision of MMR, 1961 will be followed strictly and all roads will be 10 m wide and have a gradient of not more than 1 in 20.
- iii. Excavation will not be more than 3 m in river bed.
- iv. Width of bench will be kept around 20.0 m for ease of operations and provide sufficient room for the movement of equipments.
- v. Protective equipment like dust masks, ear plugs / muffs and other equipments will be provided for use by the work persons.
- vi. Notice giving warning to prevent inadvertent entry of persons will be displayed at all conspicuous places and in particular near mine entries.
- vii. Danger signs will be displayed near the excavations.
- viii. Security guards will be posted.
- ix. In the event of temporary closer, approaches will be fenced off and notice displayed.

#### **4.16.6 Time Scheduling for Abandonment**

The mining area has enormous potential for continuance of operations even after the expiry of the awarded period. The details of time schedule of all abandonment will be given at the time of final closer plan. Mining activities are confined to river bed, up to 3.0 m. depth, relatively shallow depth of workings. Partial replenishment of the Sand being removed from the river bed is a natural process particularly during monsoon periods.

#### **4.16.7 Financial Assurance**

As per Lol term and condition and Minor Mineral Concession Rule 2012, Haryana; the lease holder will deposit 10% of the annual contract money in "Mines and Mineral development, Restoration and Rehabilitation Fund" to the Mining Department *i.e.* about Rs. 40.15 Lakhs per annum. This fund will be deposited yearly till mine period.

#### **4.17 SUMMARY**

The proposed mining operations are not anticipated to raise the concentration of the pollutants beyond prescribed limits. However, the measures are suggested to mitigate any harmful impacts of pollutants like plantation of trees along haul roads, specially near settlements, to help to reduce the impact of dust on the nearby villages; planning transportation routes of mined material so as to reach the nearest





paved roads by shortest route; regular water sprinkling on unpaved roads to avoid dust generation during transportation etc.

Some of impacts may be due to increase in the PCU/hr which is **315 PCU/hr**. Transportation of sand should be minimized in the morning and evening and cannot be done in night. Access roads will not encroach into the riparian zones. Fugitive emission from vehicle movement will form a layer in leaves thus reducing the gaseous exchange process. The impact on the present noise levels due to mining operations will be restricted to the work zone areas only. The impact on the ambient noise levels will not be felt at the settlement areas due to masking effect with the existing noise levels.

There is no drilling and blasting envisaged in the sand mining so there is no impact of vibration due to this project. Hence, the noise levels and vibration impact due to the proposed mining operations on community will be minimal.

There will be no impact on water environment due to mining in riverbed as well as in the riverbed since there is no intersection of water table due to mining activity. There will be no waste water generation from the proposed mining activity except sanitary waste water generation that will be treated in septic tanks and will be used for plantation purpose. There will be no overburden due to mining in the riverbed area. The mining activities will be done in a systematic manner by maintaining the road infrastructure and vehicle transport which will be protective measure for preserving the topography and drainage in the area. The ownership will not be changed as the land has been taken on contract which will be returned as it is after the contract period is over. No human settlement should be permitted in the lease mining or nearby area. No mining will be carried out during the rainy season to minimize impact on aquatic life. There are 2 species of Schedule I and 2 species of Schedule II are observed during study period hence, for the same conservation plan was prepared. Subsequently, a budget of Rs. 15.00 Lakhs has allotted for the conservation of wildlife species. The mining of sand is likely to increase the per capita income of local people by which the socio-economic status of the people will be improved. The local people have been provided with either direct employments or indirect employment such as business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc. Except dust generation, there is no source which can show a probability for health related diseases. Regular water sprinkling will be done with sprinkle mounted tankers and dust masks will be provided to the workers. All workers will be subjected to medical examination as per Mines Rule 1955 both at time of appointment and at least once in a year. Medical camps will be organized for this activity. Insurance of all employees as per the rules will also be carried out. R&R issues are not involved with this project. As per the **point xiv** of LOI, the lease holder will deposit 10% of the annual contract money *i.e.* approx. Rs. 40.15 Lakhs to the Mines and Minerals Development, Restoration and Rehabilitation Fund. This amount will be spent by lease holder for the protection of environment, mineral conservation in the surrounding area of core and buffer zone.

## CHAPTER-5

# ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

### 5.0 INTRODUCTION

Consideration of alternatives to a project proposal is a requirement of EIA process. During the scoping process, alternatives to a proposal can be considered or refined, either directly or by reference to the key issues identified. A comparison of alternatives help to determine the best method of achieving the project objectives with minimum environmental impacts or indicates the most environmentally friendly and cost effective options.

### 5.1 ALTERNATIVE FOR MINE LEASE

- During monsoon season, when rivers reach high stage, Yamuna River also bears significant catchment area and it transports river bed material (sand) which gets accumulated at such stretch which widens river width and concave banks. Thus, it is evident that the proposed site will be mined for the purpose of preventing land cutting during heavy rainfall and floods.
- Sand (minor mineral) deposits are site specific. It is present in Yamuna river bed (77.25ha.). The mining of the material will be done by opencast semi-mechanized method in riverbed. The mining will be done as per laid down procedures Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012. The mined out area in river bed block will get replenished annually after monsoon. Therefore, no alternate site is suggested as existing land use of mine lease classified as “River Body” and will continue to be so even after the current mining project is over.

### 5.2 ALTERNATIVE FOR TECHNOLOGY AND OTHER PARAMETERS

Some alternatives considered during EIA study are discussed below:

S.No.	Particular	Alternative Option 1	Alternative Option 2	Remarks
1	Technology	Opencast semi mechanized mining	Opencast mechanized mining	Opencast semi-mechanized for riverbed is preferred <b>Benefits:</b> <ul style="list-style-type: none"> <li>No electric power requirement</li> <li>Minimal noise will be generated</li> <li>Minimal air pollution will be generated</li> <li>Overburden will not be generated</li> </ul>
2	Employment	Local employment	Outsource employment	Local employment is preferred <b>Benefits:</b> <ul style="list-style-type: none"> <li>Provides employment to local people along with financial benefits</li> <li>No residential building/housing is required</li> </ul>
3	Labourer transportation	Public transport	Private transport	Local labors will be deployed so they will either reach mine site by bicycle or by foot. <b>Benefits:</b> <ul style="list-style-type: none"> <li>Cost of transportation of men will be negligible.</li> </ul>
4	Material transportation	Private transport	Private transport	Material will be transported through trucks/trolleys on the contract basis



				<b>Benefits:</b> It will give indirect employment
5	Water requirement	Tanker supplier	Ground water with CGWB permission	Tanker supply will be preferred. <b>Benefits:</b> No change in the surface water or ground water quality
6	Road	Haul road	Metallic road	Haul road will be considered for linking mine site from metallic road for transportation purpose Minimum distance will be measured along with less number of trees for considering optimum haul road roots. <b>Benefits:</b> Less distance, less fuel used, minimum or negligible no. of trees will be cut in best opted haul road root.

### 5.3 SUMMARY

We have analyzed all the option for alternatives of the proposed mine site. This project is sand specific project and existing land use of mine lease classified as River Body which will continue to be so even after the current mining project is over, hence no alternate site is suggested for this project.



## CHAPTER: 6

# ENVIRONMENTAL MONITORING PROGRAM

### 6.0 INTRODUCTION

Regular monitoring of the various environmental parameters is necessary to evaluate the effectiveness of the management programme so that the necessary corrective measures can be taken in case there are some drawbacks in the proposed programme. Since environmental quality parameters at work zone and surrounding area are important for maintaining sound operating practices of the project in conformity with environmental regulations, the post project monitoring work forms part of Environmental Monitoring Program. Environmental Monitoring Program will be implemented once the project activity commences. Environmental Monitoring Program includes: (i) environmental surveillance (ii) analysis and interpretation of data (iii) preparation of reports to support environmental management system and (iv) organizational set up responsible for the implementation of the programme. Environmental Monitoring will be taken up for various environmental components as per conditions stipulated in Environmental Clearance Letter issued by MoEF&CC and Consent to Operate issued by the State Pollution Control Board. Compliance of same will be submitted to respective authorities on regular basis.

### 6.1 ENVIRONMENTAL MANAGEMENT CELL

In order to maintain the environmental quality within the stipulated standards, regular monitoring of various environmental components is necessary which will comply as per conditions. For this the lessee **M/s M.P. Traders** has taken decision to formulate an Environment Policy of the mine and constitute an Environmental Management Cell and committed to operate the proposed mine with the objectives mentioned in approved Environment Policy. (Copy of approved Environmental Policy attached as **Annexure XI**). The system of reporting of Non-conformances /violation of any Environmental Law/Policy will be as per quality management system. The internal audit will be conducted on periodic basis and any Non-conformances/violation to Environmental Law/Policy will be closed and discussed during Management Review Meetings of board of directors/partners.

#### Hierarchy

An EHS Manager will be appointed to look after all environmental issues and ensure compliance with Environmental Clearance conditions/SPCB norms. An Assistant Manager and Executive Environment Engineer will be appointed under the EHS Manager. EHS Manager will report to the Lessee directly and discuss the non-compliance if so any. An immediate solution will be arrived to ensure compliance with norms.

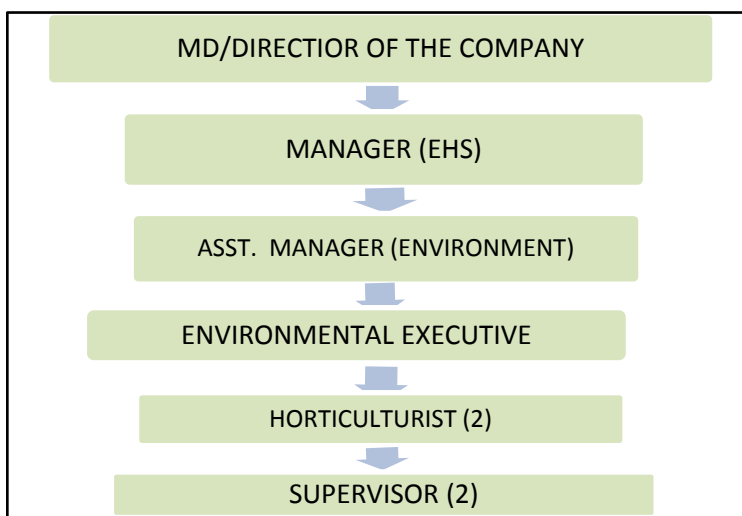


Figure- 6.1: Hierarchy of Environment System for Dealing Environmental Issues



### 6.1.1 Responsibilities for Environmental Management Cell (EMC)

The responsibilities of the EMC include the following:

- Environmental Monitoring of the surrounding area
- Developing the green belt/Plantation
- Ensuring minimal use of water
- Proper implementation of pollution control measures
- Access the risk area
- Implementation of QMS
- Conducting Internal Audits
- Closing of NCs and conduction Management Review Meetings.

### 6.2 ENVIRONMENTAL MONITORING AND REPORTING PROCEDURE

Monitoring shall confirm that commitments are being met. This may take the form of direct measurement and recording of quantitative information, such as amounts and concentrations of discharges and wastes, for measurement against corporate or statutory standards, consent limits or targets. It may also require measurement of ambient environmental quality in the vicinity of a sit using ecological/biological, physical and chemical indicators. Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints.

The key aims of environmental monitoring are:

- To ensure that results/ conditions are as forecast during the planning stage, and where they are not, to pinpoint the cause and implement action to remedy the situation.
  - To verify the evaluations made during the planning process, in particular with risk and impact assessments and standards and target setting and to measure operational and process efficiency.
  - Monitoring will also be required to meet compliance with statutory and corporate requirements.
- Finally, monitoring results provide the basis for auditing, *i.e.* to identify unexpected changes.

### 6.3 MONITORING METHODOLOGIES AND PARAMETERS

**Table-6.1: Monitoring Methodologies and Parameters**

Attributes	Sampling		Measurement Method	Test Procedure
A. Air Environment	Network	Frequency		
<b>Meteorology</b> Wind speed Wind direction Dry bulb temperature Wet bulb temperature Relative humidity Rainfall	Minimum 1 site in the project impact area	Regularly in one season by Weather Monitoring Station	Mechanical/ automatic weather station	-
<b>Pollutants</b> PM <sub>10</sub>	6 locations in the project impact area (Minimum 2 locations in upwind side, more sites in downwind side / impact zone)	Revised National Ambient Air Quality Standards (NAAQS) vide MoEF circular, dated 16.11.2009	Gravimetric method	-
SO <sub>2</sub>			EPA Modified West and Geake method	Absorption in Potassium Tetra Chloromercurate followed by Colorimetric estimation using P-Rosanilinehydrochlo





				ride and Formaldehyde (IS: 5182 Part - II).
NO <sub>2</sub>			Arsenite modified Jacob and Hochheiser	Absorption in dill NaOH and then estimated colorimetrically with sulphanilamide and N (I-Nephthyle) Ethylene diamineDihydrochloride and Hydrogen Peroxide (CPCB Method).
Free Silica	2-3 locations (Mine site, Haul road and near Habitation) will be monitored during six monthly compliance.	24 hr monitoring twice in a year	Gravimetric Method by using Repairable particulate matter sampler "Repairable Dust Sampler" (RDS)	Data analysis by using laboratory methods ( Colorimetric method by Spectrophotometer)
<b>B. Water Environment</b>				
pH, Turbidity, Colour, Odour, Taste, TDS, Total Hardness, Calcium hardness, Magnesium hardness, Chloride, Fluoride, Sulphate, Nitrates, Alkalinity, Iron, Copper, Manganese, Mercury, Cadmium, Selenium, Arsenic, Cyanide, Lead, Zinc, Chromium, Aluminum, Boron, Phenolic compounds	Set of grab samples during pre and post-monsoon for 6 ground water samples and 3 surface water samples for 10 km distance area.	Twice in a week	As per IS 10500-	Samples for water quality should be collected and analyzed as per : IS : 2488 (Part 1-5) methods for sampling and testing of Industrial effluents Standard methods for examination of water and wastewater analysis published by American Public Health Association.
<b>C. Noise</b>				
Noise levels at Day and night time -Leq dB (A)	Mine Boundary, High noise generating areas within the lease	Quarterly	As per CPCB norms	As per CPCB norms
<b>D. Soil</b>				
pH, Bulk Density, Soil texture, Nitrogen, Available Phosphorus, Potassium, Calcium,	4 locations in the project impact area	Quarterly	As per CSSRI, IISWC Method	As per CSSRI, IISWC Method



Magnesium, Sodium, Electrical Conductivity, Organic Matter, Chloride				
<b>E. Socioeconomic Status</b>	<b>Network</b>	<b>Frequency</b>	<b>Measurement Method</b>	<b>Test Procedure</b>
<ul style="list-style-type: none"> <li>Demographic structure</li> <li>Infrastructure resource base</li> <li>Economic resource base</li> <li>Health status: Morbidity pattern</li> <li>Cultural and aesthetic attributes</li> <li>Education</li> </ul>	Socio-economic survey is based on proportionate, stratified and random sampling method	Yearly	Primary data collection through questionnaire	Secondary data from census records, statistical hard books, topo sheets, health records and relevant official records available with Govt. agencies
<b>Ecological Impact</b>				
<ul style="list-style-type: none"> <li>Green Belt Development</li> <li>Conservation of Wild Life</li> </ul>	Survey	Yearly	Primary data collection.	Secondary data from statistical hard books, toposheets and relevant official records available with Govt. agencies

#### 6.4 MONITORING SCHEDULE

Regular Monitoring of all the environmental parameters viz., air, water, noise and soil as per the formulated program based on CPCB and MoEF&CC guidelines will be carried out every year in order to detect any changes from the baseline status.

**Table-6.2: Monitoring Schedule**

S. No.	Description	Schedule Of Monitoring
1.	Air Quality Free Silica	Twice in a week <b>24 hr monitoring twice in a year</b>
2.	Water Quality (Surface and Ground Water)	Twice in a week
3.	Noise Level	Quarterly
4.	Ecology and Biodiversity	Yearly
5.	Soil Quality	Quarterly
6.	Socio-economic Condition	Yearly
7.	Plantation Monitoring	Once in a season

#### 6.5 LOCATIONS OF MONITORING STATIONS

The location of the monitoring stations was selected on the basis of prevailing micro meteorological conditions of the area like; wind direction and wind speed, relative humidity, temperature. Locations for the post project monitoring shall be as under.

**Table-6.3: Locations of Monitoring Stations**

S. No.	Description	Location
	Ambient Air Quality	Lease area, Villages in down-wind direction from the Lease Boundary.



	Noise Level Monitoring	Lease Boundary, High noise generating areas within the lease boundary
	Water Level and Quality	Nearby Surface and Ground water sources
	Soil Quality	Lease area and Villages within study area.

#### Reporting Schedule during Operation of Mine

After completion of analysis, copies of all the analysis reports will be sent to MoEF&CC Regional Office and SPCB. Copies of the reports will be maintained in the office and will be made available to the concerned inspecting authorities.

#### 6.6 BUDGET ALLOCATION FOR MONITORING

The cost of the project is **Rs9.00 Crores** and a budget for monitoring of Air, water, Noise and Soil will be **Rs. 5.00 Lakhs** to be incurred by the project proponent for undertaking pollution prevention measures during the mining activity.

#### 6.7 SUMMARY

In order to maintain the environmental quality within the stipulated standards, regular monitoring of various environmental components is necessary which will comply as per conditions. For this lessee **M/s M.P. Traders** has taken decision to formulate an Environment Policy of the mine and constitute an Environmental Management Cell and committed to operate the proposed mine with the objectives mentioned in approved Environment Policy. EMP may also require measurement of ambient environmental quality in the vicinity of a site using ecological/biological, physical and chemical indicators. Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints. Regular Monitoring of all the environmental parameters viz., air, water, noise and soil as per the formulated program based on CPCB and MoEF&CC guidelines will be carried out every year. The location of the monitoring stations was selected on the basis of prevailing micro meteorological conditions of the area like; wind direction and wind speed, relative humidity, temperature. A budget for monitoring of Air, water, Noise and Soil will be **Rs. 5.00 Lakhs** to be incurred by the project proponent for undertaking pollution prevention measures during the mining activity.



## CHAPTER: 7

# ADDITIONAL STUDIES

### 7.0 GENERAL

Mining operations are associated with several potential hazards that affect adversely the human health and environment. It would normally require the assistance of emergency services to handle it effectively. The mining operation will be taken up under the supervision and control of qualified staff including Mine Manager (Grade I). Similarly Sand mines also have impending dangers and risk which need to be addressed for which a disaster management plan has been prepared with an aim of taking precautionary steps to avert disasters and also to take such action after the disaster which limits the damage to the minimum.

Nevertheless, the following natural/industrial problems may be encountered during the mining operation.

1. Inundation due to excessive rains.
2. Accidents by heavy machinery.
3. Slope failures at the mine faces etc.

### 7.1 PUBLIC CONSULTATION

Public hearing is very significant part of the process of public participation envisaged under the guidelines issued by MoEF&CC, Government of India. It facilitates involvement of all the stake holders of the project which is essential for ensuring smooth running of project and benefitting all sections of society in the process of economic development of the region. The public hearing of "mining of Sand (Minor Mineral)" mining project at Nagli Block-2 in Village Nagli, Tehsil Radaur, District Yamuna Nagar over an area of 77.25 Ha. with production capacity of 28,00,000 TPA by M/s M.P. Traders Limited was conducted on 23.05.2017 at 12.00 pm at Mine Site in Village Nagli, Distt. Yamunanagar reply for the same has been given by consultant on behalf of the project proponent and PP will follow the same as per undertaking given by PP.

#### 7.1.1 Public Hearing Notice

**Haryana State Pollution Control Board**  
C-11, Sector-6, Panchkula  
Website - [www.hspcb.gov.in](http://www.hspcb.gov.in) E-Mail - [hspcbho@gmail.com](mailto:hspcbho@gmail.com)  
Tele No. - 0172-2577870-73

**Notice for Public Hearing**

It is for the information of all concerned that M/s M.P. Traders has proposed the mining of sand mineral alongwith associated minor mineral at Vill. Nagli, Tehsil, Radaur, Distt. Yamuna Nagar, Haryana measuring over an area of 77.25 Ha. as per TORs issued on 18.01.2017 by MoEF & CC, Govt. of India, Delhi. The project is covered under the ambit of Environment Impact Assessment Notification No. S.O. 1533 (E) dated 14<sup>th</sup> Sep. 2006 issued by Ministry of Environment, Forest & CC, Govt. of India, New Delhi and thus Environmental Clearance is mandatory for the proposed project. Accordingly, the project proponent has applied to the concerned authority for obtaining Environmental Clearance and the date & venue of public hearing has been fixed as per details given below:-

Sr.No.	Name of Unit	Date of Public Hearing	Time of Public Hearing	Venue of Public Hearing
1.	M/s M.P. Traders at Vill. Nagli, Tehsil, Radaur, Distt. Yamuna Nagar, Haryana for mining of Sand Mineral alongwith associated minor mineral measuring over an area of 77.25 Ha.	23.05.2017	12:00 (Noon)	At site

As a part of procedure for seeking the Environmental Clearance, as notified by the Ministry of Environment, Forest & CC, Govt. of India, New Delhi vide notification No. S.O. 1533 (E), dated 14.09.2006, the project proponent mentioned above has applied for the Mining Project. Accordingly, the Public Hearing for the above said project has been fixed on **23.05.2017 at 12:00 (Noon)** for the Project site mentioned above. Copies of executive summary of the project and EIA study report, submitted by the project proponent, are available in the Head Office of the Board as well as in the following offices, which can be perused during office hours, on any working day:-

1. Deputy Commissioner, Yamuna Nagar
2. Regional Officer, HSPCB, Yamuna Nagar, SCO No. 131, Sec-17, Jagadhari, (Yamuna Nagar)
3. C/o Zila Parishad, Yamuna Nagar
4. C/o Municipal Council/ Corporation/Committee, Yamuna Nagar
5. Joint Director/GM, District Industries Centre, Yamuna Nagar

Notice is hereby given to all concerned to file suggestions, views, comments and objections, if any, on the proposed project, to the Member Secretary, Haryana State Pollution Control Board, C-11, Sector-6, Panchkula as well as Regional Officer, Yamuna Nagar, SCO No. 131, Sec-17, Jagadhari, (Yamuna Nagar) within 30 days of the publication of this notice. Besides, a Public Hearing will also be held on the Date, Time & Venue mentioned above at the proposed site of the project, which can be attended by any person including Environmental Groups, bonafide residents and others, located at the project site/sites of displacement/sites likely to be affected. Oral/Written suggestions, if any can also be made during the Public Hearing.

No TA/DA will be admissible for attending the Public Hearing.

(S. Narayanan)  
Member Secretary, HSPCB

Keep Haryana Clean and Pollution Free.

**Haryana State Pollution Control Board**  
C-11, Sector-6, Panchkula  
Website - [www.hspcb.gov.in](http://www.hspcb.gov.in)  
E-Mail - [hspcbho@gmail.com](mailto:hspcbho@gmail.com)  
Tele No. - 0172-2577870-73

**Notice for Public Hearing**

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4. C/o Municipal Council/ Corporation/Committee, Yamuna Nagar
5. Joint Director/GM, District Industries Centre, Yamuna Nagar

Notice is hereby given to all concerned to file suggestions, views, comments and objections, if any, on the proposed project, to the Member Secretary, Haryana State Pollution Control Board, C-11, Sector-6, Panchkula as well as Regional Officer, Yamuna Nagar, SCO No. 131, Sec-17, Jagadhari, (Yamuna Nagar) within 30 days of the publication of this notice. Besides, a Public Hearing will also be held on the Date, Time & Venue mentioned above at the proposed site of the project, which can be attended by any person including Environmental Groups, bonafide residents and others, located at the project site/sites of displacement/sites likely to be affected. Oral/Written suggestions, if any can also be made during the Public Hearing.

No TA/DA will be admissible for attending the Public Hearing.

(S. Narayanan)  
Member Secretary, HSPCB

Keep Haryana Clean and Pollution Free.

Figure-7.1: Notice For Public Hearing





### 7.1.2 Photographs of Public Hearing



Figure-7.2: Government Officers present in Public Hearing



Figure-7.3: Local Public present for Public Hearing



Figure-7.4: Environment Consultants with Project Proponent at Public Hearing



### 7.1.3 Action plan as per Public Hearing Demand

Proceeding of the Public Consultation (Hearing) under the provision of EIA notification 2006 (amended to date) for proposed mining of Sand (Minor Mineral) in Yamuna Nagar allotted M/s M.P. Traders on 23.05.2017 at 12:00 P.M. at Project Site Village –Nagli, Tehsil-Radaur, District-Yamuna Nagar having lease area of 77.25ha. Having the capacity 28,00,000TPA and the Project cost of Rs. 9.00 Crores held under Chairmanship of Sh. Rohtash Singh Kharb I.A.S., Deputy Commissioner, Yamuna Nagar. is attached as **Annexure XII**. The action plan has been prepared accordingly as per demand of public during the public consultation and given below.

S.No	Name of Stakeholder	Question	Reply	Action Plan	Fund Allocation
1.	Sh. Isham Singh Vill- Chorpura	1.) He asked that how many people will be employed from this proposed Sand Mining project?	1) Sh. RS Yadav Environment Consultant and lease holder replied that so many employment opportunities will be generated from this project. 115 skilled and semi-skilled people will get direct employment from this project. 105 dumpers will be used in this project and each dumper requires 4-5 people i.e. driver, cleaner, helper. About 500-700 people will be employed for this purpose. Every year 39000 trees will be planted that will need so many gardeners to take care of the plants. 22 KLD water will be used for dust suppression for which many persons will be employed. Bill clerks will also be needed for this project and to fulfil this purpose graduated students will be employed from the local villages. These are the direct employment opportunities. Apart from this so many indirect	Lease holder assured that first preference in employment will be given to the local villagers only. About 500-700 persons will be deployed directly and indirectly in this mining project.	A budget ofRs. 30 lakhs per year is proposed in CSR for welfare of local villages.

			employment will also be generated i.e. many hotels, workshop repair, tea stalls, general store will be established and so many employment opportunities will be generated. Lease holder assured that first priority for employment will be given to local villagers only.																				
2.	Sh. Satish Kumar	He asked that what arrangements will be done for the health of mine workers?	<p>Sh. RS Yadav Environment Consultant replied that a budget of Rs. 10 Lakhs/year has been proposed for the health safety of mine workers. A qualified MBBS doctor will be appointed, first aid, medical centre will be established at project site. Regular health checkup will be conducted by doctors and villagers also take advantage of that.</p> <p>Dust mask will be provided to the workers to protect themselves from dust. Awareness training programme will also be organized periodically to the workers to minimize the impact of air pollution. Proper care will be taken of the workers so that it won't affect the health of workers. Medical camps will be organized quarterly/ six monthly in which our workers and villagers will also be benefitted.</p> <p>A budget of Rs. 10 Lakhs per year</p>	Systematic and scientific mining will be carried out under the supervision of the qualified Mining engineer. A first aid station with qualified doctor will be setup at the mining site. For the safe transportation of the mineral is separate road will be constructed outside the village Aabadi Road. Regular health checkup will be conducted by doctors and villagers also take advantage of that. Dust mask will be provided to the workers to protect themselves from dust. Awareness training programme will also be organized periodically to the workers to minimize the impact of air pollution.	<p>A budget of <b>Rs.10.00 Lakhs</b> per year is provided for Occupational Health and Safety.</p> <table><tr><th>S. No.</th><th>Description</th><th>Amount (in Lakhs)</th></tr><tr><td>1.</td><td>Measures to Prevent Accidents during Sand Loading</td><td>1.00</td></tr><tr><td>2.</td><td>Measures to Prevent Accidents during minerals Transportation.</td><td>1.00</td></tr><tr><td>3.</td><td>Measures to Prevent Accidents due to Trucks/ Dumpers etc.</td><td>1.00</td></tr><tr><td>4.</td><td>Measures to Prevent Dangerous Incidents during Inundation/Flooding</td><td>2.00</td></tr><tr><td>5.</td><td>Education awareness and first aid kit</td><td>2.00</td></tr></table>	S. No.	Description	Amount (in Lakhs)	1.	Measures to Prevent Accidents during Sand Loading	1.00	2.	Measures to Prevent Accidents during minerals Transportation.	1.00	3.	Measures to Prevent Accidents due to Trucks/ Dumpers etc.	1.00	4.	Measures to Prevent Dangerous Incidents during Inundation/Flooding	2.00	5.	Education awareness and first aid kit	2.00
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			is proposed for occupational health safety of mine workers.		6.	Medical Examination Schedule	3.00
					Total		<b>10.00</b>
3.	Sh. Mohit	He asked what will be the benefits of this project to the villagers?	Sh. RS Yadav Environment Consultant replied that firstly this project is environment friendly project. The sediment comes along with the flow of river and get accumulated so the level of river get raised and if the accumulated sediments/sand will not be excavated then the river can divert from its original path that could lead to the flood. So, the mining will be done upto 3 m in systematic scientific manner and the sand will excavated on regular basis, so the river will flow in channel and will not divert in any other direction and the flow will be smooth. Secondly, good opportunity for generation of employment from this project and first preference will be given to the local villagers only. Details has been already given in reply of para no.-1. This sand is used for development of infrastructure in the state of Haryana and the NCR. So this project is beneficial in every manner.	This river sand mining project will protect from the flood in villages and also generate employment for the local people.About 115 technical, nontechnical, skilled, semi-skilled persons will be deployed in this mining project. Overall about 500-700 persons will get direct and indirect employment. Lease holder also assured that the first preference will be given to the local villagers. This river sand is used for development of infrastructure project of State and NCR.			
4.	Sh. Gurdoyal Singh	He said that how many trees will be planted?	Sh. RS Yadav Environment Consultant replied that approx	It is ensured by lease holder that 39000 trees will be	A budget of Rs.30.00 Lakhs per year is provided for EMP activities		

	Village: GadiGujran		<p>39000-40000 trees will be planted in five years. Only local species of trees will be planted after consultation with DFO.</p> <p>These trees will be planted to minimize the air pollution and noise pollution. Plantation will also be done along with the road of transportation, premises of Gram PanchayatBhawan, Hospitals, schools etc.</p> <p>A budget of Rs. 30 Lakhs/year has been proposed for EMP.</p>	<p>planted per year and these trees will be planted along the haul roads, in Govt. schools, gram Panchayat compound, hospitals etc.</p> <p>Local species of plantation will be done with the consultation of DFO Yamuna nagar.</p>	<p>out of which 4.00 Lakhs is provided for Plantation.</p> <p>In addition of above a budget of Rs. 40.15 Lakhs per annum available in "Mines and Minerals Development Rehabilitation and Restoration Fund. As per requirement part amount may also be utilized from this fund.</p>
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5.	Sh. Nekiram Village: GadhiBirbal	He asked that what kind of pollution will be generated due to proposed mining project?	Sh. RS Yadav Environment Consultant replied that in this sand mining project there is a possibility of air pollution due to mining and transportation of sand. To mitigate this, a proper management plan is being proposed, a budget of Rs. 30 Lakhs/year is also proposed for EMP. Regular sprinkling of water will be done at active mining area, and on haul road for dust suppression. 39000trees per year will be planted along haul road, that will be helpful in minimizing dust generation. Trucks will not be driven overloaded and the trucks will also be covered with Tarpaulin. If wind blows in high velocity than the mining work and transportation will be suspended until it becomes stable, and minimize the impact of air pollution.	The lease holder assured that Regular water sprinkling will be carried out on the mining site and also on the haul road/Kaccha roads used for transportation of minerals to prevent the air pollution. For this 22.00 KLD water per day will be used.  39000 trees per year will be planted along haul road, that will be helpful in minimizing dust generation. These plants will be watered and managed regularly. The mineral loaded trucks also covered with tarpaulin and trucks will not be transported overloaded. Mining operation will be temporary suspended during heavy wind flow to curb the air pollution.	The detailed EMP budget of <b>Rs.30.00 Lakhs per year</b> is given as below:																								
<table><tr><th>S. No.</th><th>Description</th><th>Amount (in Lakhs)</th></tr><tr><td>1.</td><td>Pollution monitoring – Air, Water, Noise and Soil</td><td>5.00</td></tr><tr><td>2.</td><td>Dust Suppression</td><td>6.00</td></tr><tr><td>3.</td><td>Plantation will be at Villages-Nagli, Nagla and Sandhla, near School- Maharaja Agrasein Public School and along the Haul road of these villages.</td><td>8.00</td></tr><tr><td>4.</td><td>Haul road and other roads repair and Maintenance</td><td>6.00</td></tr><tr><td>5.</td><td>Pre-monsoon and post monsoon survey for sedimentation in the river bed</td><td>4.00</td></tr><tr><td>6.</td><td>Waste Water Treatment</td><td>3.00</td></tr><tr><td colspan="2">Total</td><td>30.00</td></tr></table>						S. No.	Description	Amount (in Lakhs)	1.	Pollution monitoring – Air, Water, Noise and Soil	5.00	2.	Dust Suppression	6.00	3.	Plantation will be at Villages-Nagli, Nagla and Sandhla, near School- Maharaja Agrasein Public School and along the Haul road of these villages.	8.00	4.	Haul road and other roads repair and Maintenance	6.00	5.	Pre-monsoon and post monsoon survey for sedimentation in the river bed	4.00	6.	Waste Water Treatment	3.00	Total		30.00
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6.	Sh. Vikram Singh Village: KarodaJaagir	He asked that what is the provision of social development of this village?	Sh. RS Yadav Environment Consultant replied that a CSR budget of Rs. 30 Lakhs/year has been proposed which includes provision of toilets in govt. schools, drinking water facility in local villages and scholarships for students, vocational training. A meeting will be organized with Gram Panchayat before Commissioning Mining Activity and priority list will be prepared as per the need of villages. Monitoring of these activities will also be done. Regularly compliance report will be sent to the HSPCB after getting Environmental Clearance and if they find any deficiency in compliance then District Administration officers may take legal action against the lease holder	The project proponent assured providing of toilets in govt. schools, drinking water facility in local villages and scholarships for students, vocational training. A meeting will be organized with Gram Panchayat before Commissioning mining activity and priority of work will be prepared as per the need of villages.	<div>The detailed CSR budget of Rs.30 Lakhs per year is given as below:</div> <table><tr><th>S. No.</th><th>Description</th><th>Amount (in Lakhs)</th></tr><tr><td>1.</td><td>Vocational training on Villages:- Nagli, Nagla&amp;Sandhla<ul style="list-style-type: none"><li>• Fire and safety,</li><li>• Health and safety,</li><li>• Awareness program on cancer and AIDS.</li></ul></td><td>5.00</td></tr><tr><td>2.</td><td>Sanitations(Bio-toilets) and drinking water facility at Village Nagli</td><td>5.00</td></tr><tr><td>3.</td><td>Sanitations(Bio-toilets) and drinking water facility at Village Nagla</td><td>5.00</td></tr><tr><td>4.</td><td>Sanitations(Bio-toilets) and drinking water facility at Village Sandhla</td><td>5.00</td></tr><tr><td>5.</td><td>Assistance to self help groups</td><td>5.00</td></tr><tr><td>6.</td><td>Health check up camps at mine site and nearby villages (Nagli, Nagla and Sandhla)</td><td>5.00</td></tr><tr><td colspan="2">Total</td><td>30.00</td></tr></table>	S. No.	Description	Amount (in Lakhs)	1.	Vocational training on Villages:- Nagli, Nagla&Sandhla <ul style="list-style-type: none"><li>• Fire and safety,</li><li>• Health and safety,</li><li>• Awareness program on cancer and AIDS.</li></ul>	5.00	2.	Sanitations(Bio-toilets) and drinking water facility at Village Nagli	5.00	3.	Sanitations(Bio-toilets) and drinking water facility at Village Nagla	5.00	4.	Sanitations(Bio-toilets) and drinking water facility at Village Sandhla	5.00	5.	Assistance to self help groups	5.00	6.	Health check up camps at mine site and nearby villages (Nagli, Nagla and Sandhla)	5.00	Total		30.00
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7.	Sh. Avtaar Singh Village: Gumthala	He said that mining is being done in our village Gumthala and there is no provision of sprinkling of water to control the air pollution and no local	Sh. RS Yadav Environment Consultant replied that this is related to another project and advised to complain RO, DC and mining officer in this regard. Lease holder assured that for	Lease holder assured that for social and religious work, sand will be given free of cost. A CSR budget of Rs. 30 Lakhs/year has been proposed which includes development	A budget of Rs.30.00 Lakhs per year is provided for CSR activities.																								

		people have been employed. You are saying that mining will be done only upto 3 m but they are excavating upto 9m so that should be restricted. Whether the sand is free for local villagers?	social and religious work, sand will be given free of cost. A CSR budget of Rs. 30 Lakhs/year has been proposed which includes development of toilets in govt. schools, drinking water facility and scholarships for students, vocational training. Lease holder assured that first priority for employment will be given to local villagers only. Priority list will be prepared as per the need of villages.	of toilets in govt. schools, drinking water facility and scholarships for students, vocational training. Lease holder assured that first priority for employment will be given to local villagers only.	
8.	Deputy Commissioner	Deputy Commissioner, Yamuna Nagar suggested that this sand mining project is very beneficial for the local villagers. Villagers will be benefited in employment and CSR activity. This is eco-friendly mining project which prevent the flooding in the village area. The mining material will be given to the villagers on concessional rate. He also directed the R.O. and mining officers to inspect the mining site of village gumthala and ensure the compliance of EC granted to the lease holder.	Detail replies already given in above paras.	We will comply all the rule and regulations regarding Environmental Clearance.	A budget of Rs40.15 Lakhs/annum will be deposited in "Mines and Minerals Development, Restoration and Rehabilitation Fund". As per requirement this amount is utilized for protection of environment of nearby village across and affected persons from this mining.

## **7.2 HAZARD IDENTIFICATION AND RISK ASSESSMENT METHODOLOGY**

All types of industries face certain types of hazards which can disrupt normal activities abruptly. Similar river bed mines also have risks which need to be addressed for which a disaster management plan has been formulated with an aim of taking precautionary steps to avert disasters and also take such action after disaster which limits the damage to minimum. In the sections below, the identification of various hazards, probable risks during the operational phase of the mining, maximum credible accident analysis and consequences analysis are addressed either qualitatively or quantitatively.

Risk assessments will help mine operators to identify high, medium and low risk levels. This is a requirement of the Occupational Health and Safety Act 2000. Risk assessments will help to priorities the risks and provide information on the need to safely control the risks. In this way, mine owners and operators will be able to implement safety improvements. The following natural/industrial problem may be encountered during the mining operation.

- Inundation: Filling of the mine pit due to excessive rains
- Slope failures at the mine faces or stacks
- Accident due to fire (in forested areas)

As per proposal made under the mining plan the area will be developed by means of opencast mining method. Extraction of minerals is to be carried out by semi-mechanized. Water table will not be touched during the mining process. No high risk accidents like landslides, subsidence flood etc have been apprehended.

### **7.2.1 Risks due to Inundation**

Mining will be done during the non-monsoon periods (October-June); therefore problem of inundation is not likely to happen.

### **7.2.2 Risks Due to Failure of Pit Slope**

In order to allay dangers due to open cast slope failure, final pit, slope stability estimations will be made for the existing mines. Determining the factor of safety, the slopes should be monitored at regular intervals to check for any possible failure.

### **7.2.3 Risks due to Failure of Waste Dumps**

During extraction of sand from mining areas silt and clay will also be removed in form of waste materials. The excavated silt and clay will be used for backfilling of the pits. Therefore there is no risk associated with failure of waste dumps.

### **7.2.4 Risks of Accidents due to Trucks and Dumpers**

Identifying the hazards that come along with the presence of vehicles at the workplace (*e.g.* reversing operations, loading) can cause harm if not properly handled. Among some of the factors that may make vehicle accidents more likely are:

- Rough access roads
- Time pressure
- Inadequate brakes (Possibly from lack of maintenance)
- Carelessly parked vehicles (*e.g.* being parked on a slope without being adequately secured)
- Unsafe coupling and uncoupling of trailers, and
- Untrained drivers
- Overturning vehicles

To avoid such instances we will talk to the workers and their representatives and will involve them in the risk assessment process and tell them what to do, to reduce risk. All transportation within the mine lease area should be carried out directly under the supervision and control of management.

- The vehicles will be maintained in good working condition and checked thoroughly at least once a month by the competent person authorized for the purpose by the management.
- Road signs will be provided at each and every turning point up to the main road (wherever required)
- To avoid danger while reversing the vehicles especially at working place/loading points, stopper should be posted to properly guide reversing/spotting operating.
- Only trained drivers will be hired.

### 7.3 DISASTERS AND ITS MANAGEMENT

Mining and allied activities are associated with several potential hazards to both the employees and the public at large. A worker in a mine will be able to work under conditions, which are adequately safe and healthy. At the same time the environmental conditions also will not impair his working efficiency. This is possible only when there is adequate safety in mines. Hence mine safety is one of the most essential aspects of any working mine. The safety of the mine and the employees is taken care of by the Mines Act 1952, which is well defined with laid down procedure to ensure safety and constantly monitored and supervised by Directorate General of Mines Safety and Department of Mines, State Government.

#### 7.3.1 Identification of Hazards

There are various factors, which can create disaster in sand mine. These hazards are as follows:

- Inundation / Flooding.
- Quick Sand Condition.
- Drowning.
- Accident due to vehicular movement.
- Accident during sand loading, transporting and dumping.

**Table-7.1: Check List for Likely Risks in Sand Mines**

S. No.	Activities	Human Risk			Ecological Risk		
		Probability of Occurrence	Consequence	Risk level	Land	Air	Water
1.	Sand Loading	Possible	Critical	6	0	0	0
2.	Sand Transport	Possible	Critical	6	0	0	0
3.	Sand Dumping and Storage	Possible	Critical	6	0	1	0
4.	Inundation/Flooding	Possible	Minor	3	1	0	0
5.	Quick Sand Condition	Possible	Minor	3	0	0	0
6.	Drowning	Possible	Critical	4	0	0	0
7.	Vehicular Movement	High	Critical	8	1	2	0

#### 7.3.2 Sand Loading

The sand is loaded in the trucks using hand shovels and back-hoe. There are possibilities of injury in the hands during loading with shovels and staying under bucket movement.

- There are possibilities that the workers standing on the other side of loading may get injury due to over thrown sands with pebbles.
- There are possibilities of workers getting injured during opening of side covers of the trucks to facilitate sand loading.

- iii. There are possibilities of riverbank collapse due to close proximity of sand extraction.
- iv. There are chances of falling of cattle/children into sand pit in river bed-- instances of death due to fall in such pits were reported from other areas to the Department of Mines.
- v. Chance of workers getting injured due to improper balancing of truck while loading.

#### **7.3.3 Sand Transport**

The sands loaded in 25 Tons trucks are being sent to the collieries through public roads.

- i. All possibilities of road accidents are possible.
- ii. Accident may also occur during movement in the mine (sand dunes).
- iii. There are possibilities that due to overloading, some pebbles or big boulder may injure the passerby public.

#### **7.3.4 Sand Dumping and Storage**

- i. There are possibilities of the trucks rolling/ sliding down the sand bunker during dumping operation.
- ii. The dumper /trucks may cause injury to the workers working near the stowing plant.
- iii. Dumping the sand in an empty sand bunker may cause injury to the stowing operator if the bunker chute is in open condition.
- iv. Dumping the sand in an empty sand bunker may cause burying the stowing machineries if the bunker chute is in open condition.

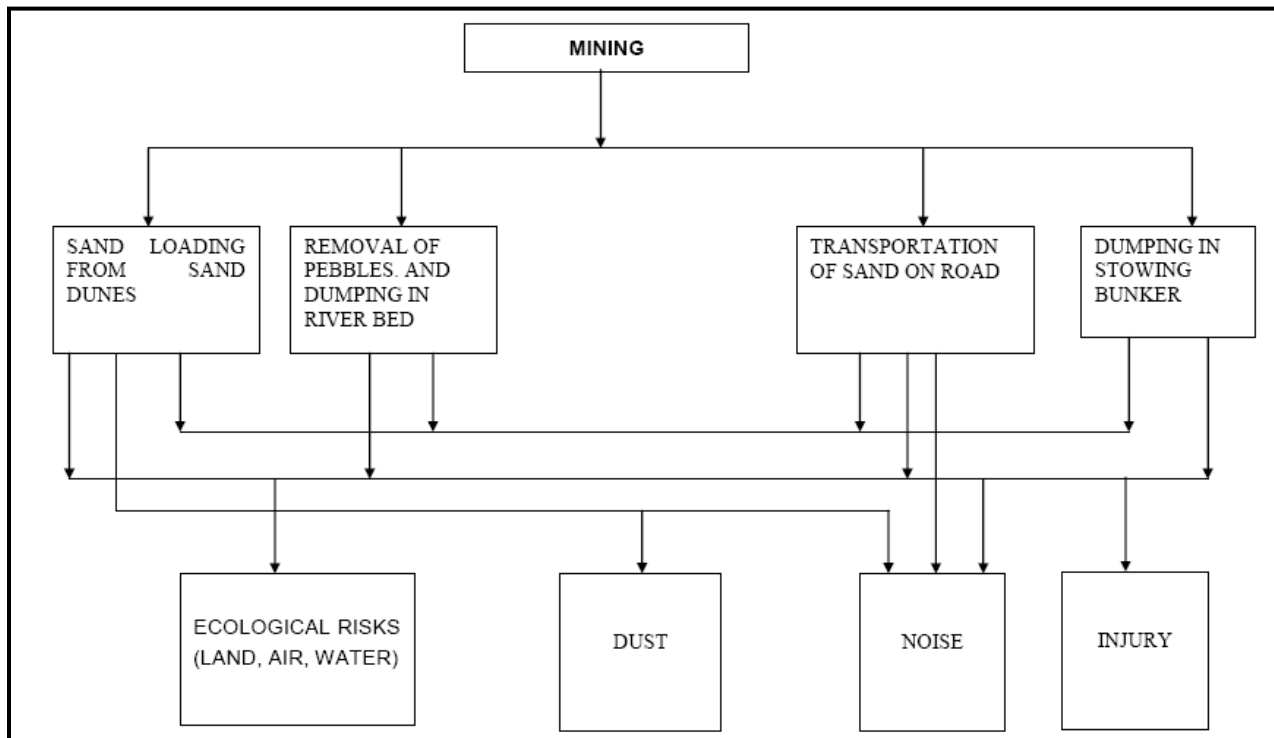
#### **7.3.5 Heavy Machinery**

Most of the accidents occur during transportation by dumpers, trucks and other heavy vehicles and are often attributable to mechanical failures, in which the factor of human errors cannot be ruled out.

#### **7.3.6 Inundation / Flooding**

- i. The possibility of inundation/flooding of the sand mines are very high during monsoon or during heavy rains in lean season as the mine area lies over the sand dunes of a riverbed.
  - ii. There are dangers to the trucks and other machineries due to flooding.
  - iii. There are dangers to the workers working in the sand dunes.
- Inundation or flooding is expected and beneficial for these sand mines as during this time only the sand reserve gets replenished.





**Figure-7.5: Identification of Hazards in Mines**

### 7.3.7 Quick Sand Condition

- i. This condition occurs when the working crosses the water table at a certain depth and the permeability of the strata is very high.
- ii. This condition occurs when the effective stress in the sand becomes zero due to influx of water i.e.,  $i = i_{cr} = \gamma' / \gamma_w$ ; where  $i$  = Hydraulic gradient,  $i_{cr}$  = Critical Hydraulic gradient,  $\gamma'$  = submerged unit weight,  $\gamma_w$  = unit weight of water.
- iii. This creates danger condition to the trucks and other machineries plying over the sand dunes.

### 7.3.8 Drowning

There are possibilities of drowning in the deeper part of the river. However safety jackets, floating tube will be kept at the site office to prevent any mishap.

### 7.3.9 Mitigation of Hazards

#### 7.3.9.1 Measures to Prevent Accidents during Sand Loading

- i. The trucks will be brought to a level so that the sand loading operation suits to the ergonomic condition of the workers and the back-hoe.
- ii. The loading will be done from one side of the truck only.
- iii. The workers will be provided with gloves and safety shoes during loading.
- iv. Opening of the side covers (pattas) will be done carefully and with warning to prevent injury to the loaders.
- v. No sand will be collected within 7.5m from bank, especially from outer bank of the meandering river. Safe clearance will be mainly determined by the height of the river bank and thickness of sand to be extracted from the close vicinity of that bank.
- vi. Ponding in the river bed shall not be allowed.
- vii. Operations during daylight only.

- viii. No foreign material (garbage's) will be allowed to remain/spill in river bed and catchment area, or no pits/pockets are allowed to be filled with such material.
- ix. Stockpiling of harvested sand on the river bank will be avoided.
- x. For particular operations, approaching river bed from both the banks will be avoided.

#### **7.3.9.2 Measures to Prevent Accidents during Sand Transportation.**

- i. All transportation within the main working will be carried out directly under the supervision and control of the management.
- ii. The Vehicles must be maintained in good repairs and checked thoroughly at least once a week by the competent person authorized for the purpose by the Management.
- iii. Road signs will be provided at each and every turning point especially for the guidance of the drivers at the evening/night.
- iv. To avoid danger while reversing the trackless vehicles especially at the embankment and tipping points, all workers will be removed from all areas for reversing of lorries, and the vehicle will have audio-visual alarm during reversing.
- v. A statutory provision of the fences, constant education, training etc. will go along way in reducing the incidents of such accidents.
- vi. Generally, overloading will not be permitted. Big boulders will not be loaded. This is unsafe and may damage equipment and stowing bunker.
- vii. The truck will be covered and maintained to prevent any spillage.
- viii. The maximum permissible speed limit will be ensured.
- ix. The truck drivers will have proper driving license.

#### **7.3.9.3 Safety Features Required in Tippers/Trucks**

- a) Exhaust/ Retard Brake: Required as per DGMS circular 02 of 2004.
- b) Propeller shaft guard: Propeller shaft guard as per DGMS circular 10 of 1999.
- c) Tail gate protection: Protection of cabin against collision either by head to head or head to tail.
- d) Limiting speed device: To ensure speed limits as decided by management. The device may be Electronic or mechanical type speed governors.
- e) Reverse gear for audio-visual alarm: The audio-visual alarm provided for equipments will confirm to DGMS (Tech.) Tests to be carried out on the audio-visual alarm and certificates shall be issued to user industries.
- f) Provision of two brakes: One of brakes shall be fail safe and for details refer DGMS circular 09 of 1999.
- g) Body lifting position locking arrangement: A hooter along with an indication may be provided to show the body is lifted.
- h) Fire suppression System: Semi-automatic fire suppression system. For details refer DGMS circular 10 of 2004. The fire suppression system shall be a factory fitment.
- i) Blind spot mirror: Better view of front blind spot by operator.
- j) Retro reflective reflectors on all sides: For visibility of truck during night
- k) Seat belt reminder: To alert operator for using the seat belt
- l) Proximity warning device: To alert operator
- m) Rear Vision System: For assisting operator to have back view during reversing
- n) Auto dipping System: To reduce glaring of eyes of operator during night
- o) Load Indicator and Recorder: Enables management to detect and prevent over loading.
- p) Global Positioning system: To prevent illegal transport and selling of sand, restricting short-cut routes other than stipulated routes and computerized monitoring.

It is the responsibility of the Project Proponent to mention these terms and conditions in the tender document.

#### **7.3.9.4 Measures to Prevent Accidents during Sand Dumping and Storage**

- i. The Stowing Sand bunkers will be covered by steel grizzly (netting) to prevent inadvertent fall of human being or the vehicles during dumping operation.
- ii. The dumping will be done only when the chute of the sand bunker is in closed condition or partially filled.
- iii. The vehicles/trucks will not be brought over the grizzly.
- iv. There will be a duly constructed berm made up of concrete or other material to prevent the rear wheels come/roll over the grizzly of sand bunker.
- v. Dozers are used near the sand bunkers to maintain the safety bern and to push material over the edge as required.
- vi. The dumping operation will be done under strict supervision.

#### **7.3.9.5 Measures to Prevent Accidents due to Trucks/ Dumpers etc.**

- i. All transportation within applied mining lease working will be carried out directly under the supervision and control of the management.
- ii. The vehicles will be maintained in good condition and checked thoroughly at least once a month by the competent person authorized for the purpose by the management.
- iii. Road signs will be provided at each and every turning point up to the main road (wherever required).
- iv. To avoid danger while reversing the equipment's/ vehicles especially at the working place / loading points, stopper will be posted to properly guide reversing/ spotting operating, otherwise no person will be there within 10 Km radius of machine.
- v. A statutory provision of the fences, constant education, training etc. will go a long way in reducing the incidents of such accidents.
- vi. Regular training will be provided to the operators by the Company or the Contractors.

#### **7.3.9.6 Measures to Prevent Dangerous Incidents during Inundation/Flooding**

- i. Inundation or flooding is expected and beneficial for these sand mines as during this time only the sand reserve gets replenished.
- ii. During monsoon months and heavy rains the sand mining operations are ceased.
- iii. The Trucks and other vehicle plying over the dunes will be kept on the river banks beyond HFL.
- iv. The workers are not allowed to go over the dunes during heavy rains.
- v. There will be mechanism/warning system of heavy rains and discharges from the upstream dams.

#### **7.3.9.7 Measures to Prevent Quick Sand Condition**

- i. The only way to avoid quick sand condition is by avoiding sand lifting below water table.
- ii. The critical hydraulic gradient (icr) will be maintained at less than 1 to prevent high artesian pressure in a coarse sand area.
- iii. At least 0.5m sand bed will be left in-situ while harvesting sand from riverbed.

#### **7.3.9.8 Measures to Prevent Drowning**

- i. The sand mining will be done under strict supervision.
- ii. The workers are not allowed to go to the deeper areas of the rivers.
- iii. The workers are not allowed to fish in the river during working hours.
- iv. In case it is required to cross the river, it is done under strict supervision and over the shallow area using life lines.
- v. Few life jackets, inflated tubes will be kept near the mine site.

#### **7.3.9 Training and Human Resources Development**

- i. Appointment and delegating qualified and experienced personnel in various disciplines.

- ii. Adequate training/refresher training will be provided to the supervisors, workers keeping in view provisions of Mines Vocational Training Rules, 1966; Mine Rules, 1955, Mines Rescue Rules, 1985.
- iii. Personnel who have to operate and maintain HEMM, Trucks etc are to be trained under the guidance of the manufacturers and as per provisions of DGMS Circular Technical 1/1989 regarding accidents in opencast mines. Recommendation of Seventh Conference on Safety in Mines on “Safety in Open Cast Mining”, “Traffic Rules and Procedures”, “Mobile equipments and Highway Delivery Vehicles”, “Operations and Operator Training” and other related circulars.
- iv. The training of mine personnel shall be provided regularly with respect to environmental protection.
- v. Special courses for employees will be arranged for afforestation, revegetation, reclamation, health hazards (identification), malaria eradication, HIV prevention etc in the training centre of the company.

#### **7.4 OCCUPATIONAL HEALTH HAZARDS**

Dry-pit mining by open cast method involves dust generation by excavation, loading and transportation of mineral. At site, during excavation and loading activity, dust is main pollutant which affects the health of workers whereas environmental and climatic conditions also generate the health problems. Addressing the occupational health hazard means gaining an understanding of the source (its location and magnitude or concentration), identifying an exposure pathway (*e.g.* a means to get it in contact with someone), and determination of likely a receptor (someone receiving the stuff that is migrating). Occupational hazard due to sand mining mainly comes under the physical hazards. Possible physical hazards are as below mention:

##### **7.4.1 Physical Hazards Due To Mining Operations**

Following health related hazards were indentified due to riverbed sand mining operations to the workers:

- a) **Light:** The workers may be exposed to the risk of poor illumination or excessive brightness. The effects are eye strain, headache, eye pain and lachrymation, congestion around the cornea and eye fatigue.
- b) **Heat and Humidity:** The most common physical hazard is heat. The direct effects of heat exposure are burns, heat exhaustion, heat stroke and heat cramps; the indirect effects are decreased efficiency, increased fatigue and enhanced accident rates. Heat and humidity are encountered in hot and humid condition when temperatures and air temperatures increase in summer time up to 48°C or above in the river bed mining area.
- c) **Eye Irritation:** During the high windy days in summer the sand could be the problems for eyes like itching and watering of eyes.
- d) **Respiratory Problems:** Large amounts of dust in air can be a health hazard, exacerbating respiratory disorders such as asthma and irritating the lungs and bronchial passages.
- e) **Noise Induced Hearing Loss:** Machinery is the main source of noise pollution at the mine site.

##### **7.4.2 Medical Examination Schedule**

To minimize the health impacts PPE like dust masks, ear plugs/ muffs and other equipments will be provided for use by the work personnel. All workers will be subjected to Initial Medical Examination as per Mines Rule 1955 at the time of appointment. Periodical Medical Examination will be conducted at least once in five years. Medical camps will be organized. The detail of health check up and periodical medical examination schedule is given below.

**Table-7.2: Medical Examination Schedule**

S. No	Activities	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
<b>1.</b>	Initial Medical Examination (Mine Workers)					
<b>A.</b>	Physical Check -up		-	-	-	-
<b>B.</b>	Psychological Test		-	-	-	-
<b>C.</b>	Audiometric Test		-	-	-	-
<b>D.</b>	Respiratory Test					
<b>2.</b>	Periodical Medical Examination (Mine Workers)					
<b>A.</b>	Physical Check -up	-				
<b>B.</b>	Audiometric Test	-				
<b>C.</b>	Eye Check -up	-				
<b>D.</b>	Respiratory Test	-				
<b>3.</b>	Medical Camp (Mine Workers and Nearby Villagers)	-				
<b>4.</b>	Training (Mine Workers)					

**Note:** Medical Follow Ups Work force will be divided into three targeted groups age wise as follows:

Age Group	PME as per Mine Rule 1955	Special Examination
Less than 25 years	Once in a Three Years	In case of emergencies
Between 25 to 40 Years	Once in a Three Years	In case of emergencies
Above 40 years	Once in a Three Years	In case of emergencies

## 7.5 ANNUAL REPLENISHMENT OF MINERAL

The proposed project is on Yamuna Riverbed as this is a perennial river which is being replenished continuously throughout the year especially during the monsoon as per the ToR study of replenishment is required for this project.

As per Expert appraisal committee of MoEF&CC New Delhi, GOI meeting dated October 24-25, 2016. It was decided that this study can be submitted within 2 yr from the date of Environment clearance because it requires actual data for replenishment. In view of EAC, MoEF&CC New Delhi, GOI the detailed replenishment study shall be submitted within 02 years after grant of EC.

## 7.6 SUMMARY

Risk assessments will help mine operators to identify high, medium and low risk levels. This is a requirement of the Occupational Health and Safety Act 2000. Risk assessments will help to priorities the risks and provide information on the need to safely control the risks. In this way, mine owners and operators will be able to implement safety improvements. Mining and allied activities are associated with several potential hazards to both the employees and the public at large. A worker in a mine will be able to work under conditions, which are adequately safe and healthy. At the same time the environmental conditions also will not impair his working efficiency. This is possible only when there is adequate safety in mines. Hence mine safety is one of the most essential aspects of any working mine. The conservation plan suggested here is for scheduled fauna (Animal and Bird) will be implemented by the mining lease holder and the budgetary provision is discussed and given in detail for the implementation of the same in the area. It is very important to conserve the Schedule fauna in the area by the local authority as well as by the forest officials. People are not aware to local species will be used in the plantation. A budget of 15.00 Lakhs has been allocated towards conservation of Scheduled fauna in the area for the implementation of conservation proposal. This mining project has positive



impact on social and economic well being of the community because this project provides employment opportunities to local people and many social welfare works done by project proponent. The percentage of replenishment is more than 100% every year. In view of this huge amount of sedimentation there are fare chances of replenishment of the river bed annually. There is no displacement of the population within the project area and adjacent nearby area. However, as per the point 14 of Lol the lease holder will deposit 10% of the annual contract money *i.e.* **Rs. 40.15 Lakhs** to the **Mines and Minerals Development, Restoration and Rehabilitation Fund**. This amount will be spent by lease holder for environmental protection and mineral conservation in the surrounding area of core and buffer zone.



## CHAPTER-8

# PROJECT BENEFITS

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### 8.0 GENERAL

The execution of the project bring overall improvement in the locality, neighborhood and the State by bringing industry, roads, employment and hence improving living standard and economic growth.

### 8.1 PHYSICAL BENEFITS

The opening of the proposed project will enhance the following physical infrastructure facilities in the adjoining areas:

- a. **Road Transport:** There will be improved road communication due to the proposed project and maintenance will also be done time to time.
- b. **Market:** Generating useful economic resource for construction. Excavated mineral will provide a good market opportunity.
- c. **Infrastructure:** Creation of community assets (infrastructure) like provision for drinking water, construction of school buildings, village roads/ linked roads, dispensary and health centre, community centre, market place etc, as a part of corporate social responsibility.
- d. **Enhancement of Green Cover:** As a part of reclamation plan, plantation will be carried along the river banks or along the road sides or near the civic amenities.
- e. **Green Belt Development:** A suitable combination of trees that can grow fast and also have good leaf cover will be adopted to develop the green belt. It is proposed to plant 39000 no's of native species along with some fruit bearing and medicinal trees during the mining plan period.
- f. **Local Employment:** This project will enhance the opportunities of employment for the local villagers near the lease area due to which their economic status become better

### 8.2 SOCIAL BENEFITS

The mining in the area will create rural employment. It has been observed that conditions of the villages around mining areas are better than that of distant villages. The mining activity in the region will have positive impact on the social economic condition of the area by way of providing employment to the local inhabitants; wages paid to them will increase the per capita income, housing, education, medical and transportation facilities, economic status, health and agriculture.

A detailed program for socio economic development of the area has been framed. The salient features of the programme are as follows:

- i) Social welfare program like provision of medical facilities educational facilities, water supply for the employees as well as for nearby villagers will be taken.
- ii) A well laid plan for employment of the local people has been prepared by giving priority to local people.
- iii) Supplementing Govt. efforts in health monitoring camps, social welfare and various awareness programs among the rural population.
- iv) Assisting social forestry program.
- v) Adoption of villages for general development.
- vi) Supply of water to village nearby villages.
- vii) Development of facilities within villages like roads, etc.

#### 8.2.1 Environmental and social Commitments

The project proponent is conscious of its social commitments and as any good corporate citizen; it is proposed to undertake the need specific proposed ESC activities in the surrounding areas of the mine.

The mining operations will provide employment to **115 people**. The project proponent has proposed to incur budget of **Rs. 30.00 Lakhs** for ESC activities and discussed in chapter 7.



### 8.3 ECOLOGICAL BENEFITS

A green belt will be developed along the boundary of the mining lease area. The area for green belt plantation consists of undisturbed soil; hence plantation could be made as in any garden or road side plantation. Green belt is erected not from biodiversity conservation point of view but is basically developed as a screen to check the spread of dust pollution. It is proposed to plant 39000Nos. of native species per year along with some fruit bearing and medicinal trees during the plan period and a budget of **Rs. 6.00 Lakhs/yr** for plantation is given in EMP. A green belt, 7.5m in width will be developed around the core zone. Green belt plantation will be started with the beginning of the mining and will be completed within five years from the beginning.

### 8.4 SUMMARY

The management will recruit the semi-skilled and unskilled workers from the nearby villages. The project activity and the management will definitely support the local Panchayat and provide other form of assistance for the development of public amenities in this region. The company management will contribute to the local schools, dispensaries for the welfare of the villagers. A suitable combination of trees that can grow fast and also have good leaf cover will be adopted to develop the green belt. It is proposed to plant 39000 no's of native species along with some fruit bearing and medicinal trees during the mining plan period. The project proponent has allocated **Rs. 30.00 Lakhs** per annum for ESC Activities and **Rs. 40.15 Lakhs** per annum to the **Mines and Minerals Development, Restoration and Rehabilitation Fund**. This amount will be spent by lease holder for the protection of environment in the nearby surrounding area. The officers of the State Government Haryana will strictly monitor the compliance of lease holder in this regard. Other than this social development of village will be considered as per social activities.



## CHAPTER-9

# ENVIRONMENTAL COST BENEFIT ANALYSIS

### 9.0 PROJECT COST

After making exhaustive study, it is considered desirable that the mining project may be implemented. Project cost for the proposed Sand Mining namely “**Nagli Block/YNR B15**” over an area of **77.25 Ha.** falling in Village-Nagli, Tehsil-Radaur, District-Yamuna Nagar (Haryana) is **Rs. 9.0 Crores.**

**Table 9.1: Project Cost and Benefit**

Major Heads	Total
<b>Production Capacity</b>	28,00,000 Ton per annum
<b>Production Cost of Mineral</b>	Rs112.50/- Per Ton or Rs.4.50 per cu. ft.
<b>Sale Value of Mineral</b>	Rs116.50/- Per Ton or Rs.4.66 per cu. ft.
<b>Profit</b>	Rs.4.00 per Ton
<b>Estimated Profit per Annum</b>	<b>1,12,00, 000/- Per Annum approx.</b>

### 9.1 ENVIRONMENT COST ANALYSIS AND PROJECT IMPLEMENTATION

The Environment cost for this proposed mining includes Environmental Management Plan, Environmental and Social Responsibility, Occupational Health and Safety which is likely to come **Rs. 10.00 Lakhs** per annum. The detailed cost for Environmental Expenses is given below in the Table.

**Table 9.2: Environmental Cost Analysis**

S. No.	Major Heads	Expenses per annum(Lakhs)
<b>1.</b>	Environmental Management Plan	Rs. 30.00Lakhs
<b>2.</b>	Environmental and Social Responsibility	Rs. 30.00 Lakhs
<b>3.</b>	Occupational Health and Safety	Rs. 10.00 Lakhs
	<b>Total</b>	<b>Rs. 70.00 Lakhs</b>

The estimated capital cost and financial viability of the present scheme has been worked out on the assumption that the above scheme shall be completed by the end of Year, 2035 *i.e.* end of lease period. From the above financial analysis, it is clear that this stone mining project is financial and technically viable. The estimated profit will be 1,12,00,000-70, 00,000=4,20,00,000 per annum.



## CHAPTER-10

# ENVIRONMENTAL MANAGEMENT PLAN

### 10.0 INTRODUCTION

The mine development in the ML area needs to be intertwined with judicious utilization of natural resources within the limits of permissible assimilative capacity. The assimilative capacity of the study area is the maximum amount of pollution load that can be discharged in the environment without affecting the designated use and is governed by dilution, dispersion and removal due to natural physicochemical and biological processes.

The environmental management must be integrated into the process of mine planning so that ecological balance of the area is maintained and adverse affects are minimized. An Environmental Management Plan (EMP) is a site specific plan developed to ensure that the project is implemented in an environmentally sustainable manner. An effective EMP ensures the application of best practice environment management to a project. The purpose of an EMP is to:

- i. Assists proponent in the preparation of an effective and user friendly EMP.
- ii. Improve the contribution that an EMP can make to the effectiveness of the environmental management process.
- iii. Ensure a minimum standard and consistent approach to the preparation of EMP's.
- iv. Ensure that the commitments made as part of the project's EIA are implemented throughout the project life.
- v. Ensure that environment management details is captured and documented at all stages of a project.

The design of EMP for operational phase has been aimed to achieve the following objectives:

- i. To ensure adoption of state of art technological environmental control measures and implementing them satisfactorily.
- ii. Effectiveness of mitigatory measures in mitigation of impacts.
- iii. Description of monitoring program of the surrounding environment.
- iv. Institution arrangements to monitor effectively and take suitable corrective steps for implementation of proper EMP.
- v. An Environmental Management Cell (EMC) should be set up to take care of all environment aspects and to maintain environmental quality in the project area.

The detailed hierarchy and responsibilities of Environment Management Cell is discussed in **Chapter6**.

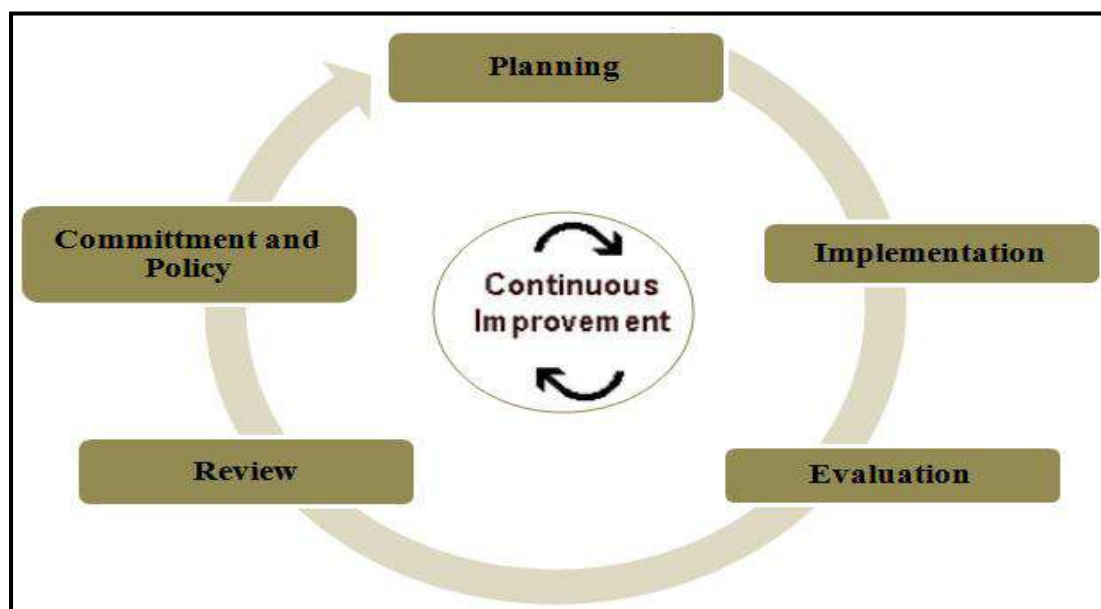


Figure-10.1: Flow Chart of EMP



### **10.1 LAND USE PATTERN**

River bed mining can lead to river bank erosion and sedimentation arising from changes in hydrology due to alteration in water depths and river bed morphology. Sand and gravel in lowland river landforms are biologically important and an economic asset. Keeping this in mind, the following management plans are suggested:

- i. There will be no mining near the banks. This is to protect the bank erosion and river migration.
- ii. Proper wide benches in the mining area will be created to prevent any erosion.
- iii. Slopes of the sides in mine will be at least 45° to prevent any erosion.

### **10.2 AIR ENVIRONMENT MANAGEMENT**

Mitigative measures suggested for air emission control will be based on the baseline ambient air quality monitoring data. From the point of view of maintenance of an acceptable ambient air quality in the region, it is desirable that the air quality needs to be monitored on a regular basis to check it vis-à-vis the NAAQS prescribed by MoEF&CC and in cases of non-compliance, appropriate mitigative measures will be adopted. In order to minimize impacts of mining on air and to maintain it within the prescribed limits of CPCB/ SPCB, an Environmental Management Plan (EMP) has been prepared. This will help in resolving all environmental and ecological issues likely to cause due to mining in the area. During the course of mining no toxic substances are released into the atmosphere as such there seems to be no potential threat to health of human beings. In the mining activities, the only source of gaseous emissions is from the engines of vehicles. The reasons may be quality of fuel, improper operation of the engine, etc; proper maintenance of engines will improve combustion process and brings reduction in pollution.

#### **10.2.1 Control of Gaseous Pollution**

In mining activities, the only source of gaseous emissions is from the engines of transport vehicles. The emissions from the diesel engines of the machinery can be controlled by proper maintenance and monitoring of machines.

#### **10.2.2 Control of Dust Pollution**

The main pollutant in air is PM<sub>10</sub>, which is generated due to various mining activities. However to reduce the impact of dust pollution the following steps have been taken during various mining activities.

##### **a) During loading operation**

- i) Latest loading equipment like hydraulic excavators will be used with dumpers. This reduces the number of buckets to fill from height and thus have comparatively less dust generation. The propagation of this dust is confined to loading point only and does not affect any person both the operators of excavator and dumpers who will sit in closed chamber and will be equipped with dust mask.
- ii) Skilled operators will operate excavators.
- iii) Avoid overloading of dumpers and consequent spillage on the roads.
- iv) The operators' cabin in the drills, dumpers will be provided with dust free enclosure and persons working at high dust prone areas will be provided with dust mask.

##### **b) During Transport operation**

- i) All the haulage roads including the main ramp be kept wide, leveled, compacted and properly maintained and watered regularly during the shift operation to prevent generation of dust due to movement of dumpers, and other vehicles.
- ii) Mineral carrying trucks will be effectively covered by Tarpaulin to avoid escape of fines to atmosphere.
- iii) Regular Compaction and grading of haul road (Motable connecting road)s to clear accumulation of loose material.
- iv) Air quality will be regularly monitored both in the core zone and the buffer zone.



**c) Plantation work carried out**

In order to reduce air pollution in the surroundings, green belt will be developed around mines office, mine approach road. The plantation will be done around the lease boundary.

**d) Monitoring of air pollution**

Periodic air quality survey will be carried out to monitor the changes consequent upon mining activities as per the norms of Haryana State Pollution Control Board.

**10.3 NOISE AND VIBRATION ENVIRONMENT**

The ambient noise level monitoring carried out in and around the proposed mine lease area shows that ambient noise levels are well within the stipulated limits of MoEF&CC. There is no drilling and blasting for mineral extraction. Noise pollution will only be due to loading and transporting equipment. Effective steps will be taken to keep the noise level well below the DGMS prescribed limit of 65 dbA.

**10.3.1 Noise Abatement and Control**

- i. Proper maintenance of all machines is being carried out, which help in reducing generation of noise during operations.
- ii. No other equipments except the Transportation vehicles and Excavator and Loaders (as and when required) for loading is allowed.
- iii. Noise generated by these equipments is intermittent and does not cause much adverse impact.
- iv. Periodical monitoring of noise will be done to adopt corrective actions wherever needed.
- v. Plantation will be taken up along the approach roads. The plantation minimizes propagation of noise and also arrests dust.

**10.4 WATER MANAGEMENT**

There will be no wastewater generate from the mining operations. Only wastewater generation will be sanitary wastewater, which will be treated in the septic tank.

**10.4.1 Surface and Ground Water Management**

- i. Mining will neither intersect the ground water table of the area. So not at all disturbing water environment.
- ii. The mining does not have any impact on the topography and natural drainage of surrounding area.

**10.4.2 Waste Water Management**

No waste water is generated from the mining activity of minor minerals as the project only involves lifting/excavation of Sand and transportation directly to the consumers.

**10.4.3 Water Conservation**

The project do not consume any process water except for drinking, dust suppression and plantation. Plantation is proposed, which will increase the water holding capacity and help in recharging of ground water. No artificial rainwater harvesting is proposed for the present project.

**10.5 SOLID WASTE MANAGEMENT**

Waste management is an important facet of environment management. Thus, solid waste management is important for both aesthetics and environment viewpoints.

- i. Solid waste (sand and silt) that will be generated during mining activities as spillage will be utilized for filling of the mine voids. Apart from this, no other solid wastes will be generated from the said mining operations.
- ii. Generated food waste or any other domestic waste will be collected in dustbins and will be properly disposed off.
- iii. There are no toxic elements present in the mineral which may contaminate the soil or river water.



## 10.6 GREEN BELT DEVELOPMENT

The proposed green belt in the lease area is to be developed taking into consideration the availability of area as the efficiency of green belt in pollution control mainly depends on tree species, its width, distance from pollution sources, side of the habitat from working place and tree height. The proposed green belt has been designed to control PM<sub>10</sub>, gaseous pollutants, noise, surface run off and soil erosion etc. While considering the above aspects due care will be taken for selecting the suitable characteristics plant species such as fast growing, locally suitable plant species, resistant to specific pollutant and those which would maintain the regional ecological balance, soil and hydrological conditions.

### 10.6.1 Plan for Link road and haulage road

This Sand mining site is located in village Nagli district Yamuna Nagar and connected with the metalled road. M.T. Karhera mining site is 4.0 Km away from SH-6, and there five haul road (Motorable connecting road) connected to this mining site are as follows – Sandhala is 1.2 Km, Lalchhappar is 1.6 Km, Nagla is 3.4 Km, 1.3 Km is Gumthala, 1.4 Km Nasrulluagarh from Nagli mining site. Its annual maintenance cost is above 5.0 lakhs this amount will be utilized from the EMP budget and a budget 40.15 Lakhs is also available in Restoration and rehabilitation fund part amount may also be utilized from this fund. A map (Fig 10.2) is also enclosed showing the existing network of road and the proposed motorable road.

Under the afforestation plan, plantation in nearby villages and connecting roads will be done. The implementation for development of greenbelt will be of paramount importance as it will not only add up as an aesthetic feature but will also act as a pollution sink. The species to be grown in the areas will be dust tolerant and fast growing species so that a permanent greenbelt is created. Plantation in the barrier zone and roads is necessary as these areas will contain fine particulates resulting from mining operation and vehicle movement. Plantation will also be carried out as social forestry program in village, school and the areas allocated by the Panchayat/State authorities. Native plants like Neem, Peepal, and other local species will be planted. A suitable combination of trees that can grow fast and also have good leaf cover shall be adopted to develop the greenbelt. It is proposed to plant **39000 Nos** of native species along with some fruit bearing and medicinal trees during the plan period. The greenbelt development program is given in **Table 10.1**

**Table 10.1: Plan for Afforestation**

Year	Saplings to be planted	Survival (@ 70%)	Species	Place of Plantation
I	3900	2730	Neem, Peepal, Ber, Shisham, Sirish, and other native species as per DFO Yamunanagar.	<ul style="list-style-type: none"> <li>Along the roads, in barren area,</li> <li>Plantation in nearby Village: Nagli approx 1.1 Km towards S from the mining site.</li> <li>Plantation in schools like Maharaja Agrasain Public School (~2 km in SW direction).</li> </ul> Plantation in surrounding office & rest shelter and other social forestry program.
II	3900	2730		
III	3900	2730		
IV	3900	2730		
V	3900	2730		

**Guidelines for plantation:** The plant species identified for greenbelt development shall be planted using pitting technique. The pit size will be either 45 cm x 45 cm x 45 cm or 60 cm x 60 cm x 60 cm. bigger pit size will be considered at marginal and poor quality soil. Soil used for filling the pit should be mixed with well decomposed farm yard manure or sewage sludge at the rate of 2.5 kg (on dry weight basis) and 3.6 kg (on dry weight basis) for 45cm x 45 cm x 45 cm and 60 cm x 60 cm x 60 cm size pits respectively. The filling of soil should be completed at least 5-10 days before actual plantation. Healthy sapling of identified species should be planted in each pit with the commencement of monsoon. Provision for regular and liberal watering during the summer period during the commissioning stage of the plant will be arranged from the local available resources. The authorities responsible for plantation will also make adequate measures for the protection of the saplings. While making choices of plant species for cultivation in green belt, weightage has been given to the natural native species, bio climatic condition,



plants which can be grown as per normal horticultural practices. Plant species identified for greenbelt development, considering the bio-climatic and soil condition.

### **Selection of Plants for Greenbelts**

The main limitation for plants to function as scavenger of pollutants are, plant's interaction to air pollutants, sensitivity to pollutants, climatic conditions and soil characteristics. While making choice of plants species for cultivation in green belts, due consideration has to be given to the natural factor of bio-climate. Xerophytes plants are not necessarily good for greenbelts; they with their sunken stomata can withstand pollution by avoidance but are poor absorber of pollutants. Character of plants mainly considered for affecting absorption of pollutant gases and removal of dust particle are as follows.

#### **For absorption of gases:**

- Tolerance towards pollutants in question, at concentration, that are not too high to be instantaneously lethal
- Longer duration of foliage
- Freely exposed foliage
- Adequate height of crown
- Openness of foliage in canopy
- Big leaves (long and broad laminar surface)
- Large number of stomatal apertures

#### **For Removal of Suspended Particular matter:**

- Height and spread of crown.
- Leaves supported on firm petiole
- Abundance of surface on bark and foliage
- Roughness of bark
- Abundance of axillaries hairs
- Hairs or scales on laminar surface
- Protected Stomata

#### **Objective of Plan:**

The main purpose of this plan is to develop greenbelt and landscape at project site so that following specific purpose is met with after completion of the project:

- a. General pollution abatement.
- b. Air pollution attenuation.
- c. Dust absorption.

As envisaged in the National Forest Policy 1988 that one third of the total area should be under green cover to maintain ecological balance in the country. It is very difficult target to attain agricultural state like Haryana but their enormous scope for attaining this target under the developmental projects where the project is designed as fresh and there is change of land use from agriculture primarily to other uses. Therefore, to attain the target as envisaged under State Forest Policy and National Forest Policy, the provision of green belts/avenue plantations is made under developmental projects. The species proposed should be long rotation, ornamental, evergreen, hardy, wind firm. The species proposed should be long rotation, ornamental, evergreen, hardy, wind firm. The species suitable for urban areas should have capacity to combat pollution.

### **Plantation program**

The project will be implemented on an area of 77.25 Ha and plantation will be done on 33% of this mining area i.e 26 ha.

This is river bed mining area so the plantation will be done on the haul road (Motable connecting road), Grampanchayat land, School and village land detail of plantation is given in below table:



<b>Mine Area (Ha)</b>	<b>77.25</b>
1/3 Plantation area	26 ha
Total No of plants @1500/ha	39000
Life of Mine (Yrs)	10
Haul Road Area (Km)	8.9Km or 8900 m
Plantation on haul road (Motorable connecting road) (5mt spacing) sqM	<b>3560</b>
Village, School and Gram panchayat area for plantation Area for Plantation (Ha)	17.1 ha
Total plantation on Village, School and Gram panchayat area	<b>35440</b>
<b>Total no of plant</b>	<b>39000</b>

**Table-10.2 List of Species for Greenbelt Development**

S.No.	Scientific Name	Common Name	Type	Effective in Control
1.	<i>Azadirachta indica</i>	Neem	Tree	Dust, air pollution, noise pollution
2.	<i>Prosopis cineraria</i>	Khejari	Tree	Air Pollution
3.	<i>Zizyphus mauritiana</i>	Beri	Tree	Air Pollution, noise pollution
4.	<i>Acacia Nilotica var-indica</i>	Kikar	Tree	Air Pollution, noise pollution
5.	<i>Delbergia sissoo</i>	Shisham	Tree	Air Pollution, noise pollution
6.	<i>Ficus religiosa</i>	Pipal	Tree	Air Pollution, noise pollution
7.	<i>Ficus bengalensis</i>	Bargad	Tree	Air Pollution, noise pollution
8.	<i>Ficus glomerata</i>	Gullar	Tree	Air Pollution, noise pollution
9.	<i>Melia azedarch</i>	Bakain	Tree	Air Pollution, noise pollution
10.	<i>Syzygium cumini</i>	Jamun	Tree	Air Pollution, noise pollution

**Table 10.3: Budgetary outlets of greenbelt development for five years**

S. No.	Year	No. of plants	Budget (Rs. in Lakhs)
1.	I	3900	6.00
2.	II	3900	6.00
3.	III	3900	6.00
4.	IV	3900	6.00
5.	V	3900	6.00

Total budget for project=60 lakhs for 10 year

Calculation of Cost for Green belt Development for five year

Plant Rs. 50\*39000 = 19.50 Lakhs/-

Recurring Cost:

**Fencing Rs.7,00,000**

**Annual weeding and soil working Charges=6,00,000/-**

**Irrigation = 7,50,000/-**

**Fertilization =7,00,000/-**

**Security and vigilance (Rs13,00,000/-)**

**For 7 years Total Expenditure = Rs. 60.00 Lakhs**

#### **Total Budget for the construction of Haul Roads/Motorable Connected Roads**

Approx 8.9 Km haul road will be constructed to connect the mine lease to nearest approach roads for transportation of minerals and a budget of **Rs. 45.00 Lakhs** (@ Rs.5.00 Lakhs/Km) proposed for the Construction of haul road.



## MAP FOR PLANTATION ON HAUL ROAD FOR SAND MINING AT NAGLI YNR B-15(RIVERBED)

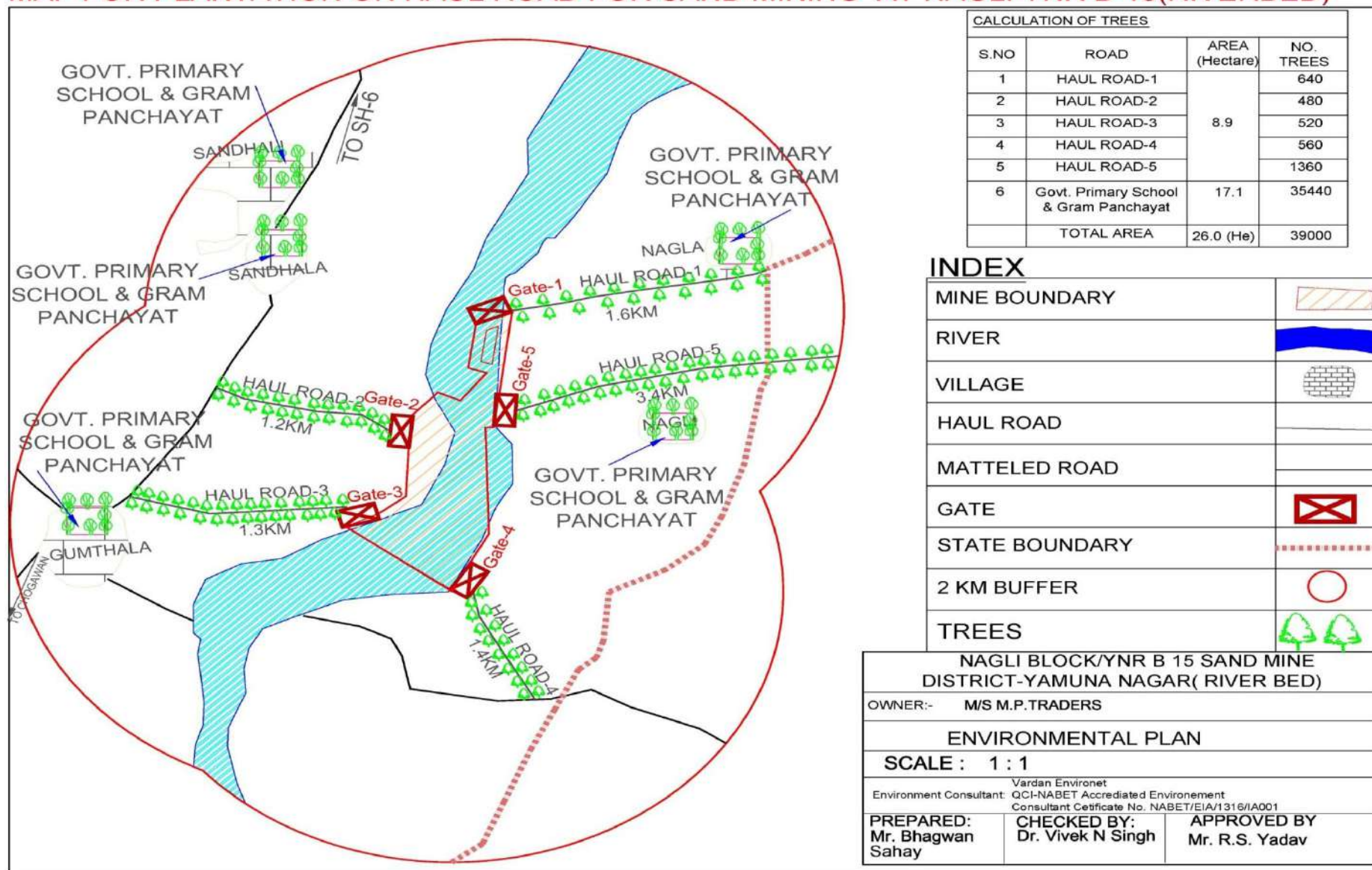


Figure 10.2: Plantation Map

## 10.7 SOCIO-ECONOMIC ENVIRONMENT

**Proposed ESC Activities** - Apart from the various environmental protection measures, the project proponent is conscious of its social responsibility and as any good corporate citizen, it is proposed to undertake the following works in the surrounding areas of the mine.

- Community Health Improvement activities such as periodically medical checkup camps, blood donation camps and health awareness camps for child and mother care, health and hygiene practices shall be implemented
- Disinfection of dug wells and other potable water sources and awareness camps shall be organized on water borne diseases, health and hygiene etc.
- Improvement in community educational activities will cover the distribution of educational books, stationary and aids and other infrastructure facilities etc.
- Afforestation programs will involve the activities such as greenbelt development, plantation of trees in villages' road side and development of nursery for maintaining the greenery of the area and preventing pollution.

Therefore, the proposed mining project can be considered "significantly positive" *i.e.* keep regular watch on adverse impacts through practicing pollution control measures and post monitoring with simultaneous contribution towards raising standard of living of the people in study area together with its development. M/s M.P. Traders proposed to incur approx. **Rs. 30.00 Lakhs** per annum towards Environmental and Social Responsibility given below in Table 10.4.

**Table-10.4: Need Specific Proposed ESC Activities**

S. No.	Planned Activities under ESR as per specific needs
1.	<b>Community Education Facilities</b> Augmentation of furniture, blackboard, etc in village schools Award scholarship to meritorious students Distribution of educational books, stationary, uniforms and aids etc.
2.	<b>Community Health Improvement</b> Disinfection facilities for dug wells and other potable water sources. Periodically medical checkup camps, blood donation camps. Eye checkup camps Health awareness camps for child and mother care, health and hygiene practices.
3.	<b>Community Welfare Activities</b> Worship places development and beautification Distribution of seeds and saplings Promotion and support to various Govt. Schemes.
4.	<b>Infrastructural Development</b> Installation/ Repair of Hand Pumps/ Bore wells Grampanchayat dug-well de-siltation and deepening Construction and maintenance of village roads adjacent to project site
5.	<b>Community Water Conservation</b> Water conservation awareness programs
6.	<b>Afforestation Programs</b> Plantation of trees in villages road side Development of nursery
7.	<b>Community Capacity Building</b> Imparting vocational training for technical skills, self employment training for women as stitching, embroidery, tailoring, handicrafts



**Table-10.5: Budget for Environmental and Social Responsibility**

S.No.	Description	Budget (Lakhs)
1.	Vocational training on Villages:- Nagli, Nagla & Sandhla <ul style="list-style-type: none"> <li>• Fire and safety,</li> <li>• Health and safety,</li> <li>• Awareness program on cancer and AIDS.</li> </ul>	5.00
2.	Sanitations(Bio-toilets) and drinking water facility at Village Nagli	5.00
3.	Sanitations(Bio-toilets) and drinking water facility at Village Nagla	5.00
4.	Sanitations(Bio-toilets) and drinking water facility at Village Sandhla	5.00
5.	Assistance to self help groups	5.00
6.	Health check up camps at mine site and nearby villages (Nagli, Nagla and Sandhla)	5.00
<b>Total</b>		<b>30.00</b>

It is expected that this will improve the socio-economic status of the people and at the same time the popularity of the project proponent will enhance. The local community in the study area desired that the project proponent should take up the following development initiatives for the betterment of the local people.

- Health camps in project village
- Distribution of books and stationeries to meritorious students in the study area
- One time donation to the schools for drinking water facilities
- Training camps for skill development

For each activity the funds to be earmarked by the proponent will be decided after discussion with the local authority and the beneficiaries. It has been planned to undertake a concurrent evaluation of the activities to be taken up under the ESR program.

#### 10.7.1 Management Plan for Socio-Economic Environment

- In general, socio-economic environment will have positive impact due to the mining project in the area.
- The deployed laborers will be from nearby villages only as these people are mainly dependent upon such mining activities.
- In order to further improve the socio-economic conditions of the area, the management will contribute for development works in consultation with local bodies.

The lessee has already allocated **Rs 30.00 Lakhs**(As per demand) for Socio-Economic Measures.

#### 10.8 OCCUPATIONAL HEALTH AND SAFETY

Occupational Health and Safety professionals develop and coordinate safety and health systems and strategies within organizations. They identify workplace hazards, assess risks to employee health and safety, and recommend solutions. Increasingly, Health and Safety Professionals are also responsible for many of the environmental aspects of their workplace. As this profession matures there is an increased emphasis on risk management strategy and on the development of workplace culture.

**Occupational Health and Safety professionals in the minerals industry may perform the following tasks:**

- The collection of minor minerals from the Sand mine does not cause any occupational ill effects.
- Except fugitive dust generation there is no source which can show a probability for health related diseases and proper dust suppression will control dust generation and dispersion.
- Dust masks will be provided to the workers working in the dust prone areas as additional personal protective equipment.
- The occupational health hazards have so far not been reported.
- Awareness program will be conducted about likely occupational health hazards so as to have a preventive action in place.



- vi. Any worker's health related problem will be properly addressed.
- vii. The Periodical medical checkup will be conducted.
- viii. Promote occupational health and safety within their organization and develop safer and healthier ways of working;
- ix. Help supervise the investigation of accidents and unsafe working conditions, study possible causes and recommend remedial action;
- x. Develop and implement training sessions for management, supervisors and workers on health and safety practices and legislation;
- xi. Coordinate emergency procedures, mine rescues, fire fighting and first aid crews;
- xii. Communicate frequently with management to report on the status of the health and safety strategy and risk management strategy, and Develop occupational health and safety strategies and systems, including policies, procedures and manuals.
- xiii. Project Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the Project and records maintained for silicosis and other occupational diseases.

**Table-10.6: Budget for Occupational Health and Safety of the workers (Lakhs)**

S. No.	Items	Capital Cost(in Lakh)
1.	Measures to Prevent Accidents during mineral Loading	1.00
2.	Measures to Prevent Accidents during minerals Transportation.	1.00
3.	Measures to Prevent Accidents due to Trucks/ Dumpers etc.	1.00
4.	Measures to Prevent Dangerous Incidents during Inundation/Flooding.	2.00
5.	Education awareness and first aid kit	2.00
6.	Medical Examination Schedule	3.00
	<b>Total</b>	<b>10.00</b>

#### 10.9 COST OF EMP MEASURES

Following provisions are proposed to be taken for improving, control and monitoring of environment protection measures.

**Table-10.7: Budget for EMP**

S. No.	Particulars	Cost (in Lakh)
1.	Pollution monitoring – Air, Water, Noise and Soil	5.00
2.	Dust Suppression	6.00
3.	Plantation will be at Villages- Nagli, Nagla and Sandhla, near School- Maharaja Agrasein Public School and along the Haul road (Motrable connecting road) of these villages.	6.00
4.	Haul road (Motrable connecting road) and other roads repair and Maintenance	6.00
5.	Pre-monsoon and post monsoon survey for sedimentation in the river bed	4.00
6.	Waste Water Treatment	3.00
	<b>Total</b>	<b>30.00</b>

#### 10.10 REHABILITATION AND RESETTLEMENT (R &R)

There is no displacement of the population within the project area and adjacent nearby area and the complete lease area is Govt. land. However, Social development of village will be considered as per social activities. Reclamation and rehabilitation by back filling the worked out area, Provision and maintenance of protective works like drains, parapet walls, retaining walls, check dams, Management of Air and water quality, Management of Waste, top soil, infrastructure and mining machinery disposal, Safety and security. The resources required for





management of these operations will be supervision, raw materials (mainly sand available at mines), gates, fencing, transport and Communication. All the above operations will be carried out in three months time.

#### **10.10.1 Mines and Minerals Development, Restoration and Rehabilitation Fund**

As per the point XIV of Lol the lease holder will be deposited 10% of the annual contract money *i.e.* **Rs. 40.15 Lakhs** approx. to the **Mines and Minerals Development, Restoration and Rehabilitation Fund**. This amount will be spent by lease holder for the protection of environment in the nearby surrounding area. The officers of the State Government Haryana will strictly monitor the compliance of lease holder in this regard. Other than this social development of village will be considered as per social activities. The following objectives are intended to be achieved through the aforesaid fund:

- i. Funding of the restoration or reclamation or rehabilitation works in the sites affected by mining operations.
- ii. Provision of common facilities for the benefit of community in and around areas where mining activities are undertaken.
- iii. Development of infrastructure facilities for orderly growth of the mining operations and allied activities e.g. roads, water supply etc.
- iv. Funding rehabilitation measures along with the environmental safeguards, mineral conservation and others.

In this way this amount will be spent by the lease holder for environmental protection and mineral conservation in the surrounding area of core and buffer zone.

#### **10.11 CONSERVATION PLAN FOR SCHEDULED FAUNA IN THE STUDY AREA**

##### **10.11.1. Conservation plan for Indian Peafowl (Peacock)**

Zoological name—*Pavo cristatus*

Peacock or Indian peafowl (*Pavo cristatus*) is a very familiar bird and also recognized as National Bird of India Asiatic peafowl like the Indian Blue Peafowl and especially the Green Peafowl occupy a similar niche as the roadrunners, secretary bird and seriema. All of these birds hunt for small animals including arthropods on the ground and tall grass and minnows in shallow streams. Because of human encroachment into their natural territories, peafowl and humans have come into increasing contact. Because of their natural beauty some are reluctant to classify the birds as pests, but their presence can be disturbing.



#### **CLASSIFICATION**

Kingdom: Animalia

Phylum: Chordata

Class: Aves



Order: Galliformes

Family: Phasianidae

Genus: *Pavo*

Species: *cristatus*

Vernacular name: Mor or Peacock

### Conservation Status



**IUCN:** Others (LC) ver. 3.1

**IWPA:** Schedule I.

**CITES:**Not listed.

**Geographical Distribution:** Pakistan, India and Sri Lanka. Many feral populations exist throughout the world.

**Description of *Pavo cristatus*:** The male, known as a peacock, is a large bird with a length from bill to tail of 100 to 115 cm (40 to 46 inches) and to the end of a fully grown train as much as 195 to 225 cm (78 to 90 inches) and weigh 4–6 kg (8.8–13.2 lbs). The females, or peahens, are smaller at around 95 cm (38 inches) in length and weigh 2.75–4 kg (6–8.8 lbs). Indian Peafowl are among the largest and heaviest representatives of the Phasianidae family. Their size, colour and shape of crest make them unmistakable within their native distribution range. The male is metallic blue on the crown, the feathers of the head being short and curled. The fan-shaped crest on the head is made of feathers with bare black shafts and tipped with bluish-green webbing. A white stripe above the eye and a crescent shaped white patch below the eye are formed by bare white skin. The sides of the head have iridescent greenish blue feathers. The back has scaly bronze-green feathers with black and copper markings. The scapular and the wings are buff and barred in black, the primaries are chestnut and the secondary are black. The tail is dark brown and the train is made up of elongated upper tail coverts (more than 200 feathers, the actual tail has only 20 feathers) and nearly all of these feathers end with an elaborate eye-spot. A few of the outer feathers lack the spot and end in a crescent shaped black tip. The underside is dark glossy green shading into blackish under the tail. The thighs are buff colored. The male has a spur on the leg above the hind toe. Peacocks are polygamous and the breeding season is spread out but appears to be dependent on the rains. Several males may congregate at a leek site and these males are often closely related. Males at leek appear to maintain small territories next to each other and they allow females to visit them and make no attempt to guard harems. Females do not appear to favor specific males. Peafowl are omnivorous and eat seeds, insects, fruits and reptiles. A large percentage of their food is made up of the fallen berries. Around cultivated areas, peafowl feed on a wide range of crops such as groundnut, tomato, paddy, etc. Around human habitations, they feed on a variety of food scraps. In the countryside, it is particularly partial to crops and garden plants.

**Habitat:** The Indian Peafowl is found mainly on the ground in open scrub forest or on land under cultivation where they forage for berries, grains but will also prey on snakes, lizards and small rodents. Their loud calls make them easy to detect and in forest areas often indicate the presence of a predator such as a tiger. They forage on the ground in small groups and will usually try to escape on foot through undergrowth and avoid flying, though they will fly into tall trees to roost. The bird has a celebrated status in Indian mythology and hence protected culturally in India. The Indian Peafowl is listed as Least Concern by IUCN.



### **Peafowl Behavior**

Peacocks are gregarious by nature. In the breeding season they are usually seen in small parties of one male with three to five females whereas in the non breeding season they remain in separate parties of adult males and females with juveniles. Peacocks roost in tall trees and emerge from the dense thickets to feed in fields and openings in forests and fields.

### **Life Cycle**

*Voice/Call:* Kee-ow, Kee-ow, Kee-ow, Ka-an, Ka-an, Ka-an, Kok-kok, Kok-kok, cain-kok

*Breeding:* April-September.

*Nest site:* On ground in undergrowth (wild), on buildings by semi-feral birds in villages.

**Life Span:** The life expectancy is about 10-15 years.

**Food Habit:** Peacocks are ground feeders. Indian peafowl's do most of their foraging early in the morning and shortly before sunset. They retreat to the shade and security of the trees for the hottest portion of the day. They make a meal of grains, berries drupes wild figs and some cultivated crops. They can also eat insect's small reptiles and small mammals.

### **Relationship with Man**

The great beauty and popularity of the Indian Peafowl has ensured its protection throughout its native ranges. It is a National bird of India. The peafowl is prominent in the mythology and folklore of the Indian people. The Hindus consider the bird to be sacred because of its association with Lord Krishna who used to wear its feather as crown (Mor Mokut). It is also associated with the God Kartikeya, son of the Lord Shiva and Parvati and brother of Lord Ganesh. It is Vaahan (transport) of Lord Kartikeya. This long and close association with humans has proven the peafowl's adaptability to human altered landscapes. In villages where it is protected it becomes quite tame, but is very shy and secretive where hunted. In the buffer area of mine site peacock is generally protected by the local people.

**Threats in the Study Area:** No perceptible threats were identified in the villages surveyed. Village residents are against hunting or poaching of the peafowl, due to culture and mythology reasons. Adult peafowl can usually escape ground predators by flying into trees.

- a) Foraging in groups provides some safety as there are more eyes to look out for predators.
- b) Habitat loss, specially the shortage of tall trees in and around the villages for roosting and for providing shade during hot summer months.
- c) Shortage of drinking water for the birds during the hot summer days.
- d) Casualties caused by eating chemically treated agricultural crop seeds.
- e) Illegal hunting by some communities.

**Conservation through Habitat Improvement and Awareness:** Habitat improvement program will be undertaken through plantation of suitable tree species in the surrounding villages. While selecting the tree/ shrub species care shall be provided for beery plants which attract these birds. During summer period, villagers will be encouraged to use the old earthen pots to fill with water for drinking these birds. Summer is the time when these. Birds are facing shortage of feeds; there by supplying the feed like Bajri, Juwar, Maize to the identified villages will suffix the problem of food shortage. The proponent can directly supply these feed to the villages directly or by funding to the NGOs active in this mission.

**Feeding and Watering Arrangement:** Artificial water holes will be created along the natural drained nallahs which can sufficient drinking water up to summer of the region. An anicut and open wall will be created by the company as their community development program involving the local panchayats in this work. Proposition for the suitable place to increase population of birds near plant nursery and office plantation will help. Provision for artificial nests, feeding



trays and water troughs is under consideration. To support furgivorous birds, artificial feed like wild fruits and vegetables will be provided.

Direct and indirect approach is required to provide effective conservation, which is recommended as under:

- i) Increasing the tree cover in the buffer area for shelter and roosting of peacocks. This will be achieved by planting of tree groves (a group of trees that grow close together, generally without many bushes or other plants) in buffer area. Some local species such as Neem, Siris, Amaltash, Ardu, Shesham, Dhak, Peepal tree etc. will be plant. Planting of tree groves in school compounds in the villages of buffers area will be plant as per the plantation program.
- ii) By conducting awareness program (community and school level) for conservation of peacocks in the area and also through organizing competitions during Wildlife Week and Van Mahotsave celebrations.
- iii) Some provision of rewards to informers for the control of poaching and illegal trade in wildlife.
- iv) Carrying out census and research projects to know the potential threats and population status of the species.
- v) Provision of veterinary care and cages for injured or sick or deformed birds.
- vi) Suggest strategies to minimize negative impacts of changing environment in nearby area of peacock populations and to promote conservation of peacock habitats.
- vii) Another way to help preserve the endangered species is to create society dedicated to ecological ethics. All the conservation measures will be implemented with the help of and in the consultation of the district forest department, Sikar.
- viii) With the objective of effectively protecting the wild life and to control poaching, smuggling and illegal trade in wildlife and its derivatives, the Government of India enacted Wild Life (Protection) Act 1972. The Act was amended in January 2003 and punishment and penalty for offences under the Act have been made more stringent.

The proponent has proposed a sum of Rs 90,000/- for the Peacock conservation plan under the following heads:

#### 10.11.2. CONSERVATION PLAN FOR SCHEDULE-I SPECIES (Bengal monitor lizard)



(Varanus Bengalensis)

Kingdom: Animalia

Phylum: Chordata

Subphylum: Vertebrata

Class: Reptilia

Order: Squamat

Suborder: Autarchoglossa

Family: Varanidae

Genus: Varanus

Species: Varanus bengalensis

The name of “Monitor” bestowed upon these creatures has a curious origin, owing to a ridiculous etymological mistake. The Arabic term for lizard is “Ouaran”. This has been wrongly taken to mean warning lizard, hence the Latin word Monitor.

**Geographical Distribution:** Although called the Bengal Monitor, this species is among the most widely distributed of varanid lizards. It is found in river valleys in eastern Iran, Afghanistan, western Pakistan, India, Nepal, Sri Lanka, Bangladesh and Myanmar.

**Habitat:** Many different types like (Rain) forests, valleys, farmlands, desert like areas and so on. It seems to be most common in farmlands and dry, open forests.

**Food:** Although these creatures are relatively large in size, especially for a lizard, they mostly feed on insects such as ants and beetles scorpions, They also eat animals such as ground birds, and their eggs, fish, frogs, snakes, other lizards, snails and small mammals like rodents. Monitors are reported to have a very special preference for eggs.

**Behavior:** Mainly ground dweller, but is a very good climber as well. Bengal Monitors are usually solitary and usually found on the ground although the young are often seen on trees. They shelter and spend nights in burrows or crevices in rocks and buildings, make use also of abandoned termite mounds. In the night their body temperature drops below ambient. In the morning they raise their body temperatures by basking before commencing activity and for this reason they are rarely active early in the morning and most active in the afternoons when temperatures are highest. Mean active body temperature is 34.5

**Life span:** About 15 years

**Status:** Status: Not Listed (IUCN 2000); Endangered (ESA).

**Threats:** The species is facing threat due to human activity. The species is still hunted for skin, oil for medicines for body ailments and meat for food. In some places, they are killed thinking that these animals as poisonous. Increased road network and traffic also causing risk of accidental death. The habitat destruction and alteration due to expansion of agriculture and urbanization also posing serious threats.

#### **10.11.3.Conservation Measures**

- Habitat improvement works will be carried out by planting bushes and shrubs in surrounding areas.
- Natural habitat places will be preserved in the surrounding.
- Speed limits of vehicles will be controlled to avoid accidental deaths.
- The people living in the surrounding area and employee of the company would be motivated towards the protection of the animal.
- Motivation will lead to timely information to the concerned authorities about any threat to wild life or any cases of poaching/hunting.

**Education and Awareness:** This is the most important aspect of wild life conservation. People will be educated regarding the importance of wildlife conservation through mass publicity by installing sign-boards, conducting audio visual classes and distributing literature in the respective villages in the buffer zone. Experts in the field of wildlife conservation will also be invited to deliver talks through slides.



**People Participation:** With the help of the local people and employees of the Company watch will be kept on the wild life as well as illegal tree felling. Forest and police department will be informed if such incident occurs, to take legal action against the offenders. For this they will be trained for motivation.

### Conservation

The people living in the surrounding area and employee of the company would be motivated towards the protection of the animal. Motivation will lead to timely information to the concerned authorities about any threat to wild life or any cases of poaching/hunting.

**Special Staff for the Protection and Anti-poaching:** Special Staffs will be deployed by the forest department for patrolling and protection of the fauna and flora under their jurisdiction because the regular staff deployed for this purpose, due to their busy schedule, is unable to perform their work properly. Each of the special staff will be equipped with dress, raincoat, gumboots, sticks and wireless set for communication. Financial burden for the same has been included in financial projection of this report.

**Reducing man wildlife conflicts:** Unauthorized entry into the forest for illegal grazing, cutting or poaching are the major causes of Man-Wildlife conflicts. These practices will be reduced as much as possible.

**Training and Awareness Program:** This is the most important aspect of wildlife conservation. People will be educated regarding the importance of wildlife conservation through mass publicity by installing sign-boards, conducting audio visual classes and distributing literature in the respective villages in the buffer zone. Experts in the field of wildlife conservation will also be invited to deliver talks through slides.

### 10.11.4 CONCLUSION

The conservation plan suggested here is for scheduled fauna (Animal and Bird) will be implemented by the mining lease holder and the budgetary provision is discussed and given in detail for the implementation of the same in the area. It is very important to conserve the scheduled fauna in the area of the local authority as well as by the forest officials. People are not aware about the wildlife and protection of wild animals. There is an urgent need of education and awareness for local people about the wildlife and their importance.

### 10.11.5 FINANCIAL PROJECTIONFOR CONSERVATION

**Rs.15.00 Lakhs** has been allocated towards conservation of scheduled fauna in the area for the implementation of conservation proposal. The budgetary allocation for all scheduled fauna is listed table below.

**Table-10.8: Budget for Conservation/Management Plan**

S. No.	Component/ Intervention	Provision (Lakhs)
1.	Planting of tree groves in the surrounding area	3.20
2.	Promotion of agroforestry in villages by planting fruits trees along the crop land	2.40
3.	Plantation of the shelterbelt along and canal side in surroundingvillage and maintenance	2.40
4.	Construction of water hole in strategic location and inside the nearby protected area and regular filling of water	2.00
5.	Development of pastures on the Panchayatland	1.40
6.	Awareness generation of labors and local people	2.60
7.	Study of the impact of mining on wildlife and habitation	1.00
	<b>TOTAL</b>	<b>15.00</b>





#### **10.12 SUMMARY**

As per Above discussion there is no measurable impact on the environment due to mining except fugitive emission in the form of dust generated during handling of mineral. The adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Plantation development will be carried out within the mine office premises, along the approach roads, around Govt. buildings, schools approx 3900 trees per year. It will prove an effective pollution mitigate technique, and help avoid soil erosion during monsoon season. Employment opportunities will be provided to the locals only as providing extraction of minerals from the mine site is the only prevailing occupation for them for their livelihood. A budget of Rs.30.00 Lakhs for Corporate Social Responsibility, budget of Rs. 10.00 Lakhs for Occupational Health and Safety and budget of Rs. 15.00 Lakh for conservation of schedule-I species will be incurred by Project Proponent. The lease holder will also deposit 10% of the annual contract money, *i.e.* Rs 40.15 Lakhs approx. to the Mines and Minerals Development, Restoration and Rehabilitation Fund.



## CHAPTER-11

# SUMMARY & CONCLUSION

### 11.0 GENERAL

The chapter discusses about the summary of whole EIA/EMP report along with recommendation and conclusion. The proposed mining lease area falls in Survey of India Toposheet (OSM) No. H43L4, H43L8, H43R1, H43R5. The lease area is located near Village-Nagli, Tehsil-Radaur and District - Yamuna Nagar, Haryana.

#### Details of the Project

A Lease Area Details		
	Lease Area	77.25 Ha
	Type of Land	(Yamuna River).
	Topography	Undulating
	Site Elevation Range	258 m RL to 261 m RL
B Production Details		
	Proposed production	28,00,000 Tons Per Annum
C Cost Details		
	Cost of the project	Rs. 9.00 Crores
	Budget for Environmental Management Plan	Rs. 30.00 Lakhs/Yr
	Budget of Environment Social Commitment	Rs. 30.00 Lakhs/Yr
	Budget for Occupational Health & Safety	Rs. 10.00 Lakhs/Yr
	Budget for Construction of Haul Road	Rs. 45.00 Lakhs
	Budget for Wildlife Conservation Plan	Rs.15.00 Lakhs
D Details of Environmental Setting		
	Ecological Sensitive Areas (National Park, Wild Life Sanctuary, Biosphere Reserve, Reserve/ Protected Forest etc.) within 10 Km radius	There is no any National Park and Biosphere Reserve within 10 Km radius. <ul style="list-style-type: none"> <li>National Park/ Wildlife Sanctuary-Kalesar (~ 45 km in NE direction).</li> </ul>
	Archaeological Important Place	Sheikh Chilli Tomb, Kurukshetra Haryana approx 37.00Km towards W.
	CRZ areas within 10 Kmradius	None within 10 Km radius of the project
	Nearest major city with 200000 population	Radaur- 9.1 Km in NW direction (Popultaion-13,690)
	Nearest Railway Station	Kalanaur Railway Station (~16 km in NE direction).
	Nearest National Highway	SH- 6 (~4 km in North direction).
	Nearest Airport	Chandigarh (~ 88 km in NW direction).
	Seismic Zone	Zone IV

### 11.1 INTRODUCTION

As per MoEF, New Delhi Gazette dated 14<sup>th</sup> September 2006 and amended thereof, the proposed mining project is categorized as category 'A', due to Mining lease area is more than 50 ha.

The project involves extraction of sand from River bed of Yamuna of Yamuna Nagar district Haryana. The Letter of Intent (LoI) (dated 20.10.2016) has been issued by Department of Mines & Geology, Haryana in favor of M/s M.P. Traders for excavation of sand from the river bed in village Nagli. The validity period of the contract is 10 years. The project involves total area of 77.25Ha. at village Nagli, Tehsil-Radaur and District-Yamuna Nagar, Haryana.

### 11.2 PROJECT DESCRIPTION

The proposed project is for mining of Sand (Minor Mineral) by open cast semi-mechanized method in riverbed over an area of **77.25ha.** by M/s M.P. Traders in Tehsil-Radaur and Distt- Yamuna Nagar, Haryana with proposed production capacity of **28,00,000 TPA** of Sand (Minor Mineral). The climate of the district is



characterized by the dryness of the air with an intensely hot summer and a cold winter. About 76% of the annual rainfall is recorded during the southwest monsoon from June-September. The project site falls under seismic zone IV which is a high damage risk zone (MSK VIII). Many part of the state of Haryana are prone to flooding. The total geological reserve is **46,35,000 MT** and total mineable reserve is **35, 22,600 MT**. Mine lease area will be worked in blocks and the digging depth will be restricted to 3.0 m only in riverbed. Riverbed block will be further replenished during rainy season. Mineral Sand will be transported by trucks. The deposit is moderate to good quality sand. It is widely used in construction, buildings, bridges and other infrastructure. It is free from clay and non sticky in nature. Total water requirement for the project is **45 KLD**. Total man power requirement for the project is **115**. The site facilities like canteen, rest-shelter, first aid facility, water and electricity supply etc. will be provided as per requirement. There is no litigation pending against this project.

### 11.3 DESCRIPTION OF THE ENVIRONMENT

Environmental data has been collected in relation to proposed mining for Air, Noise, Water, Soil, Ecology and Biodiversity. The generation of primary data as well as collection of secondary data and information from the site and surroundings was carried out during Post Monsoon Season *i.e.* **1<sup>st</sup> December 2016 to 28<sup>th</sup> February 2017**. The EIA study is being done for the Mine Lease (core zone) and area within 10 Km distance from mine lease boundary (buffer zone), both of which together comprise the study area. The mine lease area exhibits plain to undulated topography. The project site falls under seismic zone IV which is a high damage risk zone (MSK VIII). Many part of the state of Haryana are prone to flooding. In flood manual of Haryana, there are 102 vulnerable points in Haryana which need special attention during monsoon. Meteorological station was set-up at site to record surface meteorological parameter during study period; Post Monsoon Season, *i.e.* 1<sup>st</sup> December to 28<sup>th</sup> February, 2017.

Ambient Air Quality Monitoring reveals that the minimum and maximum concentrations of PM<sub>10</sub> for all the 6 AAQM stations were found to be **68.7 µg/m<sup>3</sup> and 88.8 µg/m<sup>3</sup>** respectively, PM<sub>2.5</sub> were found to be **31.2 µg/m<sup>3</sup> and 49.4 µg/m<sup>3</sup>** respectively, for SO<sub>2</sub> it is found to be **6.3 µg/m<sup>3</sup> and 14.6 µg/m<sup>3</sup>** respectively. The minimum and maximum concentrations of NO<sub>2</sub> were found to be **11.6 µg/m<sup>3</sup> and 28.3 µg/m<sup>3</sup>** respectively. The range of free Silica was found to be from **2.4 % to 3.1 %**. Ambient noise levels were measured at 6 locations around the proposed project site.

Minimum and Maximum noise levels recorded during the day time were from **50.50 L<sub>eq</sub> dB to 53.60 L<sub>eq</sub> dB** respectively and level of noise during night time were from **41.40 L<sub>eq</sub> dB to 44.10 L<sub>eq</sub> dB** respectively. Thus noise levels at all locations were observed to be within the prescribed limits.

Analysis results of ground water reveal that pH varies from **8.26 to 8.52**, Total Hardness varies from **132.25 to 172.35 mg/L** and Total Dissolved Solids varies from **229 to 335 mg/L**. The Analysis results of surface water reveal that pH varies from **7.54 to 7.86**, Total Hardness varies from **150.23 to 202.32 mg/L**, Total Dissolved Solids varies from **227 to 288 mg/L**.

The LOS value from the proposed mining will be change *i.e.* LOS value for MDR-1, MDR-2, MDR-3 and SH-6 will change from 'excellent' to 'very Good'. So the additional load on the carrying capacity of the concern roads is not likely to have major affect.

Random soil samples were collected up to depth of 15 cm and homogenized samples were then sent to the laboratory for analysis. The analysis results show that soil is basic in nature as pH value ranges from **7.45 to 8.10** with organic matter **0.42% to 0.47 %**. The concentration of Nitrogen, Phosphorus and Potassium has been found to be in good amount in the soil samples. Soil texture is Clay to Sandy.

There is no wildlife sanctuary/biosphere reserve/national parks present within 10 Km radius of the study area. 1 species of schedule-I and 2 species of Schedule-II were observed during study. Subsequently, a budget of **Rs. 15.00 Lakhs** has been earmarked for conservation of wildlife.



The study area comprise of two districts of two states, i.e. Yamuna Nagar (Haryana) and other part falls in Saharanpur (Uttar Pradesh). The implementation of this mining project will generate both direct and indirect employment. Yamuna Nagar district in which the mine contract area falls is an agriculturally based district. All the basic facilities like road and rail network, medical facilities, post and telegraph, market, drinking water facilities and education facilities are available. The project will also provide impetus to industrialization of the area and mining would be boon for the district as it will not only result in employment opportunity but also infrastructure development and overall growth of the area. At present agriculture is the main occupation of the people as more than half of the population depends on it. It was found that most of the parameters were within the limits as per the Indian Standards. In general, there is no major threat to the quality of these parameters. Similarly, the study for the biotic factors was conducted. Hence it can be concluded that the present environment status of the study area is good enough for the project activity. Adoption of adequate pollution control measures will protect the surrounding environment.

#### **11.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

The proposed mining operations are not anticipated to raise the concentration of the pollutants beyond prescribed limits. However, the measures are suggested to mitigate any harmful impacts of pollutants like plantation of trees along haul roads, specially near settlements, to help to reduce the impact of dust on the nearby villages; planning transportation routes of mined material so as to reach the nearest paved roads by shortest route; regular water sprinkling on unpaved roads to avoid dust generation during transportation etc.

The impact on the present noise levels due to mining operations will be restricted to the work zone areas only.

The impact on the ambient noise levels will not be felt at the settlement areas due to masking effect with the existing noise levels.

There is no drilling and blasting envisaged in the sand mining so there is no impact of vibration due to this project. Hence, the noise levels and vibration impact due to the proposed mining operations on community will be minimal. The soil removed from riverbed will be simultaneously utilized for reclamation purpose before shifting in to next hectare area/field.

There will be no impact on water environment due to mining in riverbed as well as in the riverbed since there is no intersection of water table due to mining activity.

There will be no waste water generation from the proposed mining activity except a sanitary waste water generation that will be treated in septic tanks and will be used for plantation purpose.

The mine worker will generate municipal solid waste of about 29 Kg per day, which will have an adverse impact on human health. There will be 6 Nos. of garbage, provided for domestic waste collection. There will be no overburden due to mining in the riverbed area.

The mining activities will be done in a systematic manner by maintaining the road infrastructure and vehicle transport, which will be protective measure for preserving the topography and drainage in the area. The ownership will not be changed as the land has been taken on contract which will be returned as it is after the contract period is over.

No human settlement should be permitted in the lease mining or the nearby area.

No mining will be carried out during the rainy season to minimize impact on aquatic life.

There are 2 species of Schedule I and 2 species of Schedule II are observed during study period hence, for the same conservation plan was prepared. Subsequently, a budget of **Rs. 15.00** Lakhs has allotted for the conservation of wildlife species.

The mining of sand is likely to increase the per capita income of local people by which the socio-economic status of the people will be improved. The local people have been provided with either direct employments or indirect employment such as business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc. Except dust generation, there is no source which can show a probability for health related diseases. Regular water sprinkling will be done with sprinkle mounted tankers and dust masks will be provided to the workers. All workers will be subjected to medical examination as per Mines Rule 1955 both at time of appointment and at least once in a year. Medical camps will be organized for this activity.



Insurance of all employees as per the rules will also be carried out. R&R issues are not involved with this project. As per the **point xiv** of Lol, the lease holder will deposit 10% of the annual contract money, *i.e.* approx. Rs.40.15 Lakhs to the Mines and Minerals Development, Restoration and Rehabilitation Fund. This amount will be spent by lease holder for the protection of environment, mineral conservation in the surrounding area of core and buffer zone.

### 11.5 ANALYSIS OF ALTERNATIVES

We have analyzed all the option for alternatives of the proposed mine site. This project is sand specific project and existing land use of mine lease classified as River Body which will continue to be so even after the current mining project is over, hence no alternate site is suggested for this project.

### 11.6 ENVIRONMENTAL MONITORING PROGRAM

In order to maintain the environmental quality within the stipulated standards, regular monitoring of various environmental components is necessary which will complied as per conditions. For this the lessee **M/s M.P. Traders** has taken decision to formulate an Environment Policy of the mine and constitute an Environmental Management Cell and committed to operate the proposed mine with the objectives mentioned in approved Environment Policy. EMP may also require measurement of ambient environmental quality in the vicinity of a sit using ecological/biological, physical and chemical indicators. Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints. Regular Monitoring of all the environmental parameters *viz.*, air, water, noise and soil as per the formulated program based on CPCB and MoEF&CC guidelines will be carried out every year. The location of the monitoring stations was selected on the basis of prevailing micro meteorological conditions of the area like; wind direction and wind speed, relative humidity, temperature. A budget for monitoring of Air, water, Noise and Soil will be **Rs. 5.00 Lakhs** which is to be incurred by the project proponent for undertaking pollution prevention measures during the mining activity.

### 11.7 ADDITIOINAL STUDIES

This is a requirement of the Occupational Health and Safety Act 2000. Risk assessments will help to priorities the risks and provide information on the need to safely control the risks. In this way, mine owners and operators will be able to implement safety improvements. Mining and allied activities are associated with several potential hazards to both the employees and the public at large. A worker in a mine will be able to work under conditions, which are adequately safe and healthy. At the same time the environmental conditions also will not impair his working efficiency. This is possible only when there is adequate safety in mines. Hence mine safety is one of the most essential aspects of any working mine. The conservation plan suggested here is for scheduled fauna (Animal and Bird) will be implemented by the mining lease holder and the budgetary provision is discussed and given in detail for the implementation of the same in the area. It is very important to conserve the scheduled fauna in the area of the local authority as well as by the forest officials. People are not aware about the wildlife and protection of wild animals. There is an urgent need of education and awareness to local people about the wildlife and their importance. A green belt will be developed around the core zone. The green belt plantation will be started with the beginning of the mining and will be completed within five years from the beginning. This plantation will be done at selected places only and only local species will be used in the plantation. A budget of **Rs 15.00 Lakhs** has been allocated towards conservation of scheduled fauna in the area for the implementation of conservation proposal. This mining project has positive impact on social and economic well being of the community because this project provides employment opportunities to local people and many social welfare works done by project proponent. The percentage of replenishment is more than 100% every year. In view of this huge amount of sedimentation there are fare chances of replenishment of the river bed annually. There is no displacement of the population within the project area and adjacent nearby area. However, as per the point 14 of **LOI** the lease holder will deposit 10% of the annual contract money *i.e.* **Rs. 40.15 Lakhs** to the **Mines and Minerals Development, Restoration and Rehabilitation Fund**. This amount will be spent by lease holder for environmental protection and mineral conservation in the surrounding area of core and buffer zone.





### 11.8 PROJECT BENEFIT

The management will recruit the semi-skilled and unskilled workers from the nearby villages. The project activity and the management will definitely support the local Panchayat and provide other form of assistance for the development of public amenities in this region. The company management will contribute to the local schools, dispensaries for the welfare of the villagers. A suitable combination of trees that can grow fast and also have good leaf cover will be adopted to develop the green belt. It is proposed to plant 39000 no's of native species along with some fruit bearing and medicinal trees during the mining plan period. The project proponent has allocated **Rs. 30.00 Lakhs** per annum for ESC Activities and **Rs. 40.15 Lakhs** to the **Mines and Minerals Development, Restoration and Rehabilitation Fund**. This amount will be spent by lease holder for the protection of environment in the nearby surrounding area. The officers of the State Government Haryana will strictly monitor the compliance of lease holder in this regard. Other than this social development of village will be considered as per social activities.

### 11.9 ENVIRONMENTAL COST BENEFIT ANALYSIS

It is considered desirable that the mining project may be implemented. Project cost for the proposed Sand Mining namely "**Nagli Block/YNR B-15**" over an area of **77.25Ha.** falling in Village-Nagli, Tehsil Radaur, District Yamuna Nagar(Haryana) is **Rs. 9.00Crores**. The profit will be Rs. 4.00 per tons.

### 11.10 ENVIRONMENTAL MANAGEMENT PLAN

As per Above discussion there is no measurable impact on the environment due to mining except fugitive emission in the form of dust generated during handling of mineral. The adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Plantation development will be carried out in the mine office premises, along the approach roads, around Govt. buildings, schools approx 1000 trees per year. It will prove an effective pollution mitigate technique, and help avoid soil erosion during monsoon season. Employment opportunities will be provided to the locals only as providing extraction of minerals from the mine site is the only prevailing occupation for them for their livelihood. A budget of **Rs.30.00 Lakhs** for Corporate Social Responsibility, budget of **Rs. 10.00 Lakhs** for Occupational Health and Safety and budget of **Rs. 30.00 Lakhs** for EMP are incurred by Project Proponent. The lease holder will also deposit 10% of the annual contract money, i.e. **Rs 40.15 Lakhs** approx. to the **Mines and Minerals Development, Restoration and Rehabilitation Fund**.

### 11.11 CONCLUSION

From the baseline study and various discussion on probable impacts of all the operational activity, it has been concluded that this project will more positive impact and will generate the revenue and employment in the area. On the above facts and baseline study, the proposed activity is recommended for the commencement with proper mitigation measure as suggested.



## CHAPTER-12

# DISCLOSURE OF CONSULTANT ENGAGED

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### 12.0 INTRODUCTION

**VardanEnviroNet**, established on 16<sup>th</sup> August 2012, is an accredited organization by Quality Council of India/NABET (National Accreditation Board for Education and Training) certificate no. **NABET/EIA/1619/RA0037**. The updated list of accredited consultant is also available online at <http://nabet.qci.org.in/environment/pop.asp?file=documents/Annexure7.pdf&heading=Accredited%20EIA%20Consultant%20Organizations%20with%20accredited%20sectors>. We have our in-house Environmental Laboratory named “VardanEnviroLab” at Village Samaspur, Opposite Amity International School, Sector 51, Gurgaon (Haryana) approved by National Accreditation Board for Testing and Calibration Laboratories, Govt. of India (NABL-T 2629).

### 12.1 Declaration

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

**EIA Coordinator:**Mr. S.K. Sharma

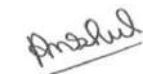


*Signature*

Date: 3<sup>rd</sup> Oct 2017

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

**Team Member:**Mr.Anshul Yadav



*Signature*

Date: 3<sup>rd</sup> March 2017



**No. J-11015/214/2016-IA.II (M)**

Government of India  
Ministry of Environment, Forest and Climate Change  
Impact Assessment Division

\*\*\*

Indira Paryavaran Bhavan,  
Vayu Wing, 3<sup>rd</sup> Floor, Aliganj,  
Jor Bagh Road, New Delhi-110 003

Dated: 16<sup>th</sup> January, 2017

To

M/s. M.P. Traders  
Sh. Vedpal Mandhan  
Near Nirankari Colony,  
Karnal Road, Indri

**Sub.:- Sand Mine of M/s M.P. Traders located at Nagli Block, Yamunanagar B-15, Tehsil Radaur, District Yamunanagar, State Haryana for production capacity of 28 Lakh TPA in 77.25 ha. of Mine lease area – ToR regarding.**

Sir,

The Proposal reference No. IA/HR/MIN/59926/2016 was received in the Ministry. The Proposal is to determine the Terms of Reference for which the proponent had submitted information in the prescribed format (Form-1) along with Pre-feasibility report.

2. The proposal of M/s M.P. Traders is for the production of 35 Lakh TPA of sand in mine lease area of 77.25 Ha. **However, finally, the proposal has been considered for the production of 28 Lakh TPA only.** The lease is located at Nagli Block, Yamunanagar B-15, Tehsil Radaur, Yamunanagar, Haryana. The LOI is over an area of 77.25 ha. Mining lease has been granted in favor of M/s. M.P. Traders by The Director General, Department of Mines & Geology, Haryana vide memo no.- DMG/ HY/ Cont/ Nagli Block/ YNR B 15/ 2016/ 5414 dated 20.10.2016 for a period of 10 years. The lease area lies on riverbed of Yamuna River in District- Yamuna Nagar (Haryana). Total M.L. area is 77.25 ha which is non- forest land. The proposed mining project land has been allotted as a single unit for mining of Sand (Minor Mineral) throughout the riverbed of District Yamuna Nagar (Haryana). The lease is located in the following latitude and longitude: Pillar No. A- N 29° 58' 29" E 77° 13' 47" Pillar No. B -N 29° 58' 30" E 77° 13' 50.5" Pillar No. C- N 29° 58' 16" E 77° 13' 48.5" Pillar No. D- N 29° 58' 02" E 77° 13' 46" Pillar No. E- N 29° 58' 02" E



77° 13' 45" Pillar No. F- N 29° 57' 38" E 77° 13' 45" Pillar No. G- N 29° 57' 24" E 77° 13' 37" Pillar No. H- N 29° 57' 38" E 77° 13' 13" Pillar No. I- N 29° 57' 40" E 77° 13' 20.5" Pillar No. J- N 29° 57' 46" E 77° 13' 27" Pillar No. K- N 29° 58' 06" E 77° 13' 28" Pillar No. L- N 29° 58' 10" E 77° 13' 32" Pillar No. M- N 29° 58' 10" E 77° 13' 39" Pillar No. N- N 29° 58' 15" E 77° 13' 43" Pillar No. O- N 29° 58' 15" E 77° 13' 42" Pillar No. P- N 29° 58' 25" E 77° 13' 42".

3. The project proponent has submitted that mining activity will be carried out by open cast semi-mechanized method. Light weight excavators will be used for digging and loading of mineral in tippers. No OB/ waste material will be produced. No drilling/ blasting is required as the material is loose in nature. Proper benching of 3.0 m height will be maintained. Roads will be properly made and sprayed by water for suppression of dust. Roads in the lease area for the movement of loaded trippers/ trucks will not have slopes more than 1 in 20. Extraction activities will start in the blocks from the upstream side to downstream side. This will not obstruct the movement of water, if any, during monsoon period in the river course. Approach roads from this block is as already described earlier will be merging with permanent tar roads on both sides of the river for transportation of the mineral to final destinations.

4. The Project Proponent has submitted that the total water requirement will be 45 KLD which will be sourced from the nearby villages through tankers. No liquid effluent will be generated at the mine site due to the mineral excavation. Only domestic waste water will be generated from mine office etc. which will be disposed of in septic tank via soak pits. The mining lease is a part of river bed of Yamuna River in Tehsil- Radaur, District- Yamuna Nagar (Haryana). The proposed activity is to take place in dry part of river bed where the excavated sand will be replenished during rainy season every year and hence there will be no change in land use. There will be no OB or waste generation as the sand is exposed in the river bed. But, at the later stage, if any soil or waste will be obtained during mining, then same will be stored with proper protection and will be used for reclamation (plantation).

5. The PP has submitted that the green belt shall be developed as per approved eco-friendly mine lease plan and as per CPCB guidelines. The project proponent shall also develop greenbelt in the premises of the schools, hospitals and also carry out the avenue plantation in the vacant areas along roads. The greenbelt shall be developed

by planting saplings per year. Indigenous species with the consultation of the State Forest Department shall be planted and maintained.

6. The PP has informed that there is no human settlement within the mine contract area. No human settlement will be disturbed due to the mining activity. So, no Rehabilitation and resettlement is proposed. Total cost of the Project is approximately Rs. 9 Crore/-.

7. The proposal was placed for consideration in the EAC meeting held on 23-25 November 2016. The committee did not consider the proposal and deferred the proposal for granting ToR as the project proponent had not submitted the KML file. The committee also noted that the proposal needs to be revised as the downstream replenishment will be less because of upstream extraction and it needs to be taken into consideration.

8. The proposal was placed for consideration in the EAC meeting held on 23-25 November 2016. The committee did not consider the proposal and deferred the proposal for granting ToR as the project proponent had not submitted the KML file. The committee also noted that the proposal needs to be revised as the downstream replenishment will be less because of upstream extraction and it needs to be taken into consideration.

9. The project proposal was once again considered during the EAC meeting held during 15-16 December 2016. Based on the information furnished and discussion held, the Committee noted that there were other contiguous mining projects of similar mineral upstream and downstream. The Committee was of the opinion that 20% of the capacity be reduced as replenishment will be affected because of three contiguous projects. After deliberation the committee recommended the reduced capacity of 28 Lakh TPA and prescribed the Standard ToR for undertaking detailed EIA study as per Annexure-I.

10. The matter was examined in the Ministry and the undersigned is directed to say that the Ministry of Environment, Forest and Climate Change after accepting the recommendation of the EAC, hereby decided to accord Terms of Reference for the



above mentioned project. Accordingly, the Project Proponent is requested to prepare and submit the final EIA/EMP report based on the TOR prescribed which are as under:-

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, May also be detailed in the EIA Report.

- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the



surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.

- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan alongwith budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral



programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.

- 22) One season (non-monsoon) [i.e. March - May (Summer Season); October - December (post monsoon season) ; December - February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of  $PM_{10}$ , particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be

provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.

- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and BGL. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.



- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
  - 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
  - 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
  - 38) Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
  - 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
  - 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
  - 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
  - 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
  - 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
9. Besides the above, the below mentioned general points are also to be followed:-
- a) All documents to be properly referenced with Index and continuous page numbering.
  - b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
  - c) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the

original analysis/testing reports should be available during appraisal of the Project.

- d) Where the documents provided are in a language other than English, an English translation should be provided.
- e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
- f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II(I) dated 4<sup>th</sup> August, 2009, which are available on the website of this Ministry, should be followed.
- g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
- h) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

11. The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

12. The prescribed ToR would be valid for a period of three years for submission of the EIA/EMP reports, as per the O.M. No. J-11013/41/2006-IA.II (I) dated 07.11.2014. The TOR is valid upto **15.01.2020**.



13. After preparing the draft EIA (as per the generic structure prescribed in Appendix- III of the EIA Notification, 2006) covering the above mentioned issues, the proponent will get the public hearing conducted and take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.

Yours faithfully,  
  
(Surendra Kumar)  
Director (S)

**Copy to:**

- 1). **The Secretary**, Ministry of Mines, Government of India Shastri Bhawan, New Delhi.
- 2). **The Secretary**, Department of Environment, Government of Haryana, Chandigarh.
- 3). **The Secretary**, Department of Forests, Government of Haryana, Chandigarh.
- 4). **The Secretary**, Department of Mines and Geology, Government of Haryana, Chandigarh
- 5). **The Addl. Chief Conservator of Forests**, Additional Principal Conservator of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (NZ), Bays No. 24-25, Sector 31 A, Dakshin Marg, Chandigarh – 160030
- 6). **The Chairman**, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
- 7). **The Chairman**, Haryana State Pollution Control Board, Plot No. C-11, Sector-6, Panchkula- 134109, Haryana
- 8). **The Member Secretary**, Central Ground Water Authority, A2, W- 3 Curzon Road Barracks, K.G. Marg, New Delhi-110001.
- 9). **The Controller General**, Indian Bureau of Mines, Indira Bhavan, Civil Lines, Nagpur - 440 001
- 10). **The District Collector, Yamunanagar** District, State of Haryana.
- 11). **Guard File.**
- 12). **MoEF&CC website.**

  
(Surendra Kumar)  
Director (S)

**Department of Mines and Geology Haryana**  
**30-Bays Building, Sector-17, Chandigarh.**

Registered  
 From

The Director General,  
 Mines & Geology Department, Haryana  
 30 Bays building, Sector-17,  
 Chandigarh.

To

M/s MP Traders,  
 Near Nirankari Colony,  
 Karnal Road, Indri.

Memo No. DMG/HY/Cont/Nagli Block/YNR B 15/2016/5414  
 Dated Chandigarh, the 20.10.2016.

**Subject:** Acceptance of the highest bid/in respect of the Sand minor mineral mines of "Nagli Block/YNR B 15" having Tentative Area of 77.25 hectares in the district Yamuna Nagar, offered in e-auction held on 30.08.2016 and 31.08.2016 and issue of Letter of Intent (LoI)-regarding.

You participated in the in the e- auction held on 30.08.2016 and 31.08.2016 on the State Government web portal <https://haryanaeprocurement.gov.in> after accepting the terms and conditions of the auction notice DMG/HY/e Auction/YNR/2015/4272 dated 08.08.2016 in order to obtain mining contracts of minor mineral mines of the district Yamuna Nagar. You offered the highest bid of Rs. 04,01,50,000/- [Rs. Four crore one lakh fifty thousand only] per annum, against the Reserve Price of Rs. 04,01,00,000/- per annum, for obtaining the Mining Contract of Minor Mineral Mines namely 'Nagli Block/YNR B 15' for extraction of Sand having tentative area of 77.25 hectares. The details of the khasra numbers of the tentative area under above said Mining Block is attached as Annexure 'A'.

2. You are hereby informed that the State Government has accepted the highest bid of Rs. 04,01,50,000/- [Rs. Four crore one lakh fifty thousand only] per annum offered by you in respect of the above said minor mineral mines of 'Nagli Block/YNR B 15' under the provisions of the Haryana Minor Mineral Concession, Stocking, Transportation of Minerals & Prevention of Illegal Mining Rules-2012 (State Rules). Accordingly, you have become the successful bidder in respect of 'Nagli Block/YNR B 15' of the district Yamuna Nagar.

3. The State Government having accepted the aforementioned highest bid offered by you, the Department is pleased to issue this Letter of Intent (LoI) in your favour in respect of the Mining Block/area namely 'Nagli Block/YNR B 15' subject to the following terms and conditions:

- (i) The period of contract shall be 10 years and the same shall commence with effect from the date of grant of environmental clearance by competent authority or on

**Department of Mines and Geology Haryana**  
**30-Bays Building, Sector-17, Chandigarh.**

expiry of a period of 12 months from the date of this communication of acceptance of highest bid/ issuance of "**Letter of Intent**", whichever is earlier;

- (ii) You may note that the detail of the area of the mining blocks is tentative and was notified "on as is where is basis" (refer condition no. 4 of the notice). In case of any inadvertent mistake, if any, the same would be rectified/ corrected before execution of the agreement (refer condition no. 3 of the notice);
- (iii) No request regarding reduction in bid amount on account of reduction in land/area of the Mining block, including due to change in description of khasra numbers/location etc. at any stage will be entertained on any ground including loss/reduction of area for mining on account of compliance of applicable laws/restrictions. Needless to state that this also includes the changes, if any, as per condition no. 3 of auction notice.
- (iv) The amount of the highest successful bid i.e. **Rs. 04,01,50,000/-** [Rs. Four crore one lakh fifty thousand only] per annum shall be the "Annual Contract Money" payable by you as the contractor in the manner prescribed in the contract agreement to be executed on form MC-1 appended to State Rules;
- (v) The above said annual contract money shall be increased at the rate of 25% on completion of each block of three years. Accordingly, the year-wise amount of the annual contract money shall be as per details given below:

Sr. No.	Year of the Contract Period	Annual contract Money
1	First Year	Rs. 04,01,50,000/-
2	Second Year	Rs. 04,01,50,000/-
3	Third Year	Rs. 04,01,50,000/-
4	Fourth Year	Rs. 05,01,87,500/-
5	Fifth Year	Rs. 05,01,87,500/-
6	Sixth Year	Rs. 05,01,87,500/-
7	Seventh Year	Rs. 06,27,34,375/-
8	Eighth Year	Rs. 06,27,34,375/-
9	Ninth Year	Rs. 06,27,34,375/-
10	Tenth Year	Rs. 07,84,17,970/-

- (vi) As per the terms and conditions of the grant, you are liable to deposit **Rs. 01,00,37,500/-** i.e. equal to 25% of the annual bid amount as "security deposit" out of which you have already deposited an amount of **Rs. 40,15,000/-** (Rs. Forty Lakh fifteen thousand only) i.e. equal to 10% of the annual bid amount as 'initial bid security' after the conclusion of e-auction. The balance amount of **Rs. 60,22,500/-** of the bid security i.e. 15% of the annual bid amount alongwith one month's advance contract money shall be deposited before commencement of the mining operations or before expiry of the period of 12 months, whichever is earlier;



**Department of Mines and Geology Haryana**  
**30-Bays Building, Sector-17, Chandigarh.**

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- (vii) You shall execute an Agreement Deed in Form MC-I appended to the Haryana Minor Mineral Concession, Stocking, Transportation of Mineral & Prevention of Illegal Mining Rules-2012 (the State Rules 2012) within a period of 90 days from the date of issuance of this communication/ grant of Lol;
- (viii) It may be pointed out that as per existing applicable rates the contract agreement had to be executed on **Non Judicial Stamp papers worth Rs. 16,12,900/- (Rs. Sixteen lakh twelve thousand nine hundred only)**. However, you are aware that M/s Om Minerals, one of the Lol holders (who participated in the auctions held in December 2013) has filed a CWP No.7991 of 2014, before the Hon'ble Punjab & Haryana High Court. Further a few other similarly situated Lol holders have also filed separate CWP's before the Hon'ble Punjab and Haryana High Court challenging demand/ levy of Stamp Duty on execution of 'Contract Agreement'. The said matter is still pending for adjudication. Accordingly, the present auction was conducted subject to outcome of said cases. **Therefore, the charging of stamp duty for the execution of contract agreement shall be as per final outcome of the said CWP's.**
- (ix) The Contract Agreement would also be required to be got Registered on payment of the applicable Registration fee;
- (x) In case you fail to execute the Agreement Deed within the prescribed period of 90 days, this Lol shall be deemed to have been revoked and the amount of initial bid security deposited at the time of auction shall be forfeited. Further, the balance amount of 15% towards the bid security, amounting to **Rs. . 60,22,500/-** being the 15% of the annual bid amount, shall be recovered as arrears of land revenue and, you, as the Lol holder/ defaulter, shall be debarred from participation in any future auctions for a period of 5 years;
- (xi) You shall also furnish a solvent surety for a sum equal to the amount of the annual bid for execution of the Agreement. In case the surety offered by the contractor(s) during the subsistence of the contract is not found solvent, the contractor(s) shall offer another solvent surety and a supplementary deed shall be executed to this effect;
- (xii) After execution of Agreement, either before commencement of the mining operation or before expiry of the period of 12 months from the date of issuance of this Lol, whichever is earlier, in case of failure to deposit the balance 15% amount towards security [as required under clause (v) above] the acceptance of bid/issuance of Lol/execution of agreement shall be deemed to have been revoked and 10% amount

**Department of Mines and Geology Haryana**  
**30-Bays Building, Sector-17, Chandigarh.**

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deposited towards as initial bid security at the time of auction shall stand forfeited. Further, un-paid 15% amount towards security shall be recovered as arrears of land revenue and you shall be barred from participation in any subsequent bids for a period of 5 years;

- (xiii) You shall be liable to deposit the contract money in advance at monthly intervals as per provisions of Contract Agreement i.e. from the date of commencement of the contract Agreement;
- (xiv) You shall also deposit/ pay an additional amount equal to 10% of the due contract money along with the monthly installments towards the '**Mines and Minerals Development, Restoration and Rehabilitation Fund**'.
- (xv) You shall also be liable to pay advance income tax as per provisions of Section 206(c) of income tax act in addition to contract money, payable as per terms and conditions of contract agreement.
- (xvi) On enhancement of the contract money with the expiry of every three years period, you shall deposit the balance amount of security so as to upscale the security amount equal to 25% of the revised annual contract money as applicable for one year with respect to the next block of three years. No interest, whatsoever, shall be payable on the security amount deposited under the prescribed security head of the government;
- (xvii) You shall prepare a Mining Plan along with the Mine Closure Plan (Progressive & Final) as per chapter 10 of the State Rules for the "Mining Block" and shall not commence mining operations in any area except in accordance with such Mining Plan duly approved by an officer authorised by the Director, mines & Geology, in this behalf.
- (xviii) Further, the actual mining will be allowed to be commenced only after prior Environmental Clearance is obtained by you as the Lol holder/mining contractor for the Mining Block from the Competent Authority as permitted by the competent Authority required under EIA notification dated 14/9/2006, as amended from time to time by the MoE&F, GoI and guidelines/ circulars issued in this behalf;
- (xix) The Mining contractor to whom mining rights have been granted through this contract would also be liable to pay the following to the landowners to undertake mining operations:
  - (a) Annual rent in respect of the land area blocked under the concession but not being operated, and

**Department of Mines and Geology Haryana**  
**30-Bays Building, Sector-17, Chandigarh.**

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- (b) Rent plus compensation in respect of the area used for actual mining operations.
- (xx) The amount of annual rent and the compensation shall be settled mutually between the landowner and the mining contractor. In case of non-settlement of the rent and compensation, the same shall be decided by the District Collector concerned in accordance with the provisions contained in Chapter 9 of the "Haryana Minor Mineral Concession, Stocking, and Transportation of Minerals and Prevention of Illegal Mining Rules, 2012";
- (xxi) The total mineral excavated and stacked by the concession holder within the area granted on mining contract shall not exceed two times of the average monthly production as per approved Mining Plan at any point of time;
- (xxii) The Mining Contractor shall not stock any mineral outside the concession area granted on mining contract, without obtaining a valid license as per provisions contained in Chapter 14 of the State Rules;
- (xxiii) The contractor shall not carry out any mining operations in any reserved/ protected forest or any area prohibited by any law in force in India, or prohibited by any authority without obtaining prior permission in writing from such authority or officer authorized in this behalf. In case of refusal of permission by such authority or officer authorized in this behalf, contractor(s) shall not be entitled to claim any relief in payment of contract money on this account;
- (xxiv) Following are the general/ special conditions applicable for excavation of minor mineral(s) from river beds in order to ensure safety of river-beds, structures and the adjoining areas:
- (a) No mining would be permissible in a river-bed up to a distance of five times of the span of a bridge structure on up-stream side and ten times the span of such bridge structure on down-stream side, subject to a minimum of 250 meters on the up-stream side and 500 meters on the down-stream side;
- (b) There shall be maintained an un-mined block of 50 meters width after every block of 1000 meters over which mining is undertaken or at such distance as may be directed by the Director or any officer authorised by him;
- (c) The maximum depth of mining in the river-bed shall not exceed three meters from the un-mined bed level at any point in time with proper bench formation;
- (d) Mining shall be restricted within the central 3/4th width of the river/ rivulet;

**Department of Mines and Geology Haryana**  
**30-Bays Building, Sector-17, Chandigarh.**

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- (e) No mining shall be permissible in an area up to a width of 500 meters from the active edges of embankments in case of river Yamuna, 250 meters in case of Tangri, Markanda and Ghaggar and 100 meters on either side of all other rivers/ rivulets. (This clause is applicable for mining outside river bed area);
- (f) Any other condition(s), as may be required by the Irrigation Department of the state from time to time for river-bed mining in consultation with the Mines & Geology Department, may be made applicable to the mining operations in river-beds.
- (xxv) A safety margin of two meters (2m) shall be maintained above the ground water table while undertaking mining and no mining operations shall be permissible below this level unless a specific permission is obtained from the competent authority in this behalf. Further, the depth of excavation of mineral shall not exceed nine meters (9m) at any point of time. (This clause is applicable for mining outside river bed area);
- (xxvi) The contractor shall not undertake any mining operations in the area granted on mining contract without obtaining requisite permission from the competent authority as required for undertaking mining operations under relevant laws;
- (xxvii) The contractor shall be under obligation to carry out mining in accordance with all other provisions as applicable under the Mines Act, 1952, Mines and Minerals (Development and Regulation) Act, 1957, Indian Explosives Act, 1884, Forest (Conservation) Act, 1980 and Environment (Protection) Act, 1986 and the rules made thereunder, Wild Life (Protection) Act, 1972, Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981;
4. Accordingly, for the time being you are advised to submit the Draft Contract Agreement on Form MC-I (in Five copies) appended to the State Rules-2012, on **plain papers** along with other requisite documents including a solvent surety(s) for a sum equal to the amount of the annual bid for execution of the agreement, within a period of 90 days from the date of issue of this bid acceptance letter and the LoI. You should also furnish an affidavit to the effect that you will immediately deposit the requisite stamp duty as per out of the related Court cases as stated under para 3(viii) above.

  
Mining Engineer,  
for Director General Mines & Geology,  
Haryana.  
Page 6 of 7

## Annexure-A

### Nagli Block/ YNR B 15

1//18min, 19, 21, 22, 23min 5//1, 2, 3min, 8min, 9, 10, 11, 12, 13min, 18min, 19, 20, 21, 22, 23min. 6//5, 6, 15, 16, 25. 11//5, 6, 14, 15, 16, 17, 18, 19, 20min. 21, 22, 23, 24, 25. 12//1, 2, 9, 10, 11, 12min, 19min, 20, 21, 22min. 21//1, 2min, 9min, 10, 11, 20, 21. 22//1 to 25. 23//4min, 5, 6, 7min, 14min, 15, 16, 17min, 24min, 25. 28//4min, 5, 6, 7min, 14min, 15, 16, 17min, 24min, 25. 29//1 to 25. 30//1, 10, 11, 20, 21. 37//1, 10, 11, 20, 21min, 38//1 to 24, 25. 39//4min, 5, 6, 7, 8min, 12min, 13, 14, 15, 16, 17, 18, 19, 20min, 21, 22, 23, 24, 25. 40//16min, 17min, 24, 25. 41//5 42//1 to 9, 10, 12, 13 to 17, 18, 24, 25. 43//1, 2, 3, 4, 8, 9, 10, 11, 12, 20, 19, 21. 44//1, 45//5.



**Registered Post**

From

The Director General,  
Mines and Geology, Haryana,  
30 Bays Building, Sector-17, Chandigarh.

To

M/s M.P. Traders,  
Karnal Road, Indri,  
Haryana.

Memo No. DMG/HY/MP/Nagli Block/YNR B-15/2016/ 927  
Dated Chandigarh, the 06-03-2017

**Subject:** Submission of Mining Plan including Progressive Mine Closure Plan for Boulder, Gravel and Sand Mine for Nagli Block/YNR B-15, District Yamunanagar, comprising an area of 77.25 hectares - M/s M. P. Traders, Karnal Road, Indri, Haryana.

-----  
Reference your letter dated 27.02.2017 on the above noted subject.

2. Vide letter under reference, the Mining Plan along with Progressive Mine Closure Plan in respect of an area of 77.25 hectares of land in village Nagli Block /YNR B-15, district Yamunanagar was submitted for approval.

3. In exercise of the powers conferred by Sub Rule 4A of Rule 22 of the Mineral Concession Rules 1960 read with the State Government order No. 1/7/103-21BII-96 dated 25.2.2003, I hereby approve the above said Mining Plan along with Progressive Mine Closure Plan in respect of Boulder, Gravel and Sand Minor Minerals over an area of 77.25 hectares of land situated in village Nagli of district Yamunanagar. This approval is subject to the following conditions:-

- (i) That this Mining Plan and Progressive Mine Closure Plan is approved without prejudice to any other laws applicable to the mine/area from time to time whether made by the Central Government or State Government or any other authority;
- (ii) That this approval of the "Mining Plan alongwith Progressive Mine Closure Plan" of Mining does not in any way imply the approval of the State Government in terms of any other provisions of the Mines and Minerals (Development & Regulation) Act, 1957 or Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012 or any other law including Forest (Conservation) Act, 1980 and Environment Protection Act, 1986 and rules framed there under;
- (iii) That this "Mining Plan along with Progressive Mine Closure Plan" is being approved on the basis of data provided by you. In case, at any point of time any ambiguity in the same is found, the approval will be revoked with suspension of the mining operations and will be allowed to resume operation only after modification/rectification of the same, if so required.
- (iv) That this "Mining Plan along with Progressive Mine Closure Plan" is approved without prejudice to any other order or direction from any court of any competent jurisdiction and is for a period of five years only and shall not be make you entitled for any extension of the lease period;

- (v) That all the norms and provisions as envisaged in the Mining Plan would be adhered to during the working of mine; and
- (vi) That the Financial Assurance of Rs. 8.80,650/- (Rs. Eight lakh eighty thousand six hundred fifty only) as required under the provisions of Rule 71(6) of "Haryana Minor Mineral Concession, Stocking, Transportation of Minerals & Prevention of Illegal Mining Rules, 2012, shall be furnished within a period of 60 days or before start of mining operations, whichever is earlier.

3. Further, as per condition no. (xviii) of the Lol dated 20.10.2016, the actual mining will be allowed to be commenced only after Prior Environmental Clearance from the Competent Authority as required under EIA notification dated 14/09/2006, as amended from time to time by the MoE&F, GoI and guidelines/ circulars issued in this behalf.

Encl: Mining Plan & Progressive  
Mine Closure Plan (2 copies)

State Mining Engineer,  
for Director General, Mines and Geology,  
Haryana.

Registered Post

Endst. No. DMG/HY/MP/Nagli Block/YNR B-15/2016/

Dated:

A copy along with a copy of the dully approved Mining Plan and Progressive Mine Closure Plan is forwarded to the Director Mines Safety, Room No. 201-203, 2<sup>nd</sup> Floor, B-Block, CGO Complex-II, Hapur Road, Ghaziabad for information and necessary action.

Encl: Mining Plan & Progressive  
Mine Closure Plan

State Mining Engineer,  
for Director General, Mines and Geology,  
Haryana.

Registered Post

Endst. No. DMG/HY/MP/Nagli Block/YNR B-15/2016/

Dated:

A copy along with a copy of the dully approved Mining Plan and Progressive Mine Closure Plan is forwarded to the Mining Officer, Mines and Geology Department, Yamunanagar for information and necessary action.

Encl: Mining Plan & Progressive  
Mine Closure Plan

State Mining Engineer,  
for Director General, Mines and Geology,  
Haryana.

Endst. No. DMG/HY/MP/Nagli Block/YNR B-15/2016/

Dated:

A copy is forwarded to Shri S.N. Sharma, House No. 282, Sector 11-D, Faridabad - 121 001 (Haryana) w.r.t. his letter dated 27.02.2017 for information and necessary action.

State Mining Engineer,  
for Director General, Mines and Geology,  
Haryana.

**Forest Department, Government of Haryana**  
**O/o P.C.C.F. cum Chief Wildlife Warden, Haryana**

Van Bhawan, C-18, Sector-6, Panchkula-134109 Phone/Fax 0172-2561224, E-mail- apccfwl@gmail.com

No.

7892

Dated

30/3/17

To,

M/s M P Traders  
Near Nirankari Colony,  
Karnal Road, Indri  
Haryana.

**Subject:** The Sand minor mineral mines of "Nagli Block /Ynr B 15, area 77.25 Ha in the Tehsil- Raduar District Yamuna Nagar, offered in e-auction held on 31.08.2016 issue of Letter of Intent (LoI) – regarding.

The project site was inspected on 11-03-2017 by a team comprising Conservator of Forest (WL), Panchkula, Inspector Wild Life, Kalesar and DWLO, Panchkula:-

- 1 This is proposed Mining Project named as Sand minor mineral at Tehsil Raduar, District- Yamunanagar- "Nagli, Block/Ynr B 15, area 77.25 ha **M/s M.P Traders, Near Nirankari Colony, Karan Road, Indri Karnal** is the applicant. Letter of intent has been issued by the Director Mines & Geology Department, Govt. of Haryana, vide Letter No. DMG/Hy/Cont Nagli , Block /Ynr B 15/2016/5414 dated 28.10.2016.
- 2 The proposed site is mining area lies riverbed in Yamuna river. The mine lease area is located at Village Nagli in Raduar Distt. Yamunanagar, Haryana (Total 77.25 ha.).
- 3 There is no National Park and Wildlife Sanctuary with in the 10 Km radius of project site and project site is outside National Park, Sanctuary, Biosphere Reserve, Tiger/Elephant Reserve or notified Eco-sensitive zones falling within territory of in Haryana boundary (Map attached).
- 4 The Kalesar National Park and Wildlife Sanctuary situated in the Yamuna Nagar but the project site is outside the notified Eco-sensitive Zone boundaries of Kalesar National Park and Wildlife Sanctuary. The Eco-sensitive Zone of Kalesar National Park and Wildlife Sanctuary varies from 0-1900 meter from its boundary as per find notification dated 22-04-2016.
- 5 Main vegetation found in the area are Delbergia sisoo, Acacia nilotica, Acacia catechu, Storea robusta, Azadirachta Indica, Prosopis juliflora, Bombax ceiba,



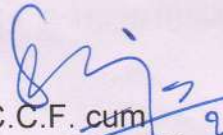
Morus alba, Ficus bengalensis, Ficus religiosa, Syzygium cumini, Magnifera indica, Butea monosperma, Terminalia arjuna, Melia azadirach, Pongamia pinnata, Albezia lebbek, Tamaridus indica, Phoenix sylvestris, Moringa oleifera, Populas deltoides, Eucalyptus hybrid, Calotropis procera, Cyperus rotandus, Sachhorum munia, Cannabis sativa, Ipomea cornea, Zyziphus mouritiana etc.

- 6 Prominent fauna of the area includes Indian Panther (*Panthera pardus*-schedule-I), Neelgai, (*Boselaphus tragocamelus*), Jackal (*Canis aureus*-schedule-II), Monitor Lizzard (*Varanaus bengalensis*-schedule-I, Part- II), Mongoose (*Herpestis edwardii*, schedule- II), Jungle-cat ( *felis chaus*, Schedule-II), Pangolin ( *Manis crassicauda*), Five stripped palm squirrel (*Funambulus pennant*, schedule- IV), Indian Cobra (*Naja naja*), Wild pig (*Sus scrofa*), Sambar (*Cervus unicolor*), Chital (*Axis axis*), Indian Hare (*Lepus nigricollis*, Schedule-IV) Gray Patridges (*Francolinus pondicerianus*, Schedule-IV) Poned Heron (*Ardenia grayii*, Schedule -IV), Cattle Egrets (*Bubulcus ibis*, Schedule-IV), Peafowl (*Pavo cristatus* Schedule-I) Parrot (*Psitta culakrameri*, Schedule- IV), Small blur Kingfisher (*Alcedo atthis*, Schedule-IV), Rat Snake (*Ptyas mucosus*, Schedule-II) and aquatic life of Riverine Ecosystem.
- 7 The mining activities at proposed site will have negative impact on the local flora and fauna. The possible adverse impact includes hampering of natural regeneration, uprooting of plants and rootstocks and disturbance & destruction and fragmentation of natural habitat of the local fauna, soil erosion stream bank erosion in addition to other pollution hazard and degradation of natural resources.
- 8 The committee has perused the conservation plan submitted by the project proponent. The conservation plan (copy attached) prepared for Schedule-I and Schedule-II animal found in the area is in order hence acceptable as it includes all the necessary interventions required for the conservation of the local fauna included in schedule I and II of Wildlife Protection Act, 1972. The species of Schedule-I and Schedule- II includes Leopard, Peafowl, Monitor lizzard, Jackal, Jungle Cat, Mongoose, Indian Cobra and Rat snake. The interventions in the proposed conservation plan includes planting of tree groves, promotion of agro-forestry in the area, plantation of shelterbelt on the road/canals, construction of water ponds to providing drinking water to the wildlife animals, planting of herb/shrub/bushes along the river bank, awareness generation among the laborer and local people. The proposed



conservation plan will be implemented in a phased manner with a total cost of Rs. 15.00 lac within a period of Ten (10) years. You are hereby directed to deposit the conservation plan cost with DWLO, Panchkula before implementation of work.

- 9 The clearance of the forest related laws, rules and instructions may be obtained from the Conservator of Forests (Forests Conservation).
- 10 The project proponent will seek necessary/mandatory permissions from the other concerned department as applicable and will not violate the Hon'ble Court order, if any.
- 11 The Project Proponent shall carry out mining operations strictly in accordance with the orders of the Hon'ble Supreme Court, dated the 4<sup>th</sup> August, 2006 in the matter of T.N. Godavaman Thirumulpad Vs. Union of India in Writ Petition (Civil) No. 202 of 1995 and dated the 21<sup>st</sup> April, 2014 in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No. 435 of 2012.
- 12 The project proponent shall furnish an undertaking on 100 rupees non judicial stamp paper regarding deposition of cost of conservation plan and other conditions mentioned in this letter. The undertaking must be duly signed by the authorized person of the firm and attested by notary.


  
P.C.C.F. cum  
Chief Wildlife Warden,  
Haryana, Panchkula.

Endst. No.

Dated

A copy is forwarded to following for information & necessary action :-

- 1 CF (Wildlife), Panchkula
- 2 DWLO, Panchkula
- 3 DFO (T), Yamunagar.

  
P.C.C.F. cum  
Chief Wildlife Warden,  
Haryana, Panchkula.





सत्यमेव जयते

Welcome : anshul523

Previous Login Date Time: 29/09/2017 23:37:35 PM, IP Address: 139.167.8.214



Logout

Government of India  
Central Ground Water Authority (CGWA)  
Ministry of Water Resources, River Development and Ganga Rejuvenation

**Application for Issue of NOC to Abstract Ground Water (NOCAP)**

<a href="#">Applicant Home</a>	<a href="#">Apply</a>	<a href="#">Feedback</a>	<a href="#">Change Password</a>	<a href="#">Profile</a>
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<a href="#">Location Details</a> <a href="#">Communication Address</a> <a href="#">Land Use Details</a> <a href="#">Dewatering Existing Structure</a> <a href="#">Dewatering Proposed Structure</a> <a href="#">Utilization of pumped water</a> <a href="#">Monitoring of groundwater regime</a> <a href="#">Groundwater Abstraction Structure- Existing</a> <a href="#">Groundwater Abstraction Structure- Proposed</a> <a href="#">Other Details</a> <a href="#">Self Declaration</a>  <a href="#">Attachment</a> <a href="#">Final Submit</a>	<p>&lt;</p> <p style="text-align: center;"><b>MINING USE : SUCCESSFUL SUBMISSION</b></p> <p style="text-align: right;"><a href="#">Print Application</a></p> <p style="color: green;">Your Application Submitted Successfully.Your Application Detail here :</p> <table border="1"> <tr> <td><b>Application Number :</b></td> <td><b>21-4/1210/HR/MIN/2017</b></td> </tr> <tr> <td><b>Name of Industry :</b></td> <td>MS M.P. TRADERS</td> </tr> <tr> <td><b>Submitted Date :</b></td> <td>30/09/2017</td> </tr> </table> <p>Please note your application number for future reference.</p> <p><b><u>This e-application will be processed only after receipt of printed form duly signed by the applicant along with all relevant enclosures at the Regional Director within seven (7) days of uploading completed application online. Please send your applicaiton to Given Address below.</u></b></p> <p><b>Regional Director</b>  <b>Central Ground Water Board North Western Region</b>  <b>Bhujal Bhawan</b>  <b>Plot No. 3A, Sector 27-B</b>  <b>CHANDIGARH</b>  <b>CHANDIGARH</b></p>	<b>Application Number :</b>	<b>21-4/1210/HR/MIN/2017</b>	<b>Name of Industry :</b>	MS M.P. TRADERS	<b>Submitted Date :</b>	30/09/2017
<b>Application Number :</b>	<b>21-4/1210/HR/MIN/2017</b>						
<b>Name of Industry :</b>	MS M.P. TRADERS						
<b>Submitted Date :</b>	30/09/2017						

**PinCode : 160019****Note:-**

a) The Processing Fee is Non-Refundable. Applicant should ensure "Check Eligibility" and "Documents Required" before Submitting Application Online.

b) Applicant has to Submit Processing Fee of Rs 1000.00 /- (Rupees One Thousand Only) through NON TAX RECEIPT PORTAL (<https://bharatkosh.gov.in>). A receipt will be generated. Please fill in the Transaction Ref No. and Date from the receipt, in print out of application and attach receipt along with hard copy of application.

c) Submitted Application will not be Processed till the Print Out of the Signed Complete Application is Submitted to Regional Office.



# भारत का राजपत्र The Gazette of India

असाधारण

EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)

PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित

PUBLISHED BY AUTHORITY

सं. 1402]

नई दिल्ली, बुधवार, जुलाई 1, 2015/आषाढ़ 10, 1937

No.1402]

NEW DELHI, WEDNESDAY, JULY 1, 2015/ASHADHA 10, 1937

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 30 जून, 2015

का.आ. 1783(अ).— केन्द्रीय सरकार, पर्यावरण (संरक्षण) नियम, 1986 के नियम 10 के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 12 की उपधारा (1) के खंड (ख) और धारा 13 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, भारत सरकार के तत्कालीन पर्यावरण और वन मंत्रालय की अधिसूचना संख्यांक का.आ. 1174(अ) तारीख 18 जुलाई, 2007 का निम्नलिखित और संशोधन करती है, अर्थात् :—

उक्त अधिसूचना की सारणी में क्रम सं. 126 और उससे संबंधित प्रविष्टियों के पश्चात् निम्नलिखित क्रम संख्यांक और प्रविष्टियां अंतःस्थापित की जाएंगी, अर्थात् :—

(1)	(2)	(3)	(4)
"127	मैसर्स वरदान इन्वायरोलेब, सेक्टर-51, समसपुर, एमेटी स्कूल के सामने, गुडगांव-122001 (हरियाणा)	(1) श्री एस.के. शर्मा (2) श्री राजेन्द्र सिंह यादव (3) श्री गौरव प्रताप सिंह	30.06.2015 से 29.06.2020" ;

[फा. सं. क्यू-15018/23/2013-सीपीडब्ल्यू]

डा. राशिद हसन, सलाहकार

टिप्पण: मूल अधिसूचना भारत के राजपत्र, असाधारण, में संख्यांक. का.आ. 1174(अ), तारीख 18 जुलाई, 2007 द्वारा प्रकाशित की गई थी और तत्पश्चात् अधिसूचना सं० का.आ. 1539(अ), तारीख 13 सितंबर, 2007, का.आ. 1811(अ), तारीख 24 अक्तूबर, 2007, का.आ. 55(अ), तारीख 9 जनवरी, 2008, का.आ. 428(अ), तारीख 4 मार्च, 2008, का.आ. 865(अ), तारीख 11 अप्रैल, 2008, का.आ. 1894(अ), तारीख 31 जुलाई, 2008, का.आ. 2728(अ), तारीख 25 नवंबर, 2008, का.आ. 1356(अ), तारीख 27 मई, 2009, का.आ.1802(अ) तारीख 22 जुलाई, 2009, का.आ.2399(अ) तारीख 18 सितंबर, 2009, का.आ. 3122(अ), तारीख 7 दिसंबर, 2009, का.आ. 3123(अ), तारीख 7 दिसंबर, 2009, का.आ. 142(अ), तारीख 21 जनवरी, 2010, का.आ. 619(अ), तारीख 19 मार्च, 2010, का.आ. 1662(अ), तारीख 13 जुलाई, 2010, का.आ. 2390(अ), तारीख 30 सितंबर, 2010, का.आ. 2904 (अ), तारीख 8 दिसंबर, 2010, का.आ. 181(अ), तारीख 28 जनवरी, 2011, का.आ. 692(अ), तारीख 5 अप्रैल, 2011, का.आ. 1537(अ), तारीख 6 जुलाई, 2011, का.आ. 1754(अ), तारीख 28 जुलाई, 2011, का.आ. 2609(अ), तारीख 22 नवंबर, 2011, का.आ. 264(अ), तारीख 13 फरवरी, 2012, का.आ. 1150(अ), तारीख 22 मई, 2012, का.आ. 2039(अ), तारीख 5 सितंबर, 2012, का.आ. 2802(अ), तारीख 27 नवंबर, 2012 और का.आ. 2850(अ), तारीख 7 दिसंबर, 2012 तथा का.आ. 592(अ), तारीख 8 मार्च, 2013, का.आ. 945(अ), तारीख 8 अप्रैल, 2013, का.आ.2287(अ), तारीख 27 जुलाई, 2013, का.आ.2288(अ), तारीख 27 जुलाई, 2013, का.आ.3489(अ), तारीख 26 नवंबर, 2013, का.आ.21(अ), तारीख 3 जनवरी, 2014, का.आ.561(अ), तारीख 26 फरवरी, 2014, का.आ.1205(अ), तारीख 5 मई, 2014, का.आ.1190(अ), तारीख 2 मई, 2014, का.आ.2003(अ), तारीख 6 अगस्त, 2014 और का.आ.137(अ), तारीख 12 जनवरी, 2015 द्वारा उसका संशोधन किया गया था

# MINISTRY OF ENVIRONMENT, FORESTS AND CLIMATE CHANGE

## NOTIFICATION

New Delhi, the 30th June, 2015

**S.O. 1783(E).**—In exercise of the powers conferred by clause (b) of sub-section (1) of section 12 and section 13 of the Environment (Protection) Act, 1986 (29 of 1986) read with rule 10 of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following further amendments in the notification of the Government of India in the erstwhile Ministry of Environment and Forests, number S.O. 1174(E), dated the 18<sup>th</sup> July, 2007, namely :-

In the said notification, in the Table after serial number 126 and the entries relating thereto, the following serial number and entries shall be inserted, namely :-

(1)	(2)	(3)	(4)
"127	M/s Vardan Enviro Lab, Sector-51, Samaspur, Opposite Amity School, Gurgaon - 122001 (Haryana)	(1) Mr.S. K. Sharma (2) Mr.Rajinder Singh Yadav (3) Mr. Gaurav Pratap Singh	30.06.2015 to 29.06.2020"

[ F. No. Q. 15018/23/2013-CPW ]  
Dr. RASHID HASAN, Advisor

Note.- The principal notification was published in the Gazette of India, Extraordinary *vide* number S.O. 1174(E), dated the 18<sup>th</sup> July, 2007 and subsequently amended *vide* notification numbers S.O. 1539(E), dated the 13<sup>th</sup> September, 2007, S.O. 1811(E), dated the 24<sup>th</sup> October, 2007, S.O. 55(E), dated 9<sup>th</sup> January, 2008, S.O. 428(E), dated the 4<sup>th</sup> March, 2008, S.O. 865(E) dated the 11<sup>th</sup> April, 2008, S.O. 1894(E) dated the 31<sup>st</sup> July, 2008, S.O. 2728(E) dated the 25<sup>th</sup> November, 2008, S.O. 1356(E) dated the 27<sup>th</sup> May, 2009, S.O. 1802(E) dated the 22nd July, 2009, S.O. 2399(E), dated the 18<sup>th</sup> September, 2009, S.O. 3122(E), dated the 7<sup>th</sup> December, 2009, S.O. 3123(E), dated the 7<sup>th</sup> December, 2009, S.O. No. 142(E), dated the 21<sup>st</sup> January, 2010, S.O. 619(E), 19<sup>th</sup> March, 2010, S.O. 1662(E) dated the 13<sup>rd</sup> July, 2010, S.O. 2390(E), dated the 30<sup>th</sup> September, 2010, S.O. 2904(E), dated the 8<sup>th</sup> December, 2010, S.O. 181(E), dated the 28<sup>th</sup> January, 2011, S.O. 692(E), dated the 5<sup>th</sup> April, 2011, S.O.1537(E), dated the 6<sup>th</sup> July,2011, S.O.1754(E), dated the 28<sup>th</sup> July, 2011 S.O. 2609 (E) dated the 22nd November, 2011, S.O. 264 (E), dated the 13 February, 2012, S.O. 1150(E), dated the 22nd May, 2012, S.O. 2039(E), dated the 5<sup>th</sup> September, 2012, S.O. 2802(E) dated the 27<sup>th</sup> November, 2012, S.O. 2850(E), dated the 7<sup>th</sup> December, 2012, S.O. 592(E), dated the 8<sup>th</sup> March, 2013, S.O. 945(E), dated the 8<sup>th</sup> April, 2013, S.O. 2287(E), dated the 27th July, 2013, S.O. 2288(E), dated the 27th July, 2013, S.O. 3489(E) dated the 26th November, 2013, S.O.21(E), dated 3rd January, 2014 and S.O. 561(E), the 26th February, 2014, S.O. 1205(E), the 5th May, 2014, S.O. 1190(E), the 2<sup>nd</sup> May, 2014, S.O. 2003(E), the 6<sup>th</sup> August, 2014 and S.O. 137(E), the 12<sup>th</sup> January, 2015.





# NABL

## National Accreditation Board for Testing and Calibration Laboratories

(An Autonomous Body under Department of Science & Technology, Govt. of India)

### CERTIFICATE OF ACCREDITATION

## VARDAN ENVIRO LAB

has been assessed and accredited in accordance with the standard

**ISO/IEC 17025:2005**

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

Village-Samaspur, Sector-51, Gurgaon, Haryana

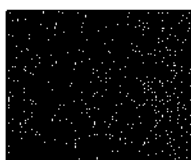
in the discipline of

**CHEMICAL TESTING**

(To see the scope of accreditation of this laboratory, you may also visit NABL website [www.nabl-india.org](http://www.nabl-india.org))

**Certificate Number** T-2629

**Issue Date** 05/08/2015



**Valid Until** 04/08/2017

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the additional requirements of NABL.

Signed for and on behalf of NABL

*N. Venkateswaran*

N. Venkateswaran  
Program Manager

*Anil Relia*

Anil Relia  
Director

*S. K. Joshi*

Prof. S. K. Joshi  
Chairman



# Vardan EnviroLab

Regd. Off: D-142, Sushant Lok-III, Golf Course Extension Road, Sector-57, Gurgaon (Hr) Tel: 0124-4291036

Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)

Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Name & Address of the Project:	M/s M.P. Traders Sand Minor Mineral Mine (Area 77.25 Ha) Nagli Block /YNR B 15, District – Yamuna Nagar (Haryana)	Report No.:	VEL/A/MP/1612/01-026
Sample Description:	Ambient Air Quality Monitoring	Reporting Date:	04/03/2017
Sample Collected by:	Vardan EnviroLab Team	Ref. No:	NIL
Location:	Project Site (A1)	Monitoring Period:	December –February 2017
		Equipment Used:	RDS & FPS with all accessories
		Protocol Used:	CPCB Guidelines/IS-5182

### RESULT

Date	PM10 ( $\mu\text{g}/\text{m}^3$ )	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
01.12.2016	71.7	34.2	14.3	9.6
02.12.2016	77.5	37.1	16.4	10.4
08.12.2016	80.2	48.6	18.9	14.6
09.12.2016	72.3	34.6	19.2	13.6
15.12.2016	70.8	40.8	16.7	9.5
16.12.2016	76.1	38.3	14.3	10.1
22.12.2016	82.4	45.4	15.6	8.5
23.12.2016	71.3	38.8	18.4	9.6
29.12.2016	80.2	44.6	20.3	12.9
30.12.2016	74.2	38.7	16.3	10.2
05.01.2017	79.3	41.0	15.8	11.3
06.01.2017	88.2	48.8	11.6	11.3
12.01.2017	74.2	43.1	19.8	9.4
13.01.2017	84.1	45.5	21.1	10.8
19.01.2017	71.8	37.8	18.6	8.6
20.01.2017	82.3	42.4	17.5	7.8
26.01.2017	80.7	43.7	22.6	9.6
27.01.2017	76.3	36.5	19.4	11.2
02.02.2017	82.3	43.9	23.3	10.4
03.02.2017	68.7	35.2	21.4	9.9

Mr. HIRANSHU ADHIKARI  
M.Sc. Env. Science



Page 1 of 2

NOTE: a) The results listed refer only to the tested samples & applicable parameters  
b) Total liabilities of our lab will be restricted to the invoice amount only  
c) The sample will be destroyed after retention time unless otherwise specified  
d) This report is not to be reproduced wholly or in part and cannot be used as evidence in the court of law



# Vardan EnviroLab

Regd. Off: D-142, Sushant Lok-III, Golf Course Extension Road, Sector-57, Gurgaon (Hr) Tel: 0124-4291036

Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)

Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Report No.:	VEL/A/MP/1612/01-026			
Date	PM10 ( $\mu\text{g}/\text{m}^3$ )	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
09.02.2017	84.9	44.7	18.3	10.3
10.02.2017	70.7	34.3	21.3	9.4
16.02.2017	75.1	40.1	24.1	8.4
17.02.2017	73.7	38.3	19.8	7.9
23.02.2017	82.9	45.7	20.3	10.6
24.02.2017	74.1	36.5	17.5	12.5

## Chemical Composition of PM 10

Date	Parameter	PM10 ( $\mu\text{g}/\text{m}^3$ )	Free Silica %	Ca ( $\mu\text{g}/\text{m}^3$ )	Mg ( $\mu\text{g}/\text{m}^3$ )	Ni ( $\text{ng}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )
27.01.2017	--	76.3	3.0	1.66	0.51	<0.5	0.12

Mr. HIMANSHU ADHIKARI  
M.Sc. Env. Science



Page 2 of 2

NOTE: a) The results listed refer only to the tested samples & applicable parameters  
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# Vardan EnviroLab

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(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Name & Address of the Project:	M/s M.P. Traders Sand Minor Mineral Mine (Area 77.25 Ha) Nagli Block /YNR B 15, District – Yamuna Nagar (Haryana)	Report No.:	VEL/A/MP/1612/027-052
Sample Description:	Ambient Air Quality Monitoring	Reporting Date:	04/03/2017
Sample Collected by :	Vardan EnviroLab Team	Ref. No:	NIL
Location:	500 m from Mine Site (A2)	Monitoring Period:	December –February 2017
		Equipment Used:	RDS & FPS with all accessories
		Protocol Used:	CPCB Guidelines/IS-5182

### RESULT

Date	PM10 ( $\mu\text{g}/\text{m}^3$ )	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
01.12.2016	71.3	36.3	17.6	8.6
02.12.2016	78.5	39.2	15.3	11.3
08.12.2016	80.5	44.2	19.7	8.3
09.12.2016	70.6	36.4	18.6	9.8
15.12.2016	76.3	38.4	14.3	8.4
16.12.2016	74.4	41.2	16.3	10.5
22.12.2016	79.3	44.7	14.5	9.9
23.12.2016	80.7	45.6	15.9	12.4
29.12.2016	76.3	32.1	16.3	10.8
30.12.2016	79.4	40.8	17.5	11.2
05.01.2017	80.1	45.6	15.6	12.7
06.01.2017	74.3	34.7	20.4	8.9
12.01.2017	87.6	42.1	15.6	7.8
13.01.2017	75.6	37.6	20.3	12.3
19.01.2017	79.3	34.7	19.8	10.4
20.01.2017	74.2	37.8	18.4	9.9
26.01.2017	76.9	41.1	21.3	10.4
27.01.2017	81.3	43.9	20.4	12.3
02.02.2017	79.1	38.6	17.5	9.8
03.02.2017	82.3	45.3	16.5	11.4

Mr. **ANMANSHU ADHIKARI**  
M.Sc. Env. Science



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# Vardan EnviroLab

Regd. Off: D-142, Sushant Lok-III, Golf Course Extension Road, Sector-57, Gurgaon (Hr) Tel: 0124-4291036

Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)

Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Report No.:	VEL/A/MP/1612/027-052			
Date	PM10 ( $\mu\text{g}/\text{m}^3$ )	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
09.02.2017	72.5	36.9	19.5	10.3
10.02.2017	79.3	38.6	22.8	11.5
16.02.2017	73.2	35.9	19.8	9.8
17.02.2017	70.6	42.5	20.6	8.7
23.02.2017	81.4	43.5	16.5	12.3
24.02.2017	75.2	37.1	21.3	9.8

## Chemical Composition of PM 10

Date	Parameter	PM10 ( $\mu\text{g}/\text{m}^3$ )	Free Silica %	Ca ( $\mu\text{g}/\text{m}^3$ )	Mg ( $\mu\text{g}/\text{m}^3$ )	Ni ( $\text{ng}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )
23.12.2016	--	80.7	2.4	1.31	0.55	<0.5	0.08

Mr. HIMANSHU ADHIKAR  
M.Sc. Env. Science

Page 2 of 2

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(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Name & Address of the Project: M/s M.P. Traders  
Sand Minor Mineral Mine  
(Area 77.25 Ha) Nagli Block /YNR B  
15, District – Yamuna Nagar (Haryana)

Sample Description: Ambient Air Quality Monitoring

Sample Collected by: Vardan EnviroLab Team

Location: Near Village-Rajheri (A3)

Report No.: VEL/A/MP/1612/053-078

Reporting Date: 04/03/2017

Ref. No: NIL

Monitoring Period: December –February 2017

Equipment Used: RDS & FPS with all accessories

Protocol Used: CPCB Guidelines/IS-5182

### RESULT

Date	PM10 ( $\mu\text{g}/\text{m}^3$ )	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
03.12.2016	85.2	45.3	17.5	9.5
04.12.2016	78.6	39.4	16.8	8.6
10.12.2016	82.4	43.5	17.8	6.4
11.12.2016	75.3	37.4	19.5	9.1
17.12.2016	85.1	45.1	22.3	10.1
18.12.2016	79.5	42.1	16.4	11.2
24.12.2016	83.7	44.4	17.3	10.3
25.12.2016	76.1	40.3	18.5	9.6
31.12.2016	77.8	38.7	17.5	9.9
01.01.2017	81.3	41.6	15.6	8.9
07.01.2017	84.5	45.5	17.5	10.2
08.01.2017	80.3	39.1	20.3	11.3
14.01.2017	78.2	36.7	17.8	14.3
15.01.2017	82.4	38.4	21.6	13.2
21.01.2017	80.7	36.5	16.5	6.3
22.01.2017	75.4	38.1	17.6	8.9
28.01.2017	79.3	40.2	14.3	9.8
29.01.2017	78.6	42.3	20.3	9.4
04.02.2017	85.4	43.5	21.1	12.3
05.02.2017	80.3	42.3	16.9	14.1
11.02.2017	77.7	36.5	17.7	11.4

Mr. HIMANSHU ADHIKARI  
M.Sc. Env. Science

Page 1 of 2

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Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)

Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Report No.:	VEL/A/MP/1612/053-078			
Date	PM10 ( $\mu\text{g}/\text{m}^3$ )	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
12.02.2017	83.4	43.5	16.8	12.4
18.02.2017	76.7	36.2	17.5	9.9
19.02.2017	85.4	46.5	19.4	9.4
25.02.2017	80.6	42.3	18.3	8.8
26.02.2017	78.3	39.8	22.4	10.2

## Chemical Composition of PM 10

Date	Parameter	PM10 ( $\mu\text{g}/\text{m}^3$ )	Free Silica %	Ca ( $\mu\text{g}/\text{m}^3$ )	Mg ( $\mu\text{g}/\text{m}^3$ )	Ni ( $\text{ng}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )
14.01.2017	--	78.2	2.9	1.49	0.69	<0.5	0.09

Mr. HIMANSHU ADHIKAR  
M.Sc. Env. Science



Page 2 of 2

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(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Name & Address of the Project:

M/s M.P. Traders  
Sand Minor Mineral Mine  
(Area 77.25 Ha) Nagli Block /YNR B  
15, District – Yamuna Nagar (Haryana)  
Ambient Air Quality Monitoring  
Vardan EnviroLab Team  
Near Village-Tabar (A4)

Sample Description:  
Sample Collected by :  
Location:

Report No.: VEL/A/MP/1612/079-104  
Reporting Date: 04/03/2017  
Ref. No: NIL  
Monitoring Period: December –February 2017  
Equipment Used: RDS & FPS with all accessories  
Protocol Used: CPCB Guidelines/IS-5182

### RESULT

Date	PM10 ( $\mu\text{g}/\text{m}^3$ )	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
03.12.2016	79.4	38.4	16.3	8.9
04.12.2016	85.6	43.3	18.3	9.1
10.12.2016	74.2	35.6	21.2	10.5
11.12.2016	78.5	37.5	19.4	12.3
17.12.2016	84.3	45.3	17.7	9.4
18.12.2016	82.4	44.2	21.5	9.9
24.12.2016	79.3	38.9	20.6	12.3
25.12.2016	81.6	43.1	18.3	9.7
31.12.2016	83.2	45.3	16.3	10.4
01.01.2017	79.8	37.2	15.6	11.3
07.01.2017	77.2	36.1	20.7	9.6
08.01.2017	86.3	45.4	19.7	8.7
14.01.2017	84.5	42.7	20.1	12.3
15.01.2017	76.8	38.5	15.3	9.9
21.01.2017	81.2	44.7	20.4	10.2
22.01.2017	85.3	46.1	18.7	7.8
28.01.2017	79.4	36.5	17.4	9.9
29.01.2017	82.7	40.5	19.5	12.3
04.02.2017	77.6	34.1	16.4	13.2
05.02.2017	76.3	38.4	18.5	10.4
11.02.2017	82.8	43.5	22.4	12.4

Mr. HIMANSHU ADHIKARI  
M.Sc. Env. Science

Page 1 of 2

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# Vardan EnviroLab

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Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)

Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

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## Test Certificate

Report No.:	VEL/A/MP/1612/079-104			
Date	PM10 ( $\mu\text{g}/\text{m}^3$ )	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
12.02.2017	83.4	43.2	23.1	10.4
18.02.2017	79.6	39.4	25.4	9.7
19.02.2017	75.4	35.1	19.7	11.4
25.02.2017	80.2	40.5	28.3	12.3
26.02.2017	79.3	38.7	24.4	10.4

## Chemical Composition of PM 10

Date	Parameter	PM10 ( $\mu\text{g}/\text{m}^3$ )	Free Silica %	Ca ( $\mu\text{g}/\text{m}^3$ )	Mg ( $\mu\text{g}/\text{m}^3$ )	Ni ( $\text{ng}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )
25.02.2017	--	80.2	2.7	1.51	0.58	<0.5	0.07

Mr. HANSHU ADHIKARI  
M.Sc. Env. Science



Page 2 of 2

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(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Name & Address of the Project: M/s M.P. Traders  
Sand Minor Mineral Mine  
(Area 77.25 Ha) Nagli Block /YNR B  
15, District – Yamuna Nagar (Haryana)  
Sample Description: Ambient Air Quality Monitoring  
Sample Collected by : Vardan EnviroLab Team  
Location: Model Town (A5)

Report No.: VEL/A/MP/1612/105-130  
Reporting Date: 04/03/2017  
Ref. No: NIL  
Monitoring Period: December –February 2017  
Equipment Used: RDS & FPS with all accessories  
Protocol Used: CPCB Guidelines/IS-5182

### RESULT

Date	PM10 ( $\mu\text{g}/\text{m}^3$ )	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
05.12.2016	84.2	43.1	20.1	12.3
06.12.2016	80.1	39.5	19.1	9.9
12.12.2016	79.6	34.6	16.4	10.4
13.12.2016	83.7	40.6	21.6	13.6
19.12.2016	78.6	36.4	19.5	12.4
20.12.2016	75.2	32.5	21.6	11.7
26.12.2016	80.4	41.2	17.3	9.9
27.12.2016	83.6	43.5	21.4	8.8
02.01.2017	76.3	38.6	23.9	10.6
03.01.2017	75.1	33.1	19.2	9.8
09.01.2017	82.3	42.3	24.7	11.4
10.01.2017	85.7	45.1	21.4	9.8
16.01.2017	78.2	49.4	18.7	8.4
17.01.2017	74.3	38.3	16.3	10.6
23.01.2017	80.2	42.5	21.4	12.4
24.01.2017	84.5	38.4	19.1	11.3
30.01.2017	79.3	42.1	15.2	8.9
31.01.2017	83.2	40.6	18.5	9.8
06.02.2017	85.1	45.4	21.1	12.4
07.02.2017	80.7	44.0	18.7	10.9
13.02.2017	78.3	37.4	16.9	8.3

Mr. HIMANSHU ADHIKARI  
M.Sc. Env. Science



Page 1 of 2

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## Test Certificate

Report No.:	VEL/A/MP/1612/105-130			
Date	PM10 ( $\mu\text{g}/\text{m}^3$ )	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
14.02.2017	84.3	42.5	18.9	10.2
20.02.2017	80.5	39.7	16.7	11.4
21.02.2017	79.6	40.5	20.3	9.7
27.02.2017	75.2	38.3	15.3	8.6
28.02.2017	81.4	43.2	20.3	11.6

## Chemical Composition of PM 10

Date	Parameter	PM10 ( $\mu\text{g}/\text{m}^3$ )	Free Silica %	Ca ( $\mu\text{g}/\text{m}^3$ )	Mg ( $\mu\text{g}/\text{m}^3$ )	Ni ( $\text{ng}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )
07.02.2017	--	80.7	2.8	1.68	0.46	<0.5	0.12

Mr. NIMANSHU ADHIKARI  
M.Sc. Env. Science



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(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)


## Test Certificate

Name & Address of the Project: M/s M.P. Traders  
Sand Minor Mineral Mine  
(Area 77.25 Ha) Nagli Block /YNR B  
15, District – Yamuna Nagar (Haryana)  
Sample Description: Ambient Air Quality Monitoring  
Sample Collected by : Vardan EnviroLab Team  
Location: Near Village- Shukartal (A6)

Report No.: VEL/A/MP/1612/131-156  
Reporting Date: 04/03/2017  
Ref. No: NIL  
Monitoring Period: December –February 2017  
Equipment Used: RDS & FPS with all accessories  
Protocol Used: CPCB Guidelines/IS-5182

### RESULT

Date	PM10 ( $\mu\text{g}/\text{m}^3$ )	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
05.12.2016	74.3	35.4	15.3	7.8
06.12.2016	76.1	36.9	18.2	8.1
12.12.2016	80.2	42.3	20.7	13.2
13.12.2016	88.8	45.1	22.1	10.5
19.12.2016	79.3	37.2	16.3	9.3
20.12.2016	84.2	41.7	23.3	11.2
26.12.2016	76.2	35.3	17.1	8.7
27.12.2016	79.4	38.2	20.3	9.7
02.01.2017	82.3	44.5	22.4	8.9
03.01.2017	80.2	42.5	19.3	10.4
09.01.2017	75.3	36.3	15.2	7.9
10.01.2017	79.2	37.7	19.8	9.9
16.01.2017	81.2	43.2	21.2	9.8
17.01.2017	79.6	35.4	20.1	10.4
23.01.2017	82.3	39.8	19.8	9.9
24.01.2017	85.1	43.5	20.5	11.4
30.01.2017	80.7	40.2	18.2	12.6
31.01.2017	79.3	38.2	16.2	9.3
06.02.2017	83.2	41.7	19.8	12.9
07.02.2017	76.3	40.3	20.3	9.9
13.02.2017	82.1	46.6	22.4	12.0

  
Mr. MANISHU ADHIKARI  
M.Sc. Env. Science



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Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)

Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

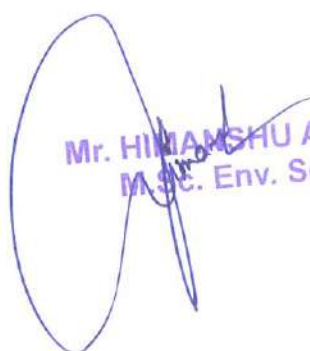
(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Report No.:	VEL/A/MP/1612/131-156			
Date	PM10 ( $\mu\text{g}/\text{m}^3$ )	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
14.02.2017	82.4	31.2	17.6	11.0
20.02.2017	85.5	40.3	18.7	12.2
21.02.2017	79.3	37.5	16.2	9.4
27.02.2017	84.3	36.4	20.6	11.1
28.02.2017	78.4	38.5	18.2	9.6

## Composition of PM 10

Date	Parameter	PM10 ( $\mu\text{g}/\text{m}^3$ )	Free Silica %	Ca ( $\mu\text{g}/\text{m}^3$ )	Mg ( $\mu\text{g}/\text{m}^3$ )	Ni ( $\text{ng}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )
17.01.2017	--	79.6	3.1	1.57	0.75	<0.5	0.15

  
Mr. HIMANSHU ADHIKARI  
M.Sc. Env. Science



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**NATIONAL AMBIENT AIR QUALITY STANDARDS**  
**CENTRAL POLLUTION CONTROL BOARD**  
**NOTIFICATION**

New Delhi, the 18th November, 2009

No. B-29016/20/90/PCI-I.—In exercise of the powers conferred by Sub-section (2) (h) of section 16 of the Air (Prevention and Control of Pollution) Act, 1981 (Act No.14 of 1981), and in supersession of the Notification No(s). S.O. 384(E), dated 11<sup>th</sup> April, 1994 and S.O. 935(E), dated 14<sup>th</sup> October, 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards with immediate effect, namely:-

**NATIONAL AMBIENT AIR QUALITY STANDARDS**

S. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO <sub>2</sub> ), µg/m <sup>3</sup>	Annual* 24 hours**	50 80	20 80	- Improved West and Gaeke - Ultraviolet fluorescence
2	Nitrogen Dioxide (NO <sub>2</sub> ), µg/m <sup>3</sup>	Annual* 24 hours**	40 80	30 80	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM <sub>10</sub> µg/m <sup>3</sup>	Annual* 24 hours**	60 100	60 100	- Gravimetric - TOEM - Beta attenuation
4	Particulate Matter (size less than 2.5µm) or PM <sub>2.5</sub> µg/m <sup>3</sup>	Annual* 24 hours**	40 60	40 60	- Gravimetric - TOEM - Beta attenuation
5	Ozone (O <sub>3</sub> ) µg/m <sup>3</sup>	8 hours** 1 hour**	100 180	100 180	- UV photometric - Chemiluminescence - Chemical Method
6	Lead (Pb) µg/m <sup>3</sup>	Annual* 24 hours**	0.50 1.0	0.50 1.0	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon filter
7	Carbon Monoxide (CO) mg/m <sup>3</sup>	8 hours** 1 hour**	02 04	02 04	- Non Dispersive Infra Red (NDIR) spectroscopy
8	Ammonia (NH <sub>3</sub> ) µg/m <sup>3</sup>	Annual* 24 hours**	100 400	100 400	- Chemiluminescence - Indophenol blue method

(1)	(2)	(3)	(4)	(5)	(6)
9	Benzene (C <sub>6</sub> H <sub>6</sub> ) µg/m <sup>3</sup>	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m <sup>3</sup>	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m <sup>3</sup>	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m <sup>3</sup>	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

\* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

\*\* 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note. — Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

SANT PRASAD GAUTAM, Chairman  
[ADVT-III/4/184/09/Exty.]

Note: The notifications on National Ambient Air Quality Standards were published by the Central Pollution Control Board in the Gazette of India, Extraordinary vide notification No(s). S.O. 384(E), dated 11<sup>th</sup> April, 1994 and S.O. 935(E), dated 14<sup>th</sup> October, 1998.





# Vardan EnviroLab

Regd. Off: D-142, Sushant Lok-III, Golf Course Extension Road, Sector-57, Gurgaon (Hr) Tel: 0124-4291036  
 Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)  
 Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275  
 (ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Sample Number:	VEL/MP/AN/01	Report No.:	VEL/ MP /N/1612/01
Name & Address of the Project:	M/s M.P. Traders Sand Minor Mineral Mine (Area 77.25 Ha) Nagli Block /YNR B 15, District – Yamuna Nagar (Haryana)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	20/12/2016
		Receipt Date:	15/12/2016

Sample Description: AMBIENT NOISE LEVEL MONITORING

### General Information:-

Sample collected by	: Vardan Enviro Lab Team
Sampling Location	: Near Village- Sandhala (N1)
Instrument Used	: Sound Level Meter
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 13/12/2016 to 14/12/2016
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Sampling & Analysis Protocol	: CPCB Guidelines & IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L <sub>max</sub>	CPCB Guidelines/ IS 9989	66.10	55.10	dB(A)
2.	L <sub>min</sub>	CPCB Guidelines/ IS 9989	46.20	40.30	dB(A)
3.	L <sub>eq</sub>	CPCB Guidelines/ IS 9989	52.40	41.40	dB(A)
4.	CPCB Limits in dB(A) L <sub>eq</sub> ( Residential Area )	-	55.00	45.00	dB(A)

Mr. MOHAMMAD ANAS  
M.Sc. Env. Science

DR. N.S. SRIVASTAVA  
General Manager (Lab)

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## Test Certificate

Sample Number:	VEL/MP /AN/02	Report No.:	VEL/ MP /N/1612/02
Name & Address of the Project:	M/s M.P. Traders Sand Minor Mineral Mine (Area 77.25 Ha) Nagli Block /YNR B 15, District – Yamuna Nagar (Haryana)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	20/12/2016
		Receipt Date:	15/12/2016

Sample Description: AMBIENT NOISE LEVEL MONITORING

### General Information:-

Sample collected by	: Vardan Enviro Lab Team
Sampling Location	: Near Village-Gumthala (N2)
Instrument Used	: Sound Level Meter
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 13/12/2016 to 14/12/2016
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Sampling & Analysis Protocol	: CPCB Guidelines & IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L <sub>max</sub>	CPCB Guidelines/ IS 9989	63.40	58.10	dB(A)
2.	L <sub>min</sub>	CPCB Guidelines/ IS 9989	44.10	41.20	dB(A)
3.	L <sub>eq</sub>	CPCB Guidelines/ IS 9989	53.60	43.60	dB(A)
4.	CPCB Limits in dB(A) L <sub>eq</sub> ( Residential Area )	-	55.00	45.00	dB(A)

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## Test Certificate

Sample Number:	VEL/ MP /AN/03	Report No.:	VEL/ MP /N/1612/03
Name & Address of the Project:	M/s M.P. Traders Sand Minor Mineral Mine (Area 77.25 Ha) Nagli Block /YNR B 15, District – Yamuna Nagar (Haryana)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	20/12/2016
		Receipt Date:	15/12/2016

**Sample Description:** AMBIENT NOISE LEVEL MONITORING

### General Information:-

Sample collected by	: Vardan Enviro Lab Team
Sampling Location	: District Road (Near Nakur Village) (N3)
Instrument Used	: Sound Level Meter
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 13/12/2016 to 14/12/2016
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Sampling & Analysis Protocol	: CPCB Guidelines & IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L <sub>max</sub>	CPCB Guidelines/ IS 9989	65.60	57.30	dB(A)
2.	L <sub>min</sub>	CPCB Guidelines/ IS 9989	47.20	43.60	dB(A)
3.	L <sub>eq</sub>	CPCB Guidelines/ IS 9989	50.50	44.10	dB(A)
4.	CPCB Limits in dB(A) L <sub>eq</sub> ( Residential Area )	-	55.00	45.00	dB(A)

Mr. MOHAMMAD ANAS  
M.Sc. Env. Science

DR. N.G. SHRIVASTAVA  
General Manager (Lab)

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## Test Certificate

Sample Number:	VEL/MP /AN/04	Report No.:	VEL/ MP /N/1612/04
Name & Address of the Project:	M/s M.P. Traders Sand Minor Mineral Mine (Area 77.25 Ha) Nagli Block /YNR B 15, District – Yamuna Nagar (Haryana)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	20/12/2016
		Receipt Date:	15/12/2016

Sample Description: AMBIENT NOISE LEVEL MONITORING

### General Information:-

Sample collected by	: Vardan Enviro Lab Team
Sampling Location	: State Highway (Near Model Town Village) (N4)
Instrument Used	: Sound Level Meter
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 13/12/2016 to 14/12/2016
Time of Monitoring	: 06:00 AM to 06:00AM
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Sampling & Analysis Protocol	: CPCB Guidelines & IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L <sub>max</sub>	CPCB Guidelines/ IS 9989	59.60	55.30	dB(A)
2.	L <sub>min</sub>	CPCB Guidelines/ IS 9989	45.10	40.40	dB(A)
3.	L <sub>eq</sub>	CPCB Guidelines/ IS 9989	53.30	42.50	dB(A)
4.	CPCB Limits in dB(A) L <sub>eq</sub> ( Residential Area )	-	55.00	45.00	dB(A)

*Mr. Mohammad Anas*  
**Mr. MOHAMMAD ANAS**  
 M.Sc. Env. Science

*DR. N.G. SINGH*  
**DR. N.G. SINGH**  
 General Manager (Lab)

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**SCHEDULE**

(see rule 3(1) and 4(1))

**Ambient Air Quality Standards in respect of Noise**

Area Code	Category of Area / Zone -----	Limits in dB(A) Leq*	
		Day Time	Night Time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone      50		40

- Note:-
1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
  2. Night time shall mean from 10.00 p.m. to 6.00 a.m.
  3. Silence zone is an area comprising not less than 100 metres around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority
  4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

\* dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A "decibel" is a unit in which noise is measured.

"A", in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq: It is an energy mean of the noise level over a specified period.





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(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Sample Number: VEL/MP/01  
 Name of the Project: M/s M.P. Traders  
 Sand Minor Mineral Mine  
 (Area 77.25 Ha) Nagli Block /YNR B  
 15, District – Yamuna Nagar (Haryana)  
 Sample Description: Ground water  
 Sampling Location: Near Project Site (W1)  
 Sample Collected by: Vardan Enviro Lab Team  
 Sampling & Analysis Protocol: IS-10500-2012, APHA 22<sup>nd</sup> Edition 2012

Report No.: VEL/W/1612/01  
 Format No.: 5.10 F-01  
 Party Reference No.: NIL  
 Reporting Date: 20/12/2016  
 Receipt Date: 15/12/2016  
 Sampling Type: Grab  
 Preservation: Refrigerated  
 Sampling Quantity: 2.0 Ltr  
 Parameter Required: As per TOR

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA 22 <sup>nd</sup> Edition, 4500-H <sup>+</sup> B	8.31	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA 22 <sup>nd</sup> Edition, 2120 B	BDL (DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA 22 <sup>nd</sup> Edition, 2130 B	BDL (DL 1 NTU)	NTU	1	5
4.	Odour	APHA 22 <sup>nd</sup> Edition, 2150 B	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA 22 <sup>nd</sup> Edition, 2160 B	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2340 C	142.56	mg/l	200	600
7.	Calcium as Ca	APHA 22 <sup>nd</sup> Edition, 3500 Ca B	26.30	mg/l	75	200
8.	Alkalinity as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2320 B	163.26	mg/l	200	600
9.	Chloride as Cl	APHA 22 <sup>nd</sup> Edition, 4500-Cl <sup>-</sup> B	43.63	mg/l	250	1000
10.	Cyanide as CN	APHA 22 <sup>nd</sup> Edition, 4500 CN <sup>-</sup> D	BDL (DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA 22 <sup>nd</sup> Edition, 2340 B	18.70	mg/l	30	100
12.	Total Dissolved Solids	APHA 22 <sup>nd</sup> Edition, 2540 C	312.00	mg/l	500	2000
13.	Sulphate as SO <sub>4</sub>	APHA 22 <sup>nd</sup> Edition, 4500 E	32.25	mg/l	200	400
14.	Fluoride as F	APHA 22 <sup>nd</sup> Edition, 4500-F <sup>-</sup> D	0.45	mg/l	1.0	1.5
15.	Nitrate as NO <sub>3</sub>	IS 3025 (P-34) 1988	26.3	mg/l	45	No Relaxation
16.	Iron as Fe	APHA 22 <sup>nd</sup> Edition, 3500-Fe B	0.35	mg/l	0.3	No relaxation
17.	Aluminium as Al	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL (DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA 22 <sup>nd</sup> Edition, 4500B C	BDL (DL 0.01 mg/l)	mg/l	0.5	1
19.	Hexa Chromium as Cr+6	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL (DL 0.01 mg/l)	mg/l	0.05	No Relaxation

Ms. NUPUR SHARMA  
 M.Sc. Env. Science

DR. N.G. SHRIVASTAVA  
 General Manager (Lab)

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(ISO 9001|ISO 14001|OHSAS 18001|MoEF & CC Recognized|NABL Accredited|HSPCB & RSPCB Approved)

## Test Certificate

Sample No.: VEL/MP/01					Report No.: VEL/W/1612/01	
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Conductivity	APHA 22nd Edition, 2120 B	0.524	mS/cm	--	--
21.	Phenolic Compounds	APHA 22nd Edition, 5530 C	BDL(DL 0.001 mg/l)	mg/l	0.001	0.002
22.	Mineral Oil	Clause 6 of IS:3025(Part 39)	BDL(DL 0.01mg/l)	mg/l	0.5	No Relaxation
23.	Anionic Detergents as MBAS	APHA 22nd Edition, 5540 C	BDL(DL 0.02 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA 22nd Edition, 3111 B	0.75	mg/l	5	15
25.	Copper as Cu	APHA 22nd Edition, 3111 B	0.09	mg/l	0.05	1.5
26.	Manganese as Mn	APHA 22nd Edition, 3111 B	BDL(DL 0.10 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA 22nd Edition, 3111 B	BDL(DL 0.001 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA 22nd Edition, 3111 B	BDL(DL 0.01mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA 22nd Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA 22nd Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	0.05
31.	Mercury as Hg	APHA 22nd Edition, 3111 B	BDL (DL 0.001 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622,1981(Reaffirmed 2003)	<2/100ml	MPN/100ml	Shall not be detectable in any 100ml sample	
33.	E. Coli	IS 1622,1981(Reaffirmed 2003)	Absent	MPN/100ml	Shall not be detectable in any 100ml sample	

Note: - \*BDL-Below Detection Limit, \*DL- Detection Limit

MS. NURSHARMA  
M.Sc. Env. Science

DR. N.G. SHRIVASTAVA  
General Manager (Lab)

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(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Sample Number: VEL/MP/02  
Name of the Project: M/s M.P. Traders  
Sand Minor Mineral Mine  
(Area 77.25 Ha) Nagli Block /YNR B  
15, District – Yamuna Nagar (Haryana)  
Sample Description: Ground water  
Sampling Location: 500 m from Mine Site (W2)  
Sample Collected by: Vardan Enviro Lab Team

Report No.: VEL/W/1612/02  
Format No.: 5.10 F-01  
Party Reference No.: NIL  
Reporting Date: 20/12/2016  
Receipt Date: 15/12/2016  
Sampling Type: Grab  
Preservation: Refrigerated  
Sampling Quantity: 2.0 Ltr  
Parameter Required: As per TOR

Sampling & Analysis Protocol: IS-10500-2012, APHA 22<sup>nd</sup> Edition 2012

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA 22 <sup>nd</sup> Edition, 4500-H <sup>+</sup> B	8.37	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA 22 <sup>nd</sup> Edition, 2120 B	BDL (DL 5 Hazen)	Hazen	5	15
3.	Turbidity	APHA 22 <sup>nd</sup> Edition, 2130 B	BDL (DL 1 NTU)	NTU	1	5
4.	Odour	APHA 22 <sup>nd</sup> Edition, 2150 B	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA 22 <sup>nd</sup> Edition, 2160 B	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2340 C	141.63	mg/l	200	600
7.	Calcium as Ca	APHA 22 <sup>nd</sup> Edition, 3500 Ca B	24.36	mg/l	75	200
8.	Alkalinity as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2320 B	126.00	mg/l	200	600
9.	Chloride as Cl	APHA 22 <sup>nd</sup> Edition, 4500-Cl <sup>-</sup> B	58.09	mg/l	250	1000
10.	Cyanide as CN	APHA 22 <sup>nd</sup> Edition, 4500 CN <sup>-</sup> D	BDL (DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA 22 <sup>nd</sup> Edition, 2340 B	19.65	mg/l	30	100
12.	Total Dissolved Solids	APHA 22 <sup>nd</sup> Edition, 2540 C	290.00	mg/l	500	2000
13.	Sulphate as SO <sub>4</sub>	APHA 22 <sup>nd</sup> Edition, 4500 E	26.57	mg/l	200	400
14.	Fluoride as F	APHA 22 <sup>nd</sup> Edition, 4500-F <sup>-</sup> D	0.41	mg/l	1.0	1.5
15.	Nitrate as NO <sub>3</sub>	IS 3025 (P-34) 1988	19.15	mg/l	45	No Relaxation
16.	Iron as Fe	APHA 22 <sup>nd</sup> Edition, 3500-Fe B	0.37	mg/l	0.3	No relaxation
17.	Aluminium as Al	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL (DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA 22 <sup>nd</sup> Edition, 4500B C	BDL (DL 0.01 mg/l)	mg/l	0.5	1
19.	Hexa Chromium as Cr+6	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL (DL 0.01 mg/l)	mg/l	0.05	No Relaxation

Ms. NUPUR SHARMA  
M.Sc. Env. Science

DR. N.G. SHIVASTAVA

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# Vardan EnviroLab

Regd. Off: D-142, Sushant Lok-III, Golf Course Extension Road, Sector-57, Gurgaon (Hr) Tel: 0124-4291036

Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)

Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Sample No.: VEL/MP/02			Report No.: VEL/W/1612/02			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Conductivity	APHA 22nd Edition, 2120 B	0.492	mS/cm	--	--
21.	Phenolic Compounds	APHA 22nd Edition, 5530 C	BDL(DL 0.001 mg/l)	mg/l	0.001	0.002
22.	Mineral Oil	Clause 6 of IS:3025(Part 39)	BDL(DL 0.01mg/l)	mg/l	0.5	No Relaxation
23.	Anionic Detergents as MBAS	APHA 22nd Edition, 5540 C	BDL(DL 0.02 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA 22nd Edition, 3111 B	0.64	mg/l	5	15
25.	Copper as Cu	APHA 22nd Edition, 3111 B	0.17	mg/l	0.05	1.5
26.	Manganese as Mn	APHA 22nd Edition, 3111 B	BDL(DL 0.10 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA 22nd Edition, 3111 B	BDL(DL 0.001 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA 22nd Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA 22nd Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA 22nd Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	0.05
31.	Mercury as Hg	APHA 22nd Edition, 3111 B	BDL (DL 0.001 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622,1981(Reaffirmed 2003)	<2/100ml	MPN/100ml	Shall not be detectable in any 100ml sample	
33.	E. Coli	IS 1622,1981(Reaffirmed 2003)	Absent	MPN/100ml	Shall not be detectable in any 100ml sample	

Note: - \*BDL-Below Detection Limit, \*DL- Detection Limit

Ms. NUPUR SHARMA  
M.Sc. Env. Science

DR. N.G. SHRIVASTAVA  
General Manager (Lab)

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Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)

Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Sample Number: VEL/MP/03  
Name of the Project: M/s M.P. Traders  
Sand Minor Mineral Mine  
(Area 77.25 Ha) Nagli Block /YNR B  
15, District – Yamuna Nagar (Haryana)  
Sample Description: Ground water  
Sampling Location: Near Village-Rajheri (W3)  
Sample Collected by: Vardan Enviro Lab Team  
Sampling & Analysis Protocol: IS-10500-2012, APHA 22<sup>nd</sup> Edition 2012

Report No.: VEL/W/1612/03  
Format No.: 5.10 F-01  
Party Reference No.: NIL  
Reporting Date: 20/12/2016  
Receipt Date: 15/12/2016  
Sampling Type: Grab  
Preservation: Refrigerated  
Sampling Quantity: 2.0 Ltr  
Parameter Required: As per TOR

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA 22 <sup>nd</sup> Edition, 4500-11 <sup>+</sup> B	8.52	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA 22 <sup>nd</sup> Edition, 2120 B	BDL (DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA 22 <sup>nd</sup> Edition, 2130 B	BDL (DL 1 NTU)	NTU	1	5
4.	Odour	APHA 22 <sup>nd</sup> Edition, 2150 B	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA 22 <sup>nd</sup> Edition, 2160 B	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2340 C	139.60	mg/l	200	600
7.	Calcium as Ca	APHA 22 <sup>nd</sup> Edition, 3500 Ca B	30.25	mg/l	75	200
8.	Alkalinity as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2320 B	135.00	mg/l	200	600
9.	Chloride as Cl	APHA 22 <sup>nd</sup> Edition, 4500-Cl <sup>+</sup> B	28.45	mg/l	250	1000
10.	Cyanide as CN	APHA 22 <sup>nd</sup> Edition, 4500 CN <sup>-</sup> D	BDL(DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA 22 <sup>nd</sup> Edition, 2340 B	15.58	mg/l	30	100
12.	Total Dissolved Solids	APHA 22 <sup>nd</sup> Edition, 2540 C	234.00	mg/l	500	2000
13.	Sulphate as SO <sub>4</sub>	APHA 22 <sup>nd</sup> Edition, 4500 E	24.8	mg/l	200	400
14.	Fluoride as F	APHA 22 <sup>nd</sup> Edition, 4500-F <sup>-</sup> D	0.43	mg/l	1.0	1.5
15.	Nitrate as NO <sub>3</sub>	IS 3025 (P-34) 1988	18.36	mg/l	45	No Relaxation
16.	Iron as Fe	APHA 22 <sup>nd</sup> Edition, 3500-Fe B	0.37	mg/l	0.3	No relaxation
17.	Aluminium as Al	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA 22 <sup>nd</sup> Edition, 4500B C	BDL(DL 0.01 mg/l)	mg/l	0.5	1
19.	Hexa Chromium as Cr+6	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.05	No Relaxation

*Ms. NUPUR SHARMA*  
M.Sc. Env. Science

*DR. N.G. SHRIVASTAVA*  
General Manager (Lab)

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Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Sample No.: VEL/MP/03			Report No.: VEL/W/1612/03			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Conductivity	APHA 22nd Edition, 2120 B	0.393	mS/cm	--	--
21.	Phenolic Compounds	APHA 22 <sup>nd</sup> Edition, 5530 C	BDL(DL 0.001 mg/l)	mg/l	0.001	0.002
22.	Mineral Oil	Clause 6 of IS:3025(Part 39)	BDL(DL 0.01mg/l)	mg/l	0.5	No Relaxation
23.	Anionic Detergents as MBAS	APHA 22 <sup>nd</sup> Edition, 5540 C	BDL(DL 0.02 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA 22 <sup>nd</sup> Edition, 3111 B	0.72	mg/l	5	15
25.	Copper as Cu	APHA 22 <sup>nd</sup> Edition, 3111 B	0.36	mg/l	0.05	1.5
26.	Manganese as Mn	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.10 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.001 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.01mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	0.05
31.	Mercury as Hg	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL (DL 0.001 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622,1981(Reaffirmed 2003)	<2/100ml	MPN/100ml	Shall not be detectable in any 100ml sample	
33.	E. Coli	IS 1622,1981(Reaffirmed 2003)	Absent	MPN/100ml	Shall not be detectable in any 100ml sample	

Note: - \*BDL-Below Detection Limit, \*DL- Detection Limit

  
**Ms. NUPUR SHARMA**  
 M.Sc. Env. Science

  
**DR. N.G. SHRIVASTAVA**  
 General Manager (Lab)

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Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

(ISO 9001|ISO 14001|OHSAS 18001|MoEF & CC Recognized|NABL Accredited|HSPCB & RSPCB Approved)

## Test Certificate

Sample Number: VEL/MP/04  
Name of the Project: M/s M.P. Traders  
Sand Minor Mineral Mine  
(Area 77.25 Ha) Nagli Block /YNR B  
15, District – Yamuna Nagar (Haryana)  
Sample Description: Ground water  
Sampling Location: Near Village-Tabar (W4)  
Sample Collected by: Vardan Enviro Lab Team  
Sampling & Analysis Protocol: IS-10500-2012, APHA 22<sup>nd</sup> Edition 2012

Report No.: VEL/W/1612/04  
Format No.: 5.10 F-01  
Party Reference No.: NIL  
Reporting Date: 20/12/2016  
Receipt Date: 15/12/2016  
Sampling Type: Grab  
Preservation: Refrigerated  
Sampling Quantity: 2.0 Ltr  
Parameter Required: As per TOR

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA 22 <sup>nd</sup> Edition, 4500-H <sup>+</sup> B	8.26	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA 22 <sup>nd</sup> Edition, 2120 B	BDL (DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA 22 <sup>nd</sup> Edition, 2130 B	BDL (DL 1 NTU)	NTU	1	5
4.	Odour	APHA 22 <sup>nd</sup> Edition, 2150 B	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA 22 <sup>nd</sup> Edition, 2160 B	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2340 C	132.25	mg/l	200	600
7.	Calcium as Ca	APHA 22 <sup>nd</sup> Edition, 3500 Ca B	28.45	mg/l	75	200
8.	Alkalinity as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2320 B	128.00	mg/l	200	600
9.	Chloride as Cl	APHA 22 <sup>nd</sup> Edition, 4500-Cl <sup>-</sup> B	27.36	mg/l	250	1000
10.	Cyanide as CN	APHA 22 <sup>nd</sup> Edition, 4500 CN <sup>-</sup> D	BDL(DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA 22 <sup>nd</sup> Edition, 2340 B	14.89	mg/l	30	100
12.	Total Dissolved Solids	APHA 22 <sup>nd</sup> Edition, 2540 C	229.00	mg/l	500	2000
13.	Sulphate as SO <sub>4</sub>	APHA 22 <sup>nd</sup> Edition, 4500 E	27.14	mg/l	200	400
14.	Fluoride as F	APHA 22 <sup>nd</sup> Edition, 4500-F D	0.38	mg/l	1.0	1.5
15.	Nitrate as NO <sub>3</sub>	IS 3025 (P-34) 1988	20.14	mg/l	45	No Relaxation
16.	Iron as Fe	APHA 22 <sup>nd</sup> Edition, 3500-Fe B	0.22	mg/l	0.3	No relaxation
17.	Aluminium as Al	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA 22 <sup>nd</sup> Edition, 4500B C	BDL(DL 0.01 mg/l)	mg/l	0.5	1
19.	Hexa Chromium as Cr+6	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.05	No Relaxation

Ms. NUPUR SHARMA  
M.Sc. Env. Science

DR. N.G. SHrivASTAVA  
General Manager (Lab)

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## Test Certificate

Sample No.: VEL/MP/04			Report No.: VEL/W/1612/04			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Conductivity	APHA 22nd Edition, 2120 B	0.386	mS/cm	--	--
21.	Phenolic Compounds	APHA 22nd Edition, 5530 C	BDL(DL 0.001 mg/l)	mg/l	0.001	0.002
22.	Mineral Oil	Clause 6 of IS:3025(Part 39)	BDL(DL 0.01mg/l)	mg/l	0.5	No Relaxation
23.	Anionic Detergents as MBAS	APHA 22nd Edition, 5540 C	BDL(DL 0.02 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA 22nd Edition, 3111 B	0.66	mg/l	5	15
25.	Copper as Cu	APHA 22nd Edition, 3111 B	0.14	mg/l	0.05	1.5
26.	Manganese as Mn	APHA 22nd Edition, 3111 B	BDL(DL 0.10 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA 22nd Edition, 3111 B	BDL(DL 0.001 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA 22nd Edition, 3111 B	BDL(DL 0.01mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA 22nd Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA 22nd Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	0.05
31.	Mercury as Hg	APHA 22nd Edition, 3111 B	BDL (DL 0.001 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622,1981(Reaffirmed 2003)	<2/100ml	MPN/100ml	Shall not be detectable in any 100ml sample	
33.	E. Coli	IS 1622,1981(Reaffirmed 2003)	Absent	MPN/100ml	Shall not be detectable in any 100ml sample	

Note: - \*BDL-Below Detection Limit, \*DL- Detection Limit

*Ms. Nupur Sharma*  
M.Sc. Env. Science

*DR. N.G. SHRIVASTAVA*  
General Manager (Lab)

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(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Sample Number: VEL/MP/05  
Name of the Project: M/s M.P. Traders  
Sand Minor Mineral Mine  
(Area 77.25 Ha) Nagli Block /YNR B  
15, District – Yamuna Nagar (Haryana)  
Sample Description: Ground water  
Sampling Location: Model Town (W5)  
Sample Collected by: Vardan Enviro Lab Team  
Sampling & Analysis Protocol: IS-10500-2012, APHA 22<sup>nd</sup> Edition 2012

Report No.: VEL/W/1612/05  
Format No.: 5.10 F-01  
Party Reference No.: NIL  
Reporting Date: 20/12/2016  
Receipt Date: 15/12/2016  
Sampling Type: Grab  
Preservation: Refrigerated  
Sampling Quantity: 2.0 Ltr  
Parameter Required: As per TOR

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA 22 <sup>nd</sup> Edition, 4500-H <sup>+</sup> B	8.44	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA 22 <sup>nd</sup> Edition, 2120 B	BDL (DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA 22 <sup>nd</sup> Edition, 2130 B	BDL (DL 1 NTU)	NTU	1	5
4.	Odour	APHA 22 <sup>nd</sup> Edition, 2150 B	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA 22 <sup>nd</sup> Edition, 2160 B	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2340 C	157.90	mg/l	200	600
7.	Calcium as Ca	APHA 22 <sup>nd</sup> Edition, 3500 Ca B	40.09	mg/l	75	200
8.	Alkalinity as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2320 B	180.00	mg/l	200	600
9.	Chloride as Cl	APHA 22 <sup>nd</sup> Edition, 4500-Cl <sup>-</sup> B	51.48	mg/l	250	1000
10.	Cyanide as CN	APHA 22 <sup>nd</sup> Edition, 4500 CN <sup>-</sup> D	BDL (DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA 22 <sup>nd</sup> Edition, 2340 B	14.06	mg/l	30	100
12.	Total Dissolved Solids	APHA 22 <sup>nd</sup> Edition, 2540 C	335.00	mg/l	500	2000
13.	Sulphate as SO <sub>4</sub>	APHA 22 <sup>nd</sup> Edition, 4500 E	39.88	mg/l	200	400
14.	Fluoride as F	APHA 22 <sup>nd</sup> Edition, 4500-F D	0.56	mg/l	1.0	1.5
15.	Nitrate as NO <sub>3</sub>	IS 3025 (P-34) 1988	16.35	mg/l	45	No Relaxation
16.	Iron as Fe	APHA 22 <sup>nd</sup> Edition, 3500-Fe B	0.40	mg/l	0.3	No relaxation
17.	Aluminium as Al	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL (DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA 22 <sup>nd</sup> Edition, 4500B C	BDL (DL 0.01 mg/l)	mg/l	0.5	1
19.	Hexa Chromium as Cr+6	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL (DL 0.01 mg/l)	mg/l	0.05	No Relaxation

*Ms. NUPUR SHARMA*  
M.Sc. Env. Science

*DR. N. C. SHrivastava*  
General Manager (Lab)

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## Test Certificate

Sample No.: VEL/MP/05			Report No.: VEL/W/1612/05			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Conductivity	APHA 22nd Edition, 2120 B	0.561	mS/cm	--	--
21.	Phenolic Compounds	APHA 22 <sup>nd</sup> Edition, 5530 C	BDL(DL 0.001 mg/l)	mg/l	0.001	0.002
22.	Mineral Oil	Clause 6 of IS:3025(Part 39)	BDL(DL 0.01mg/l)	mg/l	0.5	No Relaxation
23.	Anionic Detergents as MBAS	APHA 22 <sup>nd</sup> Edition, 5540 C	BDL(DL 0.02 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA 22 <sup>nd</sup> Edition, 3111 B	0.39	mg/l	5	15
25.	Copper as Cu	APHA 22 <sup>nd</sup> Edition, 3111 B	0.10	mg/l	0.05	1.5
26.	Manganese as Mn	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.10 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.001 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.01mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	0.05
31.	Mercury as Hg	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL (DL 0.001 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622,1981(Reaffirmed 2003)	<2/100ml	MPN/100ml	Shall not be detectable in any 100ml sample	
33.	E. Coli	IS 1622,1981(Reaffirmed 2003)	Absent	MPN/100ml	Shall not be detectable in any 100ml sample	

Note: - \*BDL-Below Detection Limit, \*DL- Detection Limit

  
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 M.Sc. Env. Science

  
**DR. N.G. SHRIVASTAVA**  
 General Manager (Lab)

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# Vardan EnviroLab

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Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)  
Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275  
(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Sample Number:	VEL/MP/06	Report No.:	VEL/W/1612/06
Name of the Project:	M/s M.P. Traders Sand Minor Mineral Mine (Area 77.25 Ha) Nagli Block /YNR B 15, District – Yamuna Nagar (Haryana)	Format No.:	5.10 F-01
Sample Description:	Ground water	Party Reference No.:	NIL
Sampling Location:	Near Village-Shukartal (W6)	Reporting Date:	20/12/2016
Sample Collected by:	Vardan Enviro Lab Team	Receipt Date:	15/12/2016
		Sampling Type:	Grab
		Preservation:	Refrigerated
		Sampling Quantity:	2.0 Ltr
		Parameter Required:	As per TOR
Sampling & Analysis Protocol:	IS-10500-2012, APHA 22 <sup>nd</sup> Edition 2012		

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
1.	pH (at 25 °C)	APHA 22 <sup>nd</sup> Edition, 4500-H <sup>+</sup> B	8.30	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA 22 <sup>nd</sup> Edition, 2120 B	BDL (DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA 22 <sup>nd</sup> Edition, 2130 B	BDL (DL 1 NTU)	NTU	1	5
4.	Odour	APHA 22 <sup>nd</sup> Edition, 2150 B	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA 22 <sup>nd</sup> Edition, 2160 B	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2340 C	172.35	mg/l	200	600
7.	Calcium as Ca	APHA 22 <sup>nd</sup> Edition, 3500 Ca B	43.25	mg/l	75	200
8.	Alkalinity as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2320 B	142.00	mg/l	200	600
9.	Chloride as Cl	APHA 22 <sup>nd</sup> Edition, 4500-Cl <sup>-</sup> B	36.25	mg/l	250	1000
10.	Cyanide as CN	APHA 22 <sup>nd</sup> Edition, 4500 CN <sup>-</sup> D	BDL(DL 0.02 mg/l)	mg/l	0.05	No Relaxation
11.	Magnesium as Mg	APHA 22 <sup>nd</sup> Edition, 2340 B	15.66	mg/l	30	100
12.	Total Dissolved Solids	APHA 22 <sup>nd</sup> Edition, 2540 C	260.00	mg/l	500	2000
13.	Sulphate as SO <sub>4</sub>	APHA 22 <sup>nd</sup> Edition, 4500 E	18.12	mg/l	200	400
14.	Fluoride as F	APHA 22 <sup>nd</sup> Edition, 4500-F <sup>-</sup> D	0.34	mg/l	1.0	1.5
15.	Nitrate as NO <sub>3</sub>	IS 3025 (P-34) 1988	24.17	mg/l	45	No Relaxation
16.	Iron as Fe	APHA 22 <sup>nd</sup> Edition, 3500-Fe B	0.37	mg/l	0.3	No relaxation
17.	Aluminium as Al	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.03 mg/l)	mg/l	0.03	0.2
18.	Boron	APHA 22 <sup>nd</sup> Edition, 4500B C	BDL(DL 0.01 mg/l)	mg/l	0.5	1
19.	Hexa Chromium as Cr+6	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.05	No Relaxation

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DR. N.G. SHRIVASTAVA  
General Manager (Lab)

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## Test Certificate

Sample No.: VEL/MP/06			Report No.: VEL/W/1612/06			
S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Requirement (Acceptable) Limit	Permissible limit in the Absence of Alternate Source
20.	Conductivity	APHA 22nd Edition, 2120 B	0443	mS/cm	--	--
21.	Phenolic Compounds	APHA 22nd Edition, 5530 C	BDL(DL 0.001 mg/l)	mg/l	0.001	0.002
22.	Mineral Oil	Clause 6 of IS:3025(Part 39)	BDL(DL 0.01 mg/l)	mg/l	0.5	No Relaxation
23.	Anionic Detergents as MBAS	APHA 22nd Edition, 5540 C	BDL(DL 0.02 mg/l)	mg/l	0.2	1.0
24.	Zinc as Zn	APHA 22nd Edition, 3111 B	0.63	mg/l	5	15
25.	Copper as Cu	APHA 22nd Edition, 3111 B	0.15	mg/l	0.05	1.5
26.	Manganese as Mn	APHA 22nd Edition, 3111 B	BDL(DL 0.10 mg/l)	mg/l	0.1	0.3
27.	Cadmium as Cd	APHA 22nd Edition, 3111 B	BDL(DL 0.001 mg/l)	mg/l	0.003	No Relaxation
28.	Lead as Pb	APHA 22nd Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	No Relaxation
29.	Selenium as Se	APHA 22nd Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	No Relaxation
30.	Arsenic as As	APHA 22nd Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l	0.01	0.05
31.	Mercury as Hg	APHA 22nd Edition, 3111 B	BDL (DL 0.001 mg/l)	mg/l	0.001	No Relaxation
32.	Total Coliform	IS 1622,1981(Reaffirmed 2003)	<2/100ml	MPN/100ml	Shall not be detectable in any 100ml sample	
33.	E. Coli	IS 1622,1981(Reaffirmed 2003)	Absent	MPN/100ml	Shall not be detectable in any 100ml sample	

Note: - \*BDL-Below Detection Limit, \*DL- Detection Limit

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## Test Certificate

Sample Number:	VEL/ MP/W/01	Report No.:	VEL/MP/W/1612/07
Issued to:	M/s M.P. Traders	Format No.:	5.10 F-01
	Sand Minor Mineral Mine	Party Reference No.:	NIL
	(Area 77.25 Ha) Nagli Block /YNR B	Reporting Date:	20/12/2016
	15, District – Yamuna Nagar (Haryana)	Receipt Date:	15/12/2016
Sample Description:	Surface water (Yamuna River)	Sampling Date:	14/12/2016
Sampling Location:	Near River Mine Site (SW 1)	Sampling Type:	Composite
Sample Collected by:	Vardan EnviroLab Team	Preservation:	Refrigerated
Sampling & Analysis Protocol:	IS-10500-2012, APHA 22 <sup>nd</sup> Edition 2012	Sampling Quantity:	2.0 Ltr
		Parameter Required:	As per TOR

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	APHA 22 <sup>nd</sup> Edition, 4500-H <sup>+</sup> B	7.86	--
2.	Colour	APHA 22 <sup>nd</sup> Edition, 2120 B	BDL (DL 5Hazen)	Hazen
3.	Turbidity	APHA 22 <sup>nd</sup> Edition, 2130 B	10	NTU
4.	Odour	APHA 22 <sup>nd</sup> Edition, 2150 B	Agreeable	--
5.	Total Hardness as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2340 C	176.06	mg/l
6.	Calcium as Ca	APHA 22 <sup>nd</sup> Edition, 3500 Ca B	29.55	mg/l
7.	Alkalinity as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2320 B	156	mg/l
8.	Chloride as Cl	APHA 22 <sup>nd</sup> Edition, 4500-Cl- B	41.23	mg/l
9.	Residual free Chlorine	APHA 22 <sup>nd</sup> Edition, 4500 Cl-B	BDL(DL 0.20mg/l)	mg/l
10.	Cyanide as CN	APHA 22 <sup>nd</sup> Edition, 4500 CN-D	BDL(DL 0.02 mg/l)	mg/l
11.	Magnesium as Mg	APHA 22 <sup>nd</sup> Edition, 2340 B	24.87	mg/l
12.	Total Dissolved Solids	APHA 22 <sup>nd</sup> Edition, 2540 C	258.00	mg/l
13.	Total Suspended solids	APHA 22 <sup>nd</sup> Edition, 2540 D	50.00	mg/l
14.	Dissolved Oxygen	APHA 22 <sup>nd</sup> Edition, 4500	7.0	mg/l
15.	Sulphate as SO <sub>4</sub>	APHA 22 <sup>nd</sup> Edition, 4500 E	27.65	mg/l
16.	Fluoride as F	APHA 22 <sup>nd</sup> Edition, 4500-F-D	0.40	mg/l
17.	BOD (3 Days at 27°C)	IS 3025, P-44, 1999 (R- 2003)	5.85	mg/l
18.	COD	APHA 22 <sup>nd</sup> Edition, 5220 B	13.36	mg/l

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## Test Certificate

Sample No.: VEL/MP/W/01			Report No.: VEL/MP/W/1612/07	
S. No.	Parameter	Test-Method	Result	Unit
19.	Conductivity	APHA 22 <sup>nd</sup> Edition, 2120 B	0.433	mS/cm
20.	Nitrate as NO <sub>3</sub>	IS 3025 (P-34) 1988	12.08	mg/l
21.	Sodium as Na	APHA 22 <sup>nd</sup> Edition, 3500 Na B	18	mg/l
22.	Potassium as K	APHA 22 <sup>nd</sup> Edition, 3500 K B	2	mg/l
23.	Iron as Fe	APHA 22 <sup>nd</sup> Edition, 3500-Fe B	0.25	mg/l
24.	Aluminium as Al	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.03 mg/l)	mg/l
25.	Boron	APHA 22 <sup>nd</sup> Edition, 4500B C	0.39	mg/l
26.	Chromium as Cr	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l
27.	Phenolic Compounds	APHA 22 <sup>nd</sup> Edition, 5530 C	BDL(DL 0.001 mg/l)	mg/l
28.	Mineral Oil	Clause 6 of IS:3025(Part 39)	BDL(DL 0.01mg/l)	mg/l
29.	Anionic Detergents as MBAS	APHA 22 <sup>nd</sup> Edition, 5540 C	BDL(DL 0.02 mg/l)	mg/l
30.	Zinc as Zn	APHA 22 <sup>nd</sup> Edition, 3111 B	0.39	mg/l
31.	Copper as Cu	APHA 22 <sup>nd</sup> Edition, 3111 B	0.12	mg/l
32.	Manganese as Mn	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.10 mg/l)	mg/l
33.	Cadmium as Cd	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.001 mg/l)	mg/l
34.	Total Coliform	IS 1622,1981(Reaffirmed 2003)	2100	MPN/100ml
35.	Fecal Coliform	IS 1622,1981(Reaffirmed 2003)	1700	MPN/100ml

Note: -\*BDL-Below Detection Limit, \*DL- Detection Limit

  
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## Test Certificate

Sample Number:	VEL/ MP/W/02	Report No.:	VEL/MP/W/1612/08
Issued to:	M/s M.P. Traders	Format No.:	5.10 F-01
	Sand Minor Mineral Mine	Party Reference No.:	NIL
	(Area 77.25 Ha) Nagli Block /YNR B	Reporting Date:	20/12/2016
	15, District – Yamuna Nagar (Haryana)	Receipt Date:	15/12/2016
Sample Description:	Surface Water ( Yamuna River)	Sampling Date:	14/12/2016
Sampling Location:	Down Wind [Near Rampur Barsi Village (SW 2)]	Sampling Type:	Composite
Sample Collected by:	Vardan EnviroLab Team	Preservation:	Refrigerated
Sampling & Analysis Protocol:	IS-10500-2012, APHA 22 <sup>nd</sup> Edition 2012	Sampling Quantity:	2.0 Ltr
		Parameter Required:	As per TOR

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	APHA 22 <sup>nd</sup> Edition, 4500-H•B	7.54	--
2.	Colour	APHA 22 <sup>nd</sup> Edition, 2120 B	BDL (DL 5Hazen)	Hazen
3.	Turbidity	APHA 22 <sup>nd</sup> Edition, 2130 B	15	NTU
4.	Odour	APHA 22 <sup>nd</sup> Edition, 2150 B	Agreeable	--
5.	Total Hardness as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2340 C	202.32	mg/l
6.	Calcium as Ca	APHA 22 <sup>nd</sup> Edition, 3500 Ca B	38.64	mg/l
7.	Alkalinity as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2320 B	146.00	mg/l
8.	Chloride as Cl	APHA 22 <sup>nd</sup> Edition, 4500-Cl- B	55.76	mg/l
9.	Residual free Chlorine	APHA 22 <sup>nd</sup> Edition, 4500 Cl-B	BDL(DL 0.20mg/l)	mg/l
10.	Cyanide as CN	APHA 22 <sup>nd</sup> Edition, 4500 CN-D	BDL(DL 0.02 mg/l)	mg/l
11.	Magnesium as Mg	APHA 22 <sup>nd</sup> Edition, 2340 B	25.74	mg/l
12.	Total Dissolved Solids	APHA 22 <sup>nd</sup> Edition, 2540 C	288.00	mg/l
13.	Total Suspended solids	APHA 22 <sup>nd</sup> Edition, 2540 D	76.00	mg/l
14.	Dissolved Oxygen	APHA 22 <sup>nd</sup> Edition, 4500	6.9	mg/l
15.	Sulphate as SO <sub>4</sub>	APHA 22 <sup>nd</sup> Edition, 4500 E	35.12	mg/l
16.	Fluoride as F	APHA 22 <sup>nd</sup> Edition, 4500-F D	0.29	mg/l
17.	BOD (3 Days at 27°C)	IS 3025,P-44,1999 (R- 2003)	6.92	mg/l
18.	COD	APHA 22 <sup>nd</sup> Edition, 5220 B	19.08	mg/l

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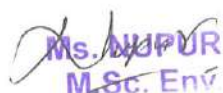
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## Test Certificate

Sample No.: VEL/MP/W/02			Report No.: VEL/MP/W/1612/08	
S. No.	Parameter	Test-Method	Result	Unit
19.	Conductivity	APHA 22 <sup>nd</sup> Edition, 2120 B	0.482	mS/cm
20.	Nitrate as NO <sub>3</sub>	IS 3025 (P-34) 1988	9.53	mg/l
21.	Sodium as Na	APHA 22 <sup>nd</sup> Edition, 3500 Na B	20	mg/l
22.	Potassium as K	APHA 22 <sup>nd</sup> Edition, 3500 K B	4	mg/l
23.	Iron as Fe	APHA 22 <sup>nd</sup> Edition, 3500-Fe B	0.19	mg/l
24.	Aluminium as Al	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.03 mg/l)	mg/l
25.	Boron	APHA 22 <sup>nd</sup> Edition, 4500B C	0.32	mg/l
26.	Chromium as Cr	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l
27.	Phenolic Compounds	APHA 22 <sup>nd</sup> Edition, 5530 C	BDL(DL 0.001 mg/l)	mg/l
28.	Mineral Oil	Clause 6 of IS:3025(Part 39)	BDL(DL 0.01mg/l)	mg/l
29.	Anionic Detergents as MBAS	APHA 22 <sup>nd</sup> Edition, 5540 C	BDL(DL 0.02 mg/l)	mg/l
30.	Zinc as Zn	APHA 22 <sup>nd</sup> Edition, 3111 B	0.63	mg/l
31.	Copper as Cu	APHA 22 <sup>nd</sup> Edition, 3111 B	0.09	mg/l
32.	Manganese as Mn	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.10 mg/l)	mg/l
33.	Cadmium as Cd	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.001 mg/l)	mg/l
34.	Total Coliform	IS 1622,1981(Reaffirmed 2003)	2500	MPN/100ml
35.	Fecal Coliform	IS 1622,1981(Reaffirmed 2003)	1400	MPN/100ml

Note: -\*BDL-Below Detection Limit, \*DL- Detection Limit

  
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## Test Certificate

Sample Number:	VEL/ MP/W/03	Report No.:	VEL/MP/W/1612/09
Issued to:	M/s M.P. Traders	Format No.:	5.10 F-01
	Sand Minor Mineral Mine	Party Reference No.:	NIL
	(Area 77.25 Ha) Nagli Block /YNR B	Reporting Date:	20/12/2016
	15, District – Yamuna Nagar (Haryana)	Receipt Date:	15/12/2016
Sample Description:	Surface water (Yamuna River)	Sampling Date:	14/12/2016
Sampling Location:	Up Wind [Near Dikha Khurd Village (SW 3)]	Sampling Type:	Composite
Sample Collected by:	Vardan EnviroLab Team	Preservation:	Refrigerated
Sampling & Analysis Protocol:	IS-10500-2012, APHA 22 <sup>nd</sup> Edition 2012	Sampling Quantity:	2.0 Ltr
		Parameter Required:	As per TOR

S. No.	Parameter	Test-Method	Result	Unit
1.	pH (at 25 °C)	APHA 22 <sup>nd</sup> Edition, 4500-H <sup>+</sup> B	7.62	--
2.	Colour	APHA 22 <sup>nd</sup> Edition, 2120 B	BDL (DL 5Hazen)	Hazen
3.	Turbidity	APHA 22 <sup>nd</sup> Edition, 2130 B	13	NTU
4.	Odour	APHA 22 <sup>nd</sup> Edition, 2150 B	Agreeable	--
5.	Total Hardness as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2340 C	150.23	mg/l
6.	Calcium as Ca	APHA 22 <sup>nd</sup> Edition, 3500 Ca B	27.45	mg/l
7.	Alkalinity as CaCO <sub>3</sub>	APHA 22 <sup>nd</sup> Edition, 2320 B	126.00	mg/l
8.	Chloride as Cl	APHA 22 <sup>nd</sup> Edition, 4500-Cl- B	38.65	mg/l
9.	Residual free Chlorine	APHA 22 <sup>nd</sup> Edition, 4500 Cl-B	BDL(DL 0.20mg/l)	mg/l
10.	Cyanide as CN	APHA 22 <sup>nd</sup> Edition, 4500 CN-D	BDL(DL 0.02 mg/l)	mg/l
11.	Magnesium as Mg	APHA 22 <sup>nd</sup> Edition, 2340 B	19.86	mg/l
12.	Total Dissolved Solids	APHA 22 <sup>nd</sup> Edition, 2540 C	227.00	mg/l
13.	Total Suspended solids	APHA 22 <sup>nd</sup> Edition, 2540 D	47.00	mg/l
14.	Dissolved Oxygen	APHA 22 <sup>nd</sup> Edition, 4500	7.2	mg/l
15.	Sulphate as SO <sub>4</sub>	APHA 22 <sup>nd</sup> Edition, 4500 E	21.09	mg/l
16.	Fluoride as F	APHA 22 <sup>nd</sup> Edition, 4500-F-D	0.31	mg/l
17.	BOD (3 Days at 27°C)	IS 3025, P-44, 1999 (R- 2003)	<5.0	mg/l
18.	COD	APHA 22 <sup>nd</sup> Edition, 5220 B	11.8	mg/l

**Ms. NUPUR SHARMA**  
M.Sc. Env. Science

**DR. N.G. SHRIVASTAVA**  
General Manager (Lab)

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Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)

Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275

(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Sample No.: VEL/MP/W/03			Report No.: VEL/MP/W/1612/09	
S. No.	Parameter	Test-Method	Result	Unit
19.	Conductivity	APHA 22 <sup>nd</sup> Edition, 2120 B	0.380	mS/cm
20.	Nitrate as NO <sub>3</sub>	IS 3025 (P-34) 1988	10.97	mg/l
21.	Sodium as Na	APHA 22 <sup>nd</sup> Edition, 3500 Na B	23	mg/l
22.	Potassium as K	APHA 22 <sup>nd</sup> Edition, 3500 K B	1	mg/l
23.	Iron as Fe	APHA 22 <sup>nd</sup> Edition, 3500-Fe B	0.26	mg/l
24.	Aluminium as Al	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.03 mg/l)	mg/l
25.	Boron	APHA 22 <sup>nd</sup> Edition, 4500B C	0.18	mg/l
26.	Chromium as Cr	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.01 mg/l)	mg/l
27.	Phenolic Compounds	APHA 22 <sup>nd</sup> Edition, 5530 C	BDL(DL 0.001 mg/l)	mg/l
28.	Mineral Oil	Clause 6 of IS:3025(Part 39)	BDL(DL 0.01mg/l)	mg/l
29.	Anionic Detergents as MBAS	APHA 22 <sup>nd</sup> Edition, 5540 C	BDL(DL 0.02 mg/l)	mg/l
30.	Zinc as Zn	APHA 22 <sup>nd</sup> Edition, 3111 B	0.58	mg/l
31.	Copper as Cu	APHA 22 <sup>nd</sup> Edition, 3111 B	0.17	mg/l
32.	Manganese as Mn	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.10 mg/l)	mg/l
33.	Cadmium as Cd	APHA 22 <sup>nd</sup> Edition, 3111 B	BDL(DL 0.001 mg/l)	mg/l
34.	Total Coliform	IS 1622,1981(Reaffirmed 2003)	1700	MPN/100ml
35.	Fecal Coliform	IS 1622,1981(Reaffirmed 2003)	800	MPN/100ml

Note: -\*BDL-Below Detection Limit, \*DL- Detection Limit

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M.Sc. Env. Science

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IS 10500 : 2012

भारतीय मानक  
पीने का पानी — विशिष्टि  
(दूसरा पुनरीक्षण)

*Indian Standard*  
DRINKING WATER — SPECIFICATION  
( *Second Revision* )

ICS 13.060.20

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**BUREAU OF INDIAN STANDARDS**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

May 2012

Price Group 6

## FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Drinking Water Sectional Committee had been approved by the Food and Agriculture Division Council.

This standard was originally published in 1983. A report prepared by the World Health Organization in cooperation with the World Bank showed that in 1975, some 1 230 million people were without safe water supplies. These appalling facts were central to the United Nations decision to declare an International Drinking Water Supply and Sanitation decade, beginning in 1981. Further, the VI Five-Year Plan of India had made a special provision for availability of safe drinking water for the masses. Therefore, the standard was formulated with the objective of assessing the quality of water resources, and to check the effectiveness of water treatment and supply by the concerned authorities.

The first revision was undertaken to take into account the up-to-date information available about the nature and effect of various contaminants as also the new techniques for identifying and determining their concentration. Based on experience gained additional requirements for alkalinity; aluminium and boron were incorporated and the permissible limits for dissolved solids, nitrate and pesticides residues modified.

As per the eleventh five year plan document of India (2007-12), there are about 2.17 lakh quality affected habitations in the country with more than half affected with excess iron, followed by fluoride, salinity, nitrate and arsenic in that order. Further, approximately, 10 million cases of diarrhoea, more than 7.2 lakh typhoid cases and 1.5 lakh viral hepatitis cases occur every year a majority of which are contributed by unclean water supply and poor sanitation. The eleventh five year plan document of India (2007-2012) recognizes dealing with the issue of water quality as a major challenge and aims at addressing water quality problems in all quality affected habitations with emphasis on community participation and awareness campaigns as well as on top most priority to water quality surveillance and monitoring by setting up of water quality testing laboratories strengthened with qualified manpower, equipments and chemicals.

The second revision was undertaken to upgrade the requirements of the standard and align with the internationally available specifications on drinking water. In this revision assistance has been derived from the following:

- a) EU Directives relating to the quality of water intended for human consumption (80/778/EEC) and Council Directive 98/83/EC.
- b) USEPA standard — National Primary Drinking Water Standard. EPA 816-F-02-013 dated July, 2002.
- c) WHO Guidelines for Drinking Water Quality. 3rd Edition Vol. 1 Recommendations, 2008.
- d) Manual on Water Supply and Treatment, third edition — revised and updated May 1999, Ministry of Urban Development, New Delhi.

This standard specifies the acceptable limits and the permissible limits in the absence of alternate source. It is recommended that the acceptable limit is to be implemented as values in excess of those mentioned under 'Acceptable' render the water not suitable. Such a value may, however, be tolerated in the absence of an alternative source. However, if the value exceeds the limits indicated under 'permissible limit in the absence of alternate source' in col 4 of Tables 1 to 4, the sources will have to be rejected.

Pesticide residues limits and test methods given in Table 5 are based on consumption pattern, persistence and available manufacturing data. The limits have been specified based on WHO guidelines, wherever available. In cases where WHO guidelines are not available, the standards available from other countries have been examined and incorporated, taking in view the Indian conditions.

In this revision, additional requirements for ammonia, chloramines, barium, molybdenum, silver, sulphide, nickel, polychlorinated biphenyls and trihalomethanes have been incorporated while the requirements for colour, turbidity, total hardness, free residual chlorine, iron, magnesium, mineral oil, boron, cadmium, total arsenic, lead, polynuclear aromatic hydrocarbons, pesticides and bacteriological requirements have been modified.

In this revision, requirement and test method for virological examination have been included. Further, requirements and test methods for cryptosporidium and giardia have also been specified.

Routine surveillance of drinking water supplies should be carried out by the relevant authorities to understand the risk of specific pathogens and to define proper control procedures. The WHO Guidelines for Drinking Water Quality, 3rd Edition, Vol. 1 may be referred for specific recommendations on using a water safety approach incorporating risk identification. Precautions/Care should be taken to prevent contamination of drinking water from chlorine resistant parasites such as cryptosporidium species and giardia.

# *Indian Standard*

## DRINKING WATER — SPECIFICATION

### ( *Second Revision* )

#### 1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for drinking water.

#### 2 REFERENCES

The standards listed in Annex A contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

#### 3 TERMINOLOGY

For the purpose of this standard the following definition shall apply.

**3.1 Drinking Water** — Drinking water is water intended for human consumption for drinking and cooking purposes from any source. It includes water (treated or untreated) supplied by any means for human consumption.

#### 4 REQUIREMENTS

Drinking water shall comply with the requirements given in Tables 1 to 4. The analysis of pesticide residues given in Table 3 shall be conducted by a recognized laboratory using internationally established test method meeting the residue limits as given in Table 5.

Drinking water shall also comply with bacteriological requirements (*see 4.1*), virological requirements (*see 4.2*) and biological requirements (*see 4.3*).

##### 4.1 Bacteriological Requirements

###### 4.1.1 Water in Distribution System

Ideally, all samples taken from the distribution system including consumers' premises, should be free from coliform organisms and the following bacteriological quality of drinking water collected in the distribution system, as given in Table 6 is, therefore specified when tested in accordance with IS 1622.

##### 4.2 Virological Requirements

**4.2.1** Ideally, all samples taken from the distribution

**Table 1 Organoleptic and Physical Parameters**  
(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to Part of IS 3025	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Colour, Hazen units, <i>Max</i>	5	15	Part 4	Extended to 15 only, if toxic substances are not suspected in absence of alternate sources
ii)	Odour	Agreeable	Agreeable	Part 5	a) Test cold and when heated b) Test at several dilutions
iii)	pH value	6.5-8.5	No relaxation	Part 11	—
iv)	Taste	Agreeable	Agreeable	Parts 7 and 8	Test to be conducted only after safety has been established
v)	Turbidity, NTU, <i>Max</i>	1	5	Part 10	—
vi)	Total dissolved solids, mg/l, <i>Max</i>	500	2 000	Part 16	—

NOTE — It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.

IS 10500 : 2012

**Table 2 General Parameters Concerning Substances Undesirable in Excessive Amounts**  
(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Aluminium (as Al), mg/l, <i>Max</i>	0.03	0.2	IS 3025 (Part 55)	—
ii)	Ammonia (as total ammonia-N), mg/l, <i>Max</i>	0.5	No relaxation	IS 3025 (Part 34)	—
iii)	Anionic detergents (as MBAS) mg/l, <i>Max</i>	0.2	1.0	Annex K of IS 13428	—
iv)	Barium (as Ba), mg/l, <i>Max</i>	0.7	No relaxation	Annex F of IS 13428* or IS 15302	—
v)	Boron (as B), mg/l, <i>Max</i>	0.5	1.0	IS 3025 (Part 57)	—
vi)	Calcium (as Ca), mg/l, <i>Max</i>	75	200	IS 3025 (Part 40)	—
vii)	Chloramines (as Cl <sub>2</sub> ), mg/l, <i>Max</i>	4.0	No relaxation	IS 3025 (Part 26)* or APHA 4500-Cl G	—
viii)	Chloride (as Cl), mg/l, <i>Max</i>	250	1 000	IS 3025 (Part 32)	—
ix)	Copper (as Cu), mg/l, <i>Max</i>	0.05	1.5	IS 3025 (Part 42)	—
x)	Fluoride (as F) mg/l, <i>Max</i>	1.0	1.5	IS 3025 (Part 60)	—
xi)	Free residual chlorine, mg/l, <i>Min</i>	0.2	1	IS 3025 (Part 26)	To be applicable only when water is chlorinated. Tested at consumer end. When protection against viral infection is required, it should be minimum 0.5 mg/l
xii)	Iron (as Fe), mg/l, <i>Max</i>	0.3	No relaxation	IS 3025 (Part 53)	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xiii)	Magnesium (as Mg), mg/l, <i>Max</i>	30	100	IS 3025 (Part 46)	—
xiv)	Manganese (as Mn), mg/l, <i>Max</i>	0.1	0.3	IS 3025 (Part 59)	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
xv)	Mineral oil, mg/l, <i>Max</i>	0.5	No relaxation	Clause 6 of IS 3025 (Part 39) Infrared partition method	—
xvi)	Nitrate (as NO <sub>3</sub> ), mg/l, <i>Max</i>	45	No relaxation	IS 3025 (Part 34)	—
xvii)	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, <i>Max</i>	0.001	0.002	IS 3025 (Part 43)	—
xviii)	Selenium (as Se), mg/l, <i>Max</i>	0.01	No relaxation	IS 3025 (Part 56) or IS 15303*	—
xix)	Silver (as Ag), mg/l, <i>Max</i>	0.1	No relaxation	Annex J of IS 13428	—
xx)	Sulphate (as SO <sub>4</sub> ) mg/l, <i>Max</i>	200	400	IS 3025 (Part 24)	May be extended to 400 provided that Magnesium does not exceed 30
xxi)	Sulphide (as H <sub>2</sub> S), mg/l, <i>Max</i>	0.05	No relaxation	IS 3025 (Part 29)	—
xxii)	Total alkalinity as calcium carbonate, mg/l, <i>Max</i>	200	600	IS 3025 (Part 23)	—
xxiii)	Total hardness (as CaCO <sub>3</sub> ), mg/l, <i>Max</i>	200	600	IS 3025 (Part 21)	—
xxiv)	Zinc (as Zn), mg/l, <i>Max</i>	5	15	IS 3025 (Part 49)	—

## NOTES

1 In case of dispute, the method indicated by '\*' shall be the referee method.

2 It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.





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(ISO 9001 | ISO 14001 | OHSAS 18001 | MoEF & CC Recognized | NABL Accredited | HSPCB & RSPCB Approved)

## Test Certificate

Sample Number:	VEL/MP/01	Report No.:	VEL/S/1612/01
Name & Address of Party:	M/s M.P. Traders Sand Minor Mineral Mine (Area 77.25 Ha) Nagli Block /YNR B 15, District – Yamuna Nagar (Haryana)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
Sample Description:	SOIL	Reporting Date:	20/12/2016
Sampling Location:	Near Village- Rajheri	Receipt Date:	15/12/2016
Sample Collected b	Vardan Enviro Lab Team	Sampling Date:	14/12/2016
		Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720 & USDA	Packing Status:	Temp Sealed

S. No.	Parameter	Protocol	Result	Unit
1.	pH (at 25 °C)	IS : 2720 (P-26,1987)	7.45	--
2.	Conductivity	IS:14767-2000 Reaffirmed 2006	0.310	mS/cm
3.	Soil Texture	USDA Method, 1968	Sandy Loam	--
4.	Color	USDA Method, 1968	Brownish White	--
5.	Water holding capacity	USDA Method, 1968	28.63	%
6.	Bulk density	USDA Method, 1968	1.45	gm/cc
7.	Chloride as Cl	USDA Method, 1968	35.12	mg/100gm
8.	Calcium as Ca	USDA Method, 1968	30.24	mg/100gm
9.	Sodium as Na	USDA Method, 1968	42.30	mg/100gm
10.	Potassium as K	USDA Method, 1968	140.30	kg/hect.
11.	Organic Matter	IS:2720 (P-22, 1972)	0.45	%
12.	Magnesium as Mg	USDA Method, 1968	13.36	mg/100gm
13.	Available Nitrogen as N	IS:14684, 1999	224.00	kg/hect.
14.	Available Phosphorus	USDA, APHA-4500PC	14.12	kg/hect.
15.	Zinc as Zn	APHA-3030D, APHA-3111B	2.53	mg/kg
16.	Manganese as Mn	APHA-3030D, APHA-3111B	3.21	mg/kg
17.	Chromium as Cr	APHA-3030D, APHA-3111B	0.42	mg/kg
18.	Lead as Pb	APHA-3030D, APHA-3111B	0.16	mg/kg
19.	Cadmium as Cd	APHA-3030D, APHA-3111B	0.53	mg/kg
20.	Copper as Cu	APHA-3030D, APHA-3111B	1.20	mg/kg

*Richa Dutta*  
MS. RICH DUTTA  
B. Tech Env. Engineer

*DR. N. G. SHRIVASTAVA*  
General Manager (Lab)

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 (ISO 9001|ISO 14001|OHSAS 18001|MoEF & CC Recognized|NABL Accredited|HSPCB & RSPCB Approved)

## Test Certificate

Sample Number:	VEL/MP/02	Report No.:	VEL/S/1612/02
Name & Address of Party:	M/s M.P. Traders Sand Minor Mineral Mine (Area 77.25 Ha) Nagli Block /YNR B 15, District – Yamuna Nagar (Haryana)	Format No.:	5.10 F-01
Sample Description:	SOIL	Party Reference No.:	NIL
Sampling Location:	Near Village- Tabar	Reporting Date:	20/12/2016
Sample Collected b	Vardan Enviro Lab Team	Receipt Date:	15/12/2016
		Sampling Date:	14/12/2016
		Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720 & USDA	Packing Status:	Temp Sealed

S. No.	Parameter	Protocol	Result	Unit
1.	pH (at 25 °C)	IS : 2720 (P-26,1987)	7.86	--
2.	Conductivity	IS:14767-2000 Reaffirmed 2006	0.295	mS/cm
3.	Soil Texture	USDA Method, 1968	Silty Loam	--
4.	Color	USDA Method, 1968	Brownish	--
5.	Water holding capacity	USDA Method, 1968	34.62	%
6.	Bulk density	USDA Method, 1968	1.38	gm/cc
7.	Chloride as Cl	USDA Method, 1968	30.16	mg/100gm
8.	Calcium as Ca	USDA Method, 1968	32.64	mg/100gm
9.	Sodium as Na	USDA Method, 1968	46.35	mg/100gm
10.	Potassium as K	USDA Method, 1968	155.30	kg/hect.
11.	Organic Matter	IS:2720 (P-22, 1972)	0.42	%
12.	Magnesium as Mg	USDA Method, 1968	17.21	mg/100gm
13.	Available Nitrogen as N	IS:14684, 1999	240.32	kg/hect.
14.	Available Phosphorus	USDA, APHA-4500PC	21.53	kg/hect.
15.	Zinc as Zn	APHA-3030D, APHA-3111B	2.42	mg/kg
16.	Manganese as Mn	APHA-3030D, APHA-3111B	4.32	mg/kg
17.	Chromium as Cr	APHA-3030D, APHA-3111B	1.06	mg/kg
18.	Lead as Pb	APHA-3030D, APHA-3111B	0.20	mg/kg
19.	Cadmium as Cd	APHA-3030D, APHA-3111B	0.37	mg/kg
20.	Copper as Cu	APHA-3030D, APHA-3111B	1.16	mg/kg

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## Test Certificate

Sample Number:	VEL/MP/03	Report No.:	VEL/S/1612/03
Name & Address of Party:	M/s M.P. Traders Sand Minor Mineral Mine (Area 77.25 Ha) Nagli Block /YNR B 15, District – Yamuna Nagar (Haryana)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
Sample Description:	SOIL	Reporting Date:	20/12/2016
Sampling Location:	Near Model Town	Receipt Date:	15/12/2016
Sample Collected b	Vardan Enviro Lab Team	Sampling Date:	14/12/2016
		Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720 & USDA	Packing Status:	Temp Sealed

S. No.	Parameter	Protocol	Result	Unit
1.	pH (at 25 °C)	IS : 2720 (P-26, 1987)	8.10	--
2.	Conductivity	IS:14767-2000 Reaffirmed 2006	0.325	mS/cm
3.	Soil Texture	USDA Method, 1968	Sandy Loam	--
4.	Color	USDA Method, 1968	Brownish White	--
5.	Water holding capacity	USDA Method, 1968	36.24	%
6.	Bulk density	USDA Method, 1968	1.42	gm/cc
7.	Chloride as Cl	USDA Method, 1968	40.12	mg/100gm
8.	Calcium as Ca	USDA Method, 1968	35.41	mg/100gm
9.	Sodium as Na	USDA Method, 1968	44.71	mg/100gm
10.	Potassium as K	USDA Method, 1968	176.00	kg/hect.
11.	Organic Matter	IS:2720 (P-22, 1972)	0.47	%
12.	Magnesium as Mg	USDA Method, 1968	28.16	mg/100gm
13.	Available Nitrogen as N	IS:14684, 1999	246.00	kg/hect.
14.	Available Phosphorus	USDA, APHA-4500PC	35.42	kg/hect.
15.	Zinc as Zn	APHA-3030D, APHA-3111B	1.78	mg/kg
16.	Manganese as Mn	APHA-3030D, APHA-3111B	3.26	mg/kg
17.	Chromium as Cr	APHA-3030D, APHA-3111B	1.05	mg/kg
18.	Lead as Pb	APHA-3030D, APHA-3111B	0.23	mg/kg
19.	Cadmium as Cd	APHA-3030D, APHA-3111B	0.47	mg/kg
20.	Copper as Cu	APHA-3030D, APHA-3111B	1.10	mg/kg

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## Test Certificate

Sample Number:	VEL/MP/04	Report No.:	VEL/S/1612/04
Name & Address of Party:	M/s M.P. Traders Sand Minor Mineral Mine (Area 77.25 Ha) Nagli Block /YNR B 15, District – Yamuna Nagar (Haryana)	Format No.:	5.10 F-01
Sample Description:	SOIL	Party Reference No.:	NIL
Sampling Location:	Near Village- Shukartal	Reporting Date:	20/12/2016
Sample Collected b	Vardan Enviro Lab Team	Receipt Date:	15/12/2016
		Sampling Date:	14/12/2016
		Type of Sampling:	Composite
		Sampling Quantity:	2.0 Kg
		Depth of Sampling:	30 cm
Sampling & Analysis Protocol:	IS 2720 & USDA	Packing Status:	Temp Sealed

S. No.	Parameter	Protocol	Result	Unit
1.	pH (at 25 °C)	IS : 2720 (P-26,1987)	8.05	--
2.	Conductivity	IS:14767-2000 Reaffirmed 2006	0.288	mS/cm
3.	Soil Texture	USDA Method, 1968	Sandy Loam	--
4.	Color	USDA Method, 1968	Brownish White	--
5.	Water holding capacity	USDA Method, 1968	32.36	%
6.	Bulk density	USDA Method, 1968	1.37	gm/cc
7.	Chloride as Cl	USDA Method, 1968	44.12	mg/100gm
8.	Calcium as Ca	USDA Method, 1968	33.24	mg/100gm
9.	Sodium as Na	USDA Method, 1968	47.12	mg/100gm
10.	Potassium as K	USDA Method, 1968	210.00	kg/hect.
11.	Organic Matter	IS:2720 (P-22, 1972)	0.46	%
12.	Magnesium as Mg	USDA Method, 1968	26.54	mg/100gm
13.	Available Nitrogen as N	IS:14684, 1999	236.00	kg/hect.
14.	Available Phosphorus	USDA, APHA-4500PC	27.63	kg/hect.
15.	Zinc as Zn	APHA-3030D, APHA-3111B	1.86	mg/kg
16.	Manganese as Mn	APHA-3030D, APHA-3111B	3.14	mg/kg
17.	Chromium as Cr	APHA-3030D, APHA-3111B	1.02	mg/kg
18.	Lead as Pb	APHA-3030D, APHA-3111B	0.26	mg/kg
19.	Cadmium as Cd	APHA-3030D, APHA-3111B	0.46	mg/kg
20.	Copper as Cu	APHA-3030D, APHA-3111B	1.16	mg/kg

*Richa Dutta*  
**MS. RICHA DUTTA**  
B. Tech Env. Engineer

*DR. N.G. SHRIVASTAVA*  
General Manager (Lab)

NOTE: a) The results listed refer only to the tested samples & applicable parameters  
b) Total liabilities of our lab will be restricted to the invoice amount only  
c) The sample will be destroyed after retention time unless otherwise specified  
d) This report is not to be reproduced wholly or in part and cannot be used as evidence in the court of law



### Standard Soil Classification

S. NO.	PARAMETERS	CLASSIFICATION
1.	pH	<4.5 extremely acidic 4.51 – 5.0 very strong acidic 5.01 – 5.5 strongly acidic 5.51-6.0 moderately acidic 6.1 – 6.5 slightly acidic 6.51-7.3 Neutral 7.31-7.8 slightly alkaline 7.81-8.5 moderately alkaline 8.51 – 9.0 strongly alkaline >9.0 Very strongly alkaline
2.	Salinity Electrical Conductivity (mho/cm) 1 mho/cm = 640 ppm	Up to 1.0 average 1-2 harmful to germination 2-3 harmful to crops
3.	Nitrogen (kg/ha)	Up to 50 very less 51-100 less 110-150 good 151-300 better >300 sufficient
4.	Phosphorus (kg/ha)	Up to 15 very less 15 – 30 less 31-50 medium 51-65 on average sufficient 66-80 sufficient >80 more than sufficient
5.	Potassium (kg/ha)	0-120 very less 120-180 less 180-240 medium 241-300 average 301-360 better >360 more than sufficient

**TRAFFIC STUDY**

Name of the Project: Mining of Sand (minor mineral) at karhera Block/YNR B-14

Name of the Road: SH-6

Date of Traffic Survey: 26.08.2017

Up: Yamuna Nagar

Down: Ladwa

Fast Moving Vehicles											Slow Moving Vehicles				
Time	Two Wheelers		Three Wheelers		Car/Vans		Buses		Trucks		Cycles		Cycle Rishkaw		
	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	
06:00-07:00 hours	25	24	12	15	23	28	2	1	12	11	6	8	-	1	Day
07:00-08:00 hours	25	22	18	11	25	23	1	1	15	18	9	7	3	2	Day
08:00-09:00 hours	28	25	21	16	28	35	2	1	29	17	10	9	4	5	Day
09:00-10:00 hours	22	20	12	18	24	34	1	1	12	12	5	4	-	1	Day
10:00-11:00 hours	24	12	11	17	24	23	3	1	12	11	7	5	-	-	Day
11:00-12:00 hours	23	23	17	15	23	13	1	1	18	17	5	4	-	-	Day
12:00-13:00 hours	40	28	15	10	24	19	2	1	15	15	5	2	-	1	Day
13:00-14:00 hours	21	29	11	2	22	29	1	1	21	16	3	-	-	-	Day
14:00-15:00 hours	32	21	13	10	22	21	2	1	22	28	4	2	1	2	Day
15:00-16:00 hours	36	38	16	14	26	24	2	1	20	19	-	-	-	-	Day
16:00-17:00 hours	26	27	12	7	26	26	1	1	10	10	5	2	-	1	Day
17:00-18:00 hours	29	23	15	18	25	23	1	1	22	18	3	4	2	2	Day
18:00-19:00 hours	21	23	16	7	23	24	2	1	22	12	9	9	1	3	Day
19:00-20:00 hours	25	28	12	11	25	24	1	1	17	19	10	12	-	-	Day
20:00-21:00 hours	31	21	9	8	22	22	1	1	12	17	6	4	2	1	Night
21:00-22:00 hours	22	21	7	13	22	23	2	2	24	18	4	6	-	-	Night
22:00-23:00 hours	24	22	12	10	24	22	2	1	23	15	1	-	-	-	Night
23:00-00:00 hours	20	27	13	12	32	37	1	1	27	12	-	-	-	-	Night
00:00-01:00 hours	27	29	13	12	27	25	1	1	10	17	-	-	-	-	Night
01:00-02:00 hours	36	18	15	12	30	28	1	1	10	8	-	-	-	-	Night
02:00-03:00 hours	28	15	17	15	28	27	1	1	16	8	-	-	-	-	Night
03:00-04:00 hours	40	25	10	15	30	28	2	1	20	15	-	-	-	-	Night
04:00-05:00 hours	38	13	10	16	28	21	1	1	10	28	-	-	-	-	Night
05:00-06:00 hours	37	16	13	14	27	46	1	1	11	29	2	1	-	-	Day

Name of the Project: Mining of Sand (minor mineral) at karhera Block/YNR B-14

Name of the Road: MDR1

Date of Traffic Survey: 27.08.2017

Up: NH73

Down: Gangoh

Fast Moving Vehicles											Slow Moving Vehicles				
Time	Two Wheelers		Three Wheelers		Car/Vans		Buses		Trucks		Cycles		Cycle Rishkaw		
	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	
06:00-07:00 hours	18	25	7	6	16	15	3	2	8	5	6	8	-	1	Day
07:00-08:00 hours	13	30	10	7	5	12	2	2	7	5	9	7	3	2	Day
08:00-09:00 hours	22	22	9	5	8	16	2	3	9	4	10	9	4	5	Day
09:00-10:00 hours	12	30	9	12	9	18	1	1	12	10	5	4	-	1	Day
10:00-11:00 hours	24	24	10	7	11	10	1	1	8	7	7	5	-	-	Day
11:00-12:00 hours	13	21	11	6	17	15	1	1	6	6	5	4	-	-	Day
12:00-13:00 hours	27	20	12	10	15	12			10	9	5	2	-	1	Day
13:00-14:00 hours	21	29	10	7	11	12			7	4	3	-	-	-	Day
14:00-15:00 hours	22	11	10	10	13	10			10	8	4	2	1	2	Day
15:00-16:00 hours	29	10	12	11	16	15			12	10	-	-	-	-	Day
16:00-17:00 hours	26	21	6	8	1	13			8	10	5	2	-	1	Day
17:00-18:00 hours	25	33	12	8	5	13			8	9	3	4	2	2	Day
18:00-19:00 hours	23	23	10	2`	7	10			9	6	9	9	1	3	Day
19:00-20:00 hours	15	25	12	17	10	10			7	4	10	12	-	-	Day
20:00-21:00 hours	21	20	19	10	9	18			8	7	6	4	2	1	Night
21:00-22:00 hours	22	21	10	13	13	13			17	13	4	6	-	-	Night
22:00-23:00 hours	24	22	12	8	10	12			8	4	1	-	-	-	Night
23:00-00:00 hours	30	27	13	9	14	16	1	1	9	10	-	-	-	-	Night
00:00-01:00 hours	27	20	13	12	13	13	1	1	15	2	-	-	-	-	Night
01:00-02:00 hours	18	28	4	4	11	2	1	1	4	4	-	-	-	-	Night
02:00-03:00 hours	18	20	8	5	8	15	1	1	5	3	-	-	-	-	Night
03:00-04:00 hours	25	28	9	5	10	10	1	1	10	2	-	-	-	-	Night
04:00-05:00 hours	28	20	5	6	25	9			6	5	-	-	-	-	Night
05:00-06:00 hours	27	20	3	4	23	10			4	3	2	1	-	-	Day

Name of the Project: Mining of Sand (minor mineral) at karhera Block/YNR B-14

Name of the Road:MDR2

Date of Traffic Survey: 28.08.2017

Up: Jagadhari

Down: Indri

Fast Moving Vehicles											Slow Moving Vehicles				
Time	Two Wheelers		Three Wheelers		Car/Vans		Buses		Trucks		Cycles		Cycle Rishkaw		
	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	
06:00-07:00 hours	18	25	10	8	14	7	1	1	6	7	6	8	-	1	Day
07:00-08:00 hours	20	16	8	6	15	3	1	1	7	8	9	7	3	2	Day
08:00-09:00 hours	23	12	8	7	18	5	1	1	7	7	10	9	4	5	Day
09:00-10:00 hours	14	27	6	9	12	3	2	2	7	9	5	4	-	1	Day
10:00-11:00 hours	24	22	6	7	7	7	2	2	9	8	7	5	-	-	Day
11:00-12:00 hours	33	29	7	15	5	4	1	1	8	7	5	4	-	-	Day
12:00-13:00 hours	25	21	5	10	5	14	1	1	5	5	5	2	-	1	Day
13:00-14:00 hours	21	28	11	12	7	6	1	1	7	9	3	-	-	-	Day
14:00-15:00 hours	22	21	13	10	17	5	1	1	4	9	4	2	1	2	Day
15:00-16:00 hours	26	17	16	7	4	18	1	1	4	6	-	-	-	-	Day
16:00-17:00 hours	26	21	8	6	10	6			5	9	5	2	-	1	Day
17:00-18:00 hours	22	22	8	8	6	6			2	8	3	4	2	2	Day
18:00-19:00 hours	23	21	7	2`	8	4			3	7	9	9	1	3	Day
19:00-20:00 hours	25	20	7	`7	19	4			5	9	10	12	-	-	Day
20:00-21:00 hours	21	10	9	8	8	21			6	9	6	4	2	1	Night
21:00-22:00 hours	22	21	7	8	7	23			9	7	4	6	-	-	Night
22:00-23:00 hours	13	22	12	5	9	17			8	2	1	-	-	-	Night
23:00-00:00 hours	20	23	7	23	10	3			4	3	-	-	-	-	Night
00:00-01:00 hours	13	20	3	9	16	12			2	5	-	-	-	-	Night
01:00-02:00 hours	10	18	5	6	17	14	1	1	18	5	-	-	-	-	Night
02:00-03:00 hours	18	20	9	5	6	10	1	1	19	6	-	-	-	-	Night
03:00-04:00 hours	19	25	10	5	11	14	1	1	17	7	-	-	-	-	Night
04:00-05:00 hours	17	20	5	2	19	16	1	1	8	6	-	-	-	-	Night
05:00-06:00 hours	10	21	3	4	10	18	1	1	5	2	2	1	-	-	Day



Name of the Project: Mining of Sand (minor mineral) at karhera Block/YNR B-14

Date of Traffic Survey: 29.08.2017

Name of the Road:MDR3

Up: Radaur

Down: Jagadhari

Fast Moving Vehicles											Slow Moving Vehicles				
Time	Two Wheelers		Three Wheelers		Car/Vans		Buses		Trucks		Cycles		Cycle Rishkaw		
	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	
06:00-07:00 hours	17	34	33	12	20	28	2	2	12	17	6	8	-	1	Day
07:00-08:00 hours	20	31	35	14	22	28	1	2	14	12	9	7	3	2	Day
08:00-09:00 hours	32	24	14	17	22	27	1	1	12	16	10	9	4	5	Day
09:00-10:00 hours	28	29	13	18	26	22	1	1	4	19	5	4	-	1	Day
10:00-11:00 hours	25	10	22	15	21	23	1	1	9	14	7	5	-	-	Day
11:00-12:00 hours	20	23	18	23	23	12	1	1	12	16	5	4	-	-	Day
12:00-13:00 hours	21	22	16	22	25	14	2	1	7	12	5	2	-	1	Day
13:00-14:00 hours	23	25	15	12	23	13		1	2	10	3	-	-	-	Day
14:00-15:00 hours	16	20	14	6	12	18			9	2	4	2	1	2	Day
15:00-16:00 hours	12	11	14	16	27	20	1		13	3	-	-	-	-	Day
16:00-17:00 hours	27	21	5	12	12	21	1	1	1	5	5	2	-	1	Day
17:00-18:00 hours	23	14	14	17	11	22			8	4	3	4	2	2	Day
18:00-19:00 hours	26	11	11	12	14	26	1		3	2	9	9	1	3	Day
19:00-20:00 hours	22	13	7	2	23	28			5	4	10	12	-	-	Day
20:00-21:00 hours	16	24	22	14	15	29			14	14	6	4	2	1	Night
21:00-22:00 hours	16	17	17	12	23	25			13	7	4	6	-	-	Night
22:00-23:00 hours	21	23	12	21	12	22			10	3	1	-	-	-	Night
23:00-00:00 hours	31	29	17	10	17	10	1	1	16	9	-	-	-	-	Night
00:00-01:00 hours	30	33	10	19	17	20	2	2	6	6	-	-	-	-	Night
01:00-02:00 hours	21	23	11	18	18	15	2	2	2	3	-	-	-	-	Night
02:00-03:00 hours	22	24	18	10	25	16	2	2	9	9	-	-	-	-	Night
03:00-04:00 hours	27	23	18	12	20	28	2	2	4	9	-	-	-	-	Night
04:00-05:00 hours	29	29	10	21	27	20	2	2	4	2	-	-	-	-	Night
05:00-06:00 hours	25	37	24	25	25	3	1	2	6	12	2	1	-	-	Day



## Environmental Policy

**M/s M.P. Traders**, District Yamuna Nagar acknowledges its responsibility to manage the environmental effects associated with the Mining of Sand Minor Mineral Mining at Nagli Block/YNR B 15, Yamuna Nagar, Haryana; as we pursue our goal of generating value for our employees and our local communities.

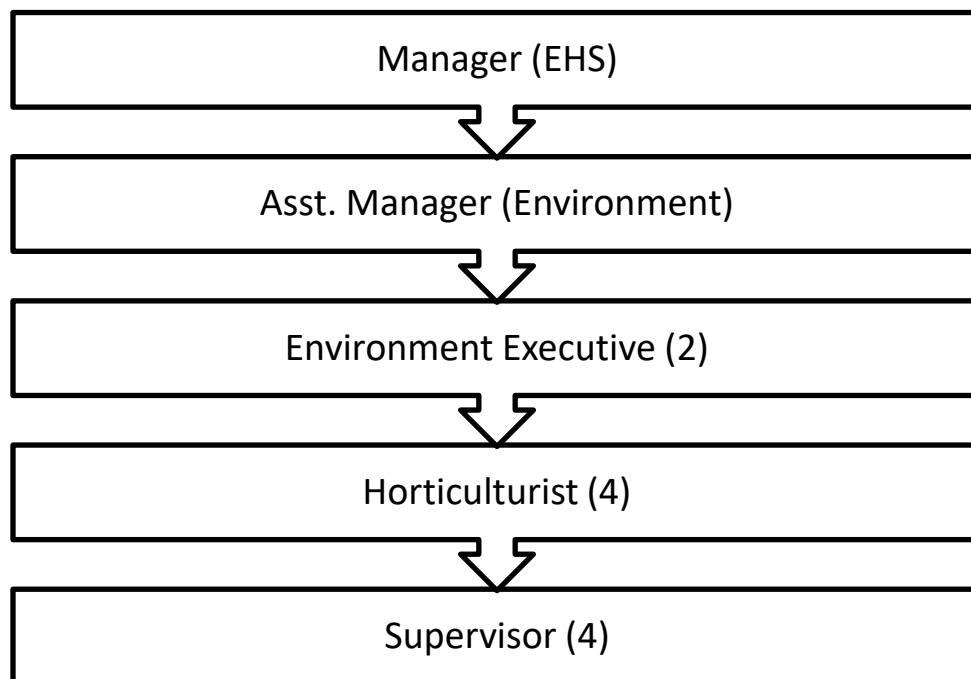
### **Implementation:**

- Comply with applicable environmental laws and regulations at all time; at all locations and at all stages of exploration, development, operations and reclamation.
- Establish and maintain standards, procedures and management controls to ensure that environmental considerations are balanced equally with competing priorities and other key business activities.
- Ensure that all employees and contractors are trained to understand their environmental responsibilities and create an environment that adheres to the Company's Policies, procedures and applicable regulations.
- Hold leadership accountable for good environment performance of our operations and projects. Inherent in that accountability will be the commitment of senior management to provide resources and successfully create an appropriate environment.
- Reward and recognize behavior that supports environmental stewardship.
- Implement procedures to measure environmental performance, including regular inspection by our consultancy to verify compliance with all the applicable regulations.
- Communicate openly with employees, regulatory agencies, the public and shareholders on environmental issues.
- Work proactively with other mining companies, policy makers and the public to define environmental priorities and to contribute to the development of responsible laws and regulations to protect the environment.
- Actively engage with credible third parties to develop continuous improvement in our environmental policies and practices.
- Continuously review environmental achievements and technologies to share and promote implementation of best practices.
- The system of reporting of Non-conformances/ violation of any Environmental Law/Policy will be as per quality management system. The internal audit will be conducted on periodic basis and any Non-conformances/ violation to Environmental Law/Policy will be closed and discussed during Management Review Meetings of board of directors/partners.

For **M/s M.P. Traders**

For M.P. Traders  
  
 Prop.

**Hierarchy of Environment for dealing Environmental Issues**



For M/s M.P. Traders

For M.P. Traders  
*[Signature]*  
Prop.



**Regional Office**  
**Haryana State Pollution Control Board**

S.C.O No. 131, Sector-17, Jagadhri (Yamuna Nagar), Ph - 01732-200137

No. HSPCB / YMN /820

Dt: 01/06/ 2017

To

The Chairman,  
Haryana State Pollution Control Board,  
Panchkula.

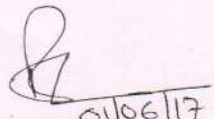
**Sub: Proceedings of the Public Hearing held under provisions of EIA Notification, 14.9.2006 (amended to date) for proposed mining of Sand (Minor Mineral) in Yamuna Nagar allotted M/s M.P. Traders on 23.05.2017 at 12:00 P.M. at Project Site Village – Nagli, Tehsil – Radaur, District Yamuna Nagar.**

Please refer to the subject noted above.

In this connection, it is intimated that public hearing of the above said unit was held on 23.05.2017 for Environmental Clearance for proposed project for minor mineral sand quarry “M.P. Traders” (Area 77.25 Ha), Proposed production capacity: 28,00,000 TPA) at village Nagli, Tehsil Radaur, District Yamuna Nagar under the Chairmanship of Deputy Commissioner, Yamuna Nagar. The proceedings of the public hearing has been approved by the Deputy Commissioner, Yamuna Nagar received on 01.06.2017 and is hereby enclosed for your further necessary action please.

It is submitted for your kind information and further necessary action please.

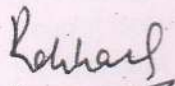
- DA/1. Copy of attendance register of officers present during the hearing.
2. Copy of attendance register of Public present during the hearing.
  3. Soft copy (CD) of proceedings of hearing (2 No.)
  4. Photographs of the hearing (2 No.)
  5. Approved copy in original of proceeding of hearing by Deputy Commissioner, Yamuna Nagar.

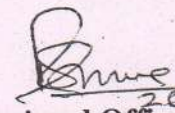
  
 01/06/17  
 Regional Officer,  
 Yamuna Nagar.



**Sub:- Proceeding of the Public Hearing under the provision of EIA notification 2006 (amended to date) for proposed mining of Sand (Minor Mineral) in Yamuna Nagar allotted to M/s M.P. Traders on 23.05.2017 at 12:00 P.M. at Project Site Village -Nagli, Tehsil-Radaur, District-Yamuna Nagar.**

The draft proceeding of the Public Hearing conducted on dated 23.05.2017 at Village Nagli, Tehsil-Radaur, District-Yamuna Nagar for project of Minor Mineral Sand Mining of Village Nagli, District Yamuna Nagar regarding Environmental Clearance for proposed project of mining for Minor Mineral Sand query by M/s M.P. Traders at Village - Nagli, Tehsil-Radaur, District-Yamuna Nagar has been prepared which is enclosed herewith for approval please.

  
**Deputy Commissioner,  
Yamuna Nagar.**

  
**Regional Officer**  
**HSPCB, Yamuna Nagar**



**Proceeding of the Public Consultation (Hearing) under the provision of EIA notification 2006 (amended to date) for proposed mining of Sand (Minor Mineral) in Yamuna Nagar allotted M/s M.P. Traders on 23.05.2017 at 12:00 P.M. at Project Site Village – Nagli, Tehsil-Radaur, District-Yamuna Nagar having lease area of 77.25ha. Having the capacity 28,00,000TPA and the Project cost of Rs. 9.00 Crores held under Chairmanship of Sh. Rohtash Singh Kharb I.A.S., Deputy Commissioner, Yamuna Nagar.**

The Public hearing was held as a mandatory requirement under EIA notification dated 14.09.2006 and subsequent amendment on date 15.01.2016.

**Venue** : At Site Village Nagli, Tehsil Radaur, District-Yamuna Nagar, Haryana.

**Date & Time:** 23.05.2017 at 12:00 PM.

**Officers Present:-**

1. Sh. Rohtash Singh Kharb I.A.S., Deputy Commissioner, Yamuna Nagar.
2. Dr. Pooja Bharti, SDM Radaur, Yamuna Nagar.
3. Sh. Rajiv Dhiman, Mining Officer, Mines and Geology, Yamuna Nagar.
4. Sh. Dinanath Sharma, BD & PO, Radaur, Yamuna Nagar.
5. Sh. Rajinder Sharma, Regional Officer, Yamuna Nagar.
6. Sh. Virender Singh Punia, AEE, Yamuna Nagar Region, Haryana State Pollution Control Board.
7. Sh. Kamaljit Singh, AEE, Yamuna Nagar Region, Haryana State Pollution Control Board.
8. Sh. Om Dutt Sharma, Mining Inspector, Mining Department, Yamuna Nagar.
9. Sh. Jai Singh, IPRO, DIPRO, Yamuna Nagar.
10. Sh. V.P. Singh Walia, IEO, o/o GMDIC, Yamuna Nagar.
11. Sh. Shashi Bhushan Sharma, J.E o/o DTP, Yamuna Nagar.

The attendance sheet of Officers and Public men/villagers present during the Public Hearing is annexed as **Annexure-A**.

Copies of the presentation in Hindi of draft EIA of M/s M.P. Traders at Village – Nagli, Tehsil-Radaur, District-Yamuna Nagar were distributed to the officials and other present in the hearing.

At the onset of Public Hearing, Rajinder Sharma, Regional Officer, Yamuna Nagar Region, Haryana State Pollution Control Board, welcomed Sh. R.S. Kharab, I.A.S., Deputy Commissioner, Yamuna Nagar and other Officers of the District Administration, panches & Sarpanches of surrounding area and public present in the hearing. He briefed about the necessity of the public hearing being held under provision of EIA notification of dated 14<sup>th</sup> September 2006, amended to date. Then he requested the project proponent to explain in detail about the project.





Further formal permission to inaugurate the process of public hearing was granted by the Chairman Sh. Rohtash Singh Kharb, I.A.S., Deputy Commissioner, Yamuna Nagar.

Thereafter, Regional Officer, HSPCB requested project consultant to make the presentation for the project for information of all the people present.

Environment consultant Sh. R.S. Yadav, of the project proponent M/s M.P. Traders at Village -Nagli, Tehsil-Radaur, District-Yamuna Nagar explained in detail about the project of Mining by way of presentation. They explained that the mining shall be done in Nagli Village in river bed. They explained about the pollution and degradation of Environment to be expected from the proposed project and the measures to be taken by the project proponent. He also explained the contents of the Environment management plan in brief prepared by them for the project and impact of the project on Environment along with control measures/steps.

The details submitted by the consultant were recorded.

After the presentation, Regional Officer, Yamuna Nagar, Haryana State Pollution Control Board called for the questions/suggestion/objection to seek information or clarification on the project by the public and the following issues /objection/suggestion raised and information/clarification sought on the project, environment related issues by the participant and reply given by the representative and environmental consultant of the project proponent and other concerned are given below:-

The following questions were raised:

1. **Sh. Isham Singh, Vill- Chorpura, gave following suggestion and asked question/suggestion detailed as below:-**

He asked that how many people will be employed from this proposed Sand Mining project?

**Reply:-**Sh. RS Yadav, Environment Consultant and lease holder replied that so many employment opportunities will be generated from this project. 115 skilled and semi-skilled people will get direct employment from this project. 105 dumpers will be used in this project and each dumper requires 4-5 people i.e. driver, cleaner, helper. About 500-700 people will be employed for this purpose. Every year 7,800 trees will be planted that will need so many gardeners to take care of the plants. 22 KLD water will be used for dust suppression for which many persons will be employed. Bill clerks will also be needed for this project and to fulfil this purpose graduated students will be employed from the local villages. These are the direct employment opportunities. Apart from this so many indirect employment will also be generated i.e. many hotels, workshop repair, tea stalls, general store will be established and so many employment opportunities will be generated. Lease holder assured that first priority for employment will be given to local villagers only.





2. **Sh. Satish Kumar, gave following suggestion and asked question/suggestion detailed as below:-**

He asked that what arrangements will be done for the health of mine workers?

**Reply:-** Sh. RS Yadav, Environment Consultant replied that a budget of Rs. 10 Lakhs/year has been proposed for the health safety of mine workers. A qualified MBBS doctor will be appointed, first aid, medical centre will be established at project site. Regular health checkup will be conducted by doctors and villagers also take advantage of that. Dust mask will be provided to the workers to protect themselves from dust. Awareness training programme will also be organized periodically to the workers to minimize the impact of air pollution. Proper care will be taken of the workers so that it won't affect the health of workers. Medical camps will be organized quarterly/ six monthly in which our workers and villagers will also be benefitted. A budget of Rs. 10 Lakh/year is proposed for occupational health safety of mine workers.

3. **Sh. Mohit, gave following suggestion and asked question/suggestion detailed as below:-**

He asked what will be the benefits of this project to the villagers?

**Reply:-** Sh. RS Yadav, Environment Consultant replied that firstly this project is environment friendly project. The sediment comes along with the flow of river and get accumulated so the level of river get raised and if the accumulated sediments/sand will not be excavated then the river can divert from its original path that could lead to the flood. So, the mining will be done upto 3 m in systematic scientific manner and the sand will excavated on regular basis, so the river will flow in channel and will not divert in any other direction and the flow will be smooth.

Secondly, good opportunity for generation of employment from this project and first preference will be given to the local villagers only. Details has been already given in reply of para no.-1. This sand is used for development of infrastructure in the state of Haryana and the NCR. So this project is beneficial in every manner.

4. **Sh. Gurdayal Singh, Village: Gadi Gujran, gave following suggestion and asked question/suggestion detailed as below:-**

He said that how many trees will be planted?

**Reply:-** Sh. RS Yadav, Environment Consultant replied that 7,800 trees will be planted per year, that means approx. 39000-40000 trees will be planted in five years. Only local species of trees will be planted after consultation with DFO.

These trees will be planted to minimize the air pollution and noise pollution. Plantation will also be done along with the road of transportation, premises of Gram Panchayat Bhawan, Hospitals, schools etc.

A budget of Rs. 30 Lakhs/year has been proposed for EMP.





5. **Sh. Nekiram, Village: Garhi Birbal gave following suggestion and asked question/suggestion detailed as below:-**  
He asked that what kind of pollution will be generated due to proposed mining project?

**Reply:-** Sh. RS Yadav, Environment Consultant replied that in this sand mining project there is a possibility of air pollution due to mining and transportation of sand. To mitigate this, a proper management plan is being proposed, a budget of Rs. 30 Lakhs/year is also proposed for EMP. Regular sprinkling of water will be done at active mining area, and on haul road for dust suppression. 7800 trees per year will be planted along haul road, that will be helpful in minimizing dust generation. Trucks will not be driven overloaded and the trucks will also be covered with Tarpaulin. If wind blows in high velocity than the mining work and transportation will be suspended until it becomes stable, and minimize the impact of air pollution.

6. **Sh. Vikram Singh, Village: Karoda Jaagir, gave following suggestion and asked question/suggestion detailed as below:-**

He asked that what is the provision of social development of this village?

**Reply:-** Sh. RS Yadav, Environment Consultant replied that a CSR budget of Rs. 30 Lakhs/year has been proposed which includes provision of toilets in govt. schools, drinking water facility in local villages and scholarships for students, vocational training. A meeting will be organized with Gram Panchayat before Commissioning Mining Activity and priority list will be prepared as per the need of villages. Monitoring of these activities will also be done. Regularly compliance report will be sent to the HSPCB after getting Environmental Clearance and if they find any deficiency in compliance then District Administration officers may take legal action against the lease holder.

7. **Sh. Avtar Singh, Village: Gumthala Rao, gave following suggestion and asked question/suggestion detailed as below:-**

He said that mining is being done in our village Gumthala and there is no provision of sprinkling of water to control the air pollution and no local people have been employed. You are saying that mining will be done only upto 3 m but they are excavating upto 9m so that should be restricted.  
Whether the sand is free for local villagers?

**Reply:-** Sh. RS Yadav, Environment Consultant replied that this is related to another project and advised to made complaint to Regional Office, HSPCB, Deputy Commissioner, Yamuna Nagar and mining officer in this regard.  
Lease holder assured that for social and religious work, sand will be given free of cost.

A CSR budget of Rs. 30 Lakhs/year has been proposed which includes development of toilets in govt. schools, drinking water facility and scholarships for students, vocational training.

Lease holder assured that first priority for employment will be given to local villagers only. Priority list will be prepared as per the need of villages.




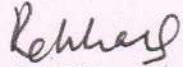


**Sh. R.S. Kharb, I.A.S., Deputy Commissioner -Yamuna Nagar:-** Deputy Commissioner, Yamuna Nagar suggested that this sand mining project is very beneficial for the local villagers. Villagers will be benefited in employment and CSR activity. This is eco-friendly mining project which prevent the flooding in the village area. The mining material will be given to the villagers on concessional rate. He also directed the Regional Officer, HSPCB and mining officers to inspect the mining site of village gumthala and ensure the compliance of EC granted to the lease holder.

Rajinder Sharma, Regional Officer, Haryana State Pollution Control Board, Yamuna Nagar requested for any other suggestion/query from the public.

There after, with the permission of Deputy Commissioner, Yamuna Nagar, Regional Officer, Haryana State Pollution Control Board, Yamuna Nagar declared the public hearing to be concluded & ended with a vote of thanks.

  
26/05/17  
Rajinder Sharma,  
Regional Officer, HSPCB,  
Yamuna Nagar

  
Sh. R.S. Kharb,  
Deputy Commissioner,  
Yamuna Nagar



Public hearing for sand block village :-  
 Nagli, Tehsil - Radaur Dist- Yamunanagar  
 Haryana (Area - 77.25) by project proponent  
 M/s M.P. Traders.

Name of officers	Designation	Dept.	Signature
Shashi Bhandari	JE	Ho DTP (Y)	SB
Virender Singh Punia	AEE	HS PCB, Ymr.	SP
Dina Nath Sharma	ASO Radaur	Dev. off	DN
Chand Singh	IPRO	DIPRO	CS
Vijay Kumar	Asst. Engineer		VK
V. P. Singh Walia	IED	DIC	VW
Om Dutt Sharma	Mining Insp	Mining	OS
Dr. Pooja Bhatti	SDM Radaur	Revenue	BP
Ratna Dhimay	Mining Officer	Mines & Geology	R
Kamaljit Singh	AEE	HS PCB	K/AEE



दिनांक : 23/05/2017

Page No.	
Date	

परियोजना प्रस्तावक - एम. पी. ट्रेडर्स  
गांव :- नवाली, जिला - यमुना नगर  
क्षेत्रफल :- 7.25 हे. रेत लव्धु खनिज सम्प  
परियोजना में भूमा लेने वाले हितधारक  
जन सुनवाई को लिए।


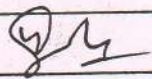
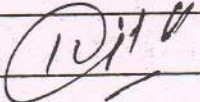
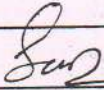


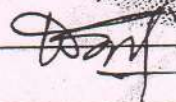
S.No	Name	Village	Signature
1.	Krishan Mehta (SARPANCH)	Gumthala	Krishankumar
2.	Akash Kumar	Gumthala	Akash Kumar
3.	Sham Mehta (Inch)	Gumthala	Sham Mehta
4.	Balwinder Kumar	Gumthala	Balwinder Kumar
5.	Kishu Mehta	Gumthala Rao	Kishu Mehta
6.	Ram. Kumar	Gumthala	Ram. Kumar
7.	Prair Singh	Gumthala Rao	Prair Singh
8.	Sahil Kamboj		



S.No.

Name

Village

9.	Deepa Saini	Suneh	
10.	YASHPAL SAINI	TAPRAN	
11.	Kuldhir Singh	Budhaur	
12.	Poojan Kumar	Khukharni	
13.	Shiv Kumar Samthali	Samthali	
14.	Rishi Pal	Samthali	
15.	Rajesh Singh	Walsara	
16.	जय प्रकाश	काठौली	जय प्रकाश
17.	मोहित कुमार	11	मोहित कुमार
18.	Mohit	काठौली	मोहित



S.no.	Name	Village	Signature
19.	शहवाल शहवाल	शहवाल शहवाल	
20.	Ashwani Lather अश्वनी लथर	Karnal करनाल	Ashwani Lather
21.	Jasbir Singh जसबीर सिंह	Hari Nagar हरी नगर	Jasbir Singh
22.	Ram Mohan राम मोहन	Haripur हरीपुर	Ram Mohan
23.	Ram Singh राम सिंह	Haripur हरीपुर	Ram Singh
24.	Yashpal याशपाल	Karnal करनाल	Yashpal
25.	Desh Raj देश राज	Kalsouza कालसूजा	Desh Raj
26.	Ram Singh राम सिंह	Kalsouza कालसूजा	
27.	Bali Ram बाली राम	Kalsouza कालसूजा	Bali Ram
28.	Ashwani अश्वनी	Gushi Bistara गुशी बिस्टारा	



	Name	village	Signature
39.	જાગીરવાળા	અંગરોળ	Jai Narye
40.	Tejpal	અંગરોળ	Tejpal
41.	Dalbirsar	મુઝિંગ	
42.	ShioA	Sekhol	
43.	મીદેનલાલ	અંડરોળ	મીદેનલા.
44.	રાજકુમાર	ગાંધી પંચાયતી	રાજકુમાર
45.	Sunfer	કે. Samolnada	Sunfer
46.	ચરણ કીદ	સેવાલી	ચરણ કીદ
47.	જલમોર	પરધાલી	કલમોર
48.	ગોમીલા	પરધાલી	ગોમીલા
49.	કુશા	પરધાલી	કુશા



	Name	Village	Signature
50	रामशरण	करीडा	रामशरण
51	रमेश	ठागली	रं
52	Vikas	Dhanoura	Vikas
53	Rajkumar	Dhanoura Jagir	Rajkumar
54	Anil Kumar	Dhanoura Jagir	Anil
56	रमेश	=	=
57	Gurender Dhande	Kandrali	Gurender
58	सालिन्द्र लुमाटे	सुन्वाली	सालिन्द्र लुमाटे
59	सुप्रजा राज	कमल पुर	सुप्रजा राज
60	गुरदयाल	गरी राजाराम	
61	रामकुमार	गुमचला	रामकुमार
62	विपिन कुमार	बनौरा	विपिन
63	जाकीराम	नारकलपार	जाकीराम
64	मंगल सिंह	मन्धाली	मंगल सिंह
65	जसाविन्द	चौरपुरा	जसाविन्द
66	मनुज	"	मनुज
67	शक्ति	"	शक्ति



Joginder Singh

ਸ਼ਿਵ ਪੁਰੀ

ਮਲਕ

ਸੰਘਾਲਾ

Joginder



TIN No.: 06502242447  
PAN No.: AHMPM-4627 L

All Subject to INDRI Jurisdiction

**M.P. TRADERS**  
Deals in : All Kinds of Building Materials

To,

Date: 6<sup>th</sup> March, 2017

**Additional PCCF cum Chief Wildlife Warden,  
Van Bhawan, C-18, Sector-6,  
Panchkula-134109**

**Subject:** Submission of Conservation Plan for the proposed project of Mining of Sand (Minor Mineral) at village Nagli Block YNR B-15, Radaur, Yamuna Nagar for its approval.

**Ref.:** Terms of Reference (ToR) issued by Ministry of Environment, Forests & Climate Change, New Delhi dt 16<sup>th</sup> January, 2017 (Pl. Refer para no.18).

Sir,

With reference to above subject, M/s M.P. Traders, <sup>Indri</sup> Saharanpur has proposed a mining project at Yamuna Nagar. The Terms of Reference for conducting EIA study has been issued by Ministry of Environment, Forests & Climate Change, New Delhi on dt 16<sup>th</sup> January, 2017 (attached for ready reference). As per para no. 18 of the ToR, a detailed biological study was required and conservation plan has to be prepared, if any scheduled-I fauna is reported in the study area of 10 km radius.

The EIA study including the biological study was done by our QCI accredited consultant M/s Vardan Environet, Gurgaon. During the study two schedule-I animals (*Pavo cristatus* & *Varanus benghalensis*) were reported. Conservation plan for these two animals has been prepared and an amount of Rs 10.0 lakhs has been proposed for their conservation.

You are requested to approve the conservation plan along with its budget to comply the ToR condition of MoEF&CC, New Delhi.

Thanking You.

Yours Truly.

M/s M.P. Traders  
For M.P. Traders  
Prop.

*[Signature]*  
7/3/2017

Encl: As above

**PROFORMA FOR ENVIRONMENTAL APPRAISAL OF MINING PROJECTS  
(MINING SECTOR PROJECTS)**

- Note 1:** All information to be given in the form of Annex/s should be properly numbered and form part of reply to this proforma.  
**Note 2:** Please enter ✓ in appropriate box where answer is Yes / No  
**Note 3:** No abbreviation to be used - **Not available** or **Not applicable** should be clearly mentioned.  
**Note 4:** **Core zone** is the mining lease area.  
**Buffer zone** in case of ML area up to 25 ha. is to be considered as **5 Km** all around the periphery of the core zone and for ML area above 25 ha. an area **10 Km** all around the periphery of the core zone.  
**Note 5:** Adopt **Scoping process** in carrying out EIA study.  
**Note 6:** Please indicate source of data.

**1. General Information**

- (a) Name of the project : **Mining of 'Sand' (Minor Mineral) at Nagli Block/ YNR B 15 (ML Area- 77.25 Ha.) for production of 28,00,000 TPA.**  
 Name of the proponent : **Sh. Vedpal Mandhan**  
 Mailing Address : **Prop M/s M.P. Traders**  
**Near Nirankari Colony, Karnal Road, Indri, Karnal**  
 E-mail : **pradeepmandhan1981@gmail.com**  
 Telephone : **+91-9896670267, 9896248266**  
 Fax No. : **-----**  
 (b) Objective of the project : **Mining of 'Sand' (Minor Mineral) at Nagli Block/ YNR B15**  
 (c) Location of mine (s) : **Block- Nagli, Tehsil-Radaur, District Yamuna Nagar (HR)**

(d) Does the proposal relate to:

(i)	New mine	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
(ii)	Expansion	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
	• Increase in ML area	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
	• Increase in annual production	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
(iii)	Renewal of ML	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
(iv)	Modernization	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

(e) Site Information

- (i) Geographical Location  
 • Latitude and Longitude

Pillar No.	Latitude	Longitude
A	N 29° 58' 29"	E 77° 13' 47"
B	N 29° 58' 30"	E 77° 13' 50.5"
C	N 29° 58' 16"	E 77° 13' 48.5"
D	N 29° 58' 02"	E 77° 13' 46"
E	N 29° 58' 02"	E 77° 13' 45"
F	N 29° 57' 38"	E 77° 13' 45"
G	N 29° 57' 24"	E 77° 13' 37"
H	N 29° 57' 38"	E 77° 13' 13"
I	N 29° 57' 40"	E 77° 13' 20.5"

J	N 29° 57' 46"	E 77° 13' 27"
K	N 29° 58' 06"	E 77° 13' 28"
L	N 29° 58' 10"	E 77° 13' 32"
M	N 29° 58' 10"	E 77° 13' 39"
N	N 29° 58' 15"	E 77° 13' 43"
O	N 29° 58' 15"	E 77° 13' 42"
P	N 29° 58' 25"	E 77° 13' 42"

• Survey of India Toposheet number **H43L8, H43L5, H43R1, H43L4**

• Elevation above Mean Sea Level **Lowest Elevation -258 m amsl,  
Highest Elevation-261 m amsl**

• Total mining lease area (in ha.) **77.25 Ha.**

(ii) Dominant nature of terrain

• Flat Yes ☐ No ☒

• Undulated Yes ☒ No ☐

• Hilly Yes ☐ No ☒

**2. Land usage of the mining lease area (in ha.)**

(a) Agricultural **NIL**

(b) Forest **NIL**

(c) Waste land **NIL**

(d) Grazing **NIL**

(e) Surface water bodies **NIL**

(f) Others (Specify) **Yamuna Riverbed**

**Total** **77.25 Ha.**

**3. Indicate the seismic zone in which ML area falls. In case of zone IV and V, details of earth quakes in last 10 years.**

The project site falls under seismic zone IV which is a high damage risk zone (**MSK VII-VIII**) Details incorporated in Chapter 2 with the heading of Seismicity of Area, Point No. 2.5

(a) Severity (Richter Scale): No major earthquake in recent years.

(b) Impact *i.e.* Damage to

• Life Yes ☐ No ☒

• Property Yes ☐ No ☒

• Existing mine Yes ☐ No ☒



Mining of Sand (Minor Mineral) at Nagli Block YNR/B-15 (area-77.25 Ha.)  
Village- Nagli, Tehsil-Radaur, District-Yamuna Nagar, Haryana.

**Questionnaire**

**4. Break-up of mining lease area (in ha.) as per approved conceptual plan:**

Purpose	Mining Lease Area				Total	Area acquired				Area to be acquired			
	Government		Private			Government		Private		Government		Private	
	Forest	Others	Agri.	Others		Forest	Others	Agri.	Others	Forest	Others	Agri.	Others
1. Area to be excavated	Nil	58.71	Nil	Nil	58.71	Nil	58.71	Nil	Nil	Nil	Nil	Nil	Nil
2. Storage for top soil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
3. Overburden / Dumps	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
4. Mineral storage	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
5. Infrastructure (Workshop, Administrative Building)	Nil	0.02*	Nil	Nil	0.02*	Nil	0.02*	Nil	Nil	Nil	Nil	Nil	Nil
6. Roads	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
7. Railways	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
8. Green Belt	Nil	8.00*	Nil	Nil	8.00*	Nil	8.00*	Nil	Nil	Nil	Nil	Nil	Nil
9.Tailings pond	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
10.Effluent treatment plant	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
11.Coal handling plant / mineral separation plant	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
12. Township area	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
13.Other (Specify) (Safety Zone = Restricted + unworked area)	Nil	18.54	Nil	Nil	18.54	Nil	18.54	Nil	Nil	Nil	Nil	Nil	Nil
TOTAL	---	77.25	Nil	---	77.25 Ha.	---	77.25 Ha.	Nil	---	---	---	---	---

*\* Infrastructure (0.02 Ha.) and Green Belt development (5.0 Ha.) are included in Safety Zone (i.e. 18.54 Ha.).*

**5. Township (outside mining lease): Not Applicable**

(a)	Total area (in ha)	NA
(b)	No. of dwelling units	NA
(c)	Distance from mine site	NA

**6. Distance of water bodies (in Km): Lease area is on River bed Yamuna River.**

Distance from	River Bank *	Other Water bodies * Sea / creek / lake / nalla etc. (specify)
Mining lease boundary	0.0	Yamuna River (Riverbed) Augmentation Canal ( 9 km in NW ) Budhi Nadi (1 km in SE) Purani Nadi (6.1 Km in SW) Kunjpura Bandh (6.1 Km in SW)
Ancillary facilities	Nil	Nil

[\* From highest flood line / high tide line]

**7. For projects falling within the Coastal Regulation Zone (CRZ)**

Whether the mineral to be mined is of rare nature and not available outside CRZ?

Yes

☐

No

☒

if yes, annex a scaled location map showing low tide line (LTL), high tide line (HTL) duly demarcated by one of the authorized agencies\* [ \*Director, Space Application Centre, Ahmedabad: Centre for Earth Sciences Studies, Thiruvananthapuram: Institute of Remote Sensing, Anna University, Chennai: Institute of Wetland Management & Ecological Designs, Kolkata: Naval Hydrographers's Office, Dehradun: National Institute of Oceanography, Panjim, Goa: and National Institute of Ocean Technology, Chennai], boundary of mining lease area, distance of ML area from LTL and HTL CRZ boundary and CRZ classification of the project area as per the approved Coastal Zone Management Plan, and settlements, sand dunes, mangroves, forest land/patches, turtles breeding and nesting sites etc., if any, in the project area.

**8. Indicate aerial distance from the periphery of core zone / area from the periphery of the buffer zone to the boundary of following (up to 10 Km):**

S. No.	Areas	Name	Aerial distance from (in Km.) Core * Zone Buffer* Zone
1.	National Park / Sanctuary	<b>NOT PRESENT IN STUDY AREA</b>	--
2.	Biosphere Reserve / Tiger Reserve / Elephant Reserve / any other Reserve	<b>NOT PRESENT IN STUDY AREA</b>	--
3.	Forest (RF / PF / unclassified)	<b>NOT PRESENT IN STUDY AREA</b>	--
4.	Habitat for migratory birds	<b>None</b> with in 10 Km radius of the project	--

5.	Corridor for animals of schedule I & II of the Wildlife (Protection) Act, 1972	There is no any corridor for wild animals. However Peafowl movement is very common in the study area. The conservation Plan has been prepared to conserve for wildlife.	--
6.	Archaeological sites * Notified  * Others	<b>None</b> with in 10 Km radius of the project	--
7.	Defense Installation	<b>None</b> with in 10 Km radius of the project	--
8.	Industries / Thermal Power Plants	<b>NONE</b> with in 10 Km radius of the project	--
9.	Other Mines	<b>NONE</b> with in 10 Km radius of the project.	--
10.	Airport	Chandigarh Airport	88.0 Km North West
11.	National / State Highways	SH-6	4 Km in N

[\* Buffer zone in case of ML area up to 25 ha. is to be considered as **5 Km** all around the periphery of the core zone and for ML area above 25 ha. an area **10 Km** all around the periphery of the core zone].

### 9. Description of flora & fauna separately in the core and buffer zones.\*

[\* Consult the Wildlife (Protection) Act, 1972 as amended subsequently and list species with (1) Common name (2) Scientific name and (3) under which schedule of the Wildlife (Protection) Act the identified species fall. Get the list authenticated by an Expert in the field / credible scientific institute / University /Chief Wildlife Warden Office. **Information to be based on field survey.**]

<b>A. Flora</b>			
<b>S. No.</b>	<b>Type</b>	<b>Core Zone</b>	<b>Buffer Zone</b>
1.	Agricultural crops	There is no any crop in River dry bed.	<b>a. Major Crops:</b> Wheat ( <i>Triticum aestivum</i> ), Paddy ( <i>Oryza sativa</i> ), Sugar cane ( <i>Saccharum officinarum</i> ), Maize ( <i>Zea mays</i> ) and Barley ( <i>Hordeum vulgare</i> ) <b>b. Minor crops:</b> The minor crops of this region are Mustard ( <i>Brassica campestris</i> var.), Green gram ( <i>Vigna radiate</i> ), Sesamum ( <i>Sesamum indicum</i> ), Pigeon Pea ( <i>Punica granatum</i> ), Lentil ( <i>Lens culinaris</i> ) and Black Gram ( <i>Vigna mungo</i> ).
2.	Commercial crops	None in Riverbed area.	Sugar Cane, <b>Major Vegetable crops:</b> Amari: <i>Hibiscus subderifa</i> . Brinjal: <i>Solanum melongena</i> . Cabbage: <i>Brassica oleracea</i> . Carrot: <i>Daucus carota</i> . Cauliflower: <i>Brassica oleracea</i> . Chilli: <i>Capsicum annum</i> . Coriander: <i>Coriandrum sativum</i> Garlic: <i>Allium sativum</i> Potato: <i>Solanum tuberosum</i> . Radish: <i>Raphanus sativus</i> . Spinach: <i>Beta olirecia</i> . Sponge gourd: <i>Luffa cylindrica</i> . Tomato: <i>Lycopersicum esculantum</i> White gourd (winter melon): <i>Benincasa hispida</i> .

3.	Plantation	<b>None</b>	Detail List of Plantation including Trees, Herbs, Shrubs, Climbers are incorporated in Chapter-4 of EIA/EMP report and as Annexure-XII.
4.	Natural vegetation / forest type	<b>None</b>	<b>There are 1 Protected and Reserve Forests found within the study area. The detailed list of forests is already given in point No. 8 of this Questionnaire.</b>
5.	Grass lands	<b>None</b>	<b>None</b>
6.	Endangered species	<b>None</b>	<b>None</b>
7.	Endemic species	<b>None</b>	<b>None</b>
8.	Others (Specify)	<b>None</b>	<b>None</b>

**B. Fauna**

S. No.	Type	Core Zone	Buffer Zone
1.	Total listing of faunal elements	<b>None</b>	<b>Detail List of fauna including Mammals, Birds, Reptiles, Fishes, Domestic animals are incorporated in Chapter-4 of the EIA/EMP report and as Annexure-XII.</b>
2.	Endangered species	<b>None</b>	<b>None</b>
3.	Endemic species	<b>None</b>	<b>None</b>
4.	Migratory species	<b>None</b>	<b>None</b>
5.	Details of aquatic fauna, if applicable.	<b>None</b>	<b>None</b>

**10. Details of mineral reserves (as per approved Mining Plan)**

Quantity (in million tonnes)

(a) Proved

**46,35,000 MT**

(b) Indicated

---

(c) Inferred

---

(d) Mineable reserves

**35,22,600 MT**

**11. Major geological formation / disturbances in the mining lease area**

(a) Geological maps submitted

Yes

✓

No

(b) Geological sections submitted

Yes

✓

No

(c) Contour map submitted

Yes

✓

No

(d) Whether the presence, if any, noted of

(i) Faults

Yes

No

✓



(ii)	Dykes	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
(iii)	Shear Zone	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
(iv)	Folds	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
(v)	Other weak zones	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
(e)	Source of data (Indicate)		<b>Approved Mining Plan</b>		

**12. Production of mineral(s) and life of mine**

a. Rated capacity of mine mineral wise (Tonnes / annum)

**28,00,000 TPA**

b. Life of mine at proposed capacity (Years)

**This is River bed mining project so Sand will be replenished every year.**

c. Lease period (Years)

**10 years**

d. Date of expiry of lease (D /M /Y)

**10 Year (20.10.2026)**

(d) Indicate in case of existing mines

(i) Date of opening of mine

**NOT APPLICABLE**

(ii) Production in the last 5 years  
From year..... to year .....  
in million tones.

1<sup>st</sup> year

**NA**

5<sup>th</sup> year

**NA**

(iii) Projected production for the next 6<sup>th</sup> to 10<sup>th</sup> year  
5 years from year ..... to year .....  
.....in million tones.

**NA**

(iv) Whether mining was suspended after opening of the mine? Yes

☐

☒

If yes, details thereof including last production figure and reason for the same.

**NA**

(f) Whether plans & sections provided? Yes

☐

No

☒

**13. Type and method of mining operations**

TYPE		METHOD	
Opencast (For Riverbed)	<input checked="" type="checkbox"/>	Manual	<input type="checkbox"/>
Underground	<input type="checkbox"/>	Semi-mechanized (For Riverbed)	<input checked="" type="checkbox"/>

Both	<input type="text" value="-"/>	Mechanized	<input type="text" value="-"/>
------	--------------------------------	------------	--------------------------------

**14. Details of ancillary operations for mineral processing**

(a) Existing	NOT APPLICABLE
--------------	----------------

(b) Additional	NOT APPLICABLE
----------------	----------------

**15. Mine details**

**(a) Opencast mine**

(i) Stripping ratio (mineral in tonnes to over burden in m <sup>3</sup> )	Not Applicable as it is river bed mining.
---	---

(ii) Ultimate working depth (in m bgl)	3 m (in Riverbed)
--	-------------------

(iii) Indicate present working depth in case of existing mine (in m bgl)	Not Applicable
--	----------------

(iv) Thickness of top soil (in m.)	No Soil cover as lease area in River bed.
------------------------------------	---

- Minimum
- Maximum
- Average

(v) Thickness of overburden (in m.)	No Generation of Overburden in Riverbed.
-------------------------------------	--

- Minimum
- Maximum
- Average

**(vi) Mining Plan**

• Height and width of the bench in overburden / waste.	NOT
--	-----

• Height & width of the bench in ore body / coal seam.	3 m height (riverbed).
--	------------------------

• Proposed inclination / slope of the sides of the opencast mine (separately for overburden, coal / ore and overall slope of the pit sides) both while operating the mine as well as at the time of closure of the mine.	NOT
--	-----

• Whether transverse sections across the opencast mine at the end of fifth year and at the end of the life of the mine have been submitted?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
---	---	-----------------------------

(vii) Type of blasting, if any, to be adopted.	NOT APPLICABLE
--	----------------

**(b) Underground mine**

(i) Seam / Ore body Min. Depth (m) Max. Depth (m) Avg. thickness (m)	NOT APPLICABLE
--	----------------

NA

NA

NA

Rate of dip in degree

NA

Direction of dip

NA

(ii) Mode of entry into the mine **NOT APPLICABLE**

• Shaft

NA

• Adit

NA

• Incline

NA

(iii) Details of machinery

• On surface

NA

• At Face

NA

• For transportation

NA

• Others

NA

(iv) Method of stoping (metalliferrous mines)

**NOT APPLICABLE**

Open

• Filled

NA

• Shrinkage

NA

• Caving

NA

• Combination of above

NA

• Others (Specify)

NA

(v) Extraction method

**NOT APPLICABLE**

• Caving

NA

• Stowing

NA

• Partial extraction

NA

(vi) Subsidence

**NOT APPLICABLE**

• Predicted max. subsidence (in m)

NA

• Max. value of tensile strain (in mm/m)

NA

• Max. slope change (in mm/m)

NA

• Whether identified possible subsidence area(s) superimposed on Surface

Yes

-

No

✓

Plan has been submitted?

- Major impacts on surface features like natural drainage pattern, houses, buildings, water bodies, roads, forest, etc.
- Salient features of subsidence management (monitoring and control).

**16. Surface drainage pattern at mine site**

- (a) Whether the pre-mining surface drainage plan submitted? Yes ☒ No ☐
- (b) Do you propose any modification / diversion in the existing natural drainage pattern at any stage? If yes, when. Provide location map indicating contours, dimensions of water body to be diverted, direction of flow of water and proposed route / changes, if any i.e. realignment of river / nallah / any other water body falling within core zone and its impact. Yes ☐ No ☒

**17. Embankment and / or weir construction**

- (a) Do you propose, at any stage, construction of
- (i) Embankment for protection against flood? Yes ☐ No ☒
- (ii) Weir for water storage for the mine? Yes ☐ No ☒
- (b) If so, provide details thereof.
- (a) Impact of embankment on HFL and settlement around.
- (d) Impact of weir on down stream users of water.

**18. Vehicular traffic density (outside the ML area)**

- |                                 | Type of vehicles  | No. of vehicles per day                              |
|---------------------------------|---|--|
| (a) Existing                    | Heavy and light vehicles and two/three wheelers                     | SH-6 -3943<br>MDR 1- 2439<br>MDR 2- 2220 MDR 3- 3238 |
| (b) After the proposed activity | Truck/Dumpers, JCB, Water Tankers, Light Vehicles, Maintenance Van. |  |
- (c) Whether the existing road network is adequate? Yes ☒ No ☐  
If no, provide details of alternative proposal?

**19. Loading, transportation and unloading of mineral and waste rocks on surface:**



Mining of Sand (Minor Mineral) at Nagli Block YNR/B-15 (area-77.25 Ha.)  
Village- Nagli, Tehsil-Radaur, District-Yamuna Nagar, Haryana.

### Questionnaire

(a)	Manual	Yes	<input type="text" value="-"/>	No	<input type="text" value="✓"/>
(b)	Tubs, mine cars, etc.	Yes	<input type="text" value="-"/>	No	<input type="text" value="✓"/>
(c)	Scraper, shovels, dumpers / trucks.	Yes	<input type="text" value="✓"/>	No	<input type="text" value="-"/>
(d)	Conveyors (belt, chain, etc.)	Yes	<input type="text" value="-"/>	No	<input type="text" value="✓"/>
(e)	Others (specify).	<input type="text" value="JCB"/>			

### 20. Mineral(s) transportation outside the ML area

	Qty. (in TPD)	Percentage (%)	Length (in Km)
(a) Road	<input type="text" value="9333"/>	<input type="text" value="100%"/>	<input type="text" value="---"/>
(b) Rail	<input type="text" value="---"/>	<input type="text" value="---"/>	<input type="text" value="---"/>
(c) Conveyors	<input type="text" value="---"/>	<input type="text" value="---"/>	<input type="text" value="---"/>
(d) Rope way	<input type="text" value="---"/>	<input type="text" value="---"/>	<input type="text" value="---"/>
(e) Water ways	<input type="text" value="---"/>	<input type="text" value="---"/>	<input type="text" value="---"/>
(f) Pipeline	<input type="text" value="---"/>	<input type="text" value="---"/>	<input type="text" value="---"/>
(g) Others (Specify)	<input type="text" value="---"/>	<input type="text" value="---"/>	<input type="text" value="---"/>
Total	<input type="text" value="9333"/>	<input type="text" value="100%"/>	<input type="text" value="---"/>

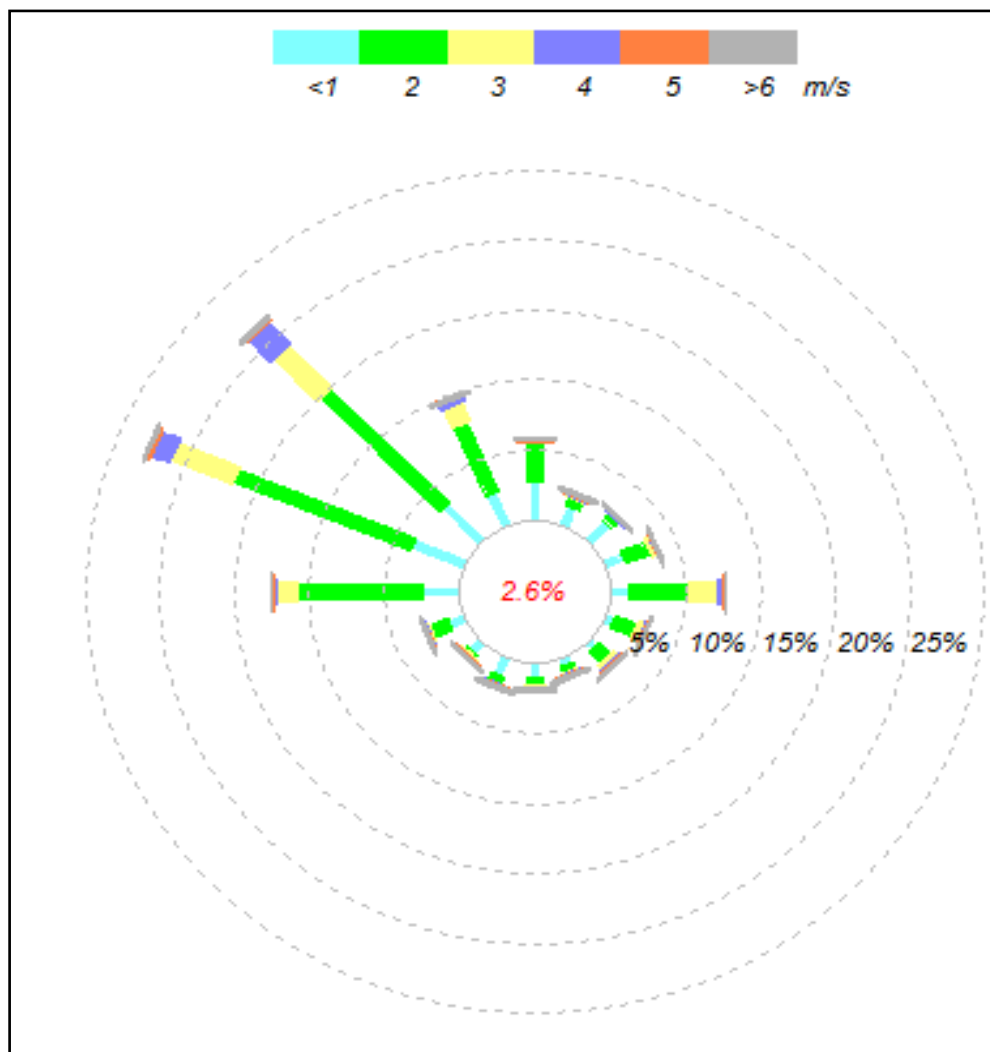
### 21. Baseline Meteorological and Air Quality data

#### (a) Micro-meteorological data

[Continuous monitoring through autographic instrument for one full season other than monsoon]

- (i) Wind rose pattern for one full season (16 points of compass i.e. N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW and NNW) based on 24-hourly data. For coastal area also furnish day-time and night time data.
- Day time,
  - Night time,
  - 24 hours period.

Wind Rose pattern of the study period, (1<sup>st</sup> December 2016 to 29<sup>th</sup> Feb. 2017)



**Predominant wind direction is west of north-west (WNW) to east of south-east (ESE)**

(ii) Site specific monitored data

Month	Temperature °C		Relative Humidity %		Wind Speed (Km/Hr)	
	Max	Min	Max	Min	Max	Min
Dec. 2016	29.0°C	10.3°C	72	45	0.55	0.19
Jan.. 2017	23.4°C	5.6°C	74	51	0.46	0.15
Feb. 2017	27°C	7.4°C	71	45	0.42	0.14

\* 24-hours rainfall should be reported from 08:30 hrs. IST of previous day to 08:30 hrs. IST of the day.

\* Rainy day is considered when 24 hrs. rainfall is  $\geq 2.5$  mm.

\*\* Visual observations of cloud cover should be recorded four times a day at regular intervals.

(iii) Indicate name and distance of the nearest IMD meteorological station from which climatological data have been obtained for reporting in the EIA report, if any.

**The Nearest IMD station is Gaya.**

**(b) Ambient air quality data\* (RPM, SPM, SO<sub>2</sub>, and NO<sub>x</sub>)**

[\*Monitoring should be carried out covering one full season except monsoon – same season as in 21 (a) (i)]

[\*Frequency of sampling: Sampling to be done twice a week for the entire season 24 hourly for SPM & RPM. For gaseous pollutants 24- hourly data be given irrespective of the sampling period. ]

(i) Season and period for which monitoring has been carried out. : Winter season **(1st December 2016 to 28th Feb2017).**

(ii) No. of samples collected at each monitoring station: **26 sample for three months**

Name of monitoring equipment used	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	No <sub>x</sub>
	Gravimetric Method by using Repairable particulate matter sampler “Repairable Dust Sampler” (RDS)	Cyclonic Method by using Fine particulate sampler.	Absorption in diluted NaOH and then estimated calorimetrically with sulphanilamide and N (I-Nepthyle) Ethylene diamine Dihydrochloride and Hydrogen Peroxide (IS: 5182 1975, Part-VI).	Absorption in Sodium Tetra Chloromercurate followed by Colorimetric estimation using P-Rosaniline hydrochloride and Formaldehyde (IS: 5182 Part – II, 2001).

Mining of Sand (Minor Mineral) at Nagli Block YNR/B-15 (area-77.25 Ha.)

Village- Nagli, Tehsil-Radaur, District-Yamuna Nagar, Haryana.

### Questionnaire

Equipment sensitivity						<0.5( $\mu\text{g}/\text{m}^3$ )			<0.02( $\mu\text{g}/\text{m}^3$ )			<0.02( $\mu\text{g}/\text{m}^3$ )		
Monitoring Location	No. of sample Drawn	Category* (R, I, S)	Permissible AAQ standard (CPCB)			R			I			S		
						100( $\mu\text{g}/\text{m}^3$ )			80( $\mu\text{g}/\text{m}^3$ )			80( $\mu\text{g}/\text{m}^3$ )		
						100( $\mu\text{g}/\text{m}^3$ )			80( $\mu\text{g}/\text{m}^3$ )			80( $\mu\text{g}/\text{m}^3$ )		
Min	Max	98% tile	Min	Max	98% tile	Min	Max	98% tile	Min	Max	98% tile	Min	Max	98% tile
A1	26	Residential	68.7	88.2	86.55	34.2	48.8	48.7	7.8	14.6	14.1	11.6	24.1	23.7
A2	26	Residential	70.6	87.6	84.95	32.1	45.6	45.6	7.8	12.7	12.55	14.3	22.6	22.05
A3	26	Residential	75.3	85.4	85.4	36.2	46.5	46	6.3	14.3	14.2	14.3	22.4	22.35
A4	26	Residential	74.2	86.3	85.95	34.1	46.1	45.75	7.8	13.2	12.8	15.3	28.3	26.85
A5	26	Residential	74.3	85.7	85.4	32.5	49.4	47.4	8.3	13.6	13	15.2	24.7	24.3
A6	26	Residential	74.3	88.8	87.15	31.2	46.1	45.85	7.8	13.2	13.05	15.2	23.3	22.85

\*R = Residential; I = Industrial; S = Sensitive

\*\*Pb for mineral specific sites only.

# Annex a location map indicating location of AAQ stations, their direction and distance with respect to project site.

**The Key Plan Showing AAQM monitoring locations is enclosed in Final EIA/EMP report Chapter-4.**

22. Stack and emission details, if any\* **Not Applicable**

Sl. No.	Process / unit of operation (e.g. DG Set, Boiler)	Height of stack (m)	Internal top dia. (m)	Flue gas exit velocity (m/sec)	Emission rate (kg/hr)				Heat emission rate from top of stack (K.cal/hr)	Exhaust / Flue gas			
					SPM	SO <sub>2</sub>	NO <sub>x</sub>	CO		Temp °C	Density	Specific Heat	Volumetric flow rate (m <sup>3</sup> /hr.)
--	--	--	--	--	---				--	--	--	--	--
--	--	--	--	--	--				--	--	--	--	--
--	--	--	--	--	--				--	--	--	--	--

23. Details of fugitive emissions during mining operations\*

24. Air Quality Impact Prediction (AQIP)\*

(a) Details of model(s) used for AQIP including grid size, terrain features, and input meteorological data



Mining of Sand (Minor Mineral) at Nagli Block YNR/B-15 (area-77.25 Ha.)  
Village- Nagli, Tehsil-Radaur, District-Yamuna Nagar, Haryana.

**Questionnaire**

(b) Maximum incremental GLC values of pollutants based on  
prediction exercise

(in  $\mu\text{g}/\text{m}^3$ )

S. No.	Pollutants	Incremental Value	Ambient Air Quality	Resultant Air Quality
1.	PM	<b>6.3800</b>	<b>88.2</b>	<b>94.862</b>
2**.	SO <sub>2</sub>	---	---	---
3**.	NO <sub>x</sub>	---	---	---

[\* Question Number 22, 23 and 24 need not be filled-in for mines having ML area of **25 Ha. or less.**]

[\*\*Information on item no. 2 and 3 to be provided in cases with captive power generation of 500 KVA and above]

**Predicted GLC of PM10 at Ambient Air Quality Monitoring Stations**

Location Code	Location Name	Max Baseline Conc. (µg/m3)	Predicted GLC (µg/m3) – Loading	Predicted GLC (µg/m3) – Transportation	Cumulative GLC (µg/m <sup>3</sup> )
A1	Project Site	88.2	0.3026	6.3800	94.862
A2	500 m from Mine Site	87.6	0.2169	4.3500	92.152
A3	Village Rajheri	85.4	0.0014	1.8560	87.257
A4	Village Tabar	86.3	0.0025	1.2180	87.520
A5	Model Town	85.7	0.0019	1.4500	87.152
A6	Village Shukartal	88.8	0.0178	0.8700	89.687

The Detailed Air Modeling Report is incorporated in Chapter 5 of Final EIA/EMP report

**25. Water requirement (m<sup>3</sup>/day)**

Purpose	Avg. Demand	Peak Demand
<b>A. Mine site</b>		
1. Mine operation	--	--
2. Land reclamation	--	--
3. Dust suppression	--	<b>24.00 KLD</b>
4. Drinking	--	<b>650 KLD</b>
5. Green Belt	--	<b>14.50 KLD</b>
6. Beneficiation	--	--
7. Washeries	--	--
8. Fire Service	--	--
9. Others (specify)	--	--
<b>B. Township</b>		
1. Green Belt	--	--
2. Domestic	--	--
3. Other (specify)	--	--
<b>Total</b>	--	<b>45.00 KLD</b>

**26. Source of water supply\*: water Requirement will be fulfilled through hired tankers**

S. No.	Source	m <sup>3</sup> /day
1.	River (name)	--
2.	Ground water	45 KLD
3.	Mine water (sump / pit)	--
4.	Other surface water bodies (specify)	--

[\*Annex a copy of sanction letter / permission from the concerned authority (Central Ground Water Authority in case of ground water abstraction is from notified area / State Ground Water Board in case of non-notified area / State Irrigation Department for surface water pumping) for drawing water.]

**27. Lean season flow in case of pumping from river / nalla (cumecs)**

**Not Applicable**

**28. Ground water potential of the study area**

**28.1. Ground water availability**

(a) Range of water table (m bgl): **The Range of Water Table is 5-10m bgl**

(i) Pre-monsoon (April/May)

- Core Zone

**5-10 m bgl**

- Buffer zone

**5-10 m bgl**

(ii) Post-monsoon (November)

- Core Zone

**4-8 m bgl**

- Buffer zone

**4-8 m bgl**

(b) Total annual replenishable recharge (million m<sup>3</sup>/ year)

- By ground water table fluctuation method
- By rainfall infiltration factor method

--

--

(c) Annual draft excluding estimated draft through mine discharge (million m<sup>3</sup>/ year)

--

(d) Estimated draft through mine discharge (million m<sup>3</sup>/ year)

--

(e) Net annual ground water availability (million m<sup>3</sup>/ year)

--

(f) Stage of ground water development in %

--

## 28.2. Water demand- Competing users of the water source

S. No.	Usage	Present Consumption (m <sup>3</sup> /day)		Additional proposed as per local plan (m <sup>3</sup> /day)		Total (m <sup>3</sup> /day)	
		Surface	Ground	Surface	Ground	Surface	Ground
1	Domestic	--	--	--	8.00 KLD	--	8.00 KLD
2	Irrigation (Plantation)	--	--	--	15.00 KLD	--	15.00 KLD
3	Industry	--	--	--	--	--	--
4	Mining (Dust Suppression)	--	--	--	22.00 KLD	--	22.00 KLD
5	Others (specify)	--	--	--	--	--	--
Total		--	--	--	45.00KLD	--	45.00KLD

## 29. Water quality\*

(a) Annex physico -chemical analysis of water at intake point \*\*

**The details of physico-chemical analysis of water are incorporated in Chapter 3, section 3.13 and 3.14 of the final EIA/EMP report.**

(b) In case of existing mine, annex report on quality of water discharge i.e. complete physico - chemical analysis\*\* **Not Applicable**

[\*For non-discharging mines at least four ground water samples to be taken preferably from downstream direction of the mine in pre-monsoon and post-monsoon periods and analysed. For discharging mines six samples are to be analysed]

\*\*All parameters as per BIS 10500. Indicate name of Methodology, Equipment used for analysis, and Detection Level (DL) for each parameter.

\*\*\* Wherever any analytical parameter is below detection level, "BDL " (Below Detection Level) should be written instead of 'NIL'.

## 30. Impact on ground water regime / stream / lake / springs due to mine dewatering \*: Not Applicable

(a) Radius of influence (in m)

[To be estimated based on analysis of pumping test data and application of empirical formula]

---

(b) Whether saline water ingress will take place? Yes  No ☒

(applicable to coastal areas)

(c) Impact on stream / lake / springs

[\* **Provide a comprehensive hydro-geological assessment report** if the average mine dewatering is more than 100 m<sup>3</sup>/day and or going below water table in non-monsoon period. The report should be based on preferably latest one year pre-monsoon and post-monsoon baseline data covering information on ground water situation, aquifer characteristics, water level conditions (April – May and November), estimate of ground water resources, predicted impact of the project on ground water regime and detailed remedial / conservation measures such as artificial recharge of ground water etc. The report should be based on actual field inventory out of existing wells, at least 30 observation wells in the buffer zone with supplementary information from secondary sources (mention name). For estimation\*\* of ground water resource (refer question no. 28 above) be designated study area of the buffer zone may be sub-divided into command and non-command areas, watershed-wise (in case of hard rock / consolidated formations) / block-wise / mandal-wise in case of alluvial / unconsolidated formations)]

[\*\*For estimating ground water resources in the area follow the Ground Water Estimation Committee recommendations of 1997]

### 31. Waste Water Management

#### Mine

(a) Daily average discharge (m<sup>3</sup>/day) from different sources

**There will be no waste water discharge from the mine lease area.**

(i)	Mine water discharge during	
	• Lean period	<input type="text" value="--"/>
	• Monsoon period	<input type="text" value="--"/>
(ii)	Workshop	<input type="text" value="--"/>
(iii)	Domestic (mine site)	<input type="text" value="--"/>
(iv)	Beneficiation / Washeries	<input type="text" value="--"/>
(v)	Coal Handling Plant	<input type="text" value="--"/>
(vi)	Tailings pond	<input type="text" value="--"/>
(vii)	Others (Specify)	<input type="text" value="--"/>
	Total	<input type="text" value="--"/>

(b) Waste water treatment plant; flow sheet for treatment process attached. Yes  ☒  
**Not Applicable**

(c) Quantity of water recycled / reused / to be recycled in **Not Applicable**

- (i) Percentage
- (ii) m<sup>3</sup>/day
- (d) Point of final discharge



Final Point	Quantity discharged (in m <sup>3</sup> /day)
1. Surface (i) Agricultural land (ii) Waste land (iii) Forest land (iv) Green belt	--
2. River / nallah	--
3. Lake	--
4. Sea	--
5. Others (specify)	--
Total	--

(e) Users of discharge water : **Not Applicable**

(i)	Human	Yes	<input type="text" value="--"/>	No	<input type="text" value="--"/>
(ii)	Livestock	Yes	<input type="text" value="--"/>	No	<input type="text" value="--"/>
(iii)	Irrigation	Yes	<input type="text" value="--"/>	No	<input type="text" value="--"/>
(iv)	Industry	Yes	<input type="text" value="--"/>	No	<input type="text" value="--"/>
(v)	Others (specify)	<input type="text" value="--"/>			

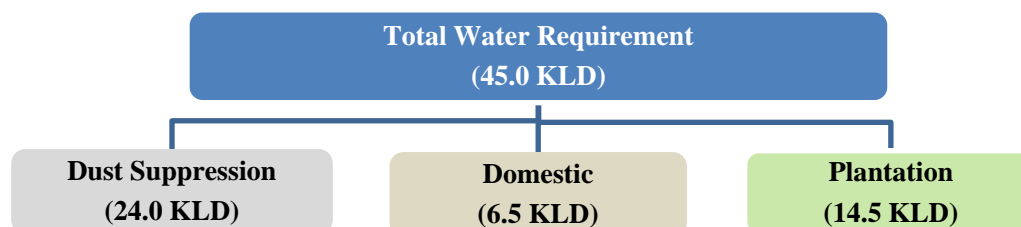
(e) Details of the river / nalla, if final effluent is / will be discharged (cumecs) **Not Applicable**

(i)	Average flow rate	<input type="text" value="--"/>
(ii)	Lean season flow rate	<input type="text" value="--"/>
(iii)	Aquatic life	
(iv)	Analysis of river water 100 meters upstream and 100 meters downstream of discharge point submitted.	Yes <input type="text"/> No <input checked="" type="checkbox"/>

**Township: Not Applicable**

(a)	Waste water generation from township (m <sup>3</sup> /day)	<input type="text" value="--"/>
(b)	Are you planning to provide sewage treatment plant?	Yes <input type="text"/> No <input checked="" type="checkbox"/>
(c)	Usage of treated water: <b>Not Applicable</b>	

**32. Attach water balance statement in the form of a flow diagram indicating source (s), consumption (Section-wise) and output.**



33. Ambient noise level  $L_{eq}$  dB(A)

S. No.	Average Day Time Noise Level Leq. dB (A)	Average Night Time Noise Level Leq. dB (A)
	Day Time (6:00 a.m. to 10:00 p.m.)	Night Time (10:00 p.m. to 6:00 a.m.)
N1	52.40	41.40
N2	53.60	43.60
N3	50.50	44.10
N4	53.30	42.50

34. Solid Waste

- (a) Top soil and Solid waste quantity and quality: **No Solid Waste is generated from the mining activities in Riverbed area/Operation**

Name (Lump/fines/slurry/ Sludge/others)	Composition	Quantity (m <sup>3</sup> /month)	Method of disposal
Mining activity* a. Top Soil b. Over burden c. Others (specify)	---		As this is sand mining project, in dry riverbed there will be no overburden in this mining.
Effluent Treatment Plant (sludge)	---	---	---
Total	---	---	---

[\* Annex layout plan indicating the dump sites.] **Not Applicable**

- (b) (i) Does waste (s) contain any hazardous/toxic substance/ radioactive materials or heavy metals? Yes ☐ No ☒
- (ii) If yes, whether details and precautionary measures provided? Yes ☐ No ☐
- (c) Recovery and recycling possibilities. : **Not Applicable**
- (d) Possible user(s) of the solid waste: **Not Applicable**
- (e) (i) Is the solid waste suitable for backfilling? Yes ☐ No ☒
- (ii) If yes, when do you propose

to start backfilling. **Not Applicable**

(in million m<sup>3</sup>)

Solid waste (s)	Already accumulated (A)	To be generated (B)	% of A & B to be backfilled	
			A	B
Over burden	NA	NA	NA	NA
Others (specify)	NA	NA	NA	NA

**Land reclamation Plan**

(f) In case waste is to be dumped on the ground, indicate: **There is no solid waste generation from the proposed mining project (Not Applicable).**

(i) Associated environmental problems

(ii) Number & type of waste dumps

- No. of external dumps

**NIL**

- Max. projected height of dumps (in m)

**NIL**

- No. of terraces and height of each stage

**NIL**

- Overall slope of the dump (degree)

**NIL**

- Proposed reclamation measures

(iii) Section of the waste dump in relation to the adjacent ground profile attached.

Yes

☐

No

☒

**35. Fuel / Energy requirements\***

[\*To be furnished for mines having ML area more than 25 ha. or captive power generation of 500KVA and above]

(a) Total power requirement

**Not Applicable**

(in MW)

S. No.		Mine Site	Township	Others (specify)	Total
1	Present	--	--	--	--
2	Proposed / additional	--	--	--	--
Total		--	--	--	--

(b) Source of power

(in MW)

S. No.		SEB/Grid*	Captive power plant	DG Sets
1	Present	--	--	--
2	Proposed	--	--	--
Total		--	--	--

[\* Annex a copy of the sanction letter from the concerned authority]

(b) Details of fuels: **HSD oil 8260 LPD shall be required for running mining Machinery.**

S.No.	Fuel	Daily Consumption (TPD)		Calorific value (Kcals/kg)	% Ash	% Sulphur
		Existing	Proposed			
1.	HSD	--	<b>8260 LPD</b>	--	--	--
2.	LSHS	--	--	--	--	--
3.	Other (specify)	--	--	--	--	--

**36. Storage of inflammable / explosive materials: Not Applicable**

S. No.	Name	Number of Storages	Consumption (in TPD)	Maximum Quantity at any point of time
1.	Fuels	--	--	--
2.	Explosives	--	--	--

**37. Human Settlement**

	Core Zone	Buffer Zone
Population*	<b>Nil</b>	<b>78742</b>
No. of villages	<b>Nil</b>	<b>43</b>
Number of households village-wise	<b>Nil</b>	<b>13683</b>

[\* As per 2001 census record or actual survey]

**Village wise details are incorporated in Final EIA/EMP report.**

**38. Rehabilitation & Resettlement (R&R) Plan\* R&R is not applicable for the proposed mining project.**

[\*Provide a comprehensive rehabilitation plan, if more than 1000 people are likely to be displaced, other-wise a summary plan]

**(a) Villages falling within the study area**

	Villages	
	Number	Name
Core zone	<b>NA</b>	<b>NA</b>
500 m from the blasting site (s)	<b>NA</b>	<b>NA</b>
Buffer zone	<b>NA</b>	<b>NA</b>
Township site	<b>NA</b>	<b>NA</b>

**(b) Details of village(s) in the core zone**

S. No.	Village name	Population*		Average Annual Income
		Tribal	Others	
(a)	--	--	--	--
(b)	--	--	--	--
(c)	--	--	--	--

[\*As per 2001 census / actual survey]

**(c) Population to be displaced and / or Land oustees: There will be no displacement. So this is not applicable**

Name of village(s) falling within	Number of oustees		
	Land (only)	Homestead (only)	Land and Homestead (both)
<u>Mining Lease</u>	--	--	--
<u>Township Site</u>	--	--	--

**(d) Whether R&R package has been finalised?**

**Lessee will deposit /pay an additional amount equal to 10% of the due contract money along with the monthly installments towards with the Mines and Mineral Development, R&R fund, (Final EIA/EMP report, LoI, Annexure I clause- xiv) Rs. 93,45,000 per annum will be deposited yearly in this fund by lease holder.**

If yes, salient features of R&R plan for oustees:

- (i) Site details where the people are proposed to be resettled & facilities existing / to be created. **Not Applicable**
- (ii) Funds earmarked for compensation package. **Not Applicable**



- (iii) Agency /Authority responsible for their resettlement. **Not Applicable**
- (iv) Time of commencement of resettlement of Project Affected People (PAP). **Not Applicable**
- (v) Period by which resettlement of PAP will be over. **Not Applicable**

**39. Lease -wise plantation details**

(a)	Lease area (in ha.)	Existing mine	New mine
(i)	Area broken up	-	-
(ii)	To be broken up	-	-
(iii)	Area not to be broken-up	-	18.54 Ha. (Safety zone)
(b)	Township area (in ha.)	Not Applicable	Not Applicable
(c)	Area afforested and proposed (in ha.)		

- |      |          |                         |       |       |          |        |
|------|----------|-------------------------|-------|-------|----------|--------|
|      |          | Peripheral              | Dumps | Roads | Township | Others |
| (i)  | Existing | : <b>Not Applicable</b> |       |       |          |        |
| (ii) | Proposed | : <b>5.0 Ha.</b>        |       |       |          |        |
- (d) No. and type of trees planted and proposed

- (i) Existing: **Not Applicable**

• When plantation was started?	Nil
No. of plant species planted	Number saplings (per ha.)
--	--

- |                   |               |
|-------------------|---------------|
| • Survival rate % | • Avg. height |
|-------------------|---------------|

- |               |    |    |
|---------------|----|----|
| (ii) Proposed | -- | -- |
|---------------|----|----|

No. of plant species to be planted	Number of saplings (per ha.)
3900 trees per annum	2730

**40. Environmental health and safety**

- (a) What major health and safety hazards are anticipated?  
**Dust related health problems such as respiratory related issues are anticipated.**
- (b) What provisions have been made/proposed to be Made to conform to health and safety requirements?
- **The collection of minor minerals from the Sand mine does not cause any serious occupational ill effects.**
  - **Except fugitive dust generation there is no source which can show a probability for health related diseases and proper dust suppression will control dust generation and dispersion.**
  - **Dust masks will be provided to the workers working in the dust prone areas as additional personal protective equipment.**
  - **The occupational health hazards have so far not been reported.**

- Awareness program will be conducted about likely occupational health hazards so as to have preventive action in place.
- Periodical medical checkup will be conducted.
- Promote occupational health and safety within their organization and develop safer and healthier ways of working
- Develop and implement training sessions for management, supervisors and workers on health and safety practices and legislation;
- Communicate frequently with management to report on the status of the health and safety strategy and risk management strategy, and Develop occupational health and safety strategies and systems, including policies, procedures and manuals.

(c) In case of an existing mine: **Not Applicable**

(i) Comprehensive report on health status of the workers as under the Mines Act annexed. Yes ☐ No ☐

(ii) Mineralogical composition of RPM (dust)

- Free silica
- Chromium\* (Total as well as Hexavalent)
- Lead\*\*

[\* Only for Chromite mines]

[\*\*Only for Base Metal mines]

(d) Information on radiation protection measures, if applicable: **Not applicable**

#### 41. Environmental Management Plan

Salient features of environmental protection measures

S. No.	Environmental issues*	Already practiced, if applicable	Proposed
1	Air Pollution	<b>Not Applicable</b>	<ul style="list-style-type: none"> <li>• Regular water sprinkling on unpaved roads to avoid dust generation during transportation.</li> <li>• Use of latest loading technologies.</li> <li>• Skilled operated to operate excavators.</li> <li>• Green belt development.</li> <li>• Periodic Air quality monitoring as per the norms of CPCB and HSPCB.</li> </ul>
2	Water Pollution	<b>Not Applicable</b>	<p><b>Surface Water:</b> There will be no waste water generation from the proposed mining activity. There will be only sanitary waste water generation that will be treated in septic tanks and will be used for plantation purpose.</p> <p><b>Ground Water:</b> There will be no extraction of ground water from the proposed mining activity.</p> <p>Mining activity will not intersect the ground water table of the area.</p>
3.	Water conservation	<b>Not Applicable</b>	<ul style="list-style-type: none"> <li>• For water conservation, rainwater harvesting system has been already proposed</li> </ul>
4.	Noise pollution	<b>Not Applicable</b>	<ul style="list-style-type: none"> <li>• No other equipments except the Transportation vehicles and Excavator for loading will be allowed.</li> </ul>

			<ul style="list-style-type: none"> <li>Noise generated by these equipments shall be intermittent and does not cause much adverse impact.</li> <li>Proper maintenance of all equipments/machines will be carried out which help in reducing noise during operations.</li> <li>Plantation will be taken up along the approach roads and side. The plantation minimizes propagation of noise and also arrests dust.</li> </ul>
5.	Solid waste / Tailings	<b>Not Applicable</b>	No solid waste is generated from the said mining project. There is not any Toxic element generate during mining project.
6.	Land degradation	<b>Not Applicable</b>	Sand will be mined out from riverbed and sufficient safety barrier should be taken during mining.
7.	Erosion & Sediment	<b>Not Applicable</b>	Water sprinkling will be done regularly to check the erosion.
8.	Top soil	<b>Not Applicable</b>	There is no Top soil in riverbed mining.
9.	Ground vibration	<b>Not Applicable</b>	It is a sand mining, blasting process is not involved. There will be not ground vibration.
10.	Wildlife conservation	<b>Conservation Plan Submitted</b>	The detailed Conservation plan will be submitted to Chief Wild Life Warden, Panchkula, Haryana. A fund of Rs. 9.10 Lakhs has been allocated for conservation of Wildlife.
11.	Forest protection	<b>Not Applicable</b>	----
12.	Others (specify)	<b>Not Applicable</b>	----

[\* As applicable]

**42. Compliance with environmental safeguards (For existing units): Not Applicable**

- (a) Status of the compliance of conditions of environmental clearance issued by MoEF, if any, enclosed. Yes ☐ No ☐
- (b) Status of the compliance of 'Consent to Operate' issued by SPCB, if any, enclosed. Yes ☐ No ☐
- (c) Latest 'environmental statement' enclosed. Yes ☐ No ☐

**43. Scoping of EIA**

- a) Whether environmental impact assessment of the project has been carried out by following scoping process? Yes ☒ No ☐
- b) If yes, a copy of scoping of EIA annexed. : **Please refer ToR reply of Final EIA/EMP report.** Yes ☒ No ☐

**44. Mine closure**

- (a) Have you planned mine closure? Yes ☒ No ☐
- (b) Submitted a conceptual mine Closure plan. Yes ☒ No ☐
- (c) If yes, indicate estimated amount for Implementing the same (in Rs. Lakhs) **Not Applicable**

**45. Capital cost of the project  
(Based on latest estimate)**

**Rs. 9.00 Crores**

**46. Cost of environmental protection measures (in Rs. Lakh).**

**Rs 30.00 Lakhs**

S. No.		Capital cost	
		Existing	Proposed
1	Pollution Control (Separately provide break-up)	Not Applicable	6.00 Lakhs (Dust Suppression) (Included in EMP Cost)
2	Pollution Monitoring (Separately provide break-up)	Not Applicable	5.00 Lakhs (Included in EMP Cost)
3	Occupational Health	Not Applicable	10.00 Lakhs (Other than EMP)
4	Green Belt • Mine • Township)	Not Applicable	6.00 Lakhs (Included in EMP)
5	Reclamation / Rehabilitation of mined out area.	Not Applicable	---
6	Others (specify)	Not Applicable	Haul road and road maintenance: 6.00 Lakhs
			Survey for sedimentation, 4.00 Lakhs.

**47. Amount earmarked for socio-economic ,  
Welfare measures for the nearby villages  
other than R&R plans.**

**30.00 Lakhs**

**48. Public Hearing**

(a) Date of Advertisement

**20.04.2017**

(b) Newspapers in which the advertisement appeared

**The Tribune**

(c) Date of public hearing (DD/MM/YYYY)

**23.05.2017**

(d) Public Hearing Panel chaired by & members present

**Sh. Rohtash Singh Kharb (I.A.S) Deputy  
Comissioner, Yamunanagr**

(e) No. of people attended the public hearing meeting  
And number of people from the lease area.

**Detailed Public Hearing attendance sheet  
is incorporate as Annexure XIV in Final  
EIA/EMP report.**



**Questionnaire**

(f) Summary/details of public hearing in tabular form.

S.N o	Name of Stakeholder	Question	Reply	Action Plan	Fund Allocation
1.	Sh. Isham Singh Vill- Chorpura	1.) He asked that how many people will be employed from this proposed Sand Mining project?	1) Sh. RS Yadav Environment Consultant and lease holder replied that so many employment opportunities will be generated from this project. 115 skilled and semi-skilled people will get direct employment from this project. 105 dumpers will be used in this project and each dumper requires 4-5 people i.e. driver, cleaner, helper. About 500-700 people will be employed for this purpose. Every year 7,800 trees will be planted that will need so many gardeners to take care of the plants. 22 KLD water will be used for dust suppression for which many persons will be employed. Bill clerks will also be needed for this project and to fulfil this purpose graduated students will be employed from the local villages. These are the direct employment opportunities. Apart from this so many indirect employment will also be generated i.e. many hotels, workshop repair, tea stalls, general store will be established	The lease holder assured that about 115 technical, nontechnical, skilled, semi-skilled persons will be deployed in this mining project. Lease holder also assured that the first preference will be given to the local villagers and employment opportunities will also come indirectly through this project like bill clerks, Account person, security guards and gardeners. In addition to above many workshops, repair shops, spare parts shop, hotels, canteen, tea stalls, daily need shops will be setup in the area by local villagers first.	The budget allocation for employment of 115 technical person is included in the project report.

**Questionnaire**

			and so many employment opportunities will be generated. Lease holder assured that first priority for employment will be given to local villagers only.																				
2.	Sh. Satish Kumar	He asked that what arrangements will be done for the health of mine workers?	<p>Sh. RS Yadav Environment Consultant replied that a budget of Rs. 10 Lakhs/year has been proposed for the health safety of mine workers. A qualified MBBS doctor will be appointed, first aid, medical centre will be established at project site. Regular health checkup will be conducted by doctors and villagers also take advantage of that.</p> <p>Dust mask will be provided to the workers to protect themselves from dust. Awareness training programme will also be organized periodically to the workers to minimize the impact of air pollution. Proper care will be taken of the workers so that it won't affect the health of workers. Medical camps will be organized quarterly/ six monthly in which our workers and villagers will also be benefitted.</p> <p>A budget of Rs. 10 Lakhs per year</p>	Mining will be carried out under the supervision of the qualified mining engineers. A first aid station with qualified doctors will be setup at the mining site. For the safe transportation of the mineral is separate road will be constructed outside the village Aabadi Road. Regular health checkup will be conducted by doctors and villagers also take advantage of that. Dust mask will be provided to the workers to protect themselves from dust. Awareness training programme will also be organized periodically to the workers to minimize the impact of air pollution.	<p>A budget of <b>Rs.10.00 Lakhs</b> per year is provided for Occupational Health and Safety.</p> <table><tr><th>S. No.</th><th>Description</th><th>Amount (in Lakhs)</th></tr><tr><td>1.</td><td>Measures to Prevent Accidents during Sand Loading</td><td>1.00</td></tr><tr><td>2.</td><td>Measures to Prevent Accidents during minerals Transportation.</td><td>1.00</td></tr><tr><td>3.</td><td>Measures to Prevent Accidents due to Trucks/ Dumpers etc.</td><td>1.00</td></tr><tr><td>4.</td><td>Measures to Prevent Dangerous Incidents during Inundation/Flooding</td><td>2.00</td></tr><tr><td>5.</td><td>Education awareness and first aid kit</td><td>2.00</td></tr></table>	S. No.	Description	Amount (in Lakhs)	1.	Measures to Prevent Accidents during Sand Loading	1.00	2.	Measures to Prevent Accidents during minerals Transportation.	1.00	3.	Measures to Prevent Accidents due to Trucks/ Dumpers etc.	1.00	4.	Measures to Prevent Dangerous Incidents during Inundation/Flooding	2.00	5.	Education awareness and first aid kit	2.00
S. No.	Description	Amount (in Lakhs)																					
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4.	Measures to Prevent Dangerous Incidents during Inundation/Flooding	2.00																					
5.	Education awareness and first aid kit	2.00																					

**Questionnaire**

			is proposed for occupational health safety of mine workers.		6.	Medical Examination Schedule	3.00
					Total		10.00
3.	Sh. Mohit	He asked what will be the benefits of this project to the villagers?	<p>Sh. RS Yadav Environment Consultant replied that firstly this project is environment friendly project. The sediment comes along with the flow of river and get accumulated so the level of river get raised and if the accumulated sediments/sand will not be excavated then the river can divert from its original path that could lead to the flood. So, the mining will be done upto 3 m in systematic scientific manner and the sand will excavated on regular basis, so the river will flow in channel and will not divert in any other direction and the flow will be smooth.</p> <p>Secondly, good opportunity for generation of employment from this project and first preference will be given to the local villagers only. Details has been already given in reply of para no.-1. This sand is used for development of infrastructure in the state of Haryana and the NCR.</p> <p>So this project is beneficial in</p>	<p>This mining project will protect from the flood and also generate employment for the local people about 115 technical, nontechnical, skilled, semi-skilled persons will be deployed in this mining project.</p> <p>Lease holder also assured that the first preference will be given to the local villagers and employment opportunities will also come indirectly through this project like bill clerks, Account person, security guards and gardeners. In addition to above many workshops, repair shops, spare parts shop, hotels, canteen, tea stalls, daily need shops will be setup in the area by local villagers first.</p>			

**Questionnaire**

			every manner.		
4.	Sh. Gurdayal Singh Village: Gadi Gujran	He said that how many trees will be planted?	Sh. RS Yadav Environment Consultant replied that 3900 trees will be planted per year that means approx. 39000-40000 trees will be planted in five years. Only local species of trees will be planted after consultation with DFO. These trees will be planted to minimize the air pollution and noise pollution. Plantation will also be done along with the road of transportation, premises of Gram Panchayat Bhawan, Hospitals, schools etc. A budget of Rs. 30 Lakhs/year has been proposed for EMP.	It is ensured by lease holder that 3800 trees per year will be planted per year and these trees will be planted along the haul roads, in schools, gram Panchayat compound, hospitals etc. Plantation will be done with the consultation of DFO Yamuna nagar. It will be done on both sides of road, school, panchayat land, etc.	A budget of Rs.30.00 Lakhs per year is provided for EMP activities out of which 4.00 Lakhs is provided for Plantation. In addition of above a budget of Rs. 40.15 Lakhs per annum available in "Mines and Minerals Development Rehabilitation and Restoration Fund. As per requirement part amount may also be utilized from this fund.



**Questionnaire**

5.	Sh. Nekiram Village: Gadhi Birbal	He asked that what kind of pollution will be generated due to proposed mining project?	<p>Sh. RS Yadav Environment Consultant replied that in this sand mining project there is a possibility of air pollution due to mining and transportation of sand. To mitigate this, a proper management plan is being proposed, a budget of Rs. 30 Lakhs/year is also proposed for EMP. Regular sprinkling of water will be done at active mining area, and on haul road for dust suppression.</p> <p>3900 trees per year will be planted along haul road, that will be helpful in minimizing dust generation. Trucks will not be driven overloaded and the trucks will also be covered with Tarpaulin. If wind blows in high velocity than the mining work and transportation will be suspended until it becomes stable, and minimize the impact of air pollution.</p>	<p>The lease holder assured that Regular water sprinkling will be carried out on the mining site and also on the haul road/Kaccha roads used for transportation of minerals to prevent the air pollution. For this 15.00 KLD water per day will be used.</p> <p>3900 trees per year will be planted along haul road, that will be helpful in minimizing dust generation. These plants will be watered and managed regularly.</p> <p>The mineral loaded trucks also covered with tarpaulin and trucks will be plying in slow speed. The mining operation will be temporary suspended during heavy wind flow to curb the air pollution.</p> <p>A budget of Rs. 30.00 Lakhs per year as EMP is also provided to control the air pollution.</p>	<p>The detailed EMP budget of <b>Rs.30.00 Lakhs per year</b> is given as below:</p> <table><tr><th>Particulars</th><th>Cost (in Lakh)</th></tr><tr><td>Pollution monitoring – Air, Water, Noise and Soil</td><td>5.00</td></tr><tr><td>Dust Suppression</td><td>6.00</td></tr><tr><td>Plantation will be at Villages- Nagli, Nagla and Sandhla, near School- Maharaja Agrasein Public School and along the Haul road (Motrable connecting road) of these villages.</td><td>6.00</td></tr><tr><td>Haul road (Motrable connecting road) and other roads repair and Maintenance</td><td>6.00</td></tr><tr><td>Pre-monsoon and post monsoon survey for sedimentation in the river bed</td><td>4.00</td></tr><tr><td>Waste Water Treatment</td><td>3.00</td></tr><tr><td><b>Total</b></td><td><b>30.00</b></td></tr></table>	Particulars	Cost (in Lakh)	Pollution monitoring – Air, Water, Noise and Soil	5.00	Dust Suppression	6.00	Plantation will be at Villages- Nagli, Nagla and Sandhla, near School- Maharaja Agrasein Public School and along the Haul road (Motrable connecting road) of these villages.	6.00	Haul road (Motrable connecting road) and other roads repair and Maintenance	6.00	Pre-monsoon and post monsoon survey for sedimentation in the river bed	4.00	Waste Water Treatment	3.00	<b>Total</b>	<b>30.00</b>
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<b>Total</b>	<b>30.00</b>																				

**Questionnaire**

6.	Sh. Vikram Singh Village: Karoda Jaagir	He asked that what is the provision of social development of this village?	Sh. RS Yadav Environment Consultant replied that a CSR budget of Rs. 30 Lakhs/year has been proposed which includes provision of toilets in govt. schools, drinking water facility in local villages and scholarships for students, vocational training. A meeting will be organized with Gram Panchayat before Commissioning Mining Activity and priority list will be prepared as per the need of villages. Monitoring of these activities will also be done. Regularly compliance report will be sent to the HSPCB after getting Environmental Clearance and if they find any deficiency in compliance then District Administration officers may take legal action against the lease holder.	The project proponent assured that the provision of toilets in govt. schools, drinking water facility in local villages and scholarships for students, vocational training. A meeting will be organized with Gram Panchayat before Commissioning Mining Activity and priority list will be prepared as per the need of villages.	<p>The detailed CSR budget of Rs.30 Lakhs per year is given as below:</p> <table><tr><th>S. No.</th><th>Description</th><th>Amount (in Lakhs)</th></tr><tr><td>1.</td><td>Vocational training on Villages:- Nagli, Nagla &amp; Sandhla<ul style="list-style-type: none"><li>• Fire and safety,</li><li>• Health and safety,</li><li>• Awareness program on cancer and AIDS.</li></ul></td><td>5.00</td></tr><tr><td>2.</td><td>Sanitations(Bio-toilets) and drinking water facility at Village Nagli</td><td>5.00</td></tr><tr><td>3.</td><td>Sanitations(Bio-toilets) and drinking water facility at Village Nagla</td><td>5.00</td></tr><tr><td>4.</td><td>Sanitations(Bio-toilets) and drinking water facility at Village Sandhla</td><td>5.00</td></tr><tr><td>5.</td><td>Assistance to self help groups</td><td>5.00</td></tr></table>	S. No.	Description	Amount (in Lakhs)	1.	Vocational training on Villages:- Nagli, Nagla & Sandhla <ul style="list-style-type: none"><li>• Fire and safety,</li><li>• Health and safety,</li><li>• Awareness program on cancer and AIDS.</li></ul>	5.00	2.	Sanitations(Bio-toilets) and drinking water facility at Village Nagli	5.00	3.	Sanitations(Bio-toilets) and drinking water facility at Village Nagla	5.00	4.	Sanitations(Bio-toilets) and drinking water facility at Village Sandhla	5.00	5.	Assistance to self help groups	5.00
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**Questionnaire**

					<table><tr><td>6.</td><td>Health check up camps at mine site and nearby villages (Nagli, Nagla and Sandhla)</td><td>5.00</td></tr><tr><td colspan="2">Total</td><td>30.00</td></tr></table>	6.	Health check up camps at mine site and nearby villages (Nagli, Nagla and Sandhla)	5.00	Total		30.00
6.	Health check up camps at mine site and nearby villages (Nagli, Nagla and Sandhla)	5.00									
Total		30.00									
7.	Sh. Avtaar Singh Village: Gumthala	He said that mining is being done in our village Gumthala and there is no provision of sprinkling of water to control the air pollution and no local people have been employed. You are saying that mining will be done only upto 3 m but they are excavating upto 9m so that should be restricted. Whether the sand is free for local villagers?	Sh. RS Yadav Environment Consultant replied that this is related to another project and advised to complain RO, DC and mining officer in this regard. Lease holder assured that for social and religious work, sand will be given free of cost. A CSR budget of Rs. 30 Lakhs/year has been proposed which includes development of toilets in govt. schools, drinking water facility and scholarships for students, vocational training. Lease holder assured that first priority for employment will be given to local villagers only. Priority list will be prepared as per the need of villages.	Lease holder assured that for social and religious work, sand will be given free of cost. A CSR budget of Rs. 30 Lakhs/year has been proposed which includes development of toilets in govt. schools, drinking water facility and scholarships for students, vocational training. Lease holder assured that first priority for employment will be given to local villagers only.	A budget of Rs.30.00 Lakhs per year is provided for CSR activities.						
8.	Deputy Commissioner	Deputy Commissioner, Yamuna Nagar suggested that this sand mining project is very beneficial for the local villagers. Villagers will be benefited in employment	Detail replies already given in above paras.	We will comply all the rule and regulations regarding Environmental Clearance.	A budget of Rs 40.15 Lakhs/annum will be deposited in “Mines and Minerals Development, Restoration and Rehabilitation Fund” for settlement of compensation with the land owner.						

Mining of Sand (Minor Mineral) at Nagli Block YNR/B-15 (area-77.25 Ha.)  
Village- Nagli, Tehsil-Radaur, District-Yamuna Nagar, Haryana.

**Questionnaire**

		and CSR activity. This is eco-friendly mining project which prevent the flooding in the village area. The mining material will be given to the villagers on concessional rate. He also directed the R.O. and mining officers to inspect the mining site of village gumthala and ensure the compliance of EC granted to the lease holder.			
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**49. Whether the following approvals\* (wherever applicable) have been obtained?**

(i)	Site clearance from MoEF	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
(ii)	'Consent for Establishment' from the State Pollution Control Board	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
(iii)	NOC from Atomic Mineral Division	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
(iv)	Mining plan approval from IBM / Ministry of Coal	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
(v)	In case of existing mines, mining scheme approval from IBM	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
(vi)	Forestry clearance under FCA, 1980	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
(vii)	NOC from Chief Controller of Explosives	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
(viii)	Commitment regarding availability / pumping of water from the concerned Authorities	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
(ix)	In case of ML area falling in notified areas of the Central Ground Water Authority, NOC from them.	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

[\*Annex copies of approvals and number them]: **Copy of Letter of Approved Mining Plan enclosed as Annexure II along with EIA/EMP report. The Mining Plan was Approved Haryana vide Memo no. DMG/HY/MP/Nagli Block/YNR B-15 /2016/746 dated 20/02/2017.**

**50.** Was / is there any court case relating to the project or related activities? If so, provide details present status.

There is no litigation pending against this project.

There is no court case against this project, however there is a court case in the matter of M/s Om minerals v/s State of Haryana and others [CWP No. 7991 of 2014], wherein the petitioner had challenged the demand/levy of stamp duty on execution of (Contract Agreement). The State Government (Dept. of Mines and Geology) has issued LoI subject to the outcome of this case. The above mentioned case is still pending before Hon'ble Punjab and Haryana High Court for adjudication.

**The Project Proponent has not filed any court case against any department neither he is a party in this case.**