

I/73423/2021(1)

**HARYANA STATE POLLUTION CONTROL BOARD**

C-11, SECTOR-6, PANCHKULA  
Ph-0172-577870-73, Fax No. 2581201  
E-Mail: hspcbcoordination@gmail.com  
Website: hspcb.gov.in

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**HSPCB/PKL/2021/Dated:- 29/10/2021**

To

The Director General,  
Information, Public Relations & Cultural Affairs Department,  
Haryana, Chandigarh.

**Subject: Regarding conduct of Public hearing for Environmental Clearance proposed - River Bed Material (RBM Gravel and Sand) Project at Shamtoo-1: Block/PKL B-11 located at Village - Shamtoo, Distt. Panchkula, Haryana, Khasra No./Killa No. 55 Min, 141 Min, 142, 143 by M/s Starex Minerals, Vill. Shamtoo, Distt. Panchkula ('C-B1').**

I have been directed to enclose herewith an advertisement regarding Public Hearing to be held on 02.12.2021 at 11:00 AM at the site of the unit for the project of River Bed Sand Mining, (RBM, Gravel and Sand) at Shamtoo-1, Block/PKL B-11 located at Village - Shamtoo, Distt. Panchkula, Haryana, Khasra No./Killa No. 55 Min, 141 Min, 142, 143, having are-46.50 Hac. Proposed capacity-4,00,000 TPA of M/s Starex Minerals, Vill. Shamtoo, Distt. Panchkula in compliance with EIA notification for publication in the following leading newspapers on DAVP rates:-

1. One major national daily newspaper.
2. One Regional Vernacular daily Newspaper in Hindi.

This advertisement should appear on or before 02.11.2021 in the above said two newspapers only and bills of above two newspapers on DAVP rates may be sent to this office at the earliest, the bill payment of above said notice will be made for two newspaper only.

**DA/-Advertisement**

**Sr. Env. Engineer (HQ)  
For Member Secretary**

**Copy to :-**

A copy of the above is forwarded to the following for information and necessary action:-

1. The Deputy Commissioner, Panchkula.
2. The Chairman, Zila Parishad, District Panchkula.
3. The Municipal Corporation, District Panchkula for display on Notice Board.
4. The Joint Director, District Industries Centre, District Panchkula.
5. The Regional Officer, Haryana State Pollution Control Board, SCO-115-116,

I/73423/2021(1)

(1st Floor), Sector-25, Panchkula. You are asked to sent copy of EIA report and Executive Summary and CD to the concerned authorities mentioned above to place the same in their offices for consultation of the public hearing during office hours.

6. M/s Starex Minerals, Address: J.S Height, Block A, Opp. Shivansh Mahindra Service Centre, Dhamdha Road, Khapri, Distt. Durg. (Email: starexmineal.env@gmail.com)
7. The SEE (IT), HSPCB (HQ) to ensure that the public notice and other necessary documents is uploaded on the website of the Board.

**Copy to:-**

A copy of the above is forwarded to the following for information please:-

1. The Additional Chief Secretary to Govt. Haryana, Environment Department, Chandigarh.
2. The Director General, Environment Department, Haryana at Sector 17, Chandigarh.
3. P.S. to Chairperson/ P.A. to Member Secretary, HSPCB, Panchkula .

**DA/-Advertisement**

## **HARYANA STATE POLLUTION CONTROL BOARD**

**C-11, SECTOR-6, PANCHKULA**  
**Ph-0172-577870-73, Fax No. 2581201**  
**E-Mail: hspcbcoordination@gmail.com**  
**Website: hspcb.gov.in**

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### **Notice for Public Hearing**

It is for the information of the general public that for proposed River Bed Mining (RBM, Gravel and Sand) Project at Shamtoo-1: Block/PKL B-11 located at Village - Shamtoo, Distt. Panchkula, Haryana, Khasra No./Killa No. 55 Min, 141 Min, 142, 143, having are-46.50 Hac. Proposed capacity-4,00,000 TPA of M/s Starex Minerals, Vill. Shamtoo, Distt. Panchkula ('C-B1') regarding Public Hearing.

In view of above letter of TOR issued by MOEF & CC vide letter no. J-11015/33/2018-IA.II(M) dated 17.12.2018 and thus Environmental Clearance is mandatory for the proposed project. Accordingly the project proponent has applied to the HSPCB for conduct of public hearing for obtaining Environment Clearance as per EIA notification dated 14.09.2006 for the proposed project. Accordingly, the Public Hearing has been fixed on 02.12.2021 at 11:00 AM at site.

Copies of executive summary of the project report and EIA study report and submitted by the project proponent, are available in the Head Office of the Board and its website ([www.hspcb.gov.in](http://www.hspcb.gov.in)) as well as in the following offices, which can be perused during office hours, on any working day:-

1. Deputy Commissioner, Panchkula.
2. The Regional Officer, Haryana State Pollution Control Board, SCO-115-116 (1st Floor), Sector-25, Panchkula.
3. Chairman, Zila Parishad, Panchkula.
4. Executive Officer, Municipal Corporation, Panchkula.
5. Joint Director, District Industries Centre, Panchkula.

Notice is hereby given to all concerned to file suggestions, views, comments and objections, if any, on the proposed project, to the Chairperson, Haryana State Pollution Control Board, C-11, Sector-6, Panchkula as well as Regional Officer, Haryana State Pollution Control Board, SCO-115-116 (1st Floor), Sector-25, Panchkula 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, *bona fide* 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, IFS**  
**Member Secretary**

To,  
Member Secretary,  
Haryana State Pollution Control Board,  
Panchkula

**Subject:** Regarding Conduct of Public hearing for our RUM (Gravel and Sand) project at Shamton-1: Block/PKI, B-11 located at Village- Shamton, District - Panchkula, Haryana.

Ref: TOR Issued by MoEF&CC Vide letter no J-11015/33/2018 LAH(M) dated 17.12.2018

Sir,

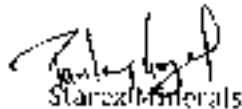
It is submitted that we have applied to MoEF&CC, New Delhi for obtaining Environmental Clearance under EIA, Notification, 2006 and its amendments. The Terms of Reference have been granted by MoEF&CC as mentioned above. The draft EIA report has been prepared by our Environmental Consultant.

As a part of procedure, we are submitting copy of draft EIA Report, Executive Summary in English & Hindi, hard & soft copy to your office.

We are submitting public hearing fees in the form of DD amounting Rs. 1,50,000/- Vide DD no 516886 Dated 09.09.2021 Issued by YES BANK in favor of **Member Secretary**, Haryana State Pollution Control Board, Panchkula is enclosed herewith.

We kindly request you to process expeditiously our application for conducting public hearing.

Yours faithfully,



Starz Minerals

starzmineralsny@gmail.com

Phone no. 0010392749

..

1149914/2021/Estt.Br

**YES BANK**

**YES BANK LTD.**

YES Bank Tower, The International Center,  
11th Floor, Senapati Bapat Marg,  
Lower Ground (W), Mumbai 400024

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VALID FOR THREE MONTHS FROM DATE OF ISSUE

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**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT AND  
ENVIRONMENTAL MANAGEMENT PLAN  
OF  
RBM of Gravel and Sand at Shamtoo-1; Block/PKL B-11**

<b>PROPOSAL NO</b>	IA/IR/MIN/73803/2018
<b>Khasra no/ Killa No</b>	55 min, 141 Min, 142, 143
<b>AREA</b>	46.50 Ha
<b>PRODUCTION</b>	4,00,000 TPA
<b>Location</b>	Village- Shamtoo, District - Panchkula, Haryana

**APPLICANT**

M/s Starex Minerals,  
Add: J.S Height, Block A,  
Opp. Shivansh Mahindra Service Centre,  
Dhandha Road, Khapri, Dist. Durg



Prepared By  
P&M Solution  
C-35, Sector 65, Noida - 201301 - U.P.  
A QCI NABET Accredited Organization  
MOB: 9226287364, 9559548342



## INDEX

Serial No.	CONTENTS	Page No.
<b>INTRODUCTION</b>		
1.0	PURPOSE OF THE REPORT	2/i
1.1	IDENTIFICATION OF PROJECT PROPONENT	2/i
1.2	BRIEF DESCRIPTION OF PROJECT	3/i
1.3	REGULATORY COMPLIANCES & APPLICABLE LAWS/REGULATIONS	6/i
1.4	SCOPE OF THE STUDY	7/i
<b>PROJECT DESCRIPTION</b>		
2.0	GENERAL	2/ii
2.1	DESCRIPTION OF THE PROJECT	2/ii
2.2	LEASE HOLD AREA	3/ii
2.3	GEOLOGY	4/ii
2.4	METHOD OF ESTIMATION OF RESERVE	5/ii
2.5	MINING	6/ii
2.6	GENERAL FEATURES	8/ii
<b>DESCRIPTION OF ENVIRONMENT</b>		
3.0	INTRODUCTION	2/iii
3.1	LAND ENVIRONMENT	2/iii
3.2	METHODS FOR MONITORING	3/iii
3.3	BASELINE DATA	3/iii
3.4	BIOLOGICAL ENVIRONMENT	17/iii
3.5	SOCIAL IMPACT ASSESSMENT	27/iii
<b>ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES</b>		
4.0	GENERAL	2/iv
4.1	LAND ENVIRONMENT	2/iv
4.2	WATER ENVIRONMENT	5/iv
4.3	AIR ENVIRONMENT	6/iv
4.4	NOISE ENVIRONMENT	8/iv
4.5	BIOLOGICAL ENVIRONMENT	10/iv

<b>ANALYSIS OF ALTERNATIVES (TECHNOLOGY &amp; SITE)</b>		
5.0	GENERAL	2/V
<b>ENVIRONMENTAL MONITORING PROGRAMME</b>		
6.0	INTRODUCTION	2/VI
6.1	PROPOSED SET UP	2/VI
6.2	MONITORING SCHEDULE AND PARAMETERS	3/VI
<b>ADDITIONAL STUDIES</b>		
7.0	PUBLIC CONSULTATION	2/VII
7.1	HAZARD IDENTIFICATION AND RISK ASSESSMENT METHODOLOGY	2/VII
7.2	POTENTIAL HAZARD & "ALARP" CONDITION	7/VII
7.3	RISK PRIORITISATION BASED ON HAZARDS	7/VII
7.4	ADDITIONAL MITIGATION MAJORS TO BRING HAZARDS UNDER "ALARP" ZONE	10/VII
7.5	NATURAL RESOURCE CONSERVATION	11/VII
<b>PROJECT BENEFITS</b>		
8.0	GENERAL	2/VIII
8.1	BENEFIT OF MINING	2/VIII
8.2	EMPLOYMENT	2/VIII
8.3	IMPROVEMENTS IN PHYSICAL AND SOCIAL INFRASTRUCTURE	3/VIII
8.4	IMPROVEMENTS IN PHYSICAL INFRASTRUCTURE	3/VIII
8.5	IMPROVEMENTS IN SOCIAL INFRASTRUCTURE	3/VIII
8.6	PLANTATION	4/VIII
8.7	HEALTH	5/VIII
<b>ENVIRONMENTAL MANAGEMENT PLAN</b>		
9.0	INTRODUCTION	2/IX
9.1	ENVIRONMENTAL MANAGEMENT PLAN (BIOLOGICAL ENVIRONMENT)	2/IX
9.2	ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION	3/IX
9.3	PROPOSED SET UP	4/IX

9.4	GREENBELT DEVELOPMENT	5/X
9.5	BUDGET ALLOCATION FOR EMP IMPLEMENTATION	5/X
9.6	MONITORING SCHEDULE AND PARAMETERS	6/X
<b>EXECUTIVE SUMMARY</b>		
10.0	INTRODUCTION OF PROJECT & PROPONENT	2/X
10.1	LOCATION	2/X
10.2	RESERVES	2/X
10.3	MINING	3/X
10.4	WATER SUPPLY	4/X
10.5	BASLINE DATA	4/X
10.6	BIOLOGICAL ENVIRONMENT	5/X
10.7	LAND ENVIRONMENT	7/X
10.8	AIR ENVIRONMENT	8/X
10.9	WATER ENVIRONMENT	9/X
10.10	NOISE ENVIRONMENT	9/X
10.11	TRAFFIC ANALYSIS	10/X
10.12	ENVIRONMENTAL MANAGEMENT PLAN (EMP)	10/X
10.13	ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION	11/X
10.14	BUDGET ALLOCATION FOR EMP IMPLEMENTATION	12/X
10.15	MONITORING SCHEDULE AND PARAMETERS	12/X
10.16	BENEFIT OF MINING	13/X
<b>DISCLOSURE OF CONSULTANTS ENGAGED</b>		
1	DISCLOSURE OF CONSULTANTS ENGAGED	1/XI-2/XI

### LIST OF TABLES

Table No.	TITLE OF TABLE	Page No.
1.1	Point Wise Compliance for TOC	6/3
2.1	Geological Reserves	6/11
2.2	Probable Mineral Reserves	6/11
2.3	Production detail	7/11
2.4 (i)	Existing Traffic Scenario & LOS	8/11
2.4 (ii)	Modified Traffic Scenario & LOS	9/11
2.5	Employment detail	10/11
3.1	Methods adopted for $PM_{2.5}$ , $PM_{10}$ , $SO_2$ and $NO_x$ (as $NO_2$ )	3/11
3.2 (i)	Ambient air quality monitoring stations	5/11
3.2 (ii)	Ambient Air Quality Status	6/11
3.2 (iii)	Ground water sampling locations	8/11
3.2 (iv)	Physico-chemical properties of ground water	9/11
3.2 (v)	Surface water sampling locations	11/11
3.2 (vi)	Physico-chemical properties of surface water	12/11
3.2 (vii)	Description of soil sampling locations	14/11
3.2 (viii)	Physico-chemical properties of soil	15/11
3.2 (ix)	Noise quality monitoring stations	15/11
3.2 (x)	Noise level status	16/11
3.3 (i)	Here of the Buffer zone	18/11
3.3 (ii)	There of the Buffer zone	24/11
3.4 (i)	Demographic Particulars	29/11
4.1	Noise impact	9/IV
4.2	Anticipated impact and mitigation measures for biological environment	10/IV
6.1	Monitoring Schedule and Parameters	4-5/VI
7.1	The risk acceptability criteria	5/VII
8.1	Employment detail	2/VIII
8.2	Corporate Environmental Responsibility (CER)	4/VIII

8.3	Budget for occupational health	4/VIII
9.1	Details of Greenbelt Scheme	5/IX
9.2	Budget Allotted for the Environmental Management Plan	6/IX
10.1	Geological Reserves	3/X
10.2	Mineable Reserves	3/X
10.3	Baseline Environmental Status	4/X
10.4	Anticipated impact and mitigation measures for biological environment	6/X

### LIST OF FIGURES

Fig. No.	TITLE OF FIGURE	Page No.
1.1	Location of the Project	5/1
1.2	10 km buffer map	6/1
3.1	Windrose diagram	4/11
3.2	Air Monitoring Locations Map	6/11
3.3	Ambient Air Quality sampling locations	6/11
3.4	Ground and Surface water sampling locations	9/11
3.5	Soil sampling near village Burjango	14/11
3.6	Noise quality monitoring Locations	16/11
6.1	Function of Environmental Management Cell	3/VI

**LIST OF ANNEXURES**

<b>S. No.</b>	<b>TITLE OF ANNEXURE</b>
I	Terms of reference(TOR)
II	LOI/Lease Document
III	Approved Mining Plan with Approval letter
IV	Forest NOC
V	500m Cluster
VI	DSR



*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-I: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.59 Ha.)*

*Chapter - I: Introduction*

**CHAPTER - I  
INTRODUCTION  
INDEX**

S. No.	CONTENTS	Page No.
1.0	PURPOSE OF THE REPORT	2/1
1.1	IDENTIFICATION OF PROJECT PROPONENT	2/1
1.2	BRIEF DESCRIPTION OF PROJECT	3/1
1.3	REGULATORY COMPLIANCES & APPLICABLE LAWS/REGULATIONS	6/1
1.4	SCOPE OF THE STUDY	6/1

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-II located at Village- Shamtoo, District - Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - I: Introduction*

## **1.0 Purpose of the report**

The purpose of the EIA studies is to ensure that all impacts whether direct or indirect and particularly environmental, social and economical impacts are fully examined and addressed.

Environmental Management plays a vital role in sustainable development of a country. Recognizing its importance, the Ministry of Environment and Forest, Government of India had formulated policies and procedures governing the industrial and other developmental activities to prevent indiscriminate exploitation of natural resources and to promote integration of environmental concern in project development.

The major objectives of the report are:

- To establish the present environmental scenario
- To anticipate the impact of proposed project and
- To suggest preventive and mitigative measures

The Ministry of Environment & Forest (MoEF&CC) has made obtaining prior Environmental Clearance (EC) for mining projects mandatory through its notification dated 14<sup>th</sup> September 2006 and its amendments till date. The present report has been prepared to obtain environmental clearance in compliance to the TOR issued for the mining of Gravel and Sand for lease measuring 46.50 hectares (Net Mineable Area 34.25 Ha) of Shamtoo Block I PKL BII (Khasra no- Killa No.- 55 min. 141 Min. 142, 143). Village: Shamtoo, District: Panchkula, Haryana. The proposed project comes under B1 category project as the project area is greater than 5 ha. This is a draft EIA prepared for public hearing purpose. The final EIA will be prepared after taking into consideration the points rose in the public hearing.

## **1.1 IDENTIFICATION OF PROJECT PROPONENT**

The mining lease has granted by the Department of Mines and Geology, Haryana to the applicant A/s Suresh Minerals, JS Height, Block A, Opp. Shivansh Mahindra Service Centre, Dhandha Road, Khapra, Dist. Durg vide letter no – DMG/HY/Cont./Shamtoo-I Block PKL B-II/2018/04 on dated 23.02.2018 for long term basis (9 years). The proposed project activity will be carried out in the bed of the river Dangri. Copy of letter is enclosed as **Annexure No. II.**

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-I: Block/P&I, B-11 located at Village- Shamtoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – I: Introduction*

**Name & Address of the lessee**

M/s Starx Minerals,  
Add: I.S Height, Block A,  
Opp. Shivansh Mahindra Service Centre,  
Dhamdha Road, Khapri, Dist. Durg

**1.2 BRIEF DESCRIPTION OF PROJECT**

The proponent has applied for mining lease in the name of Shamtoo-I Block Gravel and Sand mining over an area of 46.50 Hectare on river bed of Dangri river bed at Village- Shamtoo, District: Panchkula, Haryana. This is a minor mineral project for exploitation of river sand. The average production is proposed to be 4,00,000 TPA is the total production during the plan period. This sand would be mainly used for civil works in major projects and infrastructures development so as to meet the market potential.

IOR has been granted by MOEF&CC prescribed the Reference No: J-11015.33/2018-IA, II (M) dated 17-12-2018. The estimated cost of project is around Rs.6.09 Crores.

**Project Nature, Size & Location**

**Nature**

The proposed project is river bed Sand mining project.

**Size**

It has been proposed to collect approximately 4,00,000 TPA of river bed material annually. No mining activity will be undertaken during the monsoon season.

**Location**

The mining lease area is located in Village – Shamtoo, District – Panchkula, is on at Shamtoo Block I/P&I, B11 (Khasra no/ Killa No.- 55 min. 141 Min. 142, 143) of Dangri river covered in the Survey of India Topo Sheet No – E13K14 & H43L2 and is bounded between the Latitude - 30°37'42.00" N to 30°38'33.00" N and Longitude – 76°59'12.00" E to 76°59'24.3" E. (Location Map enclosed) and 10 km Buffer map is attached as Annexure IX.

**Site coordinates:**

**DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKI B-11 located at Village- Shantoo, District- Panchkula, Haryana (Lease area: 46.50 Ha.)**

Chapter - I: Introduction

No.	Latitude	Longitude
A	N 30°39'35"	E 76°59'18"
B	N 30°39'31"	E 76°59'15"
C	N 30°39'27"	E 76°59'12"
D	N 30°39'23"	E 76°59'09"
E	N 30°38'29"	E 76°58'31.5"
F	N 30°38'19.7"	E 76°58'29.1"
G	N 30°38'19"	E 76°58'28.5"
H	N 30°38'17"	E 76°58'24.5"
I	N 30°38'15"	E 76°58'24.5"
J	N 30°38'27"	E 76°59'29.2"
K	N 30°38'59.2"	E 76°59'36.7"
L	N 30°38'11"	E 76°58'21.9"
M	N 30°38'00"	E 76°58'21.8"
N	N 30°38'54"	E 76°59'21.8"
O	N 30°38'50"	E 76°59'23.3"
P	N 30°38'47"	E 76°59'24.7"
Q	N 30°38'42"	E 76°59'24.1"
R	N 30°38'42"	E 76°59'25.0"
S	N 30°38'18"	E 76°59'12.9"
T	N 30°38'30"	E 76°59'13.0"
U	N 30°38'26"	E 76°59'11.5"
V	N 30°38'46"	E 76°59'15.1"
W	N 30°38'01"	E 76°59'11.2"
X	N 30°38'27"	E 76°59'17.2"
Y	N 30°38'20"	E 76°59'14.2"
Z	N 30°38'17"	E 76°59'14.1"
A1	N 30°38'12"	E 76°59'19.2"
A2	N 30°38'19"	E 76°59'19.7"
A3	N 30°38'21"	E 76°59'18.4"
A4	N 30°38'27"	E 76°59'18.9"
A5	N 30°38'31"	E 76°59'19.7"

**Site connectivity:**

**Nearest Railway Station:** Ghughar Railway Station is approx. 13.64 km towards SW direction.

**Nearest Airport:** Chandigarh Airport is approx. 19.43 km towards W direction.

**Nearest Highway:** NH-73 is approx. 4.51 km in SW direction.

**Interstate Boundary:** Haryana and Punjab Interstate boundary is 8Km SW Direction.

**Ecological Sensitive Areas (National Park, Wild Life Sanctuary, Biosphere Reserve, Reserve/ Protected Forest etc.) within 10 km distance:** List of Wild life sanctuary Reserve/ Protected Forest is given below:

1. Kharli Raiata: Wild Life sanctuary is 2.41 Km. NW Direction.
2. Dharti Protected Forest is 8.5 Km. NE Direction
3. Palasara Protected Forest is 7 Km. NE Direction
4. Paonta Protected Forest is 7.2 Km. NNE Direction
5. Kadana Protected Forest is 8.5 Km. E Direction
6. Rajpura Protected Forest is 9.5 Km. E Direction

DEIA report of RHM of Minor Mineral (Gravel and Sand) at Shamtau-1: Block/PKL B-11 located at Village- Shamtau, District – Panchkula, Haryana (Lease area: 46.50 Ha.)

Chapter - I: Introduction

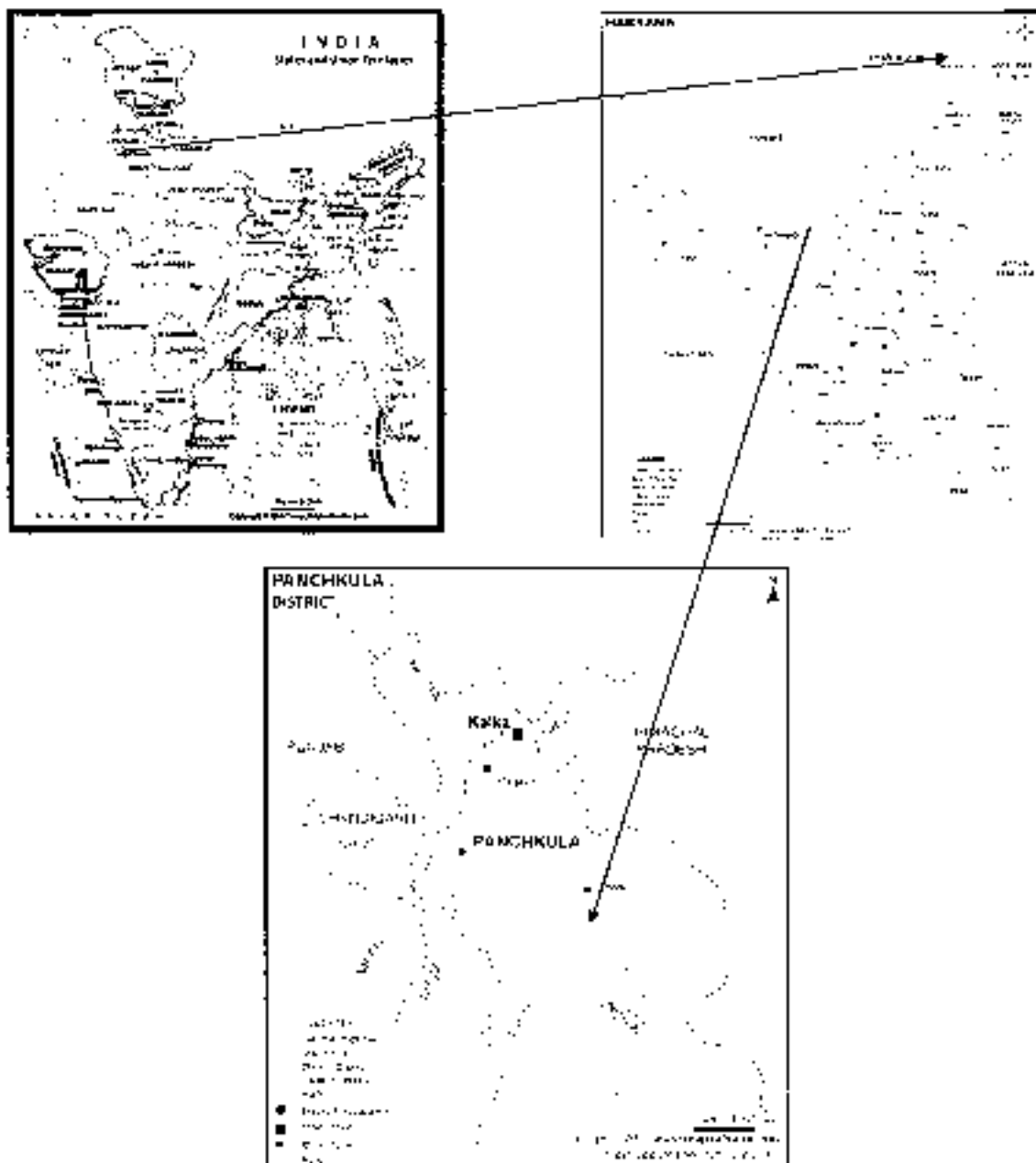
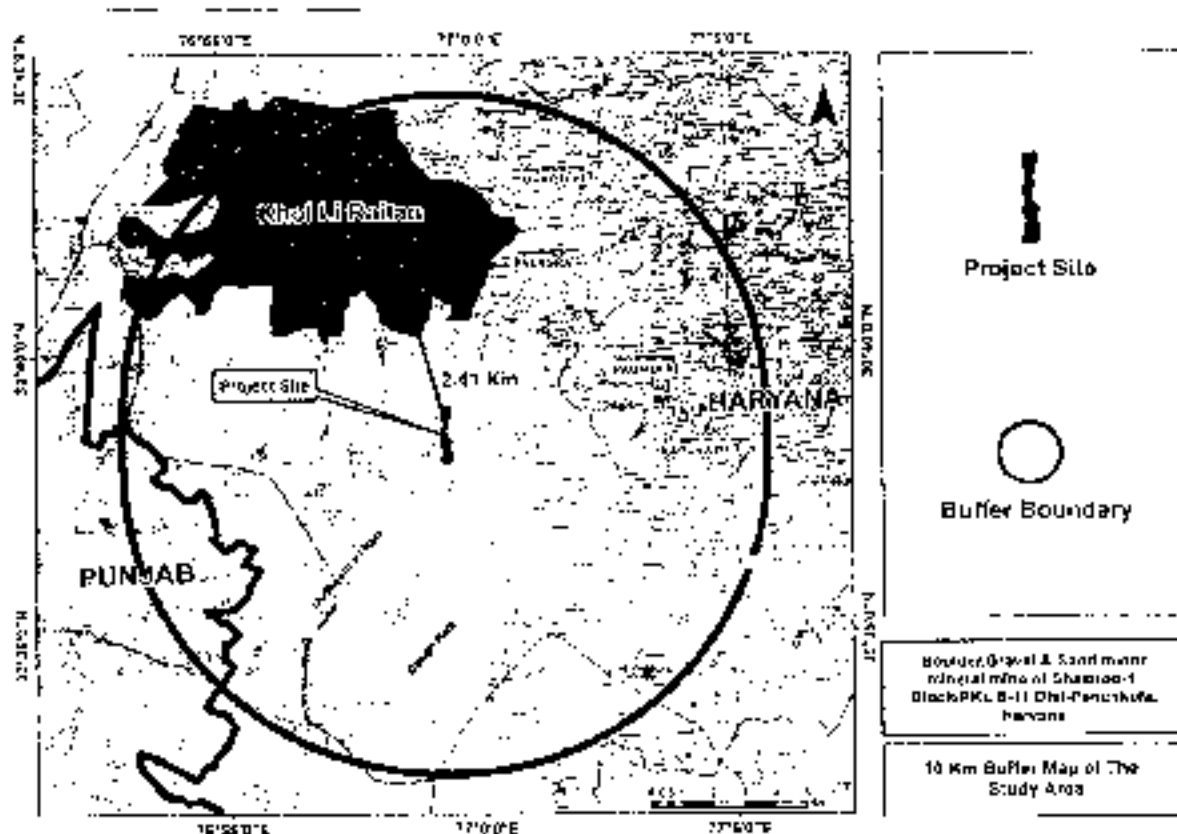


Figure-1.1 Location of the Project

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - 1: Introduction*



**Fig.1.2 10 km Buffer Map of Study Area**

#### **Project's importance to the country and the region**

This project operation will provide employment to the people residing in vicinity as about 268 man days will be generated annually and approximately 60 people may be benefited directly and indirectly by the project.

The project involves collection of river bed material, thus it is expected that the proposed mining project would improve the supply of construction materials like *Sand*, making a positive impact on the infrastructural projects like construction of roads, buildings, bridges etc in the state.

The river carry sediments along with it and depositing of the sediments takes place constantly at a specific point, where they eventually results in formation of Sand. This Sand extremely influences on the river flow, obstruct navigation and cause flooding. The present project will thus ensure scraping of such Sand and prevent flooding.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - 1: Introduction*

### 1.3 REGULATORY COMPLIANCES & APPLICABLE LAWS/REGULATIONS

- a) There is no legal case against the project and project proponent.
- b) There is no national park / Sanctuary notified under the Wildlife Protection Act in the study area.

### 1.4 SCOPE OF THE STUDY

The Expert Appraisal Committee (EAC) for mining projects considered the project during its meeting. Based on the information contained in the documents submitted and the presentation made, the MOEF&CC prescribed the Reference No: J-11015-33/2018-EA, II (M) dated 17-12-2018. The points rose by the SEIAA, Haryana in the TOR and its compliance are as under:-

**Table 1.1: Point Wise Compliance for TOR**

#### Standard TOR

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 fresh LOI. Mine is yet to be opened. It will open only after getting environmental clearance.
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 LOI is attached as <i>Annexure-II</i> .
3.	All documents including approved mine plan, EIA report 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	The EIA report is prepared on the basis of information given in the approved mine plan and supportive documents like letter of Intent, 500 m Certificate etc. Copy of approved mining plan is attached as <i>Annexure- III</i> . Copy of 500m certificate is attached as

*D/EIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKI, B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - 1: Introduction*

	name of lessee.	<i>Annexure IV &amp; LOI is attached as Annexure II.</i>
4.	All corner coordinates of the mine lease area, superimposed on 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)	The corner co-ordinates of the mine lease area superimposed on High Resolution Imagery: toposheet are shown in Figure 2.1.
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 at the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics	Information has been provided in survey of India Topo-Sheet as 1:50,000 as figure 1.2 of Chapter-1.
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.	Detail of land proposed for mining activities has been given in chapter 2 Present mining conforms to the land use policy of the State. There is no land diversion has been proposed.
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	The environment policy prescribed for standard operating process to bring into focus any violation, deviation of the environment and forest norms/conditions that the company operations will implement operational and risk management practices that provide for maximum protection of people and the



*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamou-1: Block/PKI B-11 located at Village- Shamou, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – 1: Introduction*

	<p>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>	<p>environment. Corporate Environment policy is attached as <b>Annexure VII</b>.</p>
8.	<p>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.</p>	<p>Issue related to mine safety has been given in of chapter 7.</p>
9.	<p>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.</p>	<p>The EIA study has been carried out in the 10 km radius zone from the periphery of MF area. All the data so generated have been incorporated in EIA/EMP report. No waste will be generated at site. A map showing study area of 10km radius has been given in Figure 1.2. of Chapter 1</p>

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKI, B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.59 Ha.)*

*(Chapter - I: Introduction)*

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.	There is no overburden outside the mine lease area.
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	There is no forest land involved in the ML area.

*DEIA report of RRM of Minor Mineral (Gravel and Sand) at Shamton-1: Block/PKL B-11 located at Village- Shamton, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – I: Introduction*

Committees.		
13.	<p>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.</p>	<p>There is no forest land involved hence this point is not applicable.</p>
14.	<p>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.</p>	<p>This project does not attract the recognition of forest right.</p>
15.	<p>The vegetation in the RE - PF areas in the study area, with necessary details, should be given.</p>	<p>The flora and fauna details of the buffer zone are given in section 3.4 of chapter 3.</p>
16.	<p>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.</p>	<p>A study has been done to ascertain the impact of the mining project on wild life. Details of mitigation measures have been given in chapter 4.</p>
17.	<p>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</p>	<p>There is National Parks, Biosphere Reserves, Wildlife Corridors, Ramsar site, Tiger, Elephant Reserves (existing as well as proposed), if any, within 10 km of the mine lease area. Detail has been given in chapter ..</p>

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter 1: Introduction*

	<p>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.</p>	
18.	<p>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 RFT 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 along with 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.</p>	<p>No flora or fauna species are found in the core zone.</p> <p>The species found in the study area are detailed under of Chapter 5</p>
19.	<p>Proximity to Areas Declared as 'Critical y Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where se</p>	<p>Proposed project does not come under critically polluted area.</p>

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKI B-11 located at Village- Shantoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - I: Introduction*

	<p>required clearance certifications from the prescribed Authorities, such as the SPCD or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered</p>	
20.	<p>Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LIL, HIL, 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).</p>	<p>There is no LIL, HIL, CRZ area involved in this project.</p>
21.	<p>R&amp;R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&amp;R Plan, the relevant State/National Rehabilitation &amp; 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</p>	<p>There is no R &amp; R involved in this project.</p>

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKI B-II located at Village- Shamtoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter 1: Introduction*

	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.	<p>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.</p>	<p>Baseline study has been generated for post monsoon season, October to December 2020. Primary baseline data on ambient air quality is given in Section 3.3 (I) of Chapter 3</p> <p>Water quality is given in Section 3.3 (II) of Chapter 3.</p> <p>Noise level is given in Section 3.3 (IV) of Chapter 3. Soil characteristics is given in section 3.3 (III) of Chapter 3</p> <p>Details of flora and fauna are given in Section 3.4 of Chapter 3.</p>
23.	<p>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.</p>	<p>Details of Air Quality Modeling carried out for air quality of the area have been incorporated in Chapter 4.</p>

DEIA report of RBM of Minor Mineral (Gravel and Sandy) at Shantoo-1: Block/PKI. R-11 located at Village- Shantoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)

Chapter 1: Introduction

	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.	
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.	Total water requirement of the proposed project is 6.60 KLD. Detail of water requirement is given in table 2.5 of chapter 2.
25.	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided	NOC from gram Panchayat will be obtained prior to mining activities.
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.	As the proposed project is on dry part of the river bed no rainwater harvesting is proposed.
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.	As the proposed project is on dry part of the river bed mining will not intercept the ground water table.  The detailed impact and control measure with the quality of water in the surrounding area is discussed under Section 4.2 of Chapter 4.
28.	Based on actual monitored data, it may	Existing R level of river varies from 538.50 to

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtau-1: Block/PK1, B-11 located at Village- Shamtau, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter 1: Introduction*

	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.	336.65 msl. Working bottom level of river varies from 335.50 to 335.65 msl. The detailed impact and control measure w.r.t the quality of water in the surrounding area is discussed under Section 4.2 of Chapter 4. No hydrological study is required
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.	No diversion is proposed.
30.	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSI, and hgt. A schematic diagram may also be provided for the same	Working bottom level of river varies from 335.50 to 335.65 msl.  Details have been given at chapter 2.
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.	A time bound Progressive Greenbelt Development Plan has been given in table 9.4 of chapter 9.



*DEIA report of RMM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PA1, B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter 1: Introduction*

	<p>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>	
32.	<p>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.</p>	<p>Impact on local transport has been given in of Chapter 2.</p>
33.	<p>Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.</p>	<p>Infrastructure facilities to be provided for the mine workers are as under:-</p> <p>i. Rest shelter- rest room.</p>

DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-11 located at Village- Shamtoo, District -- Panchkula, Haryana (Lease area: 46.50 Ha.)

Chapter - 1: Introduction

		<ul style="list-style-type: none"> <li>ii. Separate facility for female and male workers.</li> <li>iii. First aid room.</li> <li>iv. Training center.</li> <li>v. Canteen facilities.</li> </ul>
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.	Conceptual plans and sections are given in Figure 2.3 of Chapter 2
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.	Detail of occupational and safety has been given at section 8.7 of chapter 8.
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.	Detail of public health has been given in chapter 8.
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	Socio economic significance and influence to the local community proposed to be provided by the Project Proponent has been given

*DEIA report of RBM of Minor Mineral (Gravel) and Sand at Shantoo-1: Block/PKJ, B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – I: Introduction*

	possible. quantitative dimensions may be given with time frames for implementation.	section 3.5 of chapter 3.
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.	Detailed Environmental Management Plan is discussed under Chapter 9 of EIA report.
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.	This is draft EIA. Public hearing is to be conducted. Details regarding the same have been provided in Chapter 7 of the EIA/EMP report.
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.	There is no litigation pending against the project.
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.	Cost of the project is 6.09 Crore Capital cost of EMP is INR 3.00 Lakhs Recurring cost of the EMP is INR 4.30 Lakhs
42.	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	A disaster management plan has been prepared and given in chapter 7 of the EIA report

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - 1- Introduction*

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.	Details of project benefits have been given in chapter 8
44.	<b>Besides the above, the below mentioned general points are also to be followed:-</b>	
a.	Executive summary of the EIA/EEMP Report	Executive summary is attached with the EIA-EEMP Report
b.	All the documents to be properly referenced with index and continuous page numbering.	Complied.
c.	Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated	Complied.
d.	The 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	Complied

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtau-1: Block/PKI, B-11 located at Village- Shamtau, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter 1: Introduction*

c.	Where the documents provided are in language other than English, an English translation should be provided.	Agreed. Will be Complied.
f.	The Questionnaire for environment appraisal of mining projects as devised earlier by the ministry shall also be filled and submitted.	Questionnaire will attached with the EIA/EMP Report
g.	While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF&CC vide O.M. No J-1101341-2006-IA.15 dt dated 4th August, 2009.	Complied.
h.	Changes, if any made in the basic scope the 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	Agreed

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1; Block/P&L B-11 located at Village- Shamtoo, District -- Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – I: Introduction*

	<p>changes in structure and content of the Draft EIA/EMP (other than modification arising out of the P.E.L. process) Will entail conducting the PII again with the revised documentation.</p>	
i.	<p>As per the circular no J 11011/518/2010-IA.II(I) dated 30.5.2012 certified report of the status 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.</p>	<p>This is new case for Mining.</p>
j.	<p>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</p>	<p>Compiled With EIA report.</p>

*DEIA report of RMM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-II located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - I Introduction*

external dumps, if any, clearly showing the land features of the adjoining area.	
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#### **Additional TOR**

**The committee discussed the matter in the light of MOEFCC Notification and recommended to issue the Terms Of Reference (TOR) for the preparation of EIA report.**

<b>S no.</b>	<b>Conditions</b>	<b>Reply</b>
45.	A Sub-Divisional Committee comprising of Sub-Divisional Magistrate, Officers from Irrigation department, State Pollution Control Board or Committee, Forest department, Geology or mining officer recommendation on suitability of site for mining or prohibition thereof after (a) identification of the areas of aggradations or deposition where mining can be allowed; (b) identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited; (c) verify the mining lease boundary; (d) verify the area of the mining lease; (e) suggest the route for transportation of the mineral so that to cause minimum impact on the nearby habitation & agricultural fields; (f) identify the safety zone/restricted area and the area that can be consider for mining after excluding the area as per recommendation	Will be Complied.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter 1: Introduction*

46.	<p>of EAC, after considering the other restrictions mentioned in the Sustainable Sand Mining Management Guidelines 2016, S.O. 141(E) dated 15.01.2016, Letter of Intent &amp; District Survey Report: (g) finalize the specific gravity of the material to be mined by the mining lease holders. (h) proposed location for the installation weigh bridge; (i) verification of the initial level of the mining lease already collected by the PP; (j) verification of the baseline air quality data collected by the PP and any other point to be considered for the protection environment and health of the nearby habitation. Recommendation of the Committee needs to be annexed with EIA/EMP Report</p> <p>EIA/EMP report should be prepared for the entire duster.</p>	Complied
47.	The Replenishment Study needs to be conducted by an authorized agency and report of the same needs to be submitted.	Replenishment report will be submitted with the Final EIA report.
48.	<p>High Powered Committee was constituted under the orders of Hon'ble NGT, headed by Secretary, MOEF&amp;CC, which has given its report dated September, 2016</p> <p>The PP needs to submit the details that how the PP will comply with the recommendation of the Committee</p>	Will be complied.
49.	The Proponent should collect the baseline	Complied



*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1; Block/PK1, B-11 located at Village- Shamtoo, District- Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter 1: Introduction*

data in respect of initial level of the mining lease. For this permanent bench marks (BM) needs to be established at prominent location preferably close to mining leases in question and should have precisely known relationship to the level datum of the area, typically mean sea level. The entire mining lease should be divided suitably in the grids of 25 Meter x 25 Meters with the help of sections across the width of river and along the direction of flow of the river. The levels (MSL & RL) of the corner point of each grid need to be recorded. Each Grid should be suitably numbered for identification. PP should identify grids which will be worked out and grids which will come under no mining zone i.e. safety barriers from the river bank, safety barrier in lease boundary, restrictions as per condition of Lal/Mining Lease deed, restriction as Mineral Concession Rule of the Concerned State, restrictions as per sustainable sand mining management guidelines 2016, restriction as per DSR etc. The PP should ascertain the level of the river bed with the help of sections drawn across the width of the rivers and along the direction of flow of the river and based on this define the depth of mining of each grid. The PP should provide in tabular format the details of the grid viz wise material availability.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shanton-1: Block/PKL R-11 located at Village- Shanton, District - Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - 1. Introduction*

	<p>dimension of grid, location of grid (latitude, longitude, MSL and level from outside ground level of the corner points), average level of grid (AMSL and R.L), depth of mining in each grid, area, volume, grids under mining zone and those left under no mining zone etc. The PP should submit surveyed data so collected in the excel or CSV file so that the same can be readily used for verification in CAD or Database Software. In addition to this soft &amp; hard copy of all the plans &amp; section needs to be submitted.</p>	
50.	<p>PP should suitably name each section line. Section Plan for both sections drawn across the river and along the direction of the river needs to be submitted. Each Section should have level on vertical axis and distance from the bank of river on horizontal axis. For the section along the direction of the river the levels to be shown on vertical axis and distance from upstream to downstream should be shown on horizontal axis.</p>	Will be complied
51.	<p>The PP should prepare the Mining Plan based on the above survey. The information sought above needs to be a part of the mining plan. In the mining plan year wise production plan should be prepared in three plates for each year. Plat-</p>	Has been complied

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtau-1: Block-PKI, B-11 located at Village- Shamtau, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

Chapter 1: Introduction

	<p>1 show the mine working for the pre-monsoon period (1<sup>st</sup> APR- 30th June). Plate 2 should for the period (1<sup>st</sup>July-15 Sep) as the mining lease area needs to be left for the replenishment of the river bed mineral and no mining should be proposed in this period and plat-3 show the mine working after replenishment of the river bed i.e post monsoon period (16<sup>th</sup> Sep-31<sup>st</sup> March). The period of monsoon may also be defined in consultation with State Government.</p>	
52.	<p>PP should specifically mention in the mining plan that in the subsequent scheme of mining/review of mining plan, the year wise data pertaining to replenishment study (all five years) shall be provided which include the level (AMSL &amp; RL) of river bed recorded before and after the monsoon, year wise replenishment quantity, all plan &amp; sections of the replenishment study for the past five years.</p>	Agreed
53.	<p>PP should also submit an undertaking to the effect that each year after the replenishment study the plan &amp; section shall be submitted to concerned Department of Mining &amp; Geology of the State for verification and official record.</p>	Agreed
54.	<p>PP should submit an undertaking by way of affidavit as required as per Ministry's O.M No 3- 50/2017 -IA, RMJ dated</p>	Will be Complied

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PK1, B-II located at Village- Shantoo, District Patthkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - 1. Introduction*

55.	<p>30.05.2018 to comply with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Corruption Case versus Union of India and Ors.</p> <p>PP should include in EIA Report details of all the statutory clearances, permissions, No objection certificates, consents etc. required for this project under various Acts, Rules and regulations and their status or estimated timeline after grant of EC.</p>	Will be Complied
56.	<p>The PP should submit the revenue plan, revenue plan superimposed on the satellite Imaginary clearly demarcate the Govt. land, private land, agricultural land</p>	Will be Complied
57.	<p>The PP should clearly bring out the protective and mitigative measures to be taken for the nearby habitation and religious structures in line with the Ministry's O.M. No Z- 1101.3/57/2014-IA, II (M) dated 28.10.2014</p>	Detail has been given in chapter 4 (Affected Environment Impact and Mitigation measures)
58.	<p>The PP should submit the detailed plan in tabular format (year-wise for life of mine) for afforestation and green belt development in and around the mining lease. The PP should submit the number of saplings to be planted, area to be covered under afforestation &amp; green belt, location</p>	Data has been given in Chapter 8.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKI B-11 located at Village- Shamtoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter 1: Introduction*

	<p>of plantation, target for survival rate and budget earmarked for the afforestation &amp; green belt development. In addition to this PP should show on a surface plan (5 year interval for life of mine) of suitable scale the area to be covered under afforestation &amp; green belt clearly mentioning the latitude and longitude of the area to be covered during each 5 years.</p>	
59.	<p>The PP should submit the quantity of surface or ground water to be used for this project. The complete water balance cycle need to be submitted. In addition to this PP should submit a detailed plan for rain water harvesting measures to be taken. The PP should submit the year wise target for reduction in consumption of ground water by developing alternative source of water through rain water harvesting measures. The capital and recurring expenditure to be incurred needs to be submitted.</p>	<p>Water calculation has been given in Chapter 2, section 2.6.4.</p>
60.	<p>The PP should clearly bring out the details of the manpower to be engaged for this project with their roles/responsibilities/designations. In addition to this PP should mention the number and designation of person to be engaged for implementation of environmental management plan (EMPI).</p>	<p>Manpower Detail has been given in chapter 2, section 2.6.4</p>
61.	<p>The PP should submit the year-wise.</p>	<p>Year wise Environment Management plan has</p>

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-I: Block/PKI, B-II located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter 1: Introduction*

	activity wise and time bound budget earmarked for EMP, occupational health surveillance & Corporate Environmental Responsibility needs to be submitted.	been given in Chapter 9.
62.	PP should submit the measures to be adopted for prevention of illegal mining and pilferage of mineral.	Will be complied
63.	PP should submit the detailed mineralogical and chemical composition of the mineral and percentage of free silica from a NABL/MOEF & CC accredited laboratory.	Detail has been given in Chapter 3.
64.	PP should clearly show the transport route of the mineral and protection and mitigative measure to be adopted while transportation of the mineral. The impact from the center line of the road on either side should be clearly brought out supported with the line source modeling and isopleth. Further, frequency of testing of Poly Aromatic Hydrocarbon needs to be submitted along with budget. Based on the above study the compensation to be paid in the event of damage to the crop and land on the either side of the road needs to be mentioned.	Detail has been given in Chapter 2 and Chapter 4.
65.	PP should clearly bring out that what is the specific diesel consumption and steps to be taken for reduction of the same. Year-wise target for reduction in the specific	Will be complied

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantou-1; Block/Pk1, R-11 located at Village- Shantou, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter 1: Introduction*

	diesel consumption needs to be submitted.	
66.	PP should bring out the awareness campaign to be carried out on various environmental issues, practical training facility to be provided to the environmental engineers/diploma holders, mining engineers/diploma holders, geologists, and other trades related to mining operations. Target for the same needs to be submitted.	This will be complied.
67.	PP should specifically mention in the mining plan that the method of mining should be as proposed by EAC i.e. by use only Scrapers for mining to ensure that the mining depth be maintained as 1.0 meters. No other heavy machinery like bucket excavators, back-hoe, shovel, JCB machines etc. shall not be used for excavation/digging.	Will be complied.
68.	The safeguards which are suggested in sustainable sand mining guidelines as well as notification dated 15.01.2016 ought to be scrupulously followed and taken into consideration while preparing EIA/EMP Report	Complied
69.	The Project Proponent shall apply for NBWL Clearance for the project, if applicable, as per Office Memorandum/Guidelines issued by MOLE&CC in this regard from time to	Not Applicable.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1; Block/PKL B-11 located at Village- Shantoo, District - Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - 1. Introduction*

	time.	
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*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtao-1: Block/PKL B-11  
located at Village- Shamtao, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – II: Project Description*

**CHAPTER -II  
PROJECT DESCRIPTION**

**INDEX**

<b>S. No.</b>	<b>CONTENTS</b>	<b>Page No.</b>
<b>2.0</b>	<b>GENERAL</b>	<b>2/11</b>
<b>2.1</b>	<b>DESCRIPTION OF THE PROJECT</b>	<b>2/11</b>
<b>2.2</b>	<b>LEASE HOLD AREA</b>	<b>3/11</b>
<b>2.3</b>	<b>GEOLOGY</b>	<b>4/11</b>
<b>2.4</b>	<b>RESERVES</b>	<b>6/11</b>
<b>2.5</b>	<b>MINING</b>	<b>7/11</b>
<b>2.6</b>	<b>GENERAL FEATURES</b>	<b>10/11</b>

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – II: Project Description*

## **2.0 GENERAL**

The Environmental Impact Assessment report has been prepared in terms of EIA notification of the MoEF dated 14-9-2006, (amended till date) and the EIA Guideline Manual for Mining of Minerals (Feb. 2010) of MoEF&CC, Govt. of India, for seeking environmental clearance for mining in the existing area of ordinary Sand mining lease measuring 46.50 hectares falling under category “B”.

### **Name & Address of the lessee-**

M/s Starex Minerals.

Add: JS Height, Block A.

Opp. Saivansh Mahindra Service Centre.

Dhandha Road, Khapri, Dist: Durg.

## **2.1 DESCRIPTION OF THE PROJECT**

The Shantoo-1 Block Gravel and Sand mining lies on river bed of Dangri river and the estimated project cost is Rs. 6.09 Crores. The proponent has applied for mining lease in the name of M/s Starex Minerals for Shantoo-1 Block Gravel and Sand mining Project over an area of 46.50 Hectare at Village: Shantoo, District: Panchkula, Haryana is a minor mineral project for exploitation of river sand. The average production is proposed to be 4,00,000 TPA is the total production during the plan period. This sand would be mainly used for civil works in major projects and infrastructures development so as to meet the market potential.

### **2.1.1 NEED FOR THE PROJECT**

Sand is used in almost any type of construction activity. It is also the most important input in domestic activity. Further, the material can also be used for non-industrial purposes. Thus, in current times, where the focus of the governments is an improvement of basic infrastructure like roads, railways, dams and other social infrastructure – both in rural and urban areas, there is a constant need for ensuring regular supply of these minor minerals.

### **2.1.2 LOCATION DETAILS**

The mine lease area is located in Village: Shantoo, District: Panchkula, Haryana, is an Khasra no/ Killa No - 55 min. 141 Min. 142, 143 of Dangri river covered in the Survey of India Topo Sheet

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamoo-1: Block/PKL B-11 located at Village- Shamoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – II: Project Description*

No – 1143K 14 & H31 2 and is bounded between the Latitude - 30°37'42.00" N to 30°38'13.00" N and Longitude - 76°59'12.00" E to 76°59'34.2" E.

**Site coordinates:**

No.	Latitude	Longitude
A	N 30°38'13"	E 76°59'18.2"
B	N 30°38'53"	E 76°59'31.85"
C	N 30°38'51"	E 76°59'32"
D	N 30°38'51"	E 76°59'34.3"
E	N 30°38'29"	E 76°59'11.5"
F	N 30°38'19.7"	E 76°59'39.4"
G	N 30°38'36"	E 76°59'26.95"
H	N 30°38'14"	E 76°58'24.5"
I	N 30°38'1.5"	E 76°58'54.4"
J	N 30°38'2.5"	E 76°59'29.2"
K	N 30°38'59.2"	E 76°59'26.7"
L	N 30°38'11"	E 76°58'53.3"
M	N 30°38'50"	E 76°58'21.8"
N	N 30°38'51"	E 76°59'21.4"
O	N 30°38'53"	E 76°59'29.2"
P	N 30°38'44"	E 76°59'29.2"
Q	N 30°38'42"	E 76°59'30.7"
R	N 30°38'42"	E 76°59'33.6"
S	N 30°38'48"	E 76°59'33.9"
T	N 30°38'50"	E 76°59'37.9"
U	N 30°38'58"	E 76°59'44.5"
V	N 30°38'58"	E 76°59'45.1"
W	N 30°38'01"	E 76°59'12"
X	N 30°38'5.5"	E 76°59'17.2"
Y	N 30°38'9"	E 76°59'11.7"
Z	N 30°38'11"	E 76°59'14.7"
A1	N 30°38'16"	E 76°59'11.2"
A2	N 30°38'19"	E 76°59'19.7"
A3	N 30°38'21"	E 76°59'18.4"
A4	N 30°38'27"	E 76°59'18.4"
A5	N 30°38'31"	E 76°59'19.1"

**2.2 LEASE HOLD AREA**

The entire lease hold area of 46.50 ha lies in the river bed of Dangri River. The breakup of the land use for ancillary feature around the mining area is given below

S. No.	Type of Land use	Present Land use (Ha.)	At the end of 5 <sup>th</sup> Year (ha.)
1	Pit Area	0.00	0.00
2	Dump Area	0.00	0.00
3	Safety Zone	12.25	12.25

*DEIA report of REM of Minor Mineral (Gravel and Sand) at Shuntou 1: Block/PK1, B-11 located at Village- Shuntou, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter II: Project Description*

4	Infrastructure (Office, Temp. shelter etc) in restricted zone	0.00	0.00
5	Mineral Storage	0.00	0.00
6	Plantation	0.00	5.00
7	Un-worked	34.25	0.00
8	Naturally reclaimed area	-	34.25
<b>Total lease area</b>		<b>46.50</b>	<b>46.50</b>

### 2.3 GEOLOGY

Sand is a sedimentary material; loose grains of worn out and disintegrated rocks. Sand is a naturally occurring fragmented material comprised of tiny particles of decomposed rocks. Majority of sand comes from chemical and mechanical and mechanical breakdown (weathering) of bedrocks. Formation and composition of sand depends largely on the source material. At initial stage sand particles are usually angular and sharply pointed, but gradually they grow smaller and rounded due to wear and tear by the wind or water. Sand is mostly composed of quartz which is the most common material found in sand or possibly some amounts of feldspar, fragments of igneous, and fragments of igneous, an fragments of metamorphic rocks. The composition of sand varies, depending on the local rock sources and conditions, but the most common constituent of sand in inland continental setting and non-tropical coastal settings is silica. Sand particles tend to settle quite rapidly because of their shape, density and size. Therefore, the concentration of sand is more near the bed.

#### REGIONAL GEOLOGY:

The North - Eastern and Central part of Haryana is predominantly characterized by sedimentary lithology in the Sub-Himalayan zone comprising Subathus, Deghatis, Kasautis and Siwalikas.

#### Local Geology:

The litho units encountered in the riverbed and surrounding areas belongs to the Siwalik 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 Siwalik Super group and are a mixture of boulders, pebbles, sand, silt and clay. The following sequences have been observed in the area.

Soil-Alluvium

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamloo-1; Block/PKI. B-11 located at Village- Shamloo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – II: Project Description*

Sand

Gravel

Boulder

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 Siwalik Super- Group. The mineral Boulders, Gravel and sand have formed by weathering of rocks and then deposition on the flood plains of the rivers originated from the Siwaliks. These have been washed by rainwater during rainy season and deposited in river bed in the form of boulders, gravels and 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 2-4m constitute the top horizons in the area deposited in the flood plains outside the river is suitable for agriculture. Dangri River meanders through the area exposing the alluvium and soil at the banks. Boulder, gravel & sand is found in the river bed. Thickness of Boulder, gravel & sand is more than 10meters. This bed is presently dry and water flows only during the rainy season. The Sand exposed in the River bed of Dangri and surrounding areas is the product of the deposition of the sediments brought and deposited in the flood plains of River Dangri and Bagna. These sediments are of recent geological formation.

#### **2.4 METHOD OF ESTIMATION OF RESERVE:**

Conventionally the boulder, gravel and river sand mining is carried out manually but in the present case semi- mechanized mining with simultaneous reclamation and pollution free mining method shall be adopted. Boulder, Gravel & Sand used for construction industry is available all along the Dangri River bed.

##### **2.4.1 GEOLOGICAL RESERVES:**

The reserve of sand in the leasehold area has been calculated by surface area method. The total surface area of the lease area has been multiplied with the average thickness of the sand within the lease area to get the total volume of geological reserve of sand in cubic meter. The surface area of the mineable reserve has been considered excluding the safety zone area. The thickness of the sand bed is the same as the thickness taken for the geological reserve.

The Geological reserve is given in Table No. 2.1:

DEIA report of RBM of Minor Mineral (Gravel and Sand) at Skantoo-1: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)

Chapter – II: Project Description

Table No. 2.1: Geological reserve

Lease area in Ha.	Total geological reserve MT= Area * depth * BD (A)	Proved reserve	Blocked area of 50m strip after each km, 25% blocked in river banks, lease boundary etc = ha.	Blocked reserve MT	Geological reserve MT
46.50	25,38,900		12.25	6,68,850	

#### 2.4.2 MINEABLE RESERVE:

The mineable reserve has been calculated by considering 7.5m from the lease boundary. The mineable reserve is given in Table No. 2.2.

Table No. 2.2: Mineable Reserves

Lease area in Ha.	Total geological reserve MT= Area * depth * BD (A)	Blocked area of 50m strip after each km, 25% blocked in river banks, lease boundary etc = ha.	Blocked Geological reserve MT	Total Mineable Reserve in Blocked area MT	Mineable Reserve (Per Year)
46.50	25,38,900	12.25	6,68,850	18,70,050	4,00,000

The resource has been estimated based on the present condition of the deposit. The resource may change after the rainy season. Therefore, the resource may re-assessed after rainy season, if required.

## 2.5 MINING

### 2.5.1 Proposed method of mining

Sand will be excavated from Skantoo 1: Block/PKL B-11 Sand Quarry which lies on river bed of Bangal river. The river sand deposits are derived from hard rock due to weathering, erosion and long-term transportation. Size of the sand grain is small and shape is mostly rounded because of long transportation from the source. These deposits are renewable unlike other mineral deposits. It is mostly difficult to assess the deposit of a specific stretch with certainty every year as sand gets deposited in various patches along the river course. Unlike other mineral resources sand is formed and gets deposited through physical action. However, the assessment has been made based on

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-I: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – II: Project Description*

prevailing surface conditions. Based on the surface exposures, the updated geological reserves as well as mineable reserve have been estimated in the entire lease area.

### 2.5.2 Production detail

The sand will be excavated by open cast semi mechanized method and by manual method also. Since the depth of sand deposit is 1m, excavator, handpicks, spade, hand shovel will be used by laborers for extracting & loading of sand. Keeping in view of the market demand and resource availability in respect of reserves, proposed sand quarry is scheduled to produce @ 4,00,000 cum/year (maximum) for the plan period as per the following table:

**Table No.2.3, Year wise Production detail**

Year	Production (Tonnes)
1 <sup>st</sup> Year	4,00,000
2 <sup>nd</sup> Year	4,00,000
3 <sup>rd</sup> Year	4,00,000
4 <sup>th</sup> Year	4,00,000
5 <sup>th</sup> Year	4,00,000
<b>Total</b>	<b>20,00,000</b>

The proposed mined out areas will gradually get filled up by river sands transported with water from upstream direction. Quarry floor level at the end of the lease period will be 338.50 m sl.

### 2.5.3 Conceptual mine development

It is a river bed deposit and mined out area shall be replenished each year during monsoon period and depth of quarry shall be filled back by river Sand/gravel each year.

### 2.5.4 Anticipated life of mine

It is a river bed deposit and mined out area shall be replenished each year during monsoon period and depth of quarry shall be filled back by river Sand each year. Therefore it is not practically forecast the anticipated life of mine.

### 2.5.5 Waste Management

The area is devoid of soil cover, therefore generation of top soil shall be nil. All quantities of Sand to be exploited shall be saleable. Therefore no question arises for waste management.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKI, B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter -- II: Project Description*

## 2.6 GENERAL FEATURES

### 2.6.1 Topography

The topography of the area is a flat terrain which lies at an elevation of more than 2m from the level of flow of water. The gradient of flow of water in the river is gentle. Existing B level of river varies from 338.50 to 336.65 msl. Working bottom level of river varies from 335.50 to 335.65 msl.

### 2.6.2 Surface Drainage Pattern

The lease area here is a river sand quarry. Drainage system in the region is dendritic. General flow direction of Dangri river is from North to South. Work will continue only during summer months when there is no water in the leasehold. Mining will be restricted to a depth above the ground water level.

### 2.6.3 Vehicular Traffic Density

Traffic analysis is carried out by understanding the existing carrying capacity of the roads near to the project site and the connecting main roads in the area. Then depending on the capacity of the mine, the number of trucks that will be added to the present scenario will be compared to the carrying capacity.

**Table 2.4 (i): Existing Traffic Scenario & LOS**

Road	V	C	Existing V/C Ratio	LOS
Village Road	500	2000	0.2	A
Parwala Road	1000	15000	0.06	A

V= Volume in PCUs/hr & C= Capacity in PCUs/hr

The existing Level of Service is "A" i.e. Excellent

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

Note: Capacity as per IRC: 106-1990 page no 11 table-2 for arterial road/ Highways

### During mine operation

Total capacity of mine	:	4.010081 TPA
No. of working days	:	268 days
Per day capacity of mine	:	6716 tonnes



*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamrao-1: Block/PKL B-11 located at Village- Shamrao, District – Panchkula, Haryana (Lease area: 46.59 Ha.)*

*Chapter – II: Project Description*

Truck capacity : 20tonnes  
 No. of trucks deployed : 336 trucks

**Table 2.4 (b): Modified Traffic Scenario & LOS**

Road	V	C	Existing V/C Ratio	LOS
Village Road	$500 + 336 = 836$	2000	0.4	B
Parwala Road	$1000 + 336 = 1336$	15000	0.08	B

**Results**

From the above analysis it can be seen that the V/C ratio will be modified to 0.4 (Village Road) and 0.08 (Parwala Road) from 0.4 & 0.08 with LOS being "B" i.e. "Excellent". So the additional load on the carrying capacity will be affected to a minimum level.

**2.6.4 Utilities**

**Power, Water Supply and other Infrastructure requirements**

• **Power**

All the activities will be carried out manually i.e. loading the trucks/trolley/carrying vehicles manually by the working people. There is no power requirement for the project.

▪ **Water Supply**

In the river bed mining projects there is as such no need of water to carry out operations, except for dust suppression & drinking. The number of working people is 14 so the water requirement for workers for drinking purpose will be around 0.69 KLD & the total water requirement will be around 6.67 = 0.69 KLD. This water will be supplied from the nearby area.

Activity	Calculation	Round off Figure in KLD
Drinking	$9.10 \text{ lpcd per labor}$ $10 * 69 / 1000 = 0.69 \text{ KLD}$	0.69
Dust Suppression	Total approach road to be water sprinkled = 570 m $570\text{m} * 6\text{m} * 0.5 * 2 \text{ times} / 1000 = 3.42 \text{ KLD}$ Total water required is = 3.42 KLD	3.42
Plantation	500 plant (during plan period) $10 * 51 / \text{per plant} = 500 * 51 / 1000 = 2.5 \text{ KLD}$	2.50

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – II: Project Description*

<b>Total</b>	6.51	6.60
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### 2.7.5 Site services

The following facilities/amenities will be extended by the mine management under site services:

- A temporary rest shelter will be provided for the workers near to the site for rest.
- Provisions will also be made for following in the rest shelter:
  - ❖ First aid box will be made available at the site. In emergency worker.
  - ❖ Sanitation facility i.e. septic tank or community toilet facility will be provided for the workers.
  - ❖ Mask and gloves distribution to the workers.

- **Manpower requirement**

The mining of sand from Shantoo-1 Block Gravel and Sand mining will be carried out by opencast semi-mechanized method. A total of 69 nos. of manpower are to be employed in the lease area for mining 4 Lakh TPA of sand. Indirect employment through creation of shops, stalls, hired vehicles, etc. also can be generated to fulfil the day to day requirements of the mining personnels.

**Table 2.5: Manpower Requirement**

S no.	Category	Numbers
1	Manager (Class)Permit Manager	1
2	Assistant Manager	1
3	Foreman/Mates	2
4	Skilled Personnel	10
5	Semi-Skilled Personnel	50
6	Unskilled	05
	<b>Total</b>	<b>69</b>

### Extent of mechanization

Some machinery is proposed to be deployed for carrying out mining activities in the lease area. However, tracks and tractors are proposed for transportation of sand from the quarry.

### 2.7.7 Statutory requirements

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11 located at Village- Shantoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – II: Project Description*

It is accepted that effective resource management cannot be done in isolation. The proponent therefore vigorously pursues approaches towards coordination and integration where possible, so as to lead to coordinated regulatory systems.

Various acts dealing with matters relating to the conservation and protection of the environment and which a holder of a mining authorization must also take cognizance of include inter alia, the following:

- Haryana Minor Mineral Concession Rule, 2012 amended till date.
- The Mines Act, 1952.
- The Mines and Mineral (Development and Regulation) Act, 1957.
- Mines Rules, 1955.
- Mineral Concession Rules, 1960.
- Mineral Conservation and Development Rules, 1988.
- The Water (Prevention and Control of Pollution) Act, 1974.
- The Air (Prevention and Control of Pollution) Act, 1981.
- The Environment (Protection) Act, 1986.
- The Forest (Conservation) Act, 1980.
- The Wildlife (Protection) Act, 1972.

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*DEIA report of RRM of Minor Mineral (Gravel and Sand) at Shantou-1; Block/PKL B-11  
located at Village- Shantou, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

### SECTION-III

#### DESCRIPTION OF ENVIRONMENT

#### INDEX

S. No.	CONTENTS	Page No.
3.0	INTRODUCTION	2/III
3.1	LAND ENVIRONMENT	2/III
3.2	METHODS FOR MONITORING	3/III
3.3	BASELINE DATA	3/III
3.4	BIOLOGICAL ENVIRONMENT	17/III
3.5	SOCIAL IMPACT ASSESSMENT	27/III

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-I: Block/PKL B-11  
located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

### **3.0 INTRODUCTION**

This section contains the description of baseline studies of the 10 km radius of the area surrounding Shantoo-I: Block/PKL B-11 Sand bed mine. The data collected has been used to understand the existing environment scenario around the proposed mining project against which the potential impacts of the project can be assessed.

### **3.1 LAND ENVIRONMENT**

This section includes the study of natural features like topography, drainage, climate etc. Land use/ Land cover map.

#### **Topography**

Shivalik hill ranges occupy the northern and North Eastern fringe of Panchkula District and attain the height up to 600m above MSL. The hills are about 150-200 m high with respect to the adjacent alluvial plains. These are characterized by the broad table land topography that has been carved into quite sharp slopes by numerous ephemeral streams come down to the outer slopes of the Shivaliks and spread much of gravels boulders, pebbles in the beds of these streams. The general slope of the land surface is from NE to SW. The river Dangri & Begna provides the major drainage in the lease area. The general physiography of the Lease area is gently sloping from NE to SW side indicating the flow direction of river.

#### **Climate/Rainfall**

The climate of Panchkula can be classified as subtropical monsoon, mild & 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 penetrate 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.

#### **Rainfall**

The normal annual rainfall of the district is 1057 mm, which is unevenly distributed over the area in 49 days. The southwest monsoon sets in from last week of June and withdraws its end of September, contributed about 86% of annual rainfall. July and August are the wettest months. Rest 14% rainfall is received during post-monsoon period in the wake of western disturbances and thunderstorms.

Source: [http://egwb.gov.in/District\\_Profile/Haryana/Panchkula.pdf](http://egwb.gov.in/District_Profile/Haryana/Panchkula.pdf)

*DEI report of RBM of Minor Mineral (Gravel and Sand) at Shamtao-1: Block/PKI. B-11 located at Village- Shamtao, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

### 3.2 METHODS FOR MONITORING

**Table 3.1: Methods adopted for PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> (as NO<sub>2</sub>)**

Parameters	Technique	Technical Protocol	Minimum Detectable Limit
PM <sub>2.5</sub>	Gravimetric method	US EPA Method	5 (µg/m <sup>3</sup> )
PM <sub>10</sub>	Gravimetric method	IS 5182 (Part-XXIII)	5 (µg/m <sup>3</sup> )
Sulphur Dioxide	West and Gaeke	IS-5182 (Part-II)	3 (µg/m <sup>3</sup> )
Nitrogen Oxide	Jacob & Hochheiser	IS-5182 (Part-VI)	7 (µg/m <sup>3</sup> )

### 3.3 BASELINE DATA

#### I Air environment

Ambient air quality monitoring stations were selected primarily on the basis of surface influence, demographic influence and meteorological influence. 24 hr hourly monitoring was carried out for SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>2.5</sub> & PM<sub>10</sub> twice a week at each station for a study period of 3 months (October'20 to December'20).

##### a. Wind rose diagram

DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1; Block/PK1, B-11 located at Village- Shamtoo, District - Panchkula, Haryana (Lease area: 46.50 Ha.)

Chapter – III: Description of Environment

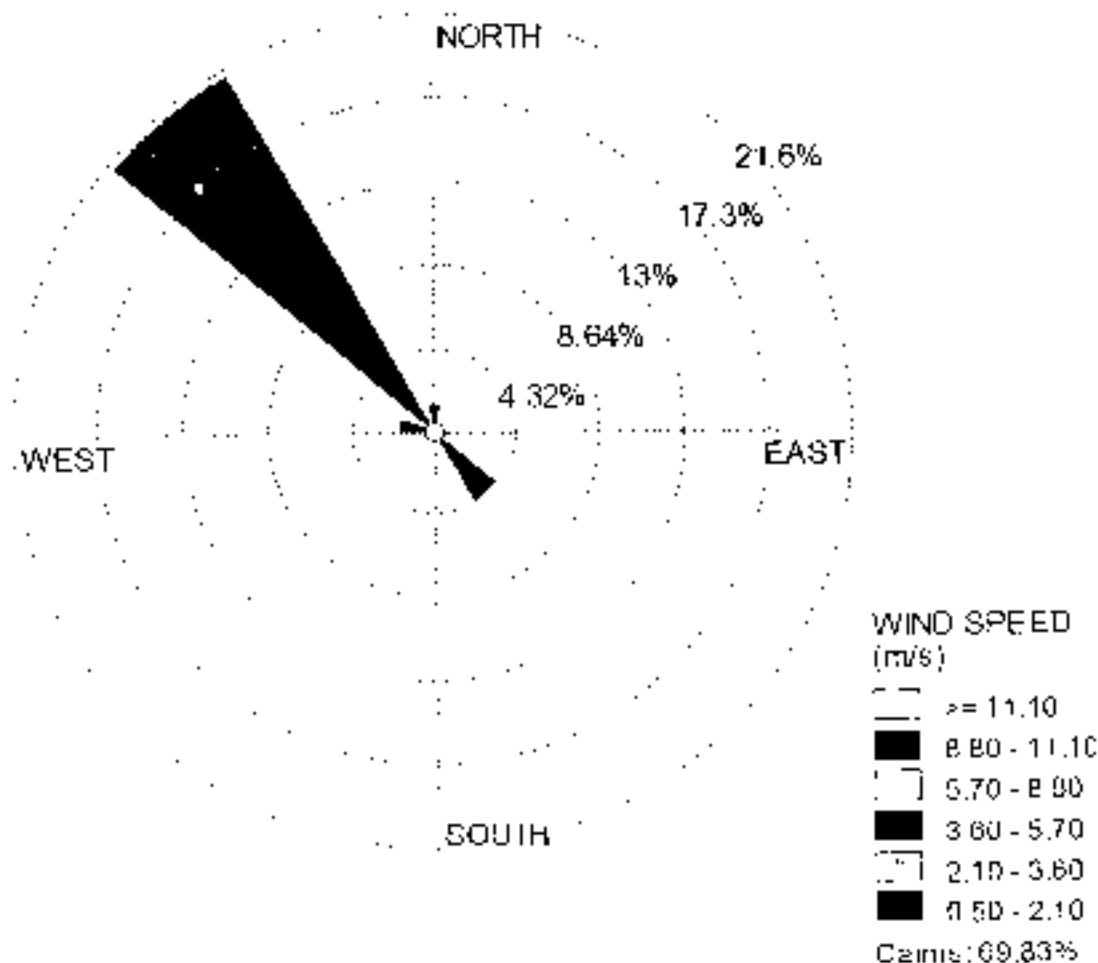


Figure 3.1: Wind Rose Diagram

#### Observations:

The prominent seasonal wind direction is from NW contributing more than approximately 33% of the total.

#### b. Method of monitoring

The Central Pollution Control Board (CPCB) has published comprehensive document on emission testing regulations ("Emission Regulations Part-5, 1985"). These procedures relevant to the particulate monitoring are summarized below:

##### i. Particulate Matter (PM):-

*DEIA report of RHM of Minor Mineral (Gravel and Sand) at Shamtoo-I: Block/PKL B-11 located at Village- Shamtoo, District Paanchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

The CPCB method and IS 5182 (Part-XXIII) adopt a very similar approach to particulate sampling. There are some differences in the expressions used, but they are generally of no practical significance. It is recommended that CPCB method is adopted.

**ii. Equipment calibration:**

For accurate testing of emission sources, the components of the sampling train is calibrated by outsource and supplier (Master Calibrator) standards and solutions are used, calibrated under certified reference material. The Ambient air quality monitoring locations are marked in fig 3.3.

The ambient air quality data were collected to find the existing emissions / condition. The data is given in Table No. 3.3 (viii)

**Table 3.2 (i) Ambient air quality monitoring stations**

Locations Code	Location Name	Distance (Km) & Direction
AQ 1	Mine site	--
AQ 2	Rattewali	0.60Km SW
AQ 3	Parwala	2.13Km SE
AQ 4	Asrewal	5.18 Km NW
AQ 5	Khetprali	3.56Km N
AQ 6	Tarlokpur	2.64Km E
AQ 7	Khargesta	4.23 Km SW



*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter III: Description of Environment*

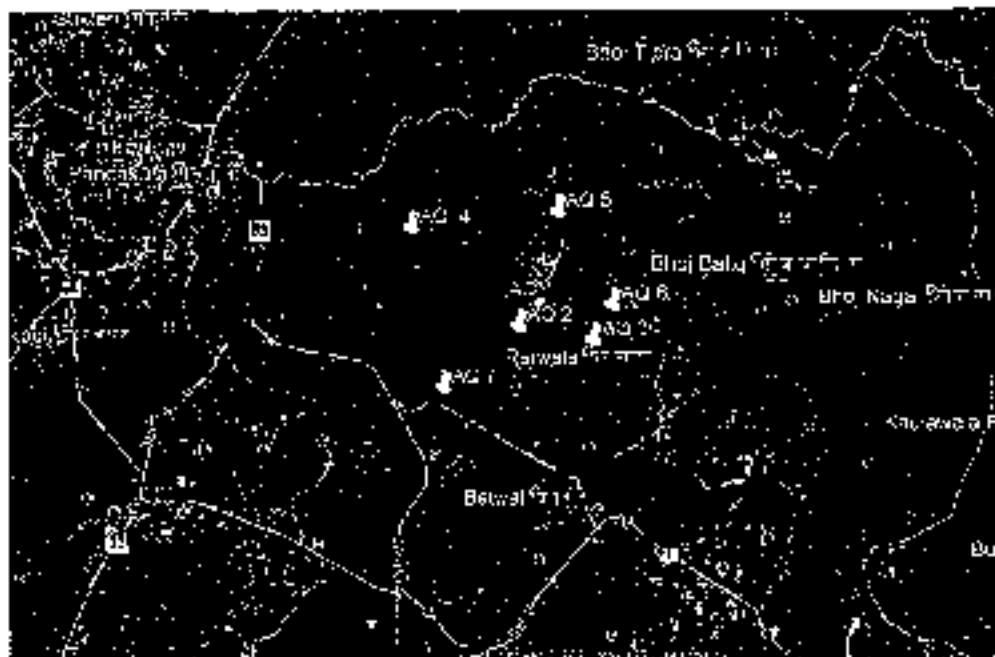


Fig- 3.2. Air Monitoring Locations Map

Table 3.2 (ii) Ambient Air Quality Status

Location Code	Name of the station	PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )			
		Min	Max	Average	98 <sup>th</sup> Percentile
AAQ1	Mine site	33.3	16.08	11.21	16.07
AAQ2	Rattewali	27.33	43	35.22	17.63
AAQ3	Parwala	31.33	44.48	36.54	13.92
AAQ4	Asrewal	38.43	41.37	37.41	11.73
AAQ5	Khetprali	11.82	13.13	18.22	12.80
AAQ6	Larkokpur	28.79	45.28	35.90	13.27
AAQ7	Khangesra	16.17	45.62	10.32	14.35

Location Code	Name of the station	PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )			
		Min	Max	Average	98 <sup>th</sup> Percentile
AAQ1	Mine site	61.38	80.87	69.15	79.15
AAQ2	Rattewali	59.35	74.83	65.68	72.92

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*Chapter – III: Description of Environment*

AAQ3	Parwala	64.77	80.04	71.89	78.88
AAQ4	Asrewali	69.72	86.81	77.71	85.41
AAQ5	Khetprah	65.37	79.65	71.13	78.69
AAQ6	Tarlokpur	64.14	75.99	69.87	75.01
AAQ7	Khangesra	63.03	79.75	71.28	79.19
<b>Location Code</b>	<b>SO<sub>2</sub> (µg/m<sup>3</sup>)</b>				
	<b>Name of the station</b>	<b>Min</b>	<b>Max</b>	<b>Average</b>	<b>98<sup>th</sup> Percentile</b>
AAQ1	Mine site	8.88	15.43	12.77	15.17
AAQ2	Ratewali	8.26	13.16	10.37	13.13
AAQ3	Parwala	7.06	13.26	10.16	13.04
AAQ4	Asrewali	6.7	13.75	10.98	15.73
AAQ5	Khetprah	6.13	13.27	10.14	13.14
AAQ6	Tarlokpur	6.67	10.35	8.32	10.35
AAQ7	Khangesra	9.87	16.08	12.67	15.42
<b>Location Code</b>	<b>NO<sub>2</sub> (µg/m<sup>3</sup>)</b>				
	<b>Name of the station</b>	<b>Min</b>	<b>Max</b>	<b>Average</b>	<b>98<sup>th</sup> Percentile</b>
AAQ1	Mine site	12.01	23.87	17.09	23.05
AAQ2	Ratewali	11.28	17.03	14.08	16.81
AAQ3	Parwala	12.19	19.78	15.32	19.78
AAQ4	Asrewali	14.18	21.48	17.78	20.97
AAQ5	Khetprah	9.31	19.6	14.02	19.41
AAQ6	Tarlokpur	11.96	17.48	14.21	16.88
AAQ7	Khangesra	4.61	22.65	18.26	22.30

**Observations:**

Ambient Air Quality Monitoring reveals that the minimum & maximum concentrations of PM10 for all the 7 AQ monitoring stations were found to be 59.75µg/m<sup>3</sup> at AQ2 and 86.81µg/m<sup>3</sup> at AQ4, respectively.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha)*

*Chapter – III: Description of Environment*

Minimum & maximum concentrations of PM<sub>2.5</sub> for all the 7 AQ monitoring stations were found to be 27.73 $\mu\text{g}/\text{m}^3$  at AQ2 and 46.08 $\mu\text{g}/\text{m}^3$  at AQ1, respectively.

As far as the gaseous pollutants SO<sub>2</sub> and NO<sub>x</sub> are concerned, the prescribed CPCB limit of 80 $\mu\text{g}/\text{m}^3$  for residential and rural areas has never surpassed at any station. The maximum & minimum concentrations of SO<sub>2</sub> were found to be 6.13 $\mu\text{g}/\text{m}^3$  at AQ5 & 16.08 $\mu\text{g}/\text{m}^3$  at AQ2, respectively. The maximum & minimum concentrations of NO<sub>x</sub> were found to be 9.23 $\mu\text{g}/\text{m}^3$  at AQ5 & 23.87 $\mu\text{g}/\text{m}^3$  at AQ1, respectively.

## II. Water environment

### Water consumption and sources

The one time water demand will be around 6.60 KLD, out of which 0.69 KLD is required for domestic purpose and 3.42 KLD for dust suppression. The water demand will be met from nearby village.

#### a. Ground water

Three water samples were collected from the study area. The physico-chemical analysis of the water samples is given in the Table 3.3 (iv).

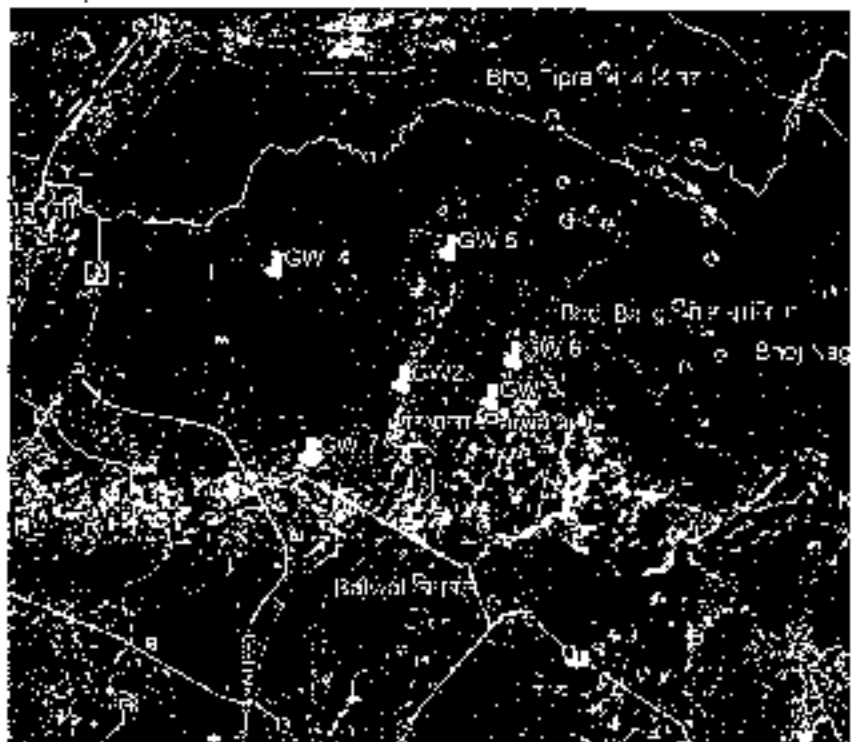
The Ground water sampling locations are marked in Map No. 5

**Table 3.2 (iii) Ground water sampling locations**

Locations Code	Location Name	Distance (Km) & Direction
GW 1	Ratewali	0.60Km SW
GW 2	Parwala	2.13Km SE
GW 3	Asrewali	5.18 Km NW
GW 4	Khetprali	3.55Km N
GW 5	Tarlokpur	2.64Km E
GW 6	Khatgesra	4.23 Km SW

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKI. B-11 located at Village- Shantoo. District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*



**Fig 3.4- Ground water sampling locations**

**DEIA report of RBM of Minor Mineral (Gavel and Sand) at Shamtoo-I: Block/PK.L B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)**  
**Chapter – III: Description of Environment**

**Table 3.2 (iv) : Physico-chemical properties of ground water Study Period**

S.No.	Parameter	GW1 Rattawali	GW2 Parwala	GW3 Arawali	GW4 Khoprali	GW5 Parlkipur	GW6 Khanasra	Requirement (Acceptable Limit)	Permissible Limit in absence of alternative source.
<b>Physical Parameter</b>									
1	pH (at 25°C)	7.58	7.67	7.67	7.56	7.71	7.62	6.5-8.5	
2	Colour (Pt-Co Unit)	5	5	5	5	5	5	5	15
3	Turbidity (NTU)	1	1	1	1	1	1	5	5
4	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
<b>Chemical Parameter</b>									
6	Total Hardness as CaCO <sub>3</sub> (mg/L)	235	416	363	285	310	377	110	600
7	Calcium as Ca (mg/L)	89.52	78.08	82.3	81.32	99.86	83.07	75	200
8	Magnesium as Mg (mg/L)	157	161	165	159	64	171	300	600
9	Total Dissolve Solids (mg/L)	497	908	800.36	607.56	205.67	194.75	250	1000
10	Chloride as Cl <sup>-</sup> (mg/L)	21.07	31.07	30.07	30.07	30.07	30.07	100	No. Relaxation
11	Sulphate as SO <sub>4</sub> <sup>-2</sup> (mg/L)	36.37	47.38	47.35	40.77	47.28	43.41	50	100
12	Total Dissolve Solids (mg/L)	497	908	800.36	607.56	205.67	194.75	500	2000
13	Sulphate as SO <sub>4</sub> <sup>-2</sup> (mg/L)	36.37	47.38	47.35	40.77	47.28	43.41	500	1000

*DEIA report of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKI. B-11 located at Village- Shantoo, District -- Panchkula, Haryana (Lease area: 46.50 Ha.)*

**Chapter – III: Description of Environment**

14.	Thonipile as P (mg/L)	0.10	0.08	0.09	0.12	0.09	0.11	1.0	0.5	No Relaxation
15.	Nitrate as NO <sub>3</sub> (mg/L)	19.05	17.02	20.55	20.78	21.55	18.46	45	45	No Relaxation
16.	Iron as Fe (mg/L)	0.12	0.08	0.07	0.11	0.06	0.09	0.3	0.3	No Relaxation
17.	Aluminium as Al (mg/L)	0.032	<0.02	0.02	0.02	0.02	0.02	0.03	0.2	0.2
18.	Barium (mg/L)	0.11	0.1	0.1	0.1	0.1	0.1	0.5	1.0	1.0
19.	Chlorination as Cl <sup>-</sup> (mg/L)	0.01	0.01	0.01	<0.01	0.01	0.01	0.05	0.05	No Relaxation
20.	Conductivity (µS/cm)	0.526	0.510	0.501	0.538	0.539	0.498	1.500	1.500	1.500
21.	Fluoride (compounds) (mg/L)	0.061	0.051	0.050	0.051	0.051	0.051	1.001	1.001	1.001
22.	Manganese (mg/L)	0.01	0.01	0.01	0.01	0.01	0.01	0.5	0.5	No Relaxation
23.	Vanadium Derivatives as V (mg/L)	0.007	0.01	0.01	0.01	0.01	0.01	0.2	0.2	0.2
24.	Zinc as Zn (mg/L)	0.37	0.12	0.21	0.02	0.04	0.03	1.5	1.5	1.5
25.	Copper as Cu (mg/L)	0.01	<0.01	0.01	0.01	0.01	0.01	0.05	0.05	0.05
26.	Magnesium as Mg (mg/L)	0.02	0.02	0.02	0.02	0.02	0.02	0.1	0.1	0.1
27.	Cadmium as Cd (mg/L)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	No Relaxation
28.	Lead as Pb (mg/L)	0.01	0.01	0.01	0.01	0.001	0.001	0.01	0.01	No Relaxation
29.	Selenium as Se (mg/L)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	No Relaxation

DELA report of RBM of Minor Mineral (Gravel and Sand) at Shamtop-I; Block/PKL B-II located at Village-Shamtop, District – Panchkula, Haryana (Lease area: 46.50 Ha.)

Chapter – III: Description of Environment

20.	Arsenic as As mg/l	<0.01	<0.03	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.05
21.	Mercury as Hg (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.01	No. lax more
22.	Total Coliform (MPN/100 ml.)	<7.146/l	<2.026/m	<2.026/m	<2.026/m	<2.026/m	<2.026/m	<2.026/m	Absent	2.23/ml
Microbiological Parameter										
23.	F <sup>+</sup> col (1-100000/l)	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Note: Un-Underflowing

*DEIA report of RHM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - III: Description of Environment*

**Observation:**

Analysis results of ground water reveal the following: -

- pH varies from 7.72 at GW5 to 7.56 at GW4 during study period.
- Total hardness varies from 410 mg/l at GW2 to 369.4mg/l at GW3 during study period.
- Total dissolved solids vary from 514 mg/l at GW4 to 469 mg.l at GW6 during study period

Results shows that the sample from GW6 had minimum amount of TDS & Total Hardness and in the contrary, samples taken from GW4 have the maximum values for most of the parameters.

The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by Indian Standards IS: 10500.

Fluorides and nitrates are within the permissible limits. Most of the parameter in ground water sources are well within the permissible limits as per IS – 10500, drinking water standards.

**h. Surface water**

Three water samples were collected from the study area. The physico-chemical analysis of the water samples is given in the Table 3.2 (vi). The Surface water sampling locations are marked in Map No. 5.

**Table 3.2 (v) Surface water sampling locations**

Surface Water		
SW 1	Dugri River Upstream	3.55 Km N
SW 2	Project Site	0
SW 3	Dugri River Downstream	6.22 Km SW



DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtan-1: Block/PKL B-11 located at Village- Shamtan, District – Panchkula, Haryana (Lease area: 46.50 Ha.)

Chapter – III: Description of Environment

Table 3.2 (vi) Physico-chemical properties of surface water

S. No.	Parameter	Unit	S.W. 1	S.W. 2	S.W. 3
			Upstream	Project site	Downstream
1.	pH (at 25°C)	-	10.5	8.5	9.0
2.	Temperature	°C	13.5	12.50	13.00
3.	Turbidity	NTU	<1	<1	<1
4.	Electric Conductivity @25°C	µmho	890	900	816
5.	Sulphate (SO <sub>4</sub> )	mg/l	116	122	110
6.	Nitrate (NO <sub>3</sub> )	mg/l	0.8	1.1	2.4
7.	Total Hardness (as CaCO <sub>3</sub> )	mg/l	452	447	460
8.	Chloride (as Cl)	mg/l	220	225	228
9.	Fluoride (as F)	mg/l	0.31	0.48	0.64
10.	COD (as O <sub>2</sub> )	mg/l	86	88	90
11.	Iron (as Fe)	mg/l	1.24	0.95	1.04
12.	Dissolve Oxygen	mg/l	6	5	6
13.	Total Dissolved Solid	mg/l	502.1	542.4	550.5
14.	BOD (5 days at 27°C)	mg/l	26.3	26.4	28.5
15.	Calcium (as Ca)	mg/l	74.6	84.2	89.6
16.	Magnesium (as Mg)	mg/l	46.50	58.7	58.7
17.	Arsenic (as As)	mg/l	BDL	BDL	BDL
18.	Lead (as Pb)	mg/l	BDL	BDL	BDL
19.	Copper (as Cu)	mg/l	BDL	BDL	BDL
20.	Zinc (as Zn)	mg/l	0.13	0.14	0.22

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PK1, B-11 located at Village- Shantoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

21.	Manganese (as Mn)	mg/l	BDL	BDL	BDL
22.	Total Chromium (as Cr)	mg/l	BDL	BDL	BDL
23.	Sodium (as Na)	mg/l	86	96.4	94.6
24.	Potassium (as K)	mg/l	31	30	34.5
25.	Total Alkalinity (as CaCO <sub>3</sub> )	mg/l	208.20	210	218
26.	Phosphate (as P)	mg/l	<0.05	<0.05	<0.05
27.	Nitrite (as NO <sub>2</sub> )	mg/l	<0.10	<0.10	<0.10
28.	Total Suspended Solid	mg/l	<5.0	<5.0	<5.0
29.	E.coli	cfu	5	4	4
30.	Total Coliform	cfu	10	15	25

**Observation:**

The analysis results indicate that the pH ranges between 8.5 and 10.5.

Dissolved Oxygen (DO) was observed in the range of 5 to 6 mg/l against the minimum requirement of 4 mg/l. BOD values were observed to be in the range of 2 to 28.5 mg/l.

The chlorides and Sulphates were found to be in the range

Based on the results it is evident that most of the parameters of the samples comply with 'Category 'C' standards of CPCB indicating their suitability for Drinking water source after conventional treatment and disinfection.

**III. Soil environment**

Soil may be defined as a thin layer of earth's crust, medium for the growth of plants. The soil characteristics include both physical and chemical properties. The soil survey and soil sample were carried out / collected to assess the soil characteristics of the study area. Soil samples were collected from 8 locations and analyzed as per CPCB norms.

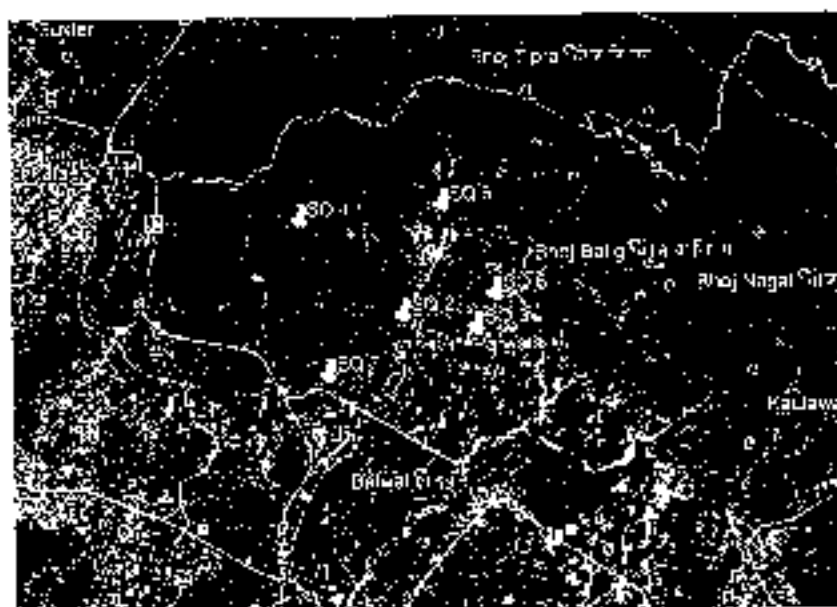
The soil sampling locations are marked in Fig. 3.3. The physico-chemical characteristics of these soil samples is given in Table No. 3.3(vi).

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantou-I: Block/PKL B-11 located at Village- Shantou, District - Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - III: Description of Environment*

**Table No. 3.2 (vii) Soil sampling locations**

Locations Code	Location Name	Distance (Km) & Direction
SQ 1	Mine site	..
SQ 2	Ratewali	0.60Km SW
SQ 3	Parwala	2.13Km SE
SQ 4	Asrewali	5.18 Km NW
SQ 5	Khetprahi	3.56Km N
SQ 6	Tarlokpur	2.64Km E
SQ 7	Khangesra	4.23 Km SW



**Fig.3.5 Soil sampling near village Burjango**

**Table 3.2 (viii) Physico-chemical properties of soil**

Sl. No.	Parameters	SQ1	SQ2	SQ3	SQ4	SQ5	SQ6	SQ7
1	pH	7.13	7.74	7.61	7.73	7.41	7.35	8.02
2	Conductivity (µmhos/cm)	245.20	776.00	311.00	796.00	269.00	304.00	312.00
3	Sulphur (µg/kg)	48.65	42.00	31.85	58.72	52.78	56.93	96.06
4	Water holding capacity (%)	70.45	51.57	29.45	26.94	78.93	52.59	72.29
5	Potassium (µg/kg)	204.20	248.89	246.03	250.16	251.02	257.56	248.26
6	Texture	66.20	61.70	55.00	67.00	57.00	56.20	51.00
		21.20	25.00	28.20	25.00	24.20	27.00	29.00
		12.60	13.00					

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtao-1: Block/PKL B-11  
located at Village- Shamtao, District – Panchkula, Haryana (Lease area: 46.59 Ha)*

*Chapter – III: Description of Environment*

		14.00	17.00	18.00	19.00	17.00	18.00
7.	Calcium (as Ca) (mg/kg)	153.00	145.00	141.00	146.00	151.00	138.00
8.	Magnesium (as Mg) (mg/kg)	66.51	71.34	73.76	70.96	74.31	71.68
9.	SAR	0.93	1.39	1.56	1.43	1.26	1.47
10.	CTC (meq/100gm)	2.17	2.25	2.12	2.12	2.24	2.08
11.	Available Phosphorus (as P) (mg/kg)	11.34	12.47	11.49	12.41	11.75	10.56
12.	Organic carbon (%)	0.70	0.45	0.45	0.34	0.42	0.77
13.	Porosity (% by mass)	47.00	46.55	47.15	45.28	46.06	46.24
14.	Permeability (cm/hr)	1.64	1.56	1.48	1.76	1.76	1.55
15.	Bulk Density (kg/cm <sup>3</sup> )	1.37	1.43	1.29	1.37	1.33	1.41
16.	TKN%	0.03	0.02	0.02	0.05	0.01	0.07

**Observations:**

Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.25 to 8.02, which shows that the soil is alkaline in nature. Potassium is found to be from 234.20mg/kg to 253.56mg/kg. The water holding capacity is found in between 26.94 % to 32.09%.

**IV Noise environment**

The noise levels within the study area were recorded using Sound Level Meter and noise monitoring results were compared with the Ambient Noise Quality Standard notified under Environment Protection Act, 1986. The levels recorded are as stated in Table 3.3 (x).

The noise level monitoring locations are marked in Fig. no.3.3.

**Table 3.2 (ix) Noise quality monitoring stations**

Locations Code	Location Name	Distance (km) & Direction
NQ 1	Mine site	--
NQ 2	Rattewali	0.60km SW
NQ 3	Parwala	2.13km SL
NQ 4	Asewali	5.18 Km NW
NQ 5	Khetpral	3.56km N
NQ 6	Balsapur	2.64km E
NQ 7	Khangesra	4.23 Km SW

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantou-1: Block/PKL B-11  
located at Village- Shantou, District - Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

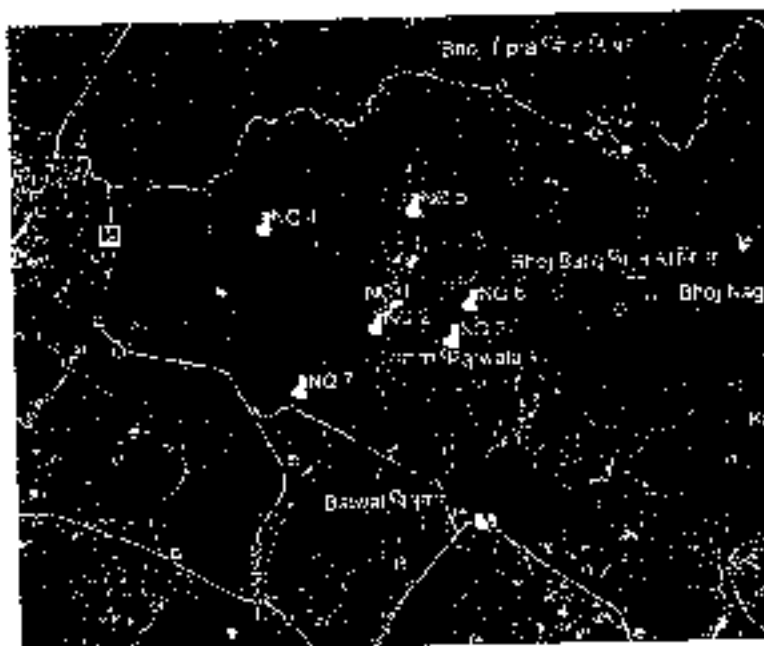


Fig.3.6- Noise quality monitoring Locations

Table No. 3.2 (a) Noise level status

S. No.	PROJECT SITE	ZONE	Leq LIMIT (as per CPCB Guidelines), in dB(A)		Leq monitored, dB(A)		Value in
			DAY <sup>a</sup>	NIGHT <sup>b</sup>	DAY <sup>a</sup>	NIGHT <sup>b</sup>	
1	NQ-1	Residential Zone (Project site)	55	45	58.7	46.5	
2	NQ-2	Residential Zone	55	45	52.9	42.3	
3	NQ-3	Residential Zone	55	45	59.4	48.2	
4	NQ-4	Residential Zone	55	45	51.7	40.2	
5	NQ-5	Residential Zone	55	45	50.6	38.8	
6	NQ-6	Residential Zone	55	45	56.8	45.5	
7	NQ-7	Residential Zone	55	45	51.3	42.7	

<sup>a</sup> Day time – Leq in dB(A) (6.00AM TO 10.00PM)

Night time – Leq in dB(A) (10.00PM TO 6.00AM)

#### Results

Noise monitoring reveals that the maximum & minimum noise levels at day time were recorded as 59.4 Leq dB (A) at NQ3 & 50.6 dB (A) at NQ5, respectively. The maximum & minimum noise levels at night time were found to be 48.2 dB (A) at NQ3 & 38.8 dB (A) at

*UEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

NQ5. There are several other sources in the 10 km radius of study area, which contributes to the local noise level of the area. Traffic activities as well as activities in nearby villages and agricultural fields add to the ambient noise level of the area.

### 3.4 BIOLOGICAL ENVIRONMENT

The state Haryana lies at the meeting point of three vegetative zones: the western Himalayas to the north, the upper Gangetic Plains to the east and West Indian Desert or Arid Zone which encompasses most of the State (Singh et al. 1994). The proposed site is located on seasonal river Dudhgarh near to village Kattewali at Barwala tehsil in Panchkula district of Haryana.

In accordance to the India State of Forest Report, 2019 (Forest Survey of India), the total forest cover of the project district Panchkula is 390.70 km<sup>2</sup> which is 43.51 % of the total geographical area (898 Km<sup>2</sup>) of Panchkula and only 0.88% of the total geographical area (44,212 Km<sup>2</sup>) of Haryana. The forest cover of Panchkula is predominantly comprising of open forest (233.80 km<sup>2</sup>) followed by Moderate Dense Forest (150.90 Km<sup>2</sup>) and very dense forest (6 km<sup>2</sup>) respectively. The scrublands are spread over only 23.84 km<sup>2</sup> area of the project district. The Forest cover of the project district is given in Table 3.30 and depicted in Figure 3-10 as follows:

#### **Methodology for Floral & Faunal study:**

Detailed survey was conducted to evaluate floral and faunal composition of the study area. Primary data on floral and faunal composition was recorded during site visit and secondary data was collected from the Forest department and published relevant literatures to get the correct picture of the study area. Inventory of flora and fauna is prepared on the basis of collected data. Forest type and vegetation of the study area is discussed on the basis of plant species recorded from the area.

#### **Study Area:**

The proposed project is to mine sand from river bed of Dangri river in Panchkula District of Haryana. The district is mainly covered by riverine alluvial soil and the remaining part of the district is covered by sandy red soil.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

The proposed project site i.e. core area is the river sand bed with water channel on one side, which has few aquatic plants only.

**Flora of the Core zone:**

The core zone is not having any vegetation on the river bank. However, some aquatic weeds and grasses are present on the river bed. No ecologically sensitive plant species has been reported from this area. (Pl. See Table 3.4 (i)).

This area consists of riparian vegetation in which aquatic and marshland plants are the main component. Most among them are weeds.

**Table No. 3.3 (i) List of trees, shrubs and perennial climbers found in the buffer zone. Plants indicated by \* were rarely found in Sal forests of the buffer zone.**

(a) Trees: Nil				
(b) Shrub				
Sr. No.	Botanical Name	Common Name	Family	IUCN Status
1.	<i>Crotalaria gigantea</i>	Azokha	Asclepiadaceae	NA
2.	<i>Crotalaria scabra</i>	Gunja	Carnabaceae	NA
3.	<i>Cassia eschscholtzii</i>	Kusundi	Leguminosae	NA
4.	<i>Chenopodium spirostemon</i>	Kantilcharai	Amaranthaceae	NA
5.	<i>Brasillajanus indicus</i>	Anantamula	Apocynaceae	NA
6.	<i>Ipomoea batatas</i>	Rainnarya	Malvaceae	NA
7.	<i>Cleome labata</i>	Lapta	Malvaceae	NA
8.	<i>Santhous serratulium</i>	Bada gokru	Asteraceae	NA
9.	<i>Achyrocline saturei</i>	Chirchira	Amaranthaceae	NA
10.	<i>Lernia javanica</i>	gershganga	Amaranthaceae	NA
11.	<i>Sida cotton gossypifolia</i>	Visaleli	Asteraceae	NA
12.	<i>Amaranthus viridis</i>	phullhuj	Amaranthaceae	NA
13.	<i>Alysicarpus huplettii</i>	Chipti	Leguminosae	NA
14.	<i>Argemone mexicana</i>	Pee + Kathel	Papaveraceae	NA
15.	<i>Bissora lacera</i>	Karyumbra	Asteraceae	NA
16.	<i>Boschnia diffusa</i>	Paurraya	Nyctaginaceae	NA
17.	<i>Bryophyllum pinnatum</i>	Parthardata	Cassidiaceae	NA
18.	<i>Cassia tora</i>	Ponvra	Leguminosae	NA
19.	<i>Chenopodium album</i>	Rathua	amaranthaceae	NA

DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PRI B-11  
located at Village- Shantoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)

Chapter – III: Description of Environment

12.	<i>Crotalaria juncea</i>	sun	Leguminosae	NA
13.	<i>Desmodium triflorum</i>	Desmodium	Leguminosae	NA
14.	<i>Euphorbia hirta</i>	Baridachi	Euphorbiaceae	NA
15.	<i>Panicum urticaria</i>	Pita papula	Poaceae	NA
16.	<i>Leucas aspera</i>	Gamma buti	Lamiaceae	NA
17.	<i>Tridax procumbens</i>	Khad- murya	Asteraceae	NA
1.	<i>Chloris barbata</i>	grass	Poaceae	NA
2.	<i>Cynodon dactylon</i>	Dogh	Poaceae	NA
3.	<i>Dactyloctenium aegyptium</i>	Blind grass	Poaceae	NA
4.	<i>Digitaria chloris</i>	Bamboo grass	Poaceae	NA
5.	<i>Heteropogon contortus</i>	Tanglehead grass	Poaceae	NA
6.	<i>Paspalum scrobiculatum</i>	Kodra	Poaceae	NA
7.	<i>Paspalum distichum</i>	Knee grass	Poaceae	NA
8.	<i>Imperata cylindrica</i>	Japongrass	Poaceae	NA
9.	<i>Elysius indica</i>	Goose grass	Poaceae	NA
10.	<i>Cyperus rotundus</i>	Mudic grass	Cyperaceae	NA
1.	<i>Amorlocasium latifolia</i> (Roth.) Planch	jamdi; nyar	Vitaceae	NA

**Flora of the Buffer zone:**

**Importance Value Index**

The Importance Value Index (IVI) is a statistical quantity which gives an overall picture of the importance of the species in the vegetative community. It considers the relative values of density, frequency and basal area of every species in a given area. It thus incorporates three important parameters which are measures of diversity and productivity of every species. In any community structure, the quantitative value of each of the frequency, density and basal area, basal cover has its own importance.

**Important Plant species observed in the Buffer Zone**

(A) Tree				
Sr. No.	Botanical Name	Common Name	Family	IUCN Status
1.	<i>Acacia catechu</i>	Khad	Leguminosae	NA
2.	<i>Acacia mangium</i>	Phulani	Leguminosae	NA
3.	<i>Acacia nilotica</i>	Beroul	Leguminosae	NA
4.	<i>Acacia mangium</i>	Australian acacia	Leguminosae	LC



*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantao-1: Block/PKL B-11 located at Village- Shantao, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

5	<i>Apple marmelos</i>	Bel	Rutaceae	NA
6	<i>Aletris excelsa</i>	Arvu	Simarubaceae	NA
7	<i>Albizia lebbek</i>	Kaala seras	Leguminosae	NA
8	<i>Albizia procera</i>	Sras safal	Leguminosae	NA
9	<i>Alistia scholaris</i>	Chitvan	Apocynaceae	NA
10	<i>Antigonon heterophyllus</i>	Dawra	Moraceae	NA
11	<i>Artocarpus heterophyllus</i>	Kathal	Moraceae	NA
12	<i>Ayrtia caragmbola</i>	Kamrakh	Oxalidaceae	NA
13	<i>Asiatrachia indica</i>	Neem	Meliaceae	NA
<b>Sr. No.</b>	<b>Botanical Name</b>	<b>Common Name</b>	<b>Family</b>	<b>IUCN Status</b>
14	<i>Bauhinia variegata</i>	Kachnar	Leguminosae	LC
15	<i>Bombax ceiba</i>	Santal	Bombacaceae	NA
16	<i>Bougainvillea serrata</i>	Salgi	Burseraceae	NA
17	<i>Butea Monosperma</i>	Dhak	Leguminosae	NA
18	<i>Callispermum lanceolatum</i>	Bottle brush	Myrtaceae	NA
19	<i>Cassia fistula L</i>	Amaltas	Leguminosae	NA
20	<i>Cassia siamea</i>	Cassia	Leguminosae	NA
21	<i>Cassia torrotosa</i>	Chilla	Leguminosae	NA
22	<i>Cedrela toona</i>	Teak	Meliaceae	NA
23	<i>Cela panatandra</i>	Kapok	Malvaceae	NA
24	<i>Citrus medica</i>	Nimbu	Rutaceae	NA
25	<i>Dalbergia sissoo</i>	Shisham	Leguminosae	NA
26	<i>Dalbergia paniculata</i>	Sheesham	Leguminosae	NA
27	<i>Delonix regia (Hook.)</i>	Gulmohar	Leguminosae	LC
28	<i>Diospyros pentana</i>	Kajulu	Ebenaceae	NA
29	<i>Elaeagnus laevis</i>	Chenra	Floragustaceae	NA
30	<i>Eucalyptus camaldulensis</i>	Nilgiri	Myrtaceae	NA
31	<i>Ficus benghalensis</i>	Bergad bar	Moraceae	NA
32	<i>Ficus racemosa</i>	Gular	Moraceae	NA
33	<i>Ficus religiosa</i>	Peepal	Moraceae	NA
34	<i>Grewia pinnata</i>	Kharpat	Burseraceae	NA
35	<i>Grewia robusta</i>	Silver oak	Proteaceae	NA
36	<i>Grewia optima</i>	Bihul	Malvaceae	NA
37	<i>Guettarda turrescens</i>	Akashneer	Rubiaceae	NA
38	<i>Hellebrus isora</i>	Mamphali	Malvaceae	NA
39	<i>Hala chena pot escens</i>	Kura	Apocynaceae	NA

DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKI. B-11  
located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)

Chapter – III: Description of Environment

43.	<i>Homoptelea integrifolia</i>	Paperi	Ulmaceae	NA
44.	<i>Hymenoclytus excelsum</i>	Barang	Rubiaceae	NA
45.	<i>Klainea scorguleana</i>	Kyaya	Melastomaceae	NA
46.	<i>Kigelia pinnata</i>	Balankhara	Bignoniaceae	NA
47.	<i>Kydia colychnis</i>	Pala	Malvaceae	NA
48.	<i>Lagerströmia parviflora</i>	Sujha	Lythraceae	NA
49.	<i>Lanana coramandelica</i>	Jhingan	Anacardiaceae	NA
50.	<i>Leucaena leucocephala</i>	Su-babool	Leguminosae	NA
51.	<i>Magnolia champiana</i>	Changa	Magnoliaceae	NA
52.	<i>Mitrasacme philippensis</i>	Rohim	Euphorbiaceae	NA
53.	<i>Mussaenda indica</i>	Aam	Anacardiaceae	NA

Sr. No.	Botanical Name	Common Name	Family	IUCN Status
53.	<i>Melia azadirachta</i>	Bokain	Meliaceae	NA
54.	<i>Millettodina lewiniana</i>	Akashneem	Bigoniaceae	NA
55.	<i>Moringa oleifera</i>	Sahjan	Veronicaceae	NA
56.	<i>Morus alba</i>	Shahul	Moraceae	NA
57.	<i>Musa paradisiaca</i>	Kela	Musaceae	NA
58.	<i>Neolamarckia costaricana</i>	Kalam	Oleaceae	NA
59.	<i>Nerium indicum</i>	Harsingga	Oleaceae	NA
60.	<i>Ocotelea indicensis</i>	Saden	Leguminosae	NA
61.	<i>Pithecolobium p. racarpum</i>	Paltoforua	Leguminosae	NA
62.	<i>Phenacoccus sphaeroides</i>	Khajur	Apocynaceae	NA
63.	<i>Phyllanthus emblica</i>	Amla	Phyllanthaceae	NA
64.	<i>Polypodium longifolium</i>	Ashok	Araceae	NA
65.	<i>Pongamia pinnata</i>	Kanj	Leguminosae	NA
66.	<i>Prosopis juliflora</i>	Kajri	Leguminosae	NA
67.	<i>Psidium guajava</i>	Anreod	Myrtaceae	NA
68.	<i>Pterocarya indica</i>		Malvaceae	NA
69.	<i>Spatholobus suberectus</i>	Spatholobus	Bignoniaceae	NA
70.	<i>Strobilites asper</i>	Sihor	Moraceae	NA
71.	<i>Syzygium cumini</i>	Jaman	Myrtaceae	NA
72.	<i>Tamarindus indica</i>	Amli	Leguminosae	NA
73.	<i>Tecoma stans</i>	Lecoma	Bignoniaceae	NA
74.	<i>Tectona grandis</i>	Teak	Verbenaceae	NA
75.	<i>Ternstroemia indica</i>	Ajgur	Celastraceae	NA

(B) Shrub

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKI B-11 located at Village- Shamtoo, District -- Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

1.	<i>Achyroanthus aspera</i>	chirchita	Amaranthaceae	NA
2.	<i>Abutilonindicum</i>	Kaunhi	Malvaceae	NA
3.	<i>Acacia farnesiana</i>	Kataneem	Leguminosae	NA
4.	<i>Aerva javanica</i>	guraklganja	Amaranthaceae	NA
5.	<i>Agave americana</i>	Kantla	Agavaceae	NA
6.	<i>Argemone mexicana</i>	PeeliKatheli	Papaveraceae	NA
7.	<i>Alysicarpus warabacoides</i>	Bankulhia	Fabaceae	NA
8.	<i>Bougainvillea glabra</i>	Bougainvillea	Nyctaginaceae	NA
9.	<i>Caesalpinia pulcherrima</i>	Krishnacmura	Caesalpiniaceae	NA
10.	<i>Capparis decidua</i>	ker	Capparidaceae	NA
11.	<i>Capparis zeylanica</i>	hins	Capparidaceae	NA
12.	<i>Carissa spinarum</i>	Karonda	Apocynaceae	NA
13.	<i>Cassia occidentalis</i>	Kasondi	Leguminosae	NA
<b>Sr. No.</b>	<b>Botanical Name</b>	<b>Common Name</b>	<b>Family</b>	<b>IUCN Status</b>
14.	<i>Cassia toro</i>	Ponwai	Leguminosae	NA
15.	<i>Cathartanthus rotundus</i>	Nayantara	Apocynaceae	NA
16.	<i>Cleome spinosa</i>	Kantili chanta	Amaranthaceae	NA
17.	<i>Cardia tetrandra</i>	Lasura	Boraginaceae	NA
18.	<i>Datura metel</i>	Kala dhatura	Solanaceae	NA
19.	<i>Datura stramonium</i>	dhura	Solanaceae	NA
20.	<i>Echinops echinops</i>	unkatara	Asteraceae	NA
21.	<i>Fraxinoma purpurascens</i>	Vantulsi	Acanthaceae	NA
22.	<i>Euphorbia nerifolia</i>	ther	Euphorbiaceae	NA
23.	<i>Euphorbia tirucalli</i>	Saptala	Euphorbiaceae	NA
24.	<i>Flacostia indica</i>	Bainha	Sarkaceae	NA
25.	<i>Gardenia crenifera</i>	Dikamali, Paprali	Rubiaceae	NA
26.	<i>Henriksenia indica</i>	Anglamula	Apocynaceae	NA
27.	<i>Hibiscus rosa sinensis</i>	Gudhal	Malvaceae	NA
28.	<i>Hugea spida auriculata</i>	Lal Bherenda	Euphorbiaceae	NA
29.	<i>Indigofera tinctoria</i>	Gurelphoul	Leguminosae	NA
30.	<i>Jatropha gossypifolia</i>	Lal Bherenda	Euphorbiaceae	NA
31.	<i>Kingia crenata pinnatifida</i>	Angjan	Leguminosae	NA
32.	<i>Latania latifolia</i>	Raimunya	Verbenaceae	NA
33.	<i>Mimosa elliptica</i>	Gaurge	Leguminosae	NA
34.	<i>Mimosa pudica</i>	Mimosa	Fabaceae	NA
35.	<i>Moraya kanipti</i>	Gandhela	Rutaceae	NA

DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtan-1: Block/PK1. B-11 located at Village- Shamtan, District – Panchkula, Haryana (Leas area: 46.50 Ha.)

Chapter -- III: Description of Environment

36.	<i>Parthenocissus hysterophysica</i>	Cajar grass	Asteraceae	NA
37.	<i>Pithecolobium dulce</i>	Vilayati lali	Leguminosae	NA
38.	<i>Rhus parviflora</i>	Muri	Anacardiaceae	NA
39.	<i>Rumex crispus</i>	Arandi	Euphorbiaceae	NA
40.	<i>Rumex hastata</i>	Kholi bot	Polygalaceae	NA
41.	<i>Solanum glaucophyllum</i>	Blakateri	Solanaceae	NA
42.	<i>Syzygium hypericifolium</i>	Kadjanun	Myrtaceae	NA
43.	<i>Tephrosia purpurea</i>	Sarlaunk	Papilionaceae	NA
44.	<i>Thevetia peruviana</i>	Kokilphul	Apocynaceae	NA
45.	<i>Thunbergia cordifolia</i>	Qiluy	Menispermaceae	NA
46.	<i>Urena lobata</i>	Lauta	Malvaceae	NA
47.	<i>Woodfordia fruticosa</i>	dhau	Lythraceae	NA
48.	<i>Xanthium strumarium</i>	Bada gokru	Asteraceae	NA
49.	<i>Ziziphus jujuba</i>	jabber.	Rhamnaceae	NA
50.	<i>Ziziphus nummularia</i>	ber	Rhamnaceae	NA

(A) Tree

Sr. No.	Botanical Name	Common Name	Family	IUCN Status
51.	<i>Ziziphus oenoplia</i>	Mako	Rhamnaceae	NA

(C)

Herb

1	<i>A. hybridus aspera</i>	Chirchira	Amaranthaceae	NA
2	<i>Ageratum conyzoides</i>	Visadad	Asteraceae	NA
3	<i>Amaranthus sessilis</i>	Garuci	Amaranthaceae	NA
4.	<i>Albizia procumbens</i>	Chupu	Leguminosae	NA
5.	<i>Asparagus racemosus</i>	Satruki	Liliaceae	NA
6.	<i>Bassella rubra</i>	Halua	Basellaceae	NA
7.	<i>Bhima lactuca</i>	Kokarmuta	Asteraceae	NA
8.	<i>Boerhaavia diffusa</i>	Parnava	Nyctaginaceae	NA
9.	<i>Brasylanthus parviflorus</i>	Parharaha	Crassulaceae	NA
10.	<i>Celastrus ampelocera</i>	Murga	Amaranthaceae	NA
11.	<i>Colocynthis baccifera</i>	Ka a bans	Zingiberaceae	NA
12.	<i>Colocynthis esculenta</i>	Arbu	Araceae	NA
13.	<i>Commelina benghalensis</i>	Kachara, kama-zini	Commelinaceae	NA
14.	<i>Convolvulus arvensis</i>	Himrag	Convolvulaceae	NA
15.	<i>Crotalaria pinnata</i>	Sau	Leguminosae	NA
16.	<i>Desmodium illinoense</i>	Desmodium	Leguminosae	NA
17.	<i>Ficaria verna</i>	Keshute	Asteraceae	NA

DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11  
located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)

Chapter - III: Description of Environment

18	<i>Elephantopus scaber</i>	Meyurchulia	Asteraceae	NA
19	<i>Euphorbia hirta</i>	Baridudhi	Euphorbiaceae	NA
20	<i>Euphorbia thymifolia</i>	Chotidudhi	Euphorbiaceae	NA
21	<i>Evolvulus nemulosus</i>	Onkranta	Convolvulaceae	NA
22	<i>Fumaria indica</i>	Pitra papda	Papaveraceae	NA
23	<i>Leucas aspera</i>	Gumra, piri	Lamiaceae	NA
24	<i>Mercurella emarginata</i>	Muskani	Convolvulaceae	NA
25	<i>Origanum sanctum</i>	Tulsi	Lamiaceae	NA
26	<i>Oxalis corniculata</i>	Khatta	Oxalidaceae	NA
27	<i>Portulaca oleracea</i>	Parsley	Portulacaceae	NA
28	<i>Sida acuta</i>	Bariyani	Malvaceae	NA
29	<i>Sida cordifolia</i>	Berela	Malvaceae	NA
30	<i>Sida rhombifolia</i>	Vishkhapari	Malvaceae	NA
31	<i>Solanum nigrum</i>	Uchkadana	Solanaceae	NA
32	<i>Solanum xanthocarpum</i>	Ringni	Solanaceae	NA
33	<i>Spermatocoe pumila</i>	Charamana	Rubiaceae	NA
34	<i>Tridax procumbens</i>	Khad-muriya	Asteraceae	NA

(B) Grasses

(A) Free

Sr. No.	Botanical Name	Common Name	Family	IUCN Status
1	<i>Aristida depressa</i>	Sateo lappa	Poaceae	NA
2	<i>Bambusa nana</i>	Choti mugi	Poaceae	NA
3	<i>Cymbopogon barthra</i>	Grass	Poaceae	NA
4	<i>Chrysopogon fulvus</i>		Poaceae	NA
5	<i>Cynodon dactylon</i>	Doob	Poaceae	NA
6	<i>Dactyloctenium aegyptium</i>	Bhead grass	Poaceae	NA
7	<i>Dandyaenonius striatus</i>	Bans	Poaceae	NA
8	<i>Dactyloctenium aegyptium</i>	Doob	Poaceae	NA
9	<i>Dichanthium annulatum</i>	Juyi	Poaceae	NA
10	<i>Eragrostis amabilis</i>		Poaceae	NA
11	<i>Heteropogon contortus</i>	Karla luapa	Poaceae	NA
12	<i>Miscanthus sinensis</i>		Poaceae	NA
13	<i>Saccharum bengalense</i>	Muni	Poaceae	NA
14	<i>Saccharum striatum</i>	Musj	Poaceae	NA
15	<i>Saccharum spontaneum</i>	Kans	Poaceae	NA
16	<i>Stenaria glauca</i>	Vindra	Poaceae	NA

DEIA report of RBM of Minor Mineral (Gravel and Sand) at Stanton-1: Block/PKI B-11 located at Village- Shamoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)

Chapter – III: Description of Environment

1	<i>Angelicaista latifolia</i>	Jangli angur	Vitaceae	NA
2	<i>Bauhinia vahlit</i>	mahulan	Leguminosae	NA
3	<i>Cissampelos parviflora</i>	Path	Menispermaceae	NA
4	<i>Clematis barbellata</i>		Ranunculaceae	NA
5	<i>Cucurbita graveol</i>	Jangli kanda	Cucurbitaceae	NA
6	<i>Combretum indicum</i>	Gurwala	Combretaceae	NA
7	<i>Ebenus arvensis</i>	Kaali daldhli	Apocynaceae	NA
8	<i>Lupinus carnea</i>	Besram	Convolvulaceae	NA
9	<i>Momordica charantia</i>	Kerala	Cucurbitaceae	NA
10	<i>Peripateria daemia</i>	Diamat hela	Apocynaceae	NA
11	<i>Pisum sativum</i>	Saal	Leguminosae	NA
12	<i>Rhynchosia banyo</i>	Van urd	Leguminosae	NA
13	<i>Rhynchosia minima</i>	Van mu g	Leguminosae	NA
14	<i>Telophora indica</i>	Damba!	Apocynaceae	NA
15	<i>Pulsaria sativum</i>	Sarva	Apocynaceae	NA
16	<i>Pistia stratiota</i>	Van angur	Vitaceae	NA
1	<i>Cuscuta reflexa</i>	Peeli bel/Amar Bel	convolvulaceae	
1	<i>Aeschynomene indica</i>	Phulan	leguminosae	NA
<b>(A) Tree</b>				
Sr. No.	Botanical Name	Common Name	Family	IUCN Status
2	<i>Alicia verticillata</i>	Alligator Weel	Amaranthaceae	NA
3	<i>Alicia verticillata</i>	Kaundi	Amaranthaceae	NA
4	<i>Asargilla arvensis</i>	Neel	Myrsinaceae	NA
5	<i>Azolla pinnata</i>	Mosquito Fern	Selinaceae	NA
6	<i>Ceratophyllum demersum</i>	Hornwort	Araceae	NA
7	<i>Cotula coronopifolia</i>	Taro	Araceae	NA
8	<i>Crotalaria benghalensis</i>	Kava	Cruciferae	NA
9	<i>Cyperus alternifolius</i>	Umbrella Sedge	Cyperaceae	NA
10	<i>Dryopteris webbiai</i>	Fern	Dryopteridaceae	NA
11	<i>Dryopteris webbiai</i>	Fern	Dryopteridaceae	NA
12	<i>Eichhornia crassipes</i>		Acanthaceae	NA
13	<i>Hydrocotyle verticillata</i>	Water Parrot	Uragraceae	NA
14	<i>Lacistema sancti-pauli</i>	Bupat	Sterculiaceae	NA
15	<i>Melochia maderas</i>	Lotus, Kamal	Nelumbaceae	NA

DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKI B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)

Chapter - III: Description of Environment

16.	<i>Nymphaea Pubescens</i>	White Lotus	Nymphaeaceae	NA
17.	<i>Clethra orniculata</i>	Amul	Oxalidaceae	NA
18.	<i>Pilea microphylla</i>	Gum Powder Plant	Utriculariaceae	NA
19.	<i>Polygonum hydropiper</i>	Marsh Pepper Knot Weed	Polygonaceae	LC
20.	<i>Portulaca oleracea</i>	Little Hog-Weed	Portulacaceae	NA
21.	<i>Ranunculus acris-ratus</i>	Ajlaon	Ranunculaceae	LC
22.	<i>Ranunc. dentatus</i>	Amouati	Polygonaceae	NA

**Faunal Diversity of the area:**

There are no Biosphere reserves or Wildlife Sanctuaries or National Parks or Important bird areas (IBAs) or other ecologically sensitive areas within a distance of 10 Km from the boundary of the project site. There are no known migratory routes or breeding grounds of any rare or endangered or threatened (RED) species either. There are no known migratory routes of wildlife such as migratory birds, tigers or elephants. Both primary survey as well as the secondary obtained from published literature, the locals and the forest department indicate that there are major wild animals with the exception of wild pigs. Among the mammals, Rodents were quite common. Only small grassland birds were seen during the survey.

List of vertebrate species other than birds either recorded or reported from the study area. Secondary data is based on the information from the locals and forest department after cross checking with database of the State.

MAMMALS		
Latin name	Common name	WPA Schedule
Jackal	<i>Canis aureus</i>	Schedule-II
Indian Hare	<i>Lepus sylvaticus</i>	Schedule-IV
Little Indian field mouse	<i>Mus borboris</i>	Schedule-V
Nalgai	<i>Dicotyles irawadiensis</i>	Schedule-III
Jungle Cat	<i>Felis tigris</i>	Schedule-II
Monkey	<i>Macaca mulatta</i>	Schedule-II
Black Bat	<i>Rhinolophus</i>	Schedule-V
Bat	<i>Rousettus ferrugineus</i>	Schedule-V
Common Langur	<i>Semnopithecus entellus</i>	Schedule-I
Common Mongoose	<i>Herpestes ichneumon</i>	Schedule-II
Five Striped Palm Squirrel	<i>Furciferillus penicillatus</i>	Schedule-IV
Hare	<i>Lepus sylvaticus</i>	Schedule-IV
Wild Boar	<i>Sus scrofa</i>	Schedule-III
Chachindar	<i>Sus scrofa</i>	Schedule-IV

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-11 located at Village Shamtoo, District – Panchkula, Haryana (Lease area: 46.59 Ha.)*

*Chapter – III: Description of Environment*

AMR 2015	Clonal	Schedule -III
Sambar	<i>Acacia catechu</i>	Schedule -III
Indian persimmon	<i>Erythrina indica</i>	Schedule-IV

### 3.5 SOCIAL IMPACT ASSESSMENT, REHABILITATION & RESETTLEMENT (R&R) ACTION PLAN

#### INTRODUCTION

Socio-Economic Impact Assessment (SEIA) refers to systematic analysis of various social and economic characteristics of human being living in a given geographical area. The geographical area is often called Study Area or Impact Area. SEIA is carried out simultaneously with Environment Impact Assessment (EIA). The prime objective of SEIA is to identify and evaluate potential socio-economic and cultural impacts of a proposed development project on the lives and conditions of people, their families and their communities. If the potential impacts are significant and adverse, SEIA assist the developers and other stakeholders to reduce, remove or prevent these impacts from happening. The objectives of the proposed SEIA are as follows.

- To identify and assess socio-economic activities, which may be influenced by mining of minerals like sand.
- To examine the perceptions of local people on mining of minerals.
- To suggest interventions that can assist the Government and other stake holders in mitigating the negative impacts of the proposed mining project.

Socio-economic study is multidisciplinary, using theories and methods from Sociology, Economics, History, Psychology, Geography etc. As per Notification dated 14th September, 2006 of the then Ministry of Environment & Forests (Since renamed as Ministry of Environment, Forests and Climate Change), Socio-economic impact assessment of the study area of a project is mandatory for all the listed projects classified under various sectors.

#### STUDY AREA

The study area, also known as Impact Area has been defined as sum total of core and buffer area with a radius of ten kilometres from the periphery of the project site. All the landmarks, be it natural or manmade, falling in the study area has been taken into consideration while undertaking the impact assessment study. The entire study area of the proposed mining



*DEIA report of RRM of Minor Mineral (Gravel and Sand) at Shantou-1: Block/Pkt. B-11 located at Village- Shantou, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

project falls in the state of **Haryana**. There are **52 villages** and **no urban area** in the study area.

#### **HYPOTHESIS**

“Mining project” has significant socio-economic impacts on livelihoods of local communities”.

#### **APPROACH**

Research approach plays an important role to decide suitable methodology. It helps to develop research design and increase the effectiveness of research study. In the present study inductive approach has been adopted, which is also known as “bottom top approach” or “climbing the hill approach”. Under this approach data is first collected from primary and secondary sources. After scrutiny tables are generated in pre-designed formats. Subsequently, draft report is prepared after detail analysis of data. The final report is prepared after incorporating the comments and suggestions of the client.

#### **METHODOLOGY**

Accordingly, both qualitative and quantitative data was collected through primary and secondary sources. For collection of primary data a Sample Survey was carried out in the study area.

The qualitative data deals with description; they can be observed but not measured. Hence, codes were extensively used during collection of qualitative data. They were decided after data processing to facilitate data analysis and report writing.

#### **Sample Design**

In rural areas two stage stratified sample design were adopted. The first stage units were census villages and the ultimate stage units were households.

#### **BASELINE DATA**

Baseline data refers to basic information collected before a project/scheme is implemented. It is used later to provide a comparison for assessing impact of a project. Any attempt to collect base line data while undertaking actual impact assessment study is faced with recall error. The baseline data was collected from secondary sources. It consists of demographic particulars and amenities. The data presented in the table below pertains to study area as a whole.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantou-1: Block/P&L B-11  
located at Village- Shantou, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

**Table: Demographic Particulars of the Study Area**

S.No.	Description	Number	Percentage to Respective totals
1	<b>Gender wise Total Population of the Study Area</b>	<b>64134</b>	<b>100</b>
	Male	34154	53.3
	Female	29980	46.7
	Sex Ratio (No. of females per 1000 males)	877	
	Panchkula District Overall density of population (per sq. km)	630/km <sup>2</sup> (1,600/sq mi)	
2	<b>Gender wise Total Population (0-6 age group)</b>	<b>7871</b>	<b>100</b>
	Male	4225	53.7
	Female	3646	46.3
	Sex Ratio of 0-6 age group population (No. of females per 1000 males)	862	
3	<b>Number of Households</b>	<b>11653</b>	
	Average Household size in the Study Area (Rural) as a whole	4	
	Highest Household size in the Study Area	5	
	Lowest Household size in the Study Area	3	
4	<b>Total Population of Schedule Caste Community in the Study Area</b>	<b>10474</b>	<b>100</b>
	Male	5577	53.3
	Female	4897	46.7
	Sex Ratio (No. Of females per 1000 males)	878	
5	<b>Total Population of Schedule Tribe Community in the Study Area</b>	<b>0</b>	<b>100</b>
	Male	0	0
	Female	0	0
	Sex Ratio (No. Of females per 1000 males)	931	

*DFIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtau-I: Block/PKL B-11  
located at Village- Shamtau, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - III: Description of Environment*

6	<b>Total Literates in the Study Area</b>	<b>42328</b>	<b>100</b>
	Male	24744	58.5
	Female	17585	41.5
	<b>Overall Literacy Rate in the Study Area</b>		<b>65.99</b>
	Male		38.58
	Female		24.41
	<b>Gender gap in Literacy rate</b>		<b>14.17</b>
7	<b>Total Workers in the Study Area</b>	<b>24444</b>	<b>100</b>
	Male	18554	75.9
	Female	5890	24.1
	<b>Overall Work Participation Rate in the Study Area</b>		<b>38.11</b>
	Male		28.93
	Female		9.18
	<b>Gender Gap in work participation rate</b>		<b>19.75</b>
	<b>Overall Dependency Rate of Non-workers</b>		<b>25.84</b>
<b>Dependency Rate of Male Non-workers</b>		<b>22.34</b>	
<b>Dependency Rate of Female Non-workers</b>		<b>2.49</b>	
8	<b>Total Main Workers in the Study Area</b>	<b>18318</b>	<b>100</b>
	Male	13420	83.6
	Female	4998	16.4
	<b>Overall Work Participation rate of Main Workers</b>		<b>28.56</b>
	<b>Work Participation rate of males</b>		<b>23.88</b>
	<b>Work Participation rate of females</b>		<b>4.67</b>
<b>Overall Gender Gap in Work Participation rate of Main workers</b>		<b>19.21</b>	
9	<b>Total Marginal Workers in the Study Area</b>	<b>6126</b>	<b>100</b>
	Male	3234	52.8
	Female	2892	47.2
	<b>Overall work participation rate in the Study Area</b>		<b>9.55</b>
	<b>Work participation rate of males</b>		<b>5.04</b>

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKI B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.59 Ha.)*

*Chapter – III: Description of Environment*

	Work participation rate of females		4.50
	Overall gender gap in work participation rate of Marginal workers		0.54
10	<b>Total Agricultural Workers in the Study Area</b>	<b>1874</b>	<b>100</b>
	Male	1613	86.1
	Female	261	13.9
	Overall work participation rate in Areas		2.92
	Work participation rate of males		2.51
	Work participation rate of females		0.40
	Gender Gap in work participation rate of Agricultural Workers in the Study Area		2.11
11	<b>Total Cultivators in the Study Area</b>	<b>6053</b>	<b>100</b>
	Male	4999	82.6
	Female	1054	17.4
	Overall work participation rate in the Study Area		9.41
	Work participation rate of males		7.79
	Work participation rate of females		1.64
	Gender Gap in work participation rate of Cultivators in the Study Area		6.15
12	<b>Total 'Non Workers' in the Study Area</b>	<b>39690</b>	<b>100</b>
	Male	15600	38.5
	Female	24090	61.5
	Overall work participation rate in the Study Area		57.57
	Work Participation rate of males		22.11
	Work Participation rate of females		35.26
	Gender Gap in work participation rate of Non Workers in the Study Area		13.15

Source: Census 2011

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-I: Block/PKL B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

NB: All the rates and ratios provided in the above table have been compiled on the basis of Census 2011 demographic data.

### **Current Socio-Economic Status**

#### **Population Composition**

According to 2011 Population Census the study area has a total population of **16434**. Of this 53.3percent are male and the remaining 46.7percent are female. Further 12.27 percent of the total population belongs to 0-6 age group. About 53.7 percent of them are male and the remaining 46.3 percent are female.

#### **Sex Ratio**

The overall sex ratio in the study area has been worked out to 877 females per 1000 males, which is less than the national average of 940 females per 1000 males. Sex ratio of Children belonging to 0-6 age group has been worked out to 862 females per 1000 males.

#### **Density of Population**

The overall density of population in the Panchkula District has been worked out to 630/km<sup>2</sup> (1,600/sq mi).

#### **Households**

There are **11653** households in the study area and the average household size is Four.

#### **Social Structure**

In the study area the total number of persons belonging to Scheduled Caste community is 10474, which is 16.33 percent of the total population. The gender wise distribution of scheduled caste population indicates male 53.2 percent and female 46.8 percent, registering a sex ratio of 878 females per one thousand males.

Further analysis of data reveals that in the study area, no any persons belonging to **Scheduled Tribe** community residing in the study area.

#### **Literates and Literacy Rate**

The total numbers of literate persons in the study area are 42328, which is 65.99 percent of the total population. Of the total number of literate persons 58.5 percent are male and the remaining 41.5 percent are female.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1; Block/Ph. B-11 located at Village- Shantoo, District – Parbhkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter III: Description of Environment*

The overall literacy rate in the study area has been worked out to 65.99 percent. The gender wise distribution of literacy rate reveals that 38.58 percent of the literate persons are male and 24.41 percent are female. This creates a gender gap of 14.17 percent.

#### **Workers and Work Participation Rate**

A worker has been defined as a person who participates in a productive activity with or without compensation, wages or profit and such participation may be physical and/or mental in nature. A worker may be a main worker or a marginal worker. The main workers are those workers who had worked for the major part of the total working period.

The total number of workers in the study area has been worked out to 24448, which is 38.11 percent of the total population. Of the total number of workers 75.9 percent are male and the remaining 24.1 percent are female. The overall work participation rate is 38.11 percent. While the work participation rate of male is 28.93 percent, it is only 9.18 percent in the case of females. This creates a gender gap of 19.75 percent, which is significantly high. The Main workers constitute 28.56 percent of the total workers, while marginal workers constitute only 9.55 percent. The females prefer to work as marginal workers as they have very little time to spare for other work outside their houses as they are to undertake household work besides rearing their children. The total number of main and marginal workers in the study area is 18318 and 6126 respectively.

Further classification of the workers has revealed that in the study area total agricultural workers about 2.92 percent are Cultivators and the remaining 9.43 percent are Agricultural labour. About 82.6 percent of cultivators are male and the remaining 17.4 percent are female. On the other hand, 86.1 percent of Agricultural workers are male and the remaining 13.9 percent are female. The wages of women agricultural labour is miserably low in comparison to their male counterpart, though they put same amount of hard work as the male does. The 'Other Workers' include white collar workers, blue collar workers, pink collar workers, infernal workers, etc.

#### **Dependency Ratio**

Based on total number of workers gainfully employed and non-workers either in search of a job or very old & retired or physically handicapped or mentally retarded or students continuing their studies or people who have no intention to work, the overall dependency rate has been worked out to 25.84 percent.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1; Block/PKI. 9-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter III: Description of Environment*

**AMENITIES**

Based on information collected from secondary sources various amenities available in the study area are provided in the table below:

**Table 3.4 (ii): Amenities available in the Study Area**

Sr. No.	Description	Number of habitations where the facility is available		Number of institutions/facilities available in the habitations	
		Village	Towns	Village	Towns
<b>(A) INSTITUTIONAL EDUCATIONAL FACILITIES</b>					
<b>1</b>	<b>Pre - Primary School</b>	<b>14</b>	<b>-</b>	<b>22</b>	<b>-</b>
1(a)	Only Private Pre - Primary School	14	-	22	-
<b>2</b>	<b>Primary School</b>	<b>74</b>	<b>-</b>	<b>114</b>	<b>-</b>
2(a)	Only Govt Primary School	61	-	89	-
2(b)	Both Govt And Private Primary School	13	-	34	-
<b>3</b>	<b>Middle School</b>	<b>48</b>	<b>-</b>	<b>62</b>	<b>-</b>
3(a)	Only Govt Middle School	40	-	43	-
3(b)	Both Govt And Private Middle School	8	-	19	-
<b>4</b>	<b>Secondary School</b>	<b>20</b>	<b>-</b>	<b>23</b>	<b>-</b>
4(a)	Only Govt Secondary School	16	-	16	-
4(b)	Only Private Secondary School	1	-	1	-
4(c)	Both Govt And Private Secondary School	3	-	6	-
<b>5</b>	<b>Senior - Secondary School</b>	<b>9</b>	<b>-</b>	<b>10</b>	<b>-</b>

DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11  
locute-1 at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)

Chapter - III: Description of Environment

5(a)	Only Govt. Senior Secondary School	8	8
5(b)	Both Govt And Private Senior Secondary School	1	2
	<b>Total No. Of Schools</b>	<b>165</b>	<b>231</b>
<b>(B)</b>	<b>HEALTH INSTITUTIONS AND HEALTH PERSONNEL.</b>		
<b>B.1</b>	<b>HEALTH INSTITUTIONS</b>		
1	Primary Health Centre	3	3
2	Primary Health Sub Centre	13	13
3	Dispensary Numbers	12	12
4	Hospital Alternative Medicine	2	2
5	Veterinary Hospital	19	19
	<b>Total</b>	<b>49</b>	<b>49</b>
<b>B.2</b>	<b>NUMBER OF DOCTORS IN HEALTH INSTITUTION</b>		
1	Primary Health Centre Doctors Total Strength	3	13
2	Hospital Alternative Medicine Doctors Total Strength	2	2
3	Dispensary Doctors Total Strength	12	12
	<b>Total</b>	<b>17</b>	<b>27</b>
<b>B.3</b>	<b>NUMBER OF PARA MEDICAL STAFF IN HEALTH INSTITUTION</b>		
1	Primary Health Centre Para Medical Staff Total Strength	3	2
2	Primary Health Sub Centre Para	4	4
3	Hospital Alternative Medicine Para Medical Total Strength	2	2
4	Dispensary Para Medical Staff Total Strength	12	15
5	Number of ASHAs	57	57
	<b>Total</b>	<b>78</b>	<b>80</b>
<b>(C)</b>	<b>Others Medical Practitioners</b>		
1	Non Govt Medical Practitioner With No Degree	2	3
2	Non Government Medical facilities Out Patient	21	32
3	Non Government Medical facilities In And Out Patient	4	4



*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/P&L B-11  
located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

4	Non Government Medical facilities with MBBS Degree	Medical Practitioner	6	7
5	Non Government Medical facilities with other Degree	Medical Practitioner	7	15
6	Non Government Medical facilities Practitioner with no Degree		13	16
7	Non Government Medical facilities Medicine Shop		4	6
	<b>Total</b>		<b>57</b>	<b>83</b>
(D)	<b>Veterinary Hospital</b>		<b>19</b>	<b>19</b>
(E)	<b>DRINKING WATER FACILITIES</b>			
1	<b>Wells</b>			<b>6</b>
(a)	Only Covered Wells			6
2	<b>Tube Wells</b>			<b>47</b>
3	<b>Hand Pump</b>			<b>25</b>
4	<b>Tap Water</b>			<b>82</b>
4(a)	Treated And Untreated Tap Water			7
4(b)	Only Treated Tap Water			75
5	<b>Tank / Pond / Lake</b>			<b>3</b>
6	<b>Spring</b>			<b>1</b>
(F)	<b>Transport And Communication</b>			
1	Telephone (landline)			68
2	Public Call Offices			35
3	Post Office			11
4	Sub Post Office			10
5	Availability Of Mobile Phone Coverage			82
6	Public Bus Service			73
7	Private Bus Service			40
8	Taxi			5

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

<b>(G)</b>	<b>ELECTRICITY</b>				
1	Total No. Of Settlements Having Power Supply	82			
1(a)	Power Supply For All Uses	82			
<b>(H)</b>	<b>ROADS</b>				
1	<b>Rural Areas</b>				
1(a)	Gravel (Kutchha) and Foot Roads	1			
1(b)	Black Topped Gravel (Kutchha) And Foot Roads	41			
1(c)	Black Topped And Foot Roads Total	40 82			
<b>(I)</b>	<b>Banking and Credit facilities</b>				
1	Commercial Banks#	1			
2	Cooperative Bank	8			
3	Agricultural Credit Societies	12			
4	Agricultural Marketing Society	4			
	<b>Total</b>	<b>25</b>			
<b>(J)</b>	<b>Other Facilities</b>				
1	Self-Help Group Status	75			
2	Public Distribution Status	56			
3	Nutritional Centres-ICDS	75			
4	Nutritional Centres-Anganwadi Centre	82			

The data given in the above table reveals that the basic amenities available in the study area are far from satisfactory. Nearly eight of the inhabited villages are without any school and the children from these villages are forced to go to the nearby villages where schools are available. There is no institution for higher education located in the study area. Lastly, the study area is devoid of facilities for adult education as there is no adult literacy centre as such.

The health facilities available in the study area are very poor and require upliftment. There are government run five PHCs, CHCs, a Maternity & Child Welfare Centre and Two Dispensaries to meet the needs of the rural people. There are in all 27 medical practitioners in the study area and the number of persons per doctor has been worked out to 2640 which is very low and should be considered as a matter of concern.

The tap water has reached all inhabited villages out of which seven have treated and untreated water.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamton-1: Block/PKL B-11 located at Village- Shamton, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – III: Description of Environment*

The accessibility of mobile signals has covered all the inhabited villages.

Out of total villages all villages have been provided with power supply for all uses. However, frequent load shedding during summer months need to be checked by ensuring uninterrupted supply of power.

There are 40 villages in the study area where there are black topped and foot roads, in 41 villages there are all types of roads are present and only one village with gravel and foot road. Hence, the construction of black topped and gravel roads in the above villages needs to be taken up on priority basis as the roadways are the backbone of social-economic development of people in a region.

The entire study area is served by one commercial bank. Besides the above there are 12 Agricultural credit societies and four Agricultural Marketing Societies. The aforesaid financial institutions provide cheap credit facilities to the local people engaged in agriculture, trade and industry. Hence the promising entrepreneurs can start micro and small industries in the region.

ANNEXURE

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PLR-B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.56 Ha.)*

*Chapter- IV: Anticipated Environmental Impact and Mitigation Measures*

**CHAPTER-IV**  
**ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES**  
**INDEX**

S. No.	CONTENTS	Page No.
4.0	GENERAL	2/IV
4.1	LAND ENVIRONMENT	2/IV
4.2	WATER ENVIRONMENT	5/IV
4.3	AIR ENVIRONMENT	6/IV
4.4	NOISE ENVIRONMENT	9/IV
4.5	BIOLOGICAL ENVIRONMENT	10/IV

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKI. B-11 located at Village- Shamtoo, District - Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – IV. Anticipated Environmental Impact and Mitigation Measures*

#### **4.0 GENERAL**

All development projects have an impact on the natural set up of the environment. This impact may be beneficial or adverse, depending on the improvement or the deterioration it brings about in the status of air, water, land, ecology, natural systems, socio-cultural life styles and economics of the population. Depending on the nature of activities and baseline environment status, the impacts are assessed for their importance. On the basis of the impact analysis, the mitigating action and future monitoring requirement are focused in the Environmental Management plan for countering or minimizing the impacts.

Keeping in mind, the environmental baseline scenario as detailed in Section III and the proposed mining activity described in Section II, it is attempted to assess the likely impact and its extent on various environmental parameters and likely mitigation measures to be adopted.

#### **4.1 LAND ENVIRONMENT**

River bed Mining and allied activities will be done in the river bank of Dangri River.

##### **Impact on Land Environment**

The mining and allied activities involved in river bed mining are creation of roads/ transportation track and formation of mine pits inside river, etc. Impacts of these activities are given below:

##### **a. Top Soil:**

The RBM activities that involve top soil involves the excavation of Sand from the river bed. The RBM activity will be limited up to 3 m water table whichever will be less. Systematic removal of sand cause bed degradation and will make it unfit for aquatic environment.

##### **Mitigation measures**

Since the project is mainly sand deposit excavation (soil deficient) so no loss of top soil is anticipated.

##### **b. Excavation:**

Excavation of pits will be done in the mine lease area.

##### **Mitigation measure**

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*Chapter- IV: Anticipated Environmental Impact and Mitigation Measures*

The RBM activity will be manual, most of the work will be done manually to mitigate harm associated with heavy machinery / equipments / their functioning, except work include human risk.

**e. Waste dumps:**

This is RBM project not involving waste generation or any blasting. The sand is directly loaded in trucks, trolleys etc. and sent to markets. Thus no waste dump sites are needed to such projects

**Mitigation measure**

Not applicable.

**IMPACT OF SAND MINING**

Impacts of sand mining can be broadly classified as given below:

**Physical**

The large-scale extraction of streambed materials, mining below the existing stream bed and the alteration of channel-bed form and shape lead to several impacts such as erosion of channel bed and banks, increase in channel slope, and change in channel morphology. These impacts may cause: (1) the undercutting and collapse of river banks, (2) the loss of adjacent land and/or structures, (3) upstream erosion as a result of an increase in channel slope and changes in flow velocity, and (4) downstream erosion due to increased carrying capacity of the stream, downstream changes in patterns of deposition, and changes in channel bed and habitat type.

**Mitigation measures**

- Sand mining will be restricted up to 3 m below river bed / water table whichever less.
- The RBM will be done in unsaturated zone. Thus minimum loss to habitat.
- Dredging will not be allowed.

**Sand Budget**

Determining the sand budget for a particular stream reach requires site-specific topographic, hydrologic, and hydraulic information. This information is used to determine the amount of sand that can be removed from the area without causing undue erosion or degradation, either at the site or at a nearby location, upstream or downstream.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamloo-1: Block/PKL B-11 located at Village- Shamloo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter- IV: Anticipated Environmental Impact and Mitigation Measures*

In-channel or near-channel sand mining changes the sediment budget, and may result in substantial changes in the channel hydraulics. These interventions can have variable effects on aquatic habitat, depending on the magnitude and frequency of the disturbance, mining methods, particle-size characteristics of the sediment, the characteristics of riparian vegetation, and the magnitude and frequency of hydrologic events following the disturbance. Temporal and spatial responses of alluvial river systems are a function of geomorphic thresholds, feedbacks, lags, upstream or downstream transmission of disturbances, and geologic/physiographic controls. Minimization of the negative effects of sand mining requires a detailed understanding of the response of the channel to mining disturbances.

Decisions on where to mine, how much, and how often require the definition of a reference state, i.e., a minimally acceptable or agreed-upon physical and biological condition of the channel. Present understanding of alluvial systems is generally not sufficient to enable the prediction of channel responses quantitatively and with confidence; therefore, reference states are difficult to determine. Still, a general knowledge of fluvial processes can provide guidelines to minimize the detrimental effects of mining. Well-documented cases and related field data are required to properly assess physical, biological, and economic tradeoffs.

*Mitigation measures*

Quantities will be strictly limited so that sand recruitment and accumulation rates are sufficient to avoid extended impacts on channel morphology and in stream habitat. Although conceptually simple, annual sand recruitment to a particular site is highly variable and not well understood.

- Flow and sediment transport for most rivers and streams is highly variable from year-to-year, thus an annual average rate may be meaningless.
- An "annual average deposition rate" could bear little relation to the sediment transport regimes in a river in any given year.
- The site selection was done keeping the following points, minor mineral reserves, site specific problems like flooding, submergence crop lands / fields, need of excavation, rate of sediment deposition etc.
  - RBM will be done in responsible manner.
  - Sand mining will be restricted up to 4 m below bed / water table whichever less.
  - The RBM will be done in unsaturated zone.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shanton-1: Block/PKL B-11 located in Village- Shamoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter- IV: Anticipated Environmental Impact and Mitigation Measures*

- No mining will be done near to important structure like bridges, dam and others to prevent bar skimming.
- No mining will be done nearby the dam and important structure to prevent hungry water problems.
- Mining will not exceeds beyond the magnitude.

#### **4.2 WATER ENVIRONMENT**

Damage in the water body, depends on its assimilative capacity. To find out assimilative capacity of receiving water body, water samples were collected from different groundwater and surface water sources. The study indicates that assimilative capacity of the River water bodies still exists, but effective measures shall be taken to check water pollution. To find out the effect on ground water an extensive hydro-geological study has been conducted and from the study it can be safely concluded that there is no noticeable effect on surrounding ground water resource due to mining. The mining activity does not require water. The collection of sand is done on the river bed where excessive sedimentation has been noticed.

Mining of sand from within or near a streambed has a direct impact on the stream's physical habitat characteristics. These characteristics include geometry, bed elevation, substrate composition and stability, in stream roughness elements, depth, velocity, turbidity, sediment transport, stream discharge and temperature. Altering these habitat characteristics can have deleterious impacts on both in stream biota and associated riparian habitat.

The detrimental effects to biota resulting from bed material mining are caused by three major processes:

- i. alteration of flow patterns resulting from modification of the river bed
- ii. an excess of suspended sediment
- iii. damage to riparian vegetation and in stream habitat

As the project activity is carried out in the meandering part of the river bed, none of the project activities affect the water environment or riparian habitats. In the projects, it is not proposed to divert or truncate any stream. No proposal is envisaged for pumping of water either from the river or tapping the ground water. In the lean months, the proposed sand mining will not expose the base flow of the river and hence, there will not be any adverse impact on surface hydrology and ground water regime due to this project. The contractor will



*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter- IV: Anticipated Environmental Impact and Mitigation Measures*

adhere all guidelines and rules for proper and scientific method of mining during the period of extracting the ordinary sand. Thus, the project activities shall not have any adverse affect on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality.

### **4.3 AIR ENVIRONMENT**

#### **Anticipated impacts and evaluation**

Information on air quality was studied and various modeling techniques predicted that the mining activity will not affect the air quality in a significant manner. In mining operations, loading, transportation and unloading operations may cause deterioration in air quality due to handling dry materials. In the present case, only wet materials will be handled, thus eliminating problems of fugitive dust. Also, the collection and lifting of minerals will be done manually without any blasting. Therefore the dust generated is insignificant as compared to mining process of other hard minerals like the process of drilling, blasting, mechanized loading etc.

#### **Air Modeling**

In general, mining operations generate substantial quantities of airborne respirable dust, which leads to the development of respirable diseases in mine workers. The increasing trend of mining leads to release of huge amount of dust. These air borne dust particles, generally below 100 micron in size, are nuisance particulates and cause health hazards as an ill effect of mining activities. Extraction activities like drilling, blasting, material handling and transport are a potential source of air pollution. Therefore, a detailed study on emission sources and quantification of pollutant concentration by means of dispersion modeling is required to assess the environmental impact of a mine. On the basis of the predicted increments to air pollutant concentrations, an effective mitigation and environmental plan can be devised for sensitive areas. In case of river bed sand mining, as there is no blasting and drilling activities, the impacts are caused by material handling and transportation activities.

#### **FUGITIVE DUST- MODELING**

In the present study sand mine in Panchkula of Haryana State was selected. Air quality modeling was done using line source model as published by USEPA for transportation

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shatatao-1; Block/PKI. B-11 located at Village- Shantao, District - Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter 11: Anticipated Environmental Impact and Mitigation Measures*

through roads and the empirical emission factor equations from article, Jyothi Prabha, Gurdeep Singh and L.N.Sinha, 2003 "Emission Factor Equations for Haul roads: The Indian Perspective", Indian Journal of Air Pollution Control Vol. VI No. 1 March pp 37-43. Emission factors to be used in Line source Dispersion equation is adopted from formula as given below:

$$E = \left\{ \left[ \frac{(100-m)}{m} \right]^{0.8} \left[ \frac{s}{(100-s)} \right]^{0.1} u^{0.1} \{2663 + 0.1 (v+fc) \} 10^{-6} \right\} \text{----- (1)}$$

Where

E = Emission Rate (g/sec/m)

m = Moisture Content of the road = 10%

s = Silt Content of the Road = 10%0

u = Wind Speed = 4.0 m/s

v = Average Vehicle Speed = 4.5 m/sec

f = frequency of Vehicle movement in no per hour = 33 vehicles / hour

c = Capacity of the dumper in tons = 20 ton

Thus using equation (1)

$$E = 0.0052 \text{ g/sec/m}$$

Concentration of the fugitive dust was calculated using the empirical equations for unpaved roads published by USEPA- AP42. The Concentration of the fugitive Dust is given below:

$$C = \left( \frac{2}{\pi} \right)^{1/2} (E / \sigma_z \cdot v) \text{Exp} \left[ - \frac{(h^2)}{(2 \sigma_z^2)} \right] \times 10^6 \text{----- (2)}$$

Where

C = Concentration in microgram/ m<sup>3</sup>

E = Emission Rate = 0.0052 g/sec/m

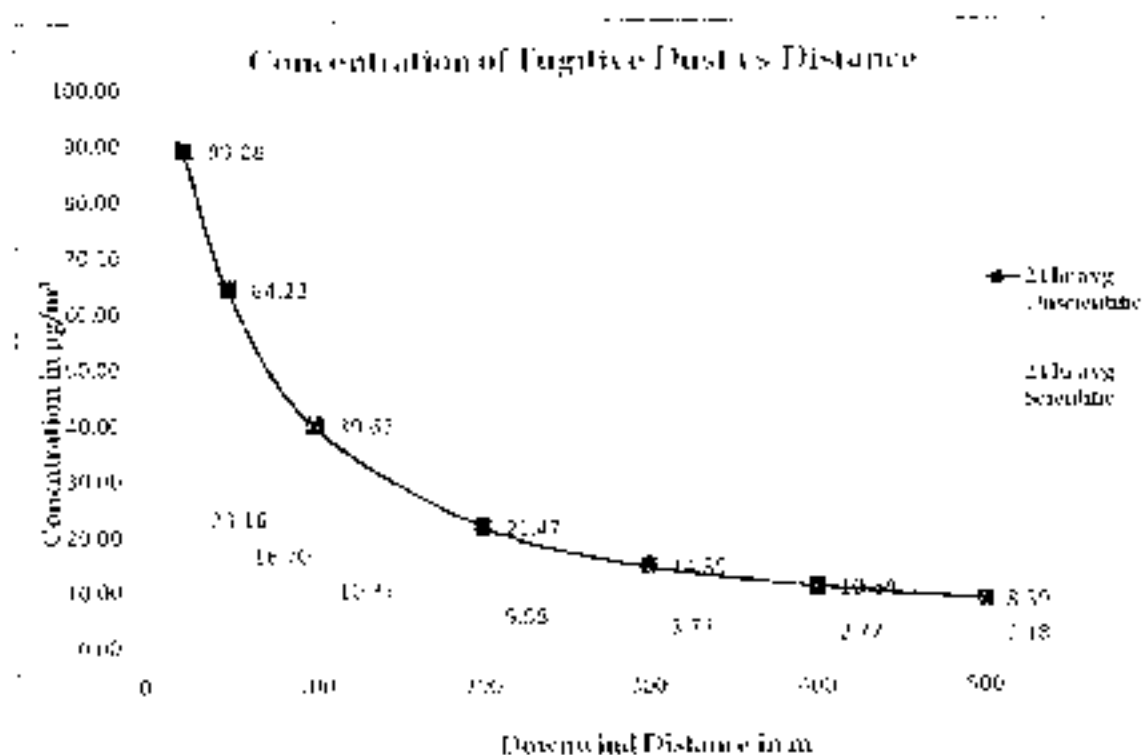
u = Wind Speed = 4 m/s

h = 1m

Modeling was done for an infinite line source assuming unpaved road. For conservative calculation wind was assumed to blow at a velocity of 4 m/s perpendicular to the road. The results are given in the graph:

*DEIA report of RRM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKJ, B-11 located at Village- Shamtoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter -IV: Anticipated Environmental Impact and Mitigation Measures*



It is observed that the ground level concentration (GLC) decreases from 89.08  $\mu\text{g}/\text{m}^3$  at 50 m from the centre line of the road to 8.30  $\mu\text{g}/\text{m}^3$  at 500 m from the centre line of the road. These values have been predicted for a dry unpaved road.

#### Mitigation measures

The only air pollution sources are the road transport network of the trucks. The dust suppression measures like water spraying will be done on the roads. This will decrease the dust emission by 75%. utmost care will be taken to prevent spillage from the trucks. Overloading will be prevented. Plantation activities along the roads will also reduce the impact of dust in the nearby villages.

#### 4.4 NOISE ENVIRONMENT

The sand mining projects are mainly not noisy as these are mainly manual in nature. But in this case the methodology adopted for mining is opencast semi-mechanized mining method

#### Impact on environment

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter- IV: Anticipated Environmental Impact and Mitigation Measures*

At mines, noise is created by movement of machinery & transportation vehicles, etc. The noise level in the working environment are compared with the standards prescribed by Occupational Safety and Health Administration (OSHA-USA) which has been adopted and enforced by the Govt. of India through model rules framed under Factories Act, 1980 and CPCB 2000 norms. The summary of the permissible exposures in cases of continuous noise as per above rules is given below:

**Table 4J: Noise impact**

Total time of exposure per day in hour	Sound pressure in dB(A)	Remarks
8.0	90	No exposure in excess of 115 dB(A) is permissible  For any period of exposure falling in between any figure and lower figure as indicated in column (1), the permissible sound is to be determined by extrapolation or proportionate scale
6.0	92	
4.0	95	
3.0	97	
2.0	100	
1 ½	102	
1	105	
½	107	
¼	110	
1/8	115	

Noise at lower levels (sound pressure) is quite acceptable and does not have any bad effect on human beings, but when it is abnormally high- it incurs some maleficent effects

**a. Mitigation measures**

**i. On-site**

As mining will be done manually, no machineries will be used. So, as such no hearing protection is needed for the miners. Moreover, well maintained vehicles will be used in order to reduce the noise during movement of vehicles.

**ii. Off-site**

The off-site receptors are not significantly affected as noise generated by mines is insignificant but some disturbances due to vehicle movement cannot be avoided. Plantation

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-I: Block/PFL B-II located at Village- Shantoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter- B: Anticipated Environmental Impact and Mitigation Measures*

will be done along the roadsides, civic amenities, etc. which will more or less dampen the off-site noise level.

#### 4.5 BIOLOGICAL ENVIRONMENT

**Table 4.2 Anticipated impact and mitigation measures for biological environment:**

Impact Predicted	Mitigation measure
Disturbance to free movement / living of wild fauna viz Birds, Reptiles etc.	<ul style="list-style-type: none"> <li>• Noise produced due to vehicular movement for carrying sand materials will be in permissible noise level. Higher noise level in the area may lead to restlessness and failure in detection of calls of mates and young ones;</li> <li>• Care will be taken not to hunt animals (birds) by labors;</li> <li>• If wild animals/birds are noticed crossing the core zone, they will not be disturbed at all;</li> <li>• Labors will not be allowed to discard food, plastic etc., which can attract animals/birds near the core site;</li> <li>• Only low polluting vehicles will be allowed for carrying mining materials. All vehicles allowed in the project site area will have to provide valid pollution under control certificate;</li> <li>• Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per noise pollution (regulation and control), rules, 2000, CPCB norms.</li> </ul>
Disturbance of riparian ecosystem/wetlands	<ul style="list-style-type: none"> <li>• The mine owners will not be allowed to destruct or modify the riparian ecosystem or the wetlands by the side of the river.</li> </ul>
Monitoring of upstream and downstream water quality	<ul style="list-style-type: none"> <li>• Water quality will be monitored from upstream and downstream area to assess the impact on water quality. Mining activity will be controlled to maintain the clean water conditions.</li> </ul>

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtao-1: Block/PKL B-11 located at Village- Shamtao, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter-IV Anticipated Environmental Impact and Mitigation Measures*

**Impact on Ecology of the Area**

Mining which leads to the removal of channel substrate, re suspension of streambed sediment, clearance of vegetation, and stockpiling on the streambed, will have ecological impacts. These impacts may have an effect on the direct loss of stream reserve habitat, disturbances of species attached to streambed deposits, reduced light penetration, reduced primary production, and reduced feeding opportunities.

For then sand of years, sand has been used in the construction of roads and buildings. Today, demand for sand continues to increase. Mining operators, in conjunction with cognizant resource agencies, must work to ensure that sand mining is conducted in a responsible manner.

Excessive and unscientific Riverbed sand mining causes the degradation of rivers. Riverbed mining lowers the stream bottom, which may lead to bank erosion. Depletion of sand in the streambed causes the deepening of rivers, and the enlargement of river mouths. Any volume of sand exported from streambeds is a loss to the system.

Excessive and unscientific Riverbed sand mining is a threat to bridges, river banks and nearby structures. Sand mining also affects the adjoining groundwater system and the uses that local people make of the river.

Excessive and unscientific riverbed sand mining results in the destruction of aquatic and riparian habitat through large changes in the channel morphology. Impacts include bed degradation, bed coarsening, lowered water tables near the streambed, and channel instability. These physical impacts cause degradation of riparian and aquatic biota and may lead to the undermining of bridges and other structures. Continued extraction may also cause the entire streambed to degrade to the depth of excavation.

Sand mining generates extra vehicle traffic, which negatively impacts the environment. Where access roads cross riparian areas, the local environment may be impacted.

**Mitigation measures**

As the present mining will be done in a scientific manner as mentioned before, not much significant impact is predicted, however, the following mitigation measure will be taken to further minimize it.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-II located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter- II: Anticipated Environmental Impact and Mitigation Measures*

- Re-suspension, turbulence, stream flow, channel substrate and associated species will be disturbed and lost due to proposed mining will disturbed existing pattern but in respect to river area is very minimum / less. The activity will mainly be carried out manually to minimize associate loss, as stated earlier that the settling pit will be created to minimize the adverse impact downstream
- No mining will be done near to important structure like bridges, dam and others.
- No mining will be carried out during the rainy season to minimize impact on aquatic life.
- As the mining site has no vegetation, thus clearance of vegetation not required.
- The mining activity will employ many heavy vehicles to transport the sand outside the mine to desired destination that cause the loss to riparian habitat. Safe site / site having less impact will be selected for transportation, all the vehicles will be employed for transportation purpose will be PUC certified. On closure / during the rainy season the eroded bank will be restored / reclaimed to minimize negative impacts.

**Flora and Fauna of Riparian Habitat**

If sand mining is done in an unscientific way, i.e. beyond the replenishment capacity, riverbed mining can have adverse effects at the mine sites. The fertile streamside land will be lost gradually and the wildlife in the riparian areas may start vanishing. Degraded stream habitats will result in loss of fisheries productivity, biodiversity, and recreational potential. Thus the severely degraded channels may lower the aesthetic value too.

All species require specific habitat conditions to ensure long-term survival. Native species in streams are uniquely adapted to the habitat conditions that existed before humans began alterations. These have caused major habitat disruptions that favored some species over others and caused overall declines in biological diversity and productivity. In most streams and rivers, habitat quality is strongly linked to the stability of channel bed and banks. Unstable stream channels are inhospitable to most aquatic species. Factors that increase or decrease sediment supplies often destabilize bed and banks and result in dramatic channel readjustments. For example, human activities that accelerate stream bank erosion, such as riparian forest clearing / Riverbed mining cause stream banks to become net sources of sediment that often have severe consequences for aquatic species. Anthropogenic activities that artificially lower stream bed elevation cause bed instabilities that result in a net release of

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-I: Block/PKL B-II located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter- IV: Anticipated Environmental Impact and Mitigation Measures*

sediment in the local vicinity. Unstable sediments simplify and, therefore, degrade stream habitats for many aquatic species.

The most important effects of excessive and unscientific Riverbed sand mining on aquatic habitats are bed degradation and sedimentation, which can have substantial negative effects on aquatic life. The stability of sand-bed streams depends on a delicate balance between stream flow, sediment supplied from the watershed, and channel form. Mining-induced changes in sediment supply and channel form disrupt channel and habitat development processes. Furthermore, movement of unstable substrates results in downstream sedimentation of habitats. The affected distance depends on the intensity of mining, particle sizes, stream flows, and channel morphology. Channel widening causes swallowing of the streambed, producing braided flow or subsurface intergrades flow in riffle areas, hindering movement of fishes between pools. Channel reaches become more uniformly shallow as deep pools fill with gravel and other sediments, reducing habitat complexity, riffle-pool structure, and numbers of large predatory fishes.

All such impacts can be reduced by following scientific mining practices and mitigation measures as restricted.

#### **Mitigation measures**

Sand extraction operations will be managed to avoid or minimize damage to stream/river banks and riparian habitats

- Sand extraction in vegetated riparian areas will be avoided
- Undercut and incised vegetated banks will not be altered.
- Large woody debris in the riparian zone will be left undisturbed or replaced when moved and not be burnt.
- Sand stockpiles, overburden and/or vegetative debris will not be stored within the riparian zone.
- It is essential that overburden is evenly redistributed over exposed areas as soon as possible after the operation has been completed for faster revegetation.
- Operation and storage of heavy equipment within riparian habitat will be restricted.
- Access roads will not encroach into the riparian zones

No exotic species will be introduced by the RBM project activity & associated persons et al.



*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter- IV: Anticipated Environmental Impact and Mitigation Measures*

As the mining will not be done beyond the stipulated limit, so the chances of river mouth widening, bank widening will be negligible.

The river channel will get swallowed due to sediment deposition which will lead to widening of the river channel and in turn cause submergence of the nearby areas. Thus, mining in a scientific and systematic way will reduce such impending effects.

Thus there is a requirement to establish a stable ecosystem with both ecological and economic returns. Minimization of soil erosion and dust pollution enhances the aesthetic value of the core and the buffer zone. To achieve this, it is advised to have planned increase in the area of green cover of plantation and green belts activities. The basic objectives of plantations are as follows:

- Improvement of Soil quality,
- Quick vegetative cover to check soil erosion,
- Improvement in mining site stability,
- Conservation of biological diversity of plants, birds and animals.
- As dust receptor and dust filter, this is likely to be produced during mining.

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*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PRI. B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter V. Analysis of Alternatives*

## CHAPTER-V

### ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

#### INDEX

S. No.	CONTENTS	Page No.
5.0	General	2/V

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL R-11  
located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)  
Chapter V: Analysis of Alternatives*

## 5.0 GENERAL

Examination of alternatives of technology and Site are an utmost important part for assuring that the project has long term sustainability, especially large projects, which involves a lot of money, manpower & their safety and nature, value of minerals & environmental hazards. River bank mining is a very simple operation needing extraction of Sand from river bank which does not need much mechanization.

Sand bed mining is a site specific project depending upon the geological set up and runable portion of the river. Being inside the river meandering course, no objects of economic importance are disturbed. Hence, there is not much scope for site alternative.

Alternative technologies may be used for the mining operation. No alternative technology has been adopted. This also leads to high employment potential of local habitants. Thus it will have more acceptability and help in socio economic upliftment of the area.

[Therefore, the opencast semi-mechanized extraction of Sand at the selected site is adopted.

\*\*\*\*\*

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11  
located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter VI - Environmental Monitoring Programme*

**CHAPTER-VI  
ENVIRONMENTAL MONITORING PROGRAMME**

**INDEX**

S. No.	CONTENTS	Page No.
6.0	INTRODUCTION	2/VI
6.1	PROPOSED SET UP	2/VI
6.2	MONITORING SCHEDULE AND PARAMETERS	3/VI

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PNI. B-11  
located at Village- Shantoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)  
Chapter VI - Environmental Monitoring Programme*

## 6.0 INTRODUCTION

Success of any post project environmental monitoring programme depends upon the efficiency of the organizational set up responsible for the implementation of the programme. Regular monitoring of the various environmental parameters is also 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 areas are important for maintaining sound operating practices of the project in line with conformity with environmental regulations, the post project monitoring work forms part of EMP.

### 6.1 PROPOSED SET UP

Keeping the utility of monitoring results in the implementation of the environmental management program in view, an organizational chart has been proposed, headed by General Manager as shown in Fig. 6.1.

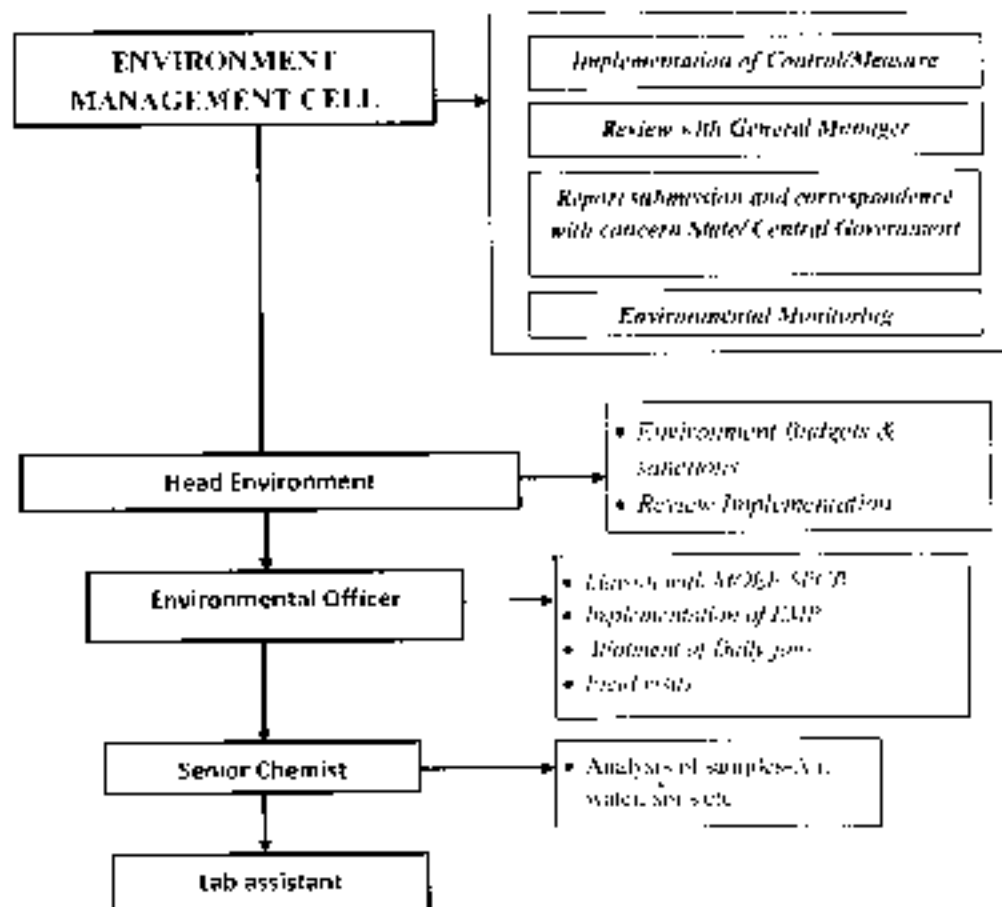
The said team will be responsible for:

- i. Collecting water and air samples from surrounding area and work zone monitoring for pollutants.
- ii. Analyzing the water and air samples.
- iii. Implementing the control and protective measures.
- iv. Co-coordinating the environment related activities within the project as well as with outside agencies.
- v. Collecting statistics of health of workers and population of surrounding villages.
- vi. Monitoring the progress of implementation of environmental management program.

The laboratory will be suitably equipped for sampling/testing for various environmental pollutants

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*Chapter VI - Environmental Monitoring Programme*



**Fig. 6.1 Function of Environmental Management Cell**

## 6.2 MONITORING SCHEDULE AND PARAMETERS

### Air Quality Monitoring

Air Quality monitoring is essential for evaluation of the effectiveness of abatement programmes and to develop appropriate control measures. The project proponent will monitor ambient air quality in and around the proposed ordinary sand mine projects at a frequency of once in a fortnight or any other frequency as stipulated by MoEF&CC and take appropriate air pollution

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*Chapter VI - Environmental Monitoring Programme*

control measures in order to ensure that the concentration of  $PM_{2.5}$ ,  $PM_{10}$ ,  $SO_2$  and  $NO_x$  are within limits.

#### **Water Quality monitoring**

Water quality monitoring involves periodical assessment of quality of surface water and the ground water near the mining project. Surface water samples will be analyzed for all the parameters as per EPA, 1986 ground water samples will be analyzed for all the parameters as per IS-10500.

Phreatic surface levels will be monitored through out the life of the project to study the impact of mining operations on ground water regime. A network of observation wells will be located in the villages around the projects area for monitoring of phreatic surface levels. The water levels will be monitored during pre-monsoon and post-monsoon seasons four times in a year.

#### **Noise Level Monitoring**

Noise level monitoring will be done for achieving the following objectives:

- To compare sound levels with the values specified in noise regulations
- To determine the need and extent of noises control of various noise generating sources
- Correlation of noise levels with community response to noise levels

Noise level monitoring will be done at the work zone to assess the occupational noise exposure levels. Noise levels will also be monitored at the noise generating sources like mineral handling arrangements, vehicle movements and also nearby villages for studying the impact due to higher noise levels for taking necessary control measures at the source.

**Table 6.1: Monitoring Schedule and Parameters**

S. No.	Description of Parameters	Schedule and Duration of Monitoring
1	Air Quality a) In the vicinity of the mine b) In the vicinity of the transportation network	24 hourly samples twice a week for one month in each season except monsoon.

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located at Village- Shamton, District – Patanchikula, Haryana (Lease area: 46.50 Ha.)  
Chapter VI - Environmental Monitoring Programme*

2	Water Quality a) Water quality of surface and groundwater around the site b) Drinking water must conform to drinking water standards	Once in a season for 4 season in a year.
3	Ambient Noise Level	Twice in a year for couple of years & then once in a year
4	Soil Quality	Once in two years on project monitoring area
5	Inventory of Floratree plantation, survival etc)	Once in two years on project monitoring area
6	Socio-economic condition of local population, physical survey	Once in 3 or 4 years

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located at Village- Shamton, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter VII- Additional Studies*

**CHAPTER-VII  
ADDITIONAL STUDIES  
INDEX**

S. No.	CONTENTS	Page No.
7.0	PUBLIC CONSULTATION	2/VII
7.1	HAZARD IDENTIFICATION AND RISK ASSESSMENT METHODOLOGY	3/VII
7.2	POTENTIAL HAZARD & "ALARP" CONDITION	7/VII
7.3	RISK PRIORITISATION BASED ON HAZARDS	7/VII
7.4	ADDITIONAL MITIGATION MAJORS TO BRING HAZARDS UNDER "ALARP" ZONE	9/VII
7.5	NATURAL RESOURCE CONSERVATION	11/VII

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11  
located at Village- Shantoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter VII: Additional Studies*

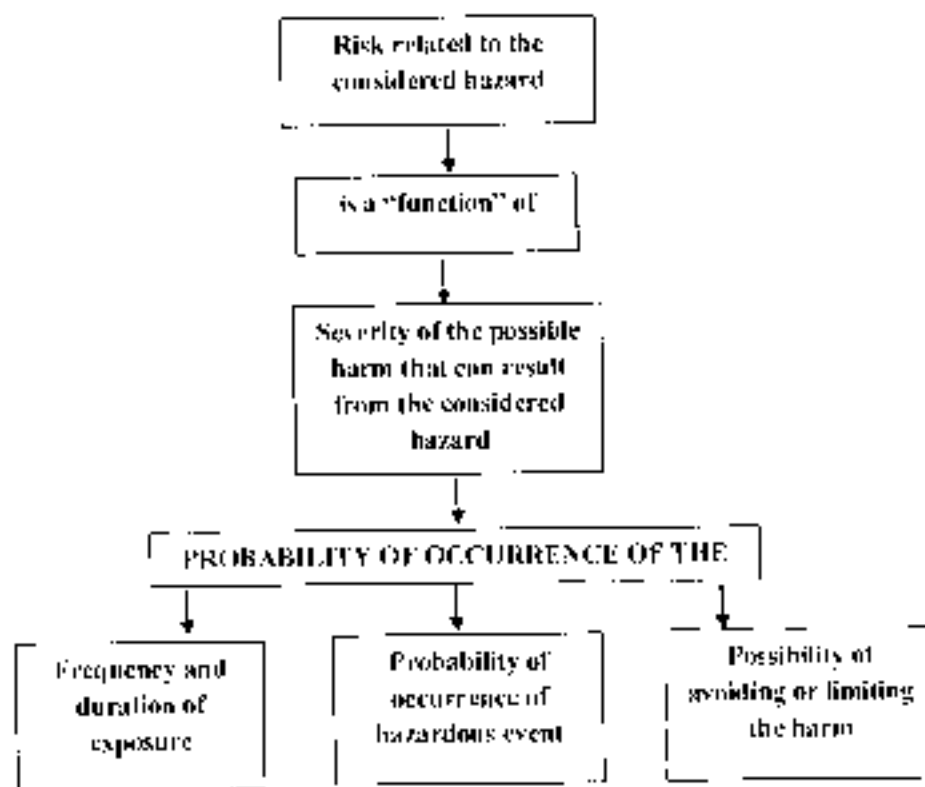
## 7.0 PUBLIC CONSULTATION

Details of Public hearing will be added in the Final EIA/FMP report.

## 7.1 HAZARD IDENTIFICATION AND RISK ASSESSMENT METHODOLOGY

### A) RISK

Risk concerns the deviation of one or more results of one or more future events from their expected value.



**Tolerable risk:** Risk which is accepted in a given context based on the current values of society

**Protective measure:** The combination of risk reduction strategies taken to achieve at least the tolerable risk. Protective measures include risk reduction by inherent safety, protective devices, and personal protective equipment, information for use and installation and training.

**Severity:** Severity is used for the degree of something undesirable.

**Risk Analysis:** A systematic use of available information to determine how often specified events may occur and the magnitude of their likely consequences.

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located at Village- Shamtao, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter VII- Additional Studies*

**The different steps of risk assessment procedure are as given below:**

**Step I: Hazard Identification**

The purpose of hazard identification is to identify and develop a list of hazards for each job in the organization that are reasonably likely to expose people to injury, illness or disease if not effectively controlled. Workers can then be informed of these hazards and controls put in place to protect workers prior to them being exposed to the actual hazard.

**Step II: Risk Assessment**

Risk assessment is the process used to determine the likelihood that people exposed to injury, illness or disease in the workplace arising from any situation identified during the hazard identification process prior to consideration or implementation of control measures.

Risk occurs when a person is exposed to a hazard. Risk is the likelihood that exposure to a hazard will lead to injury or health issues. It is a measure of probability and potential severity of harm or loss.

**Step III: Risk Control**

Risk control is the process used to identify, develop, implement and continually review all practicable measures for eliminating or reducing the likelihood of an injury, illness or diseases in the workplace.

**Step IV: Implementation of risk controls**

All hazards that have been assessed should be dealt in order of priority in one or more of the following hierarchy of controls

The most effective methods of control are:

- i. Elimination of hazards
- ii. Substitute something safer
- iii. Use engineering/design controls
- iv. Use administrative controls such as safe work procedures
- v. Protect the workers i.e. By ensuring competence through supervision and training, etc.

Each measure must have a designated person and date assigned for the implementation of controls.

This ensures that all required safety measures will be completed

**Step V: Monitor and Review**

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*Chapter VII- Additional Studies*

Hazard identification, risk assessment and control are an on-going process. Therefore regularly review the effectiveness of your hazard assessment and control measures. Make sure that you undertake a hazard and risk assessment when there is change to the workplace including when work systems, tools, machinery or equipment changes. Provide additional supervision when the new employees with reduced skill levels or knowledge are introduced to the workplace.

### **RISK ANALYSIS**

The risk assessment portion of the process involves three levels of site evaluation:

- a) Initial Site Evaluation.
- b) Detailed Site Evaluation.
- c) Priority Site Investigations and Recommendations.

The risk assessment criteria used for all levels of site evaluation take into account two basic factors:

The existing site conditions

The level of the travelling public's exposure to those conditions.

The Initial Site Evaluation and Detailed Site Evaluation both apply weighted criteria to the existing information and information obtained from one site visit. The Initial Site Evaluation subdivides the initial inventory listing of sites into 5 risk assessment site groups. The Detailed Site Evaluation risk assessment is then performed on each of the three highest risk site groups in order of the group priority level of risk. The result of the Detailed Site Evaluation process is a prioritized listing of the sites within each of the three highest risk site groups.

**Risk analysis is done for:**

- Forecasting any unwanted situation
- Estimating damage potential of such situation
- Decision making to control such situation
- Evaluating effectiveness of control measures

### **C) ACCEPTABLE RISK**

Risk that is acceptable to regulatory agency and also to the public is called acceptable risk. There are no formally recognized regulatory criteria for risk to personnel in the mining industry. Individual organizations have developed criteria for employee risk and the concepts originally arising from chemical process industries and oil and gas industries. Because of the uncertainties

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*Chapter VII- Additional Studies*

linked with probabilistic risk analysis used for quantification of the risk levels the general guiding principle is that the risk be reduced to a level considered

**As Low as Reasonably Practicable (ALARP).** The risk acceptability criteria are given in following Table. It can be seen that there are three tiers:

- a. A tolerable region where risk has been shown to be negligible and comparable with everyday risks such as travel to work.
- b. A middle level where it is shown the risk has been reduced to As Low As Reasonably Practicable level and that further risk reduction is either impracticable or the cost is grossly disproportionate to the improvement gained. This is referred as the ALARP region.
- c. An intolerable region where risk cannot be justified on any grounds. The ALARP region is kept sufficiently extensive to allow for flexibility in decision making and allow for the positive management initiatives which may not be quantifiable in terms of risk reduction.

**Table no 7.1 The risk acceptability criteria are given in following table:**

1	Risk unacceptable and must be reduced. The actions may include equipments and people or procedural measures. If risk cannot be reduced to ALARP level, operating philosophy must be fundamentally reviewed by the management	<b>Intolerable Region</b>
2	Efforts must be made to reduce risk further and to as low as reasonably practicable, without expenditure that is grossly disproportionate to the benefit gained	<b>ALARP Region (As Low as Reasonably Practicable)</b>
3	Risk level is so low as to not require actions to reduce its magnitude further.	<b>Tolerable Region</b>

**Risk Likelihood Table for Guidance (TABLE-1)**

Step 1: Assess the Likelihood			Step 2: Assess the Consequences		
1	Happens every time we operate	Almost Certain	Common repeating	or	CF Fatality Catastrophic

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*Chapter VI- Additional Studies*

			occurrence			
<b>L2</b>	Happens regularly (often)	Likely	Known to have occurred "has happened"	<b>C2</b>	Permanent disability	Major
<b>L3</b>	Has happened (occasionally)	Possible	Could occur or "heard of it happening"	<b>C3</b>	Medical/ hospital or lost time	Moderate
<b>L4</b>	Happens irregularly (almost never)	Unlikely	Not likely to occur	<b>C4</b>	First aid or no lost time	Minor
<b>L5</b>	Improbable (never)	Rare	Practically impossible	<b>C5</b>	No injury	Insignificant

A logical systematic process is usually followed during a qualitative risk assessment to identify the key risk events and to assess the consequences of the events occurring and the likelihood of their occurrence (TABLE-2)

Risk Rank	Likelihood	L1 Almost certain	L2 Likely	L3 Possible	L4 Unlikely	L5 Rare
C1 Catastrophic		1	2	4	7	14
C2 Major		3	5	8	12	16
C3 Moderate		6	9	13	17	20
C4 Minor		10	14	18	21	23
C5 Insignificant		15	19	22	24	25

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*Chapter VII- Additional Studies*

#### **RISK RATING:**

- **HIGH RISK 1-6**
- **MEDIUM RISK 7-15**
- **LOW RISK 16-25**

#### **7.2 POTENTIAL HAZARDS & 'ALARP' CONDITION**

Mining and allied activities are associated with several potential hazards and risk to both the employees and the public at large. A worker in a mine should be able to work under "ALARP" conditions (as stated above), which are adequately safe and healthy. At the same time the environmental conditions should be such as not to be impair his working efficiency. This is possible only when there is adequate safety in mines.

#### **7.3 RISK PRIORITISATION BASED ON HAZARDS**

There are various factors, which can create unsafe working conditions/hazards in mining of minor minerals from river bed.

The key risk (hazard x probability) event rating associated with sand bed mining and to assess its consequences of such events occurring and the likelihood based on above Table 2 are as:-

The risk rating of such hazards is as follows.

- a) Inundation / Flooding (C1 x L3=4)
- b) Quick Sand Condition (C2 x L3=8)
- c) Drowning (C3 x L5=25)
- d) Accident due to vehicular movement (C3 x L3 =12)
- e) Accident during sand loading, transporting and dumping-14.  
(i.e. C4 x L2=14)

##### **7.3.1 Accident during sand/mineral loading, transportation and dumping**

The risk rating assigned to this activity is assigned as "14 i.e. it is likely event with minor consequences", as frequency of this operation is more but the predicted/assumed intensity (based on experience) is less like minor cuts, abrasion, fall due to river bank collapse & falling of boulders, if not under proper supervision to bring under A: ARP ZONE.

- a) The minerals are loaded in the trucks using hand shovels. There is possibility of injury in the hands during loading with shovels.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-11  
located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter VII- Additional Studies*

- b. There is possibility that the workers standing on the other side of loading may get injury due to over thrown sand with pebbles.
- c. There is possibility of workers getting injured during opening of side covers to facilitate loading.
- d. There is possibility of riverbank collapse.
- e. There are chances of falling of cattle/children into pits to river bed by overlooking of fenced area near worksite or improper supervision.

### 7.3.2 Accident due to vehicular movement

The risk rating assigned to this activity is assigned as 13 i.e., it is possible event with moderate consequences as frequency of this operation is more but the predicted/assumed intensity (Based on experience) is less like minor cuts, bodily injury due to reckless or untrained driver. However, a strict control to be exercised to deploy trained drivers with valid driving license with a helper. A strict supervision/control to be exercised to avoid drunken driving or driving by unauthorized person to bring under ALARP ZONE.

The minerals loaded in 10-12T trucks are being sent to through public roads.

- a. All possibilities of road accidents are possible due to rash driving.
- b. Accident may also occur during movement in the mine, in case pathway is not compacted suitably or movement is at the embankment.
- c. There are possibilities that due to overloading. Some pebbles or big boulder may injure the passerby public. In case traffic & vehicle load bearing licensed capacity is neglected.

### 7.3.3 Inundation/Flooding

The risk rating assigned to this activity is assigned as 4(0.1 x 1.3 = 4) i.e., it is only possible, if warnings are neglected and work started without assessment of the river bed condition specially during monsoon season the event will be catastrophic with major consequences as frequency of this operation is possible. However the event has to be brought under 'ALARP' Zone by strict supervision based on river water and other meteorological data.

- a. The possibility of inundation/flooding of the mines are very high during monsoon or during heavy rains as the mine area lies in the riverbed.
- b. There is danger to the tracks and other machineries due to flooding.
- c. There is danger to the workers working in the mines.



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*Chapter VII- Additional Studies*

Inundation or flooding is expected and beneficial for these mines as during this time only the mineral reserve gets replenished.

#### 7.3.4 Quick Sand Condition

The risk rating assigned to this activity is assigned as 3(C2 x L3 = 5) i.e., it is likely event with major consequences as frequency of this operation is likely but the predicted/assumed intensity (Based on experience) is major.

Hence data of water table must be collected and the mining work must be above the water table (about 1.5 m above to bring under ALARP ZONE) to avoid dangerous condition to vehicles plying over sand dunes.

This condition occurs when the working crosses the water table at a certain depth and the permeability of the strata is very high. This condition occurs when the effective stress in the sand becomes zero due to influx of water i.e.

$$i = i_c = \gamma' / \gamma_w$$

Where,  $i$  = Hydraulic gradient.

$i_c$  = Critical Hydraulic gradient.

$\gamma'$  = submerged unit weight.

$\gamma_w$  = unit weight of water

This creates danger condition to the trucks and other machineries plying over the sand dunes on the river banks.

#### 7.3.5 Drowning

The risk rating assigned to this activity is assigned as 25 i.e., it is insignificant due to dry season mining

There are no possibilities of drowning in the river. Since mining operations are carried out only in the dry seasons. All mining activities will be stopped during the monsoon season.

### 7.4 ADDITIONAL MITIGATION MAJORS TO BRING HAZARDS UNDER "ALARP" ZONE

#### 7.4.1 Measures to Prevent Accidents during Loading

1. The track should be brought to a lower level so that the loading operation suits to the ergonomic condition of the workers.

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*Chapter VII- Additional Studies*

2. The loading should be done from one side of the truck only.
3. The workers should be provided with gloves and safety shoes during loading.
4. Opening of the side covers (pattas) should be done carefully and with warning to prevent injury to the loaders.
5. Operations during daylight only.
6. No foreign material should be allowed to remain/spill in river bed and catchment area, or no pits/pockets are allowed to be filled with such material.
7. Stockpiling of harvested material on the river bank should be avoided.

#### **7.4.2 Measures to Prevent Accidents during Transportation**

1. All transportation within the mine working should be carried out directly under the supervision and control of the management.
2. 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.
3. To avoid danger while reversing the trackless vehicles especially at the embankment and tipping points, all areas for reversing of lorries should as far as possible be made man free, and,
4. A statutory provision of the fences, constant education, training etc. will go a long way in reducing the incidents of such accidents.
5. Generally, overloading should not be permitted.
6. The truck should be covered and maintained to prevent any spillage.
7. The maximum permissible speed limit should be ensured.
8. The truck drivers should have proper driving license.

#### **7.4.3 Measures to prevent Dangerous Incidents during Inundation/Flooding**

Inundation or flooding is expected and beneficial for these mines as during this time only the mineral reserve gets replenished.

1. During monsoon months and heavy rains the mining operations are ceased.
2. There should be mechanism/warning system of heavy rains and discharges from the upstream dams.

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

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtao-1: Block/PKL B-11 located at Village- Shamtao, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter VII- Additional Studies*

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

#### **7.4.5 Measure to Prevent Drowning**

1. The mining should be done under strict supervision and only during the dry season.
2. Deep water areas must be identified.
3. No go zones should be clearly marked and made aware to the mine workers.

#### **7.5 NATURAL RESOURCE CONSERVATION**

Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly meandering segment of a river should be selected for mining in such a way as to avoid natural existing banks and to promote mining on naturally building (aggrading) meander components.

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located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter-VIII Project benefits*

**CHAPTER-VIII  
PROJECT BENEFITS**

**INDEX**

<b>S. No.</b>	<b>CONTENTS</b>	<b>Page No.</b>
8.0	GENERAL	2/VIII
8.1	BENEFIT OF MINING	2/VIII
8.2	EMPLOYMENT	2/VIII
8.3	IMPROVEMENTS IN PHYSICAL AND SOCIAL INFRASTRUCTURE	3/VIII
8.4	IMPROVEMENTS IN PHYSICAL INFRASTRUCTURE	2/VIII
8.5	IMPROVEMENTS IN SOCIAL INFRASTRUCTURE	3/VIII
8.6	PLANTATION	4/VIII
8.7	HEALTH	5/VIII

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1; Block/PKL B-11 located at Village- Shantoo, District - Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter-VIII Project benefits*

## 8.0 GENERAL

The operation of the project will protect against widening of river channel and flooding of adjoining areas due to non removal of sediments, bring overall improvement in the locality, neighborhood and the state by bringing industry, roads, water supply, electricity, employment, living standard and economic growth.

### 8.1 BENEFIT OF MINING

- Protecting banks
- Reducing submergence of adjoining agricultural lands due to flooding.
- Reducing aggradation of river level.
- Generating useful economic resource for construction.
- Generating employment and improvement of socio economic conditions of nearby habitats

### 8.2 EMPLOYMENT

The socio-economic conditions of the surrounding villages indicate that employment generation is seasonally. The occupational activities are agriculture, cattle rearing and employment in mines but on daily wages. The mining activity will provide employment to local people which will increase socio economic status of the area.

The total direct manpower requirement for the proposed mining operation will be around 69 significant indirect employments is also expected due to the associated activities. This project operation will provide livelihood to the poorest section of the society. Depending upon the General shifts working, following will be the proposed manpower

**Table- 8.1. Employment detail**

S no.	Category	Numbers
1	Manager (I-II)	1
	Classy Permit Manager	
2	Assistant Manager	1
3	Foreman/Mates	2
4	Skilled Personnel	10
5	Semi-Skilled Personnel	50
6	Unskilled	05
	<b>Total</b>	<b>69</b>

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*Chapter-VIII Project benefits*

### **8.3 IMPROVEMENTS IN PHYSICAL AND SOCIAL INFRASTRUCTURE**

The opening of the proposed project will enhance the socio-economic activities in the adjoining areas. This will result in following benefits:-

- Improvements in physical infrastructure.
- Improvements in Social Infrastructure.
- Increase in Employment Potential
- Contribution to the Exchequer.
- Prevention of illegal mining
- During and Post-mining enhancement of green cover.

### **8.4 IMPROVEMENTS IN PHYSICAL INFRASTRUCTURE**

The opening of the proposed project will improve the physical infrastructure of the adjoining areas. This will include the following:-

- Improved road communication due to opening of the proposed project.
- Strengthening of existing community facilities through the Community Development Programme.
- Creation of community assets (infrastructure) like provision for drinking water, construction of school buildings, village roads, linked roads, dispensary & health centre, community centre, market place etc.
- Skill development & capacity building, like vocational training, income generation programs and entrepreneurship development program.
- Literacy program, adult education, assists formation of Village Working Group (VWG), Mahila Mandal etc.
- Awareness program and community activities, like health camps, medical aids, family welfare programs, immunization camp sports & cultural activities, plantation etc

### **8.5 IMPROVEMENTS IN SOCIAL INFRASTRUCTURE**

There will be some obvious changes in various environmental parameters due to mining activity. Increase socio-economic activities, creation of new employment opportunities, infra-structural development, better educational and health facilities

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1; Block/PKL B-11  
located at Village- Shantoo, District -- Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter-VIII Project benefits*

Following are the specific impacts:-

**Socio-Economic:** - There will be positive impact in socio-economic area due to increased economic activities, creation of new employment opportunities, infrastructural development and better educational and health facilities.

**Table- 8.2, Corporate Environmental Responsibility (CER)**

Sl. No.	Activity
1.	Distribution of mask and sanitizer to the people of Shantoo village.
2	Skill development program camps like computer learning, sewing etc. in Shantoo village.

**Table- 8.3, Budget for Occupational Health**

Particulars	Recurring Cost per year (Rs.)
For routine checkup	50,000
Medical aid as per ESI Scheme	50,000
Training	50,000
<b>Total</b>	<b>1,50,000</b>

**Population dynamics:** - Due to the direct and indirect employment potential, there is a scope of migration of people into project area and in the peripheral regions from nearby areas.

**Employment Potential:** - There is a possibility of creation of direct and indirect employment opportunities due to working of this mine.

The mine will also contribute to the Exchequer of State and Central Government

## 8.6 PLANTATION

The management will provide free saplings of fruit and other trees, etc. to local during rain for plantation. This will increase the consciousness in workers and nearby villagers for greenery. Fruit trees can contribute towards their financial gains.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtao-I: Block/PFL B-11  
located at Village- Shamtao, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter-VIII Project benefits*

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### **8.7 HEALTH**

Periodic medical checkups as per Mines Act/ Rules and other social development and promotional activities will be undertaken. All this will till the general health status of the residents of the area around mines.

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*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtau-I: Block/PKL B-II located in Village- Shamtau, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter IX - Environment Management Plan*

**SECTION-IX  
ENVIRONMENTAL MANAGEMENT PLAN**

**INDEX**

S.No.	CONTENTS	Page No.
9.0	INTRODUCTION	2IX
9.1	ENVIRONMENTAL MANAGEMENT PLAN (EMP)	3IX
9.2	ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION	3IX
9.3	PROPOSED SET UP	4IX
9.4	GREENBELT DEVELOPMENT PLAN	5IX
9.5	BUDGET ALLOCATION FOR EMP IMPLEMENTATION	5IX
9.6	MONITORING SCHEDULE AND PARAMETERS	6IX

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-11 located at Village- Shamtoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter IX - Environment Management Plan*

## **9.0 INTRODUCTION**

To mitigate the adverse impact which will be caused due to the mining operation and overall scientific development of local habitat, environmental management plan (EMP) has been formulated and integrated with the mine planning. The details of the anticipated impacts and mitigative measures have been discussed in chapter IV of this report, based on the results of present environmental conditions and environmental impact assessment. The EMP has therefore been made considering implementation and monitoring of environmental protection measures during and after mining operations.

The mitigation measures which reduce the impact have already been identified earlier in this report. To minimize the adverse impact, certain additional EMP are enumerated below for implementation.

### **9.1 ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

Proper environmental management plan are proposed for "Sand" mining project to mitigate the impact during the mining operation.

- Care will be taken that no labour camps will be allowed on river bed.
- Care will be taken that no cooking, or burning of woods will be allowed in the adjoining area.
- Prior to mining, short awareness program will be conducted for labours, to make them aware to way of working.
- If some causality or injury to animal occurs, it will be informed to forest department and proper treatment will be given.
- No tree cutting, chopping, lumbering, uprooting of shrubs and herbs will be allowed
- Conidor movement of wild mammals (If exists) will be avoided
- Care will be taken that noise produced during vehicles movement for carrying sand are within the permissible noise level.
- No pilling of material will be in adjoining area.
- If wild animals are noticed crossing the river bed, it will not be disturbed or chased away, instead the labours will move away from their path.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter IX - Environment Management Plan*

## **9.2 ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION**

Environmental Management Plan serves no purpose if it is not implemented with true spirit. Some loopholes in the EMP can also be detected afterwards when it is implanted and monitored. Thus, an implementation and monitoring programme has to be prepared.

The major attributes of environment are not confined to the mining site alone. Implementation of proposed control measures and monitoring programme has an implication on the surrounding area as well as for the region. Therefore, mine management should strengthen the existing control measures as elaborated earlier in this report and monitor the efficacy of the control measures implemented within the mining area relating to the following specific areas for eco-friendly mining plan:

- a) Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.
- b) Collection of soil samples at strategic locations once in every year and analysis thereof with regard to deleterious constituents, if any.
- c) The effectiveness of drainage system depends upon proper clearing of all drains provided in the surrounding of mine area. Any blockage due to siltation or loose material will be checked at least once in a month.
- d) Measurement of water level fluctuations in the nearby ponds, dug wells and bore wells.
- e) Regular visual examination will be carried out to look for erosion of river banks. Any abnormal condition, if observed will be taken care of.
- f) Measurement of noise levels at mine site, stationary and mobile sources, and adjacent villages will be done in every quarter of the year.
- g) Plantation/afforestation as should be done as per program i.e. along the road sides and near civic amenities, which will be afforded by Government bodies as it is not feasible to plant trees near the mine lease area. Post plantation, the area will be regularly monitored in every season for evaluation of success rate. For selection of plant species local people should also be involved.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter IX - Environment Management Plan*

Mine management will be in regular touch with local surrounding villages to update the various developmental schemes made by them. They will also consider any immediate requirement, which could be taken care of in near future.

An Environmental Management Cell (EMC) is envisaged which will be responsible for monitoring EMP and its implementation. EMC members should meet once in a month to assess the progress and analyze the data collected during the month. The EMC will function as per Fig. 6.1(Section VI).

EMC will be in regular touch with State Pollution Control Board and India Bureau of Mines and send them annual progress report. Any new regulations considered by State/Central Pollution Control Board for the industry will be taken care of.

### 9.3 PROPOSED SET UP

Keeping the utility of monitoring results in the implementation of the environmental management program in view, an organizational chart has been proposed, headed by General Manager as shown in Fig. 6.1(Section VI).

The said team will be responsible for:

- (i) Collecting water and air samples from surrounding area and work zone monitoring for pollutants.
- (ii) Analyzing the water and air samples.
- (iii) Implementing the control and protective measures.
- (iv) Co-ordinating the environment related activities within the project as well as with outside agencies.
- (v) Collecting statistics of health of workers and population of surrounding villages.
- (vi) Monitoring the progress of implementation of environmental management program.
- (vii) Greenbelt development, etc.
- (viii) The laboratory will be suitably equipped for sampling/testing for various environmental pollutants.

*DEIA report of RHM of Minor Mineral (Gravel and Sand) at Shantoo-I: Block/PK1, B-11 located at Village- Shantoo, District - Panchkula, Haryana (Lease area: 46.50 Ha.)*

*( Chapter IX - Environment Management Plan*

#### **9.4 GREENBELT DEVELOPMENT PLAN**

Green belt is plantation of trees for reducing the pollution as they absorb both gaseous and particulate pollutant, thus removing them from atmosphere. Green plants form a surface capable of absorbing air pollutants and forming sinks for pollutants. It improves the aesthetic value of local environment. Under present project, green belt has been planned with emphasis on creating biodiversity; enhance natural surroundings and mitigating pollution.

The lease area is a river sand quarry and the total lease area will be used for mining of sand. Plantation work will be carried out along the safety zone of the lease area. 500 number of saplings proposed during plan period will be planted on both side of haul road i.e., 50 m. Plantation shall be done with suitable local species like teak, mango, neem, jhumun, jhau etc. per year.

#### **9.5 BUDGET ALLOCATION FOR EMP IMPLEMENTATION**

Annual budget for EMP is very essential for successful implementation of EMP. As there are no pollution control systems, no capital cost of Pollution Control system is envisaged. Costs will be annual operating costs as given below. The fund allocated will not be diverted for any other purposes and the top management will be responsible for this. The budget will take into consideration the following capital and operating expenses.

1. Field cost for monitoring of parameters.
2. Cost of any desired outsourcing.
3. Cost of chemicals, consumables and transport for data generation.
4. Man power cost for environmental cell.
5. Any other cost as per FE condition.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantao-1: Block/PAL B-11 located at Village- Shantao, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter IX - Environment Management Plan*

**Table 9.2, Budget allotted for the Environmental Management Plan**

Sl. No.	Measures	Capital Cost (In Rs.)	Recurring Cost (In Rs.)
1.	Pollution Control Dust Suppression/Water Sprinkling	--	1,00,000
2.	Pollution Monitoring i) Air pollution ii) Water pollution iii) Soil Pollution iv) Noise Pollution	--	50,000 40,000 10,000 10,000
3.	Green belt development	2,50,000	1,00,000
4.	Maintenance of haul road	1,40,000	1,20,000
<b>Total</b>		<b>3,90,000</b>	<b>4,30,000</b>

*Note: \*500 plants \* 500 Rs (for each plants)= 2,50,000*

*Salary of Labour for haul road maintenance 1 labour \*240-200 per day600\* 200 =1,20,000:-*

*\* 2.5 lakh per kilometer (2,50,000 \*0.56 km haul road =1,40,000):-*

## 9.6 MONITORING SCHEDULE AND PARAMETERS

To evaluate the effectiveness of environmental management program regular monitoring of the important environmental parameters to be monitored are shown in Table. 6.1 (Section VI).

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*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKI. B-11 located at Village- Shamtoo, District - Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - X: Executive Summary*

**CHAPTER-X  
EXECUTIVE SUMMARY**

S. No.	CONTENTS	Page No.
10.0	INTRODUCTION OF PROJECT & PROponent	2'X
10.1	LOCATION	2'X
10.2	RESERVES	2'X
10.3	MINING	3'X
10.4	WATER SUPPLY	4'X
10.5	BASE LINE DATA	4'X
10.6	BIOLOGICAL ENVIRONMENT	5'X
10.7	LAND ENVIRONMENT	8'X
10.8	AIR ENVIRONMENT	9'X
10.9	WATER ENVIRONMENT	9'X
10.10	NOISE ENVIRONMENT	10'X
10.11	TRAFFIC ANALYSIS	10'X
10.12	ENVIRONMENTAL MANAGEMENT PLAN (EMP)	11'X
10.13	ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION	11'X
10.14	BUDGET ALLOCATION FOR EMP IMPLEMENTATION	12'X
10.15	MONITORING SCHEDULE AND PARAMETERS	13'X
10.16	BENEFIT OF MINING	13'X

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PRI. B-1) located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - X: Executive Summary*

## 10.0 INTRODUCTION OF PROJECT & PROPONENT

The proponent has applied for mining lease in the name of - Block Gravel and Sand mining Project over an area of 46.50 Hectare at Village- Shamtoo, District: Panchkula, Haryana is a minor mineral project for exploitation of river sand. The average production is proposed to be 4,00,000 TPA is the total production during the plan period. Copy of letter is enclosed as Annexure No. II. As per the MoEF, New Delhi Gazette dated 14<sup>th</sup> September 2006 amended in December 2009 and April 2011, the proposed mining project is categorized as category 'B1'.

### 10.1 LOCATION

The mine lease area is located in Village- Shamtoo, District: Panchkula, Haryana, is on (Khasra no/ Killa No.- 55 min, 141 Min, 142, 143) of Dangri river covered in the Survey of India Topo 1143X14 & 1143L2 and is bounded between the Latitude - 30°37'42.00" N to 30°38'33.00" N and Longitude - 76°59' 0.00" E to 76°59'34.3" E.

**Nearest Railway Station:** Ghaghar Railway Station is approx 13.64 km towards SW direction.

**Nearest Airport:** Chandigarh Airport is approx. 19.43 km towards W direction.

**Nearest Highway:** NH-73 is approx 4.51 km in SW direction.

### 10.2 RESERVES

The reserve of sand in the leasehold area has been calculated by surface area method. The total surface area of the lease area has been multiplied with the average thickness of the sand within the lease area to get the total volume of geological reserve of sand in MT. The surface area of the mineable reserve has been considered excluding the safety zone area. The thickness of the sand bed is 1m same as the thickness taken for the geological reserve.

**Table No. 10.1: Geological Reserves**

Lease area in Ha.	Total geological MT	Proved reserve Area * depth	Blocked area of 50m strip after each km, 25% blocked in river banks, lease boundary etc * ha.	Blocked reserve MT	Geological reserve MT



*DFIA report of RBM of Minor Mineral (Gravel and Sand) at Shamoo-I: Block/PKI B-II located at Village- Shamoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – X: Executive Summary*

* BD (A)			
46.50	25,38,900	12.25	6,68,850

The mineable reserve has been calculated by considering 7.5m from the lease boundary. The mineable reserve is given in Table No.10.2.

**Table No. 10.2: Mineable Reserves**

Lease area in Ha.	Total Proved geological reserve MT= Area * depth * BD (A)	Blocked area of 50m strip after each km, 25% blocked in river banks, lease boundary etc = ha.	Blocked Geological reserve MT	Total Mineable Reserve in Blocked area MT	Mineable Reserve (Per Year)
46.50	25,38,900	12.25	6,68,850	18,70,050	4,00,000

### 10.3 MINING

#### Sand Mining

Sand will be excavated from Shamoo-I: Block/PKI B-II Sand Quarry which lies on river bed of Dangri river. The river sand deposits are derived from hard rock due to weathering, erosion and long term transportation. Size of the sand grains is small and shape is mostly rounded because of long transportation from the source. These deposits are renewable unlike other mineral deposits. It is mostly difficult to assess the deposit of a specific stretch with certainty every year as sand gets deposited in various patches along the river course, unlike other mineral resources sand is formed and gets deposited through physical action. However, the assessment has been made based on prevailing surface conditions. Based on the surface exposures, the updated geological reserves as well as mineable reserve have been estimated in the entire lease area.

#### Working Depth (below ground level)

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKI B-11 located in Village- Shantoo, District - Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - V: Executive Summary*

The deposits occur in the middle/bottom of the river. Depth of pits shall be increased up to 3.0m from surface according to deposition of sand but mining will be confined above the water table. Ground water table should not be intercepted by the proposed mining.

#### 10.4 WATER SUPPLY

In the river bed mining projects there is as such no need of water to carry out operations, except for dust suppression & drinking. The number of working people is 450. The water requirement for workers for drinking purpose will be around 0.69 KLD & the total water requirement will be around 6.51 - 6.59 KLD. This water will be supplied from the nearby area.

#### 10.5 BASE LINE DATA

This section contains the description of baseline studies at the 10km radius of the area surrounding "Shantoo-1: Block/PKI B-11 sand mining, Village- Shantoo, District: Panchkula, Haryana. The data collected has been used to understand the existing environment scenario around the proposed mining project against which the potential impacts of the project can be assessed.

Environmental data has been collected in relation to proposed mining for

- (a) Air
- (b) Noise
- (c) Water
- (d) Soil
- (e) Ecology and Biodiversity
- (f) Socio-economy

**Table 10.1 BASELINE ENVIRONMENTAL STATUS**

Attribute	Baseline status
Ambient Air Quality	<p><b>Observations:</b></p> <p>Ambient Air Quality Monitoring reveals that the minimum &amp; maximum concentrations of PM10 for all the 7 AQ monitoring stations were found to be 59.75<math>\mu\text{g}/\text{m}^3</math> at AQ2 and 86.81<math>\mu\text{g}/\text{m}^3</math> at AQ4, respectively.</p> <p>Minimum &amp; maximum concentrations of PM2.5 for all the 7 AQ</p>

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-II located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha)*

*Chapter – X: Executive Summary*

<p><b>Noise Levels</b></p>	<p>monitoring stations were found to be <math>27.73\mu\text{g}/\text{m}^3</math> at AQ2 and <math>46.08\mu\text{g}/\text{m}^3</math> at AQ1, respectively.</p> <p>As far as the gaseous pollutants <math>\text{SO}_2</math> and <math>\text{NO}_x</math> are concerned, the prescribed CPCB limit of <math>80\mu\text{g}/\text{m}^3</math> for residential and rural areas has never surpassed at any station. The maximum &amp; minimum concentrations of <math>\text{SO}_2</math> were found to be <math>6.13\mu\text{g}/\text{m}^3</math> at AQ5 &amp; <math>16.08\mu\text{g}/\text{m}^3</math> at AQ2, respectively. The maximum &amp; minimum concentrations of <math>\text{NO}_x</math> were found to be <math>9.33\mu\text{g}/\text{m}^3</math> at AQ5 &amp; <math>23.87\mu\text{g}/\text{m}^3</math> at AQ1, respectively.</p> <p>Noise monitoring was carried out at seven locations. The results of the monitoring program indicated that both the daytime and night time levels of noise were well within the prescribed limits of NAAQS, at all the four locations monitored.</p>
<p><b>Water Quality</b></p>	<p>6 Groundwater samples and 3 surface water samples were analyzed and concluded that:</p> <p>The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by Indian Standards IS: 10500.</p> <p>From the Surface water analysis it is evident that most of the parameters of the samples comply with 'Category 'C' standards of CPCB indicating their suitability for Drinking water source after conventional treatment and disinfection.</p>
<p><b>Soil Quality</b></p>	<p>Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.25 to 8.07, which shows that the soil is alkaline in nature.</p>
<p><b>Ecology and Biodiversity</b></p>	<p>There are no Ecologically Sensitive Areas present in the study area, but many reserved forests regions surround the project area.</p>
<p><b>Socio-economy</b></p>	<p>The implementation of the Shantoo-1 Block/PKL B-I sand mining project on river Dangri in Panchkula district will throw opportunities to local people for both direct and indirect employment.</p> <p>The study area is still lacking in education, health, housing, water, electricity, etc. It is expected that same will improve to a great extent due to proposed mining project and associated industrial and business activities.</p>

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-11 located at Village- Shantoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - X: Executive Summary*

## 10.6 BIOLOGICAL ENVIRONMENT

### Flora of the Core Zone

The core zone comprises of river sand bed by the side of water channel of Dangri river basin, where mining operation is proposed. The riparian vegetation has aquatic and marshland plants as the main component. Most among them are weeds. No ecologically sensitive plant species has been reported from this area. The table below here shows the flora of the study area.

Buffer zone of the proposed project is mainly agricultural land. However, there are a few patches of vegetation/plantation are present in the buffer zone. The river is also having a patch of vegetation at some place with grasses and aquatic weeds.

### Terrestrial-Fauna

Wildlife being an important strand in the complex food web in most of the forest ecosystems, its status symbolises the functioning efficiency of the entire ecosystem. The forest management therefore, cannot be isolated from wood exploration and wild life conservation in the same vulnerable vegetation complex. Just as wild flora needs special treatment for preservation and growth, wild fauna as well deserves specific conservatory pursuits for posterity. Unfortunately, our past efforts had been unscientific in rearing and preserving our valuable heritage resulting in dwindling of many interesting species, which the nature had bestowed on us. Wild animals move from one place to another place in search of food, water and other basic need. During the drought period or dry period, wild animals may visit the villages for search of food. The broad spectrum of colourful fauna is fading and some species are facing extinction.

**Table 10.3: Anticipated impact and mitigation measures for biological environment**

Impact Predicted	Suggestive measure
Disturbance to free movement / living of wild fauna viz. Birds, Reptiles etc.	<p>If birds are noticed crossing the core zone, they will not be disturbed at all;</p> <p>Laborers will not be allowed to discards food, plastic etc., which can attract animals/birds near the core site.</p> <p>Only low polluting vehicles having PUC will be allowed for carrying mining materials.</p> <p>Noise level will be maintained within permissible limit</p>

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-II located at Village- Shamtoo, District – Panchkula, Haryana (Lease area- 46.50 Ha.)*

*Chapter - X: Executive Summary*

	(silent zone-50dB (A) during day time or residential zone: 55dB (A)) as per noise pollution (regulation and control) rules, 2000, CPCB norms.
Disturbance of riparian ecosystem/wetlands	The riparian ecosystem or the wetlands will not be destroyed by the mine owners.
Monitoring of upstream and downstream water quality	Water quality will be monitored from upstream and downstream area to assess the impact on water quality and plankton and mining activity will be controlled to maintain the clean water conditions.

## 10.7 LAND ENVIRONMENT

**Mining Activity:** Harvesting of river bed minerals and other associated activities are the main sources of environmental degradations and most serious ones are detailed hereunder:

- Damage of river bank due to access ramps to river bed, causing damage to vegetation, soil erosion, micro disturbance to ground water, possible inducement of changed river course.
- Loss of riparian vegetation standing along the bank due to making roads connecting successive access to river bed
- Contamination of sand accretion water due to ponding, due to uneven rocky bed of river, sand bed thickness varies considerably and digging more sand from a pocket where thickness of sand is more may cause ponding. In this stagnant water bio-degradable materials especially flora waste gets accumulated causing contamination and inducing an unhealthy environment
- Surface degradation due to stockpiling and road network.

### Mitigation measures

- Minimum number of access roads to river bed for which cutting of river banks will be avoided and ramps are to be maintained

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKI. B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – A: Executive Summary*

- Access points to the river bed will be decided basing on least steepness of river bank and least human activity
- Mining is avoided during the monsoon season and at the time of floods.
- Mining schedule is synchronized with the river flow direction and the gradient of the land.
- Haulage roads parallel to the river bank and roads connecting access to river bed will be made away from the bank
- Care will be taken to ensure that ponds are not formed in the river bed
- Access roads from public roads and up to river bank will be aligned in such a way that it would cause least environmental damage.
- Vegetation development is proposed along the road sides of the approach roads, to arrest soil erosion. While selecting the plant species, preference will be given for planting native species of the area.

## 10.8 AIR ENVIRONMENT

### **Anticipated impacts and evaluation**

Information on air quality was studied and various modelling techniques predicted that the mining activity will not affect the air quality in a significant manner. In mining operations, loading, transportation and unloading operations may cause deterioration in air quality due to handling dry materials. In the present case, only wet materials will be handled, thus eliminating problems of fugitive dust. Also, the collection and lifting of minerals will be done manually without any blasting. Therefore the dust generated is insignificant as compared to mining process of other hard minerals like the process of drilling, blasting, mechanized loading etc.

### **Mitigation measures**

The only air pollution sources are the road transport network of the trucks. The dust suppression measures like water spraying will be done on the roads. Utmost care will be taken to prevent spillage from the trucks. Overloading will be prevented. Plantation activities along the roads will also reduce the impact of dust in the nearby villages.

## 10.9 WATER ENVIRONMENT

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Sharnoo-1: Block/PKL B-11 located at Village- Sharnoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter - A: Executive Summary*

Mining of sand from within or near a streambed has a direct impact on the stream's physical habitat characteristics. These characteristics include geometry, bed elevation, substrate composition and stability, in stream roughness elements, depth, velocity, turbidity, sediment transport, stream discharge and temperature. Altering these habitat characteristics can have deleterious impacts on both in stream biota and associated riparian habitat.

The detrimental effects to biota resulting from bed material mining are caused by three main processes:

- i. Alteration of flow patterns resulting from modification of the river bed
- ii. An excess of suspended sediment
- iii. Damage to riparian vegetation and in stream habitat.

## **10.10 NOISE ENVIRONMENT**

### **Anticipated impacts and evaluation**

As there will be no heavy earth moving machinery there will not be any major impact on noise level due to the mining and other associated activities a detailed noise survey has been carried out and results are discussed in chapter III. Blasting technique is not used for sand lifting, hence no possibility of lane vibration. It was found that the mining activity will not have any significant impact on the noise environment of the region. The only impact will be due to transportation of materials by trucks.

### **Mitigation measures**

As the only impact is due to transportation of sand to the construction through village roads, emphasis will be given on the following points.

- Minimum use of horns at the village area.
- Timely maintenance of vehicles and their silencers to minimize vibration and sound.
- Phasing out of old and worn out trucks
- Provision of green belts along the road networks
- Care will be taken to produce minimum sound during loading

It was found that the sand mining activity will not have any significant impact on the biological environment of the region. Since mining activity is carried out only during the day time, the movement of animals during the night will not be hindered. Proper mitigative

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Srantoo-I: Block/PKI B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter X: Executive Summary*

measures will be taken by the contractor, in consultation with local NGOs working in the study area.

#### **10.11 TRAFFIC ANALYSIS**

The V/C ratio will be modified to 0.2 (Village Road) and 0.06 (Parwata Road) from 0.1 & 0.08 with LOS being "B" to "Excellent". So the additional load on the carrying capacity will be affected to a minimum level.

#### **10.12 ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

Proper environmental management plan are proposed for "Sand" mining project to mitigate the impact during the mining operation.

- Care will be taken that no labour camps will be allowed on river bed.
- Care will be taken that no cooking, or burning of woods will be allowed in the adjoining area.
- Prior to mining, short awareness program will be conducted for labours to make them aware to way of working
- If some causality or injury to animal occurs, it will be informed to forest department and proper treatment will be given.
- No tree cutting, chopping, lumbering, uprooting of shrubs and herbs will be allowed.
- Corridor movement of wild mammals (if exists) will be avoided
- Care will be taken that noise produced during vehicles movement for carrying sand is within the permissible noise level.
- No piling of material will be in adjoining area.
- If wild animals are noticed crossing the river bed, it will not be disturbed or chased away, instead the labours will move away from their path.



*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PAL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

Chapter – X. Executive Summary

### 10.13 ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION

Environmental Management Plan serves no purpose if it is not implemented with true spirit. Some loopholes in the EMP can also be detected afterwards when it is implanted and monitored. Thus, an implementation and monitoring programme has to be prepared.

The major attributes of environment are not confined to the mining site alone. Implementation of proposed control measures and monitoring programme has an implication on the surrounding area as well as for the region. Therefore, mine management will strengthen the existing control measures as elaborated earlier in this report and monitor the efficacy of the control measures implemented within the mining area relating to the following specific areas for eco-friendly mining:

- a. Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.
- b. Collection of soil samples at strategic locations once in every year and analysis thereof with regard to deleterious constituents, if any.
- c. The effectiveness of drainage system depends upon proper cleaning of all drains provided in the surrounding of mine area. Any blockage due to siltation or loose material will be checked at least once in a month.
- d. Measurement of water level fluctuations in the nearby ponds, dug wells and bore wells.
- e. Regular visual examination will be carried out to look for erosion of river banks. Any abnormal condition, if observed will be taken care of.
- f. Measurement of noise levels at mine site, stationary and mobile sources, and adjacent villages will be done in every quarter of the year.
- g. Plantation/afforestation as will be done as per program i.e. along the road sides and near civic amenities, which will be aided by Government bodies as it is not feasible to plant trees near the mine lease area. Post plantation, the area will be regularly monitored in every season, for evaluation of success rate. For selection of plant species local people will also be involved.

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1, Block/PBI, B-II located at Village- Shamtoo, District Panchkula, Haryana (Lease area: 46.50 Ha.)*

Chapter V: Executive Summary

#### 10.14 BUDGET ALLOCATION FOR EMP IMPLEMENTATION

**Table 10.3 Budget allotted for the Environmental Management Plan**

Sl. No.	Measures	Capital Cost (In Rs.)	Recurring Cost (In Rs.)
1.	Pollution Control Dust Suppression /Water Sprinkling	--	1,00,000
2.	Pollution Monitoring i) Air pollution ii) Water pollution iii) Soil Pollution iv) Noise Pollution	--	50,000 40,000 10,000 10,000
3.	Green belt development	2,50,000	1,00,000
4.	Maintenance of haul road	1,40,000	1,20,000
<b>Total</b>		<b>3,90,000</b>	<b>4,30,000</b>

#### 10.15 MONITORING SCHEDULE AND PARAMETERS

**Table 10.4: Monitoring Schedule and Parameters**

Sl No	Description of Parameters	Schedule and Duration of Monitoring
1	Air Quality a) In the vicinity of the mine b) In the vicinity of the transportation network	24 hourly samples twice a week for one month in each season, except monsoon season
2	Water Quality Water quality of surface and groundwater around the site Drinking water must conform to drinking water standards	Once in a season for 4 season in a year
3	Ambient Noise Level	Twice in a year for couple of years & then once in a year
4	Soil Quality	Once in two years on project monitoring area
5	Inventory of Flora (tree plantation, survival etc)	Once in two years on project monitoring area
6	Socio-economic condition of local population, physical survey	Once in 3 or 4 years

*DEIA report of RRM of Minor Mineral (Gravel and Sand) at Shantoo-1: Block/PKL B-II located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Chapter – XI Executive Summary*

#### **10.16 BENEFIT OF MINING**

- ✓ Controlling river channel.
- ✓ Protecting banks.
- ✓ Reducing submergence of adjoining agricultural lands due to flooding.
- ✓ Reducing aggradations of river level
- ✓ Generating useful economic resource for construction.
- ✓ Generating employment and improvement of socio economic conditions of the study area.

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*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-11  
located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)  
Chapter- A1: Disclosure of Consultants*

### CONSULTANTS ENGAGED

Name of the Consultant	P and M Solution
Address	C-88, Sector 65, Noida -201301, U.P.
Credentials	Accredited by QCI/NAABET

Consultant accreditation details are given below




**Quality Council of India**  
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Education & Training

**CERTIFICATE OF ACCREDITATION**

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2.	Water supply projects	3	1101	B
3.	Metallic and industrial minerals (open cast and mine)	8	1101	B
4.	HEAVY & MEDIUM	11	1101	A
5.	Building and construction projects	16	8101	B
6.	Transport and infrastructure projects	49	8101	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in AA-AT Minutes dated December 26, 2019 on QCI/NAABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in NAABET's letter of accreditation bearing no. QCI/NAABET/FA/ACC/2019/123 dated February 4, 2020. The accreditation needs to be renewed before the expiry date of 1st and 5th January, 2024 following due process of assessment.

  
 Sr. Director, NAABET  
 Dated: February 3, 2024

Certificate No.  
 NAABET/QA/1926/1A0015

Valid till  
 01st 10, 2024

For the approval of the Council of EIA Experts of the organization, the applicant has to provide a copy of this certificate to the Council of EIA Experts.

**ANNEXURE I**  
**TERM OF REFERENCE**

**J-11015/33/2018-IA, II (M)**  
**Government of India**  
**Ministry of Environment, Forests and Climate Change**



3rd Floor, Vayu Block,  
 Indira Paryavaran Bhawan,  
 Jor Bagh Road, Aliganj,  
 New Delhi-110003

Dated: 17<sup>th</sup> December, 2018

To,

**M/s Starex Mineral**  
 J.S. Heights Block-A,  
 Opposite Shivnath Mahindra Service Centre,  
 Dhamdha Road, Haryana  
 Email: [starexmineral.envi@gmail.com](mailto:starexmineral.envi@gmail.com)

**Subject: - Production of 4.0 Lakh TPA (up to 1 meter depth from Original Ground Level) River Bed Material (Gravel and Sand) from Mining lease area of 46.50 Ha (net mineable area 34.25 Ha) (Dangri River Bed) located at Village- Shamtoo, District- Panchkula, Haryana by M/s Starex Minerals [File No J-11015/33/2018-IA,II (M); Proposal No: IA/HR/MIN/73803/2018]- Term of Reference (TOR)**

The proposal of M/s Starex Minerals is for production of 20.0 Lakh TPA of Boulder, Gravel and Sand minor mineral from Dangri River Bed having mining lease area of 46.50 Ha located at Village Shamtoo and Rattewal, District – Panchkula, Haryana. The mining lease area is located on Survey of India Topo Sheet no. H43K14. The area falls between Latitude - 30°37'42.26" N to 30°38'33.59" N Longitude - 76°50'13.61" E to 76°59'13.54" E. The Mining lease area falls in seismic zone IV.

2. The PP applied online for grant of ToR and submitted the Form-1, Pre-feasibility Report, and copy of Letter of Intent (LoI). The PP submitted the LR No B18 dated 24.05.2018 issued by Mining officer Panchkula wherein it has mentioned that Shamtoo Block 2/PKLB and Rattewal/PKLB 10 mining contract/lease are in the radius of 500 meter of this mining lease. The Proponent also submitted the District Survey Report wherein the area of the above mining leases was mentioned as 45.0 Ha & 45.0 Ha respectively. Thus, the total area of the cluster is 136.5 Ha. The ministry has issued S.O. 3977(E) 14.08.2018 as per which the category of the proposal is 'B1' Cluster Situation. The proponent submitted the letter No 91 dated 10.04.2018 issued by Chief Wildlife Warden, Haryana wherein it has mentioned that the project is located at a distance of 3.10 KM from the Khol Ha Baitan Wildlife Sanctuary (protected areas). The mining lease is outside the notified Eco Sensitive zone around Khol Ha Baitan Wildlife Sanctuary. As per S.O. 3977(E) 14.08.2018 the general condition is not applicable for the project or activity of mining of minor minerals of Category 'B1' in case of cluster of mining lease area. Thus, the project should be appraised by SEIAA Haryana but as

the proposal was earlier considered in the Ministry and as SEIAA Haryana is not functional the proposal was appraised in the Ministry

3. The PP applied online for grant of ToR on 29.03.2018 and the proposal was considered in EAC Meeting held during April 23-24, 2018. The committee after due deliberation deferred the proposal for want of requisite information. The Ministry vide LR No. J-11015/33/2018-IA-II (M) dated 17th May 2018 asked the PP to submit the requisite information. The PP submitted the information online on 13.07.2018 and the proposal was placed in EAC meeting held on 19-20 July, 2018 wherein the Committee deferred the proposal and sought clarification from the State Government. The Ministry Vide LR No. J-11015/31/2018 IA II (M) dated 20.08.2018 sought the clarification from the DMG, Haryana. The PP submitted the letter no. issued vide Memo No. DMG/HY/Cont./Shantoo-2 Block/PKL B-11/2018/ 5293 dated 23.08.2018 by DMG, Haryana in reply to Ministry's letter dated 20.08.2018 and the proposal was placed in EAC meeting held on 29.11.2018 for appraisal by the Expert Appraisal Committee (EAC) for grant of ToR.

4. The Proponent submitted that the Letter of Intent (LoI) for the mining lease area of 46.50 ha has been granted vide Memo No. DMG/HY/Cont./Shantoo-2 Block/PKL B-11/2018/904 dated 23.07.2018 by the Director, Mines & Geology, Haryana for a period of 9 years. The mining lease is a part of Dangri River Bed falling in Panchkula district Haryana. No diversion of any reserved and protected forest land is involved. The Committee observed that although the LoI for the Boulder Gravel and Sand but it is evident from the photographs submitted by the DMG, Haryana and sheave analysis submitted by the PP that in this area boulder is not available. Thus, the Committee was of the view that River Bed Material that can be considered for mining from this mining lease is Sand & Gravel. The KML file was analyzed on Google and DSS. As per DSS analysis the distance of Khoi Hi Ratan Wildlife Sanctuary is at a distance of 3.3 KM. accordingly PP also needs to submit the application for NBWL clearance.

5. The Project Proponent initially submitted that the proponent submitted that total available geological reserve is 27,90,000 MT and mineable reserves is 20,55,000 MT, of which 20,00,000 MT per annum has been proposed for mining. The method of mining is open cast by semi-mechanized means. Soulder, gravel, and sand will be excavated in layers up to a depth of 3.0 m in a riverbed and 9 m in agricultural field. Mining will be done by deploying earthmovers like excavators, loaders, loaders for excavation and loading and transportation of mineral will be through trucks. The mining will be limited to only 75% of width of river. The mining area is divided into two blocks (upstream and downstream). The proposed machinery will be JCB/excavator, dumper, water tanker, light weight vehicle, maintenance van. Total no of working days will be 268 days in a year. The Project Proponent in EAC meeting held on 19.20 July, 2018 submitted that the calculation after determining the mining zone production quantity as total area is 46.50 HA out of which 3.56 Ha area is under agriculture. This area available for the mining is 42.940 Ha. The Geological reserve is 2110109.29 MT, and Mineable Reserve is 1899098 (considering 90% recovery). The PP also submitted that now they have proposed to reduce the capacity 15.0 LTPA by deducting the reserves located in setback area safety zone. The Committee observed that previously in the Form 1 the PP has submitted that the restricted area will be 12.25 Ha and the Mineable area is 34.25 Ha and Mineable Reserves are 2055000 MT. But the now the PP has submitted that the Mineable area is 42.940 Ha and the Mineable reserves is 1899098. This is contradicting and seems that PP has not calculated the reserves and area of mining properly. Further, the specific gravity is considered in 1.82 Tonnes/m<sup>3</sup> and in the same river bed other mine owners considered the specific gravity 2.0 Tonnes/m<sup>3</sup>. The Committee observed that in DSR submitted by the PP for the mining leases in the area does not provide the specific gravity of the mineral. The Committee observed that as per reply

submitted by the DMG Haryana it appears that no replenishment study has been carried out previously for the rivers in this region and without a scientific study it is just an apprehension of the State Government that excavated pits will be replenished completely in the rainy season. Further, Committee observed that as per reply submitted by DMG the demand of the mineral as per past records shows that the actual mining remains much less than the optimum capacity of a mine and the river in question is not perennial river and water flows only during the rainy season. The Committee was thus of the view that there is a requirement of replenishment study for the rivers in this area by an authorized agency before grant of EC and also after grant of EC. The replenishment of material depends on many factors and replenishment of the material will vary from year to year thus it is necessary to restrict the excavation up to a depth of 1 meter only in place of three meters proposed by the PP and production capacity to 25% of what is proposed by the PP. The Committee observed that mining area proposed by the PP initially was 34.25 Ha and considering the depth of mining as 1 meter and specific gravity as 2.0 Ton/m<sup>3</sup> the production quantity comes out to be 6.85 Lakh TPA, further considering the mining area as 42.940 Ha the production quantity comes out to be 7.61 and considering 25% of production proposed by the PP the production rate comes out to be 4.0 Lakh TPA (25% of 16.0 Lakh TPA). The Committee was thus of the view that the production capacity for this mine should be **restricted to 4.0 Lakh TPA** as there are variation in the restricted areas calculated by the PP and PP did not provide any comments on the verification of KML file. Regarding use of machinery the Committee was of the view that PP shall use only Scrapers for mining to ensure that the mining depth be maintained as 1.0 meters. No other heavy machinery like bucket excavators, back-how, shovel, JCB machines etc shall not be used for excavation/digging which may adversely impact the aquatic biota. The PP shall have to ensure that during the course of mining, a leveled cross section is made (to the extent possible) so that replenishment studies in future are carried out with ease and transparency and depth of deposited material is measured. The DMG, Haryana shall ensure that leveled cross section is made by the PP before the onset of next rainfall season and the same be communicated to MoEFCC.

6 The Project Proponent submitted in this mine the nature of waste rock obtained will be weathered into low grade weathered mineral which is exposed with top soil/alumina. Waste will be generated during mine development work. Estimated water requirement of the project is 15 KLD (Drinking purpose, Domestic purpose, Dust suppression and for Plantation). No liquid waste is anticipated to be generated due to the proposed project. The total no. of working days will be 266 days in a year. The proponent submitted that the estimated project cost shall be Rs 100 Lakh and employment generation will be approximately 14 persons.

7 The Committee also observed that Hon'ble NGT recently in its order dated 4/09/2015 inter-alia directed that "One of the conditions of every lease of mine or minerals would be that there will be independent environmental audit atleast once in a year by reputed third party entity and report of such audit be placed in public domain. In the course of such environmental audit, a three member committee of the local inhabitants will also be associated. Composition of three members committee may preferably include ex-servicemen, former teacher and former civil servant. The Committee will be nominated by the District Magistrate." Thus, in the instant case also DM, Panchkula should nominate the Committee to be associated with third party audit team for the environmental audit of these mining leases. The Committee is of the view that as the environmental audit to be conducted annually and report of the same needs to be placed in public domain. Thus, it is necessary that the excavation from this mining lease should be monitored closely and precisely. For the monitoring of the excavation it is necessary that mine needs to be surveyed quarterly and the excavation quantities needs to be reconcile with amount dispatched. The survey on regular interval not only provides the quantity excavated but also form the basis of future replenishment study. The Committee is of the view as the mining depth is restricted to 1 meter it is necessary that PP should



maintain level surface before surveying.

8. The EAC, after detailed deliberations in its meeting held on 29<sup>th</sup> November, 2018 **recommended** the proposal for prescribing Standard & Specific Term of Reference (ToR) as stipulated at para 9 below for production of 4.0 Lakh TPA of River Bed Material (gravel and sand) from the mining lease area 46.50 Ha (in Dangri River Bed) located at Village Shamtoo and Rattewali, Tehsil & District Panchkula, Haryana by M/s Starax Minerals

9. The matter was examined in the Ministry and the Ministry after accepting the recommendation of the EAC, **hereby grant the following Specific & Standard Term of Reference (ToR) for the proposal of M/s Starax Minerals for production of 4.0 Lakh TPA (up to 1 meter depth from Original Ground Level ) of River Bed Material (gravel and sand) from the mining lease area 46.50 Ha (net minable area 34.25 Ha) (in Dangri River Bed) located at Village Shamtoo and Rattewali, Tehsil & District Panchkula, Haryana for preparation of EIA/EMP Report as per provision of EIA Notification 2006.**

#### **A) Specific Term of Reference:**

- 1) A Sub-Divisional Committee comprising of Sub-Divisional Magistrate, Officers from Irrigation department, State Pollution Control Board or Committee, Forest department, Geology or mining officer, revenue department shall visit the site and make recommendation on suitability of site for mining or prohibition thereof after (a) identification of the areas of aggradations or deposition where mining can be allowed; (b) identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited; (c) verify the mining lease boundary; (d) verify the area of the mining lease; (e) suggest the route for transportation of the mineral so that to cause minimum impact on the nearby habitation & agricultural fields; (f) identify the safety zone/restricted area and the area that can be consider for mining after excluding the area as per recommendation of EAC, after considering the other restrictions mentioned in the Sustainable Sand Mining Management Guidelines 2016, S.O. 141(E) dated 15.01.2016, Letter of Intent & District Survey Report; (g) finalize the specific gravity of the material to be mined by the mining lease holders; (h) proposed location for the installation weigh bridge; (i) verification of the initial level of the mining lease already collected by the PP; (j) verification of the baseline air quality data collected by the PP and any other point to be considered for the protection environment and health of the nearby habitation. Recommendation of the Committee needs to be annexed with EIA/EMP Report.
- 2) EIA/EMP report should be prepared for the entire cluster.
- 3) The Replenishment Study needs to be conducted by an authorized agency and report of the same needs to be submitted.
- 4) High Powered Committee was constituted under the orders of Hon'ble NGT, headed by Secretary, MOEF & CC, which has given its report dated September, 2018. The PP needs to submit the details that how the PP will comply with the recommendation of the Committee.
- 5) The Proponent should collect the baseline data in respect of initial level of the mining lease. For this permanent bench marks (BM) needs to be established at prominent location preferably close to mining leases in question and should have precisely known relationship

to the level datum of the area, typically mean sea level. The entire mining lease should be divided suitably in the grids of 25 Meter x 25 Meters with the help of sections across the width of river and along the direction of flow of the river. The levels (MSL & RL) of the corner point of each grid need to be recorded. Each grid should be suitably numbered for identification. PP should identify grids which will be worked out and grids which will come under no mining zone i.e. safety barriers from the river bank, safety barrier at lease boundary, restrictions as per condition of Lol/Mining Lease deed, restriction as Mineral Concession Rule of the Concerned State, restrictions as per sustainable sand mining management guidelines 2016, restriction as per DSR etc. The PP should ascertain the level of the river bed with the help of sections drawn across the width of the rivers and along the direction of flow of the river and based on this define the depth of mining of each grid. The PP should provide in tabular format the details of the grid viz. wise material availability, dimension of grid, location of grid (latitude, longitude, MSL and level from outside ground level of the corner points), average level of grid (AMSL and RL), depth of mining in each grid, area, volume, grids under mining zone and those left under no mining zone etc. The PP should submit surveyed data so collected in the excel or CSV file so that the same can be readily used for verification in CAD or Datamine Software. In addition to this soft & hard copy of all the plan & section needs to be submitted.

- 6) PP should suitably name each section line. Section Plan for both sections drawn across the river and along the direction of the river needs to be submitted. Each Section should have level on vertical axis and distance from the bank of river on horizontal axis. For the section along the direction of the river the levels to be shown on vertical axis and distance from upstream to downstream should be shown on horizontal axis.
- 7) The PP should prepare the Mining Plan based on the above survey. The information sought above needs to be a part of the mining plan. In the mining plan year wise product of plan should be prepared in three plates for each year. Plate-1 show the mine working for the pre-monsoon period (1<sup>st</sup> APR- 30<sup>th</sup> June), Plate-2 should for the period (1<sup>st</sup> July 15<sup>th</sup> Sep) as the mining lease area needs to be left for the replenishment of the river bed mineral and no mining should be proposed in this period and plate-3 show the mine working after replenishment of the river bed i.e. post monsoon period (16<sup>th</sup> Sep 31<sup>st</sup> March). The period of monsoon may also be defined in consultation with State Government.
- 8) PP should specifically mention in the mining plan that in the subsequent schema of mining/review of mining plan, the year wise data pertaining to replenishment study (all five years) shall be provided which include the level (AMSL & RL) of river bed recorded before and after the monsoon, year wise replenishment quantity, all plan & sections of the replenishment study for the past five years.
- 9) PP should also submit an undertaking to the effect that each year after the replenishment study the plan & section shall be submitted to concerned Department of Mining & Geology of the State for verification and official record.
- 10) PP should submit an undertaking by way of affidavit as required as per Ministry's O.M No 2-50/2017 -IA (M) dated 30.05.2018 to comply with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.

- 11) PP should include in EIA Report details of all the statutory clearances, permissions, No objection certificates, consents etc. required for this project under various Acts, Rules and regulations and their status or estimated timeline after grant of EC
- 12) The PP should submit the revenue plan, revenue plan superimposed on the satellite imagery clearly demarcate the Govt. land, private land, agr cultural land.
- 13) The PP should clearly bring out the protective and mitigative measures to be taken for the nearby habitation and religious structures in line with the Ministry's O.M. No Z-1013/57/2014- EA. II (M) dated 29.10.2014.
- 14) The PP should submit the detailed plan in tabular format (year wise for life of mine) for afforestation and green belt development in and around the mining lease. The PP should submit the number of saplings to be planted, area to be covered under afforestation & green belt, location of plantation, target for survival rate and budget earmarked for the afforestation & green belt development. In addition to this PP should show on a surface plan (5 year interval for life of mine) of suitable scale the area to be covered under afforestation & green belt clearly mentioning the latitude and longitude of the area to be covered during each 5 years.
- 15) The PP should submit the quantity of surface or ground water to be used for this project. The complete water balance cycle need to be submitted. In addition to this PP should submit a detailed plan for rain water harvesting measures to be taken. The PP should submit the year wise target for reduction in consumption of ground water by developing alternative source of water through rain water harvesting measures. The capital and recurring expenditure to be incurred needs to be submitted.
- 16) The PP should clearly bring out the details of the manpower to be engaged for this project with their roles /responsibilities/designations. In addition to this PP should mention the number and designation of person to be engaged for implementation of Environmental management plan (EMP).
- 17) The PP should submit the year wise, activity wise and time bound budget earmarked for EMP, occupational health surveillance & Corporate Environmental Responsibility needs to be submitted.
- 18) PP should submit the measures to be adopted for prevention of illegal mining and pilferage of mineral.
- 19) PP should submit the detailed mineralogical and chemical composition of the mineral and percentage of free silica from a NABL/MQEP&CC accredited laboratory.
- 20) PP should clearly show the transport route of the mineral and protection and mitigative measure to be adopted while transportation of the mineral. The impact from the center line of the road on either side should be clearly brought out supported with the line source modeling and isopleth. Further, frequency of testing of Poly Achromatic hydrocarbon needs to be submitted along with budget. Based on the above study the compensation to be paid in the event of damage to the crop and land on the either side of the road needs to be mentioned.

- 21) PP should clearly bring out that what is the specific diesel consumption and steps to be taken for reduction of the same. Year-wise target for reduction in the specific diesel consumption needs to be submitted.
- 22) PP should bring out the awareness campaign to be carried out on various environmental issues, practical training facility to be provided to the environmental engineers/diploma holders, mining engineers/diploma holders, geologists, and other trades related to mining operations. Target for the same needs to be submitted.
- 23) PP should specifically mention in the mining plan that the method of mining should be as proposed by LAC i.e. by use only Scrapers for mining to ensure that the mining depth be maintained as 1.0 meters. No other heavy machinery like bucket excavators, back-how, sival, JCB machines etc. shall not be used for excavation/digging.
- 24) The safeguards which are suggested in sustainable sand mining guidelines as well as notification dated 15.01.2016 ought to be scrupulously followed and taken into consideration while preparing EIA/EEMP Report.
- 25) The Project Proponent shall apply for NBWL Clearance for the project, if applicable, as per Office Memorandum/Guidelines issued by MoE&CC in this regard from time to time.

#### **B. Standard ToR (Mining):**

- 1) Year wise production details since 1993-94 should be given, clearly stating the highest production achieved in any one year prior to 1993-94, it may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, with the highest production achieved prior to 1993-1994. The production details need to submit since inception of mine duly authenticated by Department of Mines & Geology, State Government.
- 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/topo sheet, 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 spell 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 proposed safeguard measures in each case should also be provided.
- 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 and 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 RI / RF 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 R&T 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 prescriber 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 LIL, 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 AACQ 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 PM10, 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.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMS 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 spell 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 spell 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 spell out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
  - 44) The activities and budget earmarked for Corporate Environmental Responsibility (CER) shall be as per Ministry's O.M No 22 65/2017-IA, II (M) dated 01.05.2018 and the action plan on the activities proposed under CER shall be submitted at the time of appraisal of the project included in the EIA/EMP Report.
  - 45) The Action Plan on the compliance of the recommendations of the CAG as per Ministry's



Circular No. J-11013/41/2016-IA.I (M), dated 25.10.2017 needs to be submitted at the time of appraisal of the project and included in the LIA/LMP Report.

45) Compliance of the Ministry's Office Memorandum No. F. 3-50/2017-IA III (PL), dated 30.05.2018 on the judgment of Hon'ble Supreme Court, dated the 2<sup>nd</sup> August, 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India needs to be submitted and included in the EIA/EEMP Report.

47) 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 LIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA I (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/EEMP (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, I (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.

19) The prescribed TOR would be valid for a period of three years for submission of the EIA/EEMP reports as per the O.M. No. J-11013/41/2006-IA, II (I) dated 29.08.2017. The TOR is valid up to 16.12.2021.

11 After preparing the draft E.A (as per the generic structure prescribed in Appendix-rl 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,

(Dr. R.B. Lal)

**Addl. Director/Scientist 'E'**

Email: [rb.lal@nic.in](mailto:rb.lal@nic.in)

Phone/Fax: 011-24695352

**Copy to:**

- 1) **The Secretary**, Ministry of Mines, Government of India, Sansri Bhawan, New Delhi.
- 2) **The Secretary**, Department of Mines & Geology, Government of Haryana, Chandigarh.
- 3) **The Secretary**, Department of Environment, Government of Haryana, Chandigarh.
- 4) **The Secretary**, Department of Forest, Government of Haryana, Chandigarh.
- 5) **The Chief Wildlife Warden**, Government of Haryana, C-18, Van Bhawan, Sec-6, Panchkula - 134109.
- 6) **The Additional Principal Chief Conservator of Forests (C)**, Ministry of Environment, Forest and Climate Change, Regional Office (NZ), Bays No. 24-25, Sector 31 A, Dakshin Marg, Chandigarh – 150030.
- 7) **The Chairman**, Central Pollution Control Board, Farvesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
- 8) **The Chairman**, Haryana Pollution Control Board, C-11, Sector 5, Panchkula, Haryana 134109.
- 9) **The Member Secretary**, Central Ground Water Authority, A-2, W3, Curzon Road Barracks, K.G. Marg, New Delhi, 110001.
- 10) **The Controller General**, Indian Bureau of Mines, Indira Bhawan, Civil Lines, Nagpur-440 001.
- 11) **The District Collector**, District-Panchkula, Haryana.
- 12) **Guard File**
- 13) **MoEF&CC website**

(Dr. R.B. Lal)

**Addl. Director/Scientist 'E'**

2/10/21

**ANNEXURE II**

**LOI**

Department of Mines and Geology, Haryana  
30-Bays Building, Sector-17, Chandigarh

Registered  
From:

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

To:

M/s Stares Minerals,  
1.5 Heights Block-A,  
Opp. Shivalaji Mahindra Service Center,  
Dharamdha Road, Kharar, District Durg

Memo No. DMG/HY/Cont./Shantou-1 Block/PKL B-11/2018/ 904  
Dated Chandigarh the 25.02.2018

Subject:

Acceptance of the highest bid in respect of the Boulder, Gravel and Sand minor mineral mine of 'Shantou-1 Block/PKL B-11' having tentative area of 46.50 hectares in the District Panchkula offered in e-auction held on 07.06.2018, issuance of Letter of Intent (LoI) regarding

You participated in the e-auction held on 07.06.2018 on the State Government web portal <http://haryanaprocurement.gov.in> after accepting the terms and conditions of the auction notice issued vide notification no. DMG/HY/e-Auction/PKL/2015/140 dated 09.11.2018 in order to obtain mining contract of minor mineral mine of the district Panchkula. You offered the highest bid of Rs. 06,09,50,000/- (Rs. Six crore nine lacs fifty thousand only) per annum against the Reserve Price of Rs. 06,09,00,000/- for obtaining the Mining Contract of Minor Mineral Mine namely 'Shantou-1 Block/PKL B-11' for extraction of Boulder, Gravel and Sand having tentative area of 46.50 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. 06,09,50,000/- (Rs. Six crore nine lacs fifty thousand only) per annum offered by you in respect of 'Shantou-1 Block/PKL B-11' under the provision of Haryana Minor Mineral Concession, Stacking, Transportation of Minerals & Prevention of Illegal Mining Rules, 2012 (State Rules). Accordingly, you have become the successful bidder in respect of 'Shantou-1 Block/PKL B-11' of the district Panchkula.

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 'Shantou-1 Block/PKL B-11' subject to the following terms and conditions:

- (a) The period of the contract shall be 09 years and the same shall commence with effect from the date of grant of Environment Clearance by competent authority or expiry of a period of 12 months from the date of the commencement of acceptance of highest bid/issuance of Letter of Intent, whichever is earlier;
- (b) You may note that the detail of the area of the mining block is tentative and was notified on "as is where is basis" (refer condition no. 4 of the auction notice). To

Department of Mines and Geology, Haryana  
30-8/95 Building, Sector-17, Chandigarh

case of any inadvertent mistakes, if any, the same would be rectified/ corrected before execution of the agreement (refer condition no. 3 of the auction 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 khays numbers/ location etc. at any stage will be entertained if compliance of applicable laws/ restrictions. Needless to state this also includes the changes, if any, as per condition no. 3 of auction notice.
- (iv) The amount of the highest bid i.e. Rs. 06,09,50,000/- (Rs. Six crore nine lakh fifty thousand only) per annum shall be the "Annual Contract Money" payable by you as the contractor money in the manner prescribed in the contract agreement to be executed in 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. 06,09,50,000/-
2	Second Year	Rs. 06,09,50,000/-
3	Third Year	Rs. 06,09,50,000/-
4	Fourth Year	Rs. 07,61,87,500/-
5	Fifth Year	Rs. 07,61,87,500/-
6	Sixth Year	Rs. 07,61,87,500/-
7	Seventh Year	Rs. 09,52,34,375/-
8	Eighth Year	Rs. 09,52,34,375/-
9	Ninth Year	Rs. 09,52,34,375/-

- (vi) As per the terms and conditions of the grant, you are liable to deposit Rs. 01,52,37,500/- i.e. equal of the annual bid amount as "Security deposit" out of which you have already deposited an amount of Rs. 60,05,000/- (Rs. Sixty lakh ninety five thousand only) i.e. equal to 10% of the annual bid amount as "initial bid security" after the conclusion of auction. The balance amount of Rs. 91,42,500/- of the bid security i.e. 15% of the annual bid amount along with one month's advance contract money shall be deposited before commencement of the mining operations or an expiry of period of 12 months, whichever is earlier.
- (vii) You shall execute an Contract Agreement Deed in Form MC-1 appended to the Haryana Minor Mineral Concessions, Stocking, Transportation of Minerals & 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 Lot.
- (viii) The Contract Agreement executed shall be got duly registered under relevant law with concerned Registering Authority and you shall be liable to pay applicable stamp duty and registration fee etc. as per the applicable rates and as demanded by the Registering Authority/Revenue Department at the time of Registration.
- (ix) In case you fail to execute the agreement Deed within the prescribed period of 90 days, this Lot 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

Department of Mines and Geology, Haryana  
30-Rays Building, Sector 17, Chandigarh.

A balance amount of 15% towards the bid security, amounting to Rs. 91.65 Lakh/- being the 15% of the annual bid amount shall be recovered as arrears of land revenue and, you, as the Bidder/ defaultor, shall be debarred from participating in any future auctions for a period of 5 years.

- (ix) 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.
- (x) After execution of Agreement, either before commencement of the mining operations or before expiry of the period of 12 months from the date of issuance of this L-1, whichever is earlier, in case of failure to deposit the balance 15% amount towards the bid security (as required under clause (ii) above) the acceptance of bid/ issuance of L-1/ execution of Agreement shall be deemed to have been rescinded and 10% of the bid amount towards the bid security at the time of auction shall stand forfeited. Further, an amount of 15% towards the bid security shall be recovered as arrears of land revenue and you shall be debarred from participation in any subsequent bids for a period of 5 years.
- (xi) 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 period.
- (xii) You shall also deposit/ pay an additional amount equal to 10% of the due contract money along with the monthly instalments towards the Mines and Mineral Development, Restoration and Rehabilitation Fund.
- (xiii) 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.
- (xiv) 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 operate the security amount equal to 75% 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.
- (xv) 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 authorized by the Director, Mines & Geology, in this behalf.
- (xvi) Further, the actual mining will be allowed to be commenced only after prior Environment Clearance is obtained by you as the Bidder/ Mining Contractor for the Mining Block from the Competent Authority as permitted by the competent Authority required under EIA notification dated 14/09/2006, as

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10-Bayer Building, Sector-17, Chandigarh

amended from time to time by the MS&G and guidelines in this regard issued in this behalf.

- (viii) The Mining Contractor to whom mining rights have been granted through this contract would also be liable to pay the following to the landowners in undertaking mining operations:
- (a) Annual rent in respect of the land area allotted under the concession but not being operated, and
  - (b) Rent Plus compensation in respect of the area used for actual mining operations.
- (ix) The amount of annual rent and the compensations shall be settled mutually between the landowners 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, Storage, Transportation of Minerals & Prevention of Illegal Mining Rules, 2012".
- (x) The total mineral excavated and stacked by the concession holder within the area granted by mining contract shall not exceed two times of the average monthly production as per approved Mining Plan at any point of time.
- (xi) The Mining Contractor shall not stock any mineral outside the concession area granted by mining contract, without obtaining a valid license as per provisions contained in Chapter 14 of the State Rules.
- (xii) 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 machinery 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 any account.
- (xiii) Following are the general special conditions applicable for excavation of bridge in nearby from river beds in order to ensure safety of riverbeds, structures and the adjoining areas:
- (a) No mining would be permissible, if a riverbed 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, extend 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 authorized by him;
  - (c) The maximum depth of mining in the reserved 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 1/4th width of the river/ rivulet;

**Department of Mines and Geology, Karnataka  
30-B/1st Building, Sector 17, Chandigarh**

- (e) No mining shall be permitted in an area upto a width of 100 metres from the outer edges of embankments in case of river Yamuna, 150 metres in case of Tapti, Madanala and Ghoggar and 100 metres from the outer edges of other covers/ spoilite. (This clause is applicable to mining outside covered area).
- (f) Any other condition(s) which may be required by the Director (Department of the State from time to time for described mine) in consultation with the Mines & Geology Department, may be made applicable to the mining operations in deep-beds.
- (viii) A safety margin of two meters (2m) shall be maintained above the ground water table while undertaking mining and processing operations. It shall be permissible below this level in case a special permission is obtained from the competent authority in this regard. Further, the depth of excavation of a tunnel shall not exceed the rate of 1000 m per year. (This clause is applicable to mining outside covered area).
- (ix) The contractor shall not undertake any mining operations for the period of a mining contract without obtaining requisite permission from the competent authority as required for undertaking mining operations under relevant laws.
- (xvi) 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 Explosive 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, you are advised to submit the Draft Contract Agreement 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, with a period of 90 days from the date of issue of the bid acceptance letter and the cost.

*RK Shan*  
Mining Engineer  
For Director, Mines & Geology  
Karnataka

Encl: No. DMS/EFY/Cont./Mineral Block/PSI/2-11/2018/1 (b) (d)  
A copy is forwarded to the Government for information and necessary action.

1. The Chairman, Haryana State Council of Central Bureau, Panipat.
2. The Deputy Commissioner, Panipat.
3. The Mining Officer, Mines & Geology Department, Panipat. He is directed to ensure that proper and complete Draft Contract Agreement Documents as required are submitted within stipulated period.

- 24 -  
Mining Engineer  
For Director, Mines & Geology  
Karnataka





**ANNEXURE III**  
**APPROVED MINING PLAN**

**REVISED MINING PLAN AND PROGRESSIVE MINE CLOSURE PLAN  
FOR  
BOULDER, GRAVEL & SAND MINE (MINOR MINERAL)**

**SHAMTOO-1: BLOCK/PKL-B-11**

49914/2021/Estt.Br  
 24/09/2019  
 D/S/A 7/MP/SHAMTOO-1/PKL-B-11/2018/  
 4716-471

(Lease area: 46.50 ha; Lease Period-09 years; Production- 18.00 Lac T/Annum)



SUBMITTED TO

AUGUST-2019

THE DIRECTOR, MINES & GEOLOGY HARYANA

APPLICANT

M/s Starex Minerals, J.S. Heights, Birk-A Dhandra  
 Road, Kharoli, District Gurgaon

PREPARED BY

S.N. SHARMA  
 RQP/DDN/0135/2001-A  
 House No. 282, sector 11-D,  
 Faridabad (Haryana)

## CONTENTS

S.NO	DESCRIPTION	PAGE NO
	Introduction	1-4
1.0	General	5
2.0	Details of the Mining lease	5-8
3.0	Details of Existing Mining pits, their dimensions etc	9
3.1	Physiography, Drainage and Climate	9-12
3.2	Geology of the Area	17
3.2.1	Regional Geology	12-13
3.2.2	Local Geology	13-14
3.2.3	Description of formation	14
3.2.4	Boulder, Gravel & sand	14
3.2.5	Physical and chemical characters of mineral	15
3.2.6	Origin & control of mineralisation ( Annual replenishment of mineral in river bed area vis-a-vis sedimentation	15-20
3.2.7	Grade and use of mineral	20
3.3	Reserves	20-23
4.0	Details of production & dispatches of five years	24-25
5.0	Physical and Geological Characters of the deposit	25
6.0	Details of Mining Machinery Deployed/ to be deployed	26
7.0	Method of mining	27



S.NO	DESCRIPTION	PAGE NO
7.1	Proposed year wise development for five years	27
7.2	Proposed rate of production when the mine is fully developed	27
7.3	Mineable reserves and anticipated life of the mine	28
7.4	Proposed method of mining	28-33
7.5	Conceptual Mining Plan	33-34
7.6	Mine Drainage	34-35
7.7	Water requirement	35
8.0	Year wise Annual Programme for the next 5 years	36
9.0	Details of Employment	36
<b>ENVIRONMENT MANAGEMENT PLAN</b>		
10.0	Measures taken and to be taken for land restoration, reclamation and plantation in / or nearby lease area	37-38
11.0	Measures taken/ to be taken for protection of Environment in and around mining area!	39
12.0	Measures taken/ to be taken for dumping overburden, stacking of top soil.	39
13.0	Measures taken/ to be taken for the control of water, noise and air pollution	39-41
14.0	Demographic details of the study area	41
15.0	Details of health check ups and insurance of all the employed person	41



S.NO	DESCRIPTION	PAGE NO
15.1	Corporate Social Responsibility	41-42
15.2	Fund Provision for Environmental Management	42
15.3	Fund Provision for E M <sup>P</sup> measures	42
Part II		
Progressive Mine Closure Plan		
1.0	Introduction	43-45
2	Mine description	46
2.1	General Geology and Local Geology	46-47
2.1.2	Local geology	47-48
2.2	Reserves	48-49
2.3	Mining Method	49
2.4	Mineral beneficiation	49
3.0	Review of Implementation of mining plan including five years progressive closure plan up to the final closure plan	49
4.0	Closure plan	49
4.1	Mined out land	49
4.2	Water quality management	50-51
4.3	Air Quality Management:	51
4.4	Waste management	51
4.5	Top soil management	51



S.NO	DESCRIPTION	PAGE NO
4.6	Tailing dam management	51
4.7	Infrastructure	51
4.8	Disposal of mining Machinery	51
4.9	Safety and security	57
4.10	Disaster management and risk assessment	57
4.11	Care and Maintenance during temporary discontinuance	58
5.0	Economic Repercussion of closure of mine and manpower retrenchment	59
6.0	Time scheduling for abandonment	59
7.0	Abandonment cost	60
8.0	Financial assurance	61
9.0	Certificate	61
10	Plan & section	61



## LIST OF ANNEXURE

Sr.no.	Description
1	Copy of Letter of Intent (LOI)
2	Consent letter from applicant to prepare the Mining Plan
3	Copy of RQP Certificate
4	Density Report of Mineral

## LIST OF PLATES

Plate. No.	Description
1	Location Plan
2	Key plan
3	Surface Geological plan and section
4	Plan showing the position of Mine Workings at the end of Each Year (I to V) Years
5	Reclamation Plan & Section
6	Environmental Plan





MINING PLAN FOR SHANTOO-1 BLOCK PKL B-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

**INTRODUCTION**

M/s Storex Minerals, J.S. Heights, Block-A, opposite Shivnath Mahindra Service Center, Chandwa Road, Khapri, District Durg was the highest bidder (Rs.6,09,50,000/-) for the Boulder, Gravel & Sand quarries of Shantoo-1 Block/PKL-B-11, District Panchkula for which e-auction was held on 07-08/02/2018.

Letter of Intent has been issued by the Director, Mines & Geology, Haryana vide Memo No. DMG/HY/Cont./Shantoo-1 Block/PKL B 11/2018/904. Dated Chandigarh the 23.02.2018 for Mining of Boulder, Gravel & sand (Minor Mineral) in revenue village of Shantoo over an area of 46.50 hectares in district Panchkula, Haryana for a period of 09 Years. Letter of Intent attached as Annexure No.1.

The applicant is involved in the Mining business for last many years. The applicant can invest necessary funds for the scientific and systematic development of mines including land rejuvenation and progressive reclamation programme and other measures necessary to protect the quality of the environment and human health etc.

The objective of preparation of this Mining Plan along with Progressive Mine Closure Plan is to ensure systematic and scientific mining as per conditions stipulated by the Department of Mines & Geology, Haryana and the Haryana Minor Mineral Concession, Stocking, Transportation and Preventing Illegal Mining Rules, 2012. The conditions related to the Mining Plan are reproduced here below :

- The mining contractor shall get prepare a "Mining Plan" along with the Mine Closure Plan (Progressive & Final) from the Recognized Qualified Person as per chapter 10 of the "Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012" for the area granted on mining contract. The contractor shall not commence mining operations in any area except in accordance with such Mining Plan duly approved by an officer authorized by the Director, Mines & Geology, in this behalf. It has also been stipulated, actual mining will be undertaken only after prior Environmental



MINING PLAN FOR SHANTOO 1 BLOCK PKI-15-11 (BOULDER, GRAVEL & SAND), DISTRICT  
PANCHKULA

Clearance is obtained from Competent Authority as required under notification dated 14/9/2006 issued by the MoE&F & CC, GoI or as amended from time to time.

- 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.
- 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. (In the instant case, no forest land is involved, hence same is not relevant.)
- The Department has also stipulated special conditions for excavation of minor mineral(s) from river beds in order to ensure safety of river-beds, structures and the adjoining areas. the same are as under.
  - (i) No mining would be permissible in a river bed up to a distance of five times of the span of a bridge on up-stream side and ten times the span of such bridge on down-stream side, subject to a minimum of 250 meters on the up-stream side and 500 meters on the down-stream side;
  - (ii) 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 authorized by him;
  - (iii) The maximum depth of mining in the river-bed shall not exceed three meter from the un-mined bed level at any point in time with proper bench formation;
  - (iv) Mining shall be restricted within the central 3/4th width of the river/ rivulet;



MINING PLAN FOR SHAMTOO-1 BLOCK PXL-B-11 (BUILDUP, GRAVEL & SAND), DISTRICT-  
PANCHKULA

(v) In case of areas permitted for excavation outside river/rivulets i.e. areas adjoining to rivers/rivulets, 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 metres in case of Dangri, Markanda and Ghaggar and 100 meters on either side of all other rivers/ rivulets. ( The present area of contract does not fall outside river bed, so this condition is not relevant )

(vi) 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

In respect of "Sand Units", the contractor shall restrict the quarrying operations to maximum four villages of the Unit at any point of time during the subsistence of the contract. The contractor shall have a right to change the site at any time, during the subsistence of the contract, on settlement of compensation with the land owners of new site of the block from where he intend to extract sand but ceiling of maximum four villages shall be adhered to strictly and such change of site shall be intimated to the Director or any officer authorized by him in this behalf. (The present area of contract block has only one block/compact area, hence is not relevant.)

- That no mining operation shall be allowed in the urbanizable zone of area notified by Town and Country Planning Department. Further, in case of the agriculture zone notified by Town and Country Planning Department mining shall be permissible only after obtaining prior permission from the competent authority.
- 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.



MINING PLAN FOR SHAMTOO-1 BLOCK PKL B-11 (BOULDER, GRAVEL & SANDS), DISTRICT-  
PANCHKULA

- > 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.
- > The contractor shall be under obligation to carryout mining in accordance with all other provisions applicable as per Mines Act, 1952, Mines and Minerals (Development and Regulation) Act, 1957, Indian Explosive Act, 1884, Forest (Conservation) Act, 1980 and Environment (Protection) Act, 1986 and the rules made there under Wild Life (Protection) Act, 1972, Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981. (Where ever it is applicable.)

1.0. **GENERAL:**

a) **Name and address of the Lessee/applicant:**

M/s Starva Minerals, J.S. Heights, Block A, opposite Shivnath Mahindra Service Centre, Dhamdha Road, Kharol, District: Durg

b) **Status of the Applicant.**-The applicant is a Proprietorship firm.

c) **Name, Address and registration number of the RQP preparing the Mining Plan**

The applicant has assigned the work of preparation of Mining Plan to:

S.N.Sharma

Registration No. RQP/DJN/0135/2001/A

House No. 282, 1 Floor, Sector 11 D Faridabad (Haryana)

Mobile no.09560848579

Email- snsharma@jbbtechnocrat.com

(Consent letter enclosed as Annexure-II and copy of RQP certificate as Annexure-III)



**MINING PLAN FOR SHAMTOO-1 BLOCK PKL-B-11 (BOULDER, GRAVEL & SAND), DISTRICT  
PANCHKULA**

**2.0 Details of the Mining lease**

a) Details of the land covered in the 'Area' notified by Government of Haryana are as under:- Mining lease of Boulder, Gravel & Sand (Minor Mineral) over an area of 46.50 ha of Shamtoo-1 Block - PKL-B-11 is located in District - Panchkula

Sr. No.	Name of Block No.	Name of Village	Details of Khasra Nos./ Killa No.	Area (In Hect.)	Period (in Years)
1	Shamtoo-1 Block / PKL B-11	Shamtoon Rattowali	55 min 141 min, 142, 143	46.50	09

b) **Name of Mineral**

Boulder, Gravel & Sand (Minor Mineral)

c) **Description report of the mining lease/ quarry license with plan (copy of sanction order/ lease deed/ license)**

Based on the details published vide Haryana Government Gazette notification issued by DMG, Haryana and the Khasra map submitted by the applicant, survey of the area was carried out along the course of the Dadigar kya Nadi which joins to Dangri Tributary (River) in the revenue village of Shamtoon (detailed above) which flow from NE to SW. Workings will be restricted within the lease area. 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.

Copy of Letter of Intent issued is enclosed as Annexure - I.

d) **Location map of the mining lease showing the details of the approach roads up to the mine is attached as Plate -01**

Area lies between coordinates

Latitudes N 30° 37' 42" to N 30° 48' 31"



MINING PLAN FOR SHAMIKSO-I BLOCK PRT-B-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

Longitudes E 76° 59' 12" to E 76° 59' 34.3"

d) Key plan of the area

Lease area is shown on the Key Plan. It forms a part of G. T. Sheet No's -H43K14 & H43L2 - Key plan is enclosed as Plate - 02. Following are the coordinates of the lease hold area

No.	Latitude	Longitude
A	N 30°38'33"	E 76°59'18.8"
B	N 30°38'33"	E 76°59'31.85"
C	N 30°38'31"	E 76°59'32"
D	N 30°38'31"	E 76°59'34.3"
E	N 30°38'29"	E 76°59'31.5"
F	N 30°38'19.7"	E 76°59'29.4"
G	N 30°38'19"	E 76°58'26.95"
H	N 30°38'11"	E 76°58'24.5"
I	N 30°38'13.5"	E 76°58'24.5"
J	N 30°38'2.5"	E 76°59'29.2"
K	N 30°38'59.2"	E 76°59'26.7"
L	N 30°38'1.1"	E 76°58'23.5"
M	N 30°38'00"	E 76°58'21.8"
N	N 30°38'54"	E 76°59'21.8"
O	N 30°38'54"	E 76°59'29.2"
P	N 30°38'41"	E 76°59'29.2"
Q	N 30°38'42"	E 76°59'28.3"
R	N 30°38'42"	E 76°59'15.6"
S	N 30°38'48"	E 76°59'17.4"
T	N 30°38'50"	E 76°59'17.9"
U	N 30°38'56"	E 76°59'14.5"
V	N 30°38'56"	E 76°59'15.1"
W	N 30°38'01"	E 76°59'12"
X	N 30°38'5.5"	E 76°59'17.2"
Y	N 30°38'09"	E 76°59'14.7"
Z	N 30°38'11"	E 76°59'14.7"
A1	N 30°38'15"	E 76°59'19.2"
A2	N 30°38'19"	E 76°59'19.7"
A3	N 30°38'21"	E 76°59'18.1"
A4	N 30°38'27"	E 76°59'18.1"
A5	N 30°38'31"	E 76°59'19.1"



**MINING PLAN FOR SHAMTOO-1 BLOCK PKL B-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA**

The area is approachable from various nearest towns as detailed below

The lease area is approachable from NH-7 to Ramgarh- Narayangarh road and Barwala - Raipur Ham Roads. All these quarries are connected by metalled road. Panchkula is about 16 kms and Chandigarh is about 24 kms from the extreme NE end of the lease area.

**f) Infrastructure facilities:**

Nearest railway station	Panchkula Railway station about 18 km
Police station	Shantoo
Post office	All the nearby villages
Medical facilities	Raipur rani, Barwala, Panchkula, Ambala and Chandigarh
Education facilities	Most of the nearby villages have secondary schools and for higher education institutes are available at Ambala, Panchkula, and Chandigarh & other nearby towns
Mode of transportation of mineral	Mineral (boulder, grave & sand) will be transported by hired trucks. Loaded trucks will travel on Kuchha road made for plying of trucks. No. of such temporary road will provide access to the river bed and the movement of loaded trucks. Similarly, mineral will be transported on the other side through approach roads which finally merge with Ramgarh- Narayangarh State Highway roads for final destinations
River/ canal/ port	Dudhgarh Ki Nadi



**MINING PLAN FOR SHAMTOO 1 BLOCK P/L B 11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA**

**3) DETAILS OF EXISTING MINING PITS, THEIR DIMENSION AND LOCATIONS**

Mineral Boulder, gravel & sand is the critical component in construction activities. Presently there is no pit available in the river bed. Earlier Boulder, Gravel & Sand from this area used to transport from the road network ultimately to various destinations. Surface & Geological Plan & Sections enclosed as Plate - 03.

**Present Land use Pattern :- (in hectares)**

S. No.	Particulars	Present land use (ha.)
1.	Pit area	0.00
2.	Dump area	0.00
3.	Safety zone Roads, 7.5m lease boundary, 25% restricted area of river banks, 50m barrier at each km	12.25
4.	Infrastructure (Office, Temp. shelter etc)	0.20* Hectares
5.	Mineral Storage	0.00
6.	Plantation	5.00* Hectares
7.	Area available for mining	34.25
	<b>Total</b>	<b>46.50</b>

\*Plantation in 5.0 ha land will be done under social forestry on land available from Panchayat by the end of mine life

\* Plantation & infrastructure in restricted area only

**3.1 Physiography, Hydrogeology, Drainage and Climate**

Shivalik hill ranges occupy the northern and North Eastern fringe of Panchkula District and attain the height up to 600m above MSL. The hills are about 150-200 m high with respect to the adjacent alluvial plains. These are characterized by the broad (tableland





MINING PLAN FOR SHAMTOO-1 BLOCK PKL-B-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

topography that has been carved into quite sharp slopes by numerous ephemeral streams come down to the outer slopes of the Shiwaliks and spread much of gravels boulders, pebbles in the beds of these streams. The general slope of the land surface is from NE to SW. The river Dangri & Begna provides the major drainage in the lease area. The general physiography of the Lease area is gently sloping from NE to SW side indicating the flow direction of river.

#### Hydrogeology

The ground water exploration in the district reveals that clay group of formations dominates over the sand group in the district area. Ground water in the district occurs in the alluvium under water table and semi confined to confined conditions. These aquifers consist of sand, silt, gravels and kankar associated with clay and form highly potential aquifers. In alluvium, the permeable granular zones comprising fine to medium grained sand and occasionally coarse sand and gravel. Their lateral and as well as vertical extent is extensive. In Kandi belt, which has not been explored fully boulders cobbles and pebbles, constitutes the major aquifer horizon. Siwalik hills occupy marginal areas in the north-eastern parts of the district constitute a low potential zone.

#### Occurrence of ground water

Ground water occurs in pore-spaces of alluvial formation including Kandi belt stretching range Siwalik foothills. In alluvium, sands, silts, kankar and gravels form potential aquifer zones in the district. The Kandi belt yet to be explored constitute of boulders, pebbles and cobbles forming major aquifer horizon.

#### Nature and depth of ground water aquifers

In Kandi areas, the shallow aquifers are isolated lenses embedded in clay beds whereas aquifers in alluvial areas occur in regional scale and have pinching and swelling disposition and are quite extensive in nature. These aquifers generally consists sands (fine to coarse grained) and gravels and are often intercepted by clay and kankar horizons. These aquifers are under unconfined to semi-confined conditions and support a large no. of shallow tube wells within the depth of 50m only as per CGCR reports. The discharge of these tube wells varies between 100 lpm (Litre per Minute) and 500 lpm for





MINING PLAN FOR SHAMTOO I BLOCK PKI-8-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

**Rainfall:** The normal annual rainfall of the district is 1057 mm, and is unevenly distributed over the area. The average rainy days are 43. The south west monsoon sets in from last week of June and withdraws in the end of September, contributing about 86% of normal 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 northeast. The mean maximum temperature is 39.1°C (May & June) and mean minimum is 6.1° C (January) of the district.

Normal Annual Rainfall: 1057 mm; Normal monsoon Rainfall: 911 mm

**Temperature**

Mean Maximum: 40.8°C(May & June), Mean Minimum: 6.8 °C(January)

Normal Rainy days: 44.

(Source: District Groundwater Brochure CGWB).

**3.2 Geology of the Area**

**3.2.1 Regional Geology**

The north-eastern part of Haryana is predominantly characterized by sedimentary lithology in the Sub-Himalayan zone comprising Subathus, Dagshais, Kasaulis and Siwaliks. A general Regional stratigraphic sequence in the area is given in Table.



MINING PLAN FOR SHAMTOO J BLOCK PKL-B-11 (BOULDER, GRAVELS & SANDS), DISTRICT-  
PANCHKULA

Table : Regional stratigraphic sequence

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

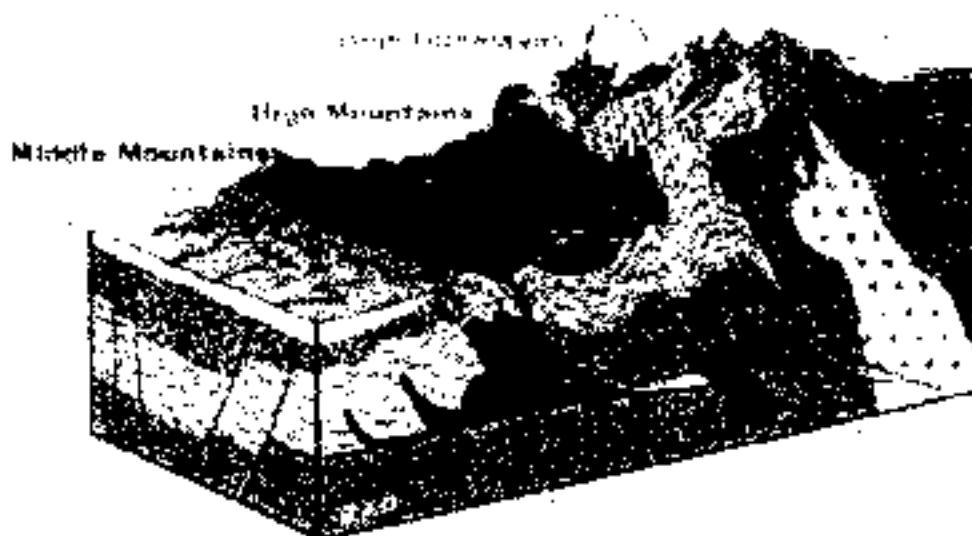
MINING PLAN FOR SHAMITOO-3 BLOCK PKI-B-11 (BOULDER, GRAVEL & SAND), DISTRICT  
PANCHKULA

3.2.2 LOCAL GEOLOGY

The litho units encountered in the riverbed and surrounding areas belongs to the Siwalik 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 Siwalik Super group and are a mixture of boulders, pebbles, sand, silt and clay. The following sequences have been observed in the area.

- Soil/Aluvium
- Sand
- Gravel
- Boulder



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



MINING PLAN FOR SHAMTUO-1 BLOCK PRL-8 11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

Soil/ alluvium varying in thickness from 2-4m constitute the top horizons in the area suitable for agriculture. Dangri River meanders through the area exposing the alluvium and soil at the banks. Boulder, gravel & sand is found in the river bed. Thickness of Boulder, gravel & sand is more than 10meters. This bed is presently dry and water flows only during the rainy season. The Sand exposed in the River bed of Dangri & Begna surrounding areas is the product of the deposition of the sediments brought and deposited in the flood plains of Rivers. These sediments are of recent geological formation. The litho units exposed within the rivers and surrounding areas have formed as water borne sediments brought by flood water during rainy season every year and deposited in riverbed. Geological map and section are enclosed as Plate - 03.

3.2.3 DESCRIPTION OF FORMATION

The description of Boulder, Gravel & Sand found in the lease area as minor mineral has been as under:

3.2.4 (Boulder, Gravel & Sand)

Sediments of various sizes and in mixed form are predominantly deposited in the river bed and outside the river bed as well in the central part. There is no perfect classification between boulders, cobbles, pebbles and sand. They are deposited in a mixed state. The classification is done by grab mining and the sediments are passed through different sieves in the screening plants.

Sediments of various sizes and in mixed form are predominantly deposited in the river bed and there is no perfect classification between sediments. These may be called as coarse sand, medium sand, and fine sand.

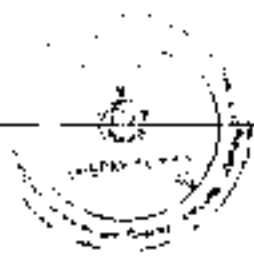
The term sand is used to denote an aggregate of mineral or rock grains greater than 1/16mm and less than 2 mm in diameter.



Mining Plan for Shamtoo-1 Block PKL-B-11 (Boulder, Gravel & Sand), District - Panchkula

Classification of Sediments (Wentworth Grain size Chart)

φ	mm	F. (Knots/hr)	SIZE TERMS (after Wentworth, 1922)	SIEVE SIZES		Interpolate diameters of natural grains equivalent to sieve size	Number of grains per mg		Settling Velocity (Quartz, 20°C)		Threshold Velocity for traction (cm/sec)	
				ASTM No (U.S. Standards)	Taylor Mesh No		Coarse silt	Fine silt	Settling velocity (cm/sec)	Threshold velocity (cm/sec)		
0	256	10.1	GRAVEL	No. 10	20	2.0	100	100	100	100	100	100
1	128	5.04										
2	64	2.52	PEBBLES	No. 20	80	0.85	100	100	100	100	100	100
3	32	1.26										
4	16	0.63										
5	8	0.315	SAND	No. 40	40	0.425	100	100	100	100	100	100
6	4	0.15										
7	2	0.075										
8	1	0.0375										
9	0.85	0.03	SILT	No. 20	80	0.075	100	100	100	100	100	100
10	0.75	0.025										
11	0.63	0.02	CLAY	No. 40	40	0.0475	100	100	100	100	100	100
12	0.5	0.015										



**MINING PLAN FOR SHAMTOO-I, BLOCK PCL B 11 (BOULDER, GRAVEL & SANDS), DISTRICT-  
PANCHKULA**

**3.2.5 PHYSICAL & CHEMICAL CHARACTERISTICS OF MINERAL**

Technically, sand is merely a size category. Sand is particulate matter that's larger than silt and smaller than gravel. Different specialists set different limits for sand: Engineers call sand anything between 0.075 and 2 millimeter, or between a U.S. standard #20 sieve and a #10 sieve. Soil scientists classify grains between 0.05 and 2 mm as sand, or between sieves #270 and #10. Sedimentologists put sand between 0.062 mm (1/16 mm) and 2 mm on the Wentworth scale, or 4 to -1 unit on the phi scale, or between sieves #70 and #10. In some other nations a metric definition is used instead, between 0.1 and 1 mm. From a geological viewpoint, sand is anything small enough to be carried by the wind but big enough that it doesn't stay in the air roughly 0.06 to 1.5 millimeters. It indicates a vigorous environment.

**Sand Composition and Shape**

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 Dangri 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 are rounded in 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.

**3.2.6 ORIGIN AND CONTROL OF MINERALISATION (ANNUAL REPLENISHMENT OF MINERAL IN RIVER BED AREA vis-à-vis SEDIMENTATION)**

Sedimentation, in the geological sciences, is a process of deposition of a solid material from a state of suspension or solution in a fluid (usually air or water). Broadly defined it also includes deposits from glacial ice and those materials collected under the impetus





MINING PLAN FOR SHAMTOL BLOCK PRL-R-11 (BOULDER, GRAVEL & SANDS) DISTRICT  
PANCHKULA

of gravity alone, as in talus deposits, or accumulations of rock debris at the base of cliffs. The term is commonly used as a synonym for sedimentary petrology and sedimentology.

Sedimentation is generally considered by geologists in terms of the textures, structures, and fossil content of the deposits lay down in different geographic and geomorphic environments.

The factors which affects the "Computation of Sediment":

- a) Geomorphology & Drainage Pattern : The following geomorphic units plays important role :
  - Structural Plain
  - Structural Hill
  - Structural Ridge
  - Denudation Ridge & Valley
  - Plain & Plateau of Gangtric origin
  - Highly Dissected pediment
  - Un dissected pediment
- b) Distribution of Basin Area River wise (Area in Sq. Km or Sq. Miles)
- c) Drainage System/Pattern of the area (Drainage Density - Km/Sq. Km of Yamuna River
- d) Rainfall & Climate: Year wise Rainfall data for previous 10 years of Yamuna Basin/River
- e) As per Dandy & Britton study "Sediment Yield" can be related to
  - i) Catchment Area and
  - ii) Mean Annual Run off



Sand is an essential minor mineral used extensively across the country as a useful construction constituent and variety of other uses in sports, agriculture, glass making (a form of sand with high silica content), etc. It is common knowledge that minerals are

MAKING PLAN FOR SHAMLOO-I BLOCK PKU B-11 (BOULDER, GRAVEL & SANDS), D-DISTRICT-  
PANCHKULA

non-renewable but this form of mineral naturally gets replenished from time to time in a given river system and is very much interrelated to the hydrological cycle in a river basin.

Panchkula district has a sub-tropical continental monsoon climate having, hot summers, cool winters, good monsoon rainfall. It has great variation in temperature (-1 °C to 43 °C). Sometimes winter frost occurs during December and January. The district also receives winter rains from the western disturbance. The rainfall is mostly received in the monsoon. Morni hills constitute the highest point of the district as well as of Haryana. The Ghaggar is the only perennial river, which is very shallow outside of the monsoons. The mountains and hills of Kasauli are clearly visible from Panchkula.

Generally the slope of the district is from north east to south west and in this direction, most of the rivers/streams rain-fed torrents flow down and spread much gravel and pebbles in their beds. Only the Sirsa river, in Kalka Tehsil, flows towards north-west. The soils in the district are mainly light loam.

The underground water in the district is generally fresh and suitable for domestic and purposes. The underground water level is generally high in the southern parts and low in north and north-east which is hilly tract. The district lies in the Himalayas boundary fault zones and earthquakes of moderate to high intensity have occurred in the past.

**Dandy & Bolton formula for calculation of Sediment Yield:**

Dandy Bolton formula is often used to check whether the sedimentation yield exceeds the replenishment rate but the whole question is whether there is adequate monitoring of the river basin. The answer is no as hydrological stations are sparsely spread. The formula uses catchment area and mean annual runoff as key determinants to give a yield value. It does not differentiate in basin wide smaller streams and their characteristics. CWC distinguishes river basins as classified and non-classified, as per the latest hydrological data for unclassified river basins; there are 122 GDSW (Gauge, Discharge, Sediment & Water Quality) sites in 12 such basins, the number was 147 in 2005. This brings in context the whole issue



MINING PLAN FOR SHANTOO-I BLOCK PKL B 11 (Boulder, Gravel & Sand), DISTRICT -  
PANCHKULA

of scientific mining, thereby indicating that the monitoring of sediment yield in rivers / streams within the river basins is essential to arrive at extraction rates and express and conduct environmental studies based on these basin wide characteristics which should become part of the 'Terms of Reference' for Environmental Clearance.

Sediment Yield versus Drainage Area

Dandy and Bolton studied sedimentation data from about 1500 reservoirs, ponds, and sediment detention basins. In developing their formulas, they used data from about 800 of these reservoirs with drainage areas greater than or equal to 1 mi<sup>2</sup>. The smaller watersheds-those of drainage area less than 1 mi<sup>2</sup>-were excluded because of their large variability of sediments yield, reflecting the diverse effects of soils, local terrain, vegetation, land use, and agricultural practices.

For drainage areas between 1 and 30,000 mi<sup>2</sup>, Dandy and Bolton found that the annual sediment yield per unit area was inversely related to the 0.16 power of the drainage area:

In which  $S_r$  = sediment yield in tons per square mile per year;  $S_R$  = Reference sediment yield

Corresponding to a 1-mile square drainage area, equal to 1645 tons per year;  $A$  = drainage area in square miles; and  $A_R$  = reference drainage area (1 mi<sup>2</sup>)

Sediments Yield versus Mean Annual Runoff

Dandy and Bolton studied sedimentation data from 505 reservoirs having mean annual runoff data. Annual sediment yield per unit area was shown to increase sharply as mean annual runoff  $Q$  in. increased from 0 to 2 in. Thereafter, for mean annual runoff from 2 to 50 in. annual sediment yield per unit area decreased exponentially.

This led to the following equations.

For  $Q < 2$  in.:

For  $Q > 2$  in.:

in which  $Q_R$  = reference mean annual runoff  $Q_R = 2$  in.

Dandy and Bolton combined eqs. 15-10 and 15-11 into a set of equations to express sediment

yield in terms of drainage area and mean annual runoff.

For  $Q < 2$  in.:



MINING PLAN FOR SHAMTOO-1 BLOCK PKL-B-E1 (BOULDER, GRAVEL & SAND) DISTRICT-  
PANCHKULA

For  $Q > 2$  in.:

Sec. 15.2 Sediment Production.

For SR = 1615 tons/mi<sup>2</sup>/y, QR = 2 in., and AR = 1 mi<sup>2</sup>, Eq. 15-12 reduces to the followings:

For  $Q < 2$  in.:  $S = 1280 Q^{0.46} [1.41 - 0.26 \log A]$

For  $Q > 2$  in.:  $S = 1965 e^{-0.045QR} [1.43 - 0.26 \log A]$

Equations 5-12 and 5-13 are based on average values of grouped data; therefore, they should be used with caution. In certain cases, local factors such as soils, geology, topography, land use, and vegetation may have greater influence on sediment yield than either mean annual runoff or drainage area. Nevertheless, these equations provide a first approximation to be of sediment yield for watershed planning purposes.

**Calculation of Sediment Yield for Boulder, Gravel & Sand Mine of Shamtoo-1 Block-PKL-B-11**

- Area under riverbed: 46.50 Ha
- Drainage basin area of river Dudhgarh Ki Nadi and its tributaries in Haryana : 744 Hactares
- Normal Annual Rainfall of Panchkula district (1978 to 2005) :1057mm or 42.28 inch

With above inputs, the calculation of the sediment yield by the Dandy and Bolton formula is illustrated below :

Sample Set	Flow: Q (in inches)	A (in square miles)	S
1	5.5	150	1400.833
2	27.4	5214	225.4736

$$S = 1965 e^{-0.045QR} [1.43 - 0.26 \log(A)]$$

Dandy & Bolton formula also says that actual sediments yield from individual drainage basins may vary 10 fold or even 100 fold from computed yields. Since itinerary of river Yamuna indicates that its basin comprises of sediment rocks with good average rainfall therefore there are fair chances of yield of sediments to be 50 fold of computed results hence Actual Sediment Yield will be : 18,00,000 T per Annum

The equations express the general relationships between sediment yield runoff and drainage area.

They may provide a quick rough approximation of mean sediment yields on a regional basis for preliminary watershed planning. Because Dandy & Bolton have derived the equation form



MINING PLAN FOR SEIAMTOO 1 BLOCK PKL-8-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

average values computed sediment yields normally would be low for highly erusive area and high for well stabilized drainage basins with high plant density. Factors which have direct bearing on sediments yield & limitations of Dandy & Bolton Equation.

Sediment yield of a sediment basin has direct impact of local terrain, climate, vegetation, soils, agricultural practices & land use pattern of catchment area of the sediment basin. Therefore, Dandy & Bolton has category stated that use of the equation to predict sediment yield for a specific location would be unwise because of the wide variability caused by local factors not considered in the equation development. Actual sediment yield from individual drainage basins may vary 10-fold or even 100-fold from computed yields.

**Assessment & Monitoring:**

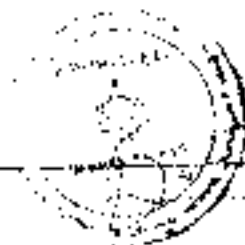
The mining of the mineral from the river bed area would be undertaken over maximum depth of 3 meter from the existing level of the bed, which at present is 356.80 MRL. It will be ensured that at no point of time the mining is undertaken below the 3 metre of the existing bed level. To ensure the compliance of the same regular monitoring of the bed level would be ensured by taking the bed level after fixed intervals, including after the rainy season. It is proposed that the MRL of the river bed area of the contracted area length wise would be taken after every 500 meter after regular intervals i.e. at the time of commencement of mining, on 30<sup>th</sup> June, 15<sup>th</sup> September (immediately after end of monsoon season), 30<sup>th</sup> December, and 31<sup>st</sup> March.

Therefore, it is recommended that Project Proponent is required to conduct sedimentation study of the project area every year through reputed agency so that accordingly production can be monitored regularly.

**3.2.7 Grade & Use of (Boulder, Gravel & Sand)**

Boulder, gravel & sand is made of quartz or quartzite/its microcrystalline cousin chalcedony, because that common mineral is resistant to weathering. Boulder, gravel & sands contain quartz, feldspar grains, tiny bits of rock (lithics), or dark minerals like ilmenite and magnetite.

The size of the sediments is variable. The grains whether small or large are rounded in shape. Sand, boulder and gravel are mainly grey, brown in color, coarse to fine grained. The present



MINING PLAN FOR SHAMTOD I BLOCK P.K.L-B-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

deposits are of good quality and can be used for building industries. There is no other use of this material.

**3.3 RESERVE**

**3.3.1 METHOD OF ESTIMATION OF RESERVE**

**PROVED RESERVES**

- a) Survey was conducted in the proposed area of Dudhgarh Ki Nadi bed as per the area located in different village, vide list given by DMG, Haryana. This is the basic document provided by the authorities. Khasra plan was provided by the applicant.
- b) Following special conditions which are applicable for excavation of minor mineral(s) from river beds in order to ensure safety of river-beds, structures and the adjoining areas are considered while calculating the reserves of this area:
  - (i) No mining would be permissible in a river-bed up to a distance of five times of the span of a bridge on up-stream side and ten times the span of such bridge on down-stream side, subject to a minimum of 250 meters on the up-stream side and 500 meters on the down-stream side.
  - (ii) 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 authorized by him;
  - (iii) The maximum depth of mining in the river-bed shall not exceed three meter from the un-mined bed level at any point in time with proper bench formation;
  - (iv) Mining shall be restricted within the central 3/4th width of the river/ rivulet;
  - (v) In case of areas permitted for excavation outside river/rivulets i.e. areas adjoining to rivers/rivulets, 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



**MINING PLAN FOR SHAWTEXO-1 BLOCK PKL-B 11 (BOULDER, GRAVEL & SAND), D STRICT - PANCHKULA**

Yamuna, 250 metres in case of Tangri, Dangri Tributary and Ghaggar and 100 meters on either side of all other rivers/ rivulets;

- (vi) 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, 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.
- c) 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.
- d) There are bridges and anicuts exist in the lease area. They provide a way for transportation of mineral also. Safety zone on upstream side and downstream side has been provided depending upon the length of the bridges/ anicuts as a measure of safeguard. No workings will be extended in this zone. (In this case, no bridge and anicut exist)
- e) Metalled roads pass through the lease area. A safety zone of 50 m on each side of road, is earmarked. In this zone no activities will be conducted.
- f) A barrier of 7.5 m width will be left from the lease boundary, if falling in the river bed.
- g) River is not having any water flow during post monsoon period and sand bed remains dry.

Mineral reserves are calculated up to 3 m depth from river bed surface RL.

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

Methods of estimation of reserves:-

For estimating the reserve of boulder, gravel & Sand the Parameters considered are as follows:

Sediments of various sizes and in mixed form are predominantly deposited in the river bed and outside the river bed. There is no perfect classification between boulders, cobbles,



MINING PLAN FOR SHAMTOD-1 BLOCK PKU-B-31 (BOULDER, GRAVEL & SAND), DISTRICT -  
PANCHAJULA

pebbles and sand. They are deposited in a mixed state. The classification is done by grad  
mining and the sediments are passed through different sieves in the screening plants.

The reserves are calculated on the basis of established width, thickness and strike  
length/influence of the mineralized formation in the area.

1. The entire reserves of Sand up to the depth of 3.0 m are calculated.
2. The bulk density of Boulder, Gravel and Sand is considered 1.82 (As per Laboratory Report attached as Annexure 4)
3. The reserves of Sand calculated by volumetric method and are summarized here below:

Geological Reserves

Sr no	Nature of land	Lease area In ha	Total proved Geological reserves MT=Area x depth x BD (A)	Blocked area of 50m strip after each km, 25% blocked in river banks, boundary etc hectares	Blocked Geological Reserves In blocked area (B)	Total Mineable reserves A-B=C	Minable Reserve (Per Year)
1	River bed	46.50	25,38,900	12.25	6,68,850 MT	18,70,050 MT	18,00,000

A) PROVED RESERVES AS PER UNFC CODE (111)

Total Reserves = 25,38,900 MT

B) BLOCKED RESERVES AS PER UNFC CODE (211 & 222) = 6,68,850 MT

C) MINEABLE RESERVES = (A-B) = 18,70,050 MT

D) TARGETED PRODUCTION

18,00,000 MT per Year up to the lease period

E) Balance reserves





MINING PLAN FOR SHAMTOO-1 BLOCK PKL B 11 BOULDER, GRAVEL & SAND, DISTRICT -  
PANCHKULA

New mineral (after replenishment) will be added every year in the river bed

**4.0 DETAILS OF PRODUCTION & DISPATCHES OF FIVE YEARS**

This is a new lease area allotted to the applicant. Future production programme has been planned as per the details given below:

**4.1 RIVER SAND MINING WITH SIMULTANEOUS RECLAMATION**

Conventionally the boulder, gravel and river sand mining is carried out manually but in the present case semi-mechanized mining with simultaneous reclamation and pollution free mining method shall be adopted. Boulder, Gravel & Sand used for construction industry is available all along the Dudhgah ki Nadi.

**4.2 Mine Roads**

The mine roads branching off the village roads, are well consolidated to prevent sinking of heavy truck wheels (IVA). The mine roads are at least 10 meters wide to permit easy manoeuvrability of trucks, provide cross-over's and changing points. To keep pollution off the mine, dust is delayed by spraying roads with water at regular intervals of by using tractor mounted water sprinklers. The water for this purpose will be obtained from nearby villages

**4.3 Proposed Method**

Mining work will be carried out by semi-mechanized method by forming one bench of 3 m high in river bed. There are no existing pits at present as the mining activities are closed for the last few years. The minor mineral is excavated by backhoe type excavators/ICB (directly loading into large trucks for dispatch to crushers/ screening plants /consumers situated in and around Panchkula, Arncala, Zirakpur, Mohali, Chandigarh etc. Loading of mineral shall be mechanical, while transport of mineral out by the river bed shall be done through private truck owners.

Salient Points of Proposed Scientific Mining are:



MINING PLAN FOR SHAMTOD-1 BLOCK PKI H 11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

- a) First requirement is to ascertain the maximum depth to which mineral is available and safe depth of working which has been fixed as 3.0 m in river bed in virgin areas.
- b) All proposed quarries have been proposed for further deepening and widening up to the above proposed depths.
- c) The depth of pit below the surface shall not exceed 3.0m in virgin areas and mining operations are carried out by formation of benches in accordance with the provisions of MMR 1961
- f) No mining shall be allowed in the adjoining fields in a width of 100 m from the active edge of embankment on either side of River Dudhgarh ki Nadi.
- g) The lease holder shall comply with all other conditions and stipulations as given in the LOI and Auction document dated 30.11.2013

**Production Programme**

Lease has been allotted for a period of 09 Years. Lease area consists of 46.50 ha area in Shamtoo village (Khasra No. 55 main) and Baltewali village (Khasra No. 141 min. 142 and 143). Out of which about 12.25 hectares area is under restricted zone. About 34.75 hectares area is free from restriction and the mining is proposed in this area only.

**Proposed Production** = 18,00,000 MT per Annum i.e. 18 Lac MT/Annum

**Working days** (Excluding 52 Sundays and 45 Rainy days) have been taken as 268 days per Annum.

**Daily Production** = 5716 MT/Day

**Trips per Day** = 6716 MT/75 T per Truck/Dumper = 265 Nos

Table-1: Five Years Proposed Production Details (MT/A)

**MINING PLAN FOR SHAMLOO-1 BLOCK PK: B-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA**

Year	Production From River bed	
	Trips/ day	MTPA
I	269	18,00,000
II	269	18,00,000
III	269	18,00,000
IV	269	18,00,000
V	269	18,00,000

**5.0 PHYSICAL AND GEOLOGICAL CHARACTERISTICS OF THE DEPOSIT**

Deposit is moderate to good quality Boulder, gravel & sand. It is widely used in construction, buildings, bridges and other infrastructure. It is free from clay and non-sticky in nature.

**6.0 DETAILS OF MINING MACHINERY DEPLOYED OR TO BE DEPLOYED AND THE DETAIL SPECIFICATIONS**

This is a new mining lease. Following equipment is proposed to be deployed for the desired production.

**Tables List of Machinery**

S. No.	Name of machinery	Capacity	Nos.
1	KLB(Backhoe Loader)- 30X	1.00 cum	05
2	Tipper/ Trucks	25 tons	50
3	Water Tanker	4000 liters	2
4	Light vehicles		2

Fuel Consumption



MINING PLAN FOR SHAMTOO-1 BLOCK PXL-3-11 (BOULDER, GRAVEL & SAND), DISTRICT  
PANCHKULA

**Quantity of Diesel / Energy fuel Consumption per day:-**

S. No.	Machine	Details of Diesel requirements	Consumption of Diesel (in ltr.)
1.	Dumper	[Considering diesel consumption by the dumper is 3 km / ltr] Total Diesel consumption for 50 Dumper = $130 \times 50$ = 5250 ltr	6500
2.	JCB	Diesel consumption 10ltr / hr working of 10 hrs diesel consumption = $130 \times 10$ $\times 10 \times 0.5 = 500$ ltr	1300
3.	Water Tankers	Diesel consumption 10 ltr/Hour $\times 10 \times 2 = 200$	100
4.	Light Vehicles	Diesel consumption 8 ltr/Hour $\times 10 \times 1 = 80$ ltr	80
5.	Maintenance Van	Diesel Consumption 10 ltr/hr $\times 10 \times 1 = 100$ ltrs	100
<b>Total diesel requirements per day</b>			<b>7430</b>

**7.0 METHOD OF MINING**

River bed mining is for extracting sand from River bed. As per Haryana Minor Mineral Concession Rules, 2012 extraction is limited to 3.0 m depth only. River bed is dry. Lease area allotted is 46.50 ha in district –Panchkula. Mining activity will be carried out in allocated areas only.

The production plan for each year is suggested to be 13,00,000 MT but for second year onward the same shall be dependent upon the rate of replenishment of the mineral during preceding year. In case due to any reason the replenishment of mineral (sand) is not taken place up depth the of mined out area (which would not be more than 3 metre of existing level of bed) in that case the working depth of mine for said year shall be such that shall be restricted up to the actual depth of replenishment for example – in case during any year only 2.5 m or 2 m or 1.5 m, of the mined out area is refilled after rainy season- the production for said year shall be accordingly adjusted and mining depth will be reduced accordingly.

The same will also act as annual replenishment study of the mine as compared to the prevailing status of river bed.



MINING PLAN FOR SHAMTOO-1 BLOCK PRL-B-11 (BOULDER, GRAVEL & SAND), DISTRICT  
PANCHKULA

i) Sequence of working has been shown in Plate No- 4. The proposed rate of production has been shown at chapter 7.2 for the 5 years plan period. If the depth of mineral replenishment is less than 3.0 m then proposed production shall be reduced proportionately.

Effective length of lease area for mining of mineral is 1.75 km. Total production envisaged is 6716 TPD. Activities will be carried out as per the production schedule given earlier. The mining quarry will be working as self-sustained units with all facilities like site office, rest shelter, first aid and drinking water etc. All these mines will be connected suitably with communication system. Light weight excavators/JCB will be deployed for extraction. Mineral will be removed in 3.0 m layer only forming one bench. This is as per the digging depth of the equipment. Mineral will be loaded in trucks of various capacities, up to 25 tons capacity. Trucks and equipment will be on hire basis. There will be no OB 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 200 m. Workings will be restricted within the lease area/ khaura 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 lease 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.

**7.1 Proposed year wise development for five years**

Boulder, Gravel & Sand lease has been granted for a period of 09 years only. Calendar plan has already been made and details have been given.

Ultimate limit will be 3.0 m below existing bed level as indicated in the working plan & section



MINING PLAN FOR SHANTOO-1 BLOCK P/L-B-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

- i) Existing B Level of River Bed varies from : 334.50 to 336.65 msl  
 ii) Working Bottom level of River Bed varies from : 335.50 to 338.65 msl

Ultimate limit will be 3.0 m below existing bed level as indicated in the working section.

7.2 Proposed rate of production when the mine is fully developed

Work will be carried out for 268 days in year. Year wise production during the plan period will be as follows:

Table: Proposed Production

Year	Targeted MT/annum	Production	OB/ Waste (M <sup>3</sup> )
1	18,00,000		
2	18,00,000		
3	18,00,000		
4	18,00,000		
5	18,00,000		



7.3 Mineable reserves and anticipated life of the mine

Lease will be granted for a period of 00 Year. During rainy season there is replenishment of the mineral, which helps in sustaining the production.

MINING PLAN FOR SHAMFOO 1 BLOCK PKL-B-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

Estimated Minable reserves up to 3.0 m available are 18,70,050 MT which are replenished every year during rains.

Anticipated production during lease period will be = 18,00,000 MT/Annum

7.4 Proposed method of mining

Mining activity will be carried out by open cast semi-mechanized method.

- Light weight excavators will be used for digging & loading of mineral in tippers.
- No OB/ waste material will be produced.
- No drilling/ blasting are 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 tippers/ trucks will not have slopes more than 1 in 20.
- Total extent of lease is 1.75 km including prohibited area.
- 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 the various blocks 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.

As per MMR 1961, following precautions shall be undertaken during operations of HEMM.

Shovel/ excavator: -

1. JCB will be provided with efficient warning devices, front & rear lights and efficient brakes.
2. JCB will be under the charge of a competent person authorized in writing by the manager designated as operator.

MINING PLAN FOR SHAM TOO 1 BLOCK P&L B-11 (BOULDER, GRAVEL & SAND), DISTRICT -  
PANCHKULA

3. No person other than the operator or his helper if any will ride on the excavator or even enter the excavator's cabin.
4. No person will be permitted to ride in the bucket of a Shovel/ excavator.
5. No inflammable material will be stored in the excavator housing or cab.
6. Shovel/ excavator dippers will be lowered to the ground during greasing operation.
7. When a Shovel/ excavator is to be moved from one point to another its boom shall be kept in strict alignment with direction of travel while the bucket/ dipper shall be held m above the ground.
8. No machine will be operated in the position where any part of the machines, suspended loads or lines are brought closer than 3 m to the exposed high voltage line.
9. Every movement of a JCB/Machine shall be preceded by warning signals.
10. When not in use, the Shovel/ excavator will be moved to and stand on stable ground, the bucket shall be kept resting on stable ground and will never be left hanging.
11. The Shovel/ excavator will be so spaced that there will be no danger of accident from flying & falling objects.
12. Safety appliances, booms will be examined thoroughly once in a year.
13. Emergency switches, safety limit switches will be examined and tested once in four months.
14. All brakes will be tested for their operation worthiness once in a week.
15. The following signboards will be carried in and around the machine. -
  - I. "Warning— Do Not Enter The Working Range Of The Machine".
  - II. "Lubricating Prohibited While the Machine in Running Condition".

**Duties of Shovel/ Excavator/JCB operator:**

1. At the commencement of every shift the operator will personally inspect and test the machine, paying special attention to the following details:
  - (i) The brakes and every warning device are in working order
  - (ii) Lights are in working order.
  - (iii) The operator will neither take out the machine for work nor will he work the machine unless he is satisfied that it is mechanically sound and in efficient working order.





MINING PLAN FOR SHAMTOO-I BLOCK PKL B-11 (BOULDER, GRAVEL & SAND), DISTRICT  
PANCHKULA

- (iv) The operator will maintained a record of every inspection made in a bound paged book, kept for the purpose and shall sign every entry made there in.
- (v) The operator will keep the cab window clean so as to ensure clear vision at all times.
- (vi) The operator will not operate the machine when persons are in such proximity as to be endangered.
- (vii) Before leaving the machine, the operator will lower the bucket to the ground.
- (viii) The operator will not leave his machine during the shift. Whenever, he finishes his work, he will hand over the machine to his relief or lock the excavators cab.
- (ix) The operator will not allow any unauthorized person to ride on the machine.

**Dumper:**

1. Every dumper will be provided with efficient brakes
2. Efficient audible warning devices will be provided with the dumpers.
3. The dumper, if required to work after daylight hours, efficient headlights and taillights will be used.
4. Every dumper will be under the charge of a competent person, authorized in writing by the manager.
5. No person, other than the driver or his helper, if any, will ride on a dumper.
6. No person will be permitted to ride in the running board of a dumper.
7. The loaded dumpers will not be reversed on gradients.
8. Sufficient stop blocks will be provided at every tipping point and these will be used on every occasion when material is dumped.
9. Standard traffic rules shall be adopted and followed during movement of all dumpers. They shall be prominently displayed at relevant places in the opencast workings and haulm roads.
10. When not in use, every dumper will be moved to and stand on proper parking places.
11. No person will be permitted to work on a chassis of a dumper, with the body in rest position, until after the dumper body has been securely blocked in position.
12. The mechanical wised mechanism will not be depended upon to whole the body of a dumper in a rest position.



MINING PLAN FOR SHAMTOO 1 BLOCK Pkt. B-1) (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

13. No unauthorized person will be permitted to enter or remain in any turning points.
14. While inflating tyres, suitable protective cages shall be used.
15. Tyres will never be inflated by sitting either in the front or on the top of the same.
16. While the vehicle is being loaded / unloaded on gradient, the same will be secured stationary by the parking brake, and other means suitably designed stopper block, which could be placed below the tyres.
17. At least once in every two weeks the brakes of every dumper will be tested as below: -
  - (a) Service Brake test: - The brake will be tested on a specified gradient and speed when the vehicle is fully loaded. The vehicle should stop within the specified distance when the brake is applied.
  - (b) Parking brake test: - The parking brake shall be capable to hold the vehicle when it is fully loaded and placed at the maximum gradient. Maximum gradient of the roadway which is permitted only for a period of at least 10 minutes.
  - (c) A record of such test will be maintained in a bound paged book and will be signed by the competent person carrying out the test. These records will be countersigned by the engineer and manager.
  - (d) All vehicles shall be tested and examined once at least in every 6 months.
  - (e) A notice shall be displayed outside every vehicle that "No Unauthorized Travelling allowed".

**Duties of dumper operators: -**

1. At the commencement of every shift, the operator shall personally inspect and test the machine, paying special attention to the following details: -
  - (i) Tyre pressure, brakes, horn and the lights are in working order.
  - (ii) The driver will neither take out the machine for work nor will he work the machine unless he is satisfied that it is mechanically sound and in efficient working order.
  - (iii) The driver will maintain a record of every inspection made in a bound paged book, kept for the purpose and shall sign every entry made therein.
  - (iv) The driver will keep the cab window clean so to ensure clear vision at all times.



MINING PLAN FOR SHANTOO 1 BLOCK PKL B 11 (BOULDER, GRAVEL & SAND), DISTRICT  
PANCHKULA

- (v) Driver will ensure that the gear is in neutral position before stopping the engine. He will park the vehicle: -
  - (a) In reverse gear, on level roads and down gradients.
  - (b) In low gear, on up gradients.
- (vi) The driver will negotiate downhill gradients in low gear, so that minimum of braking is required.
- (vii) The driver will not drive too fast, avoid distractions and drive defensively.
- (viii) Before crossing a road / railway line he will reduce his speed looking both directions along the road or railway line and will proceed across the road or line only if it is safe to do so.
- (ix) The driver will not operate the dumper in reverse unless he has a clear view of the area behind the vehicle
- (x) The driver will see that :-
  - (xi) The vehicle is not overloaded.
  - (xii) The material is not loaded in a dumper so as to project horizontally beyond the sides of its body.
  - (xiii) The driver will not allow any unauthorized person to ride on the vehicle.
  - (xiv) When there is a poor visibility, the speed of a vehicle will be restricted in a manner that the braking distance is maintained shorter the distance of visibility.
  - (xv) The driver will not leave his machine during the shift. When he finishes his work, he will hand over the machine to his reliever or lock the excavators cab.

#### 7.5 Conceptual Mining Plan

The Mining area will be worked in blocks for ease of operation. The depth would be restricted to 3.0 m only from the existing level of the river bed. Regular monitoring of the bed level would be ensured by taking the bed level after fixed intervals, including after the rainy season. The mined out area would be refilled by the mineral (sand) after every rainy. Hence even after completion of the five year period of contract or even on expiry of the



MINING PERMIT FOR SHANTOO 1 BLOCK PNL B-11 (BOULDER, GRAVEL & SANDY) DISTRICT  
PANCHKULA

period of contract the status of the contracted area / area to be used for mining in the river bed would remain unchanged.

Hence the conceptual plan of the mine after the permit of contracts shall be as is on the present day.

Plate no-03 and Reclamation Plan and Sections shown in Plate no-05

(i) Final Slope Angle To Be Adopted

Thickness of the bench is limited to 3.0 m only and width will be more than the height of the bench. River bank side will be protected by working in 3/4 part of middle of the river. Bank side natural slope will not be disturbed. This will prevent collapse of bank and erosion. The height of the bank with respect to river bed is varying from 2-3 m only.

(ii) During plan period workings will be carried out in a number of villages at a time of the lease area simultaneously. Scattered workings will ensure safety, remove congestion of vehicles and will have better control and management.

(iii) Ultimate Capacity Of Dumps

There will be no OB removal and waste generation during the plan period. No dumping area is needed. No outside material will be filled up in the extracted zone.

a) Land use Pattern of Mining Lease Area at Various Stages

Land use pattern will be as follows:

Table: Land Use Pattern of Mining Lease area at Various Phases

S. No.	Particulars	Present land use (ha.)	At the end of 5 <sup>th</sup> year (ha.)
1.	Pit area	0.00	0.00
2.	Dump area	0.00	0.00



MINING PLAN FOR SHAMTOO-1 BLOCK PKI R-11 (BOLD, DFR, GRAVEL & SAND), DISTRICT -  
PANCHKULA

3.	Safety zone	Roads, 7.5m leave boundary, 25% restricted area of river banks, 50m barrier at each km etc	12.25	12.25
4.	Infrastructure	(Office, Temp. shelter etc) in restricted zone	0.00	0.20
5.	Mineral Storage		0.00	0.00
6.	Plantation	(in safety zone)	0.00	5.00
7.	Un-worked		34.25	0.00
8.	Naturally reclaimed area		-	34.25
Total			46.50	46.50

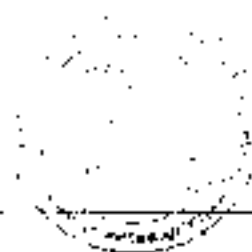
\* Plantation in 5.0 ha land will be done under social forestry on land available from Panchayat by the end of mine life

\* Plantation & infrastructure in restricted area only

#### 7.6 Mines Drainage

The general slope of the land surface is from NE to SW. Elevation of the lease area varies from 338.50 to 336.65 msl. The Duhgarh kee Nadi Tributary provides the major drainage in the lease area. The general physiography of the Lease area is gently sloping from NE to SW side indicating the flow of direction of river.

There is no flow of water in the river bed in post monsoon period. Area is having 1057 mm rainfall in a year. During rainy season, catchment water flows in the river. During dry period the Boulder, gravel & 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.



**MINING PLAN FOR SHAMTOO BLOCK PKI, R-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA**

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 8-10 m below the surface of river bed.

**7.7 Water Requirement**

The requirement of water for the project will be as under

Sr no	Activity	Requirement in KLD	Source
1	Dust suppression	8.00	Hired tankers
2	Drinking	2.00	Hired tankers
3	Green belt	3.00	Hired tankers
	<b>Total</b>	<b>13.00</b>	

**8.0 YEAR WISE ANNUAL PROGRAMME OF MINING FOR NEXT 5 YEARS**

Boulder, Gravel and Sand minor mineral is targeted for 746.3 tons per day i.e. 18 lac. Mt tons per annum (Maximum). Production programme is given below.

**Table:- Production Programme**

Year	Targeted Production (In Lac T/Annum)	Overburden handling M <sup>3</sup> Per year
1	18.00	N/A
2	18.00	N/A
3	18.00	N/A
4	18.00	N/A
5	18.00	N/A

**9.0 DETAILS OF EMPLOYMENT**

MINING PLAN FOR SHANTOO-1 BLOCK PKI-B-11 (BOULDER, GRAVEL & SAND), DISTRICT -  
PANCHKULA

Total estimate Man power would be about 69 persons as per the details given below:

Table- Employment Details

S. No.	Category	Numbers
1	Manager (-/II Class)/Permit Manager	1
2	Assistant Manager	1
3	Foreman/Mates	2
4	Skilled personnel	10
5	Semi skilled personnel	50
06	Unskilled	05
<b>Total</b>		<b>69</b>

Note: Statutory personnel shall be deployed as per requirement of Mines Act-1952 and latest DGMS circulars.



MINING PLAN FOR SHANTOO 1 BLOCK PKL B 11 (BOULDER, GRAVEL & SAND), DISTRICT -  
PANCHKULA

ENVIRONMENT MANAGEMENT PLAN

10.0 MEASURES TAKEN AND TO BE TAKEN FOR LAND RESTORATION, RECLAMATION AND PLANTATION IN/ OR NEARBY LEASE AREA

- Envisaged mining operation will be carried out in the River bed. This will be dry bed mining. There will be no mining activities when there is flow of water in the working zones. During rainy season, the activities will be stopped, if there is flow in the river.
- Besides resource extraction, following activities will be kept in view:
  - a) Protection and restoration of ecological system
  - b) Prevent damages to the river regime
  - c) Protect reversing configuration such as bank erosion, change of water course gradient, flow regime etc.
  - d) Prevent contamination of ground water

Safeguard Measures

While carrying out mining activity following measures will be taken.

- Mining activities will be carried out only in dry bed. No in stream mining will be practiced.
- Identification of river stretches for mining will be completed
- There will be no mining near the banks. This is to protect the bank erosion and river migration.
- Mineral Boulder, gravel & sand from river will be restricted to a maximum depth of 3.0 m from the existing bed level. This is for safety and sustainability.
- As the lease area is quite large and long in length, systematic extraction will be carried out to prevent seasonal scouring and enhanced erosion.
- Extraction will be carried out in a manner that there is no obstruction to flow of water, if any, during rainy season.
- Mining on the concave side of the river channel should be avoided to prevent bank erosion. Similarly meandering segment of river will be selected to prevent natural eroding banks and to promote mining on natural building (aggrading) meanders



MINING PLAN FOR SHAMFOOD-1 BLOCK PRL-B-11 (BOURDER, GRAVE. & SAND), DISTRICT-  
PANCHKULA

component.

**Reclamation of Mined out Area**

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

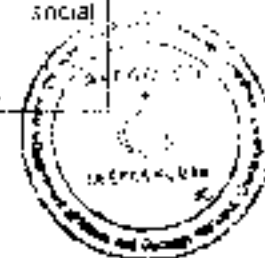
**Greenbelt**

The lease area is in the river bed and devoid of any vegetation. Mining activities will not cause any harm to riparian vegetation cover as the working will not extend beyond the offset left against the banks in the river. Land on both sides is the private agriculture land. Link road from the active zone pass through the areas. It is proposed to have plantation on both sides of the roads as greenbelt to provide cover against dust dissemination. River banks will be strengthened by way of plantation on the banks. Plantation will also be carried out as social forestry programme in villages, school and the areas allocated by the Panchayat/ State authorities.

Native plants like Neem, Pipa., Khejri, Mango 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 7500 no's of native species along with some fruit bearing and medicinal trees during the plan period.

Table: Greenbelt Programme

Year	Saplings to be planted	Survival BD %	Species	Place of Plantation
I	1500	1200	Neem,	Along the roads,
II	1500	1200	Peepal,	Along the river
III	1500	1200	Mango,	banks in schools
IV	1500	1200	Shisham,	and public building
V	1500	1200	Sirish,	and other social
Total	7500	6000	Babul,	forestry
			Gulmohar	programme.



MINING PLAN FOR SHAMTOO-1 BLOCK PKL-B-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

**11.0 MEASURES TAKEN AND TO BE TAKEN FOR PROTECTION OF ENVIRONMENT IN AND AROUND MINING LEASE AREA**

- Dry bed mining will only be carried out.
- Mining activities will be confined to 3.0 m depth from surface level of river bed.
- All link roads from the mining area to the tar road will be properly sprayed with water for dust suppression.
- Greenbelt and plantation on road side and river banks will help in dust suppression and will also reduce noise level.
- Plantation will improve ecology and aesthetic beauty of the area.
- Measures will be taken to prevent the workings from extending in safety zones, cutting the banks and exceeding 3.0 m depth limit from the river bed surface.

**12.0 MEASURES TAKEN AND TO BE TAKEN FOR DUMPING OVERBURDEN, STACKING OF TOP SOIL AND UTILIZATION OF TOP SOIL**

There is no top soil in the lease area. No overburden and waste is likely to be generated during lease period. There will be neither any stacking of soil nor creation of OB dumps.

**13.0 MEASURES TAKEN AND TO BE TAKEN FOR THE CONTROL OF WATER, NOISE AND AIR POLLUTION**

**Air Pollution:**

Emission of gases and dust takes place due to movement of vehicles. Spraying of water and plantation along the road side prevents the spread of dust. Plantation also acts as barrier for restricting pollution. Impact on air environment has been assessed taking in to consideration the proposed production and increase emissions. The sources of air pollution are given below:

- Operation of mining machinery/ loading operations
- Transportation of mineral
- Wind erosion from barren area and river bed



MINING PLAN FOR SHAMTOO I BLOCK PKI B 11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

**Air pollutants released during production can be checked by:**

- Dust suppression system/ water spraying would be adopted at mine working and loading points
- Excavation operations to be suspended during very strong wind conditions
- Afforestation will be carried out for control of dust
- Plantation with wide canopy trees along approach road will help in dust suppression
- Persons to be provided with dust mask and other personal protective equipments, particularly during summer months and dust storm periods

**Transportation**

- Regular water spraying on haulage roads during mineral transportation by water sprinklers.
- Avoid over loading of tippers & consequent spillage on the roads,
- Mineral carrying trucks will be effectively covered by tarpaulin to avoid escape of fines to atmosphere,
- Air quality shall be regularly monitored both in the core zone and the buffer zone.

**Controlling of NOx level**

The source of NOx is due to vehicular emission. This can be controlled by proper maintenance and servicing of vehicles. Only P.U.C. certified vehicles will be permitted

**Noise Pollution**

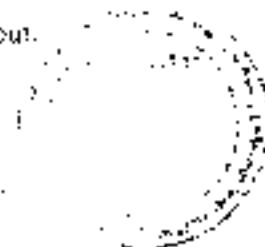
There is no drilling and blasting for mineral extraction. Noise pollution due to transportation will not cause any problem to the inhabitants of this area because there is no human settlement in close proximity to the link roads in lease area. Effective steps will be taken to keep the noise level well below the OSMs prescribed limit of 85 dBA.

**Noise control is achieved by the following-**

Proper care and maintenance of the equipment will be carried out.

Plantation along haul roads shall also act as Noise Barrier

Personal protective equipment will be provided to the workers.



**MINING PLAN FOR SHANTOO-1 BLOCK PKL-8-11 (BOULDER, GRAVEL & SAND), DISTRICT -  
PANCHKULA**

**14.0 DEMOGRAPHIC DETAILS OF THE STUDY AREA (Plate no.2)**

Shantoo Village, with population of 1886 is Panchkula sub-district's the 22nd most populous village, located in Panchkula sub-district of Panchajyala district in the state Haryana in India. Total geographical area of Shantoo village is 4 km<sup>2</sup> and it is the 30th biggest village by area in the sub-district. Population density of the village is 502 persons per km<sup>2</sup>.

Nearest town of the village is Panchkula. Pin code of Shantoo village is 134118. The village comes under Shantoo panchayat. Panchkula is the sub-district head quarter and the distance from the village is 16 km. District head quarter of the village is Panchkula which is 16 km away.

The village is home to 1886 people, among them 1028 (55%) are male and 858 (45%) are female. 80% of the whole population are from general caste, 20% are from schedule caste. Child (aged under 6 years) population of Shantoo village is 13%, among them 55% are boys and 45% are girls. There are 324 households in the village and an average 6 persons live in every family.

**15.0 DETAILS OF HEALTH CHECKUP AND INSURANCE OF ALL THE EMPLOYED PERSONS (FOR EXISTING LEASE)**

All workers will be subjected to medical examination as per Mines Rule 1955 both at times of appointment and at least once in five years. Medical camps will be organized for this activity. Insurance of all employees as per the rules will be carried out.

**15.1 Corporate Social Responsibility**

As a Corporate Social Responsibility following measures along with budget provision is proposed for improving the conditions of persons in and around the project area:

Sr. No.	Description	Amount (in lacs)
1	Health check-up camps	1.0
2	Surveillance programme of the workers	1.0
3	Insurance cover of workers	1.0
4	Assistance to nical schools, scholarship to students	2.00
5	Sanitations and drinking water facilities	2.50
6	Vocational training to persons for income generation	2.00
7	Assistance to self-help groups	3.00



MINING PLAN FOR SHAMTOO I II, CKK PKL-II-11 (BOULDER, GRAVEL & SAND), DISTRICT  
PANCHKULA

Sr. No.	Description	Amount (In lacs)
Total		12.50

**15.2 Fund Provision for Environmental Management**

It is proposed to create an Environment Management Fund. The contractor shall deposit/pay an amount equal to 10% of the due contract money along with instalments towards the 'Mines and Minerals Development, Restoration and Rehabilitation fund.

**15.3 Fund Provision for EMP Measures**

Following provisions are proposed to be taken for improving, control and monitoring of environment protection measures

Sr. No.	Particulars	Amount (In lacs)
1	Pollution monitoring – Air, Water, Noise	1.50
2	Pollution abatement – Water sprinkling	2.00
3	Wire fencing at plantation sites	1.00
4	Plantation including maintenance	2.00
5	Rainwater harvesting	2.00
6	Haul road and other roads repair and maintenance	2.00
7	Pre-monsoon and post monsoon survey for sedimentation in the river bed	3.0
	Total	13.50

The protection measures will be dynamic and subject to periodic review so that measures remain effective and appropriate.



**MINING PLAN FOR SHANTOD-I BLOCK PKL-B-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA**

**PART-II**

**PROGRESSIVE MINE CLOSURE PLAN**

**1.0 Introduction**

**Name & address of the lessee**

M/s Starex Minerals, JS Heights, Block-A, opposite Shivnath Mahindra Service Center,  
Dhamdha Road, District - Durg.

**(B) LOCATION OF THE LEASE AREA**

Sr. No.	Name of Block No.	Name of Village	Details of Khuara Nos./ Killa No.	Area (In Hect.)	Period (In Years)
1	Shantod-I Block / PKL-B-11	Shantod Rattewal	55 min 141 min. 142, 143	46.50	09

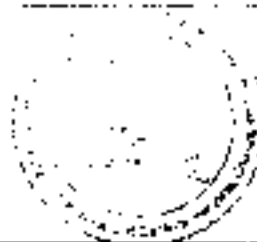
**(C) EXTENT OF THE LEASE AREA**

The lease area of 46.50 Hectares is spread over in Shantod and Rattewal village as explained at Section 2.0 in the main Mining Plan

**(D) PRESENT LAND USE PATTERN**

Details are given below:

S. No.	Particulars	Present land use (ha.)
1	Pit area	0.00
2	Overp area	0.00



**MINING PLAN FOR SHANTOO 1 BLOCK PKI B-11 (BOULDER, GRAVEL & SAND), DISTRICT  
PANCHKULA**

3.	Safety Roads, 7.5m lease boundary, 25% restricted area of zone river banks, 50m barrier at each km etc	12.25
4.	Infrastructure (Office, Temp. shelter etc)	0.00
5.	Mineral Storage	0.00
6.	Plantation (In safety zone)	0.00
7.	Un-worked	34.25
8.	Natural y reclaimed area	-
<b>Total</b>		<b>46.50</b>

**(E) METHOD OF MINING:**

River bed mining is for extracting boulder, gravel & sand from Dudhgarh kee Nad bed and its tributaries. As per HMVC Rules, 2012 extraction is limited to 3.0 m depth only. River bed is dry. Lease area allotted is 46.50 ha. Total length of the proposed lease area as per the description report stretches in the length of 1.75 km. Mining activity will be carried out in allocated areas only.

Total production envisaged is 7463 TPD. Activities will be carried out as per the production schedule given earlier.

Light weight excavators will be deployed for extraction. Mineral will be removed in 3.0 m layer only forming one bench. This is as per the digging depth of the equipment and as required under Haryana Minerals Rules, 2012. Mineral will be loaded in various capacities of trucks up to 25 tons capacity. There will be no over burden or waste generation as the Boulder, Gravel & 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 lease 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 lease area for the movement of loaded trippers/



MINING PLAN FOR SHAMTOO T. BLOCK PKL B 11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

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 in the lease area..

**(F) MINERAL PROCESSING OPERATION:**

No mineral processing is envisaged for Boulder, gravel & sand (minor mineral) produced during the mining activity. Bulk mining will be done and mineral will be sent to the screening plants/ crushers where it will be classified according to the size.

**1.1 Reasons 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 due to it's replenishment, to carry on the activities.

**1.2 Statutory Obligations:**

The lessee is bound to submit the Progressive mine closure plan either with Mining plan or Scheme of Mining. Lessee is bound to follow the terms and conditions as will be stipulated in the lease deed. 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. During the course of mining the rules stipulated in Mines Act, Mines rules Metalliferous Mines Regulation 1961 and Haryana Mineral Rules, 2012 will be followed. All other rules pertaining to the mining existing at that time will be followed during the course of mining activities.

**1.3 Closure plan preparations**

NAME, ADDRESS AND REGISTRATION NUMBER OF THE RECOGNISED PERSONS WHO PREPARED THE PROGRESSIVE CLOSURE PLAN AND NAME AND ADDRESS OF THE EXECUTING AGENCY WHO IS INVOLVED IN THE PREPARATION OF PROGRESSIVE MINE CLOSURE PLAN.



MINING PLAN FOR SHAMFOO-I BLOCK PKL-B-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

S.N.S Sharma

282, First Floor, Sector-11 D

Faridabad-121006 (Haryana)

Registration No RQP/DDN/0135/2001/A (Annexure-III)



MINING PLAN FOR SHANTOO-1 BLOCK PKL & L (BOULDER, GRAVEL & SAND), DISTRICT  
PANDEKULA

2.0 MINE DESCRIPTION

2.1 General Geology and Local Geology

2.1.1 Regional Geology

The north eastern part of Haryana is predominantly characterized by sedimentary lithology in the Sub-Himalayan zone comprising Subuthus, Dagshais, Kasaulis and Siwaliks. A general Regional stratigraphic sequence in the area is given in Table. Tertiary sequence of Haryana

Age	Super group	group	Formation	lithology			
				Gravel	Sand	silt	clay
Holocene			Newer alluvium and Newer Aolian Deposits	Gravel, limestone	Sand, gypsum	silt	clay
Lower to upper Pleistocene			older alluvium and Older Aolian Deposits	Gravel, grey sand	silt, clay, brown sand, calcrete		
Lower to Middle Pleistocene	S	Upper Siwalik	Boulder Conglomerates formation	Conglomerate, sandstone, silt, clay			
Upper Pliocene	W		Pinjora Formation	Coarse grit, red sand stone and clay, conglomerate			
	A		Tarot Formation	Friable Sandstone and variegated clay			
			Dhakpathan Formation	Brown sandstone and orange clay			
Middle Miocene	K	Middle Siwalik	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 lenticles, greenish white Quartzite			
Lower			Kasauli	Grey and stone, green shale and grey			

MINING PLAN FOR SHAMTOO 1 BLOCK K PRL-H-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

Age	Super group	group	Formation	lithology
Miocene			Formation	clay
		Siwark	Dagsh Formation	Purple and green sand stone, deep red gritty clay, white sandstone with ferruginous concretions
Upper Eocene			Subathu formation	Sandstone with gritty clay, Impure fossiliferous limestone calcareous slate, greenish shale and dark brown quartzite
Pre-ozoerotic			Hunda pathar	Thickly bedded stromatolite limestone with carboniferous shale and quartzite

### 2.1.2 LOCAL GEOLOGY

The litho units encountered in the riverbed and surrounding areas belongs to the Siwalik 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 Siwalik 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
- Gravel
- Boulder



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

MINING PLAN FOR SHAMTOO-1 BLOCK PKI-B-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA.

Soil/ alluvium varying in thickness from 2-4m constitute the top horizons in the area deposited in the flood plains outside the river is suitable for agriculture. Dangri River meanders through the area exposing the alluvium and soil at the banks. Boulder, gravel & sand is found in the river bed. Thickness of Boulder, gravel & sand is more than 10meters. This bed is presently dry and water flows only during the rainy season. The Sand exposed in the River bed of Dangri and surrounding areas is the product of the deposition of the sediments brought and deposited in the flood plains of River Dangri and Begna. 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. Geological map and section are enclosed as Plate – 03.

## 2.2 Reserves

Method of Estimation of Reserve and reserves are explained at Chapter 3.3. Of main Mining Plan.

### Geological Reserves

Sr no.	Nature of land	Lease area In ha	Total proved Geological reserves MT=Area x depth x 80 (A)	Blocked area of 50m strip each km, blocked in river banks, boundary etc= hectares	Blocked Geological Reserves in blocked area (B)	Total Mineable reserves A-B=C	Minable Reserve (Per Year)
1	River bed	46.50	25,38,900	12.25	6,68,850 MT	18,70,050 MT	18,00,000



**MINING PLAN FOR SHAMTOO 1 BLOCK PKL-B 11 (BOULDER, GRAVEL & SAND) DISTRICT-  
PANCHKULA**

**C) PROVED RESERVES AS PER UNFC CODE (111)**

Total Reserves - 25,38,900 MT

**D) BLOCKED RESERVES AS PER UNFC CODE (211 & 222) = 6,68,850 MT**

**C) MINEABLE RESERVES = (A-B) = 18,70,050 MT**

**D) TARGETED PRODUCTION**

18,00,000 MT per Year up to the lease period

**E) Balance reserves**

For balance reserves it is presumed that the mineral will be replenished every year during the rainy season. New mineral will be added every year in the river bed

**2.3 Mining Method**

Mining method to be followed is described in chapter of mining at 4.3 in mining plan.

**2.4 Mineral Beneficiation**

No mineral beneficiation is envisaged.

**3.0 Review of Implementation of mining plan including five years progressive closure plan up to the final closure plan**

Mining Plan and Progressive mine closure plan are being submitted for the first time. It will be reviewed after five years and review of implementation will be given with next mining scheme.

**4.0 CLOSURE PLAN**

**4.1 Mined - out land**

About 34.25 hectare area is available for mining. Land use at various stages is given in the table below:

MINING PLAN FOR SHAMTOO-1 BLOCK PRT B 1L (BOULDER, GRAVEL & SAND), DISTRICT  
PANCHKULA

Table: Land Use

S. No.	Particulars	Present land use (ha.)	At the end of 5th year (ha.)
1.	Pit area	0.00	0.00
2.	Dump area	0.00	0.00
3.	Safety zone Bridge & anicuts roads, 7.5m lease boundry, 25% restricted area of river banks, 50m barrier at each km etc	12.25	12.25
4.	Infrastructure (Office, Temp. shelter etc)	0.00	0.50
5.	Mineral Storage	0.00	0.00
6.	Plantation (in safety zone)	0.00	5.00
7.	Un-worked	34.25	0.00
8.	Naturally reclaimed area	-	34.25
<b>Total</b>		<b>46.50</b>	<b>46.50</b>

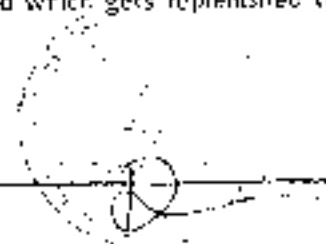
\* Plantation in 5.0 ha land will be done under social forestry on land available from Panchayat by the end of mine life

\* Plantation & infrastructure in restricted area only

#### 4.2 Water quality management

The River (Dudhgarh ki Nadi) flows in the north-eastern part of the district which originates in Nahar hills. Chaulang, Khand and Omka nadas of local existence also drain the district. The general slope of the land surface is from SE to NW. The general physiography of the Lease area is gently sloping from NE to SW side indicating the flow direction of river.

There is no flow of water in the river bed in post monsoon period. Area is having 1076 mm rainfall in a year. During rainy season, catchment water flows in the river. During dry period the Boulder, gravel & sand is excavated which gets replenished to some



MINING PLAN FOR SHANTOO 1 BLOCK PKI-B 11 (Boulders, Gravel & Sand), DISTRICT  
PANCHKULA

extent during this 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 10 m below the surface of river bed.

**4.3 Air Quality Management:**

The proposed mining method is not likely to produce much of dust and fugitive emissions to cause damage to ambient air quality of the area. Workers will be provided with personnel protective equipment like face mask, ear plug/ muffs.

For air pollution management at the progressive mine closure of mine, green belt will be developed to prevent and control air pollution.

**4.4 Waste Management:**

As stated in mining method, there will be no OB/ waste generation and there will not be any OB/ waste dumps.

**4.5 Top Soil Management**

There is no top soil.

**4.6 Tailing dam management**

There is no proposal of beneficiation of mineral. No tailing dam is envisaged.

**4.7 Infrastructure:**

The infrastructure facilities like site office, first-aid station, rest shelter/ store, drinking water etc. will be established.

**4.8 Disposal of mining machinery:**

Machinery is proposed on hire basis. Hence no decommissioning of mining machinery is proposed.



MINING PLAN FOR SHANTOO I BLOCK PKU-B-11 (BOULDER, GRAVEL & SAND) DISTRICT  
PANCHKULA

**4.9 Safety & Security:**

Safety measures will be implemented to prevent access to excavation area by unauthorized persons as per Mine Act 1952, MMR 1961.

- i. Safety measures will be implemented as per Mine Act 1952, MMR 1961, Mines Rules 1955.
- ii. Provisions of MMR 1961 shall be followed strictly and all roads shall be 10 m wide and have a gradient of not more than 1 in 20.
- iii. Excavation will be not more than 3 m depth.
- iv. Width of bench will be kept around 20-30 m for ease of operations and provide sufficient room for the movement of equipment.
- v. Protective equipment like dust masks, ear plugs/muffs and other equipment shall be provided for use by the work persons.
- vi. Notices giving warning to prevent inadvertent entry of persons shall be displayed at all conspicuous places and in particular near mine entries.
- vii. Danger signs shall 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.

**4.10 Disaster Management and Risk Assessment:**

This should deal with action plan for high risk accidents like landslides, subsidence, flood, inundation in underground mines, fire, seismic activities, tailing dam failures etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of lessee to meet such eventualities and the assistance to be required from the local authorities should be described.

- The shallow depth of activities in river bed mining will not involve any high risk accident due to side falls/collapse
- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.

/s/





MINING PLAN FOR SHAMSOO-1 BLOCK PKL-B-11 (BOULDER, GRAVEL & SAND), DISTRICT  
PANCHKULA

- All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955, Haryana Mineral Rules, 2012 and other laws applicable to mine will strictly be complied with.
- During heavy rainfall the mining activities will be closed.
- All persons in supervisory capacity will be provided with proper communication facilities. Competent persons will be provided FIRST AID kits which they will always carry.

**4.11 Care and Maintenance during Temporary Discontinuance:**

In case of any temporary discontinuance due to court order or due to statutory requirement or any other unforeseen circumstance following measures shall be taken for care, maintenance and monitoring of conditions.

- Notice of temporary discontinuance of work in mine shall be given to the JKMS as per the MMR 1961.
- All the mining machinery shall be shifted to a safe place.
- Entrance to the mine or part of the mine, to be discontinued shall be fenced off. Fencing shall be as per the circular 11/1959 from DGMS.
- Security Guards shall be posted for the safety and to prevent any unauthorized entry to the area.
- Carry out regular maintenance of the facilities/area detailed below in such a way as would have been done as if the mines were operating.

Mine roads and approach roads.

Fencing on approach roads,

Checking and maintenance of machines and equipment,

Drinking water arrangements.

Mine office, First aid stations etc.

- Competent persons shall inspect the area regularly.
- Air, water and other environmental monitoring shall be carried out as per CPCB and IBM Guideline.



MINING PLAN FOR SHAMTOO 1 BLOCK PKL B LL (BOULDER, GRAVEL & SAND) DISTRICT-  
PANCHKULA

- Care and upkeep of plantation shall be carried out on regular basis
- Status of the working and status monitoring for re opening of the mines shall be discussed daily.

In case of discontinuance due to any natural calamities/abnormal conditions, mining operation will be restarted as early as possible after completing rescue work, restoring safety and security, repairs of roads etc.

**5.0 ECONOMIC REPERCUSSION OF CLOSURE OF MINE AND MANPOWER RETRENCHMENTS**

Lease area will be granted for a period of 10 years only. As per the production programme envisaged, at the end of lease period, still sufficient un-worked area would be left available for continuing production activities further. Hence, no closure is planned. There will be no effect on the man power as the persons belong to nearby villages and will have an option either to be available for employment for the next contract/ lease or do the agriculture in their fields.

**6.0 TIME SCHEDULING FOR ABANDONMENT**

The lease 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 Boulder, gravel & sand being removed from the river bed is a natural process particularly during monsoon periods.

**7.0 ABANDONMENT COST**



MINING PLAN FOR SHAMLOO-1 BLOCK PKL-B-11 (BOULDER, GRAVEL & SAND), DISTRICT-  
PANCHKULA

As at present mining is not going to be closed so abandonment cost could not be assessed. However based on the progressive mine closure activities during the plan period, cost is assessed as given below

Abandonment Cost

ACTIVITY	YEAR					Rate	Amount (In Rs.)
	First	Second	Third	Fourth	Fifth		
Plantation (In no.)	1500	1500	1500	1500	1500	@ 20 Rs per sapling	1,80,000/-
Plantation cost (In Rs)	30,000/-	30,000/-	30,000/-	30,000/-	30,000/-		
Wire fencing (meter)	500	500	500	750	1000	@ of 120Rs per meter	3,90,000/-
Total							5,70,000/-



8.0 FINANCIAL ASSURANCE

**MINING PLAN FOR SHAMTOO-1 BLOCK PKE-B-11 (BOULDER, GRAVEL & SAND), DISTRICT -  
PANCHKULA**

As per the Rule 7(5) of Haryana Mining (Mineral Concession, Stocking, Transportation of Minerals & Prevention of Illegal Mining) Rules, 2012, the mineral concession holder shall furnish financial assurance amounting to Rs. 15,000/- per hectare of the area granted under the mineral concession and put to use for mining and allied activities subject to minimum of one lakh rupees in the form and manner as defined. Thus for Shamtoo-1 Block PKE-B-11 (Boulder, Gravel and Sand Minor Mineral Mine), the financial assurance comes out to Rs. 6,97,500/- for lease area of 46.50 Ha at the rate of Rs. 15,000/- per ha which will be deposited in the form of Surety bond/ Bank Guarantee to the Director Mines & Geology, Haryana.

**9.0 CERTIFICATE**

It is enclosed with the report.

**10.0 PLAN AND SECTION**

Plans and Sections are prepared and enclosed with the Mining Plan.

  
 DIRECTOR MINES & GEOLOGY  
 HARYANA



*Annexure - 1*

Department of Mines and Geology, Haryana  
3C-Bays Building, Sector:17, Chandigarh

**Registered**

From

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

To

M/s Starex Minerals,  
J. S. Heights, Block-A,  
Opp. Shivnath Mahindra Service Center,  
Dhandha Road, Khaprli, District Durg.

Memo No. DMG/HY/Cont./ Shamtoo-1 Block/PKL B-11/2018/ 904  
Dated Chandigarh, the 23-2-2018

**Subject:**

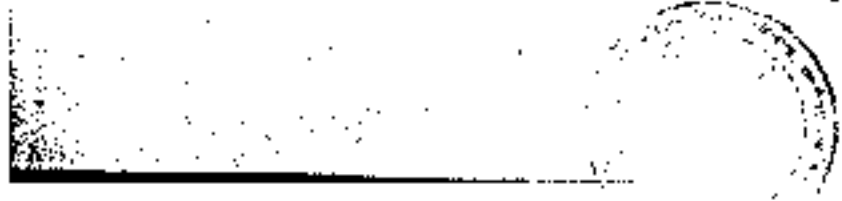
Acceptance of the highest bid in respect of the Boulder, Gravel and Sand minor mineral mine of "Shamtoo-1 Block/PKL B-11" having tentative area of 46.50 hectares in the district Panchkula, offered in e-auction held on 07-06.02.2018/issuance of Letter of Intent (LoI)- regarding.

You participated in the e-auction held on 07-06.02.2018 on the State Government web portal (<http://haryanaprocurement.gov.in>) after accepting the terms and conditions of the auction notice issued vide notification no. DMG/HY/e-Auction/PKL/2015/140 dated 09.01.2018 in order to obtain mining contract of minor mineral mine of the district Panchkula. You offered the highest bid of Rs. 06,09,50,000/- (Rs. Six crore nine lacs fifty thousand only) per annum against the Reserve Price of Rs. 06,09,00,000/- for obtaining the Mining Contract of Minor Mineral Mine namely 'Shamtoo-1 Block/PKL B- 11' for extraction of Boulder, Gravel and Sand having tentative area of 46.50 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. 06,09,50,000/- (Rs. Six crore nine lacs fifty thousand only) per annum offered by you in respect of 'Shamtoo-1 Block/PKL B- 11' under the provision of Haryana Minor Mineral Concession, Stacking, Transportation of Minerals & Prevention of Illegal Mining Rules, 2012 (State Rules). Accordingly, you have become the successful bidder in respect of 'Shamtoo-1 Block/PKL B- 11' of the district Panchkula.

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 'Shamtoo-1 Block/PKL B- 11' subject to the following terms and conditions:

- (i) The period of the contract shall be 04 years and the same shall commence with effect from the date of grant of Environment Clearance by competent authority or on 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 block is tentative but was notified on 'as is where is basis' (refer condition no. 4 of the auction notice). In



Department of Mines and Geology, Haryana  
30-Bays Building, Sector-17, Chandigarh.

case of any inadvertent mistake, if any, the same would be rectified/ corrected before execution of the agreement (refer condition no.3 of the auction notice);

- (ii) 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 if compliance of applicable laws/ restrictions. Needless to state this also includes the changes, if any, as per condition no.3 of auction notice.
- (iv) The amount of the highest bid i.e. Rs. 06,09,50,000/- (Rs. Six crore nine lacs fifty thousand only) per annum shall be the "Annual Contract Money" payable by you as the contractor; money 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 75% 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. 06,09,50,000/-
2	Second Year	Rs. 06,09,50,000/-
3	Third Year	Rs. 06,09,50,000/-
4	Fourth Year	Rs. 07,61,87,500/-
5	Fifth Year	Rs. 07,61,87,500/-
6	Sixth Year	Rs. 07,61,87,500/-
7	Seventh Year	Rs. 09,52,34,375/-
8	Eighth Year	Rs. 09,52,34,375/-
9	Ninth Year	Rs. 09,52,34,375/-

- (vi) As per the terms and conditions of the grant, you are liable to deposit Rs. 01,52,37,500/- i.e. equal of the annual bid amount as "Security deposit" out of which you have already deposited an amount of Rs. 60,95,000/- (Rs. Sixty lacs ninety five thousand only) i.e. equal to 10% of the annual bid amount as 'initial bid security' after the conclusion of auction. The balance amount of Rs. 91,42,500/- 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 an expiry of period of 12 months, whichever is earlier.
- (vii) You shall execute an Contract Agreement Deed in Form MC-1 appended to the Haryana Minor Minerals Concession, Stacking, Transportation of Minerals & 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) The Contract Agreement executed shall be got duly registered under relevant law with concerned Registering Authority and you shall be liable to pay applicable stamp duty and registration fee etc. as per the applicable rates and as demanded by the Registering Authority/ Revenue Department at the time of Registration.
- (ix) 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



Department of Mines and Geology, Haryana  
30-Says Building, Sector-17, Chandigarh.

Balance amount of 15% towards the bid security, amounting to Rs. 91,42,500/- being the 15% of the annual bid amount, shall be recovered as arrears of land revenue and, you, as the Bid holder/ defaulter, shall be debarred from participation in any future auctions for a period of 5 years.

- (x) 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.
- (xi) After execution of Agreement, either before commencement of the mining operations or before expiry of the period of 12 months from the date of issuance of this bid, 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 bid/ execution of agreement shall be deemed to have been revoked and 10% amount 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 debarred from participation in any subsequent bids for a period of 5 years.
- (xii) 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 period.
- (xiii) You shall also deposit/ pay an additional amount equal to 10% of the due contract money along with the monthly instalments towards the 'Mines and Mineral Development, Restoration and Rehabilitation Fund.
- (xiv) 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.
- (xv) 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. An interest, whatsoever, shall be payable on the security amount deposited under the prescribed security head of the government.
- (xvi) 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.
- (xvii) Further, the actual mining will be allowed to be commenced only after prior Environment Clearance is obtained by you as the Bid holder/ Mining contractor for the Mining Block from the Competent Authority as permitted by the competent Authority required under EIA notification dated 14/09/2020, as



Department of Mines and Geology, Haryana  
50-Bays Building, Sector 17, Chandigarh

amended into force to them by the MGF & G. S. and conditions of contracts have been on the behalf.

- (viii) The Mining Contractor to whom mining rights have been granted through this contract would also be liable to pay the following to the Government to undertake mining operations:
- (a) Annual rent in respect of the land area blocked under the concession but not being operated, and
  - (b) Best Plus compensation in respect of the area used for actual mining operations.
- (ix) The amount of annual rent and the compensations 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, Transportation of Minerals & Prevention of Illegal Mining Rules, 2012".
- (x) 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.
- (xi) 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.
- (xii) 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.
- (xiii) Following are the general/special conditions applicable for excavation of minor canal(s) from river beds in order to ensure safety of riverbeds, structures and the adjoining areas:
- (a) No mining would be permissible in a river bed up to a distance of five meters 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 authorized by him;
  - (c) The maximum depth of mining in the riverbed shall not exceed three meters from the undisturbed bed level at any point in time with proper bench formation;
  - (d) Mining shall be restricted within the central 1/3<sup>rd</sup> width of the river/canal;



Department of Mines and Geology, Haryana  
30-Bays Building, Sector-17, Chandigarh

- (e) No mining shall be permissible in an area upto a width of 500 meters from the active edges of embankments to case of river Yamuna, 250 meters from case of Tangri, Mahanda and Ghaggar and 100 meters on either side of all other rivers/creeks. (This clause is applicable for mining outside river bed area);
- (f) Any other condition(s) as may be required by the Legislation 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.
- (xxb) 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 shafts shall not exceed nine meters (9m) at any point of time. (This clause is applicable for mining outside river bed area)
- (xxv) The contractor shall not undertake any mining operation in the area granted on mining contract without obtaining requisite permission from the competent authority as required for undertaking mining operations under relevant laws;
- (xxvi) 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 Explosive Act, 1984, 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, you are advised to submit the Draft Contract Agreement along with other requisite documents including a solvent surety (s) for a sum equal to the amount of the original bid for execution of the agreement, within a period of 90 days from the date of issue of this bid acceptance letter and the bid.

*D.K. Sharma*  
Mining Engineer  
For Director, Mines & Geology  
Haryana

File No. DMG/HY/Cent./Shantoo-1 Block/PK/B-11/2018/

Dated

please.

1. The Chairman, Haryana State Pollution Control Board, Panchkula.
2. The Deputy Commissioner, Panchkula.
3. The Mining Officer, Mines & Geology Department, Panchkula. He is directed to ensure that proper and complete Draft Contract Agreement Documents as required are submitted within stipulated period.



*Sd.*  
Mining Engineer  
For Director, Mines & Geology  
Haryana

Department of Mines and Geology, Haryana  
30-Bays Building, Sector 17, Chandigarh.

Annexure 'A'

Sr. No.	Name of Block No.	Name of village	Details of Khasra Nos./Killa No.	Area (In Hect.)	Period (In Years)
1	Shantoo Block/DKC B, 11	Shantoo	55 min	46.50	09
		Rattewall	141 Min, 142, 143		



Annexure - 2

## CONSENT LETTER FROM APPLICANT

The Mining Plan & Progressive Mine Closure Plan in respect of "Boulder, Gravel and Sand Minor Mineral Mines (Shamtoo-1, Block-PKL B-11) of M/s Starex Minerals, I.S. Heights, Block-A, opposite Shivnath Mahindra Service Center, Dhamdha Road, Khapri, District:Durg in village Shamtoo and Rattewali comprising lease area of 46.50 Hectares ; District- Panchkula, State -Haryana is being prepared by S.N. Sharma (Recognized Qualified Person). RQP/DDN/0135/2001-A.

I request The Director, Department of Mines and Geology, Haryana to make further correspondence regarding modification of the Mining Plan with the said RQP on the following address:-

S.N. Sharma

(RQP Registration No. RQP/DDN/0135/2001-A)

282, First Floor, Sector-11D, Faridabad (Haryana)

+91-9560848579

Mail id: snsharma@jbbtechnocrat.com

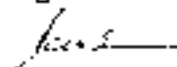
I also authorize S.N. Sharma to make correspondence with your office.

I hereby undertake that the Mining Plan along with Progressive Mine Closure Plan in respect of the lease area prepared by RQP be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects

Place: Chandigarh

Date: 15.03.2019

Signature of the applicant



Authorized Signatory

( M/S Starex Minerals)



संख्या R2402 - 3

Renewed/अनुरोध up to 27/3/2024



खनन योजना तैयार करने हेतु  
वीथ व्यवस्था के रूप में  
समन्वय का प्रदर्शन

Regional Controller of Mines  
भारतीय खनन ब्यूरो  
Indian Bureau of Mines

(खनन विनियमन विनियम 1960 के नियम 22(घी) के अंतर्गत)

श्री. रमेश चंद्र शर्मा

पत्ता श्री. के. सी. शर्मा

दिनांक 15/03/2024 को 16 फरवरी 2024 को

आपकी योजनाओं और अनुभव का समन्वय प्रमाण प्रस्तुत करने के फलस्वरूप  
खनन विनियमन विनियम 1960 के नियम 22(घी) के अंतर्गत उन्हें एतद्वारा खनन  
योजना तैयार करने हेतु वीथ व्यवस्था के रूप में सहायता प्रदान की जाती है।

आपका संयोग क्रमांक

R24/DBN/135/2001/A

6

आपका दिनांक 29.03.2024

को मिला

उपरोक्त योजना की अवधि के लिए वैध है।

स्थान: देहरादून

दिनांक: 30.03.2024

Regional Controller of Mines  
भारतीय खनन ब्यूरो  
Indian Bureau of Mines



Annexure - 4

## Eco Laboratories &amp; Consultants Pvt. Ltd.

CIN : U74140PW01 LPTC054735



(A Govt. Approved Test House)

ISO 9001:2015, ISO 14001 &amp; OHSAS-18001: 2007 Certified

Approved by CPWD, MES, BSNL, PUDA, GMADA, HPHC &amp; M&amp;U with PEC-CCE

## TEST REPORT

Name & Address of the Customer : STAR EX MINERALS PVT. LTD.	Test Report No.: EL25061RG0001	
	Issue Date : 30.06.2018	
Description of the Material : River bed soil (sand) By: Core-Cutter Method	Party Reference: Telephonic order Dt.25.06.2018	
	Date of Receipt : 25.06.2018	
	Lab Code No. :062509HISC	
	Date of Registration	25.06.2018
	Date of commencement of testing	25.06.2018
	Date of completion of testing	30.06.2018
	Sample condition at receipt	OK

## Test Results

LOCATION	TEST PARAMETERS	RESULTS	IS METHOD
BH-1	Bulk Density (g/cc)	1.81	IS. 2720(P-29)- 1975
BH-2	Bulk Density (g/cc)	1.83	
BH-3	Bulk Density (g/cc)	1.82	
BH-4	Bulk Density (g/cc)	1.87	

Verified by

Mr. P.L. Geel  
(Lab Incharge)

Authorized by

  
Mr. P.L. Geel  
(Lab Incharge) (Representative)

NOTE: Sample Suggested Collected by Client Laboratory



Form No. EL-1001

ECO BHAWAN E-207, Industrial Area, Phase VIII B (Sector-74), Mohali (Gurgaon) Haryana 150071

Tel/Fax: 0172-4616225 M: 9781502189 [enquiries@ecolab.com](mailto:enquiries@ecolab.com) [ecolab@ecolab.com](mailto:ecolab@ecolab.com) [www.ecolab.com](http://www.ecolab.com)

**ANNEXURE IV**  
**FOREST NOC**



**ANNEXURE V**  
**CLUSTER CERTIFICATE**



Annexure- 6

From

Mining Officer,  
Mines & Geology Department,  
Panchkula.

To

M/s Starix Minerals,  
15 Heights, Block-A,  
Opp. Shyam Nath Mahindra Service Center,  
Kharaj Gola, Distt. Chandigarh.

Memo No- 412

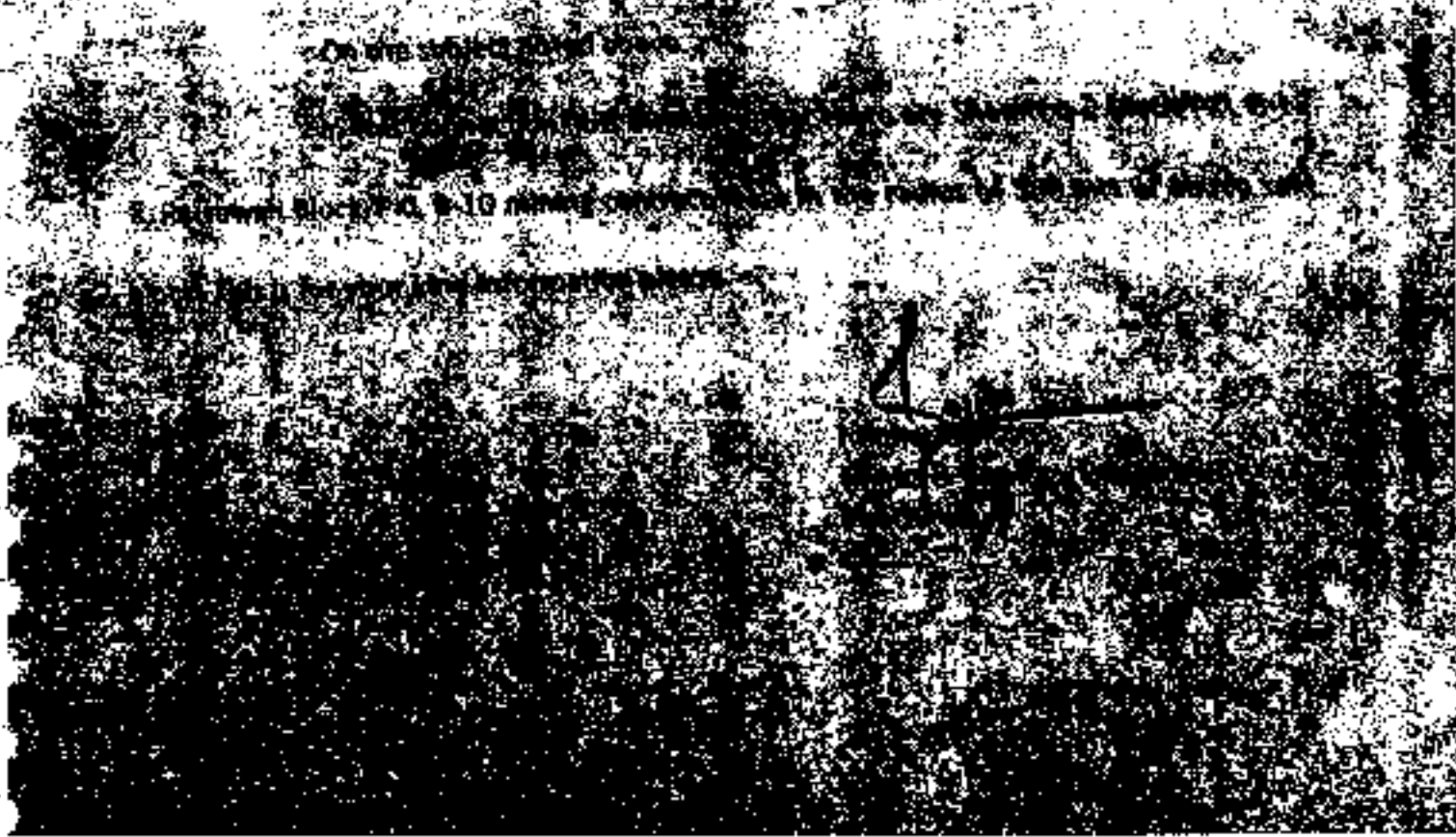
Date- 24/01/21

Subject

Information regarding lease for mining concessions of Granite-I  
Block/Part B-12 with its extension areas of area of Block

On the subject stated above.

Reference is made to the letter of M/s Starix Minerals dated 12/01/21  
concerning the above subject. In the request, the area of Block



**ANNEXURE VI**  
**DSR**

# DISTRICT SURVEY REPORT

## Panchkula District - Haryana

Prepared by,

Mr. G. S. Singh, District Surveyor

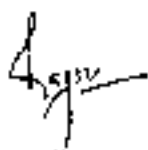
## DISTRICT SURVEY REPORT FOR SUSTAINABLE SAND MINING DISTRICT, PANCHKULA - HARYANA

The Boulder, Gravel and Sand are one of the most important construction materials. These minerals are found deposited in river bed as well as adjoining areas. These aggregates of raw materials are used in the highest volume on earth after water. Therefore, it is the need of hour that mining of these aggregates should be carried out in a scientific and environment friendly manner. In an endeavor to achieve the same, District Survey Report, aptopos "the Sustainable Sand Mining Guidelines" is being prepared to identify the areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structural and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area

With reference to the Notification Issued by the Ministry of Environment Forest and Climate Change dated 15/01/2016, S.O. 141 (E), the preparation of District Survey Report of River bed mining and other minerals, appendix 10 of the Notification, every effort have been made to cover sand mining locations, areas and overview of Mining activity in the district with all relevant features pertaining to geology & mineral wealth in replenishable and non-replenishable areas of rivers, stream and other Boulder, gravel and sand mining sources. This report will act as a model guideline document which is a compendium of available mineral resources, geographic setup, environmental and ecological setup of the district and is based on data available on various government departments, published reports and websites.

### **I. Introduction:** -

As per Notification vide S.O. 141 (E) 15th January 2016 a survey shall be carried out by the District Environmental Impact Assessment Authority (DEIAA) with assistance of irrigation department, Drainage department, forest department, Mining department and Revenue department. Methodology adopted for calculating Mineral potential as per sustainable sand mining management guidelines 2016, the mineral potential is calculated by based on field investigation and geology of the catchment area of the river/streams. As per the policy of the state and location,

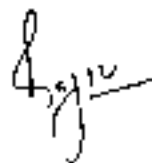


length of minable mineral is defined. The area for the removal of mineral of mineral in a river or stream can be decided depending on geo-morphology and other factors. It can be 50% to 60% of the area of a particular river/stream. Other constituent like clay and silt are excluded as waste while calculating the mineral potential of particular river or stream.

This District Survey Report shall form the basis for application for environment clearance, preparation of reports and appraisal of projects. The report shall be updated once every five years.

### Minor Mineral Deposits:

- 1.1 Panchkula district of Haryana is located in northern part of Haryana State and lies between 30°26' 30"55' North latitudes and 76°46' 77°10' East longitudes. Total geographical area of the district is 898 sq. km. in which there are 264 Villages, 2 tehsils and 4 sub-tehsils. Panchkula District is divided into two tehsils and four development blocks viz. Pinjore, Barwala, Raipur Rani and Morri. Himachal Pradesh bound the district, in North in the east by Uttar Pradesh, in west by Ambala district, in south by Karnal and Kurukshetra districts
- 1.2 The district has a sub-tropical continental monsoon climate where we find seasonal rhythm, hot summer, cool winter, unreliable rainfall and immense variation in temperature. In winters, frost sometimes occurs during December and January. The district also gets occasional winter rains from cyclones. The rain fall is mostly received in rainy season. The important river/ stream of district are Ghaggar, Tangra, Bagna and Sirsa river etc
- 1.3 Boulder, Gravel and Sand (Minor Minerals) finding use as construction material are found in the river bed areas. The size and the concentration of material gradually reduce towards downstream as the heavy material of larger size settles with reduction in flow of water stream. The mineral deposits are found in river bed areas as well as outside river bed areas of concerned villages of the districts Panchkula. All rivers in the district Panchkula are seasonal rivers. The water released in river during rainy season bring huge quantity of Boulder, Gravel and Sand which gets



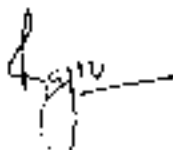
deposits in the river bed area. The flood plains also have huge deposits of Boulder, Gravel and Sand up to a depth of 10-12 meter.

## 2. Overview of Mining Activity in the District

### Grant of Mineral Concessions for Mining of Minor Minerals.

#### Mode of grant of mineral concession

- 2.1 Before giving details of actual sites / number of sites or mineral concessions it would be appropriate to explain that the Mineral Concession in respect of minor minerals are granted as per the provisions of the State Rules, framed by the State Government in exercise of powers conferred under section 15 of the Mines and Minerals (D&R) Act, 1957.
- 2.2 The State of Haryana at the time of bifurcation opted prevailing Rules namely "Punjab Minor Mineral Concessions Rules 1964". These Rules were amended from time to time as per policy of the State Government. The Hon'ble Supreme Court vide its order dated 27.02.2012 directed all State Governments to revise their State Rules making provisions in accordance with various recommendations contained in the report of the MoEF & CC, Govt. on mining of minor minerals and the Model draft guidelines issued by the Ministry of Mines, Govt.
- 2.3 Accordingly, the State of Haryana framed & notified on 20.06.2012 comprehensively revised Rules namely, the "Haryana Minor Mineral Concession, Stacking, Transportation of Minerals, and Prevention of Illegal Mining Rules, 2012", repealing the prevailing Rules namely "Punjab Minor Mineral Concession Rules 1964".
- 2.4 The mineral concessions in the Haryana are being granted in the form of "Mining Contract" or "Mining Lease" through competitive bidding process. The Mining Contracts are granted for a minimum period of 07 years and maximum period of 10 years. Whereas the Mining Leases are granted for a minimum period of 10 years and maximum period of 20 years. In district Panchkula mineral concessions are/were granted in the form of Mining contracts for the period varying between 7 to 10 years. The-



contracts are being granted through open auction/ e-auction mode. The Mineral concessions are being granted subject to condition that actual mining operation shall be allowed only after environment Clearance is/are obtained from the competent authority as per requirement of EIA Notification dated 14.09.2006 of the MoEF&CC, Govt.

- 2.5 The mineral concession holders are required to prepare a detailed "Mining Plan" for their specific project through Registered Qualified Person and get it approved from authorized officer of the State Government. The exhaustive mining plan are prepared interalia giving details of mineral reserves, method of mining, extent of proposed mining and other related details. These are the projects specific details. Based on these details itself the project proponents/ mineral concession holders obtains environmental clearances.

**3. Method of Mining and Conditions in which mining in river bed areas is to be allowed**

- 3.1 The river bed areas apart from other related condition for mining are allowed to excavate minerals (Boulder, Gravel or Sand) to ensure safety of rivers bed structures and the adjoining areas on the following specific conditions:

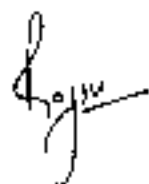
- (i) No mining would be permissible in a river-bed up to a distance of five times of the span of a bridge on up-stream side and ten times the span of such bridge on down-stream side, subject to a minimum of 250 meters on the up-stream side and 500 meters on the down-stream side;
- (ii) There shall be 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 authorized by him;
- (iii) The maximum depth of mining in the river-bed shall not exceed three meters measured from the un-mined bed level at any point in time with proper bench formation;
- (iv) Mining shall be restricted within the central 3/4<sup>th</sup> width of the river/ rivulet;

- 3.2 The above said conditions have been decided after detailed discussions and recommendations of the PWD (B & R) department and Irrigation department, Haryana

- 3.3 As the mining in river bed remains restricted in the central 3/4<sup>th</sup> part of the river bed, the area left on both side of the river bank not only ensures the safety of banks (bank cutting due to water stream) but also ensures that in the central part of river, water stream flows smoothly during rains and process of river meandering does not occur.
- 3.4 The light weight excavator/JCBs are being deployed to remove mineral from river bed up to maximum depth of 03-meter layer from general level of the bed. The mining in the river bed are undertaken in mechanized manner. At times the RQPs do refers the excavation in river bed mining through excavators as "Semi Mechanized Mining".
- 3.5 The mineral excavated is directly loaded in the vehicles/dumpers and the vehicle owners and drivers take away the mineral directly to the stone crushers or screening plants or consumers. In certain cases, mineral concession holders stacks mineral on the river bank in case are not able to sell the material on actual mining itself.

#### **4. Method of Mining in river bed areas (semi-mechanized / mechanized or manual)**

- 4.1 The Hon'ble NGT with regards to river bed mining has specifically desired to examine the mode of mining - shall the same be semi mechanized /mechanized or manual.
- 4.2 There is no specific definition of Semi - Mechanized Mining. The term Semi - mechanized mining in general is used where method of working in general are undertaken mechanically, however, some operations are also undertaken manually. Therefore, the semi mechanized mining or mechanized mining, is the same method of working. Sometime mechanized mining with light machines are also referred as semi- mechanized mining. The term semi mechanized mining is being used in general parlance where in the very same mining area in part area as per requirement manual mining is also undertaken along with mechanized mining of sand/river bed mining.
- 4.3 Whereas Manual mining operations are undertaken using conventional hand tools only like Spade, Pan, Crowbar etc. and operations are only labour intensive. As per requirement in manual mining lifting of sand and directly





loading the sand in tractor trolleys etc. is being carried out through labours itself.

4.4 The Mechanized mining operations in respect of sand mining are undertaken with the help of excavator-cum-loaders. In this process sand is lifted/excavated from the river bed through excavator-cum-loaders and directly loaded in dumpers or other mode of transport. The vehicles carrying the mineral from mines to site of use/ site of construction or sale stocks outside lease hold areas *(on independent business than that of mining)*

4.5 In the current scenario it is impractical to undertake manual mining because :-

- (i) The labours are not easily available;
- (ii) Manual mining cannot be undertaken in systematic and scientific manner as compared to mechanical mining which can be undertaken systematic/ scientific and controlled mining
- (iii) In case of manual mining to achieve desired level of production more number of manpower would be required meaning thereby human interface within river bed area would increase and more ecological damage would be caused.

4.6 The method of mining even otherwise cannot be uniform even for same area and all the methods have their own pros and cons. however, considering the current scenario wherever feasible mechanized (semi-mechanized or mechanized is same thing) mining should be preferred over manual method.

## 5. General Regulation relating to Mining

5.1 As per prevailing State Rules the Mineral Concession holders are required to get a Mining Plan for the area prepared from a "Registered Qualified Persons". The mining plan includes the area specific details along with the Mine Closure Plan (Progressive & Final) taking into consideration the details of the Geology and lithology of the area including the estimated mineral reserves of the area. Proposed method of mining/ development of mines, use of explosives and blasting operations, if any, stacking and disposal of minerals, mine-drainage pattern, handling of the overburden, location of weigh bridges, and mineral processing, if any. The extent of manual mining or mining with the use of machinery and mechanical devices along Level of

Production (production from year-to-year for a period of five years), Mechanization, Type of Machinery to be used, nature and extent of the mineral body, spot or spots where the mining operations are proposed to be undertaken, natural water courses, limits of mineral reserves and other forest areas and density of trees, if any, assessment of impact of mining activity on land surface and environment including air and water pollution i.e. the environment management plan. In addition to this Mining plan also suggests the details of scheme of restoration/ rehabilitation of the area through afforestation, land reclamation, use of pollution control devices and such other measures as may be directed by the State Government from time to time.

- 5.2 The Mining Plan are to be got approved from the authorized officer of the State Government. Based on mining plan prior environmental clearance from the competent authority as per provisions of EIA Notification dated 14.09.2006 of MoEF & CC, Govt is obtained.
- 5.3 After obtaining the Environmental Clearances, to comply with requirement of Air Act, 1981 the Consent to Establish and "Consent to Operate" from State Pollution Control Board are also obtained before actual mining.
- 5.4 The above said provisions mainly relates to mineral conservation and environmental protection. With regards to provisions related to safety in mines and welfare of labours provisions under the Mines Act, 1952 are ensured by the Directorate General Mines Safety, a department under the Ministry of Labour, Government of India.

## 6. Areas selected for Mining in District Panchkula

### Background

- 6.1 As per rough estimate total area of rivers beds (all rivers and tributaries/trivulets) passing through district Panchkula is about 58000 sq. m. A larger part of which is otherwise under various uses including agriculture. As regards selection of area for mining it may be pointed out that:-

(i) Earlier, (about 15-18 years back) mineral concession/mining contracts were being granted on revenue estate basis (without giving any specific



details of areas), subject to various restrictions. The mineral concession holders used to undertake mining in areas after leaving restricted area.

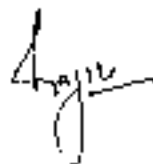
(ii) Initially about 65 villages were being offered for mining, however, over a period of time the number of villages/quarries reduced to about 29, as area of some of the villages came under other restrictions either because of construction of some bridges on river bed or due to other development projects including habitation.

(iii) The mode of grant of mining contracts of individual quarries/revenue estates in Panchkula district was changed in late nineties and instead granting individual quarries on contract, number of adjoining quarries were clubbed for the purpose of granting mineral concession. This mode was further changed and all minor mineral quarries of the district were given "as one unit". In this way their used to be a single contractor for all minor mineral quarries "District as one unit". In district Panchkula last such contract for "district as one unit" was granted from 2002 to 2008

(iv) Needless to state that such mineral concession areas used to have even the areas having no mineral deposits, the areas otherwise not permissible for mining. The mineral concession holders were under obligation to undertake mining only in the areas free from all restriction and as per prevailing Rules and Regulations. Mineral Concessions for minor Mineral prior to 14.09.2006 were not required to obtain environmental clearance.

(v) The EIA notification dated 14.09.2006 became applicable for fresh contracts/ leases and in the year 2008 for grant of mineral concessions in respect of other areas in the State fresh auctions were notified subject to condition that mining will be allowed to be undertaken only after prior environmental clearance is obtained as per requirement of EIA notification dated 14.09.2006 of MoEF & CC, Govt. However, said condition was challenged by some prospective bidders on the plea that the notification dated 14.09.2006 was not applicable for mining of minor minerals.

(vi) The operation of notification dated 14.09.2006 for mining of minor

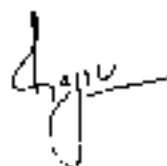


mineral was stayed by the Hon'ble Punjab and Haryana High Court vide its interim order dated 07.04.2008 in CWP No. 4578 of 2008- Chandi Mandir Stone Crusher Consumer Company Vs. Union of India and Others.

- (vii) The State could not have granted long term contracts during the pendency of said case because operation of the notification was under stay and in case long term contracts were granted the mineral concession holders would have claimed that at the time of grant the notification was not applicable for them or may have sought to cancel the contract.
- (viii) Subsequently, the Hon'ble High Court on 15.05.2009 while disposing of the above said writ petition (along with CWP no 20334 of 2008 Vijay Bansal vs State) upheld that notification dated 14.09.2006 was applicable for mining of minor minerals also.
- (ix) However, as regards the process of obtaining the prior environmental clearance, the Hon'ble High Court directed the process to be followed in two parts. In the first stage, it was directed that the state of Haryana would submit the ToRs to the EAC and the EIA report will be prepared by Expert Appraisal Committee (EAC) in the MoEF&CC Govt before conducting the auctions. Subsequent to the holding of the auctions, the successful bidder shall obtain the prior environmental clearance from the competent authority.
- (x) The Hon'ble High Court, considering that some time would be required for completing the process as per above, and general public would face problems due to sudden closure of mining, permitted mining without environmental clearance for the period up to 28.02.2010.
- (xi) Accordingly, no long-term contract in Panchkula area could be granted due to above litigation and after expiry of the last contract the mining operations was allowed in district Panchkula (as well as in other part of the state) for the period of up to 28.02.2010 without environmental clearance as per orders of Hon'ble High

Court

- (xii) However, the order dated 13.05.2009 of Hon'ble High Court relating to preparation of EIA report by the State Government was not acceptable to the MoEF&CC, Govt. The MoEF was of the view that state being regulating agency cannot prepare the said report at its own. Therefore, the applications submitted by State of Haryana for approval of FoR were not considered.
- (xiii) The MoEF initially filed a Review Application before the Hon'ble High Court and thereafter SLP before the Hon'ble Supreme Court. During the pendency of said matter the state of Haryana neither could take further action relating to preparation of EIA report nor could auction its minor mineral areas for grant of mineral concessions subject to condition that Environmental Clearance shall be obtained by the project proponent.
- (xiv) The mining in district Panchkula /other parts of the State came to a grinding halt on 01.03.2010. The mining in the district Panchkula remained closed. The mining operations prior to 01.03.2010 were either undertaken by the contractors to whom contract was granted prior to 14.09.2006 or under special dispensation granted by the Hon'ble High Court to operate mines without Environment clearance till 01.03.2010.
- (xv) Subsequently, the Hon'ble Supreme Court on 28.10.2013 while disposing of the SLP No. 729 of 2011 of the MOEF & CC, Govt held that prior environmental clearance is to be obtained by the concerned mining lease holders and not by the State Government. In other words, the process for obtaining prior environmental clearance was to be followed as prescribed by MoEF, CC, Govt under its notification dated 14.09.2006 as amended to time to time (uniformly applicable for country).
- (xvi) In view of above the State of Haryana in November, 2013 could issue notifications for grant of mineral concessions in various parts of the State including district Panchkula through open auctions to be held in December, 2013.



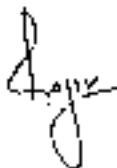
7. Areas Selected for mining in November/ December, 2013 and thereafter (the areas at present on contracts or to be granted on mining contracts)

- 7.1 In November, 2013 it was decided that instead of the auctioning all of minor mineral quarries of a district as a single unit, the same should be granted in the form of big mining units. The mineral concessions for district as one unit were found to be resulting in monopoly of a few in the business of mining in a district.
- 7.2 At the cost of repetition it is stated that mineral concession areas of large size blocks/units used to have even such areas which otherwise were not permissible for mining. The restricted area were not meant to be used for actual mining operations but otherwise permissible for subsidiary activities like installation/establishment of check posts/weightbridge etc
- 7.3 In December, 2013 a total of 05 Mining Blocks having contiguous area were carved out and were auctioned as 03 separate units (one unit was having number of blocks). The said mineral concessions were granted subject to condition that mining would be allowed to be commenced only after prior environmental clearance is obtained by the concerned mining contractor of holders.
- 7.4 The areas of each of these Mining Units except that of Unit No. 1 to Unit No. 5 are very large. However, subsequently 03 of the Lol holders got their bids cancelled through Hon'ble High Court. The area of each cancelled 03 large size contracts became available for fresh grant. It was decided to be auctioned afresh by carving out small size blocks as compared to large size areas auctioned in the December, 2013.
- 7.5 The area available for actual mining out of area of above said 03 units and a few of other areas which earlier could have been offered due to some issues relating to access road etc. were notified for fresh grant by carving out 18 Mining Blocks. While auctioning comparatively smaller blocks the total area available for grant of mineral concession got further reduced to 449.04 hectare (Auction in April 2015)



## 8. Annual Capacity of Areas selected for mining of minor minerals

- 8.1 In order to make estimates of mineral deposits and mineable reserves of any mineral a detailed exploration is required to be undertaken. The economic life of a mine based on the mineral estimates including current mining production plans are made on the basis of study taking into consideration the quantity and quality of the minerals extracted during the reporting time, changes in Economic Viability due to changes in prices and costs, development of relevant technology, newly imposed environment or other regulations, and data on exploration conducted concurrently with mining. It presents the current status of the deposits, providing a detailed and accurate, up-to-date statement on the reserves and the remaining resources.
- 8.2 However, in case of minor minerals like Boulder, Gravel and Sand as the same are available in abundance and estimates can be made on the basis of mineral seen at surface or through the area operated in past and on the basis of permissible limits to excavate minerals.
- 8.3 The minerals are non-renewable resources, however, minor minerals found in the river bed areas have peculiar condition relating to mineral reserves. The minerals removed from the river bed areas get replenished after every rainy season with minerals brought along with water from hilly areas. The mineral reserves for mining or replenishment remain almost same every year after rainy season.
- 8.4 On the other hand, in case of areas outside river bed or any area used for mining, the mineral reserves reduce after every year after mining operations. Hence, total mineable reserves after mining gets depleted and the life of any mine also reduces. This is a normal practice for mineral reserve estimation for all types of mining activities other than river bed areas.
- 8.5 The mineral reserves for river bed areas are calculated on the basis of maximum depth of 3 meters. The area multiplied with depth gives volume and volume multiplied with bulk density gives the quantity in M.T. In case of river bed areas per hectare area, maximum availability of mineral for actual mining is 60,000 MT. However, as explained above the mineral excavated



from river gets replenished after every year, therefore, the same quantity remains available for mining again and again.

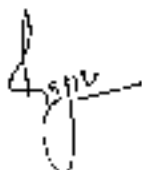
- 8.6 In case of areas outside river bed the maximum depth of 9 meters from ground level is considered for calculation of capacity of a mine. The area multiplied with 09 gives the volume and volume multiplied with bulk density gives quantity of total mineral available in M.T. However, on an average half meter to 1-meter layer is of ordinary earth, so actual mineral can be excavated up to maximum depth of about 08 meters per hectares area outside river bed in general provides 1,60,000 M.T. of mineral.

## **9. Capacity of Minor Mineral Mines/ Areas selected for mining**

- 9.1 The capacity of any mining area mainly depends upon of mineable reserves, economical viability and demand of minerals. In most of the cases particularly in respect of minor minerals the mineral deposits are found in huge quantity. However, the demand of material depends upon other factors such as ongoing infrastructure projects and other related private constructions. The operation of other minor mineral mines in and around any area/mine is one of the important factors affecting the production plan.

To illustrate for example if total demand of particular area for construction material is "X" M.T. per annum, all operating mines in and around any particular area depending upon market forces would be supplying the material. Accordingly, if operation in any of the mines stops, the demand of the market would be met by the remaining operating mines. In other words, the production level of operating mines shall increase. The annual production plan is prepared by mining contractors/lease holders considering their maximum capacity. However, in all cases peak capacity in general may or may not be achieved at any point of time.

- 9.2 As per documents submitted by the Mineral Concessionaires maximum annual capacity of each of the 18 Mining Units/Blocks of District Panchkula, are given as under.





Sr. No.	Mining Unit/Block Location	Area (In Hect.)	Period (In yrs)	Name of Minor Minerals	Status of Granted of Mineral Concession	Annual Capacity as per EC/Mining Plan/10R in lakh MT.	Present Status
<b>Riverbed Mining Areas</b>							
1	Gorkhnath	12.94	7	Boulder, Gravel, Sand	Yes	582300	Running
2	Kiratpur	13.40	7	Boulder, Gravel, Sand	Yes	607400 MT	Running
3	Gobindpur	28.40	10	Boulder, Gravel, Sand	Yes	1278000 MT	Running
4	Narainpur	33.63	7	Boulder, Gravel, Sand	No	146850 MT	Not Working/EC/CTO awaited
5	Mandali	13.20	10	Boulder, Gravel, Sand	Yes	792000 MT	Not Working/EC/CTO awaited
6	Mandali-2	10.60	7	Boulder, Gravel, Sand	No	530000 MT	Not Working/EC/CTO awaited
7	Mazgaon Tabra	14.48	9	Boulder, Gravel, Sand	No	675300 MT	Not Working/EC/CTO awaited
8	Charnia	30.55	10	Boulder, Gravel, Sand	No	-	Not Working/EC/CTO awaited
9	Rattewali	45.00	7	Boulder, Gravel, Sand	No	-	Not Working/EC/CTO awaited
10	Karanpur	17.05	9	Boulder, Gravel, Sand	No	360000 MT	Not Working/EC/CTO awaited
11	Kot	31.59	10	Boulder, Gravel, Sand	No	-	Not Working/EC/CTO awaited
12	Shantou-2	45.00	10	Boulder, Gravel, Sand	No	-	Not Working/EC/CTO awaited
13	Narwal	48.18	9	Boulder, Gravel, Sand	No	-	Not Working/EC/CTO awaited
14	Shantou-1	46.50	9	Boulder, Gravel, Sand	No	-	Not Working/EC/CTO awaited
15	Busawal Block	20.00	9	Boulder, Gravel, Sand	No	-	Not Working/EC/CTO awaited
16	Sukhdarsapur	37.38	7	Boulder, Gravel, Sand	No	-	Not Working/EC/CTO awaited
17	Khatauli Block	24.15	9	Boulder, Gravel, Sand	No	-	Not Working/EC/CTO awaited
18	Nagpal Block	27.99	10	Boulder, Gravel, Sand	No	-	Not Working/EC/CTO awaited

9.3 The annual capacities of above mines have been ascertained on the basis of area available for mining and production plans suggested by the mineral concession holders under their Mining Plan/ Application for seeking Environment clearance. In case of the areas not granted till now, the average reserves had been taken into account. Further, the annual capacity of river bed areas is calculated on the basis of assumption that the quantity lifted during any year would get replenished after every rainy season.

9.4 That as explained in for forging parts the demand of mineral is most crucial factor in deciding the actual production of any mine or area. The total demand of mineral in the areas can be estimated on the basis of past production of minor minerals. During last 10 years the production of minor minerals excavated are tabulated as below: -

Year	Rounder/Gravel/Bajri/Sand
2008-2009	
2009-2010	
2010-2011	NIL
2011-2012	NIL
2012-2013	NIL
2013-2014	NIL
2014-2015	NIL
2015-2016	NIL
2016-2017	680956
2017-2018	1241280
<b>Total</b>	<b>1924236</b>
<b>Average Per yr.</b>	<b>192423</b>

#### **10. DETAILS OF ROYALTY/REVENUE RECEIVED IN LAST THREE YEARS**

Sr.	Year	Revenue (In Rs)
1	2014-15	NIL (Mining Closed)
2	2015-16	17460552
3	2016-17	63871306

#### **11. DETAILS OF PRODUCTION OF MINOR MINERAL OF LAST THREE YEARS**

Sr.	Year	Production (In MT)
1	2014-15	NIL (Mining Closed)
2	2015-16	NIL (Mining Closed)
3	2016-17	680956

## 12. PROCESS OF DEPOSITION OF SEDIMENTS IN THE RIVER OF DISTRICT

The deposition in a river bed is more pronounced during rainy season although the quantum of deposition varies from stream to stream depending upon numbers of factors such as catchment, lithology, discharge, river profile and Geomorphology of the river course. It has been observed that during rainy season all of the pits created due to excavation of minerals are completely filled up and as such the excavated area is replenished with new harvest of minerals.

In order to calculate the mineral deposits in the stream beds, the mineral constituents have been categorized as Clay, Silt, Sand, Gravel and Boulder. However during present calculation, the waste material i.e. silt, clay which vary from 10 to 20% in different streams have been included in the total production. The mineral reserves have been included only up to 1.00-meter depth although there are some portions in the river beds such as channel bars, point bars and central islands where the annual deposition is raising the level of river bed thus causing shifting of the rivers towards banks resulting in to cutting of banks and at such locations, removal of this material up to the bed level is essential to control the river flow in its central part to check the bank cutting. While calculating the mineral potentials, the mineral deposits lying in the sub-tributaries of that particular stream/river has not been taken into consideration. Since these mineral deposits are adding annually in the main river, the mineral deposits will be much more.

The important rivers/streams of the district are Ghaggar, Tangri, Sirsa. All this river rainy seasonal river and takes its birth in the rolling foot hill plains. Generally, the slope of the district is from north-east to south-west, in which direction of most of rivers/streams/rainfed torrents flow down.

## 13. GENERAL PROFILE OF THE DISTRICT

Country	India
State	Haryana
Headquarters	Panchkula
Sub Divisions	Panchkula, Kalka
Tehsils	Panchkula, Kalka, Raipur Rani
Sub Tehsils	Barwala, Mohi Hills, Raipur Rani

Area	898 km <sup>2</sup> (347 sq mi)
<b>Population (2011)</b>	
Total	5,58,890
Density	620/km <sup>2</sup> (.600/sq mi)
<b>Demographics</b>	
Sex ratio	823
Website	Official website (panchkula.gov.in)

#### 14. LAND UTILIZATION PATTERN IN THE DISTRICT

In District Panchkula, most of the areas are utilized for Agriculture and Horticulture, some area is used for Mining and rest of land is forest.

#### 15. PHYSIOGRAPHY OF DISTRICT

The district is divided into four Physiographic units -

- Siwaliks
- Dissected Rolling Plains
- Interfluvial Plains
- Active and Recent Flood Plains
- Relief Plains

**Siwaliks hills** – Siwalik hill ranges occupy the northern fringe of Panchkula 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.

**Interfluvial plains** – This tract is part of higher ground between Chaggar and Tangri, Sarsa, Kosaiya, Hegna and includes high mounds and valleys. In general, the slope is from northeast to southwest.

**16. Rainfall data: - Year Wise**

Total Yearly rainfall data for last 10 years from IMD New Delhi.

Sr. No.	Year	Total Rainfall in mm
1	2004	652
2	2005	827
3	2006	831.2
4	2007	866
5	2008	957
6	2009	397.5
7	2010	707.4
8	2011	623.5
9	2012	662.1
10	2013	709.6
	<b>Total</b>	<b>7233.2</b>

Last five year Monthly Rainfall Data (Source: IMD New Delhi)

Month	YEAR (Rainfall mm)				
	2012	2013	2014	2015	2016
JAN	13	37.5	37.5	40.3	0.3
FEB	0.7	70	40.5	27	2.6
MAR	0	8.4	39.7	134.6	21
APR	22.3	0	10	14.2	5.2
MAY	0.2	4.3	21.2	4.8	23.8
JUN	3.8	109.1	18	31.7	62.5
JUL	191.2	155.2	124.5	171.6	137.5
AUG	240	223.4	110.7	161.9	165.6
SEPT	188.9	71.9	65.8	56.9	37.8
OCT	1	20.5	9.8	4.5	2.3
NOV	0	4.5	0	0.7	0
DEC	1	4.8	60	3	37.6
<b>Total Rainfall</b>	<b>662.1</b>	<b>709.6</b>	<b>537.7</b>	<b>651.2</b>	<b>476.2</b>

**17. GEOLOGY AND MINERAL WEALTH**

The north-eastern and central part of Haryana is predominantly characterized by sedimentary lithology in the sub-Himalayan zone comprising Subathus, Dughais,

Kasaulis and Siwaliks: A general Regional Stratigraphic sequence in the area is given in the table

Table: 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		Upper Siwalik	Boulder Conglomerates formation	Conglomerate, sand stone, silt Clay
Upper Pliocene			Pinjore Formation	Coarse gr. red sand stone and clay, conglomerate
			Tarai formation	Frable Sand Stone and variegated clay
	Middle Siwalik		Dhekpathar Formation	Brown Sandstone and variegated clay
			Nagri Formation	Hard grey sand Stone and minor shale
	Lower Siwalik		Nahan Formation	Coarse gritty, clay and red sandstone often calcareous, brownish shale with lignite lenses greenish white quartzite
Lower Miocene	Sirmur		Kasauli Formation	Grey and stone, green shale and grey clay
			Dagai Formation	Purple sand green sand stone, deep red gritty, clay, white sand stone with ferruginous concretions
Upper Eocene			Sibathu Formation	Sandstone with grit clay, Impure fossiliferous limestone calcareous slate, greenish shale and dark brown quartzite
Pre-Preterozoic			Tunda pathar	Tickly bedded, stromatolite limestone with carboniferous shale and quartzite

1149914/2021/Estt.BR. **District Wise detail of river/stream and other Sand Sources:**

S. No.	Name of River	Origin	End in C.G.	Width	Length in Ynr Distt. (km)	Remarks
1	Ghaggar River	Origin in Haryana Kalesar	Toda	100 M	15Km	

**19. List of villages where minor minerals (Gravel, Boulder and Sand) are available.**

As per above in the para no. 9.2

**20. Reclamation and Restoration of mining area and provision of Fund for the same**

20.1 As explained in foregoing paras mining in river bed areas takes place only up to a maximum depth of 3 meter from existing river bed level, that too in central 34<sup>th</sup> of the river bed. The material brought by the river due to fluvial action fills the void created in the process of excavation. In this way the area operated/ used for excavation of mineral from rivers gets reclaimed after every rainy season. Further, in the river bed areas there are no flora and fauna. Accordingly, as such river bed mining does not create any ecological impact. The excavation of minerals from central part of the river in fact provides void/space for settlement of sediments without raising the river bed level.

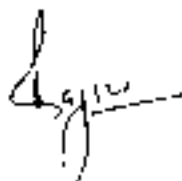
20.2 As it is well known that rising of bed level results in river meandering (change of course) and in the present day the change of course of any river results in floods and damages. Though sometimes areas in and adjoining river banks are affected because of unforeseen circumstances/water streams due to heavy rains.

20.3 Further, the area outside river bed requires levelling, reclamation and restoration after mining. The land owners take compensation from the mining contractors in lieu of surface rights. The areas after mining are levelled by the contractors or land owners (depending upon mutual settlement between the contractor and land owners) to make the land reusable for cultivation. In

*Signature*

order to ensure that areas after mining in case needs reclamation/restoration are properly dealt/restored

- 20.4 The State Rules, 2012 appropriately provide provisions of R&R Fund namely "**Mines and Mineral Development, Restoration and Rehabilitation Fund**". The mineral concession holders are liable to deposit an amount equal to 10% of the dead rent or royalty or contract money paid to the state for Restoration and Rehabilitation works. Further, the state also contributes 5% of the amount received by it on account of the dead rent or royalty or contract money in a financial year to the Fund. The Fund has been created only for funding of the restoration or reclamation or rehabilitation works in the sites affected by mining operations. The Fund can be used for creating common facilities for the benefit of community in and around areas where mining activities are undertaken, development of infrastructure facilities for orderly growth of the mining operations and allied activities and other related works/schemes.
- 20.5 In compliance with amendment in the Mines and Minerals (Development & Regulation) Act, 1957, vide which Section 9B has been inserted making it mandatory to form District Mineral Foundation (DMF) in each district, the State has recently (19.12.2017) notified Haryana District Mineral Foundation Rules-2017. The Foundations shall work for welfare and benefit of persons and areas affected due to mining operations. 1/3<sup>rd</sup> of the amount collected in "**Mines and Mineral Development, Restoration and Rehabilitation Fund**" shall be transferred in the DMF Fund. The projects to be carried out under **Pradhan Mantri Khanij Kshetra Kalyan Yojna** shall be implemented by the District Mineral Foundations.
- 20.6 The areas operated in past in the district Panchkula were restored (river bed filled up with sediments brought by fluvial action and areas outside river bed levelled by land owners for cultivation). However, some of the areas used for mining in land falling outside river bed were not put in use by private land owners after mining for the reasons known to them. The private land owners could not have been insisted for undertaking cultivation, in case they don't choose for the same



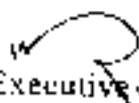


**21. Conclusion:**

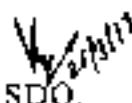
In district Panchkula a total of 449.04-hectare area has been identified for mining of minor minerals under 18 mineral concessions (at para 9.2), though number of mineral concessions may change depending upon policy of the state from time to time. Further, use of mineral deposits and exploration/excavation in respect of minerals is an ongoing activity, therefore, as per requirement the area used for mining of minor minerals may have to be revised from time to time.



Forest Officer,  
Forest Deptt. Panchkula



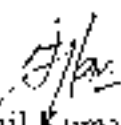
Executive Engineer,  
Water Service Division,  
Panchkula



SDO,  
HSPCB, Panchkula  
(Ref. of R.O. PKL)



(Rajiv Kumar)  
Mining Officer, PKL



(Anil Kumar)  
Mining Inspector, Pkl



SDE  
PWD (B&R), Panchkula



(Mukul Kumar), HCS  
Deputy Commissioner,  
Panchkula

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-I: Block/PKL B-11  
located at Village- Shantoo, District - Panchkula, Haryana (Leave area: 46.50 Ha.)  
Chapter- XI: Disclosure of Consultants*

Consultant Contact Details:

P and M Solution

Address -C-88, Sector 65 Noida

Mobile no. - 18377871554, 8826287364

S.No	Name	EC/EAE	DETAILS
1	Pravin Kumar Sinha	EC	EC
2	Pravin Kumar Sinha	EAE	GEO
3	Tapon Majumdar	EAE	HG
4	Sulbhashi Kuma	EAE	SC
5	Manoj Kumar Pandey	EAE	LB
6	Vikas Chand Tripathi	EAE	KH, AP
7	Neha Singh	EAE	NV, AO
8	Abhay Nath Mishra	EAE	SE
9	Hussain Ziauddin	EAE	WP
10	Poojan Kumari Mangalam	EAE	LU

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**EXECUTIVE SUMMARY  
OF  
ENVIRONMENTAL IMPACT ASSESSMENT**

For

**RBM of Gravel and Sand at Shamtoo-1: Block/PKL B-11**

Khasra no / Killa No. - 55 min, 141 Min, 142, 143

Village- Shamtoo, District – Panchkula, Haryana

Area – 46.50 Ha

Proposed capacity: - 4,00,000 TPA

**Applicant**

**M/s Starex Minerals,  
Add: J.S Height, Block A,  
Opp. Shivansh Mahindra Service Centre,  
Dhamdha Road, Khapri, Dist. Durg**



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Prepared By  
CONSULTANT

P&M Solution  
C-88, Sector 65, Noida - 201301 U.P  
A QCI NABET Accredited Organization  
MOB-8826287364, 9555848342



**NABET**

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1; Block/PKI. B-11 located at Village- Shamtoo, District - Panchkula, Haryana (Lease area: 46.50 Ha.)*

*Executive Summary*

## EXECUTIVE SUMMARY

### INTRODUCTION

The proponent has applied for mining lease in the name of Shamtoo - I Block Gravel and Sand mining Project over an area of 46.50 Hectare at Village- Shamtoo, District: Panchkula, Haryana is a minor mineral project for exploitation of river sand. The average production is proposed to be 4,00,000 TPA is the total production during the plan period. Copy of letter is enclosed as Annexure No. 11. As per the MoEF, New Delhi Gazette dated 14th September 2006 amended in December 2009 and April 2011, the proposed mining project is categorized as category 'B1'.

### PROJECT DESCRIPTION

#### LOCATION

The mine lease area is located in Village- Shamtoo, District: Panchkula, Haryana, is on (Khasra no/ Killa No.- 55 Min. 141 Min. 142, 143) of Dangri river covered in the Survey of India Topo H43K14 & H43L2 and is bounded between the Latitude - 30°37'42.00" N to 30°38'33.00" N and Longitude - 76°59'12.60" E to 76°59'34.3" E.

**Area & production:** The total ML area is 46.50 Ha Proposed rate of production will be 4 Lakh TPA.

#### **Connectivity:**

**Nearest Railway Station:** Ghaghar Railway Station is approx. 15.64 km towards SW direction.

**Nearest Airport:** Chandigarh Airport is approx. 19.43 km towards W direction.

**Nearest Highway:** NH-73 is approx. 4.51 km in SW direction.

**Interstate Boundary:** Haryana and Punjab Interstate boundary is 8Km SW Direction.

**Ecological Sensitive Areas (National Park, Wild Life Sanctuary, Biosphere Reserve, Reserve Protected Forest etc.) within 10 km distance:** List of Wild life sanctuary Reserve Protected Forest is given below:

1. Kholi Raita Wild Life sanctuary is 2.41 Km. NW Direction.
2. Dharti Protected Forest is 3.5 Km. NE Direction.
3. Palasani Protected Forest is 7 Km. NE Direction.

<i>DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtoo-1; Block/PKL B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)</i>	<i>Executive Summary</i>
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4. Panta Protected Forest is 7.2 Km, NNE Direction
5. Kadana Protected Forest is 8.5 Km, E Direction
6. Rajpura Protected Forest is 9.5 Km, E Direction.

#### **Salient Features of Project**

Name of the applicant	M/S Stares Minerals
Address of Lessee	Add: JS Height, Block A, Opp. Shivash Mahindra Service Centre, Dhamcha Road, Khapri, Dist. Durg.
Name of Mine	Reverbed Sand Mining
Village	Shamtoo
District & State	Panchkula, Haryana
Mineral	Minor mineral (Sand)
Area (ha)	46.50 Ha.

#### **MINING**

Sand will be excavated from Shamtoo-1; Block/PKL B-11 Sand Quarry which lies on river bed of Dargri river. The river sand deposits are derived from hard rock due to weathering, erosion and long-term transportation. Size of the sand grain is small and shape is mostly rounded because of long transportation from the source. These deposits are renewable unlike other mineral deposits. It is mostly difficult to assess the deposit of a specific stretch with certainty every year as sand gets deposited in various patches along the river course. Unlike other mineral resources sand is formed and gets deposited through physical action. However, the assessment has been made based on prevailing surface conditions. Based on the surface exposures, the updated geological reserves as well as mineable reserve have been estimated in the entire lease area. Existing B level of river varies from 338.50 to 336.65 msl. Working bottom level of river varies from 335.50 to 332.65 msl.

<p><i>DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantoo-I: Block/PKL B-11 located at Village- Shantoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)</i></p>	<p><i>Executive Summary</i></p>
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### RESERVE AND PRODUCTION

#### Geological reserves:

Lease area in Ha.	Total geological reserve MT= Area * depth * BD (A)	Proved reserve	Blocked area of 50m strip after each km, 25% blocked in river banks, lease boundary etc = ha.	Blocked reserve MT	Geological reserve MT
46.50	25,38,900		12.25	6,68,850	

#### Mineable reserves:-

Mineable Reserves						
Lease area in Ha.	Total geological reserve MT= Area * depth * BD (A)	Proved reserve	Blocked area of 50m strip after each km, 25% blocked in river banks, lease boundary etc = ha.	Blocked Geological reserve MT	Total Mineable Reserve in Blocked area MT	Mineable Reserve (Per Year)
46.50	25,38,900		12.25	6,68,850	18,70,050	4,00,000

#### Year wise Production detail

Year	Production (Tonnes)
1 <sup>st</sup> Year	4,00,000
2 <sup>nd</sup> Year	4,00,000
3 <sup>rd</sup> Year	4,00,000
4 <sup>th</sup> Year	4,00,000
5 <sup>th</sup> Year	4,00,000
<b>Total</b>	<b>20,00,000</b>

### SITE FACILITIES AND UTILITIES

#### Water Supply

<p><i>DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtao-1: Block/PKL B-11 located at Village- Shamtao, District - Panchkula, Haryana (Lease area. 46.50 Ha.)</i></p>	<p><i>Executive Summary</i></p>
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In the river bed mining projects there is as such no need of water to carry out operations, except for dust suppression & drinking. The number of working people is 1450 the water requirement for workers for drinking purpose will be around 0.69 KLD & the total water requirement will be around 6.61 - 6.60 KLD. This water will be supplied from the nearby area.

#### Temporary Rest Shelter

A temporary rest shelter will be provided for the workers near to the site for rest. In addition, first aid box along with anti-venoms to counteract poison produced by certain species of small insects, if any and sanitation facility i.e. septic tank or community toilet facility will be provided for the workers.

#### BASILINE ENVIRONMENTAL STATUS

Environmental data has been collected in relation to proposed mining for Air, Noise, Water, Soil, Flora & Fauna. The baseline environment study was carried out over an area with radii distance of 10 km around the mining lease area during post monsoon season from October 2020 to December 2020.

Baseline Environmental Status	
Attribute	Baseline status
Ambient Air Quality	<p><b>Observations:</b></p> <p>Ambient Air Quality Monitoring reveals that the minimum &amp; maximum concentrations of PM10 for all the 7 AQ monitoring stations were found to be 59.75<math>\mu\text{g}/\text{m}^3</math> at AQ2 and 86.81<math>\mu\text{g}/\text{m}^3</math> at AQ4, respectively.</p> <p>Minimum &amp; maximum concentrations of PM2.5 for all the 7 AQ monitoring stations were found to be 27.73<math>\mu\text{g}/\text{m}^3</math> at AQ2 and 46.08<math>\mu\text{g}/\text{m}^3</math> at AQ1, respectively.</p> <p>As far as the gaseous pollutants SO<sub>2</sub> and NO<sub>x</sub> are concerned, the prescribed CPCB limit of 80<math>\mu\text{g}/\text{m}^3</math> for residential and rural areas has never surpassed at any station. The maximum &amp; minimum concentrations of SO<sub>2</sub> were found to be 6.13<math>\mu\text{g}/\text{m}^3</math> at AQ5 &amp; 16.08<math>\mu\text{g}/\text{m}^3</math> at AQ7, respectively. The maximum &amp; minimum</p>

<p><i>DEIA report of RBN of Minor Mineral (Gravel and Sand) at Shamtoo-1: Block/PKL B-11 located at Village- Shamtoo, District – Panchkula, Haryana (Lease area: 46.50 Ha.)</i></p>	<p><i>Executive Summary</i></p>
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<p><b>Noise Levels</b></p>	<p>concentrations of <math>\text{NO}_x</math> were found to be <math>9.33\mu\text{g}/\text{m}^3</math> at AQ5 &amp; <math>23.87\mu\text{g}/\text{m}^3</math> at AQ7, respectively.</p>
<p><b>Water Quality</b></p>	<p>Noise monitoring was carried out at seven locations. The results of the monitoring program indicated that both the daytime and night time levels of noise were well within the prescribed limits of NAAQS, at all the four locations monitored.</p>
<p><b>Water Quality</b></p>	<p>6 Groundwater samples and 1 surface water samples were analyzed and concluded that: The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by Indian Standards IS. 10500</p>
<p><b>Water Quality</b></p>	<p>From the Surface water analysis it is evident that most of the parameters of the samples comply with 'Category 'C'' standards of CPCB indicating their suitability for Drinking water source after conventional treatment and disinfection.</p>
<p><b>Soil Quality</b></p>	<p>Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.25 to 8.02, which shows that the soil is alkaline in nature.</p>
<p><b>Ecology and Biodiversity</b></p>	<p>There are no Ecologically Sensitive Areas present in the study area, but many reserved forests regions surround the project area</p>
<p><b>Socio-economy</b></p>	<p>The implementation of the Shamtoo-1, Block/PKL B-11 sand mining project on river Dangri in Panchkula district will throw opportunities to local people for both direct and indirect employment. The study area is still lacking in education, health, housing, water, electricity etc. It is expected that same will improve to a great extent due to proposed mining project and associated industrial and business activities.</p>

### **ANTICIPATED ENVIRONMENTAL IMPACTS**

#### **Impact on Air Environment**

The proposed mining activities loading and movement of other transport vehicles used in mining will generate dust (SPM/RSPM). Proper water sprinkling shall be carried out at the mine site.



**DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamtao-1; Block/PKL B-11 located at Village- Shamtao, District – Panchkula, Haryana (Lease area: 46.50 Ha.)**

Executive Summary

The mineral will be transported by road through covered tarpaulin trucks/tippers to reduce the fugitive emission caused by the wind.

#### **Impact on Water Environment**

Mining of sand from within or near river has an indirect impact on the physico-chemical habitat characteristics during monsoon season. These characteristics include in stream roughness, elements, depth, velocity, turbidity, sediment transport and stream discharge.

The detrimental effects, if any, to biota resulting from bed material mining are caused by following:

- Alteration of flow patterns resulting from modification of the river
- An excess of suspended sediment during monsoon season.

Project activity will be carried out only in the dry part of the Dangri River. Hence, none of the project activities affect the water environment directly. In the project, it is not proposed to divert or truncate any stream in monsoon season only. No proposal is envisaged for pumping of water either from the River (in monsoon) or tapping the ground water.

#### **Impact on Land Environment**

The proposed extraction of stream bed materials, mining below the existing streambed, and alteration of channel-bed form and shape may lead to several impacts such as erosion of channel bed and banks, increase in channel slope, and change in channel morphology if the operations are not carried out systematically.

The systematic and scientific removal of sand will not cause bed degradation. The silt and clay generated as waste will be used for plantation or filling up low lying area elsewhere. The mining is planned in non monsoon seasons only, so that the excavated area gets replenished gradually during the monsoons each year.

#### **Impact on Noise Environment**

The proposed mining activity is semi-mechanized in nature. No drilling & blasting is envisaged for the mining activity. Hence, the only impact is anticipated is due to movement of vehicles

*DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shamloo-I: (Lease Number: Block/P&L B-11 located at Village - Shamloo, District - Panchkula, Haryana (Lease area: 46.50 Ha.)*

deployed for transportation of minerals. The vehicles will be maintained in good running condition so that noise will be reduced to minimum possible level.

#### **Impact on Biological Environment**

As the proposed mining will be carried out in a scientific manner, not much significant impact is anticipated. No mining will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many of the species. The mining site has no vegetation, no clearance of vegetation will be done. Haul roads will be sprinkled with water which would reduce the dust emission, thus avoiding damage to the crops.

#### **Impact on Socio Economic Environment**

The impact of mining activity in the area is positive on the socio-economic environment of the region. Sand mining will be providing employment to local people whenever there is requirement of manpower.

#### **POST PROJECT ENVIRONMENTAL MONITORING**

S.No.	Description of Parameters	Schedule of Monitoring
1	Air Quality	24 hourly samples twice a week in each season except monsoon
2	Water Quality (Surface & Groundwater)	Once a season for 4 seasons in a year
3	Soil Quality	Once in a year in project area
4	Noise Level	Twice a year for first two years & then once a year
5	Socio-economic Condition	Once in 3 years
6	Plantation Monitoring	Once in a season

#### **ADDITIONAL STUDIES**

##### **Public Hearing**

Public hearing is yet to be conducted

<i>DFIA report of RRM of Minor Minerals (Gravel and Sand) at Shamtao-I; Block/PKI. B-II located at Village- Shamtao, District – Panchkula, Haryana (Lease area: 46.50 Ha.)</i>	<i>Executive Summary</i>
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### **Risk Assessment**

The complete mining operation will be carried out under the management control and direction of a qualified mine manager holding. The DGMS have been regularly issuing standing orders, model standing orders and circulars to be followed by the mine management in case of disaster, if any. Moreover, mining staff will be sent to refresher courses from time to time to keep them alert.

### **Disaster Management Plan**

Emergency preparedness is an important aspect in the planning of Disaster Management. Personnel would be trained suitably and prepared mentally and physically in emergency response through carefully planned, simulated procedures. Similarly, the key personnel and essential personnel shall be trained in the operations.

### **PROJECT BENEFITS**

**Physical Benefits:** Road Transport, Market, Enhancement of green cover & Creation of community assets.

**Social Benefits:** Increase in Employment Potential, Contribution to the Exchequer, Increased Health related activities, Educational attainments & Strengthening of existing community facilities.

### **Environmental Benefits:**

- Controlling river channel and protection of banks.
- Reducing submergence of adjoining agricultural lands due to flooding.
- Reducing aggradation of river level.
- A check on illegal mining activity

### **CORPORATE SOCIAL RESPONSIBILITY**

2% of capital cost of the project cost will be allotted for the Corporate Environmental Responsibility as per OM dated 1st May 2018. The following has been proposed considering the needs & demand of the people. CER is 12.18 Lakhs/- .

<i>DEIA report of RBM of Minor Mineral (Gravel and Sand) at Shantou-1, Block/PKL B-11 located at Village- Shantou, District – Panchkula, Haryana (Lease area: 46.56 Ha.)</i>	<i>Executive Summary</i>
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Sl. No.	Activity	Capital Cost (in Lakh)
1	Health check-up camp will be organized for the local community in the Gram Panchayat	4.0
2	Drinking water facility in nearby village	3.0
3	Distribution of mask and sanitizer to the people of Shantou village.	1.18
4	Skill development program camps like computer learning, sewing etc. in Shantou village.	4.0
<b>TOTAL (in life time)</b>		<b>12.18 lakhs.</b>

#### **ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

- Extraction will be done from the bed leaving safety zone from bank.
- The maximum working depth will remain above ground water table of the area
- Provide health facilities to the workers & surrounding people in the impact area to reduce the health impacts.
- Ensuring wildlife protection & arranging awareness campaigns for the same.
- Minimize activities that release fine sediment to the river.
- Effective mitigation measures will be adopted to minimize disturbance during transportation & handling of minerals
- Establishment of reclamation program with plantation of local/native & fast growing species
- Establishment of restoration plan during the closure of mine at the onset of monsoon season.
- Establishment of effective Disaster Management Plan to take timely precautionary measures to avoid effects of impending disasters.
- Establishment of effective Monitoring Program monitored by Environment Management Cell.

*EIA report of RBM of Minor Mineral (Gravel and Sand) at Shamton-I, Block/PKL B-11 located at Village- Shamton, District – Panchkula, Haryana (Lease area: 46.50 Ha.)* *Executive Summary*

### **BUDGET ALLOCATION FOR EMP IMPLEMENTATION**

#### **Environment Management Budget**

Sl. No.	Measures	Capital Cost (In Rs.)	Recurring Cost (In Rs.)
1.	Pollution Control Dust Suppression/Water Sprinkling	--	1,00,000
2	Pollution Monitoring i) Air pollution ii) Water pollution iii) Soil Pollution iv) Noise Pollution	--	50,000 40,000 10,000 10,000
3	Green belt development	2,50,000	1,00,000
4.	Maintenance of haul road	1,40,000	1,20,000
	<b>Total</b>	<b>3,90,000</b>	<b>4,30,000</b>

### **CONCLUSION**

Based on the EIA study it is observed that there will be an increase in the dust pollution, which will be controlled by sprinkling of water and plantation. There will be an insignificant impact on ambient environment and ecology due to the mining activities moreover the mining operation will lead to direct and indirect employment generation in the area. Green belt development around the area will also be taken up as an effective pollution mitigative technique, as well as to control the pollutants released from the premises of the Mine. Monitoring program will be followed till the mining operations continue. Hence, it can be summarized that the development of the mine will have a positive impact on the socio-economic environment of the area and lead to sustainable development of the region.

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# कार्यकारी सारांश

नदी तल (बजरी और रेत) खनन परियोजना  
शामटू-1: पंचकुला बी-11

खसरा नंबर/किल्ला नंबर - 55 min, 141 Min, 142, 143

ग्राम- शामटू, जिला- पंचकुला,  
राज्य- हरियाणा

क्षेत्रफल- 46.50 हेक्टेयर, उत्पादन 4,00,000  
टन प्रति वर्ष

## आवदेन कर्ता

### मेसर्स स्टारेक्स मिनरल्स

पता- जे एस हाइट, ब्लॉक ए,  
शिवांश महिंद्रा सर्विस सेंटर के सामने,  
धम्धा रोड, खपरी, जिला- दुर्ग

## एनवायरनमेंट कन्सल्टेंट :

### पी & एम सल्यूशन

(क्वालिटी कौंसिल ऑफ इंडिया द्वारा मान्यता प्राप्त)

सी-88 सेक्टर 65 नॉएडा उत्तर-प्रदेश

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## कार्यकारी सारांश

यह परियोजना 46.50 हेक्टेयर खदानों के क्षेत्र में नदी तल (बजरी और रेत) का खनन करने के लिए प्रस्तावित है। खनन स्थल ब्लॉक नं शामटू 1: पंचकुला बी-11, ग्राम- शामटू, जिला- पंचकुला, राज्य- हरियाणा में स्थित हैं। योजना अवधि के दौरान कुल औसत उत्पादन 4,00,000 टीपीए होने का प्रस्ताव है, एमओईएफ और रीसी के अनुसार, नई दिल्ली राजपत्र दिनांक 14 सितंबर 2006 और उसके बाद के संशोधन, प्रस्तावित खनन परियोजना को श्रेणी 'बी 1' के रूप में वर्गीकृत किया गया है।

### आवेदक का विवरण:-

क्रमांक	आवेदक का विवरण	ब्लॉक
1	मेसर्स स्टारेक्स मिनरल्स पता- जे एस हाइट, ब्लॉक ए, शिवांश महिंद्रा सर्विस सेंटर के सामने, धम्धा रोड, खपरी, जिला- दुर्ग	शामटू-1: पंचकुला बी-11

उपरोक्त पट्टे पर TOR को JKEIAA द्वारा जारी किया गया है।

S.no	Block No	Vide Letter No	TOR date
1	शामटू-1 पंचकुला बी-11	J-11015/35/2018-LA, II (M)	17-12-2018

प्रस्तावित परियोजना के लिए अनुमानित परियोजना लागत नीचे दी गई है:

ब्लॉक	परियोजना की लागत	ईमपी की लागत	सीएसआर की लागत
शामटू-1 पंचकुला बी-11	6.09 करोड़ रु.	पूजी की लागत : 3.90 लाख आवर्ती लागत : 4.30 लाख	12.18 लाख

**परियोजना का विवरण**

नदी तल (बजरी और रेत) खनन परियोजना , शामटू-1: पंचकुला ब्लॉक -11 खसरा नंबर/  
किल्ला नंबर - 55 min, 141 Min, 142, 143 ग्राम- शामटू जिला- पंचकुला, राज्य- हरियाणा

**स्थान**

यह परियोजना नदी तल (बजरी और रेत) खनन परियोजना , शामटू-1: पंचकुला ब्लॉक -  
11 खसरा नंबर/ किल्ला नंबर - 55 min, 141 Min, 142, 143 ग्राम शामटू जिला- पंचकुला,  
राज्य- हरियाणा पट्टे के निर्देशांक और अन्य विवरण नीचे सूचीबद्ध हैं।

**साइट निर्देशांक:**

शामटू-1: पंचकुला बी-11	अक्षांश	30°37'42.00" N	30°38'33.00" N
	देशांतर	76°59'12.00" E	76°59'31.3" E

**संपर्क:**

**निकटतम रेलवे स्टेशन:** छापर रेलवे स्टेशन, दक्षिण दिशा की ओर लगभग 13.64 किमी की दूरी पर है।

**निकटतम हवाई अड्डा:** चंडीगढ़ हवाई अड्डा , पश्चिम दिशा की ओर लगभग 19.43 किमी की दूरी पर है।

**निकटतम राजमार्ग:** NH-73 , दक्षिण पश्चिम दिशा की ओर लगभग 4.51 किमी की दूरी पर है।

**अंतरराज्यीय सीमा:-** हरियाणा और पंजाब अंतरराज्यीय सीमा दक्षिण पश्चिम दिशा में 8 किमी है।



**पारिस्थितिक संवेदनशील क्षेत्र :-** (राष्ट्रीय उद्यान, वन्य जीवन अभयारण्य, वाथोस्फीयर रिजर्व, रिजर्व / संरक्षित वन आदि) 10 किमी की दूरी के भीतर: वन्य जीवन अभयारण्य रिजर्व / संरक्षित वन की सूची नीचे दी गई है:

1. खोल ली रैतन वन्य जीवन अभयारण्य 2.41 किमी, उत्तर दिशा में है।
2. धरती संरक्षित वन 8.5 किमी, उत्तर पूर्व दिशा में है।
3. पत्तासरा संरक्षित वन 7 किमी, उत्तर पूर्व दिशा में है।
4. पांवटा संरक्षित वन 7.2 किमी, एनएनई दिशा में है।
5. कड़ाना संरक्षित वन 8.5 किमी, पूर्व दिशा में है।
6. राजपुरा संरक्षित वन आईडी 9.5 किमी, पूर्व दिशा में है।

### परियोजना की मुख्य विशेषता

खनन का नाम	नदी तल (बजरी और रेत) खनन परियोजना शामटू-1: पंचकुला बी-11
गांव	शामटू
तहसील	पंचकुला
जिला, राज्य	पंचकुला, राज्य- हरियाणा
खनिज	गाइजर
एरिया(हेक्टेयर)	46.50 हेक्टेयर

### खुदाई

शामटू-1 ब्लॉक/पीकेएल बी-11 रेत खदान से रेत उत्खनन किया जाएगा जो डांगरी नदी के तल पर स्थित है। नदी की रेत जमा अपक्षय, कटाव और लंबी अवधि के परिवहन के कारण कठोर चट्टान से प्राप्त होती है। रेत के दाने का आकार छोटा होता है और स्रोत से लंबे परिवहन के कारण आकार ज्यादातर गोल होता है। ये जमा अन्य खनिज जमाओं

के विपरीत नवीकरणीय हैं। हर साल निश्चित रूप से एक विशिष्ट खंड के जमा का आकलन करना मुश्किल होता है क्योंकि नदी के किनारे विभिन्न पैच में रेत जमा हो जाती है। अन्य खनिज संसाधनों के विपरीत रेत का निर्माण होता है और भौतिक क्रिया के माध्यम से जमा हो जाता है। हालांकि, मौजूदा सतह की स्थितियों के आधार पर आकलन किया गया है। सतही जोखिम के आधार पर, अद्यतन भूवैज्ञानिक भंडार के साथ-साथ खनन योग्य भंडार का अनुमान पूरे पट्टा क्षेत्र में लगाया गया है। नदी का मौजूदा बी स्तर 338.50 से 336.65 एमएसएल के बीच है। नदी का कार्य तल स्तर 335.50 से 336.65 एमएसएल तक भिन्न होता है।

### उत्पादन विस्तार

शामट्टू-1:	S. No	Category	Reserves
पंचकुला बी-	1	Proposed Production	4,00,000 TPA
11	2	Ultimate depth of Mining	1 m

ऊपर लिखितगणना के अनुसार संघय अनुमानतः 4,00,000 TPA है

### साइट सुविधाएं और सुविधाएं

#### जलपूर्ति

क्रम संख्या	आवश्यकतायें	मात्रा	स्रोत
शामट्टू 1:	भूमि	46.50 हेक्टेयर	यह एक नया खान है
पंचकुला बी-	पानी	6.61-6.60 KFD	आस पास के गाँव से
11	श्रमशक्ति	14	मुख्य रूप से आस पास के गाँवों से

#### अस्थाई रेस्ट शेल्डर

आराम के लिए साइट के पास श्रमिकों के लिए एक अस्थायी आराम आश्रय प्रदान किया जाएगा। इसके अलावा, आपातकालीन कर्मचारियों के लिए साइट पर प्राथमिक चिकित्सा बॉक्स उपलब्ध कराया जाएगा। श्रमिकों के लिए स्वच्छता सुविधा यानी सैप्टिक टैंक या सामुदायिक शौचालय की सुविधा प्रदान की जाएगी। श्रमिकों को मास्क और दस्ताने वितरित किए जाएंगे।

### बेसलाइन पर्यावरणीय स्थिति

वायु, शोर, जल, मिट्टी, वनस्पतियों और जीवों के लिए प्रस्तावित खनन के संबंध में पर्यावरणीय डेटा एकत्र किया गया है। बेसलाइन पर्यावरण अध्ययन अक्टूबर 2020 से दिसंबर, 2020 तक सर्दियों के मौसम के दौरान खनन पट्टा क्षेत्र के आसपास 10 किमी की रेडियल दूरी वाले क्षेत्र में किया गया था।

### बेसलाइन पर्यावरणीय स्थिति

Attribute	Baseline status
वायु गुणवत्ता को निगरानी	<p>परिवेशी वायु गुणवत्ता निगरानी के 10 किमी के दायरे में 7 स्थानों पर की गई। यह बताता है कि PM10 के न्यूनतम संकेदन वाले मॉनिटरिंग स्टेशन में (AQ2) में 59.75 <math>\mu\text{g}/\text{m}^3</math> और में अधिकतम (AQ4) में 86.81 <math>\mu\text{g}/\text{m}^3</math> थे। PM2.5 के परिणाम से पता चलता है कि पर (AQ3) में 27.73 <math>\mu\text{g}/\text{m}^3</math> की न्यूनतम एकाग्रता जबकि में अधिकतम (AQ1) में 46.08 <math>\mu\text{g}/\text{m}^3</math> की एकाग्रता पाई गई थी।</p> <p>गैसीय प्रदूषक SO<sub>2</sub> और NO<sub>x</sub> 80 <math>\mu\text{g}/\text{m}^3</math> की निर्धारित CPCB सीमा के भीतर थे। सभी स्टेशनों पर अतासीय और ग्रामीण क्षेत्रों के लिए SO<sub>2</sub> की</p>

शोर का स्तर	<p>न्यूनतम और अधिकतम सांद्रता (AQI) में 6.13 <math>\mu\text{g} / \text{m}^3</math> और (AQI) में क्रमशः 16.08 <math>\mu\text{g} / \text{m}^3</math> पाई गई। <math>\text{NO}_x</math> को न्यूनतम और अधिकतम सांद्रता AQI में 9.33 <math>\mu\text{g} / \text{m}^3</math> और AQI में क्रमशः 23.87 <math>\mu\text{g} / \text{m}^3</math> पाई गई।</p> <p>शोर की निगरानी से पता चलता है कि दिन के समय में न्यूनतम और अधिकतम शोर स्तर <math>\text{NO}_3</math> में क्रमशः 10.15 dB (A) और <math>\text{NO}_1</math> में 61.11 dB (A) दर्ज किए गए थे। रात के समय में न्यूनतम और अधिकतम शोर स्तर <math>\text{NO}_3</math> पर क्रमशः 31.12 dB (A) और <math>\text{NO}_1</math> में 50.04 dB (A) पाया गया।</p>
पानी की गुणवत्ता	<p>6 भूजल नमूनों का विश्लेषण किया गया और निष्कर्ष निकाला गया कि सभी स्रोतों से भूजल पीने के प्रयोजनों के लिए उपयुक्त रहता है क्योंकि सभी घटक भारतीय मानक IS: 10500 द्वारा घटत पेय जल मानकों द्वारा निर्धारित सीमा के भीतर हैं।</p>
मिट्टी की गुणवत्ता	<p>पहचाने गए स्थानों से एकत्र किए गए नमूने संकेत करते हैं कि मिट्टी रेतीले प्रकार की है और पीएच मान 7.25 से 8.02 तक है, जिस से पता चलता है कि मिट्टी प्रकृति में क्षारीय है। पोटेशियम 234.20 <math>\text{mg} / \text{kg}</math> से 253.56 <math>\text{mg} / \text{kg}</math> तक पाया जाता है।</p>
पारिस्थिति की और नैवविधिधता	<p>(राष्ट्रीय उद्यान, वन्य जीवन अभयारण्य, बायोस्फीयर रिजर्व, रिजर्व / संरक्षित वन आदि) 10 किमी की दूरी के भीतर: वन्य जीवन अभयारण्य रिजर्व / संरक्षित वन की सूची नीचे दी गई है।</p> <ol style="list-style-type: none"> <li>1. खोल ली रैलन वन्य जीवन अभयारण्य 2.41 किमी, उत्तर दिशा में है।</li> <li>2. धरती संरक्षित वन 8.5 किमी, उत्तर पूर्व दिशा में है।</li> <li>3. पद्मासरा संरक्षित वन 7 किमी, उत्तर पूर्व दिशा में है।</li> </ol>

4. पांवटा संरक्षित वन 7.2 किमी, एनएनई दिशा में है।
5. कडाना संरक्षित वन 8.5 किमी. पूर्व दिशा में है।
6. राजपुरा संरक्षित वन आड़ंडी 9.5 किमी. पूर्व दिशा में है।

### संबंधित पर्यावरणीय विभाग

#### वायु पर्यावरण पर प्रभाव

खनन में प्रयुक्त अन्य परिवहन वाहनों की लोडिंग और आवाजाही की प्रस्तावित खनन गतिविधियाँ धूल (SPM / RSPM) उत्पन्न करेंगी। खदान स्थल पर उत्पित पानी का छिड़काव किया जाएगा। हवा के कारण होने वाले भयोडे उत्सर्जन को कम करने के लिए खनिज को ढके हुए तिरपाल टूकों / टिपरों के माध्यम से सड़क द्वारा ले जाया जाएगा।

#### जल पर्यावरण पर प्रभाव

मानसून के मौसम में नदी के भीतर या आस पास से रेत के खनन का भौतिक-रासायनिक निवास स्थान की विशेषताओं पर अप्रत्यक्ष प्रभाव पड़ता है। इन विशेषताओं में धारा खुरदरापन तत्व, गहराई, वेग, अशांति, तलछट परिवहन और धारा निर्वहन शामिल हैं। बड़े सामग्री खनन से उत्पन्न बायोटा के लिए हानिकारक प्रभाव, निम्नलिखित के कारण होते हैं:

- नदी के संशोधन के परिणामस्वरूप प्रवाह पैटर्न का परिवर्तन
- मानसून के मौसम में त्रिभुजित तलछट की अधिकता।

परियोजना गतिविधि डोंगरी नदी तल के सूखे हिस्से में ही की जाएगी। इसलिए, परियोजना की कोई भी गतिविधि जल पर्यावरण को सीधे प्रभावित नहीं करती है।

परियोजना में, मानसून के मौसम में किसी भी धारा को मोड़ना या काट देना प्रस्तावित नहीं है। नदी (मानसून में) से या तो भूजल के दोहन के लिए किसी भी प्रस्ताव की परिकल्पना नहीं की गई है।

### **भूमि पर्यावरण पर प्रभाव**

धारा बिस्तर सामग्री का प्रस्तावित निष्कर्षण, भोजूटा धारा के नीचे खनन और चैनल-बिस्तर के रूप और आकार में परिवर्तन से चैनल बिस्तर और बैंकों के क्षरण, चैनल ढलान में वृद्धि और चैनल आकारिकी में परिवर्तन जैसे कई प्रभाव हो सकते हैं, यदि संचालन व्यवस्थित रूप से नहीं किए जाते हैं।

रेत के व्यवस्थित और वैज्ञानिक हटाने से बिस्तर की गिरावट नहीं होगी। कचरे के रूप में उत्पन्न गाद और मिट्टी का उपयोग वृक्षारोपण के लिए किया जाएगा या अन्य स्थानों पर निचले स्तर को भरने के लिए किया जाएगा। खनन की योजना गैर मानसून के मौसम में ही बनाई जाती है, ताकि खुदाई का क्षेत्र प्रत्येक वर्ष मानसून के दौरान धीरे धीरे फिर से भर जाए।

### **शोर पर्यावरण पर प्रभाव**

प्रस्तावित खनन गतिविधि प्रकृति में ओपन कास्ट संगी मैकेनाइज्ड विधि तथा हस्तचालित विधि से भी किया जायेगा। खनन गतिविधि के लिए कोई ड्रिलिंग और ब्लास्टिंग की परिकल्पना नहीं की गई है। इसलिए, खनिजों के परिवहन के लिए तैनात वाहनों की आवाजाही के कारण एकमात्र प्रभाव अनुमानित है। वाहनों को अच्छी स्थिति में रखा जाएगा ताकि शोर कम से कम संभव स्तर तक हो सके।

### जैविक पर्यावरण पर प्रभाव

खनन जो चैनल सब्सट्रेट को हटाने की ओर जाता है, सुव्यवस्थित तलछट का पुनः निलंबन और धारा पर स्टॉकिंग, पारिस्थितिक प्रभाव होगा इन प्रभावों से स्ट्रीम रिजर्व निवास स्थान के प्रत्यक्ष नुकसान पर अरार पड़ सकता है, स्टीम जगा करने से जुड़ी प्रजातियों की गड़बड़ी, हल्की पैठ कम हो गई, प्राथमिक उत्पादन कम हो गया, और खिलाने के अवसर कम हो गए। रेत खनन अतिरेकत यात्रायात उत्पन्न करता है, जो पर्यावरण को नकारात्मक रूप से प्रभावित करता है।

### सामाजिक आर्थिक पर्यावरण पर प्रभाव

दोय में खनन गतिविधि का प्रभाव क्षेत्र के सामाजिक-आर्थिक वातावरण पर सकारात्मक है। जब भी जनशक्ति की आवश्यकता होती है रेत खनन स्थायी लोगो को रोजगार प्रदान करता है।

### परियोजना लाभ

- भौतिक लाभ: सड़क परिवहन, बाजार, हरित आवरण और सामुदायिक संपत्ति का सृजन।
- सामाजिक लाभ: रोजगार में वृद्धि, सरकारी खजाने में योगदान, स्वास्थ्य संबंधी गतिविधियों में वृद्धि, शैक्षिक उपलब्धि और मौजूदा सामुदायिक सुविधाओं को मजबूत करना।

पर्यावरणीय लाभ:

- नदी चैनल पर नियंत्रण और बैंको की सुरक्षा।
- बाढ़ के कारण आस-पास की कृषि भूमि का जलमग्न होना कम करना।
- नदी के स्तर में वृद्धि को कम करना।
- अवैध खनन गतिविधि पर एक जांच।

### कॉर्पोरेट की सामाजिक जिम्मेदारी

परियोजना लागत का एक प्रतिशत शिक्षा, सामाजिक कारणों, स्वास्थ्य देखभाल और पर्यावरण से संबंधित गतिविधियों के लिए कॉर्पोरेट सामाजिक जिम्मेदारी के लिए आवंटित किया जाएगा।

### कॉर्पोरेट पर्यावरणीय जिम्मेदारी (सीईआर) के लिए बजट

क्रमांक	क्रियाएँ	लाख / वर्ष में निधि (लाख में पूंजीगत लागत)
1	ग्राम पंचायत में स्थानीय समुदाय के लिए स्वास्थ्य जांच शिविर लगाना जायेगा	4.0
2	आस-पास के गांव में पेयजल की सुविधा	3.0
3	पंचायत के लोगों को ग्रामीणों को सैनिटाइजर, दस्ताने और मास्क का वितरण। - सैनिटाइजर, दस्ताने और मास्क।	1.18
4	शामटू गांव में कौशल विकास कार्यक्रम शिविर जैसे कन्स्यूटर लैनिंग, सिलाई आदि।	4.0
<b>कुल</b>		<b>12.18 लाख</b>

### पर्यावरण प्रबंधन योजना (ईएमपी)

- निकासी बैंक से सुरक्षा क्षेत्र छोड़ने वाले बिस्तर से की जाएगी।
- अधिकांश कार्य गहराई क्षेत्र के भूजल तालिका के ऊपर रहेगी।



- स्वास्थ्य प्रभाव कम करने के लिए प्रभाव क्षेत्र में श्रमिकों और आसपास के लोगों को स्वास्थ्य सुविधाएं प्रदान करें।
- वन्यजीव संरक्षण सुनिश्चित करना और उसी के लिए जागरूकता अभियान चलाना।
- नदी को ठीक तलछट छोड़ने वाली गतिविधियां कम करें।
- खनिजों के परिवहन और हैंडलिंग के दौरान गड़बड़ी को कम करने के लिए प्रभावी शमन उपायों को अपनाया जाएगा।
- स्थानीय / देशी और तेजी से बढ़ती प्रजातियों के रोपण के साथ पुनर्ग्रहण कार्यक्रम की स्थापना।
- मानसून के मौसम की शुरुआत में खदान के बंद होने के दौरान बहाली योजना की स्थापना।
- आसन्न आपदाओं के प्रभावों से बचने के लिए समय पर एहतियाती कदम उठाने के लिए प्रभावी आपदा प्रबंधन योजना की स्थापना।
- पर्यावरण प्रबंधन सेल द्वारा प्रभावी निगरानी कार्यक्रम की स्थापना।

### ईएमपी कार्यान्वयन के लिए बजट आवंटन

क्रमांक	उपाय	पूरी लागत (₹ में)	आवृत्ति लागत (₹ में)
1.	प्रदूषण नियंत्रण धूल दमन/पानी का छिड़काव	--	L.OU.(ND)

2.	प्रदूषण निगरानी i) वायु प्रदूषण ii) जल प्रदूषण iii) मृदा प्रदूषण iv) ध्वनि प्रदूषण		50,000 40,000 10,000 10,000
3.	शीन बेल्ट विकास	2,50,000	1,00,000
4.	दोना सड़क निर्माण और रखरखाव	1,40,000	1,20,000
<b>Total</b>		<b>3,90,000</b>	<b>4,30,000</b>

### निष्कर्ष

इंआईए अध्ययन के आधार पर यह देखा गया है कि धूल प्रदूषण में वृद्धि होगी, जिसे पानी और नृक्षारोपण के छिड़काव से नियंत्रित किया जाएगा। खनन गतिविधियों के कारण परिवेश के वातावरण और पारिस्थितिकी पर एक नगण्य प्रभाव पड़ेगा क्योंकि खनन के संचालन से क्षेत्र में प्रत्यक्ष और अप्रत्यक्ष रूप से रोजगार सृजन होगा। क्षेत्र के चारों ओर शीन बेल्ट विकास को एक प्रभावी प्रदूषण माइटीगेटिव तकनीक के रूप में भी लिया जाएगा, साथ ही खदान के परिसर से जारी प्रदूषकों को नियंत्रित करने के लिए भी। खनन कार्य जारी रहने तक निगरानी कार्यक्रम का पालन किया जाएगा। इसलिए, यह संक्षेप किया जा सकता है कि खदान के विकास से क्षेत्र के सामाजिक-आर्थिक वातावरण पर सकारात्मक प्रभाव पड़ेगा और क्षेत्र का सतत विकास होगा।

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