ENVIRONMENT IMPACT ASSESSMENT
&
ENVIRONMENTAL MANAGEMENT PLAN
WITH EXECUTIVE SUMMARY HINDI & ENGLISH
FOR
CLUSTER AREA OF 4 EXISTING MINING LEASE 43.9786 Ha. AND PROPOSED
STONE SAND AND BAJRI MINING PROJECT
AT
MAUZA / MOHAL- MOHAKAMPUR NAWADA

Tehsil – PAONTA SAHIB, District – SIRMAUR,
State – HIMACHAL PARDESH

(Private Land)

Purpose – Fresh Grant EC,
Proposed Production – 62,842 TPA
APPLIED LEASE AREA- 3.9786 Hect, PROJECT COST – 10.6 Lacs

Detail of Existing Leases in 500 m Periphery (Cluster area):

Sr. No.	Name of project	Area	Mauza /Mohal	Status of Lease in Cluster
1	M/s J.J Associates	3.9786 Ha., Pvt land	MOHAKAMPUR NAWADA	Applied
2.	M/s R.J. Associates	52-16 Bighas	MOHAKAMPUR NAWADA	EC granted, but not Operational
3.	Sh Gajendra Pal Singh	125-00 Bighas	MOHAKAMPUR NAWADA	Operational
4.	Sh.Inder Singh	58.10 Bighas	MOHAKAMPUR NAWADA	Operational
5.	Sanjay Kishor	58.01 Bighas	MOHAKAMPUR NAWADA	Operational

CATEGORY- 'B1

APPLICANT

M/S J.J Associates (partners - Sh.Jahangir Ali,Jaibir Singh,Rajesh Gupta and Rohit Chowdhary).
R/o Village Mauza/Mohal Mohakampur Nawada, tehsil Paonta Sahib, district sirmaur (H.P)

EIA CONSULTANT

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Quality Council of India

National Accreditation Board for Education & Training

CERTIFICATE OF ACCREDITATION

N. S. Envirotech Laboratories and Consultant, Jaipur

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		NABET	MoEFCC	
1.	Mining of minerals including opencast / underground mining	1	1 (a) (i)	A
2.	Highway	34	7 (f)	A
3.	Aerial ropeways	35	7 (g)	A

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated Sept 04, 2020 and supplementary MoM Jan 15, 2021 posted on QCI-NABET website.

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Sr. Director, NABET Dated: Feb 01, 2021	Certificate No. NABET/EIA/1922/RA 0173_Rev 01	Valid till July 08, 2023

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Abbreviations

AAS/ICP A	:	Atomic Absorption Spectrophotometer/Inductively Coupled Plasma Analyzer
AAQ	:	Ambient Air Quality
AAQM	:	Ambient Air Quality Monitoring
AAQS	:	Ambient Air Quality Standards
ADM	:	Additional District Magistrate
AIS & LUS	:	All India Soil and Land Use Survey
AMSL	:	Above Mean Sea Level
ANFO	:	Ammonium Nitrate - Fuel Oil
APHA	:	American Public Health Association
BH	:	Business Head
BHs	:	Bore Holes
BIS	:	Bureau of Indian Standards
BGL	:	Below Ground Level
CAZRI	:	Central Arid Zone Research Institute
CC	:	Calcium Carbonate
CCA	:	Culturable Command Area
CFM	:	Cubic Feet per Minute
CWC		Central Water Commission
CPCB	:	Central Pollution Control Board
CCR	:	Central Control Room
CSR	:	Corporate Social Responsibility
CMO	:	Cement Manufacturing Officer
DFO	:	District Forest Officer
DGMS	:	Directorate General of Mines Safety
DMP	:	Disaster Management Plan
DMG	:	Department of Mines and Geology
DSB	:	Differential Sub Basin
DTH	:	Down the Hole
E	:	East
EAC	:	Expert Appraisal Committee
EC	:	Environmental Clearance
ECO	:	Emergency Coordinating Officer
EIA	:	Environmental Impact Assessment

EMC	:	Environment Management Cell
EMP	:	Environmental Management Plan
EMP	:	Environmental Monitoring Programme
ESE	:	East of South East
ENE	:	East of North East
EPA	:	Environmental Protection Act
ETP	:	Effluent Treatment Plant
ERDAS	:	Earth Resources Data Analysis System
EPO	:	Emergency planning officer
FPS	:	Fine Particulate Sampler
FCC	:	False Color Composite
Govt.	:	Government
GCP	:	Ground Control Points
GLC	:	Ground Level Concentration
GOI	:	Government of India
GPS	:	Global Positioning System
GSI	:	Geological Survey of India
GWEC	:	Ground Water Estimation Committee
Ha	:	Hectare
HIV	:	Human Immunodeficiency Virus
HEME	:	Heavy Earth Moving Equipment
HP	:	Horse Power
HOD	:	Head of Department
HSD	:	High Speed Diesel
IBM	:	Indian Bureau of Mines
IMD	:	India Meteorological Department
IS	:	Indian Standards
ISO	:	International Organization of Standardization
IUCN	:	International Union for Conservation of Nature
KLD	:	Kilo Liter Per Day
LOI	:	Letter of Intent
LUS	:	Land Use Study
LU/LC	:	Land Use / Land Cover
mRL	:	Meter Reduced Level
MC	:	Magnesium Carbonate
MHHS	:	Multi House Hold Survey

ML	:	Mining Lease
MoEF&CC	:	Ministry of Environment , Forests& Climate Change
MSK	:	Medvedev-Sponheur-Karnik Scale
MSL	:	Mean Sea Level
MT	:	Metric Tonnes
MTPA	:	Metric Tonnes Per Annum
N	:	North
NAAQS	:	National Ambient Air Quality Standards
NABET	:	National Accreditation Board for Education & Training
NATMO	:	National Atlas & Thematic Mapping Organization
NABL	:	National Accreditation Board for Testing and Calibration Laboratories
NDIR	:	Non Depressive Infrared Spectroscopy
NE	:	North East
NH	:	National Highway
NNE	:	North of North East
NGO	:	Non Governmental Organization
NNW	:	North of North West
NRBPT	:	National Registration Board for Personnel & Training
NRSA	:	National Remote Sensing Agency
NRSC	:	National Remote Sensing Centre
NW	:	North West
OB	:	Over Burden
OBC	:	Other Backward Classes
OHS	:	Occupational Health and Safety
OSHA	:	Occupational Safety and Health Administration
PETN	:	Penta Erythritol Tetra Nitrate
PFR	:	Pre Feasibility Report
pH	:	Potential of Hydrogen
PHCS	:	Public Health Centers
PM	:	Particulate Matter
PPE	:	Personal Protective Equipment
PPV	:	Peak Particle Velocity
QCI	:	Quality Council of India
RSPM	:	Reparable Suspended Particulate Matter

SDO	:	Sub Divisional Officer
SC	:	Scheduled Caste
SE	:	South East
SEIAA	:	State Environmental Impact Assessment Authority
SHE	:	Safety, Health & Environment
SI	:	Sustainability initiatives
SIA	:	Social Impact Assessment
SOI	:	Survey of India
SPCB	:	State Pollution Control Board
SPM	:	Suspended Particulate Matter
SSW	:	South of South West
ST	:	Scheduled Tribe
SW	:	South West
TC	:	Total Carbonate
TDS	:	Total Dissolved Solids
TNT	:	Tri Nitro Toluene
ToR	:	Terms of Reference
TPD	:	Tonnes Per Day
TRC	:	Technical Research Cell
TW	:	Tube Well
UNFC	:	United Nations Framework Classification
UPA	:	Urban Planet Atlas
USDA	:	United States Department of Agriculture
USEPA	:	United States Environmental Protection Agency
VT	:	Vocational Training
RF	:	Reserved Forest
PF	:	Protected Forest
W	:	West
WNW	:	West of North West
WSW	:	West of South West
$\mu g/m^3$	:	Micro gram per meter cube
µm	:	Micro Meter
cu. m	:	Cubic meter
dB	:	Decibel
gm/sec	:	Gram per second
gm/cc	:	Gram per cubic meter

hr/day	:	Hour per day
kg	:	Kilogram
Kg/hr	:	Kilogram per hour
Kg/ha	:	Kilogram per hectare
km	:	Kilometer
m	:	Meter
mg/l	:	Milligram per Liter
mm	:	Millimeter
Sq.km	:	Square Kilometer
t/hr	:	Tonnes per hour

CHEPTER- I INTRODUCTION AND BACKGROUND

1.0 PURPOSE OF THE REPORT

Environmental Impact Assessment (EIA) is one of the proven management tools for integrating environmental concerns in development process and for improved decision making. The growing awareness, over the years, on environmental protection and sustainable development, has given further emphasis to the implementation of sound environmental management practices for mitigating adverse impacts from developmental activities. EIA study 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.

Environmental Impact Assessment and Environment Management Plan report is prepared as per the Office Memorandum issued by Ministry of Environment, Forest & Climate Change as per Office Memorandum No. J-11013/41 /2006-lA- l 1 (f) (Part) dated 29/08/2017 issued by MoEF & CC, Gol, the Standard Terms of Reference (TOR) which have been issued on 6 March 2023 for seeking environmental clearance for mining of Stone Sand and Bajri in the applied mining lease area measuring 3.9786 hectares falling under category "B1" due to Cluster Situation. As per situation of Cluster, total 5 leases falls in this cluster. Out of which 4 leases and 1 is proposed applied LOI. The total cluster area is 43.9786Ha. The lease area lies near Mauza/Mohal Mohakampur Nawada, Tehsil- Paonta Sahib, and District- Sirmaur, Himachal Pradesh ***(Letter of Intent copy attached with the report as Annexure I)***.

The entire stretch of applied mining lease area is Private which is a part of Bed of Giri river. The proposed project is manual extraction and collection of Stone Sand and Bajri from bed of Giri River.

- It has been proposed to extract around 62,842 TPA of Stone Sand and Bajri; the extracted materials will get replenished during every monsoon season.

1.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT

1.2.1 Identification of the Project:

As per vide letter Nos. Udyog-Bhu (Khani-4) Laghu-158/15-10763 dated 04-02-2019, a letter of Intent has been granted to M/S J.J Associates Mines & Minerals (Partnership Firm Partners Sh. Jahangir Ali, Jaibir Singh,Rajesh Gupta & Rohit Chowdhry) R/O- Village- Mauza/Mohal- Mohakampur Nawada, P.O Shivpur, Tehsil- Paonta Sahib and District- Sirmaur (H.P for one year and the LOI extension was issued for another year w.e.f 04.03.2020 as per letter no Udyog-Bhu(Khani- 4)Laghu-158/15-5813 dated 01.10.2021. The area comprises of Khasra No 640/563/480/1 (Private Land/ riverbed) 3.9786 ha (47-04 Bighas) falling in Mohal and Mauza Mohakampur Nawada, tehsil Paonta Sahib and District Sirmaur (H.P).

Details of the Project Proponent:

The details of the project proponent are given below:

Table 1.1

Name of the applicant	**M/s** J.J AssociatesMines & Minerals
Name & Address of applicant	R/O- Village Nawada P.O. Shivpur Tehsil Paonta Sahib, District Sirmaur (H.P)
Name of Mine	Stone Sand and Bajri Mining Project By M/s J.J AssociatesMines & Minerals
Mineral	Stone Sand and Bajri
Area (ha)	3.9786
Location	Mauza/Mohal- Mohakampur Nawada , Tehsil- Paonta Sahib, and District- Sirmaur (H.P). Himachal Pradesh
Status of Project	New

Detail of Existing Leases in 500 m Periphery (Cluster area):

Sr. No.	Name of project	Area	Mauza /Mohal	Status of Mine
2.	M/s R.J. Associates	52-16 Bighas	MOHAKAMPUR NAWADA	EC granted, but not Operational
3.	Sh Gajendra Pal Singh	125-00 Bighas	MOHAKAMPUR NAWADA	Operational
4.	Sh.Inder Singh	58.10 Bighas	MOHAKAMPUR NAWADA	Operational

5.	Sanjay Kishor	58.01 Bighas	MOHAKAMPUR NAWADA	Operational

1.3 BRIEF DESCRIPTION OF PROJECT

Mining of Stone Sand and Bajri will be carried out only up to a depth of 1 m (3 feet) depth, using hand tools like shovel, pan etc only during the day time. The applicant intends to mine Stone Sand and Bajri from the lease area. Mining will be confined to the applied lease area lies in the bed of Bed of Giri river, a main tributary of Giri river. No rotational mining is proposed, complete mineable area shall be explored every year. The applied mining lease area is 3.9786 Ha. Situated in MAUZA/MOHAL- Mohakampur Nawada, Tehsil-Paonta Sahib, and District – Sirmaur (H.P). No drilling & blasting is proposed. The proposed capacity of collection of Stone Sand and Bajri will be 62,842 TPA.

1.3.1 Size

It has been proposed to extract around 62,842 tonnes per annum of Stone Sand and Bajri, the extracted materials will get replenished during every monsoon season. The area comprises of Khasra No. 640/563/480/1 (Private Land) measuring 3.9786 hectare falling in Mauza/Mohal- Mohakampur Nawada, Tehsil-Paonta Sahib, and District – Sirmaur (H.P).

The entire stretch of mining lease area is Private land which is a part of bed of Giri river. The proposed project is manual extraction and collection of Stone Sand and Bajri from bed of Giri up to one meter (3 feet) depth.

1.3.2 Location

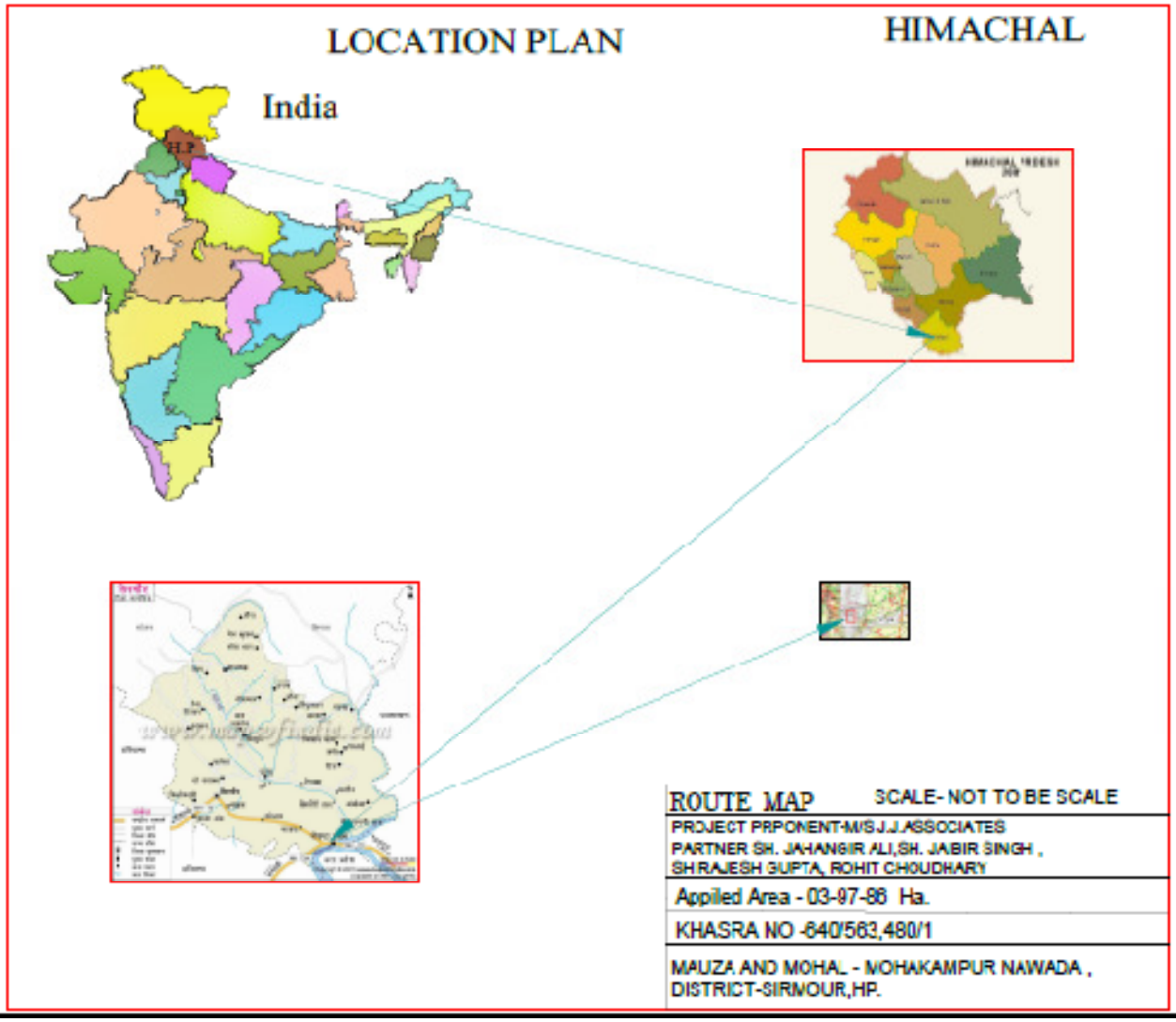
Mining will be confined to the allotted lease area lies in the bed of Giri. The mining lease area is 3.9786 hectare Situated Mauza/Mohal- Mohakampur Nawada, Tehsil-Paonta Sahib, and District – Sirmaur (H.P).

The site is approachable from Paonta Sahib Bhangani road at a distance about 013km from Rampura ghat Road head there after a distance of approximately 600 km through the mettle road The co-ordinates of the mine lease area are: ***(Map showing pillar coordinates of applied lease area attached as Map no-IV.).***

Latitude : *30^0 26'11.22" N- 30^0 28' 5.54" N*

Longitude: *77^0 41'13.73" E- 77^0 41'15.15" E*

FIGURE1.1: LOCATION MAP



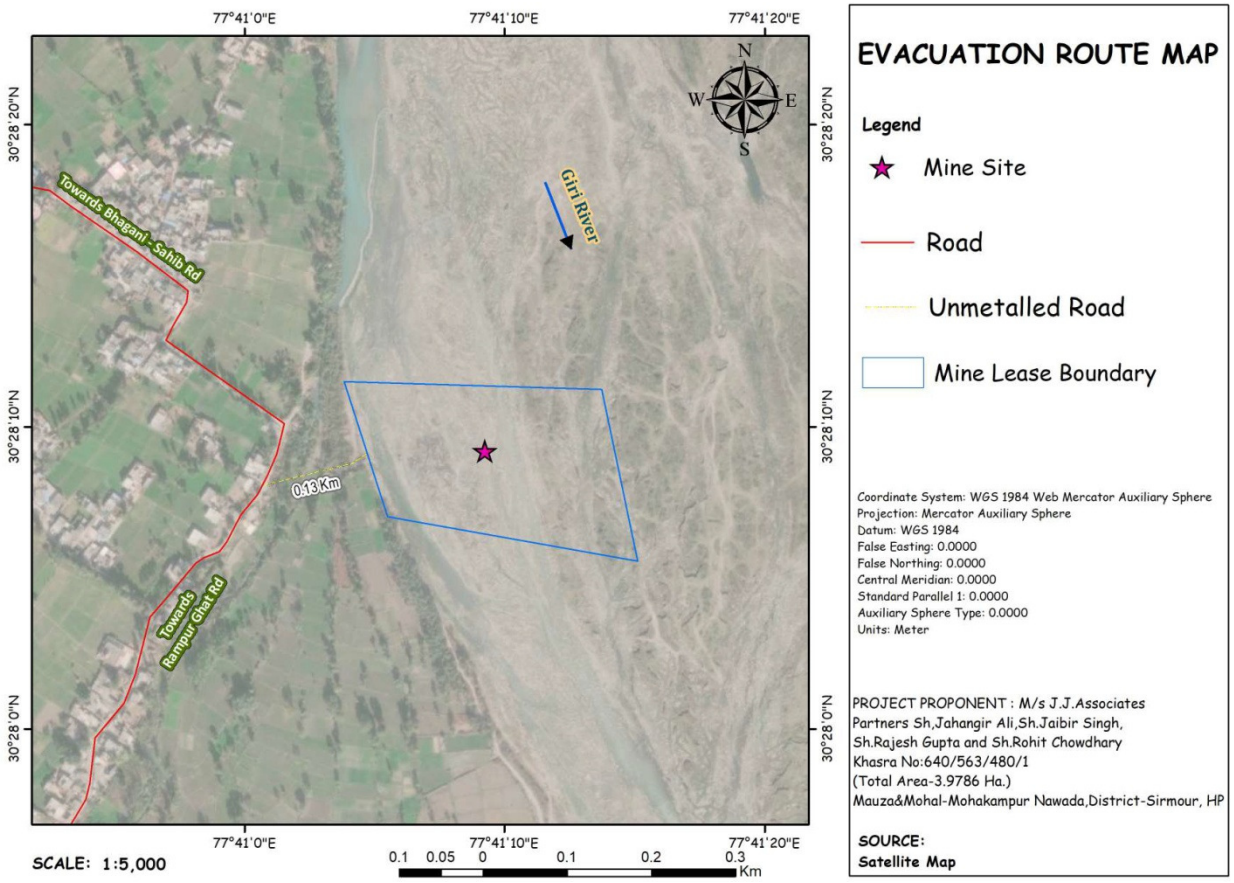


Figure1.2 : Google Imagery of the Mining Lease

1.3.3 Connectivity Details

Table 1.2

Connectivity Details		Crow Fly Distance
Nearest Railway Station	Dehradun Railway Station	About 40.14 km in E direction.
Nearest Airport	Jolly Grant Airport	About 59.61 km away in SW direction
Nearest Highway	NH-907	Approx. 1.0 km In W direction

1.3.4 Project's importance to the country and the region

The demand of Stone bajri and sand in the area is increasing day by day both for private construction activities and infrastructure development by the Government Agencies. The State Governments has launched several projects of road construction, road widening, bridge construction and buildings for offices, school and other social activities. Thus, the extracted mineral from the mining lease area contribute to the development of infrastructure and prosperity of the area/region.

1.4 REGULATORY COMPLIANCES & APPLICABLE LAWS/REGULATIONS

a) There is no legal case against the project and project proponent.
b) There is no 'wild life sanctuary, biosphere reserve, nation park etc. within ten kilometers of the mining lease except some protected forests.

1.4.1 **The Consultant** -The studies were undertaken by The Consultant namely, N.S. Enviro-Tech Laboratories & Consultant ('NSETLC'). NSETLC is a National Accreditation Board for Education and Training (NABET) Accredited Consultant Organization (ACO) and is qualified to prepare EIA reports for Project / Activity 1(a) (Mining of Minerals), a mandatory requirement for agencies submitting such studies to regulators for the purpose of seeking EC.

1.5 Generic Structure of EIA Report

The structure of this report follows the generic structure of Environment Impact Assessment document provided in Appendix III of EIA Notification, 2006. The report, complete with necessary tables, drawings and annexes is as follows:

List of Abbreviation

Chapter-1	:	Introduction and Background
Chapter-2	:	Project Description
Chapter-3	:	Description of Environment
Chapter-4	:	Anticipated Environmental Impacts and Mitigation Measures
Chapter-5	:	Analysis of Alternatives
Chapter-6	:	Environmental Monitoring Program
Chapter-7	:	Additional Studies
Chapter-8	:	Project Benefits

Chapter-9 : Environmental Management Plan

Chapter-10 : Summary and Conclusion

Chapter-11 : Disclosure of Consultant Engaged

1.6 SCOPE OF THE STUDY

The Standard Terms of Reference (TOR) which have been issued on 6 March 2023 during by SEIAA, H.P. For seeking environmental clearance for mining of stone Sand and Bajri in the applied mining lease area measuring 3.9786 hectare falling under category "B1". The lease area lies near MAUZA/MOHAL- Mohakampur Nawada, Tehsil- Paonta Sahib, and District- Sirmaur, Himachal Pradesh The points given in the TOR has been considered and its compliance is as under:-

Point Wise Compliance for TOR

Table 1.3

S.No	TOR	Compliance	Reference in the EIA Report
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	This is the new case hence no prior production was done.	Copy of Letter of Intent attached as Annexure II.

	production achieved prior to 1994.		
2	A copy of document in support of fact that the proponent is the rightful lessee of the mine should be given.	M/s J.J Associates Mines & Minerals is the right full lessee of the proposed mine, reference document attached with this report.	Copy of Letter of Intent attached as Annexure II.
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.	The production figures, lease area, waste generation, mining technology in mine plan and EIA report are compatible with each other. For this project Public Hearing is Not Applicable.	Mentioned in Chapter 2, Working cum environment management plan.
4	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	High resolution Imagery/ Toposheet with corner coordinates of the mine lease area has been incorporated in the chapter I of the report.	Given in chapter-I

5	Information should be provided in survey 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.	Survey toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area attached with report	Buffer map will be attached with final report..
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.	Mining will be confined to the allotted lease area lies bed of Giri River. The mining lease area is 03.9786 hectare Situated in MAUZA/MOHAL- Mohakampur Nawada, Tehsil- Paonta Sahib, and District- Sirmaur (H.P).	Copy of Letter of Intent attached as Annexure II.
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	Environment policy mentioned in the report.	-

	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 is detailed in the EIA Report.	Yes, the policy is prescribed for all standard operating process/procedure.	
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.	Mining will be carried manually. No blasting will be carried.	Proper personal protective Equipments will be provided to the workers.

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.	The 5 km area around the periphery of the lease Area has been taken as study area for the purpose of EIA. The data contained in the EIA Report is given for 5 years for which mine plan has been prepared. The Production generation details are given in the report.	5km buffer map is attached in final report.

10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of Paonta Sahib, 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.	Surface plan & Working of the lease area is attached with the EIA/EMP Report showing the pre-operational, operational and post-operational phases.	Surface plan & Working of the lease area is attached with the EIA/EMP Report as annexure VI & VIII along with working plan and also showing the pre-operational, operational and post-operational phases.
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.	Silt shall be generated as a waste which will be used for the maintenance of approach road of the crusher. However, it would be dumped in the adjoining private lands of the lease holder. ***Source: Approved Mine Plan***	Surface plan & Working of the lease area is attached with the EIA/EMP Report as annexure X.
12	A Certificate from the Competent Authority in the	Project is lies on the bed of Bed of Giri River which is not	NOC slip attached as

	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.	under possession of forest Department.	Annexure X.
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.	Project is lies on the bed of Bed of Giri River which is not under possession of forest Department.	NOC slip attached as Annexure X.
14	Implementation status of recognition of forest rights	Project is lies on the Bed of Giri River which is not under	NOC slip attached as

	under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	possession of forest Department.	Annexure X.
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	There are few reserved forests present within the study area. Study for Flora and fauna has been done, List of vegetation in the RF/PF is incorporated in the report.	Authenticated list of flora and fauna will be attached in final Report
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.	There is no wildlife or any protected area present within 10 km radius of the lease area.	Incorporated chapter IV
17	Location of National Parks, Sanctuaries, Biosphere Reserves, wildlife Corridors, Tiger/Elephant Reserves	There is no 'wild life sanctuary, biosphere reserve, nation park etc. within ten kilometers of the mining	5km Google map attached

	(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, if any, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above should be obtained from the state Wildlife Department / Chief Wildlife Warden under the Wildlife (Protection) Act, 1972 and copy furnished.	lease except some protected forests	
18	A detailed biological study for the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out covering both terrestrial and aquatic flora and fauna. Details of flora and fauna, duly authenticated, separately for core and buffer zone should be furnished based on field survey clearly indicating the Schedule of the fauna present, in case of any schedule-I fauna found in the study area, the necessary plan for their conservation should be	Detailed Biological study along with the list of flora & fauna is given in the report. There is no schedule I fauna found in the study area.	Authenticated list of flora and Fauna will be attached in final report

	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 project cost.		
19	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.	Proposed project is not located in the Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations)	Coordinates of the proposed project mentioned.
20	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL. HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining	Proposed project is not located in the coastal zone	Not Applicable for this project

	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	R&R Plan/compensation details for the Project Affected People (PAP) are not applicable for this project as this project is located on the bed of Giri River.	--

	Report.		
22	One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10,	Base line study was done from Oct.'22-Dec.'22 and the details are given in Chapter III Site-specific meteorological data has been collected and shown in the report. Date wise collected baseline AAQ data is enclosed with the report. It has been ensured that at least one monitoring station is within 500 m of the mine lease in the pre-dominant downwind direction.	Chapter III Chapter III

	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 vehicle 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 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 rose showing pre-dominant wind direction may also be indicated on the map.	Monitoring details incorporated in the report	.
24	The water requirement for the project, its availability and source to be furnished. A detailed water balance should also be provided. Fresh water requirement for the project should be indicated.	Total water requirement for the project is 2.8 KLD, including 1.1 KLD for dust suppression and 0.9 KLD for plantation and 1.1 KLD for domestic purpose. Water Requirement. Water requirement for the proposed	

		mining activities will be fulfilled which will be taken care by PP's own constructed borewell which will be situated at Khasra No. 640/563/480/1 situated at Bata Mandi, Tehsil- Paonta Sahib.	
25	No mechanized mining/blasting shall be carried out.	The mining shall be taken manually with the use of hand tools, shovels, Pans etc. The material will be extracted and loaded directly into tipper truck by the workers themselves. The operation will be done in day time only, so there is no power requirement for the mining activity.	Working cum environment management Plan attached as Annexure III
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.	No check dams are proposed as the adjoining land belongs to different private individuals. Moreover, the mining operations shall have no impact on the banks in any way. Source: Approved Mine Plan	Working plan Letter for 5 year attached as Annexure III.

27	Impact of the project on the water quality should be assessed and necessary safeguard measures, if any required should be provided.	The area being part of the River which receives annual rainfall, the mining area will get replenished during every rainy (monsoons) season. As abundant precaution, keeping in view the variation in rainfall particularly highest rainfall, which generally causes floods, the factor of eight cm annual replenishment is taken into consideration in general. Keeping in view of the replenishment factor, no rotational mining has been proposed. The complete mineable area shall be explored every year. Though the major mining activities will be under taken during the dry seasons and it proposed as per approved mining plan that mining will be carried out up to 1m bgl whichever comes first, hence no such impact will occur ***Source Approved mining***	Chapter IV.

		Plan.	
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.	The area being part of the River which receives annual rainfall, the mining area will get replenished during every rainy (monsoons) season. As abundant precaution, keeping in view the variation in rainfall particularly highest rainfall, which generally causes floods, the factor of eight cm annual replenishment is taken into consideration in general. The proposed project is manual extraction and collection of Stone Sand and Bajri from bed of Giri River up to 1 meter bgl whichever comes first.	Approved mining plan Letter is attached with the report
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	The entire stretch of mining lease area is Private which is a part of bed of Giri River.	

	out.			
30	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.	Site Elevation	Highest 3000 m above MSL Lowest- 300 m above MSL	Source: Approved Mining Plan
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	It is proposed to plant around 40 trees every year for 5 years during monsoon season. The Site For Plantation shall be decided in consultation with local gram panchayat.		Details mentioned in Chapter II

	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.	There will be 23 trucks carrying the minerals per hour. The impact due to this has been detailed in the report.	There will be 23 trucks carrying the minerals per hour. The impact due to this has been detailed in the report. Maintenance of the roads will be carried out properly and alternative route pattern will be adopted in order to avoid any type of congestions.

33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Temporary rest shelters along with site services will be provided to the workers at mine site. Mine Office with. First aid station and Store for mining equipment.	-
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	The area being part of the River which receives annual rainfall, the mining area will get replenished during every rainy (monsoons) season. As abundant precaution, keeping in view the variation in rainfall particularly highest rainfall, which generally causes floods, the factor of eight cm annual replenishment is taken into consideration in general.	Chapter IV.
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.	Each labour will undergo pre-placement medical examination. Thereafter they will be medically checked up half yearly for which tie up will be done with nearest PHC's. Impact on health is expected	Chapter VII

	The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	to be least for such mining projects.	
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.	The mining shall be taken manually with the use of hand tools Such impact will not occur due to project.	
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.	Socio-economic influence will be positive as there will be potential availability of employment, improvement of physical and social infrastructures etc. In addition CSR has also proposed.	Chapter VI Chapter VII
38	Detailed environmental management plan to mitigate the environmental impacts, specific safeguard measures to control PM10 as well as	Detailed environmental management plan to mitigate the environmental impacts are discussed in the report. Safeguard measures to	Chapter IV

	pollution due to transportation should be given.	control PM_{10} has also been given.	
39	Public hearing points raised and commitment of the project proponent on the same along with the time action plan to implement the same should be provided if applicable.	Public Hearing yet to be conducted.	--
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 project (capital cost and recurring cost) as well as the cost towards implementation of EMP should clearly be spelt out.	Cost towards implementation of EMP is given in the report.	Chapter - VIII
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report	Mining of Stone Sand and Bajri will be carried out manually with the use of hand tools and shall be directly transported to the market as per demand.	As per approved mining plan
43	Benefits of the Project if the Project is implemented should	There is large demand of Stone Sand and bajri for	

	be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	construction activities in the region. It is essential raw material for construction of buildings, roads, bridges; check dams, etc in the area.	
44-Besides the above , the below mentioned general points should also be followed :-			
a	Executive Summary of the EIA/EMP Report	Executive Summary of the EIA/EMP Report is attached with the report.	complied
b	All documents to be properly referenced with index, page numbers 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	Relevant details have been mentioned in EIA-EMP Report.	
d	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc using the MoEF & CC/NABL accredited laboratories. All the	Compiled	Monitoring has been carried out by the NABL approved lab only.

	original analysis/testing reports should be available during appraisal of the Project.		
e	Where the documents provided are in a language other than English, an English translation should be provided.	Compiled	--
f	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Enclosed	-
g	While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF from time to time should also be followed.	Instructions for the proponents and instructions for the consultants issued by MoEF from time to time has taken in consideration while preparing the EIA report and will be followed.	--
h	Changes, if any made in the basic scope and project parameters (as submitted	Enclosed	Form1 and PFR attached with the report.

	in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF & CC with reasons For such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than Modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.		
i	As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of	Noted	

	Environment, Forest and Climate Change, as may be applicable.		
j	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.	Noted	--
Addition conditions are included given in standard Terms of References as published by MoEF&CC, Gol afresh for Mining of Minerals, for the purpose of preparing Environment Impact Assessment Report, EMP for obtaining prior Environment Clearance with public consultation.			
1.	The project proponent shall make provision to provide two plastic waste shredders, two plastic waste ULBs/PRIs as per the recommendations of Department of Environment, Science & Technology, GoH.	Agreed & Noted	

	The project proponent shall also include to plant variety of wild fruit plants as may be suitable to the area viz. wild peach, pear, guava, shahtoot under the plantation plan to be proposed in EIA/EMP. The SEIAA secretarial shall monitor the plantation on yearly basis. The photo monitoring verification will be carried out by the SEIAA & SEAC by developing a suitable system.	Agreed & Noted	
	The project proponent shall include the detailed analysis of GLC-2.5 with air modeling and shall prepare the wind-rose diagram of the site to plan the installation of PCDs.		
	The project proponent shall submit affidavit to ensure that, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the	Agreed & Noted	

	land to a condition which is fit for growth of fodder, flora, fauna etc.		

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CHEPTER-II PROJECT DESCRIPTION

2.0 GENERAL

As per Office Memorandum No. J-11013/41 /2006-lA- l 1 (f) (Part) dated 29/08/2017 issued by MoEF & CC, Gol, the Standard Terms of Reference (TOR) which have been which have been issued on 6 March 2023 for the purpose of preparing Environment Impact Assessment Report, Environment Management Plan for obtaining prior Environment Clearance with public consultation, for mining of Stone Sand and Bajri in the applied mining lease area measuring 03.9786 hectares from bed of Giri River falling under category "B1". The lease area lies near Mauza/Mohal- Mohakampur Nawada, Tehsil- Paonta Sahib, and District- Sirmaur (H.P).

2.1 TYPE OF PROJECT

The proposed project is the river bed mining of Stone Sand Stone and *Bajri* from bed of Giri River located near Mauza/Mohal- Mohakampur Nawada, Tehsil- Paonta Sahib, and District- Sirmaur, Himachal Pradesh. The applied area comprises of Khasra No. 640/563/480/1 (Pvt. Land) measuring 3.9786 hectares, Mauza/Mohal- Mohakampur Nawada, Tehsil- Paonta Sahib & District- Sirmaur (H.P). The lease has been sanctioned in favour of M/S J.J AssociatesMines & Minerals (partnership firm partners firm Partners Sh. Jahangir Ali, Jaibir Singh,Rajesh Gupta & Rohit Chowdhry) As per vide letter Nos. Udyog-Bhu (Khani-4) Laghu-158/15-10763 dated 04-02-2019, a letter of Intent has been granted to M/S J.J Associates Mines & Minerals (Partnership Firm Partners Sh. Jahangir Ali, Jaibir Singh,Rajesh Gupta & Rohit Chowdhry) R/O- Village- Mauza/Mohal- Mohakampur Nawada, P.O Shivpur, Tehsil- Paonta Sahib and District- Sirmaur (H.P for one year and the LOI extension was issued for another year w.e.f 04.03.2020 as per letter

no Udyog-Bhu(Khani- 4)Laghu-158/15-5813 dated 01.10.2021. The area comprises of Khasra No 640/563/480/1 (Private Land/ riverbed) 3.9786 ha (47-04 Bighas) falling in Mohal and Mauza Mohakampur Nawada, tehsil Paonta Sahib and District Sirmaur (H.P).

2.2 NEED FOR THE PROJECT

The demand of stone, sand & Bajri in the area is increasing day by day both for private construction activities and infrastructure development by the govt. agencies. The state govt. has launched several projects of road construction, road widening, bridge construction and building for office, school & other social activities. Thus, the extracted mineral from the mining lease area contribute to the development of infrastructure & prosperity of the area/region.

2.3 LOCATION DETAILS

Mining will be confined to the allotted lease area lies in the bed of Giri River. The mining lease area is 3.9786 hectare Situated in MAUZA/MOHAL- Mohakampur Nawada, Tehsil- Paonta Sahib, and District- Sirmaur (H.P). The lease area is connected to the nearest metalled road i.e towards Rampur Ghat road through un-mettaled road at a distance of about 0.13 km.

The lease area lies in the Bed of Giri river. The co- ordinates of the mine lease area are:

(Map showing pillar coordinates of applied lease area attached as Map no-IV.).

Latitude : *30^0 26'11.22" N- 30^0 28'5.54" N*

Longitude : *77^0 41'13.73" E- 77^0 41' 15.15" E*

Details of Applicant

Table No. 2.

Name of the applicant	M/S J.J AssociatesMines & Minerals (Partners Sh. Jahangir Ali, Jaibir Singh,Rajesh Gupta & Rohit Chowdhry).
Name & Address of applicant	R/o Village Nawada, P.O Shivpur, tehsil Paonta Sahib, district sirmaur (H.P).
Name of Mine	Stone Sand, and Bajri Mining Project By M/s J.J Associates Mines & Minerals.
Mineral	Stone Sand and Bajri
Area (ha)	3.9786 Ha,
Location	Mauza/Mohal- Mohakampur Nawada, Tehsil- Paonta Sahib, & District- Sirmaur (H.P)
Status of Project	New

2.4 DETAILS OF THE LEASE AREA

As per revenue record, the area is a Private land classified as Gair Mumkin Nadi.

Table No. 2.2

Khasra Number	Owner of Land	Kism	Mauza/Mohal	Area (Ha)	Name of the Panchayat
640/563/480/1	Private Land	Gair Mumkin Nadi	Mohakampur Nawada	3.9786 Ha,.	Nawada
TOTAL					

Source-Approved Mining Plan

2.5 GEOLOGY

REGIONAL GEOLOGY

The Shiwalik Group mainly represents the rocks of the district. In addition to this at few places the Newer Alluvium of Quaternary age are also present.

SIWALIK GROUP

The Siwalik deposits are one of the most comprehensively studied fluvial sequences in the world. They comprise mudstones, sandstones, and coarsely bedded conglomerates laid down when the region was a vast basin during Middle Miocene, to Upper Pleistocene times. The sediments were deposited by rivers flowing southwards from the Greater Himalayas, resulting in extensive multi- ordered drainage systems. Following this deposition, the sediments were uplifted through intense tectonic regimes (commencing in

Upper Miocene times), subsequently resulting in a unique topographical entity-the Siwalik Hills. The Siwaliks are divided

stratigraphically into three major Subgroups-Lower, Middle, and Upper. These Subgroups are further divided into individual Formations that are all laterally and vertically exposed today in varying linear and random patterns.

Ongoing erosion and tectonic activity has greatly affected the topography of the Siwaliks. Their present-day morphology is comprised of hogback ridges, consequent, subsequent, obsequent, and resquent valleys of various orders, gullies, choes (seasonal streams), earth-pillars, rilled earth buttresses of conglomerate formations, semi-circular choe-divides, talus cones, colluvial cones, water-gaps, and choe terraces. Associated badlands features include the lack of vegetation, steep slopes, high drainage density, and rapid erosion rates. In the advent of Neogene a depression was formed in front of the rising mountains (Proto- Himalaya). This depression becomes a repository of a thick sequence of molassic sediments of the Siwalik. The Siwalik Group comprising conglomerates friable micaceous sandstone, siltstone and claystone.

The conglomerates in general are poorly cemented but at places they are very hard. These consist mainly of pebbles and cobbles of quartzite. The stray bebbles of granite, limestone, sandstone, braccia and lumps of claystone are also observed at places. The conglomerates not only occur as regular band but also as lenticular bands alternative with micaceous sandstone and claybeds. The sediments were bought down 2 to 25 million years ago by the numerous fast flowing rivers issuing forth from rapidly Rising Mountain mass of the Himalaya, in the north The Siwalik Group is

divisible into three sub-groups respectively the Lower, Middle and Upper based on the lithostratigraphy. The general lithostratigraphy of the area is as given belo

Group			Lithology	Age
Newer Alluvium	Channel Alluvium		Grey, fine to coarse micaceous sand and silts along with cobbles and pebbles of the fan and terracealluvium.	Quarternary
	Terrace Alluvium		Grey, micaceous, fine to coarse grained sand, silt, clays and cobble and pebbles.	
	Fan Alluvium		Brownish grey clay, sand and gravel, white to grey coloured cobble and bebble sequence.	
Older Alluvium	Dun Gravels		Multicyclic sequence of brown to grey silt, clay withkankar and reddish brown to grey micaceous sand with pebbles & cobbles.	
Siwalik Group	Upper Siwalik	B	Predominantly massive conglomerate with red and orange clay as matrix and minor sandstone and earthybuff and brown claystone.	Neogene
		A	Sandstone, clay and conglomerate alternation.	
	Middle Siwalik	B	Massive Sandstone with minor conglomerate and local variegated claystone.	
		A	Predominantly medium to coarse- grained sandstoneand red day alternation, soft pebbly with subordinate claystone, locally thick prism of conglomerate.	

	Lower Siwalik	B	Alternation of fine to medium- grained sporadically pebbly sandstone, calcareous cement and prominent chocolate and medium maroon claystone in the middle part.	

Geological Conditions of Catchment

Sirmour district lying within the lessee Himalaya and the Shiwalik foothill comprises rocks ranging in age from proterozoic to quaternary. The oldest rock of undifferentiated proteomic age belong to the jutogh group comprising carbonaceous Phyllis, schist, gneiss. The Deoban/shali group of rocks of meso-proterozoic age is represent by quartzite with basic veinlets. The tal group of early Cambrian age is hetrolithic sequence of siltstone, dolomite, shale, ash and quartz arenite & recorded algal structures and tribute.

Existing Land Use Pattern, Shortest Distances from Forests, Water Bodies and Eco-Sensitive Areas, Etc.

The mining lease area is situated in the bed of Giri River. The stream course is occupied with river borne deposits which comprises of Cobbles, Pebbles, Sands and Silt/clay deposits forming channel deposits of annual deposition. The rock along the banks are terrace alluvium and fan alluvium and in higher reach of catchments Upper Siwalik formation. The land, in which the mining lease lies, is at present as per revenue record, the area is a Private land classified as Gair Mumkink Nadi.

There is no forest land or agriculture land in the mine lease area. There is no eco-sensitive area within15 km radius of mine lease area.

Existing Infrastructure

The site has no existing infrastructure, except for connecting road for transportation.

Geomorphology & Soils

(*Central Ground Water Board, Sirmaur, Ministry of Water Resources, District Book 2007)*

Sirmour district presents an intricate mosaic of high mountain ranges, hills and valleys with altitude ranging from 300 to 3000 m above MSL. There is general increase in elevation from south to north and from east to west. In general, trance Yamuna terrain exhibits highly rugged mountain terrain. The highest peaks in Chaur dhar remain snow bound throughout the year. Low denuded hill ranges of Siwalik represent the southwestern part of the district. In the areas underlain by high hill ranges of Himalayas, the valleys are narrow and deep with steep slopes. The terrain is moderately to highly dissect with steep slopes. Paonta valley, trending NW-SE, have an area of about 230 sq km and lies between the main Himalayan ranges on the north and outer Siwallik hill range in the south.

The Yamuna River that forms the eastern district boundary with the State of Uttranchal drains major part of Sirmour district. Tons, Yamuna, bata are its major tributaries. Only a small area in the southeast is drained by river Markanda of the Ghaggar river basin. Bed of Yamuna river practically

bisects the district in to two parts, namely Trans Yamuna area and cis-Yamuna area. Paonta valley is drained by river Bata a tributary of Yamuna.The soil in the district varies from thin and bare soil of high mountains to rich deep alluvial soil of the valleys. In the hilly area i.e. northern part soils are veneer and brown in colour, these are high base status soil of humid regions. In the southern part, combination of shallow black, brown and alluvial soils are found. (Source: Ground Water Information Booklet, Central Ground Water Board, Ministry of Water Resources, District Sirmour, Himachal Pradesh 2008

The Beas River: The entire drainage of the Beas River above Pandoh (Mandi) has been diverted to Govind Sagar (The Sutlej River).The river receives only regulated flows downstream of Pandoh and the flows contributed by the Uhl River, Neogal Khad and Binwa Khad along with the other minor seasonal rivers/Khads directly join the river Beas. Other important tributaries of Beas are Baker, Salagi, Nauli, Maili and Jangled Khads. In PAONTA SAHIB district's, PAONTA SAHIB and Man khads are the major streams. These along with other major khads join the Beas River.

PAONTA SAHIB Khad: PAONTA SAHIB is the most important tributary of the Beas River in the district. . Major tributaries of this khad are Sukar, Jhaniari, Gasota, Hathali and Sukrala Khads. These khads are perennial and have floods during rainy season.

Man Khad: Man Khad is another perennial tributary of Beas River which originates near Deotsidh and flows towards NNW, to join Beas River to the west of Nadaun. Important tributaries of this khad are Haretta, Bambloo and Matwara Khads.

YAMUNA: Sukker and Sir Khads are the main khads joining the Sutlej River and Govind Sagar.

These occupy the southernmost part of the district and flow towards south to directly fall into the Govind Sagar. These are ephemeral in the upper parts and become perennial in the lower parts.

Sir Khad: Sir Khad is another important khad, which is draining the eastern most part and flows towards east. This khad is ephemeral in upper catchment area and becomes perennial in lower parts

2.6 MINING

The mining is confined to extraction of Stone Sand and *Bajri* from the proposed mine site. The extracted sand stone and bajri will be collected in its existing form. Mining of Stone,Sand and *Bajri* will be carried out only up to a depth of 1 m (3 feet) depth.

1. The mining shall be taken manually/mechanically with the help of tyre mounted excavator and to load materials into the tractors/tippers/trucks.
2. No blasting is required.
3. The area being part of the River which receives annual rainfall, the mining area will get replenished during every rainy (monsoons) season. As abundant precaution, keeping in view the variation in rainfall particularly highest rainfall, which generally causes floods, the factor of eight cm annual replenishment is taken into consideration in general.
4. Keeping in view of the replenishment factor, no rotational mining has been proposed. The complete mineable area shall be explored every year.
5. Though the major mining activities will be under taken during the dry seasons.
6. Thus effective mining will be only for 300 days in a year.
7. Mining activity will be done in day time only (9 AM-5 PM).

The area of the proposed mine is 3.9786 ha. the proposed capacity of Stone and and Bajri will be 62,842 TPA. The Applicant intends to mine Stone,Sand and Bajri from the allotted lease area.

2.6.1 PRODUCTION PARAMETERS

The Mineral production target for the Next five years is given below:

Table Showing Year wise Production Programme

Table No. 2.6

Year	Boulders	Bajri	Sand	Silt/Clay	Total
1st Year	27930	20947	13965	6982	69824
2nd Year	27930	20947	13965	6982	69824
3rd Year	27930	20947	13965	6982	69824
4th Year	27930	20947	13965	6982	69824
5th Year	27930	20947	13965	6982	69824
Total	**139650**	**104735**	**69825**	**34910**	**349120**

Source: - Approved mine Plan.

2.7.1 Climatic Data from Secondary Sources

Climate of the district is sub-tropical to temperate depending upon the elevation. Four major seasons that are the winter season extends from Nov to February; summer season from March to June followed by the monsoon period extending from July to September end. Maximum precipitation in the form of rain occurs during July to September. Average annual rainfall in the district is about 982 mm with average of 60 rainy days. In the non -monsoon season precipitation as snowfall also occurs in the higher reaches above 1500 m AMSL, the peaks of Chaur dhar remains covered by snow. During winter

period rainfall also occurs in lower hills and valleys parts. Mean maximum and minimum temperature of 30°C and -0°C respectively.

(Source: Ground Water Information Booklet, Central Ground Water Board, Ministry of Water Resources, District Sirmour, Himachal Pradesh 2008).

Township

Since this mining is intermittent and labour employed would be mostly from adjoining areas, no colony is proposed.

2.7.2 POWER, WATER SUPPLY AND OTHER INFRASTRUCTURE REQUIREMENTS

2.7.2.1 POWER

All the activities will be carried during the day time only. Hence, no power is required.

2.7.2.2 WATER SUPPLY

Table No. 2.5

Activity	**Water Requirement (KLD)**
Dust suppression	0.8
Plantation	0.9
Domestic purpose	1.1
Total	**2.8**

Water Requirement for drinking purpose and for dust suppression will be fulfilled from private borewell situated at land of sh.Wahid Ali S/o Sh Noor Deen Village Mohkampur Nawada, tehsil- Paonta Sahib (H.P)

2.7.2.3 Infrastructure:

- The site services like temporary rest shelters for workers working at the mine site.
- Facilities for sanitation-community toilets with septic tanks.

2.8 Reclamation:

2.9 Mine Waste Disposal:-

2.9.1 Waste –Disposal Arrangement

There is no waste will be generated.

(Source- Working cum Environment management Plan)

2.9.2 Reclamation Plan

The afforestration programme is the most important programme to improve the environment and ecological balance of the area. It is observed that there is no land available in the mine lease area where the plantation in the phased manner can be carried out. However plantation will be done along the haul road side.

The year wise area proposed for plantation is as under:

Table 2.7

S.NO	Year	Area in Sq. m	NO OF PLANTS
1	1st YEAR	400	40
2	2nd YEAR	400	40
3	3rd YEAR	400	40
4	4th YEAR	400	40
5	5th YEAR	400	40
	Total	**2000**	**200**

Flow Chart showing the operation:

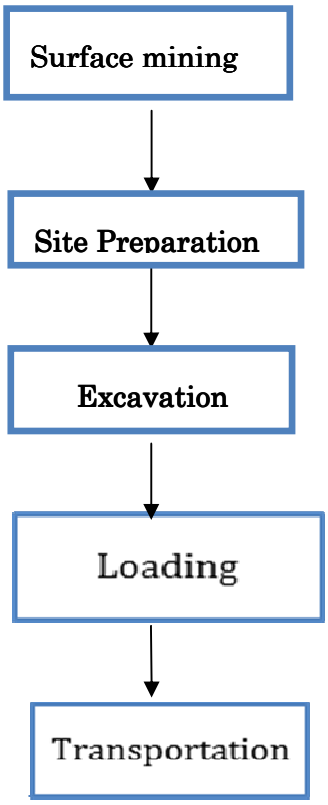


Figure 0-1: STONE SAND & BAJRI Mining Process

2.10 PROJECT COST

Expected project cost is 35 Lac.

2.11 PROJECT IMPLEMENTATION SCHEDULE

The mine is not working presently. We will operate the mine after getting Environment Clearance, Consent to Establish & Consent to operate.

****

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 Mauza/Mohal- Mohakampur Nawada and District Sirmaur (H.P). 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.

It is necessary to study the present scenario of the area by collecting the information on following parameters:

- Land Environment
- Soil Environment
- Water Environment
- Air Environment
- Meteorology
- Noise Environment
- Biological Environment
- Socio-economic Environment

The relevant information and data (Both Primary & Secondary) were collected in core as well as buffer zone (10 km. distance from the lease boundary) during Post Monsoon of 2021 in accordance with the guidelines for preparation of EIA studies.

Secondary data were collected from Indian Meteorological Department (IMD), State Mines & Geology, Hydrology, Ecology, Socio-Economic from SOI, Water Resource, Forest, Census, Statistical departments etc.

Table 3-1: Environmental Setting of the Study Area

<table>
<tr><th>Sr. No.</th><th>Particulars</th><th>Details</th></tr>
<tr><td>A.</td><td>Nature of the Project</td><td>Stone Sand, and Bajri Mining Project By M/S J.J AssociatesMines & Minerals (partners S/Shri Jahangir Ali,Jaibir Singh, Rajesh Gupta &Rohit Chowdhry)</td></tr>
<tr><td>B.</td><td colspan="2">Size of the Project</td></tr>
<tr><td>1.</td><td>Applied Mine Area</td><td>3.9786 Ha.</td></tr>
<tr><td>2.</td><td>Proposed Production capacity</td><td>62,842 TPA (ROM) of Stone Boulder, Sand & Bajri</td></tr>
<tr><td>C</td><td colspan="2">Location Details</td></tr>
<tr><td>1.</td><td>Village</td><td>Mauza/Mohal- Mohakampur Nawada</td></tr>
<tr><td>2.</td><td>Tehsil</td><td>Paonta Sahib</td></tr>
<tr><td>3.</td><td>District</td><td>Sirmaur</td></tr>
<tr><td>4.</td><td>State</td><td>H.P.</td></tr>
<tr><td>5.</td><td>Latitude & Longitude</td><td>The Latitude & Longitude of Mining Lease Area is mentioned below-</td></tr>
<tr><td></td><td colspan="2">The Latitude & Longitude of Mining Lease Area
<table>
<tr><th>Latitude (N)</th><th>Longitude (E)</th></tr>
<tr><td>30^0 26’ 11.22” N</td><td>77^0 41’5.54” E</td></tr>
<tr><td>30^0 28’ 5.54” N</td><td>77^0 41’15.15” E</td></tr>
</table></td></tr>
<tr><td>6.</td><td>Toposheet No.</td><td>H43L11</td></tr>
<tr><td>D</td><td colspan="2">Environmental Settings of the Area</td></tr>
<tr><td>1.</td><td>Ecological Sensitive Areas</td><td>Project lies on Giri river bed only</td></tr>
<tr><td>2.</td><td>River / water body</td><td>Yamuna which is the tributary of Yamuna River Near village Mohakampur Nawada</td></tr>
</table>

Sr. No.	Particulars	Details
3.	Nearest Town / City	Nearest Town- Mohakampur Nawada about 1.14 km in West direction. District Headquarter-Sirmaur
4.	Nearest Railway Station	Dehradun Railway Station about 40.17 km
5.	Nearest Airport	Jolly Grant Airport Approx. 59.61 km away in West direction
6.	State Boundary	No state boundary touching the lease area.
7.	Seismic Zone	Seismic zone – IV
D	Cost Details	
1.	Total Project Cost	10.6 Lakh
E	Requirements of The Project	
1.	Proposed Water Requirement	2.8 KLD
2.	Fuel requirement	0.5 KLD
3.	Man Power Requirement	15-20 (Skilled and unskilled persons)

3.1 LAND ENVIRONMENT

The total land of the study area is divided into different categories.

- Built-up Area
- Cropped Land
- Fallow Land
- Vegetation
- Barren Land
- Water Body

3.1.1 Data Input

IRS LISS3 Multispectral digital FCC (False Color Composite) data from NRSC Bhuwan Portal has been used for preparation of Land use/ Land cover thematic map of study area. Project site mine plan map & Google maps and Toposheet has been used as a reference map for preparation of base layer map like road, rail network, project site boundary, landmarks point etc.

Satellite Image : IRS LISS3

Band Combination : 2, 3, 4

DIP Software : ERDAS Imagine 9.2 & Arc GIS 9

3.1.2 Methodology

Land use / Land cover map preparation, Base map creation; and Geometric correction of satellite image has been processed using ERDAS Imagine 9.2 Software. The methodology used for land use land cover study is as follows:

3.1.3 Geo Referencing of Topo Map

SOI Toposheet has been geo-referenced in geographic lat/long coordinate system using ERDAS Imagine Software.

3.1.4 Base Map Layer Creation

Base map has been prepared using ancillary Google maps as a reference map on 1:50000 scale. In base layer linear and point feature like road, rail, canal, village location and plant site have been created in vector data format

The land use of the study area is given in **Error! Reference source not found.**

Table 3.2: Existing Land use pattern of the Study Area

The land use of the study area is tabulated below:

S. No.	Description	Area in Hectares	Percentage share in total area
1	Settlement	1816.10	22.97
2	Forest	1057.08	13.37
3	Open Scrub/ other Land	541.06	6.84
4	Agriculture	2942.25	37.22
5	Water bodies	319.20	4.04
6	Sand	1229.36	15.55
Total		**7905.05**	**100.00**

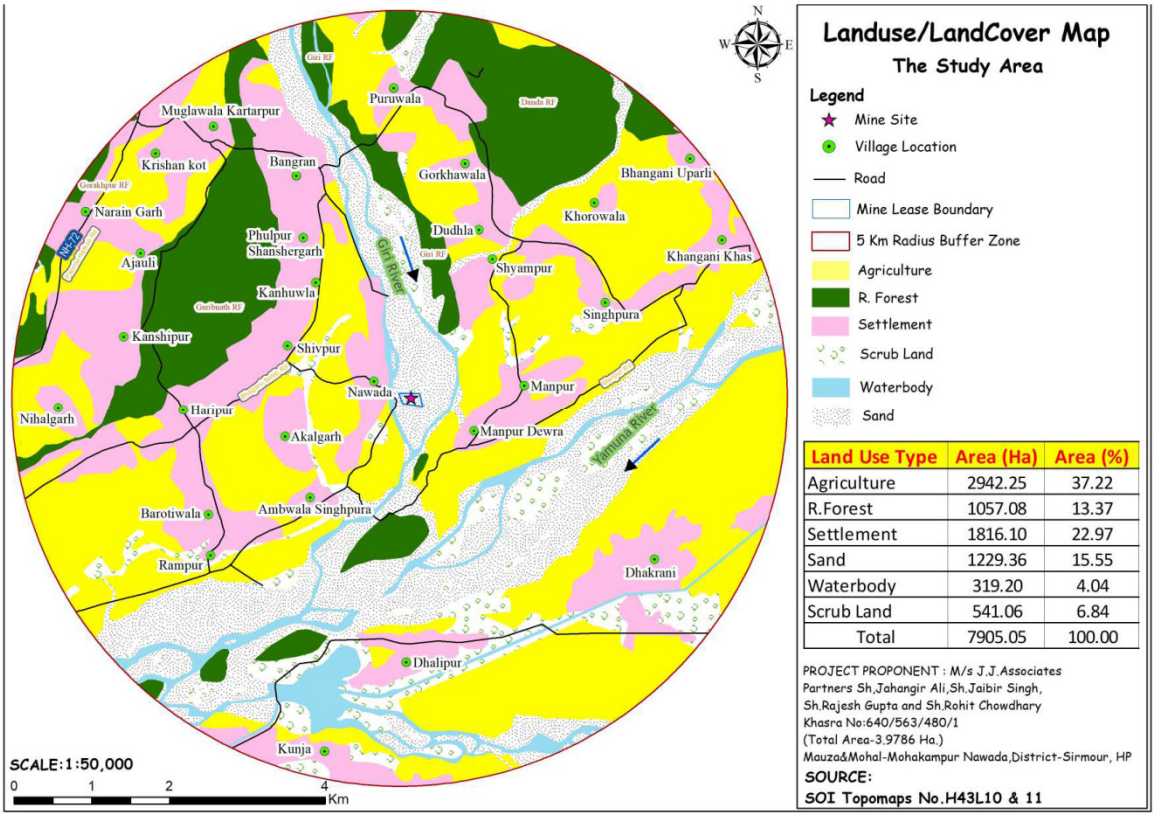
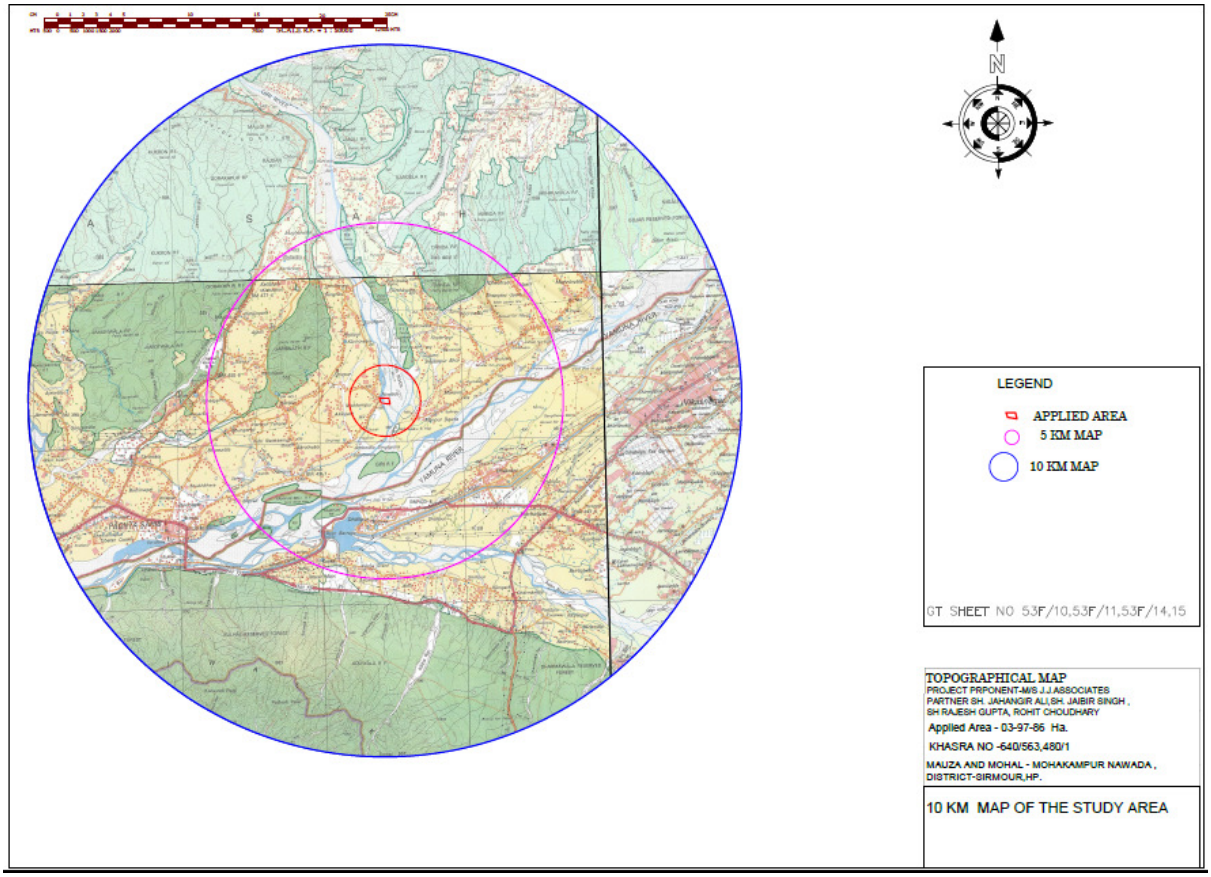


Figure- Landuse map

3.2 Topography & Drainage of the study area

The applied area forms a part of the river bed confined by embankments and is replenished during monsoon floods. YAMUNA is a main tributary of Yamuna River. The river Yamuna forms dendritic type of drainage pattern during its flow course. YAMUNA originates from near village Kharapathar in Jubbal tehsil of the district Shimla at height of about 3270 mtrs.

Figure No. 3.1 Topographic Map



3.3 METHODS FOR MONITORING

Table 3.3: Methods adopted for PM_{10}, PM 2.5, SO_2 and NO_2

Parameters	Technique	Technical Protocol	Minimum Détectable Limit
PM_{10}	Gravimetric method	IS 5182 (Part-XXIII)	5 (µg/m³)
Sulphur Dioxide	West and Gaeke	IS-5182 (Part-II)	3 (µg/m³)
Nitrogen Dioxide	Jacob & Hochheiser	IS-5182 (Part-VI)	7 (µg/m³)
$PM_{2.5}$	Gravimetric method	CPCB Guidelines - Volume-I, May 2011	5 (µg/m³)

3.3.1 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 hourly monitoring was carried out for SO_2, NO_2, and PM2.5 & PM_{10} twice a week at each station. This study was done for a period of a month Oct. 2022 to Dec. 2022.

b. Method of monitoring

The Central Pollution Control Board (CPCB) has published comprehensive document on emission testing regulations ("Emission Regulations Part-3, 1985"). Those procedures relevant to the particulate monitoring are summarized below:

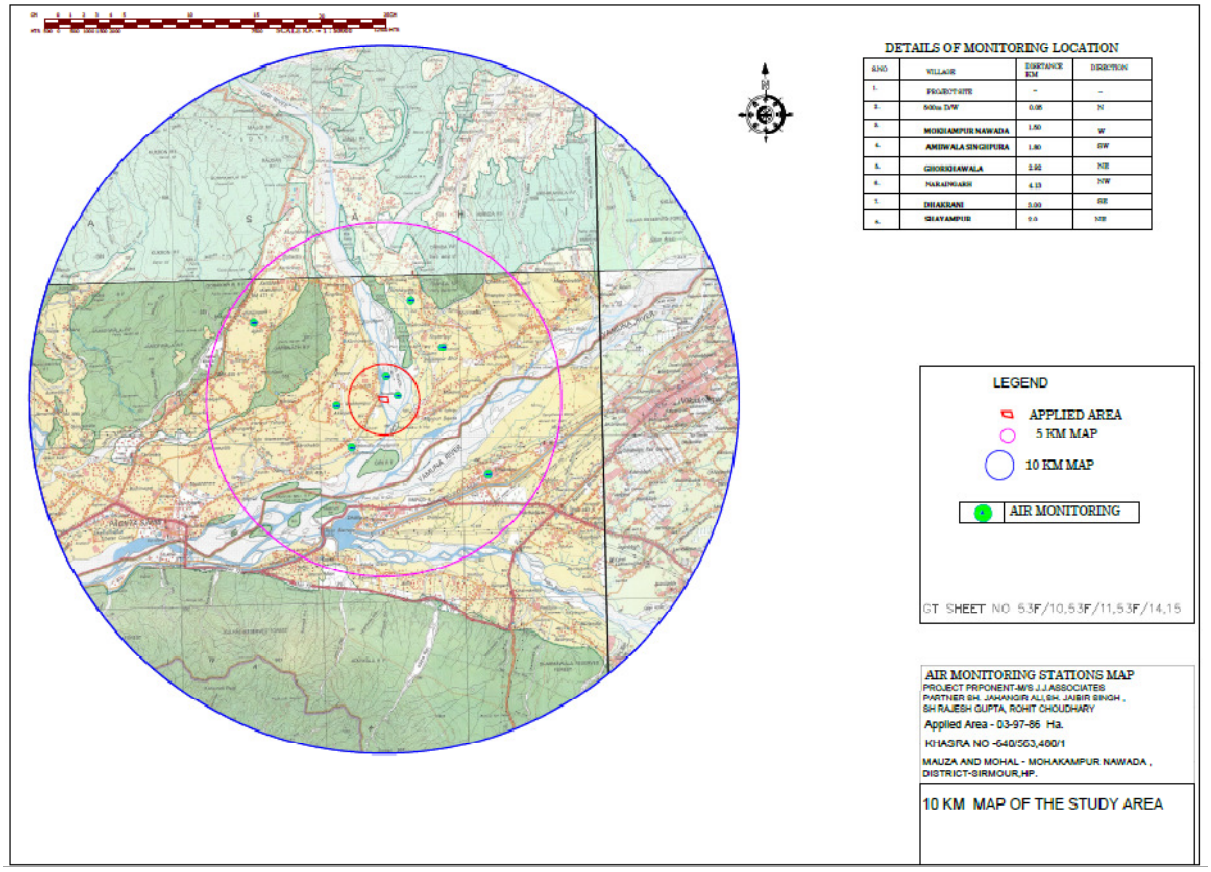
I. Particulate Matter (PM):-

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 adapted.

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 **Map.**

Figure No. 3.2 Air Monitoring Station Map



The ambient air quality data were collected to find the existing GLC. The data is given in Table No. 3.3 (ii).

Table 3.3 (i) Ambient air quality monitoring stations

S. No.	Location	Station Name	Approx Distance (KM)	Direction
1.	AQ1	Project Site	00	--
2.	AQ2	500 M	0.5	N
3.	AQ3	Mokhampur Nawada	1.5	W
4	AQ4	Ambwala Singhpura	1.8	SW
5	AQ5	Ghorkhawala	2.92	NE
6	AQ6	Naraingarh	4.13	NW
7	AQ7	Dhakrani	3.0	SE
8	AQ8	Shayampur	2.0	NE

Table 3.3 (ii): Ambient Air Quality Status

S. No.	Pollutant	Location	No. of observation	Minimum	Maximum	Average	98th Percentile	CPCB Standards
1.	SO_2 ($\mu g/m^3$)	AQ1	8	BDL<6.0	BDL<6.0	BDL<6.0	--	80.0
		AQ2		BDL<6.0	BDL<6.0	BDL<6.0	--	
		AQ3		BDL<6.0	BDL<6.0	BDL<6.0	--	
		AQ4		BDL<6.0	BDL<6.0	BDL<6.0	--	

		AQ5		BDL<6.0	BDL<6.0	BDL<6.0	--	
		AQ6		BDL<6.0	BDL<6.0	BDL<6.0	--	
		AQ7		BDL<6.0	BDL<6.0	BDL<6.0	--	
		AQ8		BDL<6.0	BDL<6.0	BDL<6.0	--	
2.	NO_2 ($\mu g/m^3$)	AQ1	8	BDL<6.0	6.2	BDL<6.0	--	80.0
		AQ2		BDL<6.0	6.5	BDL<6.0	--	
		AQ3		BDL<6.0	6.1	BDL<6.0	--	
		AQ4		BDL<6.0	6.3	BDL<6.0	--	
		AQ5		BDL<6.0	6.2	BDL<6.0	--	
		AQ6		BDL<6.0	6.6	BDL<6.0	--	
		AQ7		BDL<6.0	6.3	BDL<6.0	--	
		AQ8		BDL<6.0	6.1	BDL<6.0	--	
3.	PM_{10} ($\mu g/m^3$)	AQ1	8	33.6	45.2	39.4	38.6	100.0
		AQ2		32.0	44.3	38.15	37.4	
		AQ3		32.6	45.4	39	38.2	
		AQ4		32.8	45.4	39.1	38.3	
		AQ5		33.1	44.4	38.75	38.0	
		AQ6		32.7	45.6	39.15	38.4	
		AQ7		32.0	45.2	38.6	37.8	

		AQ8		32.4	44.9	38.65	37.9	
4.	PM2.5 ($\mu g/m^3$)	AQ1	8	23.2	27.4	25.3	24.8	60.0
		AQ2		22.1	26.7	24.4	23.9	
		AQ3		22.4	27.8	25.1	24.6	
		AQ4		22.3	27.5	24.9	24.4	
		AQ5		23.4	27.0	25.2	24.7	
		AQ6		22.1	27.9	25	24.5	
		AQ7		22.2	27.5	24.85	24.4	
		AQ8		22.3	27.7	25	24.5	

BDL: Below Dectectable Level

3.4 Observations:

Ambient Air Quality Monitoring reveals that the minimum & maximum concentrations of PM_{10} amongst all the 8 AQ monitoring stations were found to be 32.0 $\mu g/m^3$ at AQ2 and 45.6 $\mu g/m^3$ at AQ6, respectively. This dust concentration will get considerably reduced the moment measures are taken for dust control at the crusher itself, like the wet crushing, or extraction of dust laden air and cleaning of dust thereof.

As far as the gaseous pollutants SO_2 and NO_2 are concerned, the prescribed CPCB limit of 80 $\mu g/m^3$for residential and rural areas has never surpassed at any station. The minimum concentrations of SO_2 are BDL<6.0 $\mu g/m^3$. The minimum & maximum concentrations of NO_2 were found to be BDL<6.0 $\mu g/m^3$ 6.5 $\mu g/m^3$ at AQ2 respectively.

3.5 Hydrology and Physiography of the Study Area

3.5.1 Hydrology

Hydro geological map of the district is presented in below mentioned Fig. Springs are the major ground water sources of water supply in the district. In valley area poanta, the ground water occurs in porous unconsolidated alluvial formation comprising, sand, silt, gravel, cobbles/pebbles etc. Ground water is being developed in the area by medium to deep tube wells, dug wells, dug cum bored wells. Depth to water level shows wide variation from near surface to more than 35 m bgl. Yield of shallow aquifier is moderate with well discharges up to 10 lps

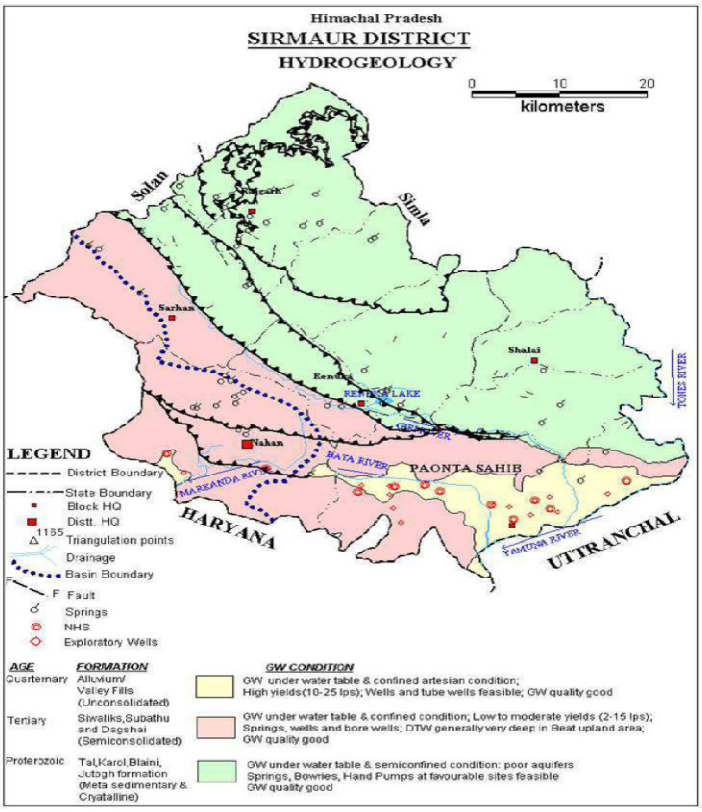
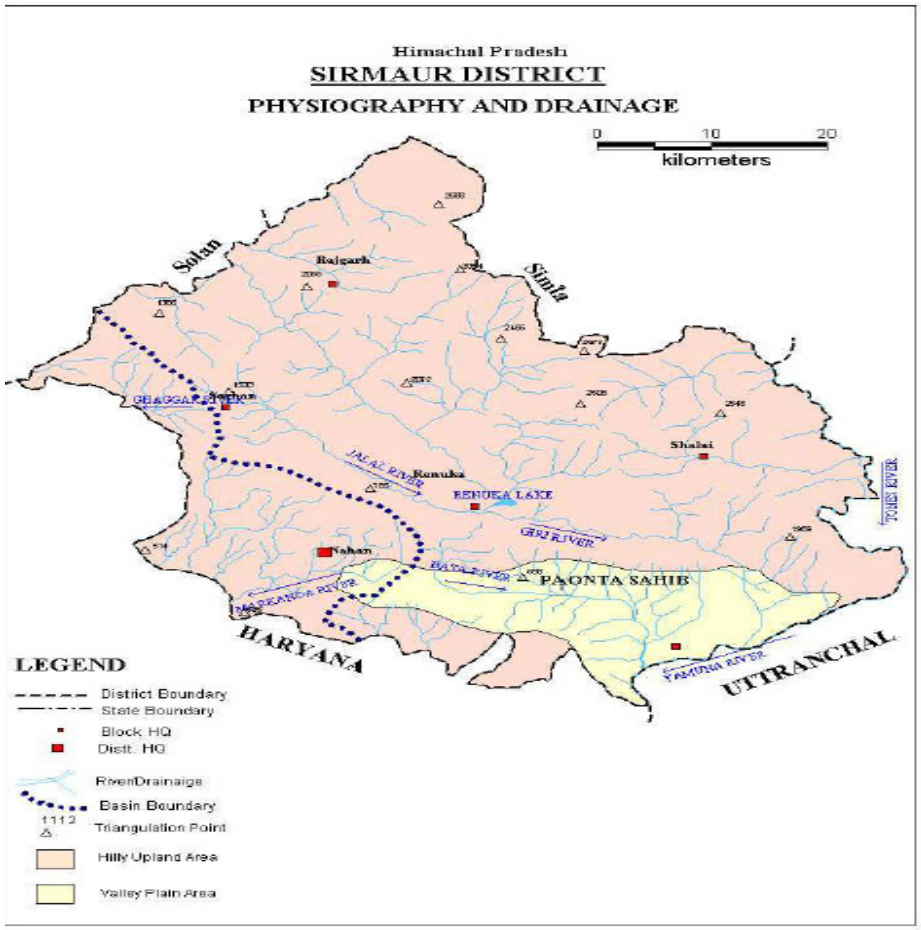


Figure No. 3.3 Hydrology Map

3.5.2 Physiography

Figure No. 3.4 Physiography and Drainage Map



3.5.2 Relief

The lease area is valley plain surface having Giri Bed.

3.6 Water environment

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

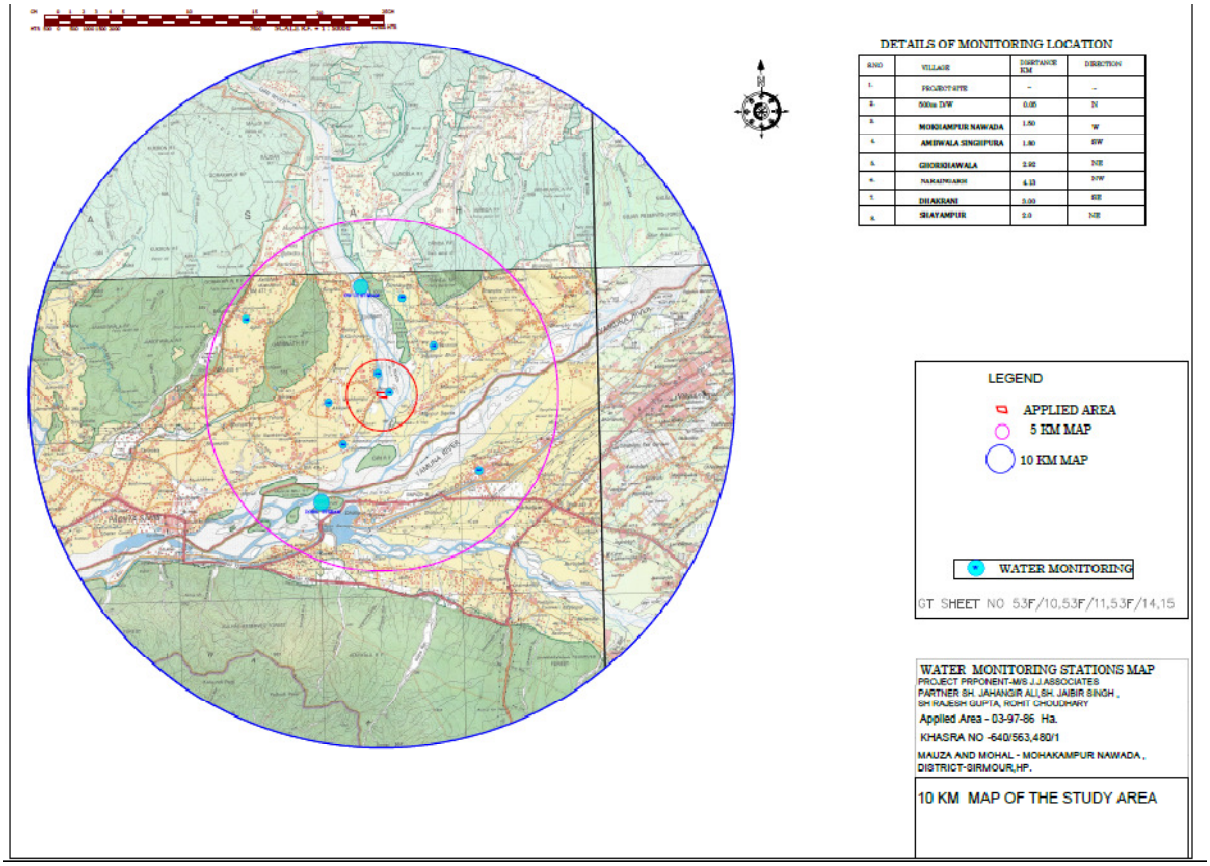


Table 3.3 (iii) Ground water sampling locations

Station No.	Location	Approx. Distance	Direction
GW1	Project Site	00	--
GW2	500 M	0.5	N
GW3	Mokhampur Nawada	1.5	W
GW4	Ambwala Singhpura	1.8	SW
GW5	Ghorkhawala	2.92	NE
GW6	Naraingarh	4.13	NW
GW7	Dhakrani	3.0	SE
GW8	Shayampur	2.0	NE

Table 3.3 (iv) Physico-chemical properties of ground water Study Period – October'22-December'22

S. NO	Parameter	Unit	Requirement (Desirable Limit) (As per BIS 10500:2012)	Permissible limit in the Absence of Alternate source (As per BIS 10500:2012	Location and Source of Water Sample							
					GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8
1	**pH**	NA	6.5 to 8.5	NR	7.27	7.30	7.38	7.69	7.38	7.56	7.68	7.62
2	**Turbidity**	NTU	1.0	5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
3	**Conductivity**	µS/cm	--	--	716.33	651.66	750.00	536.66	630.00	663.33	713.33	646.66
4	**Temperature**	^{0}C	--	--	21.0	20.8	21.1	20.1	20.5	21.4	20.7	21.1
5	**Total Alkanity as $CaCO_3$**	mg/l	200.00	600.00	125.00	95.00	135.00	145.00	125.00	110.00	185.00	120.00
6	**Total Suspended Solids**	mg/l	--	--	6.00	9.00	12.00	9.00	8.0	6.0	7.0	6.00
7	**Total Dissolved Solids**	mg/l	500.00	2000.00	429.00	391.00	450.00	322.00	378.00	398.0	428.00	388.00
8	**Total Hardness as $CaCO_3$**	mg/l	200.00	600.0	152.12	204.16	212.16	92.07	132.10	172.13	192.15	152.12
9	**Calcium Hardness as Ca^{2+}**	mg/l	75.00	200.00	16.03	43.28	44.88	20.84	27.25	35.27	41.68	35.27

S. NO	Parameter	Unit	Requirement (Desirable Limit) (As per BIS 10500:2012)	Permissible limit in the Absence of Alternate source (As per BIS 10500:2012	Location and Source of Water Sample							
					GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8
10	Magnesium Hardness as Mg^{2+}	mg/l	30.00	100.00	27.22	23.31	24.29	9.86	15.54	20.40	21.37	15.53
11	Chloride as Cl^-	mg/l	250.00	1000.00	60.26	67.35	81.53	35.45	24.81	42.54	88.62	95.71
12	Fluoride as F^-	mg/l	1.00	1.50	0.32	0.39	0.32	0.36	0.48	0.52	0.53	0.59
13	Nitrate as NO_3^-	mg/l	45.00	NR	4.12	8.99	7.14	4.58	5.21	3.69	5.96	8.59
14	Sulphate as SO_4^{2-}	mg/l	200.00	400.00	12.78	14.24	12.16	7.91	12.22	9.87	16.18	13.38
15	Chemical Oxygen Demand(COD)	mg/l	--	--	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
16	Dissolved Oxygen	mg/l	--	--	4.60	3.90	3.90	4.75	0.8	1.0	4.75	4.75
17	Sodium as	mg/l	--	--	13.20	14.53	17.82	7.82	5.45	9.35	19.36	20.91
18	Potassium as K	mg/l	--	--	1.42	1.76	2.14	1.02	0.68	1.32	2.32	2.50
19	Iron as Fe	mg/l	0.30	NR	0.19	0.23	0.21	0.18	0.22	0.21	0.20	0.22
20	Phosphorus as PO_4^{3-}	mg/l	--	--	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Part-B

3.6.1 Observation:

Analysis results of ground water reveal the following: -

- PH varies from 7.27 at GW1 to 7.69 at GW4.
- Total hardness varies from 92.07 mg/l at GW4 to 212.16 mg/l at GW3.
- Total dissolved solids vary from 322 mg/l at GW4 to 450 mg/l at GW3.

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 is well within the permissible limits as per IS: 10500-1991, Drinking Water Standards.

3.6.2 Surface water

Two water samples were collected from the river Upstream & Downstream area. The Surface water sampling locations map attached as **Annexure XIV.** The physico-chemical analysis of the water samples is given in the Table 3.3 (vi).

Table 3.3 (vi)

Surface water sampling locations

Station No.	Location	Approx. Distance	Direction
SW1	Giri River Upstream	3.0	NW
SW2	Yamuna River Downstream	3.40	SW

Draft EIA/EMP Report of M/s J.J Associates, Sand Stone & Bajri. Mine Total Area is 43.9786 HA, Located Near Village- Mauza/Mohal Mohakampur Nawada, Tehsil – Paonta Sahib & Dist.- Sirmaur (h.p)

SW1- Giri River Upstream

S.No	Parameter	Test Method	Results	Units	Tolerance Limit as per IS:2296				
					Class A	Class B	Class C	Class D	Class E
1	pH	IS:3025(Part-11)	7.43	-	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5
2	Temperature	IS:3025(Part-09)	20.3	^{O}C	-	-	-	-	-
3	Turbidity	IS:3025(Part-10)	<1.0	NTU	-	-	-	-	-
4	Conductivity @25°C	IS:3025(Part-14)	460.0	µs/cm.	-	-	-	1000	2250
5	Total Suspended Solid	IS:3025(Part-17)	8.0	mg/l	-	-	-	-	-
6	Total Alkalinity (as $CaCO_3$)	IS:3025(Part-23)	110.0	mg/l	-	-	-	-	-
7	Dissolved Oxygen (as O_2) Min.	IS:3025(Part-38)	4.90	mg/l	6	5	4	4	-
8	Calcium(as Ca)	IS:3025(Part-40)	32.06	mg/l	80	-	-	-	-
9	Magnesium(as Mg)	IS:3025(Part-46)	9.72	mg/l	24	-	-	-	-
10	Chloride(as Cl),Max	IS:3025(Part-32)	46.09	mg/l	250	-	-	-	600
11	Iron(as Fe),Max	IS:3025(Part-53)	0.22	mg/l	0.3	-	50	-	-
12	Fluoride(as F),Max	IS:3025(Part-60)	0.23	mg/l	1.5	1.5	1.5	-	-
13	Total Dissolved Solid	IS:3025(Part-16)	276.0	mg/l	500	-	1500	-	2100
14	Total Hardness (as CaCO3)	IS:3025(Part-21)	120.10	mg/l	300	-	-	-	-

15	Sulphate (as SO4)Max	IS:3025(Part-24)	21.63	mg/l	400	-	400	-	1000
16	Phosphate (as P)	IS:3025(Part-31)	<0.05	mg/l	-	-	-	-	-
17	Sodium (as Na)	IS:3025(Part-45)	11.25	mg/l	-	-	-	-	-
18	Potassium (as K)	IS:3025(Part-45)	1.96	mg/l	-	-	-	-	-
19	Nitrate (as NO3),Max	IS: 3025 (Part-34)	4.26	mg/l	20	-	50	-	-
20	Chemical Oxygen Demand (asO2)	IS-3025(Part-58)	8.0	mg/l	-	-	-	-	-

Remarks:-

Class A-Drinking water without conventional treatment but after disinfection.
Class B-Water for outdoor bathing.
Class C-Drinking water with conventional treatment followed by disinefection.
Class D-Water for fish culture and wild life propagation.
Class E-Water for irrigation, industrial cooling and control waste disposal.

SW2- Yamuna River Downstream

RESULTS									
S.No	Parameter	Test Method	Results	Units	Tolerance Limit as per IS:2296				
					Class A	Class B	Class C	Class D	Class E
1	pH	IS:3025(Part-11)	7.40	-	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5
2	Temperature	IS:3025(Part-09)	20.0	^{O}C	-	-	-	-	-
3	Turbidity	IS:3025(Part-10)	,1.0	NTU	-	-	-	-	-
4	Conductivity @25°C	IS:3025(Part-14)	718.33	µs/cm.	-	-	-	1000	2250
5	Total Suspended	IS:3025(Part-17)	6.0	mg/l	-	-	-	-	-

	Solid								
6	Total Alkalinity (as $CaCO_3$)	IS:3025(Part-23)	105.0	mg/l	-	-	-	-	-
7	Dissolved Oxygen (as O_2) Min.	IS:3025(Part-38)	4.85	mg/l	6	5	4	4	-
8	Calcium(as Ca)	IS:3025(Part-40)	40.08	mg/l	80	-	-	-	-
9	Magnesium(as Mg)	IS:3025(Part-46)	14.58	mg/l	24	-	-	-	-
10	Chloride(as Cl),Max	IS:3025(Part-32)	106.35	mg/l	250	-	-	-	600
11	Iron(as Fe),Max	IS:3025(Part-53)	0.20	mg/l	0.3	-	50	-	-
12	Fluoride(as F),Max	IS:3025(Part-60)	0.29	mg/l	1.5	1.5	1.5	-	-
13	Total Dissolved Solid	IS:3025(Part-16)	311.61	mg/l	500	-	1500	-	2100
14	Total Hardness (as CaCO3)	IS:3025(Part-21)	160.13	mg/l	300	-	-	-	-
15	Sulphate (as SO4)Max	IS:3025(Part-24)	13.18	mg/l	400	-	400	-	1000
16	Phosphate (as P)	IS:3025(Part-31)	<0.05	mg/l	-	-	-	-	-
17	Sodium (as Na)	IS:3025(Part-45)	23.32	mg/l	-	-	-	-	-
18	Potassium (as K)	IS:3025(Part-45)	2.96	mg/l	-	-	-	-	-
19	Nitrate (as NO3),Max	IS: 3025 (Part-34)	5.89	mg/l	20	-	50	-	-
20	Chemical Oxygen Demand (COD)	IS-3025(Part-58)	8.0	mg/l	-	-	-	-	-

Remarks:-

Class A-Drinking water without conventional treatment but after disinfection.

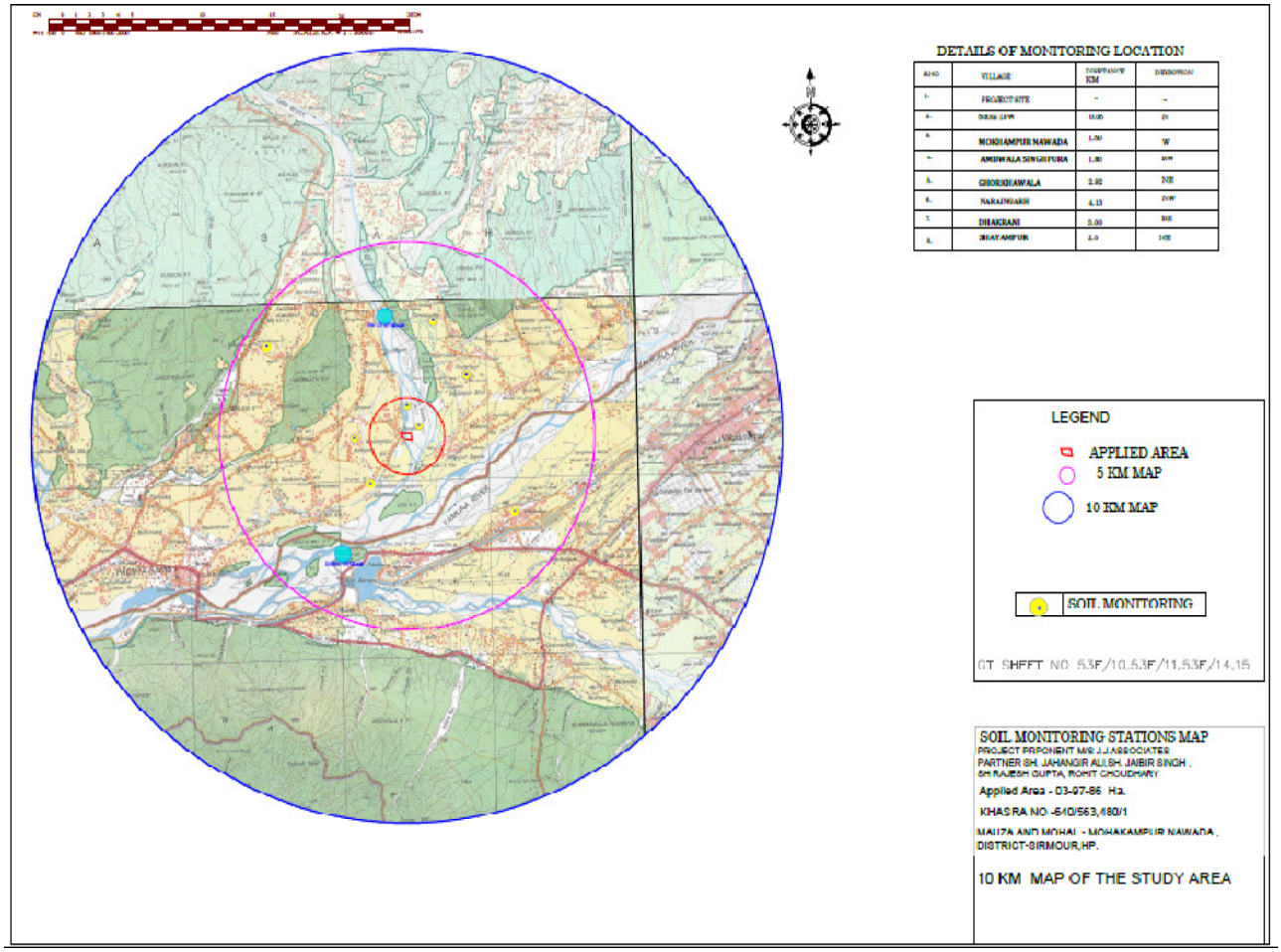
Class B-Water for outdoor bathing.

Class C-Drinking water with conventional treatment followed by disinefection.
Class D-Water for fish culture and wild life propagation.
Class E-Water for irrigation, industrial cooling and control waste disposal.

3.7 Soil environment

Soil may be defined as a thin layer of earth's crust, a 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 (1 core zone & 7 Buffer zone) and analyzed as per CPCB norms. The soil sampling locations map.

The Soil sampling locations are marked in Map



The physico-chemical characteristic of these soil samples is given in Table No. 3.3 (viii).

Table No. 3.3 (VI) Description of soil sampling locations

Station No.	Location	Approx. Distance	Direction
SQ 1	Project Site	00	--
SQ 2	500 M	0.5	N
SQ3	Mokhampur Nawada	1.5	W
SQ4	Ambwala Singhpura	1.8	SW
SQ5	Ghorkhawala	2.92	NE
SQ6	Naraingarh	4.13	NW
SQ7	Dhakrani	3.0	SE
SQ8	Shayampur	2.0	NE

Table 3.3 (vii)

S. No	Parameter	Unit	S1	S2	S3	S4	S5	S6	S7	S8
1	pH	NA	7.97	7.88	8.09	7.95	8.11	7.92	8.11	7.93
2	Electrical Conductivity	mS/cm	0.14	0.13	0.15	0.14	0.12	0.14	0.13	0.16
3	Sodium as Na	%	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4	Potassium as K	%	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
5	Organic Matter	%	1.26	1.35	1.41	1.30	1.34	1.28	1.47	1.33
6	Organic Carbon	%	0.73	0.78	0.82	0.75	0.77	0.74	0.85	0.77
7	Water Holding capacity	%	35.89	33.89	32.05	37.21	33.10	35.22	31.25	38.34
8	Available Phosphorous	Kg/ha	11.21	10.23	11.48	12.11	11.87	12.34	11.20	10.41
9	Bulk Density	gm/cc	1.36	1.40	1.39	1.42	1.37	1.34	1.45	1.38
10	Available Chloride	mg/Kg	12.03	13.57	13.03	12.06	13.22	13.67	13.52	13.28
11	Total Nitrogen	%	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
12	Calcium Carbonate as $CaCO_3$	%	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
13	Texture	-	Sandy clay	Sandy clay	Sandy clay	Sandy clay	Sandy clay	Sandy clay	Sandy clay	Sandy clay

Physico-chemical properties of soil

3.7.1 Observations:

Samples collected from identified locations indicate the soil is Loamy type and the pH value ranging from 7.88 to 8.11, which shows that the soil moderatly alkaline in nature. The water holding capacity is found in between 31.25 % to 38.34 %.

3.8 Noise environnent

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 analysis reveals that the noise is well within permissible ranges. The noise level monitoring locations map.

The Noise sampling locations are marked in Map.

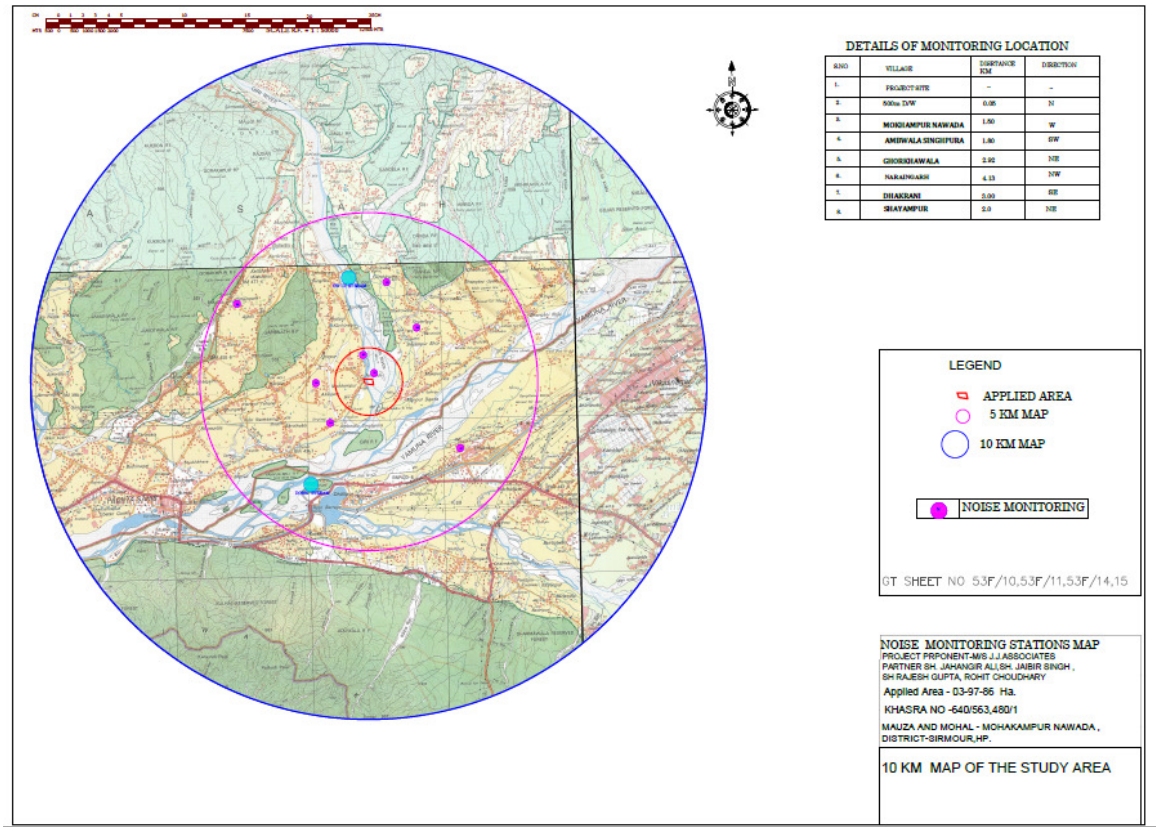


Table 3.3 (viii)

Noise quality monitoring stations

S. No.	Location	Station Name	Approx. Distance	Direction
1.	NQ1	Project Site	00	--
2.	NQ 2	500 M	0.5	N
3.	NQ 3	Mokhampur Nawada	1.5	W
4	NQ4	Ambwala Singhpura	1.8	SW
5	NQ5	Ghorkhawala	2.92	NE
6	NQ6	Naraingarh	4.13	NW
7	NQ7	Dhakrani	3.0	SE
8	NQ8	Shayampur	2.0	NE

Table No. 3.3 (ix) Noise level status

S. No.	Project Site	Leq Value monitored, in dB(A)	
		DAY*	NIGHT*
1	NQ1	52.6	41.9
2	NQ2	53.4	40.7
3	NQ3	52.9	42.3
4	NQ4	53.0	42.8
5	NQ5	54.3	42.0
6	NQ6	54.5	41.7
7	NQ7	53.2	41.8
8	NQ8	54.2	40.5

* Day Time

* Night Time

3.8.1 Results

Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as 52.6 dB(A) at NQ-1 & 54.5 dB(A) at NQ6 respectively. The minimum & maximum noise levels at night time were found to be 40.5dB (A) at NQ8 & 42.8 dB(A) at NQ4 respectively.

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.

3.9 TRAFFIC STUDY

The lease area is about 1.81 km away from the nearest matelled road.

3.9.1During mine operation

Proposed Capacity of mine/annum	: 62,842 TPA
No. of working days	: 300 days
Proposed Capacity of mine/day	: 209 TPD
Tipper truck Capacity	: 9 tonnes
No. of tipper truck deployed/day	: 23 tipper truck

The additional load on the carrying capacity of the concerned roads is not likely to have any adverse effect due to the proposed project.

3.10 BIOLOGICAL ENVIRONMENT

Biological diversity comprises the variability of species, genus and ecosystems and is very crucial for maintaining the basic processes on which the life depends. Broadly it can be divided in to two types i.e. the floral diversity and faunal diversity. Conservation of the biodiversity is essential for the sustainable development as it not only provides the food, fodder and medicine but also contribute in improvement of essential environmental attributes like air, water, soil, etc.

Before starting any Environmental Impact Assessment study, it is necessary to identify the baseline of relevant environmental parameters which are likely to be affected as a result of operation of the proposed project. A similar approach has been adopted for conducting the study

on Biological Environment for this Project. Both terrestrial and aquatic ecosystems have been studied to understand the biological environment.

3.10.1 PHYSICAL ENVIRONMENT OF THE STUDY AREA:

District Sirmaur is located in outer Himalayas which are commonly known as Shivalik range. This district is bounded by district Shimla in North, Uttar Pradesh in East, Haryana in South and District Solan in North-West. Like other parts of Himachal Pradesh, it has beautiful landscapes, bracing climate, big and small game and legendry temples which hold abiding attraction for the tourists. The river Yamuna is the biggest river in the district which originates from Kotkhai/Jubbal Tehsil of Shimla district and flows down in the south-east direction. It ultimately joins the river Yamuna near Paonta Sahib. Lot of tributaries join this river in its long course, most important of them being Jalal River which originates from Dharthi range near Pachhad and joins the Bed of Yamuna river at Dadahu from the right side. The river Yamuna is very useful as it a big source of livelihood fishermen in this district. Another important river which forms the eastern border of the Sirmour district is the river Tons.

3.10.2 FORESTS COVER IN PAONTA SAHIB DISTRICT:

The forest cover in the Himachal Pradesh state, based on interpretation of satellite data of October-November 2008 mentioned in the India State of Forest Report 2011, is 26.37% of the state's geographical area. In terms of forest canopy density classes, the state has 3224 km^2 area under very dense forest, 6381 km^2 area under moderately dense forest and 5074 km^2 area under open forest. Out of 2825 km^2 total area of Sirmaur

district, 130 km^2 areas is under very dense forest, 568 km^2fall under moderately dense forest and 687 km^2area is open forest.

3.10.3 STUDY PERIOD AND METHODOLOGY

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 literature. Inventory of flora and fauna has been prepared on the basis of collected data.

3.10.3.1 FIELD STUDY PERIOD: The ecological survey has been conducted for one season. All data were collected in pre-monsoon period in order to reduce metrological biasness. The details are given as below:

Post-monsoon: Oct.-2022 to Dec. - 2022
Core zone : At the project site along Bed of Giri river
Buffer zone : Around the project site in 10 km radius.

3.10.3.2 Methodology:

Table No: 3.4 Mode of data collection & parameters considered during the survey

Aspect	**Data**	**Mode of data collection**	**Parameters monitored**
Terrestrial Ecology	Primary data collection	By conducting field survey	Floral and Faunal diversity
	Secondary data collection	From authentic sources like Forests Department of Sirmaur and Forest Department of Dehradun (Being border of Dehradun District) and available	Floral and Faunal diversity and study of vegetation, forest type, importance

		published literatures	etc.
Aquatic Ecology	Primary data collection	By conducting field survey	Floral and Faunal diversity
	Secondary data collection	From authentic sources like Forests Department of Sirmaur and Forest Department of Dehradun and available published literatures	Floral and Faunal diversity and study of vegetation, forest type, importance etc.

3.10.4 GENERAL VEGETATION STUDY OF THE AREA:

Area supports moderately healthy vegetation, the main forest species are along the Shivalik foothills. These Terai plains support the species of Sisam, Arjuna, Kanji, Khair, Saagaun, Subabul, Neem, Eucalyptus, Babul etc. Ground vegetation mainly consists of grasses and small shrubs. Useful fodder grasses, *Cynodondactylon, Eleusineindica, Trifoliumalexandrinum,* etc. can be seen growing in the area. The large weeds which infest uncultivated tracts are aak *(Calotropisprocera),* castor *(Ricinuscommunis),* dhatura *(Daturametel)* and thorn *(Opuntiastricta).* Other noxious weeds and those which appear in crops arePohlior Thistle *(Carthamusoxyacantha),* shialkanta *(Argemonemexicana),* kandyari *(Solanumxanthocarpum), Partheniumhysterophorus*andBhang *(Cannabis sativa).*

3.10.4.1 FLORA OF THE CORE ZONE

The core zone comprises of Giri river bed, where mining operation is proposed. This area consists of riparian vegetation in which aquatic and marshland plants are the main component. Most among them are weeds. No ecologically sensitive plant species has been reported from this area.

Riparian vegetation is found along the river side. In stagnant water growth of hydrophytes likes *Hydroleazeylanica, Ipomoea carnea,Ludwigiaadscendens, Sagittariasagittifolia*, *Spilanthespaniculata, Typhalatifolia*, etc. can be commonly observed. The river bank supports the growth of poplar and algal bloom.

3.10.4.2 FLORA OF THE BUFFER ZONE:

Buffer zone of the proposed project is Terai and foothills of Shivalik. Many tree species are planted in the area because of their usefulness, economic and aesthetic values. The tree species observed in the area are, Aam (*Mangiferaindica*), Jamun (*Syzygiumcumini*), Bail (*Aeglemarmelos*), Bakain (*Meliaazedarach*), Bargad (*Ficusbengalensis*), Neem (*Azadirachtaindica*), Peepal (*Ficusreligiosa*), Popular (*Populasdeltoides*), Safeda (*Eucalyptus sp.*), Sisam (*Dalbergiasissoo*), *Bauhinia variegata*, *Celtisaustralis*, *Bombaxceiba*, *Grewiaoptiva,* etc.

In agricultural waste land and along the road side, growth of weeds like *Argemonemexicana, Cannabis sativa, Cenchrusciliaris, Heteropogoncontortus, Lantana camara*, *Partheniumhysterosphorus*, etc. are very common. These weeds are affecting the agricultural productivity of the region due to fast growth, short life cycle and enormous production of seeds.

3.10.4.3 WASTE LAND:

Most of the areas nearby the Core zone are waste land. Commonly seen plant species in such areas are *Cannabis sativa, Lantana camara*, *Ipomeacarnea*, *Calotropisprocera, Cassia tora, Partheniumhysterophorus, Ziziphus*sp*, Heteropogoncontortus,Argemone Mexicana,* etc. These weeds

are affecting the agricultural productivity of the region due to fast growth, short life cycle and enormous production of seeds.

3.10.4.4 VEGETATION IN AND AROUND HUMAN SETTLEMENT:

Vegetation pattern in villages and surrounding areas are slightly different from the rest of the areas. The common species grown near villages are mostly edible or useful plants such as *Mangiferaindica, Syzygiumcumini, Azadirachtaindica, Albizialebbeck, Delonixregia, Tamarindusindica, Ficusreligiosa,Bauhinia variegata*, *Celtisaustralis*, *Bombaxceiba*, *Grewiaoptiva,* etc.

A list of flora of the study area is enclosed as **Table: 3.6(i) & 3.6(ii).**

Table: 3.6(i) FLORA OF THE CORE ZONE

Sl. No.	**Species**	**Family**	**Habit**
1	*Ageratum conyzoides*L.	Asteraceae	Herb
2	*Amaranthusspinosus*L.	Amaranthaceae	Herb
3	*Calotropisprocera*(Aiton) R.Br.	Asclepiadaceae	Shrub
4	*Cannabis sativa* L.	Canabaceae	Herb
7	*Chenopodium album* L.	Chenopodiaceae	Herb
8	*Daturainnoxia*Mill.	Solanaceae	Shrub
9	*Hydroleazeylanica*(L.) Vahl	Hydrophylaceae	Herb
10	*Ipomoea carnea*Jacq.	Convolvulaceae	Shrub
13	*Dalbergiasissoo*	Fabaceae	Tree
14	*Bombaxceiba*	Bombacaceae	Tree

Note: Trees are near the banks of the river (Periphery of the leased area)

Table: 3.6(ii) FLORA OF THE BUFFER ZONE

Sl.No.	**Species**	**Family**	**Habit**
1	*Alternantheraparonychioides*	Amaranthaceae	Herb

Sl.No.	Species	Family	Habit
2	*Alternantherapungens*	Amaranthaceae	Herb
3	*Amaranthusspinosus*	Amaranthaceae	Herb
4	*Colocasiaesculenta*	Araceae	Herb
5	*Ageratum conyzoides*	Asteraceae	Herb
6	*Grangeamaderaspatana*	Asteraceae	Herb
7	*Partheniumhysterophorus*	Asteraceae	Herb
8	*Cassia tora*	Fabaceae	Herb
9	*Cannabis sativa*	Cannabaceae	Herb
10	*Chenopodium album*	Chenopodiaceae	Herb
11	*Argemonemexicana*	Papaveraceae	Herb
12	*Brachiariaramosa*	Poaceae	Herb
13	*Cynodondactylon*	Poaceae	Herb
14	*Eleusineindica*	Poaceae	Herb
15	*Eragrostistenella*	Poaceae	Herb
16	*Imperatacylindrica*	Poaceae	Herb
17	*Saccharumspontaneum*	Poaceae	Herb
18	*Physalis minima*	Solanaceae	Herb
19	*Calotropisprocera*	Asclepiadaceae	Shrub
20	*Cassia occidentalis*	Fabaceae	Shrub
21	*Croton bonplandianum*	Euphorbiaceae	Shrub
22	*Abutilon indicum*	Malvaceae	Shrub
23	*Bougainvillea spectabilis*	Nyctaginaceae	Shrub
24	*Ziziphusmauritiana*	Rhamnaceae	Shrub
25	*Daturainnoxia*	Solanaceae	Shrub
26	*Solanumvirginianum*	Solanaceae	Shrub

Sl.No.	Species	Family	Habit
27	*Lantana camara*	Verbenaceae	Shrub
28	*Berberis vulgaris*	Berberidaceae	Shrub
29	*Mangiferaindica*	Anacardiaceae	Tree
30	*Polyalthialongifolia*	Annonaceae	Tree
31	*Ficusracemosa*	Moraceae	Tree
32	*Cassia fistula*	Fabaceae	Tree
33	*Ricinuscommunis*	Euphorbiaceae	Tree
34	*Albizialebbeck*	Fabaceae	Tree
35	*Bauhinia acuminata*	Fabaceae	Tree
36	*Buteamonosperma*	Fabaceae	Tree
37	*Dalbergiasissoo*	Fabaceae	Tree
38	*Bombaxceiba*	Malvaceae	Tree
39	*Azadirachtaindica*	Meliaceae	Tree
40	*Meliaazedarach*	Meliaceae	Tree
41	*Luecenaleucocephala*	Fabaceae	Tree
42	*Bauhinia variegata*	Fabaceae	Tree
43	*Terminaliabellerica*	Combretaceae	Tree
44	*Terminaliachebula*	Combretaceae	Tree
45	*Morus alba*	Moraceae	Tree
46	*Delonixregia*	Fabaceae	Tree
47	*Pinusroxburgii*	Pinaceae	Tree
48	*Celtisaustralis*	Cannabaceae	Tree
49	*Grewiaoptiva*	Tiliaceae	Tree
50	*Holopteleaintegrifolia*	Ulmaceae	Tree

3.10.5 WILD LIFE AND AVIFAPAONTA SAHIB OF THE STUDY AREA:

Core zone of project area comprises of Asan Conservation Reserve, and supports healthy aquatic bird population. But area does not support any significant wild mammalian species. No wild mammalian species encountered during the field visit to study area, while livestock of local people are significantly using the area.

There are many river channels present in the buffer zone of study area which are the major attraction sites for avifauna. Asan barrage is famous for winter migratory birds, almost 140 bird species were identified during the field work, majority of these are migratory aquatic birds. As far as the reptile community was concerned, rat snake and house lizard are reported from the study area. Area does not support any healthy wild mammalian species and after a potential search, neither any direct sighting nor the indirect evidences were found in whole study area. A list of wild fauna of the study area has been prepared on the basis of local inquiry from the village people and from the available published literatures. The conservation value at regional level of identified fauna was gathered from the Wildlife protection Act, 1972, moreover, global conservation status of species was estimated from Red data book of IUCN. No established habitats of any mammals or birds are noticed in river bed and along the banks of the core zone area.

The fauna of study area can be grouped in to aquatic and terrestrial as the core area mostly comprises of aquatic fauna and the buffer area provides shelter to the terrestrial animals.

3.10.5.1 AQUATIC FAPAONTA SAHIB:

Aquatic fauna mostly comprises of Avifauna, Amphibians & Fish which cannot survive without water. Detail list of aquatic birds is shown in tabular form.

3.10.5.2 TERRESTRIAL FAPAONTA SAHIB:

A) MAMMALS: Area is not rich in wild mammals, but many domesticated mammal species are reported from buffer zone during the field survey. Common grazing animals like buffalo, cow, goat etc. can be noticed in open grass fields. Small mammals like Indian palm squirrel (*Funambuluspalmarum*) and field mouse (*Apodemussylvaticus*) are noticed in vicinity of village. Inquiry from village people regarding wild animals reveals that Rhesus macaque *(Macacamulatta)*, Indian hare (*Lepusnigricollis*), fruits bat (*Pteropusconspicillatus*), etc. are often seen in the area.

B) AVIFAPAONTA SAHIB: Water birds like White-breasted Water hen, Northern Pintail, Northern Shoveler, Common Teal, Falcated Duck, Eurasian Wigeon, Mallard, Spot-billed Duck, Gadwall, Cormorant and Bar Headed Gooseare of common occurrence.

C) REPTILES: The reptilians species commonly reported are Agama (*Laudakiatuberculata*) in settlement area, Garden lizard (*Calotesversicolor*) and *Eutropismacularia* along shady places in agricultural field or where growth of bushes is noticed. Among non poisonous snakes rat snakes (*Ptyasmucosus*) are commonly noticed in field, followed by poisonous snakes like King Cobra (*Najanaja*) and Banded krait (*Bungarusmulticinctus*) are reported to be seen by farmers.

D) AMPHIBIAN: Amphibians are commonly found at the places along the margin of aquatic and terrestrial systems. Due to presence of water bodies like river, nalas, etc. the study area is providing shelter to many amphibian species. Some of the commonly reported species are *Bufomelanostictus*(common Indian toad),*Euphlyctiscyanophlyctis*(Indian skipper frog), *Hoplobatrachustigerinus*(Indian bull frog)etc.

E) FISH: The fish species which are commonly found in the proposed site are *Labiobata* (Bhangan or Bata), *Gudusiachapara* (Chappera or Palla), *Labiorohita* (Dumra or Dhambra*), Notopterusnotopterus* (Pari or Battu),*Catlacatla* (Theila), *Clariusbatrachus*(mangur), etc.

A list of Fauna of the study area is presented in **Table 3.6(iii) and Table 3.6(iv).**

TABLE: 3.6(III) FAUNA OF THE CORE ZONE

S. No.	Common Name	Scientific Name	Wildlife schedule	IUCN Red List Status
Avian fauna (Bird):				
1	Common Myna	*Acridotherestristis*	IV	LC
2	Indian Cormorant	*Phalacrocoraxfuscicollis*	IV	VU
3	House Crow	*Corvussplendens*	V	LC
4	Ashy Drongo	*Dicrurusleucophaeus*	IV	LC
5	Koel	*Eudynamysscolopacea*	IV	NA
6	Sparrow	*Passer domesticus*	IV	LC
7	Oriental turtle	*Streptopeliaorientalis*	IV	LC

	Dove			
8	Rock Pigeon	*Columba livia*	IV	LC
9	Rose ringed Parakeet	*Psittaculakrameri*	IV	LC
10	Red vented bulbul	*Pycnonotuscafer*	IV	LC
Mammals				
1	Squirrel	*Funambulus pennant*	IV	DD
2	Rat	*Rattusrattus*	V	LC
Amphibians				
1	Common Indian toad	*Duttaphrynusmelanostictus*	IV	NA
2	Indian skipper frog	*Euphlyctiscyanophlyctis*	IV	NA
3	Indian bull frog	*Hoplobatrachustigerinus*	IV	NA
Fishes				
1	Bhangan or Bata	*Labeobata*		NA
2	Chappera or Palla	*Gudusiachapara*		DD
3	Dumra or Dhambra	*Labeorohita*		NA
4	Pari or Battu	*Notopterusnotopterus*		NA

5	Theila	*Catlacatla*		NA
6	mangur	*Clariusbatrachus*		

LC: Least Concern, VU: Vulnerable, NA: Not Assessed, DD: Data deficient.

Table: 3.6(iv) Fauna of the Buffer zone

S.No.	Common Name	Scientific name	Wildlife Schedule	IUCN Red Category
Wild Animals (Mammals)				
1	Squirrel	*Funambulus pennant*	IV	DD
2	Rat	*Rattusrattus*	V	LC
3	Wild pig	*Susscrofa*	III	LC
4	Indian Hare	*Lepusnigricollis*	V	LC
5	Fruit Bat	*Rousettusleschenaultii*	V	LC
6	Crested porcupine	*Hystrixindica*	IV	LC
Reptiles & Amphibians				
1	Common Toad	*Duttaphrynusmelanostictus*	IV	NA
2	India bull frog	*Ranatigrina*	IV	DD
3	Indian tree frog	*Polypedatesmaculatus*	IV	NA
4	Skipping frog	*Bufostomaticus*	IV	NA
5	Garden lizard	*Calotesversicolor*		NA
6	House lizard	*Hemidactylussp*	IV	NA

Avians (Birds)				
S.No.	**Common Name**	**Scientific name**	**IWPA**	**IUCN**
1.	Jungle Myna	*Acridotheresfuscus*	IV	LC

2.	Bank Myna	*Acridotheresginginianus*	IV	LC
3.	Common Myna	*Acridotherestristis*	IV	LC
4.	Blyth's Reed Warbler	*Acrocephalusdumetorum*	IV	LC
5.	Clamorous Reed Warbler	*Acrocephalusstentoreus*	IV	LC
6.	Common Sandpiper	*Actitishypoleucos*	IV	LC
7.	Common Iora	*Aegithinatiphia*	IV	LC
8.	Crimson Sunbird	*Aethopygasiparaja*	IV	LC
9.	Common Kingfisher	*Alcedoatthis*	IV	LC
10.	Red Avadavat	*Amandavaamandava*	IV	LC
11.	White-breasted Waterhen	*Amaurornisphoenicurus*	IV	LC
12.	Northern Pintail	*Anasacuta*	IV	LC
13.	Northern Shoveler	*Anasclypeata*	IV	LC
14.	Common Teal	*Anascrecca*	IV	LC
15.	Falcated Duck	*Anasfalcata*	IV	LC
16.	Eurasian Wigeon	*Anaspenelope*	IV	LC
17.	Mallard	*Anasplatyrhynchos*	IV	LC
18.	Spot-billed Duck	*Anaspoecilorhyncha*	IV	LC
19.	Gadwall	*Anasstrepera*	IV	LC
20.	Darter	*Anhinga melanogaster*	IV	LC
21.	Greater White-fronted Goose	*Anseralbifrons*	IV	LC
22.	Greylag Goose	*Anseranser*	IV	LC
23.	Lesser White-fronted Goose	*Ansererythropus*	IV	LC
24.	Bar-headed Goose	*Anserindicus*	IV	LC
25.	Rosy Pipit	*Anthusroseatus*	IV	LC
26.	Water Pipit	*Anthusspinoletta*	IV	LC
27.	Tree Pipit	*Anthustrivialis*	IV	LC
28.	House Swift	*Apusaffinis*	IV	LC

29.	Common Swift	*Apusapus*	IV	LC
30.	Grey Heron	*Ardeacinerea*	IV	LC
31.	Purple Heron	*Ardeapurpurea*	IV	LC
32.	Indian Pond Heron	*Ardeolagrayii*	IV	LC
33.	Spotted Owlet	*Athenebrama*	IV	LC
34.	Baer's Pochard	*Aythyabaeri*	IV	LC
35.	Common Pochard	*Aythyaferina*	IV	LC
36.	Tufted Duck	*Aythyafuligula*	IV	LC
37.	Ferruginous Pochard	*Aythyanyroca*	IV	LC
38.	Cattle Egret	*Bubulcus ibis*	IV	LC
39.	Yellow-breasted Greenfinch	*Carduelisspinoides*	IV	LC
40.	Common Rosefinch	*Carpodacuserythrinus*	IV	LC
41.	Greater Coucal	*Centropussinensis*	IV	LC
42.	Pied Kingfisher	*Cerylerudis*	IV	LC
43.	White-capped Water Redstart	*Chaimarrornisleucocephalus*	IV	LC
44.	Long-tailed Duck	*Clangulahyemalis*	IV	LC
45.	Rock pigeon	*Columba livia*	IV	LC
46.	Oriental Magpie Robin	*Copsychussaularis*	IV	LC
47.	Indian Roller	*Coraciasbenghalensis*	IV	LC
48.	HouseCrow	*Corvussplendens*	IV	LC
49.	Northern House Martin	*Delichonurbica*	IV	LC
50.	RufousTreepie	*Dendrocittavagabunda*	IV	LC
51.	Yellow-crowned Woodpecker	*Dendrocoposmahrattensis*	IV	LC
52.	Lesser Whistling Duck	*Dendrocygnajavanica*	IV	LC
53.	Ashy Drongo	*Dicrurusleucophaeus*	IV	LC
54.	Black Drongo	*Dicrurusmacrocercus*	IV	LC

55.	Black-rumpedFlameback	*Dinopiumbenghalense*	IV	LC
56.	Little Egret	*Egrettagarzetta*	IV	LC
57.	Great Thick-knee	*Esacusrecurvirostris*		LC
58.	Asian Koel	*Eudynamysscolopacea*	IV	LC
59.	Verditer Flycatcher	*Eumyiasthalassina*	IV	LC
60.	Common Coot	*Fulicaatra*	IV	LC
61.	Common Moorhen	*Gallinulachloropus*	IV	LC
62.	Jungle Owlet	*Glaucidiumradiatum*	IV	LC
63.	Himalayan Griffon	*Gyps himalayensis*	IV	LC
64.	White-throated Kingfisher	*Halcyon smyrnensis*	IV	LC
65.	Common Hawk Cuckoo	*Hierococcyxvarius*	IV	LC
66.	Black-winged Stilt	*Himantopushimantopus*	IV	LC
67.	Red-rumped Swallow	*Hirundodaurica*	IV	LC
68.	Streak-throated Swallow	*Hirundofluvicola*	IV	LC
69.	Pheasant-tailed Jacana	*Hydrophasianuschirurgus*	IV	LC
70.	Brown-headed Gull	*Larusbrunnicephalus*	IV	LC
71.	Pallas's Gull	*Larusichthyaetus*	IV	LC
72.	Black-headed Gull	*Larusridibundus*	IV	LC
73.	Black-tailed Godwit	*Limosalimosa*	IV	LC
74.	Indian Silverbill	*Lonchuramalabarica*	IV	LC
75.	Scaly-breasted Munia	*Lonchurapunctulata*	IV	LC
76.	Marbled Duck	*Marmaronettaangustirostris*	IV	LC
77.	Crested Kingfisher	*Megaceryle lugubris*	IV	LC
78.	Coppersmith Barbet	*Megalaimahaemacephala*	IV	LC
79.	Lineated Barbet	*Megalaimalineata*	IV	LC
80.	Brown-headed	*Megalaimazeylanica*	IV	LC

	Barbet			
81.	Crested Bunting	*Melophuslathami*	IV	LC
82.	Green Bee-eater	*Meropsorientalis*	IV	LC
83.	Blue-tailed Bee-eater	*Meropsphilippinus*	IV	LC
84.	Black Kite	*Milvusmigrans*	IV	LC
85.	Blue-capped Rock Thrush	*Monticolacinclorhynchus*	IV	LC
86.	Blue Rock Thrush	*Monticolasolitarius*	IV	LC
87.	White Wagtail	*Motacilla alba*	IV	LC
88.	Grey Wagtail	*Motacillacinerea*	IV	LC
89.	Painted Stork	*Mycterialeucocephala*	IV	LC
90.	Purple Sunbird	*Nectariniaasiatica*	IV	LC
91.	Red-crested Pochard	*Nettarufina*	IV	LC
92.	Cotton Pygmy-goose	*Nettapuscoromandelianus*	IV	LC
93.	Eurasian Curlew	*Numeniusarquata*	IV	LC
94.	House Sparrow	*Passer domesticus*	IV	LC
95.	Scarlet Minivet	*Pericrocotusflammeus*	IV	LC
96.	Great Cormorant	*Phalacrocoraxcarbo*	IV	LC
97.	Indian Cormorant	*Phalacrocoraxfuscicollis*	IV	LC
98.	Little Cormorant	*Phalacrocoraxniger*	IV	LC
99.	Tickell's Leaf Warbler	*Phylloscopusaffinis*	IV	LC
100.	Lemon-rumped Warbler	*Phylloscopuschloronotus*	IV	LC
101.	Hume's Warbler	*Phylloscopushumei*	IV	LC
102.	Greenish Warbler	*Phylloscopustrochiloides*	IV	LC
103.	Grey-headed Woodpecker	*Picuscanus*	IV	LC
104.	Baya Weaver	*Ploceusphilippinus*	IV	LC
105.	Plain Prinia	*Priniainornata*	IV	LC
106.	Black Ibis	*Pseudibispapillosa*	IV	LC
107.	Plum-headed	*Psittaculacyanocephala*	IV	LC

	Parakeet			
108.	Alexandrine Parakeet	*Psittaculaeupatria*	IV	LC
109.	Rose-ringed Parakeet	*Psittaculakrameri*	IV	LC
110.	Red-vented Bulbul	*Pycnonotuscafer*	IV	LC
111.	Himalayan Bulbul	*Pycnonotusleucogenys*	IV	LC
112.	Pied Avocet	*Recurvirostraavosetta*	IV	LC
113.	Plumbeous Water Redstart	*Rhyacornisfuliginosus*	IV	LC
114.	Plain Martin	*Ripariapaludicola*	IV	LC
115.	Sand Martin	*Ripariariparia*	IV	LC
116.	Grey Bushchat	*Saxicolaferrea*	IV	LC
117.	Common Stonechat	*Saxicolatorquata*	IV	LC
118.	River Tern	*Sterna aurantia*	IV	LC
119.	Spotted Dove	*Streptopeliachinensis*	IV	LC
120.	Asian Pied Starling	*Sturnus contra*	IV	LC
121.	Brahminy Starling	*Sturnuspagodarum*	IV	LC
122.	Little Grebe	*Tachybaptusruficollis*	IV	LC
123.	Ruddy Shelduck	*Tadornaferruginea*	IV	LC
124.	Common Shelduck	*Tadornatadorna*	IV	LC
125.	Common Wood shrike	*Tephrodornispondicerianus*	IV	LC
126.	Asian Paradise-flycatcher	*Terpsiphoneparadisi*	IV	LC
127.	Spotted Redshank	*Tringaerythropus*	IV	LC
128.	Marsh Sandpiper	*Tringastagnatilis*	IV	LC
129.	Common Redshank	*Tringatotanus*	IV	LC
130.	Common Babbler	*Turdoidescaudatus*	IV	LC
131.	Jungle Babbler	*Turdoidesstriatus*	IV	LC
132.	Barred Buttonquail	*Turnixsuscitator*	IV	LC
133.	Common Hoopoe	*Upupaepops*	IV	LC
134.	River Lapwing	*Vanellusduvaucelii*	IV	LC

135.	Red-wattled Lapwing	*Vanellusindicus*	IV	LC
136.	Oriental White-eye	*Zosteropspalpebrosus*	IV	LC

LC: Least Concern, NA: Not Assessed, DD: Data deficient.

3.10.5.2 CROPPING PATTERN

The climatic conditions of a a region affect the agricultural cropping pattern and different areas, thus, produce different crops. Amongst a host of climatic factors,rainfall, temperature, humidity, wind velocity and duration of sunshine etc. affectthe cropping pattern in a significant way.
Kharif Crop: Makka, Udad (Dal), Mung, Choula, Tawar Dal, Arandi, Mirchi, Soff, Rabbi Bajara, Jawar, Gawar.Crops: Wheat, Chhana, Rai, Dhaniya, Lahsun, Rajka etc. Bajara, Jawar, Gawar

3.11. SOCIO ECONOMIC ENVIROMENT

3.11.1 INTRODUCTION.

The aesthetic component of environmental study refers to the scenic value if any in the study area, tourist attraction, details about forest, wildlife, historic and cultural monuments. The study of these parameters helps in identification, predication and evaluation of likely impact on socioeconomics and parameters of human interest due to proposed project.

3.11.2 RECONNAISSANCE.

The site for environmental impact assessment for proposed River Bed mining project of Mineral Sand, Bajri & Stone near village Mauza and Mohal Mohakampur Nawada at Tehsil- Paonta Sahib, District Sirmaur State Himachal Pradesh. The study of socio-economic environment includes demographic structure and availability of basic amenities viz. Housing

education, health and medical services, water supply, sanitation, transportation, communication and power supply.

3.11.3 BASELINE STATUS.

Baseline in formations is collected in order to delineate apply the socio-economic profile of the study area. The process related database thus generated includes.

- Demographic structure.
- Infrastructure base in the area.
- Economic structure.
- Health structure.
- Cultural attributes.
- Scio economic status in relation to quality of life.
- Public awareness and their concern about the project.

The primary socio economic data was collected through field survey in sample villages in study area as well as the observations by the survey team. It has been subs tainted with relevant socioeconomic data from secondary sources of various official records. viz., census records, district statistical abstract, district health office, district industry centre tourism office etc. The list of sampling villages identified for socioeconomic survey **in the study area is shown below Table No. (3.01) and the study map given.**

Table No. (3.01)Villages for Socio-Economic Survey

Sr. No.	villages	Direction	Distance
1.	Mohkampur Nawada	W	1.50km
2.	Ambwala Singh Pura	SW	1.80km
3.	Manpur Dewra	E	2.0km
4.	Shampur Gorkhuwala	NE	2.0km
5.	Bhungarni	W	4.33km
6.	Jawalpur	NW	4.0km
7.	Narain Garh	NW	4.13km
8.	Paonta Sahib	SW	7.42

3.11.4 DEMOGRAPHIC STRUCTURE.

The details concerning the demographic structure of the study were collected form census record of Sirmaur District. Study area covers Poanta Sahib Tehsil. The details regarding the demographic structure of the study area were collected from census record of Sirmaur District. Himachal Pradesh study area comprises total 29 villages.

Demographic details such as number of persons per household, sex ratio, percentage of SC &ST population and employment pattern is described in

Table and while the summarized information is presented in Table No. 3.11(ii) the salient features are as follows:

Table No. (3.02) DEMOGRAPHIC STRUCTURE IN THE STUDY AREA

Sr. No	village	house hold	Population			SC	ST	literacy	Main worker	Marginal worker	Non worker
			TP	TM	TF						
Sirmaur Dist. Poanta Sahib Tehsil											
1	Kanhu Wala (105)	155	773	389	384	77	0	567	254	6	513
2	Mohkampur Nawada (106)	366	1798	909	889	119	7	1234	419	279	1100
3	Akal Garh (107)	160	780	408	372	5	7	581	238	19	523
4	Ambwala Singh Pura (108)	41	195	95	100	0	0	133	18	26	151
5	Manpur Dewra (56)	673	3306	1784	1522	75	156	1855	473	1024	1809
6	Shampur Gorkhuwala (57)	919	4584	2386	2198	449	7	2887	1073	868	2643
7	Guruwala (55)	96	497	256	241	49	39	330	115	96	286
8	Puruwala (59)	240	1244	667	577	169	13	723	230	254	760
9	Haripur Tohana (101)	179	967	487	480	159	6	680	278	129	560
10	Bhungarni (100)	172	762	397	365	146	2	568	249	3	510
11	Patti Natha Singh (112)	80	372	206	166	63	0	266	154	70	148

12	Baroti Wala (109)	88	379	201	178	45	0	280	20	46	313
13	Bangran (104)	179	965	487	478	71	1	612	202	106	657
14	Phulpur Shamshergarh (103)	127	688	371	317	54	0	459	253	6	429
15	Nihal Garh (96)	273	1297	714	583	418	2	901	502	9	786
16	Jawalpur (95)	141	703	376	327	231	1	478	253	1	449
17	Kanshipur (94)	178	917	495	422	82	0	618	281	18	618
18	Ajauli (93)	101	516	254	262	32	0	352	137	12	367
19	Narain Garh (92)	172	909	478	431	45	303	517	247	45	617
20	Kishan Kot (91)	162	799	414	385	97	0	543	192	14	593
21	Behrewala (99)	221	1124	575	549	273	0	832	532	97	495
22	Rampur Ghat (110)	203	1098	576	522	12	15	669	381	111	606
23	Gondpur (98)	225	1024	555	469	104	0	716	397	62	565
24	Rajban (89)	444	1877	999	878	288	43	1349	549	33	1295
25	Dobri (60)	340	1798	935	863	1052	0	1124	579	393	826
26	Danda (32)	353	2003	1030	973	958	4	1287	392	356	1255
27	Gojar Arian (53)	288	1417	746	671	335	0	812	422	226	769

28	Bhagani (54)	1034	5757	2983	2774	1257	3	3627	1276	766	3715
29	Paonta Sahib (M Cl)	5713	25183	13265	11918	3621	124	19997	8357	765	16061
Grang Total		**13323**	**63732**	**33438**	**30294**	**1028 6**	**733**	**44997**	**18473**	**5840**	**39419**

Source : Primary Census Abstract : CD – 2011,Sirmaur Dist. Himachal Pradesh State.

TP : Total Population.

TM : Total Male.

TF : Total Female.

Total populations of region as per 2011 census is out of 63732 which is 33438 male and 30294 is female sex ratio (number of male per thousand female) in the region is 905 this show that male population is higher in the region as compared with female population.

Out of the total population Scheduled Cast 1028 and scheduled tribe population is 733 respectively. Total main worker population is18473 , 5840 come under marginal worker category and 39419 belong to non-workers category. Literacy rate of the population in the study area is 44997 (70.60%) literacy rate.

3.11.5 INFRASTRUCTURE RESOURCE BASE.

The infrastructure resource base of the study area with reference education, medical facility, water supply, post and telegraph, transportation and communication facility and power supply etc is presented in table the

infrastructure resources details have been abstracted from Housing, Household Amenities and Assets CD 2011 of Sirmaur District, State Himachal Pradesh are described below:

3.11.5.1 EDUCATION.

Classes up to class 7th included in primary school. Classes from 8th to 10th included in Higher Secondary School classes 11th and 12th are included in senior secondary school. There is no middle school in the study area. As per 2011 village directory record, all villages having education facility in the form of primary school.

3.11.5.2 WATER FACILITY.

Almost all villages having water facility in the record of census 2011 Main source of water is tap water, tube well, well hand pump, rivers, and others sources are tank water transportation and communication. Transportation is good in study area. Most of the villages having communication facility in the form of post office and telephone connection. The entire region is connecting with bus facility and some villages is using navigable waterway.

3.11.5.3 POWER SUPPLY.

Electric power is one of the basic and key infrastructures in the growing economy. It occupies a distinct role in the development of industry and agriculture. It is also a key factor in the socio –economic transformation in rural areas. In the study area almost all villages using electricity for all purpose.

3.11.5.4 MEDICAL/PRIMARY HEALTH CARE.

Medical facilities in terms of community health workers are available in all the villages. Medical facilities exist in villages as stated below:

- Primary Health Centre
- Sub Centres
- Community Health Centre

Table. No. (3.03)Infrastructure Resources Base of The Study Area.

Sr.No	village	Education	Medical Facility	Water Facility	Communication	Transportation	Road Condition	Power
Sirmaur Dist. Poanta sahib Tehsil								
1	Kishan Pura		PHC	W,HP	TP,PH			
2	Bhuppur	P	PHC	W,HP	TP,PH	BS	MR,FP	EA
3	SampdaShamsherpur	P	.PHC	T,W, HP	TP	BS	MR,FP	EA
4	Kunja	P,AC.O	PHC	W,TK ,HP	TP	BS	PR,MR, FP	ED,E AG
5	Rampur Ghat	P,M	....	W,TK ,HP,R	.TP	....	MR	ED,E AG

6	SampdaShubhKhera	P	....	W,TK.HP	PH	BS	MR,FP	EA
7	Badripur	P,AC	....	W,HP	PH	BS		EA
8	Taruwala	P,M,AC	PHC, CHC	W,HP	PO	....	MR,FP	EA
9	DharamKot	P,M,AC	HC,CHC	T,W,TK,TW,HP	PO,TO,PTO,PH	....	PR,MR,FP	EA
10	Gondpur	PM,S,AC	PHC	T,W,TK,TW,HP	PO,PH	BS	PR,MR,FP	ED,EAG
11	Bhagani	P	PHC	W,TK,TW,HP	TP	BS	MR,FP	EA

3.11.6 ECONOMIC ATTRIBUTES.

Economic resource base of any region mainly depends upon it economically active group i.e. the working populations involved in mining work. Work-work may be defined, as participation in any economically productive activity. Such participation may be physical or mental in nature. Work involves not actual work but also effective supervision and direction of work. It also includes unpaid work on farm or in family enterprise.

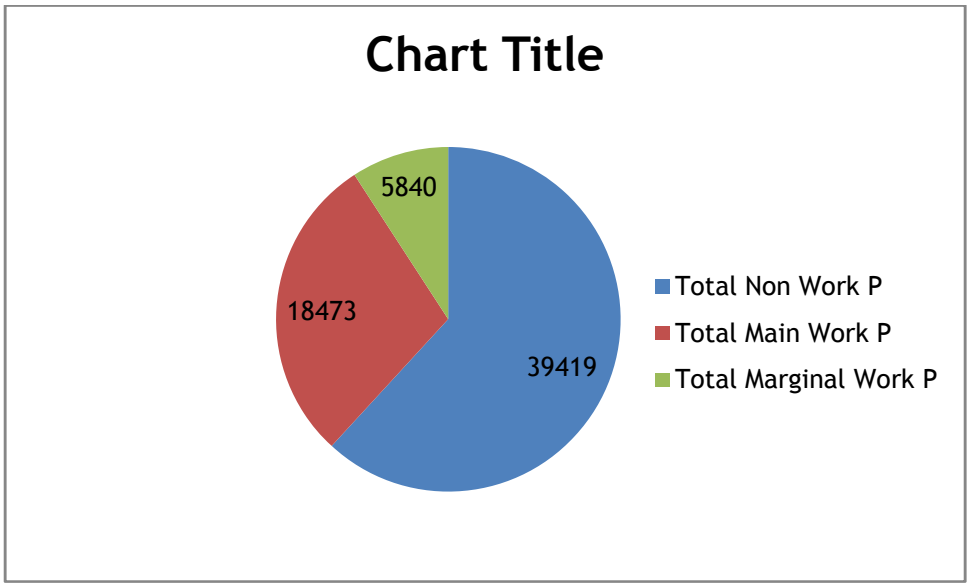
There are different types of workers that may be classified as – those persons who had worked for at least 6 month or 183 days are treated to be main workers, on the others hand if person categorized as workers has participated in any economic or productive activity for less than 6 months or 183 days during the last one year are treated as marginal workers and non –workers are those who have not worked any time at all in the year preceding the enumeration.

The workers coming under the main and marginal workers category are ; cultivators, agricultural labours, live-stock, forestry, fishing, hunting, and plantations, orchards and allied activities, mining and quarrying, manufacturing, processing, servicing and repairs in household industry, construction trade and commerce, transport, storage and communication, other services.

All persons who had not worked at all during the last year were recorded as non-workers and it includes persons engaged in household duties, dependents, retired persons, beggars are some of the categories grouped as non-work.

The employment pattern of workers and main worker the study area is described below and presented in Graf. Main worker population in the study area is 18473. Majority of the worker i.e. 13807 are engaged as main other workers and cultivator workers are 2307. There are 1238and 137 workers as agriculture and household workers. Total marginal worker in the study area are 5840.

Unemployment level is high in the region as non-workers population account for more than half of the total population in the region i.e. 39419 non worker population includes student, household duties, dependent, pensioner, beggar and others.



Employment Pattern of working population in the study area.

Fig No (3.04)

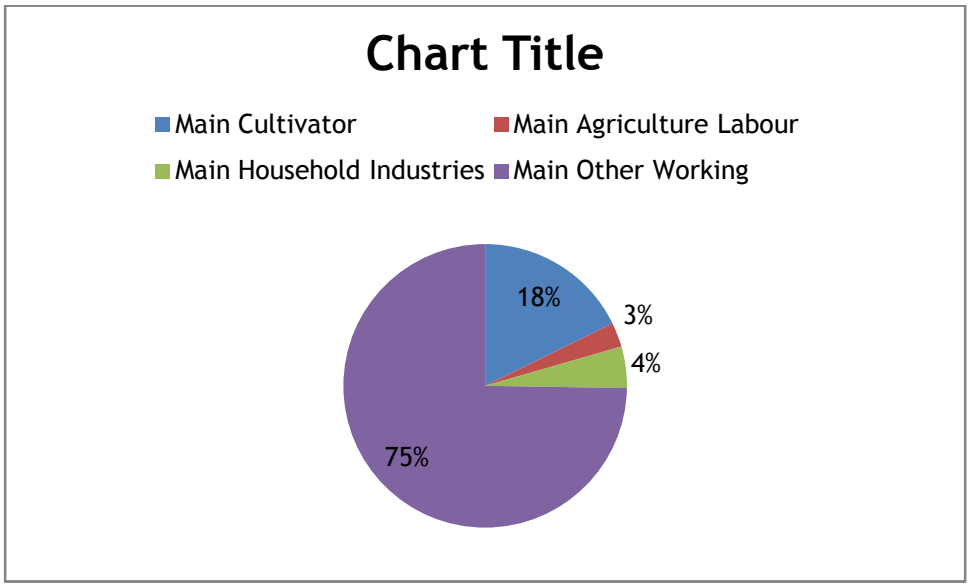


Fig No (3.05)

Main workers employment pattern of working population in the study area

MAIN_CL_P- Main Cultivator Worker.

MAIN_AL_P- Main Agriculture Worker.

MAIN_HH_P-Main Household Worker.

MAIN_OT_P-Main Other Worker.

Table No. (3.06)Main Worker Employment Pattern

Sr.NO.	village	Main cultivator	Main Agriculture	Main house Hold	Main other Worker
Sirmaur Dist. Poanta sahib Tehsil					
1	Kanhu Wala (105)	65	25	28	136
2	Mohkampur Nawada (106)	75	8	2	334
3	Akal Garh (107)	70	7	15	146
4	Ambwala Singh Pura (108)	5	1	0	12
5	Manpur Dewra (56)	107	173	1	192
6	Shampur Gorkhuwala (57)	288	35	21	729
7	Guruwala (55)	83	0	2	30
8	Puruwala (59)	49	5	16	160
9	Haripur Tohana (101)	122	0	0	156
10	Bhungarni (100)	72	15	0	162
11	Patti Natha Singh (112)	44	1	0	109
12	Baroti Wala (109)	1	0	0	19

13	Bangran (104)	44	0	3	155
14	Phulpur Shamshergarh (103)	60	43	17	133
15	Nihal Garh (96)	134	4	3	361
16	Jawalpur (95)	100	1	6	146
17	Kanshipur (94)	95	1	0	185
18	Ajauli (93)	31	0	0	106
19	Narain Garh (92)	66	0	0	181
20	Kishan Kot (91)	49	0	2	141
21	Behrewala (99)	172	3	4	353
22	Rampur Ghat	160	7	98	116
23	Gondpur (98)	101	2	4	290
24	Rajban (89)	42	5	0	502
25	Dobri (60)	100	14	2	463
26	Danda (32)	128	5	7	252
27	Gojar Arian (53)	157	10	5	250
28	Bhagani (54)	715	41	13	507
29	Paonta Sahib (M Cl)	146	104	626	7481

MAIN _CL_P-Main Cultivator Worker

MAIN_AL_P- Main Agriculture Worker

MAIN_HH_P- Main Household Worker

MAIN_OT_P- Main Other Worker

3.11.6 HEALTH STATUS.

Health of the people is not only a desirable goal, but it is also an essential investment in human resources. As per the National Health Policy (1983), Primary Health Care has been accepted as main instrument for achieving this goal of development and strengthening rural Health Infrastructure through a three-tier system, viz., primary health centre (PHCs), Sub Centres and Community Health Centre which have been established.

Lack of building, shortage of manpower and inadequate provision of drug supplies are hampering The operationalization of these of units. The standards to be met according to National Health Policy are given below:

3.11.6.1 RURAL HEALTH CARE SYSTEM IN INDIA

population	Infrastructure	Personnel
3,000 – 5,000	1Sub Centre	1 (ANM) Auxiliary Nurse Midwife
25,000 – 30,000	1PHC,6Beds	2Medical Officers
1,00,000	Rural	Medical Superintendent

Source: National Health Policy, Year 2005-06

During discussion with the medical officer at Dahej PHC, it was revealed that general prevailing diseases in the project region are malaria, diarhea and viral fever. The Health problems as reported could be attributed to improper sanitation, mosquito nuisance ad water logging in the villages as well as mining population.

3.11.6.2 CULTURAL AND AESTHETIC ATTRIBUTES.

No Cultural and Aesthetically important place is coming within the study area, so there will be no impact on such important places.

3.11.7 SOCIO- ECONOMIC SURVEY.

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

3.11.7.1 SAMPLING METHOD.

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

3.11.7.2 DATA COLLECTION METHOD.

In order to assess and evaluate the likely impact arising out of any developmental project on socio-economic environment, it is necessary to gauge the apprehension of the people in the project area. For the process of data collection through primary and secondary sources certain methods are used among that are.

(a) FIELD SURVEY AND OBSERVATIONS.

Field survey and observations is made at each sampling villages and the quality of life of that region is studies. Visits are made at hospital, primary health centres and sub-centres to know the health status of the region. Various governmental organizations such as statistical department, department of census operations are visited to collect the population details of the region.

(b) INTERVIEW METHOD

Structured interview method is used to collect data regarding the awareness and opinion from the sample selected of the various socio-economic section of the community Structured.

Alternative question. The questionnaire mainly highlights the parameters such as income, employment and working conditions, housing, food, clothing, water supply, sanitation, health, energy, transportation and communication, education, environment and pollution to assess the quality of life of that particular region and general awareness and opinion of the respondents about the project.

The interview method has the advantage that almost all perfect sample of the general population can be reached and respond to the approach. Interview method helps to collect more correct and accurate information as the interviewer is present during the field survey.

Socio-economic survey was conducted in 12 villages within the study area located in all directions with reference to the project site.

The respondents were asked for their awareness/opinion about the project and of their opinion about the impact of the project, which is an important aspect of socio-economic environment, viz. Job opportunities, education, health care, transportation facility and economic status.

3.11.7.8 THE SALIENT OBSERVATIONS RECORDED DURING SURVEY IN THE STUDY AREA:

- Educations facilities are available in the form of primary and middle schools in region.
- Most of the people are engaged in labour work in the nearby River Bed mining of Mineral Sand, Bajri & Stone project and some people are engaged in farming production of different fruits, yield of wheat (rabi), yield of maize (karif), rice, tomato the main crops of Sirmaur District.
- Most of the respondents stated that electricity supply is satisfactory in the region but in summary power cut problem is creating.
- LPG Gas mainly used as fuel for cooking.
- Due to the mining activity, the study area is developing in terms of transportation, communication, service requirement etc.
- Road in the surveyed villages are in good condition, people are satisfied with the transportation facility.

3.11.8 AWARENESS AND OPINION.

For assessing the awareness and opinion about the project activity socio-economic survey was conducted in the sampling villages. The salient observation drawn through survey is described below:

Awareness regarding the proposed project is very poor but the awareness regarding minor mineral Stone Sand, Bajri project.

When informed, maximum people gave favorable opinion about the proposed expansion project as they are aware that Giri Bed Mining project of Minor

Mineral Stone Sand, Bajri, Stone will work for improvement of their basic necessities i.e. drinking water, health services and other developmental activates like school etc.

DEMOGRAPHIC SUMMARY

TABLE NO. 3.07

Demographic parameters	Details
No. of District	1
No. of village	29
Total no. of household	7830
Total population	63732
Population density	1.60
Sex ratio (NO. of female\1000 males)	905
Scheduled castes	10286
Scheduled tribes	733
Literate	44997
Main worker	18473
Marginal worker	5840
Non – workers	39419

Source: Primary Census Abstract 2011 (PCA), PAONTA SAHIB Dist. Himachal Pradesh State.

3.11.8.1 CONCLUSION

The implementation of MAUZA/MOHAL- Mohakampur Nawada, Stone Sand and *bajri* mining project on bed of Giri in district Sirmaur, Himachal Pradesh will throw opportunities to local people for both direct and indirect employment. It will reduce flooding of river banks, destruction of standing crops, land and also prevent the siltation. The project will also provide impetus to industrialization of the area. It is likely the intending entrepreneurs will venture to set up micro and small scale units in the near future making the area a mixed society, dependent on industry, trade and business. It is expected that same will improve to a great extent due to proposed mining project and associated industrial and business activities. It is therefore suggested that extraction of minerals should be taken up on regular basis during the post monsoon period. This will dredge the river bed on regular basis, regulate the course of the river and check flooding of the catchment area.

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CHAPTER IV - ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURE

4.0 GENERAL

All industrial and/or development projects are likely to 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 change 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 paid attention to in the Environmental Management Plan for countering or minimizing the impacts.

Keeping in mind, the environmental baseline scenario as detailed in Chapter III and the proposed mining activity described in Chapter 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

4.1.1 IMPACTS ON LAND ENVIRONMENT

The mining activities involved the extraction of Stone Sand Stone & Bajri. The proposed project is the riverbed mining of Stone Sand Stone and Bajri from bed of Giri located near Mauza/Mohal- Mohakampur Nawada in Tehsil- Paonta Sahib, District- Sirmaur, and Himachal Pradesh. The applied area comprises of Khasra No. 640/563/480/1 (Pvt. Land) measuring 3.9786 hectares, falling in MAUZA/MOHAL- Mohakampur Nawada, Tehsil PAONTA SAHIB, and District- SIRMAUR (H.P). The lease has been sanctioned in favour of M/S J.J Associates Mines & Minerals (partnership

firm partners firm partners S/Shri Jahangir Ali,Jaibir Singh, Rajesh Gupta & Rohit Chowdhry) R/O- Nawada village, Tehsil- Paonta Sahib and District- Sirmaur (H.P) and the extension of L.O.I dated 1-10-2021 for one year, W.E.F 04-03-2020 the leased block is part of river bed of Giri, a main tributary of River Yamuna. The area comprises of Khasra No. 640/563/480/1 (Pvt. Land) measuring 3.9786 Ha. falling in Mauza/Mohal- Mohakampur Nawada, Tehsil- Paonta Sahib, and District- Sirmaur (H.P

Activity may cause a few environmental degradations and the most anticipated are detailed here under :-

- River bank cutting and erosion
- Upstream erosion as a result of an increase in channel slope and changes in flow velocity
- Downstream changes in patterns of deposition.
- Changes in channel bed and habitat type

4.1.2 MITIGATION MEASURES

Minerals which are to be extracted will get replenished in every monsoon season so the Project will not change the existing land use pattern. In order to prevent the environmental degradation of leased mine area and its surroundings, the following

Measures shall be taken,

- No mining near the banks up to 1/10th of its width, i.e. from 5 to 6 meters shall be resorted to.
- Mining shall be undertaken to a depth of one meter only.
- Minimum damage to the flora standing on the river bank

Movement of the vehicles on the road will be increased; however, non-metalled road leading to minerals from mining area will be sprinkled with water at regular intervals. In addition to prevent spillage by tractor trolley, over loading should be controlled along with speed limit.

The applied area comprises of Khasra No. 640/563/480/1 (Pvt. Land) measuring 3.9786 hectares.

4.2 WATER ENVIRONMENT

4.2.1 IMPACTS ON WATER ENVIRONMENT

Mining of Stone Sand Stone & *Bajri* from Bed of Giri river bed has no permanent and direct impact on the physico-chemical characteristics. These characteristics includes in stream roughness elements, depth, velocity, turbidity, sediment transport and stream discharge. Altering these characteristics can have negative impacts on both in-stream biota and associated riparian habitat. The mining will confine to central part of river bed, away from banks.

Thus mining would channelize the river flow.

The detrimental effects, if any, to biota resulting from bed material mining are caused by following:

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.

4.2.2 MITIGATION MEASURES

The major source of surface water pollution due to mining is negligible, however, the following measures shall be undertaken to prevent water pollution.

A: SURFACE WATER

Drains and their Catchments will be constructed just beside the access roads so that the storm water gets settled before flowing to the river.

The washing of trucks and tipper truck in the river will be avoided and disposal of domestic waste in the water body will be prevented.

B: GROUND WATER

There would not be any adverse effect on the ground water quality. The mineral formation does not contain any harmful element, which could percolate into the ground and pollute the ground water. Mining will be done up to the depth of 1 meter bgl or below ground water table whichever comes first. It ensured that the project will not intercept the ground water.

4.3 IMPACTS ON AIR ENVIRONMENT

Emission of fugitive dust is envisaged due to:

I. Mining Activities includes extraction of minerals. No blasting material is to be used. Therefore the dust generated is likely to be insignificant as compared to other mining processes.

II. Transportation of minerals will be done by road using trucks. Fugitive dust emission is expected from the transportation of trucks on the haul roads. The mining will be undertaken during dry seasons.

The major source of dust generation is the transport of material by trucks and tipper truck. Adequate control measures shall be taken during mining operations as well as transportation of minerals.

The following steps shall be adopted to prevent air pollution due to airborne dust.

The only air pollution sources are the road transport network of the trucks. The dust suppression measures like water sprinkling will be done on the un-metalled part of the haul road.

Utmost care will be taken to prevent spillage of Stone Sand & Bajri from the trucks and materials will be covered with tarpaulin sheet.

Overloading will be prevented.

Plantation activities in consultation with local competent authority along the roads will also reduce the impact of dust in the nearby villages.

4.3.1 IMPACT ON AIR QUALITY

4.3.2 IMPACT DURING CONSTRUCTION PHASE

There will be no impacts on ambient air quality as no construction stage is involved in this project.

4.3.3 IMPACT DURING OPERATION PHASE

The major impact on ambient air quality in river bed mining is due to dust generation by various mining activities especially due to movement of dumpers/trucks on haul roads. The other activities which are responsible for dust generation are loading and unloading of Stone bajri, sand, etc. However, the dust generation due to these activities is for short duration and localized in nature. Other atmospheric pollutants viz. SO_2 and NO_2 are not expected to have considerable variation due to mining activities of proposed project. As the dust generation from mine haul road is the major contributor towards deterioration of air quality, Air Quality Modeling for PM10 emission from haul road is carried out using ISCST3 to assess the severity of impact.

4.3.3.1 EMISSION CHARACTERISTICS FOR MINING OPERATIONS

Dust emission rate from the Mining area, based on the following empirical formula.

a) DUST EMISSION DUE TO EXCAVATION:

$$\text{Dust emission (DE)} = \frac{Pa \times 23.6}{Wd \times Wh \times 1000}$$

DE = Dust emission in kg/hr
Pa = Annual Excavation in Tonnes
Wd = No. of days of operation in a year
Wh = Effective working hrs in a day

23.6 Quantity of dust emitted in kg/for 1000 tonnes of excavation

Dust emission rate = 62,842 x 23.6/ 300 x 8 x 1000 = 0.61794kg/hr

The above mentioned emission rate is without adoption of dust control measures. The literature suggests that dust control measures reduce the emissions and effective emission rate is one third of the computed emission. Accordingly emission rate to be in the modeling is (0.61794/3) i.e. 0.20598 kg/hr.

4.3.3.2 MINE DIMENSIONS

The mine dimensions are as follows:

Area = 3.9786 hectare,.

4.3.3.3 METEOROLOGICAL DATA

On site hourly meteorological data for Post Monsoon (Oct. 2022 to Dec. 2022) in respect of wind speed, wind direction, temperature and cloud amount are utilized in this study. The data was put in model format. The mixing heights have been extracted from CPCB publications.

4.3.4 MODELING PROCEDURE

4.3.4.1 METHODOLOGY:

Prediction of ground level concentrations (glc's) due to mining has been made by **Industrial Source Complex, Short Term (ISCST3)** as per **CPCB** guidelines. ISCST3 is US-EPA approved model to predict the air quality. The model uses rural dispersion and regulatory defaults options as per guidelines on air quality models (PROBES/70/1997-1998). The model assumes receptors on undulating and hilly. This model is capable of handling point, area, and line sources simultaneously.

Meteorological inputs required are hourly wind speed and direction ambient temperature, stability class, mixing height and wind exponents. The model details follow.

4.3.4.2 Ambient Air Quality Standards and Background Concentrations

Ambient Air Quality Standards

Ambient air quality standards promulgated by Central Pollution Control Board (CPCB) for all type of land uses for the relevant air quality parameters are as follows:

Concentration (µg/m³)		
PM10	**SO_2**	**NO_x**
100	80	80

The above standards are for a sampling period of 24 hours.

4.3.4.3 BACKGROUND CONCENTRATION LEVELS

The background measured concentrations at various ambient air quality monitoring stations are as given below:

4.3.5 PLAN AND FRAME WORK OF COMPUTATIONSSELECTION OF LOCATIONS

The locations have been selected around the mining area covering an area of 10 km radius from the centre of mining. The entire area has been put on grid network and grid spacing has been taken as 500 m.

4.3.5.1 PLAN OF COMPUTATION

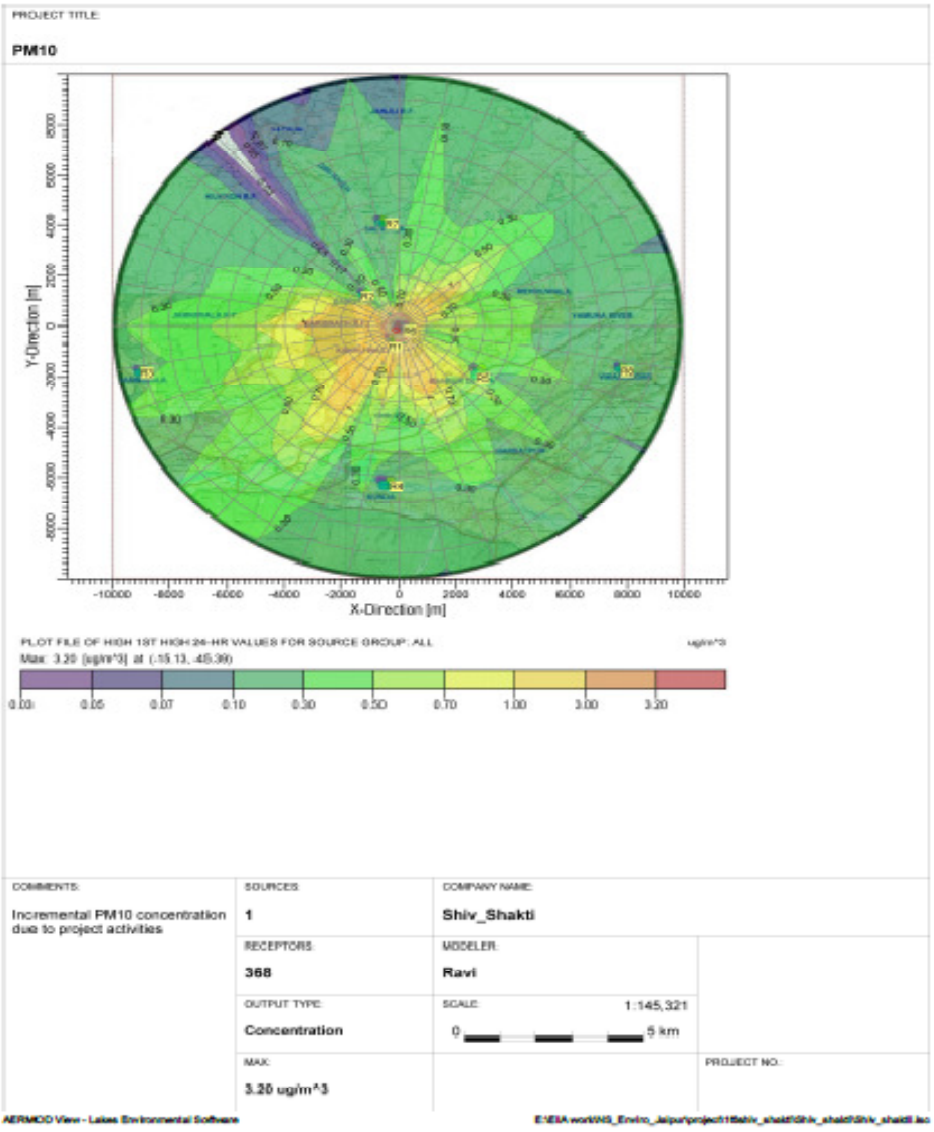
The emission rate, dispersion coefficients and other input data being now available; it was planned to compute the following:

The 24 hourly averaged incremental concentration with hourly data.

The identification of grid point is having peak concentration for the incremental values & Preparation of isopleths for various pollutants.

4.3.5.2 PREDICTED AMBIENT AIR QUALITY

With a wide fluctuation in meteorological parameters it is a complex task to predict post project ambient air quality. With available ambient air quality data and incremental concentrations computed through mathematical modeling the post project ambient air quality have been predicted in **Tables.**


PROJECT TITLE:
PM10
Y-Direction [m]
X-Direction [m]
PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL
Max: 3.20 (ug/m^3) at (-15.13, -45.39)
0.00
0.05
0.07
0.10
0.30
0.50
0.70
1.00
3.00
3.20
COMMENTS:
Incremental PM10 concentration due to project activities
SOURCES:
1
RECEPTORS:
368
OUTPUT TYPE:
Concentration
MAX:
3.20 ug/m^3
COMPANY NAME:
Shiv_Shakti
MODELER:
Ravi
SCALE:
1:145,321
0
5 km
PROJECT NO.:
AERMOD View - Lakes Environmental Software

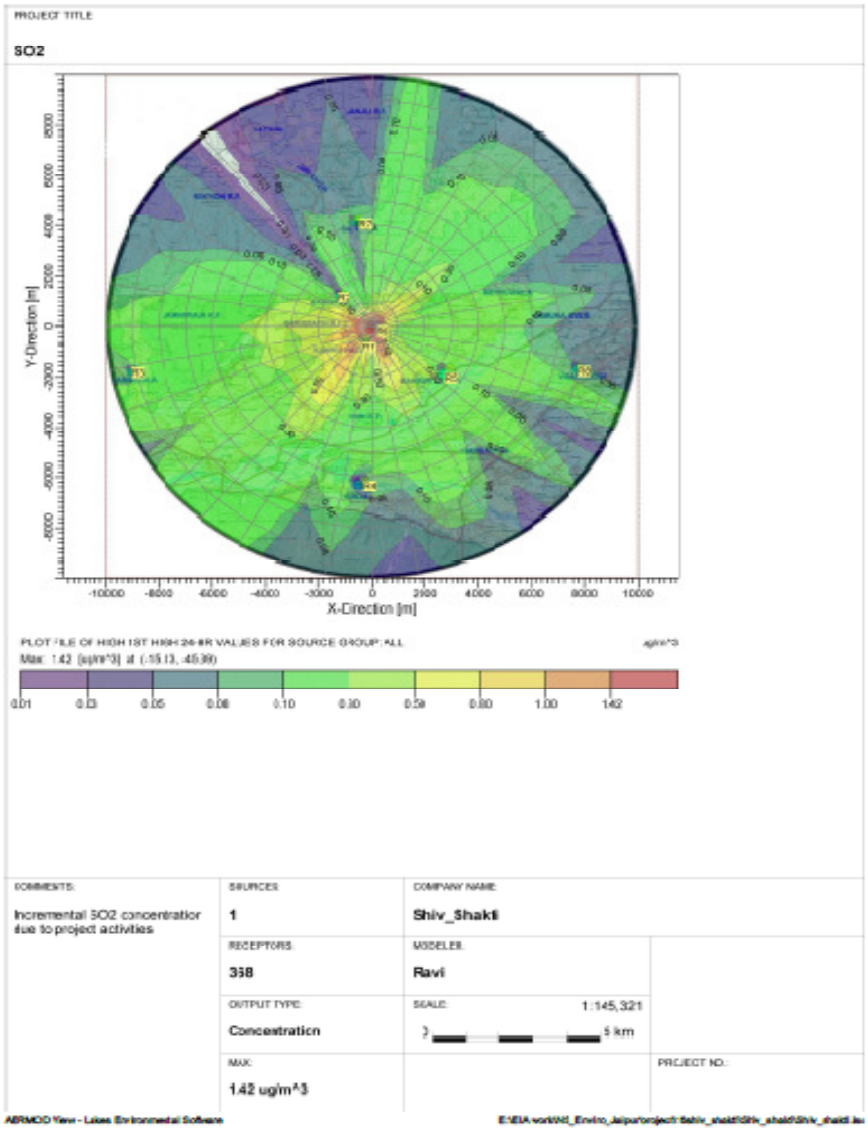

PROJECT TITLE:
SO2
Y-Direction [m]
X-Direction [m]
PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL
Max: 1.42 (ug/m^3) at (-1513, -4539)
0.01
0.03
0.05
0.08
0.10
0.30
0.50
0.80
1.00
1.42
COMMENTS:
Incremental SO2 concentration due to project activities
SOURCES:
1
COMPANY NAME:
Shiv_Shakti
RECEPTORS:
338
MODELER:
Ravi
OUTPUT TYPE:
Concentration
SCALE:
1:145,321
5 km
MAX:
1.42 ug/m^3
PROJECT NO.:
ARMOD View - Lakes Environmental Software

Table- 4.3:
Predicted Ambient Air Quality Concentrations in Operation Phase
Cumulative Concentrations (Baseline + Incremental) for PM_{10} and $PM_{2.5}$

S. No.	Particular	Concentration of PM_{10}	Concentration of $PM_{2.5}$
1.	Monitored Maximum concentrations in $\mu g/m^3$	45.6	27.9
2.	Predicted incremental Maximum concentrations in $\mu g/m^3$	3.20	1.83
3.	Resultant Maximum concentrations in $\mu g/m^3$	48.8	29.73
4.	**NAAQS (dated 2009)**	**100**	**60**

It is clear from predicted values that concentrations in respect of PM10 are well within limits at all locations.

4.3.5.1 MITIGATION MEASURES

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

- Plantation of trees along haul roads, specially near settlements, to help to reduce the impact of dust on the nearby villages;
- Planning transportation routes of mined material so as to reach the nearest paved roads by shortest route. (minimize transportation over unpaved road);
- Dust mask shall be provided to the workers engaged at dust generation points like excavations and loading points;

- Regular water sprinkling on unpaved roads to avoid dust generation during transportation;
- Transportation of material shall be carried out during day time only;
- The speed of trucks plying on the haul road should limited to avoid generation of dust;
- Haul road shall be covered with gravels; and
- Covering of material during transportation on trucks to prevent spillage of sand from the trucks. The trucks shall be covered by tarpaulin. Overloading shall be avoided.

4.4 IMPACTS ON NOISE ENVIRONMENT

The proposed mining activity is manual in nature. No drilling & blasting is proposed for this mining activity. Hence the only impact is anticipated is due to movement of vehicles deployed for transportation of minerals. About 40 to 42 truck trips/hr would be required for transporting mined material per working day from mining area.

4.4.1 MITIGATION MEASURES

The following control measures shall be taken to keep the ambient noise levels well within limits:

Minimum use of horns and speed limit is 10 kms in the village area.

Only PUC certified vehicles will be used for transportation purpose.

The dedicated tipper truck would be properly and regularly undergo maintenance so as to create minimum noise.

Special care would be taken to properly maintain the silencers of the vehicles.

4.5 IMPACTS ON BIOLOGICAL ENVIRONMENT

The mining activity will have insignificant effect on the existing flora and fauna. The purpose of the project itself is to save the flora around the project area from river widening, excessive erosion and floods. It was found that the mining activity will not have any significant impact on the biological environment of the region.

4.5.1 MITIGATION MEASURES

There is a requirement to establish a stable ecosystem with both ecological and economic returns.

It is proposed to plant around 40 trees every year along the haul road.

TABLE NO. 4.5 MITIGATION MEASURES

S.NO	Year	Area in Sq.m	NO OF PLANTS
1	1st YEAR	400	40
2	2nd YEAR	400	40
3	3rd YEAR	400	40
4	4th YEAR	400	40
5	5th YEAR	400	40
	Total	**2000**	**200**

4.6 IMPACTS OF SOLID WASTE GENERATION

Nominal amount of domestic waste will be generated at the mine site by the workers which will be disposed-off by municipal way no plantation is possible

within this area. However, plantation can be taken up along the haul road. No solid waste generation is expected from the mining operation. However, only silt/clay will be generated as waste which will be further use for leveling and plantation purpose.

The entire mining lease area falls within river course and gets flooded during monsoons; therefore, no plantation is possible within this area.

4.7 TRAFFIC ANALYSIS

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. The excavated mineral will be transported through kaccha road, the lease area is connected to the nearest metalled road unmettaled road at a distance of about 600m.

Then depending on the capacity of the mine, the number of tipper truck that will be added to the present scenario will be compared to the carrying capacity.

Figure No. 4.1 Transportation Route Map

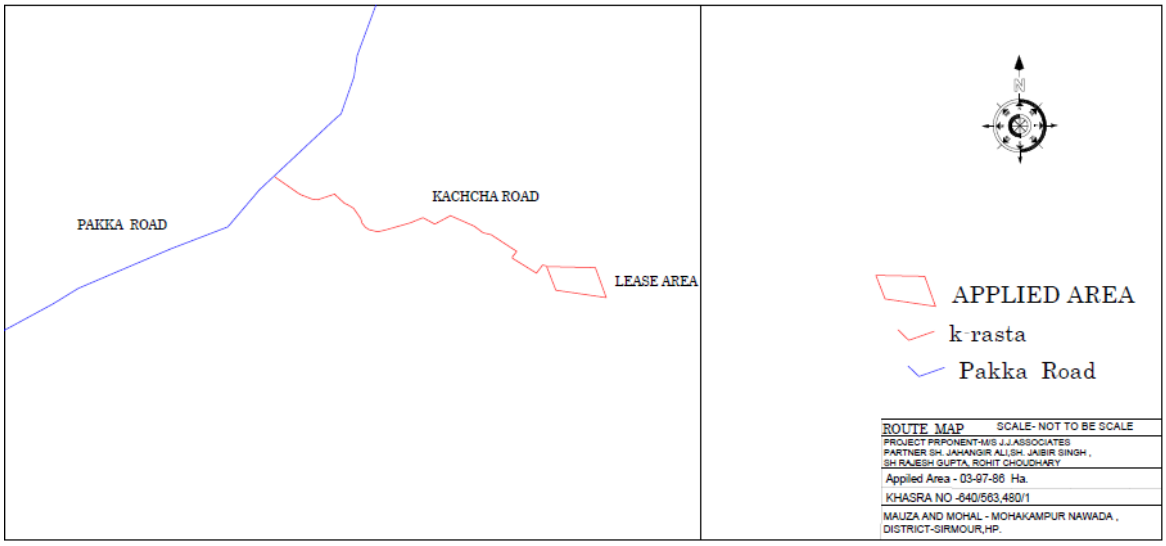


Table 4.4 (i): EXISTING TRAFFIC SCENARIO & LOS

Road	V	C	Existing V/C Ratio	LOS
Paonta Sahib-Bhangani Road	400	2000	0.20	B

Source: Capacity as per IRC: 64-1990

V= Volume of Vehicles in PCU's/day & C= Capacity of Highway in PCU's/day

The existing Level of Service (LOS) 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

Reference: ENVIS Technical Report, IISc, Bangalore

4.7.1 DURING MINE OPERATION

Proposed Capacity of mine/annum : 62,842 TPA(including wastage)

No. of working days : 300 days

Proposed Capacity of mine/day : 209 TPD

Tipper truck Capacity : 9 tonnes

No. of tipper truck deployed/day : 23 tipper truck

Table 4.4 (ii): MODIFIED TRAFFIC SCENARIO & LOS

Road	V	C	Modified V/C Ratio	LOS
Paonta Sahib-Bhangani Road	415	2000	0.2075	B

4.7.2 RESULTS

From the above analysis it can be seen that the V/C ratio is likely to change to 0.20 & 0.2075 with LOS being changed to "B" which is 'Very Good" respectively, as per classification. So the additional load on the carrying capacity of the concerned roads is not likely to have any adverse affect. If required alternate route pattern will adopt to avoid any type of road congestion.

4.8 SOCIO ECONOMIC ENVIRONMENT

The mining activities in the proposed area will definitely help in the improvement of socio-economic status of the people around the mine area by generating direct or indirect employment opportunities. The project will also attract ancillary and related small-scale industries in the adjoining areas.

Continued mining activities will benefit the local people due to provision of more infrastructural facilities provided by local industry as mining industry will boost up the local market.

Since, the extraction of the reserves of this mineral is economically viable, their proper utilization will improve the economic status of the people nearby and the country as a whole.

The social welfare activities will be handled by a full time team of village development officials, who will monitor the programme and give necessary back-up support. The programs will be made broad based by involvement of local groups and government agencies to the maximum extent possible.

4.8.1 MEASURE TO IMPROVE SOCIO ECONOMIC STATUS

With mining activities, local people will have a lot of direct and indirect employment avenues opened up. There will be direct employment opportunities in the mine and also the secondary employment by providing services to the employed manpower. Thus the local people will enjoy the economic upliftment. The following activities will be followed: -

- Rural/village & Community welfare,
- Healthcare of local population,
- Free medical camps,
- Literacy awareness, supports to schools etc.,
- Environment protection and Environment awareness activities like Environment awareness camps, plantation etc.
- Social awareness program.
- Thus the socio-economic status of the area will be improved.

4.9 OCCUPATIONAL HEALTH AND SAFETY

Occupational health and safety (OHS) is a cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment. The goal of all occupational health and safety programs is to foster a safe work environment.

4.9.1 OCCUPATIONAL HEALTH HAZARDS AT MINE SITE:

Mining activity experiences risk of a number of hazards. Some examples of such hazards are as under:

- Exposure to dust
- Noise exposure;
- Physical Hazards;

4.9.2 VEHICULAR MOVEMENTS AND RELATED ACCIDENTS.

These mainly impact on those working within the mine although health hazards can also impact on local communities. Therefore, protective measures are required for health and safety of the employed persons. The health of workers and the persons around the lease area will be regularly monitored. All the personal protective equipment's will be provided to employed persons. The mining in the area will be got done with all safety measures.

4.9.3 IMPLEMENTATION OF OCCUPATIONAL HEALTH AND SAFETY MEASURES:

Occupational Health & Safety measures result in improving the conditions under which workers are employed and work. It improves not only their physical efficiency, but also provides protection to their life and limb. Lessee will implement the following safety measures:

- Safety clauses in contract order
- Inspection and maintenance of equipment's and accessories
- Pre placement and periodic health check up
- Removal of unsafe conditions and prevention of unsafe acts
- Detailed analysis of each and every incident
- To provide standard PPEs and ensure their uses
- Celebrations of various safety events for awareness
- An effective and clearly audible means of giving warning, in case of fire, to every person shall be provided at the site. A free passage–way giving

access to each means of escape in case of fire shall be maintained for the use of all workers in the mine.

- Medical facilities & first aid boxes will be established in the mine premises.
- Pits, Sumps, openings in floor etc. which may be a source of danger, shall be either securely covered or securely fenced. Securely fencing a pit means covering or fencing it in such a way that it ceases to be a source of danger.

4.9.4 PRE-PLACEMENT MEDICAL EXAMINATION AND PERIODICAL MEDICAL EXAMINATION SCHEDULES

- The fresh employees when inducted will be thoroughly medically examined under initial medical examination and thereafter during continuation of employment; the periodic medical examination will be conducted.
- The examination will include apart from the general observation the Chest X-ray, Lung function Test, Spirometry, Audiometry and the record of the same will be maintained and submitted to the concerned authorities.

4.10 MINE CLOSURE

Mine closure plan is the most important environmental requirement in mineral mining projects. The mine closure plan should cover technical, environmental, social, legal and financial aspects dealing with progressive and post closure activities. The primary aim is to ensure that the following broad objectives along with the abandonment of the mine can be successfully achieved:

- To minimize environmental damage.
- To conserve valuable attributes and aesthetics.
- To overcome adverse socio-economic impacts.
- To create a productive and sustainable after use for the site, acceptable to mine owner, regulatory agencies and the public.

- To protect public health and safety of surrounding habitation.

4.10.1 MINE CLOSURE CRITERIA

The criterion involved in mine closure is defined in relation to following key issues.

- Compatibility with agreed post –mining land use
- Physical stability
- Low risk to biota
- Physical stability

4.11 STATUTORY REQUIREMENTS

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

A regulatory system consists of both statutory and non-statutory components. In the Sectoral-specific strategy for prospecting and mining, the Department participates within an integrated environmental management system which is administered in terms of the Acts and Rules. Other 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.

- 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
- State Minor Mineral Concession Rules, U.P., 1963

- 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

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CHAPTER-V

ANALYSIS OF ALTERNATIVES

The proposed Stone Sand stone & Bajri Mine is an applied mine area in past. Analysis of alternatives based on site technology is given below:

5.1 SITE ALTERNATIVES

As per vide letter Nos. Udyog-Bhu (Khani-4) Laghu-158/15-10763 dated 04-02-2019, a letter of Intent has been granted to M/S J.J Associates Mines & Minerals (Partnership Firm Partners Sh. Jahangir Ali, Jaibir Singh,Rajesh Gupta & Rohit Chowdhry) R/O- Village- Mauza/Mohal- Mohakampur Nawada, P.O Shivpur, Tehsil- Paonta Sahib and District- Sirmaur (H.P for one year and the LOI extension was issued for another year w.e.f 04.03.2020 as per letter no Udyog-Bhu(Khani- 4)Laghu-158/15-5813 dated 01.10.2021. The area comprises of Khasra No 640/563/480/1 (Private Land/ riverbed) 3.9786 ha (47-04 Bighas) falling in Mohal and Mauza Mohakampur Nawada, tehsil Paonta Sahib and District Sirmaur (H.P).

5.2 TECHNOLOGY ALTERNATIVES

The proposed manual opencast method of mine will continue to be used as it is most appropriate and approved in mining plan due to nature of terrain and volume of activities.

CHAPTER VI- ENVIRONMENTAL MONITORING PROGRAMME

6.0 INTRODUCTION

Regular monitoring of the various environmental parameters is necessary to evaluate the effectiveness of the management programme so that the necessary corrective measures can be taken in case there are some drawbacks in the proposed programme. Since environmental quality parameters at work zone and surrounding areas are important for maintaining sound operating practices of the project in conformity with environmental regulations, the post project monitoring work forms part of Environmental Monitoring Program.

Environmental Monitoring Program will be implemented once the project activity commences. Environmental monitoring program includes (i) environmental surveillance, (ii) analysis & interpretation of data, (iii) preparation of reports to support environmental management system and (iv)organizational set up responsible for the implementation of the programme.

6.1 ENVIRONMENTAL MONITORING AND REPORTING PROCEDURE

Monitoring shall confirm that commitments are being met. This may take the form of direct measurement and recording of quantitative information, such as amounts and concentrations of discharges and wastes, for measurement against corporate or statutory standards, consent limits or targets. It may also require measurement of ambient environmental quality in the vicinity of a site using ecological / biological, physical and chemical indicators.

Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints.

The preventive approach to environment management may also require monitoring of process inputs, for example, type and method used, resource consumption, equipment and pollution control performance etc.

6.2 THE KEY AIMS OF ENVIRONMENT MONITORING ARE:

To ensure that results / conditions are as forecast during the planning stage, and where they are not, to pinpoint the cause and implement action to remedy the situation.

To verify the evaluations made during the planning process, in particular with risk and impact assessments and standard & target setting and to measure operational and process efficiency.

Monitoring will also be required to meet compliance with statutory and corporate requirements.

Finally, monitoring results provide the basis for auditing i.e. to identify unexpected changes.

6.3.1 MONITORING METHODOLOGIES AND PARAMETERS

6.3.2 AIR QUALITY MONITORING

Air Quality monitoring is essential for evaluation of the effectiveness of abatement Programmes and to develop appropriate control measures. Suspended Particulate Matter (SPM), Sulphur Dioxide (SO_2) and Nitrogen Dioxide (NO_2) will be monitored at the workplace i.e. core zone. The methodology proposed for is shown below:.

Parameters	Technique	Technical Protocol
$PM_{2.5}$	Gravimetric method	CPCB Guideline Vol. I May' 2011
PM_{10}	Gravimetric method	IS 5182 (Part-XXIII)
Sulphur Dioxide	Improved West and Gaeke	IS-5182 (Part-II)
Nitrogen Dioxide	Modified Jacob & Hochheiser	IS-5182 (Part-VI)

6.3.3 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.

6.3.4 SOIL QUALITY MONITORING

The soil quality monitoring is carried out to assess the soil characteristic. The soil quality will be analyzed as per CPCB norms.

6.3.5 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 noise control of various noise generating sources

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 at the nearest village for studying the impact due to higher noise levels for taking necessary control measures at the source.

6.3.6 SOCIO-ECONOMIC SURVEY

Socio economic condition will be monitored to assess the demographic particulars of the area including the impacts on the social & economical condition on the residents nearby.

6.3.7 PLANTATION MONITORING PROGRAMME

Plantation monitoring will be done to ensure survival & growth rate of plantations.

6.4 MONITORING SCHEDULE

The schedule has been shown below for the parameters proposed for monitoring.

Table No. 6.1 Monitoring Schedule

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 c) dust suppression	24 hourly samples twice a week for one month in each season except monsoon

	d) Scraping of road to keep it levelled	Regularly till dust remains airborne Fortnightly
2	Water Quality a) Surface water b) Groundwater around the site	Once a season for 4 seasons in a year
3	Ambient Noise Level	Twice a year for first two years & then once a year
4	Soil Quality	Once in two years on project area
5	Reclamation works a) Plantation b) Check Dam	Once in two years on project monitoring area
6	Socio-economic condition of local, population, physical survey	Once in 3 years

6.4.1MONITORING SCHEDULE - IMPLEMENTATION

An implementation programme has been prepared as it serves no purpose if it is not implemented in letter and spirit.

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:

- 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.
- Collection of soil samples at strategic locations once every two years and analysis thereof with regard to deleterious constituents, if any.
- Measurement of water level fluctuations in the nearby ponds dug wells and bore wells and to assess if mining has got any impact on it or not.
- Measurement of noise levels at mine site, stationary and mobile sources, and adjacent villages will be done twice a year for first two years and thereafter once a year.
- 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.

An Environmental Management Cell (EMC) is envisaged which will be responsible for monitoring EMP and its implementation. EMC members should meet periodically to assess the progress and analyze the data collected during the month.

6.5 BUDGET ALLOCATION FOR MONITORING

The EMC will be responsible to carry on the monitoring. Budget allotment has also been proposed for the same:

Table No. 6.2 Budget Allocation for Monitoring

S. No.	Description	Cost to be incurred (in lakh /annum)
1	Air Quality	0.7 LACS
2	Water Quality (Surface & Groundwater)	
3	Soil Quality	
4	Noise Level	
5	Socio-economic Condition	
6	Plantation monitoring	
TOTAL		**0.7**

6.6 REPORTING SCHEDULES OF THE MONITORING DATA

It is proposed that voluntary reporting of environmental performance with reference to the EMP should be undertaken. The environmental monitoring cell shall co-ordinate all monitoring programmes at site to furnish the data to the State regulatory agencies regularly in respect of the stipulated prior environmental clearance terms and conditions.

The proponent shall prominently advertise in the newspapers indicating that the project has been accorded environmental clearance and also the details of website where it is displayed.

CHAPTER VII- ADDITIONAL STUDIES

7.0 PUBLIC CONSULTATION

Public hearing yet to be conducted by PP .

7.2 DISASTER MANAGEMENT AND RISK ASSESSMENT

The mining lease area part of Riverbed which is prone to some risk hazards but there will not be any major risk hazard associated with the process.

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

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

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.

A) 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 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:

1) A tolerable region where risk has been shown to be negligible and comparable with everyday risks such as travel to work.

2) 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.

3) 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. 7.1The risk acceptability criteria are given in following table:

	Risk unacceptance 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.	**Intolerable Region**
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	**ALARP Region (As Low as Reasonably Practicable)**
3	Risk level is so low as to not require actions to reduce its magnitude further.	**Tolerable Region**

The possible scenarios selected for this project are as below:

- Accident during mineral loading, transportation and dumping
- Inundation/Flooding
- Drowning
- Accident due to vehicular movement
- Earthquakes

7.2. ACCIDENT DURING SAND/MINERAL LOADING, TRANSPORTATION AND DUMPING

The consequences of this scenario are minor which may be taken care with first aid care.

a. The minerals are loaded in the trucks using hand shovels. There is possibility of injury in the hands during loading with shovels
b. Trained drivers will be appointed for the working of JCB machineries for excavation purpose.
c. There is possibility that the workers standing on the other side of loading may get injury due to over thrown sand with pebbles.
d. There is possibility of workers getting injured during opening of side covers to facilitate loading.
e. There are chances of falling of cattle/children into pits by overlooking of fenced area near worksite or improper supervision.

7.2.2 ACCIDENT DUE TO VEHICULAR MOVEMENT

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 controls to be exercised to deploy trained drivers with valid driving license with a helper. A strict supervision/control is to be exercised to avoid drunken driving or driving by Sirmaur authorized person to bring under ALARP ZONE.

The minerals loaded in 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 may injure the passerby public. In case Traffic & vehicle load bearing licensed capacity is neglected.
d. Proper turning of vehicles will be ensured to avoid any congestion during entry or exit.

1.2.3 DROWNING

There are no possibilities of drowning in the river as project is on riverbed, since mining operations is stopped during monsoon.

1.2.4 EARTHQUAKES

The mining operations are open cast pit mining. The mining pits will be only of one meter depth. There won't be any structure in the area likely to cause risk to workers. The workers rest sheds, store building and toilets will be constructed.

7.4 ADDITIONAL MITIGATIONMEASURESTO BRING HAZARDS UNDER "ALARP" ZONE

7.4.1 MEASURES TO PREVENT ACCIDENTS DURING LOADING

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

7.4.2 MEASURES TO PREVENT ACCIDENTS DURING TRANSPORTATION

1. All transportation within the main 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. The truck drivers with proper driving license would only be employed.
4. Generally, overloading should not be permitted.
5. The truck should be covered and maintained to prevent any spillage.
6. The maximum permissible speed limit should be ensured.
7. To avoid danger of accident roads and ramp near embankment should be properly maintained.

7.4.3 MEASURES TO PREVENT INUNDATION/FLOODING/DROWNING

- Being on riverbed there should not be any mining operation during monsoon or rainy day.
- Formation of deep pits should not be allowed. Mining will be carried out as per mining scheme only.
- Whenever there is any alert of flooding the workers will be moved to safer area along the banks.

7.4.5 EMERGENCY PLAN

On realizing anything serious happened anywhere in the mine, the foreman or the mate will immediately inform the nearest mining official & the manager of mines.

On receiving information of emergency, Shift in-charge will ensure that all the materials and transport system to deal with emergency situation is kept under readiness.

First aid facilities are to be kept ready to receive the cases.

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

There will be no resettlement or rehabilitation involved in the project being on meandering course of the river. However, a detailed Socio Economic Assessment has been performed, which is given below:

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CHAPTER VIII-PROJECT BENEFITS

8.0 GENERAL

The execution of the project i.e. removal of sediments will protect against widening of the river channel and flooding of adjoining areas, 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 BENEFITS OF MINING

i. Controlling river channel
ii. Protecting banks
iii. Prevent Siltation
iv. Reducing submergence of adjoining agricultural lands due to flooding.
v. Reducing aggradation of river level.
vi. Protection of crops being cultivated along the river bank
vii. Generating useful economic resource for construction.
viii. Improvement in the general health status of the local people.
ix. Generating employment
x. Improvement of socio economic conditions of nearby habitats.
xi. A check on illegal mining activity.

8.2 EMPLOYMENT

The socio-economic conditions of the surrounding villages indicate that employment generation is seasonal. 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 proposed project will provide the direct employment to the 10 to 15 Person.

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:-

a. Improvements in physical infrastructure.
b. Improvements in Social Infrastructure.
c. Increase in Employment Potential
d. Prevention of illegal mining.
e. During and Post-mining enhancement of green cover.

8.3(a) IMPROVEMENTS IN PHYSICAL INFRASTRUCTURE

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

i. Improved road communication due to opening of the proposed project.
ii. Strengthening of existing community facilities through the Community Development Programme.
iii. 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.
iv. Awareness program and community activities, like health camps, medical aids, family welfare programs, immunization camp sports & cultural activities, plantation etc.

8.3(b) IMPROVEMENTS IN SOCIAL INFRASTRUCTURE

There will be some obvious changes in various environmental parameters due to mining activity. 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.

Lessee will also undertake awareness program and community activities like health camps, medical aids, family welfare camps etc.

8.3(c) INCREASE IN EMPLOYMENT POTENTIAL: - There is a possibility of creation of direct and indirect employment opportunities due to working of this mine.

8.3(d) ENHANCEMENT OF GREEN COVERS

As per mining plan the entire mining lease area falls within river course. The entire mining area falls within river course and gets flooded during monsoons; therefore, no plantation is possible within this area. However, plantation can be taken up along the haul roads.

It is proposed to plant around 40 trees every year along the haul road.

Table No. 8.1 ENHANCEMENT OF GREEN COVERS

S.NO	Year	Area in Sq.m	NO OF PLANTS
1	1st YEAR	400	40
2	2nd YEAR	400	40
3	3rd YEAR	400	40
4	4th YEAR	400	40
5	5th YEAR	400	40
	Total	**2000**	**200**

8.4 HEALTH

Pre-placement medical examination and Periodic medical checkups will be done half-yearly and other social development and promotional activities will be undertaken. All this will lift the general health status of the residents of the area around mine.

8.5 UNDER CSR THE FOLLOWING MEASURES WILL BE TAKEN

Table No. 8.2 Budget Proposed for Corporate Social responsibilities Activities

Budget for *Social Corporate Responsibility*		
Item	Capital (In Lac.)	Recurring Cost/year (Lacs)
Contribution to the local area under ***Social Corporate Responsibility***– will provide 4 solar light in local area. It is also proposed to provide plastic shredder and bailing machine	0.50 1.5	-
Total cost	2.00	-
Total cost in five years Rs.2.0 Lac (Within 6 months after getting Environmental Clearance)		

- Awareness program will be conducted for labours to sensitize them about importance of biological environment.
- Villagers will be encouraged to plant trees for which free saplings will be provided to them.
- Provide employment to the nearby villagers for better living standards.
- Regular medical health check-up for workers will be organized annually.
- Distribution of school bags, books and uniforms to the children.
- Awareness programs will be organized for the Promotion of Girl child education

CHAPTER IX-ENVIRONMENT MANAGEMENT PLAN

9.0 INTRODUCTION

To mitigate the adverse impact which is likely to 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 in Chapter IV. To minimize the adverse impact, certain additional EMP measures are enumerated below for implementation.

9.1 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

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

- No labour camps will be established on river bed.
- No cooking, or burning of woods will be allowed in the nearby area.
- Prior to commencement of mining, a short awareness program will be conducted for labours to make them aware of way of working and various precautions to be taken while at work. Such program will be repeated occasionally.
- In the event of any some causality or injury to any animal occurs, proper treatment will be given.

- No tree cutting, chopping, lumbering, uprooting of shrubs and herbs will be allowed.
- Corridor movement of wild animals, if exists mining operations will be avoided in the area.
- It will be ensured that noise produced due to vehicles movement while carrying sand is within the permissible noise level.
- No piling of River Bed Material will be done in adjoining area.

9.2 ENVIRONMENTAL MANAGEMENT PLAN - IMPLEMENTATION

Environmental Management Plan serves no purpose if it is not implemented in letter and spirit. An implementation and monitoring programme has therefore been 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:

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 every two years and analysis thereof with regard to deleterious constituents, if any.
c) Measurement of water level fluctuations in the nearby ponds, dug wells and bore wells and to assess if mining has got any impact on it or not.
d) Regular visual examination will be carried out to look for erosion of river banks. Any abnormal condition, if observed, will be taken care of.

e) Measurement of noise levels at mine site, stationary and mobile sources, and adjacent villages will be done twice a year for first two years and thereafter once a year.

d) Plantation / Afforestation will be done as per program i.e. along the road sides and near civic amenities, which will be allotted by Government bodies. 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.

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 periodically to assess the progress and analyze the data collected during the month. The EMC will function as per Fig. 5.1(Chapter V).

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. 5.1(Chapter - V).

The said team will be responsible for:

(i) Collecting water, air and soil samples, noise measurements and collection of data about flora, fauna, and other parameters as per the programme schedule from surrounding area and work zone monitoring for pollutants.

(ii) Analyzing the water, air and soil 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.

(vii) Reporting the status report to the statutory authorities.

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

9.4 BUDGET ALLOCATION FOR EMP IMPLEMENTATION

Annual budget for EMC is very essential for successful implementation of EMP. 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 defined outsourcing
3. Cost of chemicals, consumables and transport for data generation
4. Manpower cost for environmental cell
5. Any other cost as per EC condition.

Table 9.1 COST OF EMP

The project will commence once Environmental Clearance and other necessary certificates are obtained from the respective departments.

S. No	Description	Measures	Capital Cost (Lac Rs.)	Recurring Cost (In Lac Rs.)	Time Frame
1	Air pollution control	Sprinkling of Water on Haulage Road to control Dust.		0.5 Lac	Twice a time in a day
2	Plantation	Plantation will be developed along the road side	0.50	0.20Lac	40 plants will be planted every year for 5 year
3	Occupational Health measures and other miscs activities for Employees) Shelter, Health Facilities, Safe drinking water, will be provided to labour.		0.10Lac	0.60Lac	Two times in a year report will be submitted to regional office MoEF & CC & H.P SEIAA
4	Retaining Structure Construction &			0.20	

	Maintenance				
5	Environment Monitoring and Management			0.50	Two times in a year
Total			0.60	2.0	
Total budget for EMP for 5 years = Capital Cost (Rs. 0.60 Lacs) + Recurring Cost (2.0Lacs*5) = 10.6 lacs.					
Total budget for Project – Rs. 10.6 Lacs					

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CHAPTER X- SUMMARY & CONCLUSION

10.0 INTRODUCTION OF PROJECT & PROPONENT

As per vide letter Nos. Udyog-Bhu (Khani-4) Laghu-158/15-10763 dated 04-02-2019, a letter of Intent has been granted to M/S J.J Associates Mines & Minerals (Partnership Firm Partners Sh. Jahangir Ali, Jaibir Singh,Rajesh Gupta & Rohit Chowdhry) R/O- Village- Mauza/Mohal- Mohakampur Nawada, P.O Shivpur, Tehsil- Paonta Sahib and District- Sirmaur (H.P for one year and the LOI extension was issued for another year w.e.f 04.03.2020 as per letter no Udyog-Bhu(Khani- 4)Laghu-158/15-5813 dated 01.10.2021. The area comprises of Khasra No 640/563/480/1 (Private Land/ riverbed) 3.9786 ha (47-04 Bighas) falling in Mohal and Mauza Mohakampur Nawada, tehsil Paonta Sahib and District Sirmaur (H.P).

The proposed Sand and Bajri mining project is located near MAUZA/MOHAL- Mohakampur Nawada, Tehsil PAONTA SAHIB, District- SIRMAUR, and Himachal Pradesh. The proposed project is for Stone Sand and Bajri mining having lease area of 3.9786 ha. The entire stretch of applied mining lease area is Private which is a part of bed of GIRI.

The proposed project is manual extraction and collection of Stone Boulder, Sand and Bajri from bed of GIRI up to one meter bgl or above.

It has been proposed to extract around 62,842 tonnes per annum of Stone Sand and Bajri, the extracted materials will get replenished during every monsoon season.

10.1 LOCATION

Mining will be confined to the allotted lease area lies in the bed of Giri. The mining lease area is 3.9786 hectare Situated in MAUZA/MOHAL- Mohakampur Nawada Tehsil PAONTA SAHIB and District- SIRMAUR, H.P The lease area is connected to the nearest metalled road through unmettaled road at a distance of about 1.2km.

The co-ordinates of the mine lease area are:

Latitude: *30^0 26' 11.22" N- 30^0 28' 5.54" N*

Longitude: *77^0 41'13.73" E- 77^0 41' 15.15" E*

10.2 MINING

10.2.1 METHOD OF MINING

1. The mining shall be taken manually with the use of hand tools.
2. No blasting is required.
3. The area being part of the River which receives annual rainfall, the mining area will get replenished during every rainy (monsoons) season. As abundant precaution, keeping in view the variation in rainfall particularly highest rainfall, which generally causes floods, the factor of eight cm annual replenishment is taken into consideration in general.
4. Keeping in view of the replenishment factor, no rotational mining has been proposed. The complete mineable area shall be explored every year.
5. Though the major mining activities will be under taken during the dry seasons.
6. Thus effective mining will be only for 300 days in a year.
7. Mining activity will be done in day time only.
8.

SIZE OR MAGNITUDE OF OPERATION

The area of the proposed mine is 3.9786 ha, and the proposed capacity of Stone Sand and Bajri will be 67,500 TPA. The Applicant intends to mine Stone Sand and Bajri from the allotted lease

The Mineral production target for the Next five years is given below:

Table 10.1 Showing Year wise Production Programme

Year	Boulders	Bajri	Sand	Silt/Clay	Total
1st Year	27930	20947	13965	6982	69824
2nd Year	27930	20947	13965	6982	69824
3rd Year	27930	20947	13965	6982	69824
4th Year	27930	20947	13965	6982	69824
5th Year	27930	20947	13965	6982	69824
Total	**139650**	**104735**	**69825**	**34910**	**349120**

Source: - Approved mine Plan.

WORKING DEPTH (BELOW GROUND LEVEL)

The deposits occur in the middle/bottom of the river. During the entire lease period the deposit will be worked from the top surface to 3 ft below ground level. The ultimate depth of the open cast pits will not exceed 3 ft below river bed level or above ground water table, whichever comes first. Under no circumstances it will interfere with the ground water table.

10.3 WATER SUPPLY

Table No. 10.2 WATER SUPPLY

Activity	**Water Requirement (KLD)**
Dust Suppression	0.8
Plantation	0.9
Domestic purpose	1.1
Total	**2.8**

Water Requirement for the mining process will be met from existing Borehole Present at own land at Village Nawada, the- Paonta Sahib, H.P

This section contains the description of baseline studies of the 10 km radius of the area surrounding **" MAUZA/MOHAL- Mohakampur Nawada Stone Sand & *Bajri* Mine, and Himachal Pradesh"**. 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 have been 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 10.3 BASELINE ENVIRONMENTAL STATUS

Attribute	Baseline status
Ambient Air Quality	Ambient Air Quality Monitoring reveals that the minimum & maximum concentrations of PM_{10} amongst all the 8 AQ monitoring stations were found to be 32.0 µg/m^3 at AQ2 and 45.6 µg/m^3 at AQ6, respectively. This dust concentration will get considerably reduced the moment measures are taken for dust control at the crusher itself, like the wet crushing, or extraction of dust laden air and cleaning of dust thereof. As far as the gaseous pollutants SO2 and NO_2 are concerned, the prescribed CPCB limit of 80µg/m3 for residential and rural areas has never been surpassed at any station.
Noise Levels	Noise monitoring was carried out at six 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 five locations monitored.
Water Quality	8 Groundwater samples and 2 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 IS: 10500.
Soil Quality	Samples collected from identified locations indicate the soil is loamy type and the pH value ranging from 7.88to 8.11, which shows that the soil is Moderat alkaline in

	nature.
Ecology and Biodiversity	There is no wild life sanctuary present within 10km radius of the study area.
Socio-economy	The implementation of Mauza/Mohal Mohakampur Nawada Stone Sand & *Bajri* Mining Project on Giri bed in district Sirmaur 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.

10.4 BIOLOGICAL ENVIRONMENT

Biological diversity comprises the variability of species, genus and ecosystems and is very crucial for maintaining the basic processes on which the life depends. Broadly it can be divided in to two types i.e. the floral diversity and faunal diversity. Conservation of the biodiversity is essential for the sustainable development as it not only provides the food, fodder and medicine but also contribute in improvement of essential environmental attributes like air, water, soil, etc.

Before starting any Environmental Impact Assessment study, it is necessary to identify the baseline of relevant environmental parameters which are likely to be affected as a result of operation of the proposed project. A similar approach has been adopted for conducting the study on Biological Environment for this Project. Both terrestrial and aquatic ecosystems have been studied to understand the biological environment.

10.5 WATER ENVIRONMENT

10.5.1 IMPACTS ON WATER ENVIRONMENT

Mining of Stone Sand Stone & *Bajri* from river bed has no permanent and direct impact on the physico-chemical characteristics. These characteristics includes in stream roughness elements, depth, velocity, turbidity, sediment transport and stream discharge. Altering these characteristics can have negative impacts on both in-stream biota and associated riparian habitat. The mining will confine to central part of river bed, away from banks.

Thus mining would channelize the river flow.

The detrimental effects, if any, to biota resulting from bed material mining are caused by following:

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.

10.6.2 MITIGATION MEASURES

The major source of surface water pollution due to mining is negligible, however, the following measures shall be undertaken to prevent water pollution.

A: SURFACE WATER

Drains and their Catchments will be constructed just beside the access roads so that the storm water gets settled before flowing to the river.

The washing of trucks and tipper truck in the river will be avoided and disposal of domestic waste in the water body will be prevented.

B: GROUND WATER

There would not be any adverse effect on the ground water quality. The mineral formation does not contain any harmful element, which could percolate into the ground and pollute the ground water. Mining will be done up to the depth of 1 meter bgl or below groundwater table whichever comes first. It ensured that the project will not intercept the groundwater table.

10.7 IMPACTS ON AIR ENVIRONMENT

Emission of fugitive dust is envisaged due to:

I. Mining Activities includes extraction of minerals. No blasting material is to be used. Therefore the dust generated is likely to be insignificant as compared to other mining processes.

II. Transportation of minerals will be done by road using trucks. Fugitive dust emission is expected from the transportation of trucks on the haul roads. The mining will be undertaken during dry seasons.

The major source of dust generation is the transport of material by trucks and tractor/trolleys. Adequate control measures shall be taken during mining operations as well as transportation of minerals.

The following steps shall be adopted to prevent air pollution due to airborne dust.

The only air pollution sources are the road transport network of the trucks. The dust suppression measures like water sprinkling will be done on the un-metaled part of the haul road.

- Utmost care will be taken to prevent spillage of Sand & Bajri from the trucks and materials will be covered with tarpaulin sheet.
- Overloading will be prevented.
- Plantation activities in consultation with local competent authority along the roads will also reduce the impact of dust in the nearby villages.

10.8 IMPACTS ON NOISE ENVIRONMENT

The proposed mining activity is semi mechanized in nature. No drilling & blasting is proposed for this mining activity. Hence the only impact is anticipated is due to movement of vehicles deployed for transportation of minerals. About 23 truck trips are required for transporting mined material per working day from mining area to crusher.

10.8.1 MITIGATION MEASURES

The following control measures shall be taken to keep the ambient noise levels well within limits:

- Minimum use of horns and speed limit is 10 kms in the village area.
- Only PUC certified vehicles will be used for transportation purpose.
- The dedicated tipper truck would be properly and regularly undergo maintenance so as to create minimum noise.
- Special care would be taken to properly maintain the silencers of the vehicles.
- A thick belt of broad leaf trees, bushes and shrubs would be planted near the banks of river to screen the noise and stabilize the banks.

10.9 IMPACTS ON BIOLOGICAL ENVIRONMENT

The mining activity will have insignificant effect on the existing flora and fauna. The purpose of the project itself is to save the flora around the project area from river widening, excessive erosion and floods. It was found that the mining activity wills not have any significant impact on the biological environment of the region.

10.10 IMPACTS OF SOLID WASTE GENERATION

No solid waste generation is expected from the mining operation. However, only silt/clay will be generated as waste which will be further use for maintenance of haul road and plantation purpose.

10.11 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

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

- No labour camps will be established on river bed.
- No cooking, or burning of woods will be allowed in the nearby area.
- Prior to commencement of mining, a short awareness program will be conducted for labours to make them aware of way of working and various precautions to be taken while at work. Such program will be repeated occasionally.
- In the event of any some causality or injury to any animal occurs, proper treatment will be given.
- No tree cutting, chopping, lumbering, uprooting of shrubs and herbs will be allowed.
- Corridor movement of wild animals, if exists mining operations will be avoided in the area.

- It will be ensured that noise produced due to vehicles movement while carrying sand is within the permissible noise level.
- No piling of River Bed Material will be done in adjoining area.

10.12 ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION

Environmental Management Plan serves no purpose if it is not implemented in letter and spirit. An implementation and monitoring programme has therefore been 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:

f) 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.

g) Collection of soil samples at strategic locations once every two years and analysis thereof with regard to deleterious constituents, if any.

h) Measurement of water level fluctuations in the nearby ponds, dug wells and bore wells and to assess if mining has got any impact on it or not.

i) Regular visual examination will be carried out to look for erosion of river banks. Any abnormal condition, if observed, will be taken care of.

j) Measurement of noise levels at mine site, stationary and mobile sources, and adjacent villages will be done twice a year for first two years and thereafter once a year.

e) Plantation/afforestation will be done as per program i.e. along the road sides and near civic amenities, which will be allotted by Government bodies. 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.

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 periodically to assess the progress and analyze the data collected during the month.

BUDGET ALLOCATION FOR EMP IMPLEMENTATION

Table 10.4 COST OF EMP

S. No	Description	Measures	Capital Cost (Lac Rs.)	Recurring Cost (In Lac Rs.)	Time Frame
1	Air pollution control	Sprinkling of Water on Haulage Road to control Dust.		0.5 Lac	Twice a time in a day
2	Plantation	Plantation will be developed along the road side	0.50	0.20Lac	40 plants will be planted every year for 5

					year
3	Occupational Health measures and other miscs activities for Employees) Shelter, Health Facilities, Safe drinking water, will be provided to labour.		0.10 Lac	0.60Lac	Two times in a year report will be submitted to regional office MoEF & CC & H.P SEIAA
4	Retaining structure construction and maintenance	Construction & maintenance will be done of 5 no retaining structure of 10 m length & 1.5 m height	--	0.20	
5	Environment Monitoring and Management			0.50	
Total			0.60	2.0	
Total budget for EMP for 5 years = Capital Cost (Rs. 0.60 Lacs) + Recurring Cost (2.0Lacs*5=10 lacs.) = 10.6 lacs.					
Total budget for Project – Rs. 10.6 Lacs					

10.13BENEFIT OF MINING

Mining will result in following benefits:-

i. Controlling river channel
ii. Protecting banks
iii. Prevent Siltation
iv. Reducing submergence of adjoining agricultural lands due to flooding.
v. Reducing aggradation of river level.
vi. Protection of crops being cultivated along the river bank
vii. Generating useful economic resource for construction.
viii. Improvement in the general health status of the local people.
ix. Generating employment
x. Improvement of socio economic conditions of nearby habitats.
xi. A check on illegal mining activity.

CHEPER- XI DISCLOSURE OF CONSULTANTS

DISCLOSURE OF CONSULTANT

M/s N.S. Enviro-Tech Laboratories & Consultant is expertise in Mining and Environment Management provides comprehensive professional services for Mining, Cement Plants, Isolated Storage & handling of hazardous chemicals, Ports, harbours, break waters and dredging, Building & Large Construction and Metallurgical industries (ferrous & non-ferrous) sectors.

M/s N.S. Enviro-Tech Laboratories & Consultant was established in the year 2015. It is an ISO 9001:2008 certified organization. It is NABET accredited Organization for preparation of EIA/EMP for Mining, and Cement Plants, Isolated Storage & handling of hazardous chemicals, Ports, harbours, break waters and dredging, Building & Large Construction and Metallurgical industries (ferrous & non-ferrous) sectors projects by NABET.

LIST OF EXPERTS TEAM Of NSETLC

S. No	Name	Qualification /Work Experience
1	Mr.N.S. Naruka (CEO)	M. Phill in Environment Management & M. Sc- Environment Science, Certified lead auditor in Environment Management System. Approved A cat. By NABET, EIA Co-coordinator- Mining A cat. & Functional Area Expert- AP, WP & SHW and more than 15 Years work experience in the field of Environment Clearance and preparation of EIA/EMP Report.
2	Mr. S.P Goyal Ex. Controller of Mines, IBM, India	B.E (Mining). Approved A cat. By NABET, EIA Co-coordinator- Mining (Underground & Opencast) & Functional Area Expert- AP, NV, RH & SHW & more than 6 years experience in the field of Consultancy on Mining and Environment.
3	Mr. S.C. Sharma (Ex. Chief Mining Engineer, Coal India Limited)	B.E (Mining Engineering). Approved A cat. By NABET, EIA Co-coordinator- Mining (Underground & Opencast) & Functional Area Expert- NV, RH & more than 10 years experience in the field of Consultancy on Mining and Environment.

4	Dr. A. K Pandey	Ph. D & Post Doct. in Environment Science B.J (M.C) in Journalism Diploma in Disaster Management & M. Sc Ecology & Env. Science & more than 25 years experience in the field of Consultancy on Mining and Environment. Approved A cat. By NABET, EIA Co-coordinator- Mining & -1, Highway-34, and Common municipal solid waste-37, Functional Area Expert- EB, & SHW.
5	Mr. Rakesh Yamuna Goswami(Ex. Sr. Geologist, DMG, Jodhpur.)	M.SC. TECH. in applied Geology. Functional Area Expert- HG & GEO & more than 6 years experience in the field of Consultancy on Mining and Environment.
6	Mr.Rohit Pandey	M. Sc- Environment Science. Team Member- WP,EB & more than 12 Years work experience in field of Environment Consultancy.
7	Ms. Anju	M.A- Sociology. Functional Area Expert- SE & more than 10 Years work experience in Social Development & NGO.
8	Mr. Rajveer Singh	M.Sc- Remote Sensing and GIS. EIA Co-coordinator- Rope way & Functional Area Expert- LU and more than 10 Years work experience in the field of Environment Clearance and preparation of EIA/EMP Report.
9	Mr. Kailash Meena	Post-Graduation (M.A. in Geography) & P.G. Diploma in Remote Sensing & GIS Functional Area Expert- LU. More than 5 Year work Experience as Empanelled Expert Land Use.
10	Mr. Vikash Jangir	M. Sc- Environment Science. Functional Area Associated- AP & WP & AQ More three years work experience in the field of Environment Clearance and preparation of EIA/EMP Report.
11	Ms. Sweta Sarkar	M. Sc- Environment Science. Functional Area Associated- AP & WP & SHW More three years work experience in the field of Environment Clearance and preparation of EIA/EMP Report.

12	Ms. Mansi Patel	M. Sc- Environment Science. Functional Area Associated – EB, SHW & SC one year work experience in the field of Environment Clearance and preparation of EIA/EMP Report
12	Dr. Ravi Kumar Ranjan	Ph. D- Environmental Science and Engineering. M. Tech Environmental Science and Engineering. Functional Area Expert- AQ . More than 7 Year work Experience in the field of Environment Consultancy.
13	Ms. Ambika Bhatt	M. Sc. Microbiology. TM- WP. More than 7 Year work Experience in the field of Environment Consultancy.
14	Mr. Mahipal Singh Chouhan	M. Sc- Geology. TM- HG & GEO. 3 Year work experience in Hindustan Zinc Limited. 2 Year work experience in Environment Consultancy.
15	Mr. Gajendra Singh Chouhan	B-TECH- Civil Engineer. TM- HG & NV. 4 Year work experience in Environment Consultancy.
16	Mr. Subash Gurjar	M.A Sociology & Public Administration. TM-SE. 2 Year work experience in Environment Consultancy.
17	Mr.Hariom Chejara	AutoCAD Expert
18	Ms. Monika Sharma	M. Sc- Environment Science. FAA -EB&WP More then 2 Year Work experience in Environment Consultancy.
19	Mr. Yatendra Singh Rathore	M. Sc- Environment Science.

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