To **Date: 14.06.2023**

The Regional officer,
HP Pollution Control Board, Una

Sub: Regarding Environmental Clearance and conducting Public Hearing for project "Extraction of Sand, Stone & Bajri" (3-37-99 Hectares) at Khasra No. 405, Mauza Datwal, Mohal Jangli, Tehsil Bijhari, District Hamirpur, Himachal Pradesh.

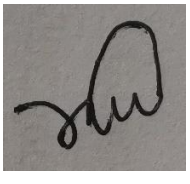
File no- HPSEIAA/2022/1029, Proposal no- SIA/HP/MIN/413181/2023

Dear Sir,

As per Terms of Reference (ToR) awarded by State Environment Impact Assessment Authority (SEIAA), Himachal Pradesh, we have prepared a Draft EIA/EMP report for conducting public hearing as per the EIA Notification,2006.

We are hereby submitting a set of Draft EIA/ EMP Report and Executive Summary (Hindi and English) in both hard and soft copies for your kind perusal and scrutiny for further processing of the case. Hope you will find this in order.
We kindly request you to process expeditiously our application for conducting public consultation/ hearing.

Thanking you,
Yours faithfully,



Authorized Signatory
Sh. Madan Lal
S/o Sh. Ram Chand,
R/o Village & P. O. Gandalwin, Tehsil Ghumarwin,
District Bilaspur, H.P

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT

AND

ENVIRONMENTAL MANAGEMENT PLAN

OF

EXTRACTION/COLLECTION OF SAND, STONE AND BAJRI

PROPOSAL NO	**SIA/HP/MIN/413181/2023**
AREA	**3-37-99 Ha.**
PRODUCTION	**61,599 MTPA**
LOCATION	**Khasra No. 405, Mauza Datwal, Mohal Jangli, Tehsil Bijhari, District Hamirpur, Himachal Pradesh.**

APPLICANT

Sh. Madan Lal

S/o Sh. Ram Chand,

R/o Village & P. O. Gandalwin, Tehsil Ghumarwin,

District Bilaspur, H.P

CONSULTANT

P&M Solution

C-88, Sector 65, Noida -201301 – U.P

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INDEX

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXURES

S. No.	TITLE OF ANNEXURE
I	Terms of reference (TOR)
II	Letter of Intent (LOI) & LOI Extension letter
III	Approved Mining Plan
IV	500m Cluster Certificate
V	Joint Inspection Report
VI	List Of Flora & Fauna
VII	Revenue Record

1.0 Preamble

Environmental Impact Assessment (EIA) is a process that is used to identify the environmental, social, and economic impacts of a project prior to decision-making. It serves as a decision-making tool that guides decision-makers in making appropriate decisions for proposed projects. The objective of EIA is to predict environmental impacts at an early stage of project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment, and present the predictions and options to decision-makers. By utilizing EIA, both environmental and economic benefits can be achieved. By considering predictions and mitigating environmental effects early on in the project planning process, benefits can be obtained, such as the protection of the environment, optimum utilization of resources, and overall cost and time savings.

EIA systematically examines both beneficial and adverse impacts of the proposed project, above and beyond the prevailing conditions of environmental parameters. It ensures that these impacts are taken into account during the project designing stage itself, and that the values of the combined impacts remain within statutory norms. The Ministry of Environment and Forests has envisioned and set this process in motion for sustainable development. The final decision is arrived at only after those who matter have been made aware of the salient features of the project being envisaged close to them, and their opinions have been sought in a widely advertised Public Hearing Event under the chairmanship of the district authorities. This way, the public can express their opinions freely, without favor or fear."

1.0.1 Description of lease area

The proposed project is for Extraction of Sand, Stone and Bajrifrom KhasraNo.405,Measuring 03-37-99 hectare (Govt Land, River Bed) Falling in Mauza Datwal, Mohal Jangli, Tehsil Bijhari, District Hamirpur, Himachal Pradesh. The project has been proposed by Sh. Madan Lal, S/o Sh. Ram ChandR/o Village & P. O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, H.P. The letter of intent by the Department of Industries has been issued vide letter No.Udyog-Bhu(Khani-4)Laghu-936/2020-4869 dated 05-09-2022 Mining plan has been approved vide letter no. Udyog-Bhu (Khani-4) Laghu – 936/2020- 9056 dated 15.12.2022. The estimated project cost is Rs 30 Lakh. The proposed production is61,599 MTPA.

According to the EIA Notification dated 1st July 2016, a cluster will be formed when the distance between the peripheries of one lease is less than 500 m from the periphery of another lease in a homogeneous mineral area. This is applicable to mine leases or quarry licenses granted on or after 9th September 2013 (Ref: Clause (B) (i), Page No-4 in EIA Notification dated 1st July 2016).

Therefore, based on the EIA Notifications dated 15th January 2016 and 1st July 2016, the project falls under B1 Category with project activity type "1(a)" (Mining of Minerals) with a cluster situation. The area of active mines in the immediate surroundings exceeds 5 hectares, and thus, an EIA and EMP are required to seek Environmental Clearance from SEIAA as per the O.M F. No. L-11011/175/2018/-IA-II (M) dated 12/12/2018.

The Environmental Impact Assessment (EIA) study report is prepared for obtaining Environmental Clearance (EC) from SEIAA Himachal Pradeshfor the proposed Extractionof Sand, Stone &Bajri Project.

The proposed project is having area of 03-37-99 Hectares (under cluster approach of area 6-06-30Hectares(Govt Land, River Bed) and falls under Category- "B1" as per the 500 m cluster Certificate vide letter no. Udyog-Bhu(Khani-4)Laghu-936/2020-9441 Dated 29-12-2022 regarding details of other mines located within 500m of the lease area which is attached as **Annexure-V.** As per the 500 m cluster Certificate from Mining Officer the details of mining lease area which falls within 500m is given in **table 1.1**

Table 1.1: Cluster Details

Sr. No.	Name of Mining Lease	Khasra No.	Area in Hectares	Mohal & Mauza	Validity Period	Status of EC/Mining leases whether operating or not operating
1.	Ms. Sikha Kapil, Vill - Gharyani, PO- Lafran,	209/2	02-68-31	Jangli/Datwal	10 years valid from dated 07-12-	EC granted and Mining lease is operational

	Tehsil Bijhari, District Hamirpur				2021 to 06-12-2031	

1.1 Identification of Project& Project Proponent

Name of the project-Extraction of Stone, Sand and Bajri falling in Mauza Datwal, Mohal Jangli Tehsil Bijhari, District Hamirpur, Himachal Pradesh by Sh. Madan Lal, S/o Sh. Ram Chand.

Location of the project- Mauza Datwal, Mohal Jangli, Tehsil Bijhari, District Hamirpur,Himachal Pradesh

Identification of Project proponent

Sh. Madan Lal, S/o Sh. Ram Chand, R/o Village & P. O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, H.P

Table 1.1(a): Brief Description of the project

S. No.	Particulars	Details
A.	**Nature & Size of the Project**	Sand, Stone and Bajri (ML Area–03-37-99 Hectares) 61,599 MTPA
B.	**Location**	
Mauza & Mohal		Mauza Datwal, Mohal Jangli
Khasra no-		405
Tehsil		Bijhari
District		Hamirpur
State		Himachal Pradesh
Coordinates		

Pillars	Latitude	Longitude
A	31°29'9.00"N	76°36'34.12"E
B	31°28'56.91"N	76°36'32.02"E
C	31°28'56.97"N	76°36'30.35"E
D	31°29'9.07"N	76°36'29.41"E
E	31°29'9.43"N	76°36'25.92"E
F	31°29'8.88"N	76°36'24.83"E
G	31°29'8.44"N	76°36'25.34"E
H	31°29'9.21"N	76°36'26.20"E

Toposheet No.		H43E10
C.	**Mine Lease Area Details**	
	Lease Area	03-37-99 Hectares
	Type of Land	Govt Land, River Bed
	Topography	River bed (SukkarKhad)
	Elevation	Highest-624 mRL, Lowest -621mRL
D.	**Cost Details**	
	Cost of the project	Rs30 Lacs
	Cost for EMP	**Capital Cost: 11.0**lakhs**, Recurring Cost: 10.70**lakhs
	Cost of CSR	13.5 Lakhs
E.	**Details of Environmental Setting**	
	Ecological Sensitive Areas (National Park, Wild Life Sanctuary, Biosphere Reserve, Reserve/ Protected Forest etc.) within 10 km	There are no national parks, wildlife sanctuary and other notified eco sensitive areas within 10 km from the periphery of the project site.
	Water Bodies Protected	The Project lies onSukkarKhad.
	Forest/ Reserve Forest	Kalwal PF-4.3 Km in SW Direction Kharal PF-6.18 Km in NW Direction Pairwin PF-5.1 Km in NW Direction Khalaut PF-3.5 Km in NW Direction Bhijri PF-8.0 in NW Direction Gutiana PF-7.5 Km in NW Direction Chalsai PF-6.3 Km in NW Direction Bubru PF-5.1 Km in NW Direction Bhakgol PF-7.0 Km in NW Direction Samela PF-3.3 Km in NW Direction Thetu PF-6.7 Km in West Direction Chatara PF-8.5 Km in West Direction Kalwal PF-4.2 Km in SW Direction Kamoti PF-4.2 Km in NE Direction Chokhana PF-2.9 Km in NE Direction Chakheli PF-2.4 Km in SW Direction Dhar Sindh PF-6.0 Km in SW Direction Janjhlar PF-5.0 Km in East Direction Gochar PF-6.0 Km in SW Direction Dhar Kala PF-7.0 Km in SW Direction
	Nearest Town	Bhota–About 14.30 Km in NNW direction (Aerial Distance
	Nearest Railway Station	Una Railway Station is approx. 31.65 Km in west Direction (Aerial distance)

	Nearest National & State Highway	NH-103 ≈ About 5.4 Km in East Direction
	Nearest Airport	Shimla Airport ≈ About 61.28 Km in SE Direction (Aerial distance)
	State,Nationalboundaries	NA
	Seismic Zone	Seismic Zone IV. (Severe Intensity Zone).

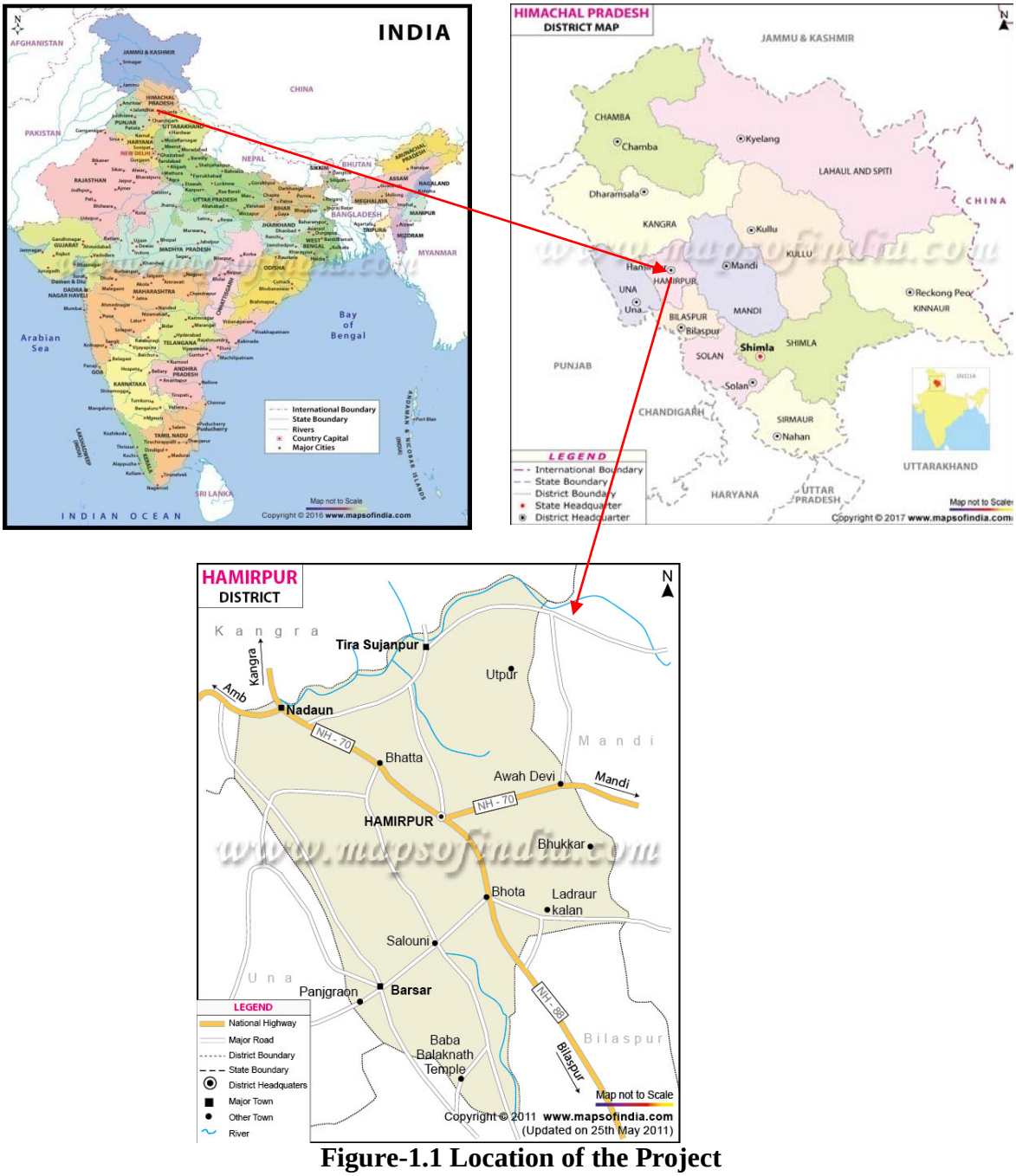

Figure-1.1 Location of the Project

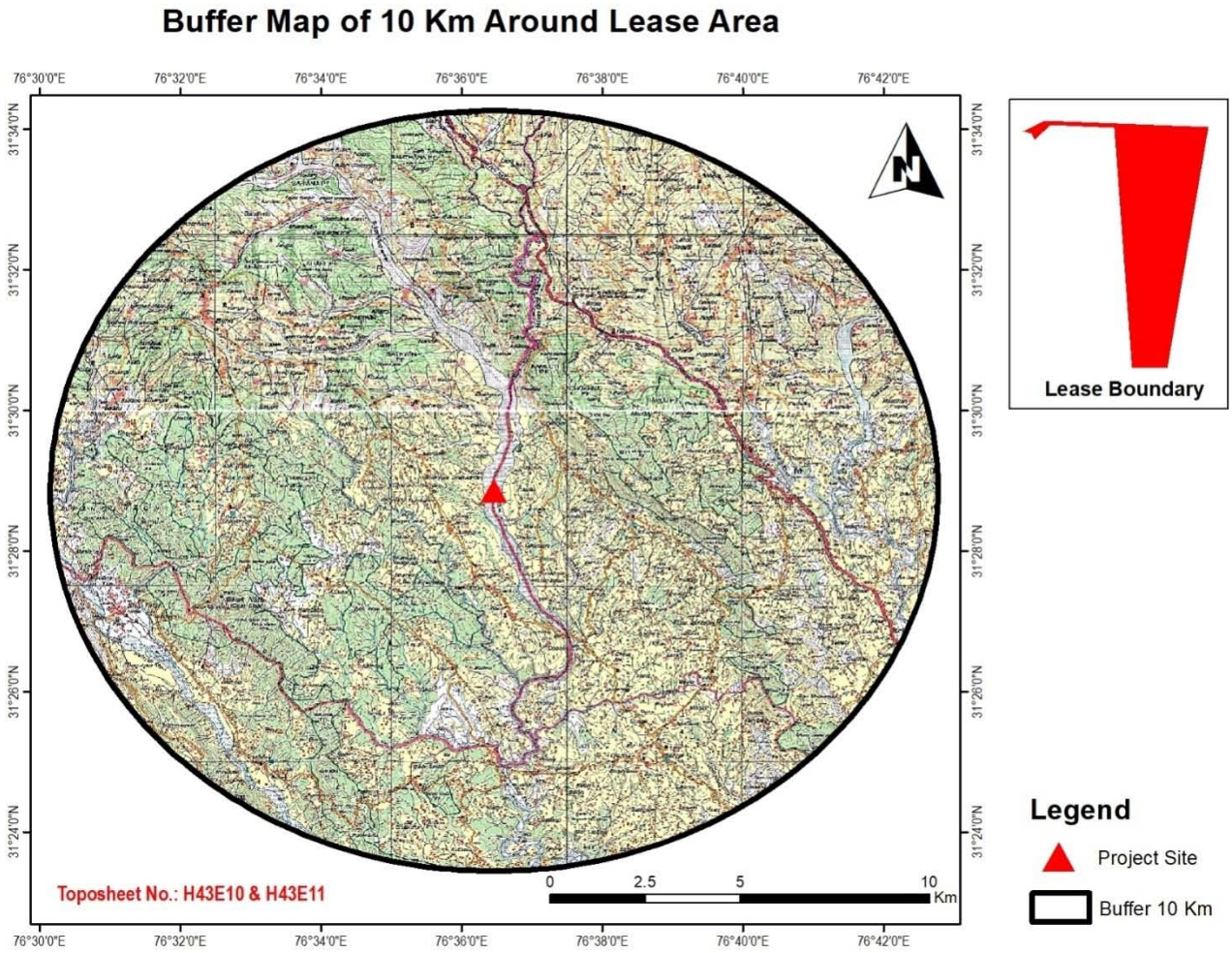

Figure 1.2 Buffer Map of the area

1.2 Scope of the Study

In line with the Terms of Reference (TOR)prescribed by SEIAA, Himachal Pradesh, the area comprising 10km radius around the proposed mine lease boundary is considered as the study area. The detailed studies have been conducted as per prescribed TOR. The study area map is shown in Figure-1.2.

The scope of study broadly covered:

- Literature review and collection of data relevant to the study area;
- Establish the baseline environmental aspects in and around the proposed project;
- Identify various existing pollution loads due to various mining activities;

- Predict incremental levels of pollutants in the study area due to the proposed operations.
- Evaluate the predicted impacts on various environmental attributes in the study area by using scientifically developed and widely accepted environmental impact assessment methodologies;
- Prepare an Environment Management Plan (EMP) outlining the measures for improving the environmental quality; and
- Identify critical environmental attributes that are required to be monitored in the post-project scenario.

Compliance of TOR

Term of Reference forConducting Environment Impact Assessment Study has been granted by SEIAA, Himachal Pradesh vide letter no.HPSEIAA/2022/1029-1382-89dated 16.05.2023.

Table 1.2: Standard TOR points:

S.No	TOR	Compliance	Reference in the 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 production achieved prior to 1994.	This is fresh LOI, Mine is yet to be opened. It will open only after getting environmental clearance.	--
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	State Govt. has given consent for mining vide letter no. Udyog-Bhu (Khani-4) Laghu-936/2020-4869 dated 05-09-2022.	**Annexure II, LOI**

		Proposed project has been allotted to the proponent Sh. Madan Lal, S/o Sh. Ram Chand	
3	All documents including approved mine plan, EIA and public hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management and mining technology and should be in the name of the lessee.	The documents including mine plan and EIA report submitted are compatible with one another w.r.t. to following information: Mining Lease Area- 03-37-99 Hectare. Lessee:Sh. Madan Lal, S/o Sh. Ram Chand Proposed Production- 65,250 MTPA.	**Annexure- III** Mine plan All details have been complied in chapter-2
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).	All Corner Coordinates of mining lease area superimposed on toposheet Map has been incorporated in EIA/EMP Report	Refer Chapter 2
5	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the	The land use map showing salient features of the area is given in the report. The geological map of the mine lease area is also given in the report showing	Land-use of the study area Figure 3.1.

	area, important water bodies, streams and rivers and soil characteristics.	geomorphology	
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.	The Lease area is dry part of River bed. As per revenue record the land is classified as GairMumkinKhad Govt land, Riverbed). The mining process will be done by land use policy of the State & no land diversion has been proposed.	Refer Chapter II &III
7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating processes /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 insuring compliances 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	Yes, the proponent Company has a well laid down Environment Policy. The hierarchical system or administrative order of the company has been given in the EIA report.	Refer Chapter VI Section 6.1 Corporate Environment Policy Annexure- XI

	shareholders or stakeholders at large, may also be detailed in the EIA Report.		
8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposal safeguard measures in each case should also be provided.	No underground mining is proposed.	
9	The study area will comprise of l0 km zone around the mine lease from lease periphery and the data contained in the EIA.	The 10 km zone from periphery of the lease has been considered as the study area. The Buffer map of the study area is attached with report. All the details in the EIA report are for the life of the mine period. The details of mining & production have been given in the report.	Refer Chapter I Figure 1.1
10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post	Land use pattern of 10 km from the periphery of the lease area has been prepared and incorporated with the report. There is no wildlife sanctuary or national park within the study area.	Refer Land-use of the study area Figure 3.1, Table 3.1 Shown in 10 km buffer map enclosed in Chapter I of EIA Report.

	operational phases and submitted. Impact, if any, of change of land use should be given.		
11	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from the mine lease, its land use, R&R issues, if any, should be given.	Detail has been given in chapter 2.	Section 2.5.3 of chapter 2.
12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	There is no forest land within the lease area.	DFO NOC is attached.
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	No forest land is involved in the lease area; therefore, deposition of net present value (NPV) and compensated Afforestationis	

	afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	not indicated.	
14	Implementation status of reorganization of forest rights under the schedule tribes and other traditional forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated"	There is no forest land involved in the leased-out area. Hence, this act is not applicable for this project.	
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given	There are RF/PF present within the 10 km radius of the lease area. Detail has been given in table 1.1 of chapter 1. The vegetation details of the study area are incorporated with the report.	Refer Chapter III Section 3.6 Biological Environment
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.	The details Impacts &their mitigation measures are given in chapter IV of EIA/EMP Report.	Refer Chapter IV
17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger / Elephant Reserves / (existing as well as proposed), if any, within l0	There are no national parks, wildlife sanctuary and other notified eco sensitive areas within 10 km from the periphery of the project site.	

	km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.		
18	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.	Detailed biological study of core zone and buffer zone within 10 km radius of the periphery of the mine lease has been carried out for the project. The same has been incorporated in the report	Refer Chapter III Section 3.1.6 Biological Environment

19	Proximity to Areas declared as 'Critically Polluted' or the Project areas attracting court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.	Proposed project does not come under critically polluted area.	--
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 asmangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would alsoneed to obtain approval of the concerned Coastal Zone Management Authority).	Proposed Projects does not falling under CRZ.	--
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	There is no R & R involved in this project.	

	be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.		
22	One season (non-monsoon) [i.e., March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report" Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be	Base line study was carried out for pre monsoon season March, 2023 to May 2023. Details are provided in EIA/EMP Report. The locations of the monitoring stations were decided on the basis of prevailing meteorological conditions (Wind direction & wind speed) of the study area. The wind rose has been given in chapter III of EIA/EMP Report. The location of the monitoring sites has been shown in map.	Refer Chapter III

	at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.		
23	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	Lines source Modeling has been used. Detail has been given in chapter 4 of EIA report.	Refer – Chapter -4
24	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	The water requirement for the project is 6.15KLD for drinking, dust suppression and green belt development. A detailed water balance is being provided in the report.	Refer Chapter –II Section 2.6.4.1 **Table-2.8, Water Requirement**
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Water will be sourced from SukkarKhad, supplied through water tanker. The	The NOC from the Gram Panchayat awill be obtained.

		NOC from the Gram Panchayat will be obtained.	Refer Chapter II
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.	The project does not consume any process water except for drinking, dust suppression, and plantation. A plantation is proposed, which will increase water holding capacity and help in recharging groundwater. Although no artificial rainwater harvesting is proposed for the present project in the lease area, if any such project is proposed by the state government, PP will provide assistance	
27	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided"	Mining activities will be conducted on the dry bed of the river to avoid any impact on surface water. The mining will be limited to a depth of 1 meter below ground level or above the groundwater table, whichever is shallower, to ensure that there is no interference with the groundwater table. Mining will be done as per Approved mining plan.	Refer Chapter II
28	Based on actual monitored data, it may clearly be shown whether	Mining activities will be conducted on the dry bed of	

	working will intersect groundwater.Necessary data and documentation in this regard may be provided. In case the working will intersectgroundwater 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 onthese aquifers. Necessary permission from Central Ground Water Authority for working belowground water and for pumping of ground water should also be obtained and copy furnished.	the river to avoid any impact on surface water. The mining will be limited to a depth of 1 meter below ground level or above the groundwater table, whichever is shallower, to ensure that there is no interference with the groundwater table. Mining will be done as per Approved mining plan.	
29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	The project site lies on SukkarKhad. No diversion is proposed.	
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.	The elevation of the applied area for the block is624 m AMSL to 621 m AMSL in the stretch.Mining will be up to 1 m below ground level or above the ground water table whichever comes first.	
31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and Quantities coverage, plant	Plantation/afforestation will be done as per program i.e., along the road sides and near civic amenities, as per	Refer Chapter IX Section 9.4.

	species and time frame) and Submitted keeping in mind the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	mineplan. Post plantation, the area will be regularly monitored in every season for evaluation of success rate. List of Plant species selected for green belt is detailed in the EIA report. The plant species selected for green belt have a greater ecological value and are of good utility value to the local population. The plant species are selected by giving emphasis on local and native species and the species which are tolerant to pollution	
32	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent	There will be about 15trucks carrying the minerals per day. The projection has been done based on the mineral transportation. The details of traffic analysis are discussed in the report.	Refer Chapter II Section 2.6.1 Traffic Analysis Fig 2.3, Table 2.7(i), 2.7(ii) & 2.7(iii).

	shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.		
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report	A temporary rest shelter will be provided for the workers near to the site with provisions of water, first aid facility, protective equipment's, etc. Details are given in the EIA/EMP Report.	Refer Chapter II Section 2.6.4.4
34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans andwith adequate number of sections) should be given in the EIA report.	It is a deposit in the riverbed, and the mined-out area will be replenished each year during the monsoon period. Additionally, the depth of the quarry will be filled back with river sand and gravel each year.	
35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impact mainly is expected due air pollution due to fugitive dust emission because of movement of vehicles. However appropriate mitigation measures for air pollution control have been given in the report, discussed in Chapter-4. Each labour will undergo pre-placement medical examination. There after	Refer Chapter VIII Section 8.5 Table- 8.3, Budget for OccupationalHealth

		periodical heath checkup will be arranged as stated in the report. About 8.0 lakh has been earmarked for occupational health.	
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 proposed project being a small-scale manual/ semi-mechanized mining project, there will be hardly any process related health implication on the population of the nearby villages except fugitive dust emissions due to transportation. Budgetary allocation is given in Chapter-VIII.	Refer Chapter VIII
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 to time for implementation.	Socio-economic significance provided to the local community i.e., to the nearby villagers is given in the EIA/EMP Report.	Refer Chapter VIII Section 8.5
38	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the	The detailed environmental management plan to mitigate the environmental impacts has been mentioned in of the EIA/EMP Report.	Refer chapter IX

	proposed Project		
39	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	This is a draft EIA/EMP report. Public hearing is yet to be conducted. Details will be incorporated in final EIA/EMP report.	--
40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending against the project.	
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	The capital cost of 11.0lakh &10.70lakh as recurring cost has been earmarked for EMP. Chapter IX table no. 9.3	Refer Chapter IX Table 9.3, Budget allotted for the Environmental Management Plan
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report".	A Disaster management Plan has been given in EIA/EMP report.	Refer Chapter VII
43	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	About 13.5 lakh as Capital cost has been earmarked towards the Enterprise Social Commitment which will be used for the development of village.	Table no 8.2 of chapter 8.
44.	**Besides the above, the below mentioned general points are also to be followed: -**		

a.)	All documents to be properly referenced with index and continuous page numbering.	Complied.	-
b)	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	Complied.	
c)	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.	Complied	
d)	Where the documents provided are in a language other than English, an English translation should be provided.	Agreed. Will be Complied.	
e)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Questionnaire is attached with the EIA/EMP Report.	
f)	While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August, 2009, which are available on the website of this Ministry, should	Complied.	

	be followed.		
g)	Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.	Agreed.	
h)	As per the circular no. J-11011/618/2010-IA. II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.	This is new case for Mining.	
i)	The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and	Compiled With EIA/EMP report.	

	external dumps, if any, clearly showing the land features of the adjoining area.		

Table 1.3 ADDITIONAL CONDITION OF TOR

S.No	TOR	Compliance	Reference in the Report
1.	The project proponent shall also assess the air quality of the area using Air Quality Models.	Lines source Modeling has been used. Detail has been given in chapter 4 of EIA report	Refer: Chapter-4
2.	The project proponent shall assess and provide comprehensive details of muck disposal in the final EIA/ EMP report	Muck management Plan will be given in Final EIA/EMP report.	Refer: Chapter-9
3.	The project proponent shall provide details of labour, its management	A temporary rest shelter will be provided for the workers near to the site with provisions of drinking water, first aid facility, Bio toilets, Septic tank & protective equipment's, etc. Details are given in the EIA/EMP Report.	Refer Chapter -2 Section 2.6.4.4
4.	The traffic/ vehicle flux assessment shall be included in the EIA/ EMP.	There will be about 15 trucks carrying the minerals per day. The projection has been done based on the mineral transportation. The details of traffic/ vehicle flux assessment analysis are discussed in the report.	Refer Chapter -2 Section 2.6.1 Traffic Analysis Fig 2.3, Table 2.7(i), 2.7(ii) & 2.7(iii).

5.	The project proponent may use baseline data for EIA/ EMP reports from already formulated EIA/ EMP as per the provision of EIA notification 2006 with prior consent of the respective proponent and his undertaking to be submitted to the SEAC.	The fresh Base line study was carried out for pre monsoon season March to May 2023. Details are provided in EIA/EMP Report	Refer- Chapter-3

****

2.0 General

The proposed project is located at Mauza Datwal, Jangli, Tehsil Bijhar, District Hamirpur Himachal Pradesh. The proposed production is 61,599 TPA of Sand, Stone and Bajri.

Identification of Project proponent

Sh. Madan Lal, S/o Sh. Ram Chand, R/o Village & P. O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, Himachal Pradesh

2.1 Description of project

The proposed project is for Extraction of Sand, Stone and Bajri from Khasra No. 405, Measuring 03-37-99 hectare (Govt Land, River Bed) Falling in Mauza Datwal, Mohal Jangli, Tehsil Bijhari, District Hamirpur, Himachal Pradesh. The project has been proposed by Sh. Madan Lal, S/o Sh. Ram Chand R/o Village & P. O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, H.P. The letter of intent by the Department of Industries has been issued vide letter No. Udyog-Bhu(Khani-4)Laghu- 936/2020-4869 dated 05-09-2022 Mining plan has been approved vide letter no. Udyog-Bhu (Khani-4) Laghu – 936/2020- 9056 dated 15.12.2022.

The Auctioned mining site is located near the village Jangli which is located on the right bank of Sukkar Khad. The site is approachable through an approach road originating from the Bijhari-Barthin road near the village Sathwin. The auctioned area is approximately 11 kms. from Bijhari. The proposed mining site is located in the riverbed of Sukkar Khad. The highest point of the auctioned area is 624 meters above MSL and the lowest point is 621 meters above MSL and the average width of the mining auctioned area is 50 to 110 Mtrs.

2.1.1 Location of the project

The proposed project is situated at Khasra No. 405, in Mauza Datwal, Mohal Jangli, Tehsil Bijhari, District Hamirpur, Himachal Pradesh. The area falls in Survey of India Toposheet No. H43E10 The surface plan of the project is shown in **Figure-2.1**.

The Auctioned mining site is located near the village Jangli which is located on the right bank of Sukkar Khad. The site is approachable through an approach road originating from the Bijhari-Barthin road near the village Sathwin. The auctioned area is approximately 11 kms. from Bijhari.

The nearest railway station is Una Railway Station is approx. 31.65 km towards West direction. The Nearest airport is Jubbarhatti Grant Airport, Shimla is approx. 61.8 km

towards SE direction. The leased area is well-connected, with the first approach road is connected to the village road, about 280 meters to the east, which further connects to the link metalled road (Karloti-Chatt Road) towards Ghumarwin, about 15 kilometers to the north.

The second approach road is connected to the village road, about 650 meters to the west, which further connects to the link metalled road (Bijhri-Bherthen Road) towards Hamirpur, about 40 kilometers to the northwest. The nearest NH-103 About 5.4 Km in East direction

Table-2.1: Pillar coordinates

Pillars	Latitude	Longitude
A	31°29'9.00"N	76°36'34.12"E
B	31°28'56.91"N	76°36'32.02"E
C	31°28'56.97"N	76°36'30.35"E
D	31°29'9.07"N	76°36'29.41"E
E	31°29'9.43"N	76°36'25.92"E
F	31°29'8.88"N	76°36'24.83"E
G	31°29'8.44"N	76°36'25.34"E
H	31°29'9.21"N	76°36'26.20"E

Figure 2.1 Pillar Co-ordinate Map

2.1.2 Need of the Project

The river carries a huge quantity of sediment consisting of stones and sand during every monsoon. This sediment takes the form of river bed material (RBM) which has been deposited over many years and has changed the shape of the river bed from a valley to raised land. As a result, heavy and devastating floods damage large tracts of land on both banks of the river every year during the monsoon season. Therefore, it is necessary to remove this material in order to channelize the river

2.1.3 Size/Magnitude of Operation

Proposed Extraction/Collection of Stone Boulder, Sand, & Bajri lease is presently spanning over an area of 03-37-99 Hectares. The proposed rate of production is 61,599 MTPA.

2.2 Lease hold area

The description of the lease hold area is as following.

Table-2.2: Description of the lease holds area

Khasra No	Area in Ha.	Name of the Owner	Kism	Mauza & Mohal	Name of the Panchyat
405	03-37-99	Govt Land	Gair Mumkin Khad	Datwal/ Jangli	Jangli
Total	**03-37-99**				

Table-2.3: Detail of lease hold area

Project Name	Minor Mineral Lease for extraction of Stone, Sand and Bajri falling in Mauza Datwal, Mohal Jangli, Tehsil Bijhar, District Hamirpur by Sh. Madan Lal, S/o Sh. Ram Chand	
Mining Lease area	03-37-99 ha. (Govt Land, River Bed)	
Location of mine	Mauza & Mohal	Datwal & Jangli
	Tehsil	Bijhar
	District	Hamirpur
	State	Himachal Pradesh

Coordinates	**Pillars**	**Latitude**	**Longitude**
	A	31°29'9.00"N	76°36'34.12"E
	B	31°28'56.91"N	76°36'32.02"E

	C: 31°28'56.97"N, 76°36'30.35"E D: 31°29'9.07"N, 76°36'29.41"E E: 31°29'9.43"N, 76°36'25.92"E F: 31°29'8.88"N, 76°36'24.83"E G: 31°29'8.44"N, 76°36'25.34"E H: 31°29'9.21"N, 76°36'26.20"E
Toposheet No.	H43E10
Minerals of Mine	Minor Mineral: Stone, Sand and Bajri
Proposed Production	61,599 MT/year (excluding mine waste)
Method of mining	Open Cast, Manual Mining
No. of working days	270 days
Project cost	30 Lacs
Elevation	Highest-624 mRL, Lowest -621mRL
Average Width of River	150-200 m
Ultimate Depth of Mining	3 feet/1 meter from Surface level
End use of Mineral	For Manufacturing of Grit
Water demand	3.15 KLD (Domestic) + 2.0 KLD (Dust Suppression) + 1.0 KLD (Plantation) = 6.15 KLD
Man Power	70
Nearest Railway Station	Railway Station Una ≈ 31.65 Km in West Direction (Aerial distance)
Nearest State/ National Highway	NH-103 ≈ 5.4 Km in East Direction
Nearest Airport	Shimla Airport ≈ 61.28 Km in SE Direction (Aerial distance)
Approach Road	Approach road (1) connected to village road about 280 m in East direction which further connected to link metalled road (Karloti- Chatt Road) Towards Ghumarwin about 15 Km in North direction. Approach road (2) connected to village road about 650 m in West direction which further connected to link metalled road (Bijhri-Bherthen Road) Towards Hamirpur about 40 Km in NW direction.

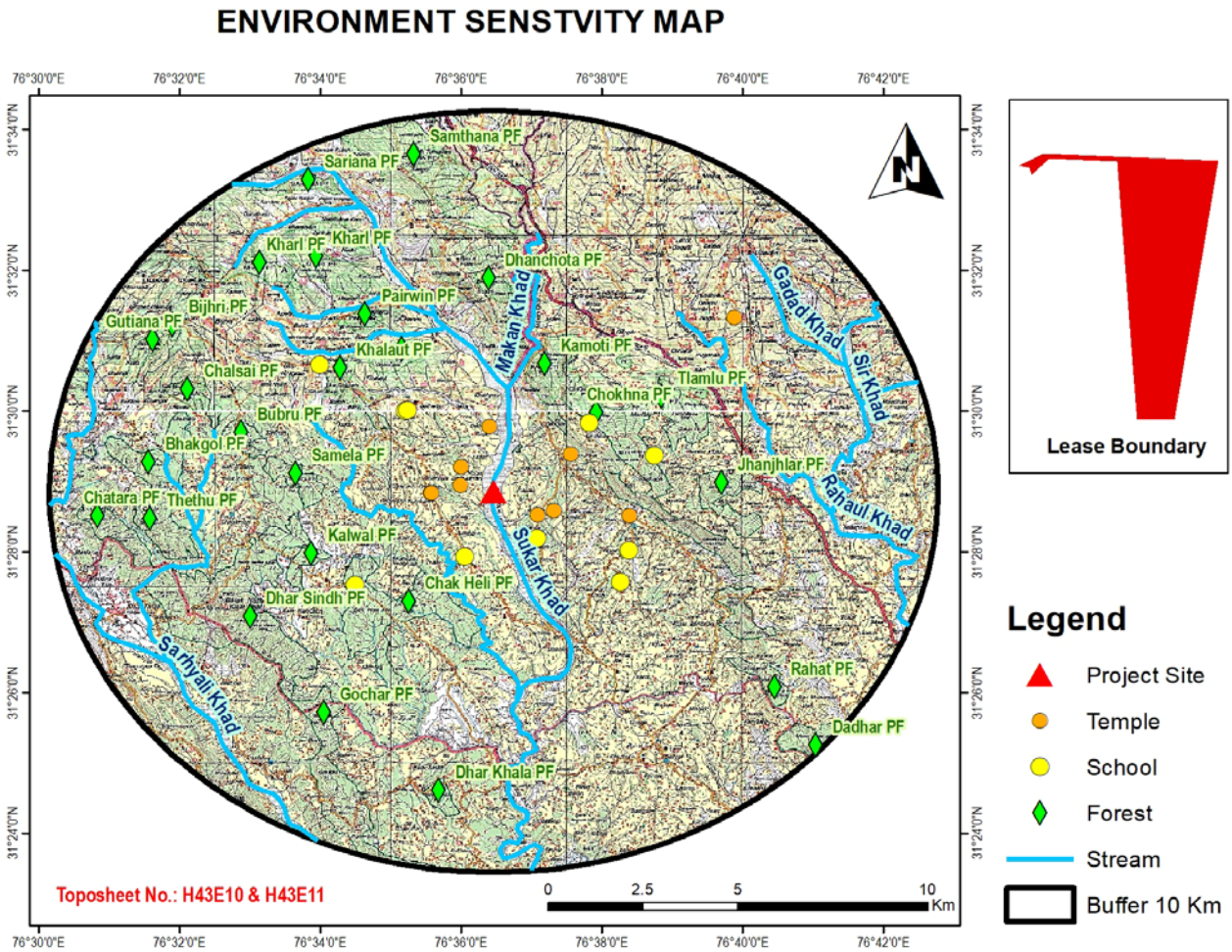

Figure 2.2 Environment Sensitivity Map

2.3 Geology

Regional Geology

The district is located in the south-western part of the state. It forms a part of central Himachal Pradesh and is situated predominantly in outer Himalaya or Shiwalik Zone. It lies between 310 24' 48' and 310 53' 35 north latitudes and 760 17' 50" and 760 43' 42" east longitudes and is separated from Kangra district by Beas River in the north, Bakar and Sir khads from Mandi district in the east while Una district falls in its west and Bilaspur district touches it in the south. The district has a total area of 1,118 sq. kms. forming 2.01 per cent of the total area of the state. It ranks 12th in the area amongst the districts of the state.

Physiographically the entire tract of this district is hilly and covered by lower Himalayas known as Shiwalik range. The elevation of this district varies between 470 metres and 1,235 metres above the mean sea level.

Ranges/Dhars in District Hamirpur:

The district has many low hill ranges which run north-west to the south-east direction and of them Jajiar Jakh Dhar, Chaumukhi Dhar, Sola Singhi Dhar and Chabutra Dhar are prominent.

Jhak Dhar: The Jhak Dhar runs in continuation of Kali Dhar range in Kangra district. It enters Hamirpur district near Nadaun and traverses it into the south-eastern direction.

Chabutra Hills: The Chabutra hills have the same dip and strike as in the Jakh Dhar and are continued beyond Beas River to what is known as the Changar, a mass of rugged and broken hills.

Sola Singhi Dhar: Sola Singhi Dhar is the longest range of the tract and is known under various names such as Chintpurni and Jaswan Dhar in Una and by Sola Sing hi Dhar in Hamirpur. Thus, Dhar enters Hamirpur to the east of Tappa Daruhi and travesses it in a south-easterly direc-tion more or less parallel to the Jakh Dhar and terminated on Satluj river.

Khads/Rivulets in District Hamirpur:

Main khads of this district are Bakar, Kunah, Man, Pung, Sukar and Sir. Sukar khad drains into Sir/Seer khad which ultimately merges in Satluj river outside the district white all other khads drain into Beas River. The valleys of these khads are almost flat and fertile. The district falls in the humid subtrorical zone and the mean annual rainfall varies between 1,000 to 1,400 mm. This region spreads over the entire western Hamirpur district (except parts of Nadaun tehsil). The region includes the whole of Barsar tehsil excluding north-eastern corner, southern Nadaun tehsil, a small pocket of south-western Tira Sujanpur Tehsil and south-western part of Hamirpur tehsil. It makes its limits with Beas basin in the north, Una district in the west, Bilaspur district in the south and eastern Hamirpur Shiwalik region in the east. In terms of area, this region is one of the biggest sub-micro regions of the district. This region has many low hills and fertile valleys with an altitude ranging from 518 metres to 1,112 metres above the mean sea level. According to village papers, the area of this entire region comes to 483.70 sq. kms. The prominent Dhars falling in this region are Chaumukhi Dhar, Sola Singhi Dhar and Jajiar Jakh Dhar.

Eastern Hamirpur Shiwalik: The region is situated in the eastern Hamirpur embracing the whole of Bhoranj Tehsil, major parts of Hamirpur tehsil except north-eastern and south-western parts and small pockets of Barsar tehsil. It is surrounded by Beas Basin from north-west Hamirpur forested Shiwalik from the west, Bilaspur district from south and Mandi district from the east. This region is most populous amongst all the three regions of the

district. The region is undulating and contains fertile valleys along the streams. The elevation of this region varies between 710 metres and 1,235 metres above the mean sea level. The total area of this region comes to 318.76 sq. kms.

Beas Basin: This region extends over northern Hamirpur district, covering the whole of Tira Sujanpur Tehsil ex-cept its south-western part, the north-eastern fringe of Hamirpur Tehsil and the northern part of Nadaun tehsil. The northern boundary of this region is formed by Beas River which flows from east to westerly di-rection and separates it from Kangra district. In the east, Bakar khad makes its limit and separates it from Mandi district while in the south it is bounded by eastern Hamirpur Shiwalik and western Hamirpur forested Shiwalik regions. Masinh khad makes its western limit and separates it from Kangra district. This region is characterized by low hills and fertile valleys with an altitude ranging from 470 meters to 1078 meters above the mean sea level. The total area of this region comes to 300.12 sq. kms. The geological structure of this district is mainly formed of Shiwalik formations. In this district, upper reaches of Jajiar Jakh, Sola Singhi and Chaumukhi Dhars have a fairly dense concentrat ion of chir forests while thin vegetation cover is found in lower areas. In north-eastern and eastern parts of this district, scrub type of vegetation is found scattered here and there. The district is drained by a number of perennial and non-perennial streams which are tributaries of the river Beas or river Satluj.

River Beas: Bakar khad, Pung khad, Kunah khad and Man khad drain into river Beas, while Sukar khad and Mundkhar khad drain into Sir khad which ultimately merges with river Satluj. Beas river enters the valley of Nadaun in Hamirpur district from Kangra district. Here the Jaswan chain obstructs its further passage to the south and the river flows in the north west direction almost parallel to the strike of the hills at Murthalghat beyond Hajipur, the hills subside and the liberated water flows in an uninterrupted direction towards the plain. The region along Beas River is called the Beas basin. This region is characterized by low hills and fertile valleys. Valleys of Man, Kunah and Pung khads contain a dense concentration of villages. There are two main geological horizons, namely post-tertiary and tertiary formations in Hamirpur district. The sequence of geological formation is given as follows

AGE	FORMATION	LITHOLOGY

Post-Tertiary (Quaternary)	Alluvium	Sand, Gravel, Pebble & Boulders and clay
Tertiary (Siwalik)	Upper	Conglomerates, Boulders and pebbly sandstone
	Middle	Micaceous sandstone and shale
	Lower	Hard, purple sandstone & shale

TERTIARY FORMATIONS

Almost the entire district is underlain by the tertiary formations. These formations are represented by the Siwalik group of rocks (lower, middle and upper). Lower Siwaliks comprise of massive dark gray sandstone and purple shales. These are conformably overlain by micaceous sandstone and gray clay/shales of middle Siwalik. Upper Siwaliks comprise of conglomerates, coarse-grained sandstones, inter bedded with grey and pink clays/silts and sand stone or pebbles beds. Conglomerates occupy the major part of the district. Conglomerates are compact and hard in northern part, while in south-eastern parts these are weathered and fractured.

OLDER ALLUVIUM DEPOSITS

These are widely distributed in the area between Nadaun – Sandhol and Harsi Pattan along the Beas River and Jahu-Bhorang area along Sir khad. Older alluvial deposits also occur in the lower reaches of Man khad. Alluvial deposits are also formed along minor streams / tributaries. These deposits are discontinuous and are of limited aerial extent. Thickness of these deposits varies from less than 10 m to about 100 m along the Beas River valley and Sir Khad.

YOUNGER ALLUVIUM

These deposits occur either along the active channel or adjacent to it. The width of these deposits varies from few meters to about a kilometer. These are distributed along the major and minor streams/rivers. Pebbly sandstone is also occurring in the district, which is highly, weathered and fractured. Springs are formed along or near to the thrust zones traversing through the central part of the district.

POST –TERTIARY FORMATIONS

Quaternary deposits forming valley fill deposits are fluvial deposits. These deposits rest uncomfortably over the Siwaliks, with more thickness in low topographical areas along the rivers/khads. These sediments are composed of sand, gravel, pebble and boulders. Mostly these are formed by the coalescence of the alluvial fan deposits by the various rivers/khads.

Local Geology

The Sukkar Khad is a tributary of seer Khad and its originates near village Dagwar at an altitude of 1016 mtrs and leaves district hamirpur near village Riana where the R.L drops to 538 mtrs near origin, it flows in eastern direction and then it swings towards south eastern direction up to Bilaspur boundary. The stream is seasonal in nature and water flows in it only during rainy season. The river bed of sukkar Khad is occupied with recent deposits comprising predominantly of boulders, sand and river borne Bajri. The boulders beds are considered as the prominent source of river borne deposit it over the riverbed annually. The highest point of auctioned area is 620 meters above MSL and the lowest point is 615 meters above MSL and the average width is 330 to 170 Mtrs

Topography

The terrain of the district is mostly hilly and undulating. The surface elevation ranges from 400 m to 600 m amsl along the Beas River valley and in lower reaches of Kunah Khad in the northern part of the district. The elevation is more than 900 m above msl in the eastern part of the district. The altitudinal variation in-general, ranges between 600 m to 900 m above msl. Sola Singhi hill ranges forms the western boundary of the district, with a maximum elevation of 1145 m above msl. Deep gulleys and gorges are formed in the north-eastern part of the district. The river / khad valleys are broad in the southern part of the district, mainly along the Sukar and Sir Khad in Bhorang-Jahu-Dhankar areas. In the drainage basin of Beas River, the general ground slope is towards north, while in the Sutlej River this slope is towards south. Hamirpur district forms a part of drainage system of the Beas River in the northern and western parts, whereas in the eastern and southern parts Sutlej River system drains the areas. The drainage pattern is dendritic to sub dendritic. drainage density is coarse to medium.

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 Hamirpur

district's, Kunah and Man khads are the major streams. These along with other major khads join the Beas River.

Kunah Khad: Kunah 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.

Sukkar Khad: Sukkar 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. In addition to these khads there are other numerous minor streams/khads joining the Sutlej River. There are number of minor surface water storage tanks located in the district, called Talavs or Tanks. Almost all the villages have a Talav/Tank to fulfill the domestic water requirements. There is no natural lake existing in the district.

Source- *http://cgwb.gov.in/District_Profile/HP/hamirpur.pdf*

Drainage System

The Sukkar Khad form Sub-dendirite and dendrite type of drainage pattern. All rivers/streams of Hamirpur district are formining part of two major river system catchments i.e. Beas river catchment and Satluj river catchment. The northern half part from the catchment of the Satluj River. The site forms part of the Sarluj Drainage system.

Geometry of the Catchment of the River impacting the Replenishment of Deposits

In the catchment, 9 stream are draining water into Sukkar Khad. Other minor streams are of smaller magnitude also form part of the catchment area.

Geometry of Sukkar River

Total Area of catchment =194.00 Sq. Km.

Area of catchment up to mining site =94.25 Sq. KM

Number of tributaries on right bank	4

Number of tributaries on left bank	5
Stream order up to auctioned area	2
The Maximum length of watershed	24 Km
The Maximum breadth of watershed	12 Km
Length breadth ratio=2:1, Higher the ratio, the higher is the asymmetry of the watershed	
Profile of River Bed	
Elevation at origin	1016 m
Elevation at Mining area	620 to 615 m
Total length of river	31.00 Km
Total length of river up to auctioned area	18.1 Km
Cumulative elevation loss	396 m
Average slope	2.20 % i.e., about 1.26^{o}
Slope angle at auctioned area	2.44% i.e., about 1.31^{o}

2.4 Quality of reserve

2.4.1 Method of estimation of reserve

The various constituents of river-borne deposits, such as sand, stone, and bajri, were considered for reserve calculation based on their size classification. However, since it is not feasible to delineate these units separately on the geological map, two pits measuring 1 x l x l meter were excavated at different locations within the mining lease area. The material extracted from these pits was then separated into different sizes, and their respective percentages were calculated. These percentages were subsequently taken into account during the calculation of reserves. The results of the test pits are presented in the following table.

An average specific gravity i.e., 2.25 is taken into consideration for the calculation of mineral potential in the mining lease area of **30419 sqm.** for mining purpose.

Table-2.4 Summary of Geological reserves

Area in sqm.	Specific Gravity	Depth in metres	Geological Reserves (in MT)
30419	2.25	3	206229
		1	68443

Reserve estimation in the available mineable area

Area proposed for grant of Mining Lease in sqm.	Mineable Area in sqm.	Volume in cum	Boulders (MT) (40%)	Bajri (MT) (30%)	Sand (MT) (25%)	Silt/Clay (MT) (25%)	Total Resource (MT)
33799	30419	30419	27377	20533	13689	6844	68443

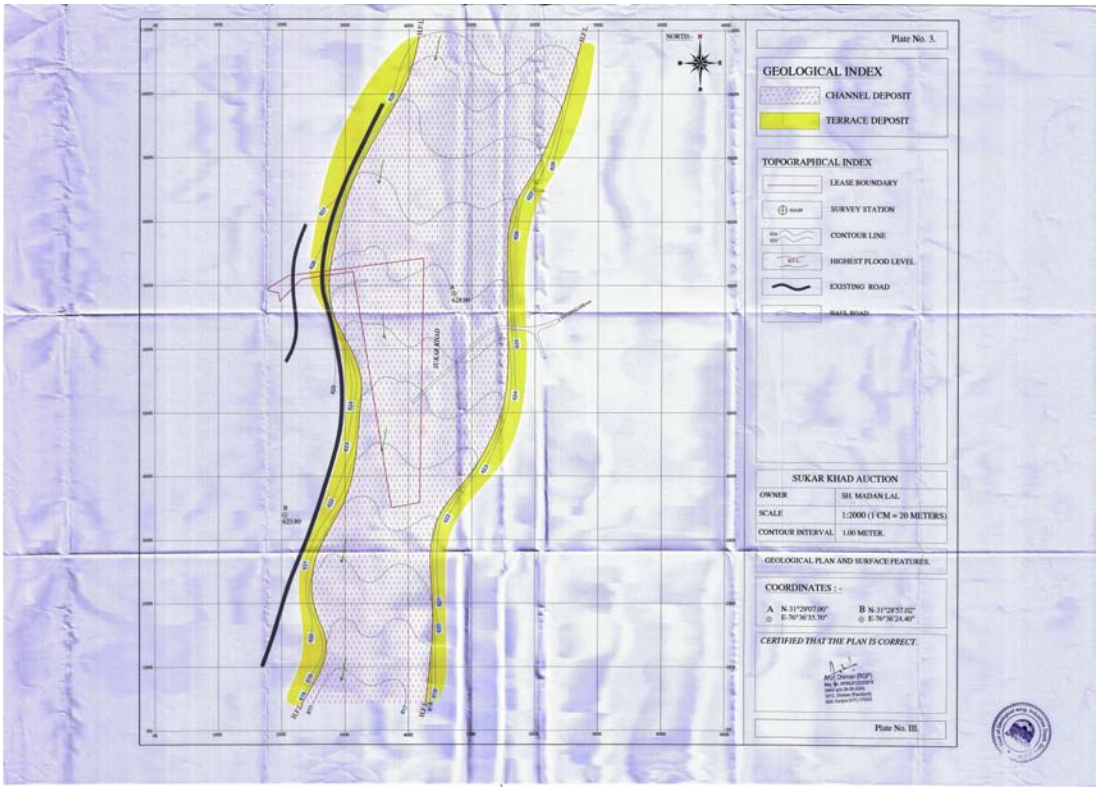

Figure 2.3 Surface Plan

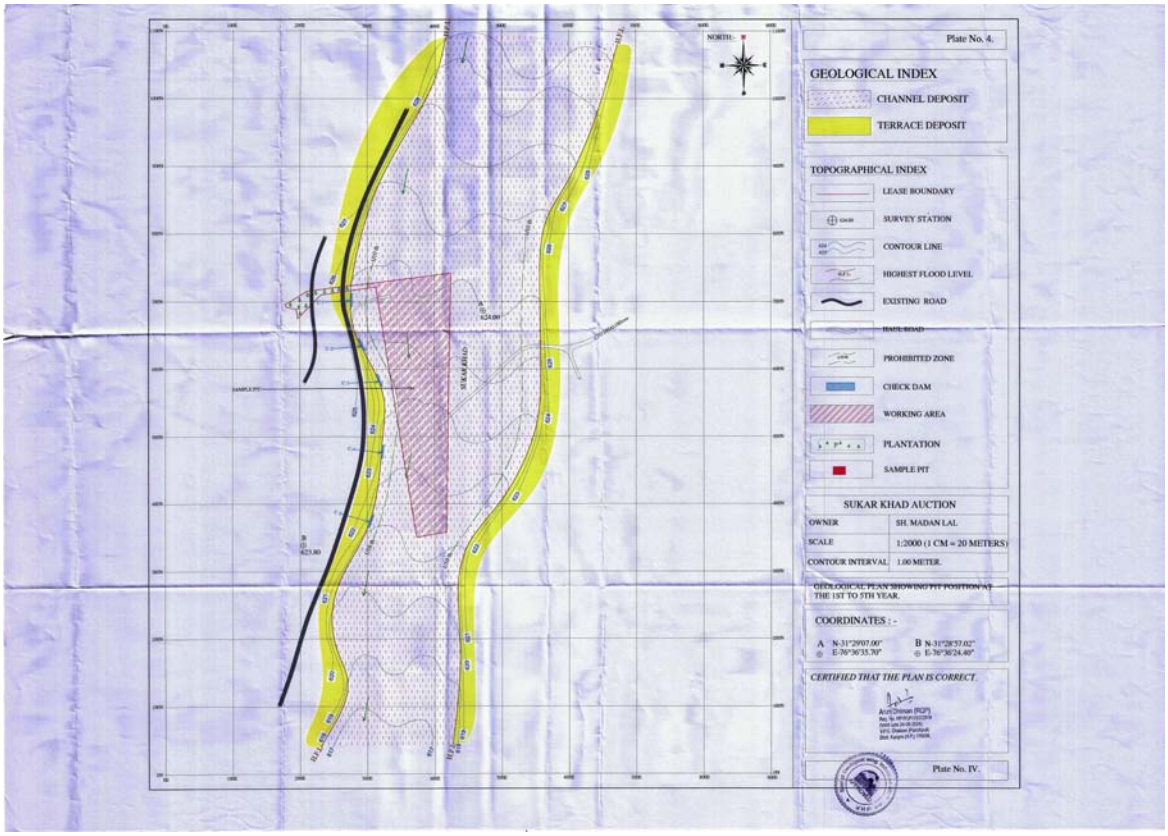

Figure 2.4- Five years mine planning

2.5 MINING

2.5.1 Proposed method of mining/extraction

The mining is confined to extraction of Stone, Sand and Bajri from the proposed mine site. The extracted minerals will be collected in their existing form and manually sorted based on size and market demand. Fine materials will be separated using a manual screener to sort various constituents before being loaded onto tractors/trucks for sale.

Mining operations will be carried out manually, and no blasting will be necessary as the mining will take place in the riverbed. The mining will be performed in a manner that ensures that pits are not made deeper than one meter from the surface. Additionally, the mining activity will only occur during the dry season.

Mine development and plan of progressive mining

The purpose of lease is to use the material in the proposed stone crusher as the source of raw material for manufacturing of grit. As such, the primary raw material required for stone crusher is stone and bajri. The river borne material contains sand, bajri and mixture of clay/ silt. The clay/silt does not have any market value and this material will be used for rehabilitation work, in order to calculate the mineable reserves, the following points are taken in to consideration.

1. A Geological map is prepared and main Litho-units were marked on the plan to know the surface spread of each unit.
2. The various components of river-borne deposits, such as boulders, bajri, sand, and silt/clay, were considered for reserve calculation based on their size classification. Although it is not possible to mark these units separately on the geological map, two pits were excavated in the mining lease area at different locations, each measuring 1 x 1 x 1 meter. The excavated material was then separated by size, and the percentage of each component was calculated. These percentages were taken into account during the calculation of reserves.
3. Keeping in view the replenishment factor, whole block that be explored every year.
4. The mining shall be under taken manually.
5. The average specific activity of mix mineral is taken as 2.25 for computation of mineral reserve.

6. As per the policy guidelines, the total available mineable area is almost 80% of the total Auctioned Area. The non-mineable (i.e., 20%) area includes the area laying outside highest flood level, leaving 1/10th area and the area lies within the stream flow. thus, river borne material can be excavated from the whole of the lease area.
7. The highest point of auctioned area is 624 meters above MSL and the lowest point is 621 meters above MSL and the average width is150 to 200 Mtrs.
8. The depth of the mining in the river bed shall not exceed one meter or water level whichever is less.

It has been experienced that during monsoon, that in this type of river, the replenished factor is generally high. Therefore, no rotation mining is proposed because the material excavated up to the one-meter depth would be replenished during the raining season.

2.5.2 Production detail

Proposed production expected as in table below:

Table 2.5, Year wise Production detail

Year	Area for mining in Sqm.	Quantity of Sand (M.T.)	Quantity of Stone (M.T.)	Quantity of Bajri (M.T.)	Quantity of Silt/ Clay (M.T.)	Total (M.T.)
		20 %	40%	30%	10%	
1st year	30419	13689	27377	20533	6844	**68443**
2nd year	30419	13689	27377	20533	6844	**68443**
3rd Year	30419	13689	27377	20533	6844	**68443**
4th Year	30419	13689	27377	20533	6844	**68443**
5th Year	30419	13689	27377	20533	6844	**68443**
Total		**68443**	**136886**	**102665**	**34222**	**342215**

Note: The proposed production is 61,599 MTPA

2.5.1 Conceptual mine development

The Area lies in the riverbed of the Sukkar and gets adequately replenished during monsoon as well as during winter rains when the river gets heavy load for a short period. The river level is raised up to 2-3 meters during monsoon rains/rainy season. The mining has been planned in the full block up to a depth of 1.00 meter to give a better chance for replenishment. The worked-out block shall get replenishment during rainy season for

recharging the worked-out area and the worked-out area shall be fully replenished. Total 69000 square meters of area shall be available for working every year.

2.5.2 Life of mine

It is not practically forecast the anticipated life of mine as area shall be replenished each year.

2.5.3 Waste Management

The waste, which is a mixture of clay/silt and sand, will be used for maintenance of the approach, plantation, filling works, etc. If necessary, the waste material will be dumped in an appropriate location outside of the riverbed. The site for dumping the waste shall be determined in consultation with the concerned local gram Panchayat and villagers.

Table 2.6, Production of mine waste During Five Years

Year	Silt/Clay
1st	6844
2nd	6844
3rd	6844
4th	6844
5th	6844
Total	**34222**

2.5.4 Drilling and Blasting

Not required.

2.6 General Features

Surface Drainage Pattern

The Sukkar Khad forms sub-dendrite and dendrite type of drainage pattern.

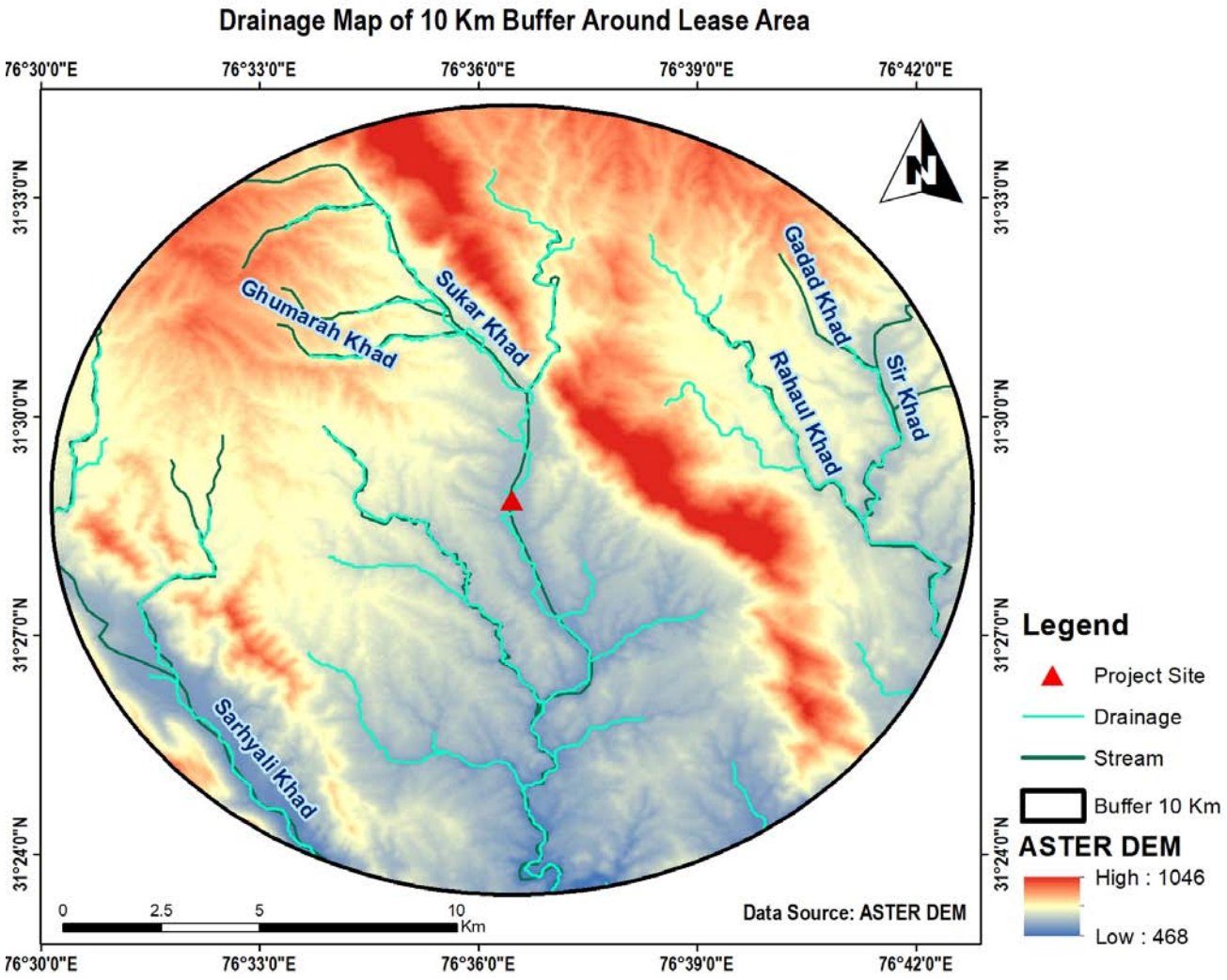

Figure 2.5- Drainage Pattern

2.6.1 Vehicular Traffic Density

Traffic study is carried out by understanding the existing carrying capacity of the road in the vicinity of site and flow towards Highway Road in the area. Then depending on the capacity of the mine, the number of trucks that will be added to the present scenario will be compared to the carrying capacity as recommended by Indian Road Congress (IRC). The existing volume of traffic and, the Level of Service are given in **Table-2.7 (i)** and shown in traffic density map as **Figure 2.7.**

Table 2.7 (i) Existing Traffic Scenario & LOS

Road	V	C	Existing V/C Ratio	LOS
Karloti- Chatt Road	600	7000	0.08	A
Bijhri-Bherthen Road	550	5400	0.10	A

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

The existing Level of Service near Village is "A" i.e., excellent and at highway is "A" i.e. excellent when compared with LOS recommended by IRC, as given in **Table-2.7 (ii)**.

Table 2.7 (ii) V/C Ratio & LOS

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

Note: Capacity as per IRC: 64-1990

During Mine operation

Total Capacity of mine **:** 61,599 TPA

No. of working days : 270 days

Total Capacity of mine/day : 228 tonnes

Truck Capacity : 15 tonnes

No. of truck/day : 15 trucks

PCU/day (15*3) : 45

The addition to traffic by the proposed project during its operation is given in

Table 2.7 (iii) Additional Traffic Scenario & LOS due to proposed project

Road	V	C	Existing V/C Ratio	LOS
Karloti- Chatt Road	600 + 45 = 645	7000	0.09	A
Bijhri-Bherthen Road	550 + 45= 595	5400	0.11	A

From the above analysis it can be seen that the V/C ratio will be modified from 0.08 to 0.09 at Village metallic road connected to Karloti- Chatt Road with LOS being "A" and will be modified from 0.10 to 0.11 at Bijhri-Bherthen Road with LOS remain A respectively. So, the additional load on the carrying capacity will be affected to a minimum level.

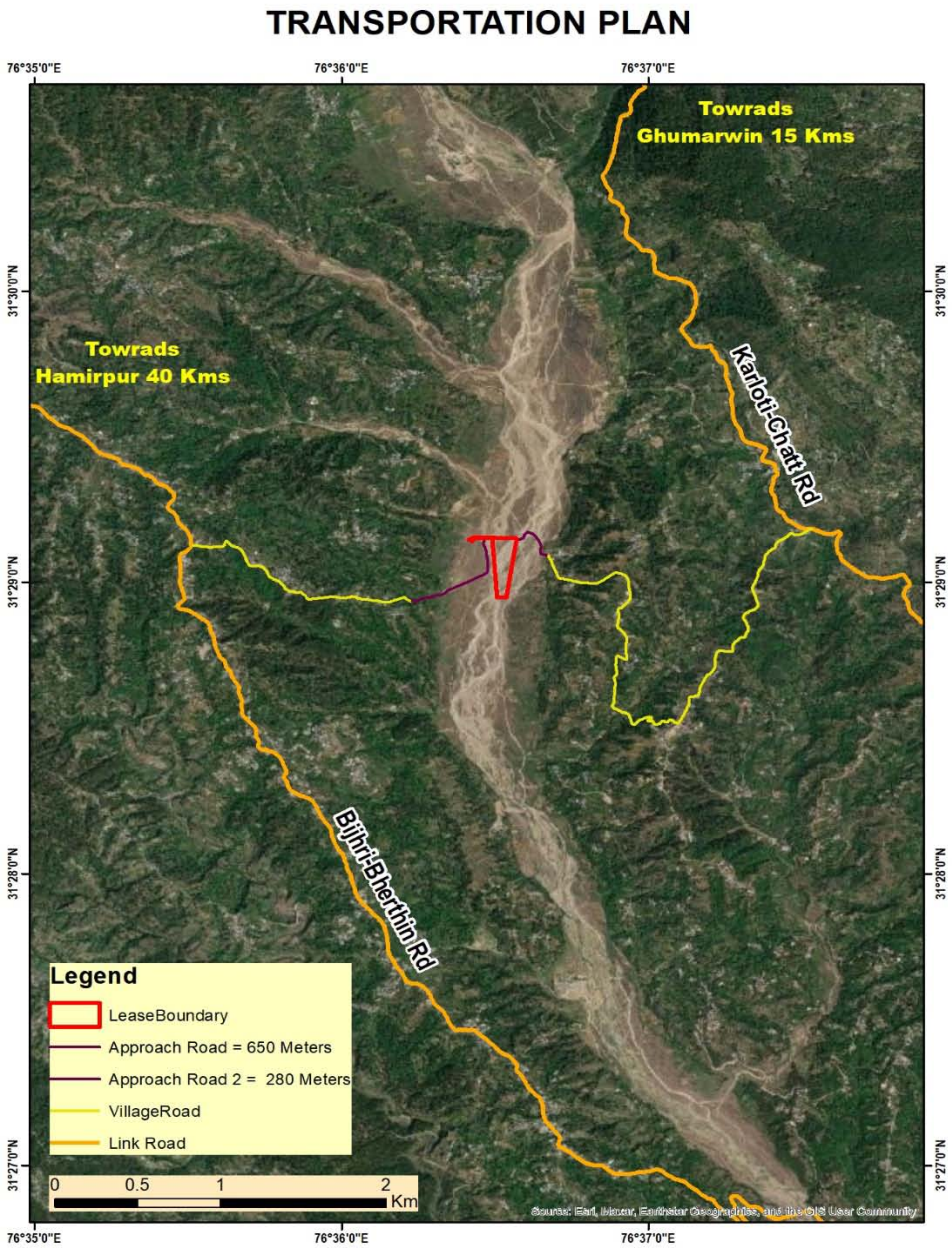

Figure 2.6 Traffic Route Map

2.6.2 Beneficiation/ Processing

No processing of mineral will be done in the mine.

2.6.4 Utilities

2.6.4.1 Water Requirement

Water consumption will be there mainly for dust suppression, green belt development, drinking and other domestic purpose during mining operations. The total requirement of water will be 6.15 KLD. Water will be sourced from Sukkar Khad, supplied through water tanker.

The break up of total water requirement of the mines is given in **Table-2.8**.

Table-2.8: Water Calculation

Activity	Calculation	Round off Figure in KLD
Drinking	@ 45 lpcd per labor 70*45/1000= 3.15 KLD	3.15 KLD
Dust suppression	Total haulage road to be water sprinkled = 400 m*2.5m*2/1000= 2.0 KLD	2.0 KLD
Plantation	2500 plants @ 1.0 L/plant/Day = 1000*1.0 L/day = 1000/1000 = 1 KLD	1.0 KLD
Total		**6.15 KLD**

2.6.4.2 Power Supply

Operations will not require any electrical power as mining will only take place during the daytime. The office will only require minimal power which will be obtained from the General Electric supply in the area.

2.6.4.3 Employment Generation

The employment of the mine is as below:

- General management and mines office.
- Time keeping, Personal welfare, Training and mines safety.
- Mining operations
- Stores, minor repairs and garage.

Management and Supervisory Personnel:

The manpower requirement is given below:

Table 2.9, Manpower Requirement

SI. No	Qualification	No. of persons
1.	Mining Engineer	01
2	Geologist	01
3	Skilled workers	33
4	Unskilled workers	30
Total		**70**

2.6.4.4 Infrastructure:

The site services like rest room shelter, first aid box, drinking water & facilities will be provide to workers at the mine site.

Mining Equipment's

Mining shall be conducted through open cast manual/semi-mechanized methods without the use of drilling and blasting, as permitted by the government. Excavators shall be deployed on a hire basis as and when required for the removal of overburden.

****

3.0 INTRODUCTION

The main objective of describing the environment which may be potentially affected, are i) To assess present environmental quality and the environmental impacts and ii) to identify environmentally significant factors that could preclude mine development. Mining activities affect the existing status of environment at site. In order to maintain the existing environmental status at mining site it is essential study existing environmental status and assess the impact of upcoming project on various environmental components.

This Chapter gives idea of description of environment status of the study area and this will be helpful for assessment of impact on the environment due to proposed mining activities.

Baseline environmental status in and around proposed mining lease area describe the existing conditions of air, noise, water, soil, biological and socio-economic environment. The proposed project as a center, a radial distance of 10 km is considered as study area for baseline data collection and environmental monitoring. The data was collected by P & M Solutions for various environmental attributes so as to compute the impacts that are likely to arise due to proposed development activity.

3.0.1 Study area & study period

The proposed project as a center, a radial distance of 10 km is considered as study area for baseline data collection and environmental monitoring. The baseline environment quality was carried out over a radial distance of 10 km around the mining lease area during pre monsoon season of 2023 covering the months of March, 2023 to May, 2023.

3.0.2 METHODOLOGY

Base line attributes like ambient air, Water, Metrology, Noise, Soil, Ecology and Biodiversity & Socio Economy condition were collected as per approved term of reference. Secondary data was also collected from various government department as well as local people. Methodology adopted in this study is as follows.

- ✓ By setting up metrological station near project site
- ✓ Collection of site specific meteorological data at the mine site
- ✓ Installation of respiratory dust samplers (for PM_{10}, $PM_{2.5}$) at different location in the study area for the collection of primary air pollutant and analyze the existing air conditions.
- ✓ Carrying out a detailed biological study for the Core and Buffer Zone

- ✓ Soil sample were collected from various location in the study area to analyze physical and chemical characteristics for assessment of impact on soil.
- ✓ Ground water samples were also collected from the various locations in the study area for analysing the existing water quality in the study area.
- ✓ Noise measurement has been done in core zone as well as buffer zone to analyze the existing situation in the study area.
- ✓ Literature review that includes identification of relevant data and articles from various publications, various government agencies and other sources for socio-economy, demography has been done with primary data collection in 10 km of the study area.
- ✓ Existing pollution load has been also identified in the buffer zone due to similar activities.

Accordingly, field studies were carried out during the study period (March, 2023 to May, 2023) to establish the existing baseline conditions.

3.1 Land Environment of the Study area

Land use

Land use involves the management and modification of natural environment or wilderness into built environment such as settlements and semi-natural habitats such as arable fields, pastures, and managed woods. It also has been defined as "the total of arrangements, activities, and inputs that people undertake in a certain land cover type**.**

Land cover

Land cover is the physical material at the surface of the earth. Land covers include grass, asphalt, trees, bare ground, water, etc. Earth cover is the expression used by Ecologist Frederick Edward Clements that has its closest modern equivalent being vegetation.

To assess the land use pattern surrounding the 10 km radius of the site, a detailed study was carried out. The land use pattern study reveals that the 10 km environs is predominantly forest in the North, East and South.

3.2 Water Environment

Water quality assessment is one of the essential components of EIA study. Such assessment helps in evaluating the existing health of water body and suggesting appropriate mitigation measures to minimize the potential impact from development projects. Water quality of ground water has been studied in order to assess proposed water-uses in construction, drinking, cooling and horticulture purpose.

a. Ground water

Three water samples were collected from the study area. The physico-chemical analysis of the water samples is given

The water quality within the 10 km impact zone was monitored during March, 2023. The water sampling locations marked within the study are presented in Table 3.2 and Figure 3.2 and the result of the monitoring and analysis are presented in the **Table 3.3 to Table 3.4** showing Water Quality Monitoring Locations marked within the Study Area.

Table 3.2 Ground water Location

Locations Code	Location Name	Distance &Direction
GW 1	Chokhna	2.5 km, NE
GW 2	Manjru	3.5 Km, SW
GW3	Batlahu	3.5 Km , N
GW4	Himar	5.4 Km, SE
GW5	Ghumarwin	5.5 Km, ENE
GW6	Chauki	4.0 Km , S
GW7	Bara	3.10 Km , W

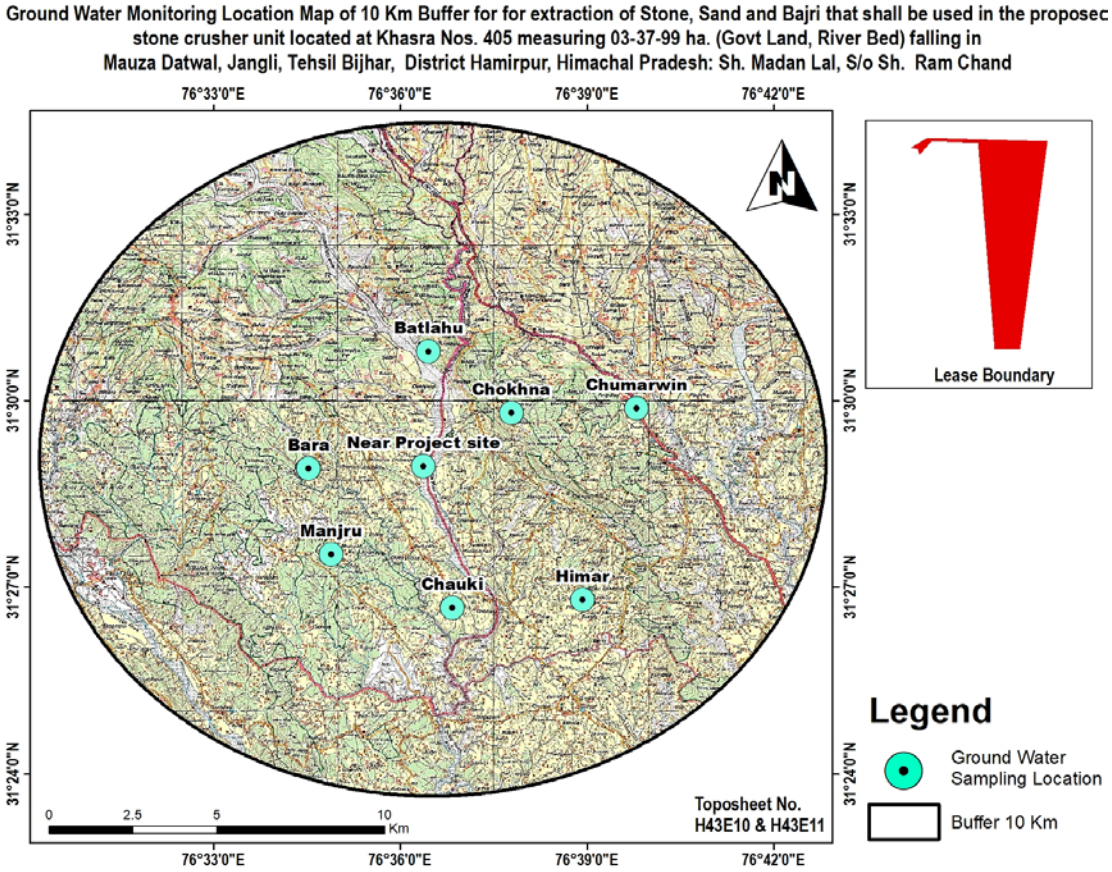

Figure 3.2 Water sampling Locations

Table 3.3 Ground water Monitoring Result

Physico-chemical properties of ground water Study Period, March, 2023

TEST RESULTS									
S. No.	**Parameter**	**Test method**	**Result**				**Unit**	**Acceptable Limit**	**Permissible Limit**
			Chokhna (GW1)	**Manjru (GW2)**	**Batlahu (GW3)**	**Himar (GW4)**			
	Organoleptic & Physical Parameters								
1.	Colour	IS-3025(P-04)	<1.0	<1.0	<1.0	<1.0	Hazen Unit	5	15
2.	Odour	IS-3025(P-05)	Agreeable	Agreeable	Agreeable	Agreeable	-	Agreeable	Agreeable
3.	Taste	IS-3025(P-07 & 08)	Agreeable	Agreeable	Agreeable	Agreeable	-	Agreeable	-
4.	Turbidity	IS-3025(P-10)	<1.0	<1.0	<1	<1	NTU	1	5
5.	pH value	IS-3025(P-04)	7.86	7.74	7.48	7.34	-	6.5-8.5	-
6.	Total Dissolve Solid (TDS)	IS-3025(P-16)	475	397	473	421	mg/l	500	2000
	General Properties								

7.	Aluminum (as Al)	IS:3025 (P- 55)	<0.01	<0.01	<0.01	<0.01	mg/l	0.03	0.2
8.	Total Ammonia	IS:3025 (P- 34)	<0.10	<0.10	<0.10	<0.10	mg/l	0.5	No Relaxation
9.	Anionic surface Detergents(as MBAS)	Annex K of IS-13428	<0.10	<0.10	<0.10	<0.10	mg/l	0.2	1.0
10.	Barium (as Ba)	IS: 15302	<0.10	<0.10	<0.10	<0.10	mg/l	0.7	No Relaxation
11.	Boron (as B)	IS:3025 (P- 57)	<0.10	<0.10	<0.10	<0.10	mg/l	0.5	2.4
12.	Calcium(as Ca)	IS:3025 (P- 40)	62.86	58.20	54.89	60.10	mg/l	75	200
13.	Chloramines (as Cl2)	IS:3025 (P- 26)	<1.00	<1.00	<1.00	<1.00	mg/l	4.0	No Relaxation
14.	Chloride (as Cl)	IS:3025 (P- 32)	18.5	14.41	16.2	18.1	mg/l	250	1000
15.	Copper (as Cu)	IS :3025 (P-42)	<0.05	<0.05	<0.05	<0.05	mg/l	0.05	1.5
16.	Fluoride(as F)	IS: 3025 (P-60)	0.56	0.34	0.26	0.35	mg/l	1.0	1.5
17.	Free Residual Chlorine	IS: 3025 (P-26)	<0.10	<0.1	<0.1	<0.1	mg/l	0.2	1.0
18.	Iron (as Fe)	IS: 3025(P-53)	0.134	0.115	0.122	0.119	mg/l	1.0	No Relaxation
19.	Magnesium (as mg)	IS: 3025 (P-46)	3.18	4.00	8.42	2.60	mg/l	30	100
20.	Manganese (as Mn)	Clause 35 of IS 3025	<0.10	<0.10	<0.10	<0.10	mg/l	0.1	0.3
21.	Mineral Oil	Clause 6 of IS: 3025	<0.50	<0.50	<0.50	<0.50	mg/l	0.5	No Relaxation
22.	Nitrate (as NO_3)	IS: 3025 (P- 34)	3.28	2.36	3.28	4.12	mg/l	45	No Relaxation
23.	Selenium (as Se)	IS:3025 (P- 56)	<0.01	<0.01	<0.01	<0.01	mg/l	0.01	No Relaxation
24.	Silver (as Ag)	AnnexIS: 13428	<0.05	<0.05	<0.05	<0.05	mg/l	0.1	No Relaxation
25.	Sulphate (as SO_4)	IS:3025 (P- 24)	25.37	34.92	28.41	26.62	mg/l	200	400
26.	Sulphide(as H_2S)	IS-3025 (P-29)	<0.05	<0.05	<0.05	<0.05	mg/l	0.05	No Relaxation
27.	Alkalinity(as Ca CO_3)	IS:3025 (P- 23)	119.0	123.0	126.0	128.0	mg/l	200	600
28.	Total Hardness (as $CaCO_3$)	IS:3025 (P- 23)	144.0	162.0	172.0	161.0	mg/l	200	600
29.	Zinc (as Zn)	IS:3025 (P- 49)	0.138	0.152	0.139	0.137	mg/l	5	15
	Parameters Concerning Toxic Substances								
30.	Cadmium (as Cd)	IS-3025(P-41)	<0.01	<0.01	<0.01	<0.01	mg/l	0.003	No Relaxation

31.	Cyanide (as CN)	IS-3025(P-27)	<0.01	<0.01	<0.01	<0.01	mg/l	0.05	No Relaxation
32.	Phenol	IS: 3025 (P- 43)	<0.001	<0.001	<0.001	<0.001	mg/l	0.001	0.002
33.	Lead (as Pb)	IS-3025(P-47)	<0.01	<0.01	<0.01	<0.01	mg/l	0.01	No Relaxation
34.	Mercury (as Hg)	IS-3025(P-48)	<0.001	<0.001	<0.001	<0.001	mg/l	0.001	No Relaxation
35.	Molybdenum (Mo)	IS-3025(P-2)	<0.05	<0.05	<0.05	<0.05	mg/l	0.07	No Relaxation
36.	Nickel (as Ni)	Annex L of IS-13428	<0.01	<0.01	<0.01	<0.01	mg/l	0.02	No Relaxation
37.	Poly nuclear Aromatic	APHA 6440	<0.0001	<0.0001	<0.0001	<0.0001	mg/l	0.0001	No Relaxation
38.	Poly chlorinated biphenyl	APHA 6630	<0.0001	<0.0001	<0.0001	<0.0001	mg/l	0.0005	No Relaxation
	MICROBIOLOGICAL PARAMETERS								
39.	*Escherichia coli*	IS-1622	Absent	Absent	Absent	Absent	Absent/100ml		
40.	*Coliform Bacteria*	IS-15185	Absent	Absent	Absent	Absent	Absent/100ml		

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TEST RESULTS

S. No.	Parameter	Test method	Result			Unit	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
			Ghumarwin (GW5)	Chauki (GW6)	Bara (GW7)			
	Organoleptic & Physical Parameters							
1.	Colour	IS-3025(P-04)	<1.00	<1.00	<1.00	Hazen	5	15
2.	Odour	IS-3025(P-05)	Agreeable	Agreeable	Agreeable	-	Agreeable	Agreeable
3.	Taste	IS-3025(P-07 & 08)	Agreeable	Agreeable	Agreeable	-	Agreeable	-
4.	Turbidity	IS-3025(P-10)	<1.00	<1.00	<1.00	NTU	1	5
5.	pH value	IS-3025(P-04)	7.54	7.16	7.35	-	6.5-8.5	-
6.	Total Dissolve Solid (TDS)	IS-3025(P-16)	389.2	321.0	402.0	mg/l	500	2000
	General Properties							
7.	Aluminum (as Al)	IS:3025 (P- 55)	<0.01	<0.01	<0.01	mg/l	0.03	0.2
8.	Total Ammonia	IS:3025 (P- 34)	<0.10	<0.10	<0.10	mg/l	0.5	No Relaxation
9.	Anionic surface Detergents(as MBAS)	Annex K of IS-13428	<0.10	<0.10	<0.10	mg/l	0.2	1.0

10.	Barium (as Ba)	IS: 15302	<0.10	<0.10	<0.10	mg/l	0.7	No Relaxation
11.	Boron (as B)	IS:3025 (P- 57)	<0.01	<0.10	<0.10	mg/l	0.5	1.0
12.	Calcium(as Ca)	IS:3025 (P- 40)	53.58	57.16	58.30	mg/l	75	200
13.	Chloramines (as Cl2)	IS:3025 (P- 26)	<1.00	<1.00	<1.00	mg/l	4.0	No Relaxation
14.	Chloride (as Cl)	IS:3025 (P- 32)	12.46	14.12	16.19	mg/l	250	1000
15.	Copper (as Cu)	IS :3025 (P-42)	<0.05	<0.05	<0.05	mg/l	0.05	1.5
16.	Fluoride(as F)	IS: 3025 (P-60)	0.46	0.32	0.48	mg/l	1.0	1.5
17.	Free Residual Chlorine	IS: 3025 (P-26)	<0.1	<0.1	<0.1	mg/l	0.2	1.0
18.	Iron (as Fe)	IS: 3025(P-53)	<0.1	<0.1	<0.1	mg/l	0.3	No Relaxation
19.	Magnesium (as mg)	IS: 3025 (P-46)	7.75	8.50	8.70	mg/l	30	100
20.	Manganese (as Mn)	Clause 35 of IS 3025	<0.10	<0.10	<0.10	mg/l	0.1	0.3
21.	Mineral Oil	Clause 6 of IS: 3025	<0.50	<0.50	<0.50	mg/l	0.5	No Relaxation
22.	Nitrate (as NO_3)	IS: 3025 (P- 34)	5.84	4.02	5.36	mg/l	45	No Relaxation
23.	Selenium (as Se)	IS:3025 (P- 56)	<0.01	<0.01	<0.01	mg/l	0.01	No Relaxation
24.	Silver (as Ag)	AnnexIS: 13428	<0.05	<0.05	<0.05	mg/l	0.1	No Relaxation
25.	Sulphate (as SO_4)	IS:3025 (P- 24)	32.15	26.59	23.21	mg/l	200	400
26.	Sulphide(as H_2S)	IS-3025 (P-29)	<0.05	<0.05	<0.05	mg/l	0.05	No Relaxation
27.	Alkalinity(as Ca CO_3)	IS:3025 (P- 23)	124.0	142.0	136.0	mg/l	200	600
28.	Total Hardness (as $CaCO_3$)	IS:3025 (P- 23)	166.0	178.0	182.0	mg/l	200	600
29.	Zinc (as Zn)	IS:3025 (P- 49)	0.125	0.123	0.123	mg/l	5	15
30.	Phenolic Compound as (C_6H_5OH)	IS: 3025 (P- 43)	<0.001	<0.001	<0.001	mg/l	0.001	0.002
	Parameters Concerning Toxic Substances							
31.	Cadmium (as Cd)	IS-3025(P-41)	<0.001	<0.001	<0.001	mg/l	0.003	No Relaxation
32.	Cyanide (as CN)	IS-3025(P-27)	<0.01	<0.01	<0.01	mg/l	0.05	No Relaxation
33.	Lead (as Pb)	IS-3025(P-47)	<0.01	<0.01	<0.01	mg/l	0.01	No Relaxation
34.	Mercury (as Hg)	IS-3025(P-48)	<0.001	<0.001	<0.001	mg/l	0.001	No Relaxation
35.	Molybdenum (Mo)	IS-3025(P-2)	<0.05	<0.05	<0.05	mg/l	0.07	No Relaxation
36.	Nickel (as Ni)	Annex L of IS-13428	<0.01	<0.01	<0.01	mg/l	0.02	No Relaxation
37.	Total Arsenic (as As)	IS-3025(P-37)	<0.01	<0.01	<0.01	mg/l	0.01	No Relaxation
38.	Total Chromium (as Cr)	Annex J of IS-13428	<0.05	<0.05	<0.05	mg/l	0.05	No Relaxation

	MICROBIOLOGICAL PARAMETERS						
39.	*Escherichia coli*	IS-15185	Absent	Absent	Absent	/100ml	Absent
40.	*Coliform Bacteria*	IS-15185	Absent	Absent	Absent	/100ml	Absent

Observation:

Analysis results of ground water reveal the following: -

- pH varies from 7.16 to 7.86.
- Total hardness varies from 144 mg/l to 182 mg/l
- Total dissolved solids vary from 321 mg/l to 475 mg/l

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

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

b. Surface water

Three water samples were collected from the study area. The physico-chemical analysis of the water samples is given in the Table 3.5:

Table 3.4 Surface water sampling locations

Station No.	Location	Direction	Distance (km)
SW1	**Sukkar Khad (upstream, Near Dhaloh village)**	**N**	**0.80**
SW2	**Sukkar Khad (near site)**	**--**	**--**
SW3	**Sukkar Khad (downstream, near Nohan village)**	**S**	**1.20**

Table 3.5 Physico-chemical properties of surface water

TEST RESULTS						
S. No.	**Parameter**	**Units**	**Test Method**	**Sukkar Khad (upstream, Near Dhaloh village)**	**Sukkar Khad (near site)**	**Sukkar Khad (downstream , near Nohan village)**
1	pH	-	IS:3025(Part-11)	7.51	7.60	7.18
2	Temperature	^{0}C	IS:3025(Part-9)	26.0	21.00	27
3	Turbidity	NTU	IS:3025(Part-10)	1.8	1.86	2.6
4	Conductivity	µS/cm	IS:3025(Part-14)	480	382	520

	@25^{0}C					
5	Sulphate (SO4)	mg/l	IS:3025(Part-24)	35	11.0	47.6
6	Nitrate (NO3)	mg/l	IS:3025(Part-34)	2.60	5.06	2.80
7	Total Hardness(as CaCO3)	mg/l	IS:3025(Part-21)	160	110	240
8	Chloride(as Cl-)	mg/l	IS:3025(Part-32)	28.0	21.0	36.0
9	Fluoride (as F)	mg/l	APHA 4500F	0.36	0.25	0.48
10	COD (as O2)	mg/l	APHA-5220 B	18.0	21.0	25.0
11	Iron (as Fe)	mg/l	IS:3025(Part-53)	0.265	0.280	0.312
12	Dissolve Oxygen	mg/l	IS-3025(Part-38)	6.8	8.2	5.7
13	Total Dissolved Solid	mg/l	IS:3025(Part-16)	260	245	332
14	BOD (3 days at 20^{0}C)	mg/l	IS:3025 (P-44)	2.1	3.8	4.2
15	Calcium(as Ca)	mg/l	IS:3025(Part-40)	76	58	78.4
16	Magnesium (as Mg)	mg/l	IS:3025(Part-46)	8.0	8.5	10.6
17	Arsenic (as As)	mg/l	IS:3025(Part-37)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
18	Lead (as Pb)	mg/l	IS:3025(Part-47)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
19	Copper(as Cu)	mg/l	IS:3025(Part-42)	BDL (<0.05)	BDL (<0.05)	BDL (<0.05)
20	Zinc (as Zn)	mg/l	IS:3025(Part-49)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
21	Manganese (as Mn)	mg/l	IS:3025(Part-59)	BDL (<0.10)	BDL (<0.10)	BDL (<0.10)
22	Total Chromium (as Cr)	mg/l	IS:3025(Part-52)	BDL (<0.05)	BDL (<0.05)	BDL (<0.05)
23	Cyanide (CN)	mg/l	IS-3025(P-27)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
24	Phenolic Compound as (C_6H_5OH)	mg/l	IS: 3025 (P- 43)	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)
25	Boron (B)	mg/l	IS: 3025 (P- 57)	BDL (<0.10)	BDL (<0.10)	BDL (<0.10)
26	Cadmium (Cd)	mg/l	IS-3025(P-41)	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)
27	Mercury (Hg)	mg/l	IS-3025(P-48)	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)
28	Nickel (Ni)	mg/l	IS-3025(P-54)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
29	Total Suspended Solid	mg/l	IS:3025(Part-17)	8.12	8.30	12.1
30	Faecal Coliform	MPN/100 ml	IS-1622	1.4×10^3	2.6×10^3	0.9×10^3
31	Total Coliform	MPN/100 ml	IS-1622	1.8×10^3	3.8×10^3	1.2×10^3

3.2.1 Sampling frequency

Parameters for analysis of water quality were selected based on the utility of the particular source of water as per CPCB guidance. Surface water quality was monitored for parameters as per Methods of Monitoring & Analysis published by CPCB and it was rated according to the CPCB Water Quality Criteria against A, B, C, D & E class of water.

As per the standard practice, one sample from each station was taken each month in the study period. Sampling was done by standard sampling technique as per the Standard Methods. Necessary precautions were taken for preservation of samples.

The surface water quality is compared with CPCB water quality criteria mentioned in **Table 3.6** below:

Table 3.6: Water quality criteria as per Central Pollution Control Board

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	Total Coliforms Organism MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6mg/l or more Biochemical Oxygen Demand 5 days 20°C 2mg/l or less
Outdoor bathing (Organized)	B	Total Coliforms Organism MPN/100ml shall be 500 or less; pH between 6.5 and 8.5; Dissolved Oxygen 5mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	Total Coliforms Organism MPN/100ml shall be 5000 or less; pH between 6 to 9; Dissolved Oxygen 4mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Propagation of Wild life and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	pH between 6.0 to 8.5 Electrical Conductivity at 25°C micro mhos/cm Max.2250 Sodium absorption Ratio Max. 26 Boron Max. 2mg/l
	Below-E	Not Meeting A, B, C, D & E Criteria

As per the standard practice, one sample from each station was taken each month in the study period. Sampling was done by standard sampling technique as per the Standard Methods. Necessary precautions were taken for preservation of samples.

Observation:

The analysis results indicate that the pH ranges between 7.18 and 7.60.

Dissolved Oxygen (DO) was observed in the range of 5.7 to 8.2 mg/l.

Chlorides were found to be in the range of 21-36 mg/l

Sulphates were found to be in the range of 11.0-47.6 mg/l respectively.

Based on the results it is evident that most of the parameters of the samples comply with 'Category 'A' standards of CPCB indicating their suitability for Drinking water source without conventional treatment but after disinfection.

3.3 Air Environment

Meteorology is the key to understand the air quality. The essential relationship between meteorology and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

A meteorological station was set up at the proposed mine premises. Meteorological data was generated during the pre -monsoon monitoring period and shown in **Table-3.7**

The following parameters were recorded at hourly intervals continuously during monitoring period, except rainfall which was recorded on daily basis.

- Wind speed
- Wind Direction
- Air Temperature

Table-3.7 Summarized Project site Meteorological Data

Month	Wind Speed (km/h)		Temperature (°C)			Rainfall (mm)	
	Max	Avg	Max	Min	Avg	Rain (mm)	No. of rainy Days

March 2023	17.5	9.7	34	17	24	45.2	3
April 2023	19.2	10.2	38	21	28	37.5	2
May 2023	24	11.9	41	24	31	109.6	4

a. Wind rose diagram

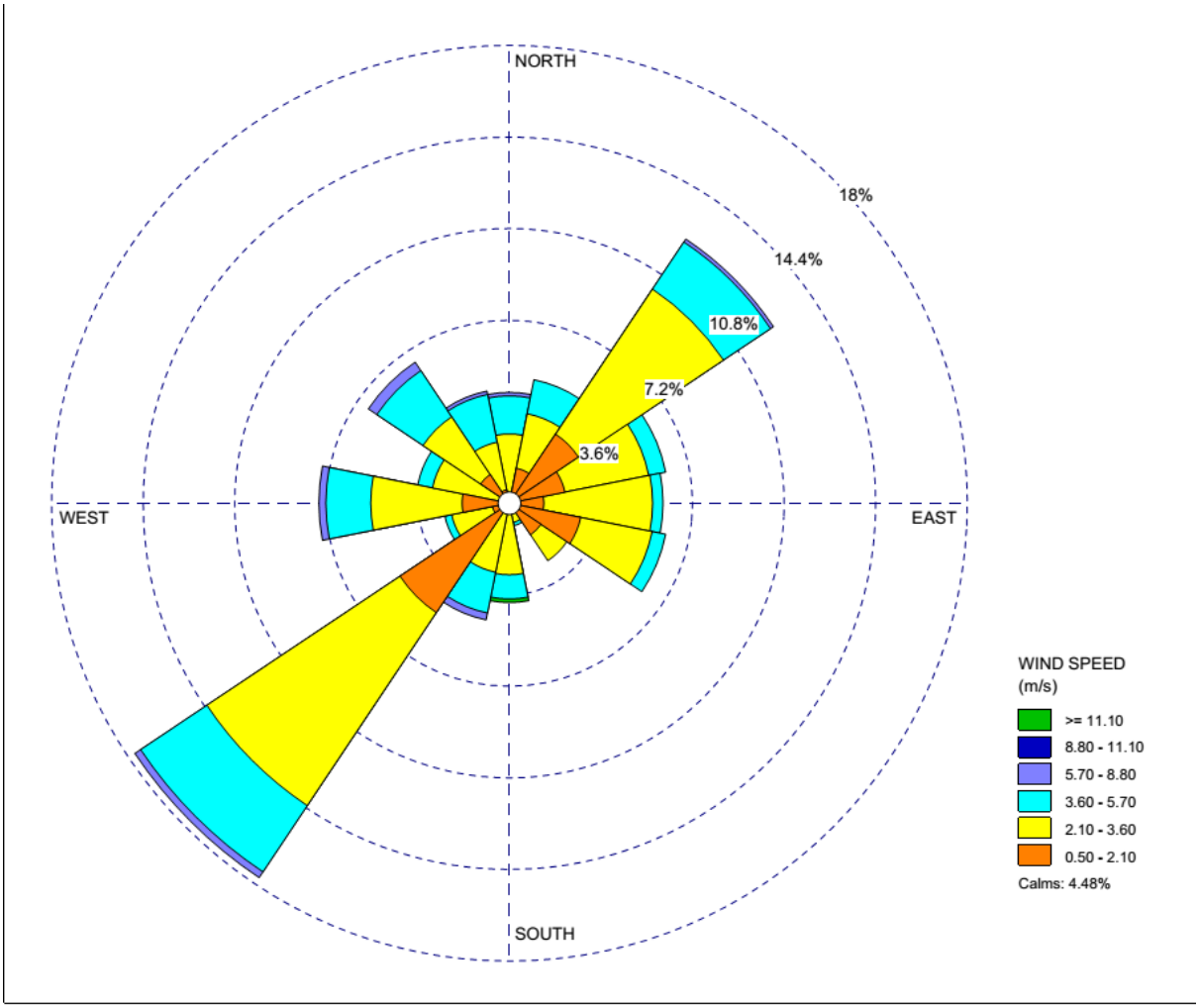


Figure 3.3 Wind rose diagram

Observations:

The prominent seasonal wind direction is from SW & NE contributing more than / approximately 30 % of the total.

Method of monitoring

The Central Pollution Control Board (CPCB) has published comprehensive document on emission testing regulations ("Emission Regulations Part-3, 985"). 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 calculation:

For accurate testing of emission sources, the components of the sampling train is calibrated by outsource and supplier (Master Calibrator) standards and solutions are used, calibrated under certified reference material. The Ambient air quality monitoring locations are marked in **fig 3.4.**

3.3.4 Selection Criteria for Monitoring Location

The baseline status of the ambient air quality has been assessed through a scientifically designed ambient air quality network. The design of monitoring network in the air quality surveillance programme has been based on the following consideration.

- Meteorological parameters including wind direction
- Topography of the study area
- Representative of regional background air quality for obtaining baseline status
- Representative of likely impact areas.

Ambient air quality monitoring was carried out twice a week with a frequency of 24 hours for three months during the study period. The common air pollutant namely Particulate Matter-10 (PM_{10}) & $PM_{2.5}$, Sulphur-dioxide (SO_2) and Oxides of Nitrogen (NO_2) has been measured through a planned field monitoring.

The baseline values of the air pollutants of concern are presented in Tables below statistical

parameters like minimum, maximum, average and 98th percentiles have been computed from the observed field data for all sampling stations and are given **Table-3.8.** These are compared with the standards prescribed by Central Pollution Control Board (CPCB) for industrial, residential and rural zone.

Table-3.8 Ambient air quality monitoring stations

Locations Code	Location Name	Distance & Direction
AQ 1	Near Project site	0.30 Km.
AQ 2	Chokhna	2.5 km, NE
AQ 3	Manjru	3.5 Km, SW
AQ 4	Batlahu	3.5 Km , N
AQ 5	Himar	5.4 Km, SE
AQ 6	Ghumarwin	5.5 Km, ENE
AQ 7	Chauki	4.0 Km , S
AQ 8	Bara	3.10 Km , W

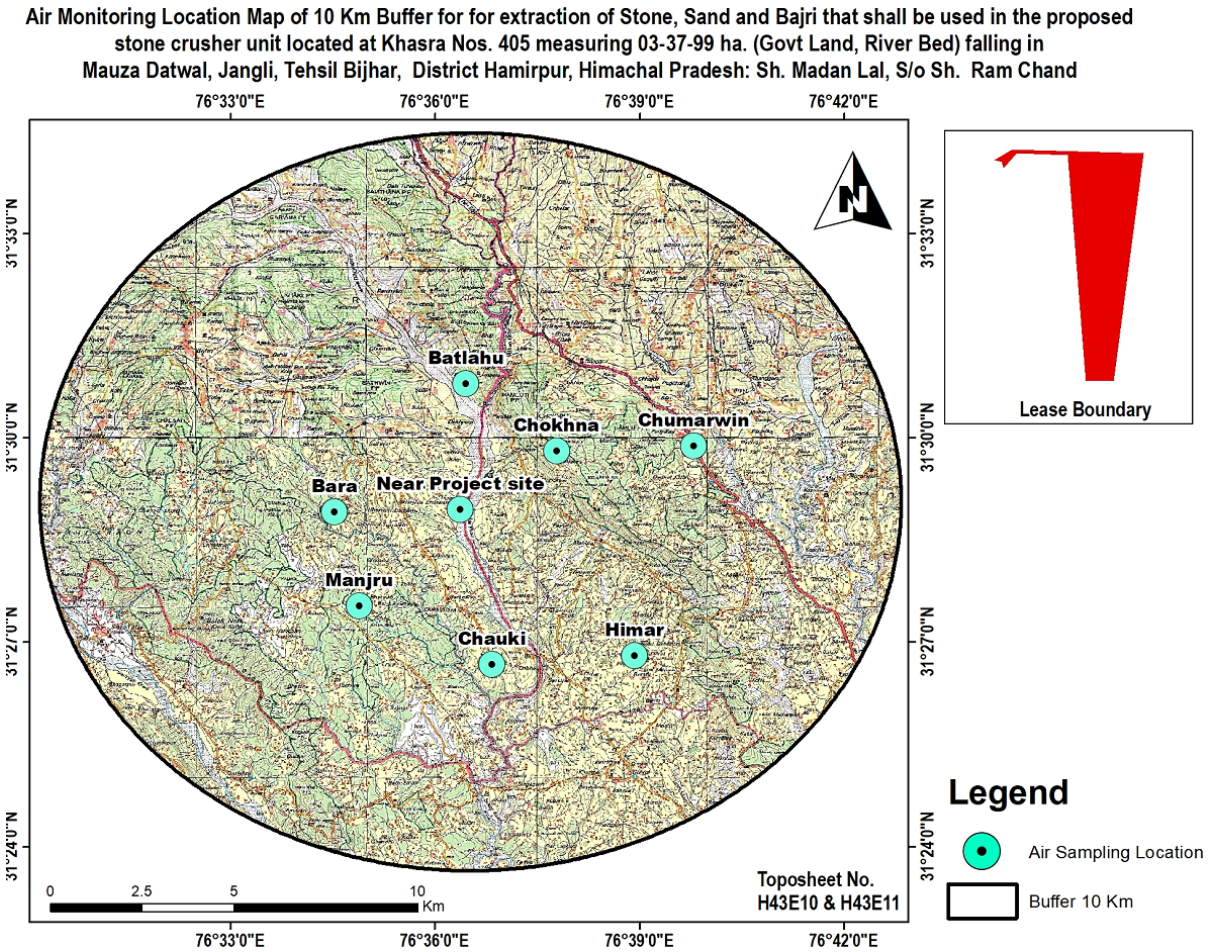


Figure 3.4 Ambient air quality monitoring stations

Table - 3.9 Ambient air quality monitoring result

S.No.	Pollutant	Location	No. of observation	Minimum	Maximum	Average	98th Percentile	CPCB Standards
1.	PM10 ($\mu g/m^3$)	AQ1	24	60.53	79.82	66.29	79.08	100
		AQ2		60.53	69.2	62.98	68.33	
		AQ3		51.2	57.12	53.38	55.86	
		AQ4		50.2	59.57	54.61	59.1	
		AQ5		59.47	69.56	61.76	69.1	
		AQ6		53.4	66.3	57.29	66.07	
		AQ7		51.05	69.77	63.51	69.61	
		AQ8		46.23	59.63	51.61	59.16	
2.	PM2.5 ($\mu g/m^3$)	AQ1	24	30.69	39.27	34.2	39.1	60.0
		AQ2		27.24	31.14	28.34	30.75	
		AQ3		18.43	20.56	19.22	20.1	
		AQ4		18.07	21.45	19.66	21.28	
		AQ5		24.98	32.12	26.06	30.59	
		AQ6		19.21	25.44	21.19	25.13	
		AQ7		36.15	44.15	40.05	43.84	
		AQ8		16.64	22.55	18.63	21.88	
3.	SO_2 ($\mu g/m^3$)	AQ1	24	11.76	14.75	12.85	14.53	80.0
		AQ2		8.25	12.63	9.83	12.1	
		AQ3		10.36	14.45	12.04	14.44	
		AQ4		8.98	11.69	9.8	11.3	
		AQ5		11.87	15.89	13.44	15.53	
		AQ6		5.24	8.78	7.06	8.48	
		AQ7		6.15	11.82	8.12	11.56	
		AQ8		6.08	10.97	9.06	10.97	
4.	NO_x ($\mu g/m^3$)	AQ1	24	16.85	19.5	17.5	19.21	80.0
		AQ2		11.21	17.63	14.72	17.62	
		AQ3		12.32	20.55	15.31	19.93	
		AQ4		9.88	18.62	13.37	17.1	
		AQ5		13.24	19.6	15.68	19.22	
		AQ6		8.84	18.86	11.77	18.82	
		AQ7		15.48	20.04	17.56	19.76	
		AQ8		8.25	17.85	13.16	16.44	

Observations:

Ambient Air Quality Monitoring reveals that the minimum & maximum concentrations of PM10 for all the 8 AQ monitoring stations were found to be 46.23 µg/m^3 & 79.82 µg/m^3, respectively and the minimum & maximum concentrations of PM 2.5 were found to be 16.64 µg/m^3 and 39.48µg/m^3 respectively.

As far as the gaseous pollutants SO2 and NOx are concerned, the prescribed CPCB limit of 80 µg/m^3 for residential and rural areas has never surpassed at any station. The maximum & minimum concentrations of SO2 were found to be 5.24 µg/m^3 & 15.89µg/m^3 respectively. The maximum & minimum concentrations of NOx were found to be in between 8.25 µg/m^3 & 20.55 µg/m^3.

3.4. Soil Environment

Soil may be defined as a thin layer of earth's crust, medium for the growth of plants. The soil characteristics include both physical and chemical properties. The soil survey and soil sample were carried out / collected to assess the soil characteristics of the study area. Soil samples were collected from **08 locations** and analyzed as per CPCB norms.

The soil sampling locations are marked in **fig. 3.5.** The physico-chemical characteristic of these soil samples is given in Table No. 3.10.

Table-3.10, Soil sampling locations

Locations Code	Location Name	Distance & Direction
SQ 1	Near Project site	0.30 Km.
SQ 2	Chokhna	2.5 km, NE
SQ 3	Manjru	3.5 Km, SW
SQ 4	Batlahu	3.5 Km , N
SQ 5	Himar	5.4 Km, SE
SQ 6	Ghumarwin	5.5 Km, ENE
SQ 7	Chauki	4.0 Km , S
SQ 8	Bara	3.10 Km , W

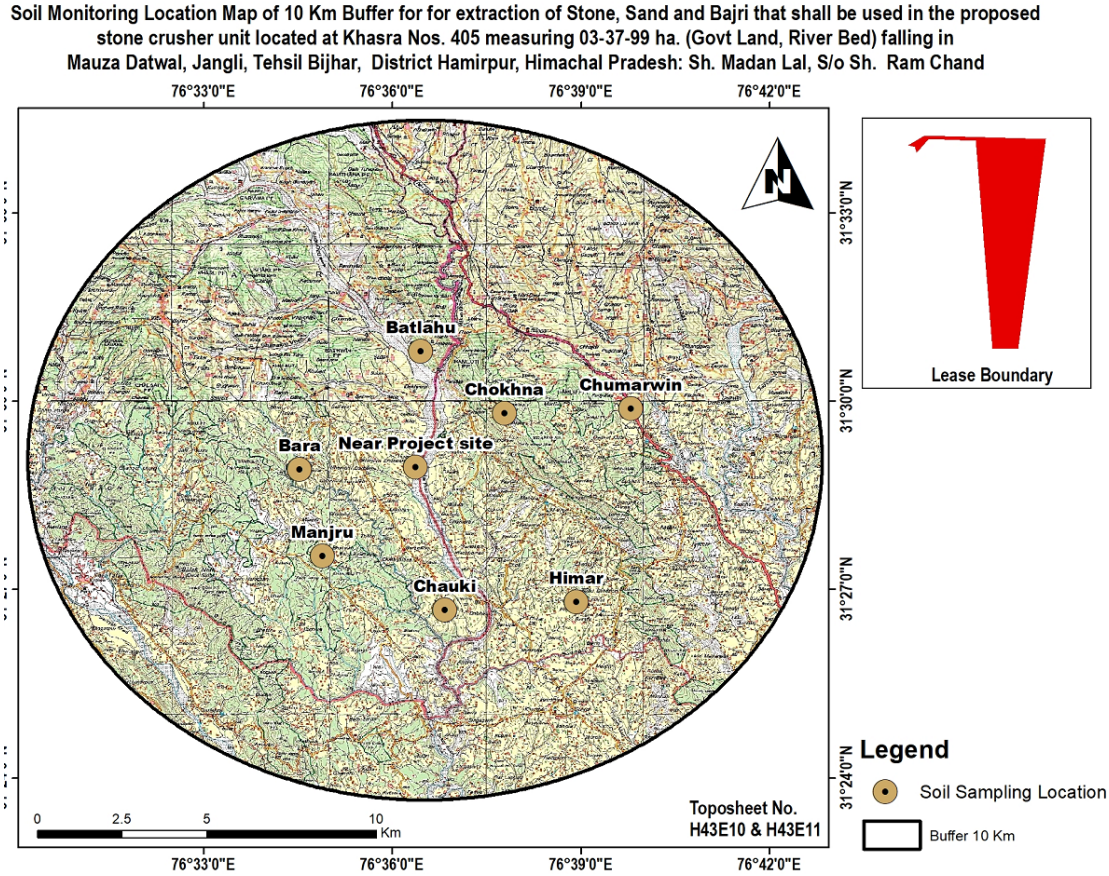


Figure 3.5 Soil sampling locations

Table 3.11, Physico-chemical properties of soil

		Location	Project Site (SQ1)	Chokhna (SQ2)	Manjru (SQ3)	Batlahu (SQ4)
Sr. No.	**Parameters**	**Units**	**Results**	**Results**	**Results**	**Results**
1	pH	-	7.46	7.62	7.38	7.25
2	Conductivity	µmhos/cm	431.00	354.00	506.00	376.00
3	Sodium (as Na)	mg/kg	184.43	83.50	110.10	94.71
4	Water holding capacity	%	36.21	34.32	34.50	35.64
5	Potassium (as K)	mg/kg	142.69	267.29	284.40	269.81
6	Sand	%	85.00	86.50	89.00	85.40
7	Clay	%	8.00	4.80	3.60	4.60
8	Silt	%	7.00	8.70	7.40	10.0
9	Calcium (as Ca)	mg/kg	547.00	662.00	656.00	450.00
10	Magnesium (as Mg)	mg/kg	282.65	361.86	368.50	170.41
11	SAR	-	1.29	0.74	0.98	1.20
12	CEC	meq/100gm	2.51	2.18	2.20	2.53
13	Phosphorus (as P)	mg/kg	12.84	12.00	12.40	12.64

14	Organic carbon	%	0.50	0.46	0.46	0.51
15	Porosity	%	43.15	36.72	46.10	38.00
16	Permeability	cm/hr	1.89	1.73	1.84	1.83
17	Bulk Density	kg/cm^3	1.34	1.41	1.18	1.41
18	Total Kjeldahl Nitrogen (TKN)	%	0.023	0.025	0.038	0.034

-

		Location	**Himar (SQ5)**	**Ghumarwin (SQ6)**	**Chauki (SQ7)**	**Bara (SQ8)**
Sr. No.	**Parameters**	**Units**	**Results**	**Results**	**Results**	**Results**
1	pH	-	7.46	7.62	7.38	7.25
2	Conductivity	µmhos/cm	431.00	354.00	506.00	376.00
3	Sodium (as Na)	mg/kg	84.43	83.50	102	114.71
4	Water holding capacity	%	36.21	34.32	34.50	35.64
5	Potassium (as K)	mg/kg	272.69	267.29	284.40	269.81
6	Sand	%	92.00	86.00	84.00	84.00
7	Clay	%	3.02	5.20	7.00	7.00
8	Silt	%	4.98	8.80	9.00	9.00
9	Calcium (as Ca)	mg/kg	547.00	662.00	656.00	850.00
10	Magnesium (as Mg)	mg/kg	282.65	361.86	368.50	470.41
11	SAR	-	1.29	0.74	0.98	1.20
12	CEC	meq/100gm	2.51	2.18	2.20	2.53
13	Phosphorus (as P)	mg/kg	12.84	12.00	12.40	12.64
14	Organic carbon	%	0.50	0.46	0.46	0.51
15	Porosity	%	43.15	36.72	46.10	38.00
16	Permeability	cm/hr	1.89	1.73	1.84	1.83
17	Bulk Density	kg/cm^3	1.34	1.41	1.18	1.41
18	Total Kjeldahl Nitrogen (TKN)	%	0.023	0.025	0.038	0.034

Observations:

Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.25 to 7.62, which shows that the soil is alkaline in nature. Potassium is found to be from 142.69 mg/kg to 284.40 mg/kg. The water holding capacity is found in between 34.32 % to 36.21 %.

3.5 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 noise level monitoring locations are marked in **Fig. no.3.6.**

Table 3.12 Noise quality monitoring stations

Locations Code	Location Name	Distance & Direction
NQ 1	Near Project site	0.30 Km.
NQ2	Chokhna	2.5 km, NE
NQ 3	Manjru	3.5 Km, SW
NQ 4	Batlahu	3.5 Km , N
NQ 5	Himar	5.4 Km, SE
NQ 6	Ghumarwin	5.5 Km, ENE
NQ 7	Chauki	4.0 Km , S
NQ 8	Bara	3.10 Km , W

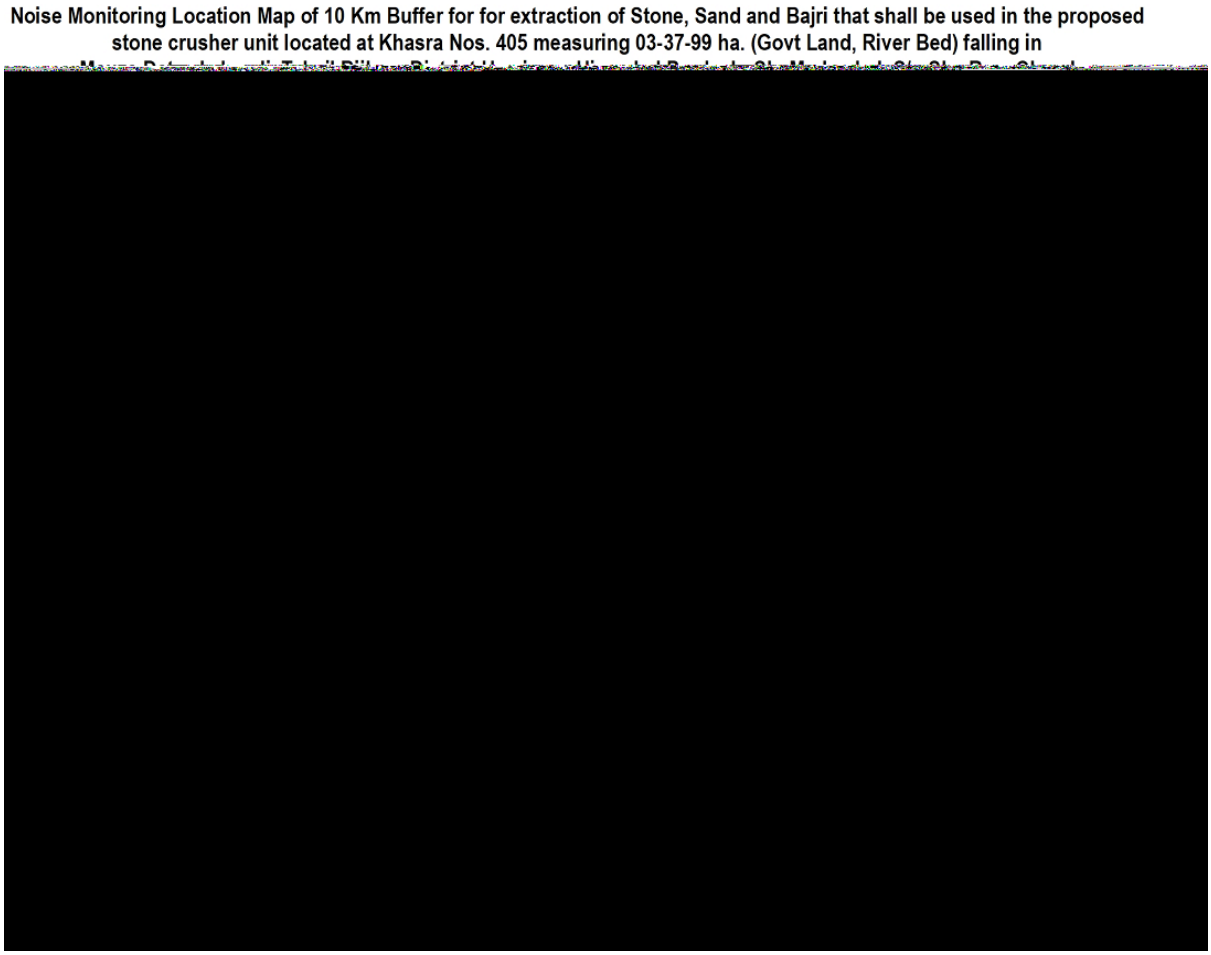


Fig.3.6- Noise quality monitoring stations

Table No. 3.13, Noise level status

S. No.	Project Site	Zone	Leq LIMIT (as per CPCB Guidelines), in dB(A)		Leq Value monitored, in dB(A)	
			DAY*	NIGHT*	DAY*	NIGHT*
1	NQ-1	Industrial Zone (Project Site)	75	70	55.6	41.0
2	NQ-2	Residential Zone	55	45	50.4	40.0
3	NQ-3	Residential Zone	55	45	48.5	35.2
4	NQ-4	Residential Zone	55	45	47.8	39.8
5	NQ-5	Residential Zone	55	45	52.2	42.0
6	NQ-6	Residential Zone	55	45	54.9	41.5
7	NQ-7	Residential Zone	55	45	51.8	38.6
8	NQ-8	Residential Zone	55	45	50.4	37.8

***** Day Time Leq in dB(A) (6.00AM TO 10.00PM)

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

Results

Noise monitoring reveals that the maximum & minimum noise levels at day time were recorded as 55.6 Leq. dB & 47.8 dB (A), respectively. The maximum & minimum noise levels at night time were found to be 42.0 dB (A) & 35.2 dB (A) 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.

3.6 BIOLOGICAL ENVIRONMENT

Biological diversity comprises the variability of genes, species and ecosystems and is very crucial for maintaining the basic processes on which the life depends. Broadly it can be divided into 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.

General Vegetation Study of the area:

The study area comprise of Sub-Tropical Dry Deciduous Vegetation. Several tropical elements can be seen scattered in the area. Species of *Saccharum, Calotropis, Vitex, Zizyphus,* etc. are of common occurrence. Tree species viz. *Acacia catechu, Albizia lebbeck, Dalbergia sissoo, Morus alba,* etc. are found planted along the boundary of the agricultural lands and along the road sides.

Ground vegetation mainly consists of grasses and small shrubs. Among the grasses, *Vetiveria Zizanioides, Cenchrus ciliaris* are very common in the area. Useful fodder grasses, *Cynodon dactylon, Eleusine indica, Trifolium alexandrinum,* etc. are present in the proposed project area.

The large weeds which infest uncultivated tracts are *aak (Calotropis procera), arind (Ricinus communis), dhatura (Datura metel)* and *thor (Opuntia stricta).* Other noxious weeds and those which appear in crops are *pohli*or thistle *(Carthamus oxyacantha), shialkanta (Argemone mexicana), kandyari (Solanum virginianum)* and *bhang (Cannabis sativa).*

FLORA OF THE STUDY AREA

Table No. 3.14 Flora of the study area

Sl. No	Species	Family	Habit
1	*Adhatoda vasica*	Acanthaceae	Shrub
2	*Ageratum conyzoides*	Asteraceae	Herb
3	*Albizia procera*	Mimosaceae	Tree
4	*Barleria cristata*	Acanthaceae	Herb
5	*Abutilon indicum*	Malvaceae	Herb
6	*Acacia catechu*	Fabaceae	Tree

Sl. No	Species	Family	Habit
7	*Acacia nilotica*	Fabaceae	Tree
8	*Achyranthes aspera*	Amaranthaceae	Herb
9	*Bauhinia variegata*	Fabaceae	Tree
10	*Boerhavia diffusa*	Nyctaginaceae	Herb
11	*Bombax ceiba*	Bombacaceae	Tree
12	*Carissa carandas*	Apocynaceae	Shrub
13	*Cassia fistula*	*Fabaceae*	*Tree*
14	*Cissampelos pareira*	*Menispermaceae*	*Climber*
15	*Cordia dichotoma*	Boraginaceae	Tree
16	*Cryptolepis buchanani*	Asclepiadaceae	Climber
17	*Dalbergia sissoo*	Fabaceae	Tree
18	*Datura stramonium*	Solanaceae	Shrub
19	*Dicliptera bupleuroides*	Acanthaceae	Herb
20	*Dodonaea viscosa*	Sapindaceae	Shrub
21	*Eucalyptus* sp.	Myrtaceae	Tree
22	*Eupatorium* sp.	Asteraceae	Herb
23	*Euphorbia royleana*	Euphorbiaceae	Shrub
24	*Ficus benghalensis*	Moraceae	Tree
25	*Ficus palmata*	Moraceae	Tree
26	*Ficus religiosa*	Moraceae	Tree
27	*Ficus rumphii*	Moraceae	Tree
28	*Jasminum dispermum*	Oleaceae	Shrub
29	*Lantana camara*	Verbenaceae	Shrub
30	*Mallotus philippensis*	Euphorbiaceae	Tree
31	*Mangifera indica*	Anacardiaceae	Tree
32	*Malva parviflora*	Malvaceae	Shrub
33	*Morus alba*	Moraceae	Tree
34	*Murraya koenigii*	Anacardiaceae	Shrub
35	*Phoenix sylvestris*	Arecaceae	Tree
36	*Populus deltoides*	Salicaceae	Tree
37	*Sida acuta*	Malvaceae	Herb

Sl. No	Species	Family	Habit
38	*Solanum nigrum*	Solanaceae	Herb
39	*Terminalia arjuna*	Combretaceae	Tree
40	*Terminalia bellirica*	Combretaceae	Tree
41	*Terminalia chebula*	Combretaceae	Tree
42	*Tinospora cordifolia*	Menispermaceae	Climber
43	*Urena lobata*	Malvaceae	Shrub
44	*Xanthium strumarium*	Asteraceae	Shrub
45	*Ziziphus mauritiana*	Rhamnaceae	Shrub

FAUNA OF THE STUDY AREA

Table No. 3.15, Fauna of the study area

Sl.No	Common Name	Scientific name	Wildlife Schedule	IUCN Red List Status
Mammals				
1	Indian Palm Squirrel	*Funambulus palmarum*	IV	LC
2	Indian Grey Mongoose	*Herpestes edwardsii*	II	LC
3	Rat	*Rattus rattus*	V	DD
4	Wild pig	*Sus scrofa*	III	LC
5	Field mouse	*Apodemus sylvaticus*	-	LC
6	Indian hare	*Lepus nigricollis*	IV	LC
7	Rhesus macaque	*Macaca mulatta*	II	LC
8	Fruits bat	*Pteropus conspicillatus*	V	LC
9	Golden Jackal	*Canis aureus*	II	LC
Domestic Animals:				
10	Cow	*Bos indicus*		NA
11	Buffalo	*Bos bubalis*		DD
12	Goat	*Capra aegagrushircus*		DD
Avian fauna (Birds)				
1	**Peacock**	***Pavo cristatus***	**I**	
2	Jungle Myna	*Acridotheres fuscus*	IV	LC

Sl.No	Common Name	Scientific name	Wildlife Schedule	IUCN Red List Status
3	Common Myna	*Acridotheres tristis*	IV	LC
4	Spotted Owlet	*Athene brama*	IV	LC
5	Cattle Egret	*Bubulcus ibis*	IV	LC
6	Red-rumped Swallow	*Cecropis daurica*	-	DD
7	Pied kingfisher	*Ceryle rudis*	IV	DD
8	Blue Rock Pigeon	*Columba livia*	-	LC
9	Oriental Magpie Robin	*Copsychus saularis*	IV	LC
10	Indian roller	*Coracias benghalensis*	IV	LC
11	House Crow	*Corvus splendens*	V	LC
12	Common Cuckoo	*Cuculus canorus*	IV	LC
13	Ashy Drongo	*Dicrurus leucophaeus*	IV	LC
14	Asian Koel	*Eudynamys scolopacea*	IV	NA
15	White-breasted King fisher	*Halcyon smyrnensis*	IV	LC
16	Small Green Bee Eater	*Merops orientalis*	-	LC
17	House Sparrow	*Passer domesticus*	IV	LC
18	Rose ringed Parakeet	*Psittacula krameri*	IV	LC
19	Red vented Bulbul	*Pycnonotus cafer*	IV	LC
20	Spotted Dove	*Streptopelia chinensis*	IV	NA
21	Pied Myna	*Sturnus contra*	IV	LC
22	Marsh Sandpiper	*Tringa stagnatilis*	IV	LC
23	Common Babbler	*Turdoides caudatus*	IV	NA
24	Hoopoe	*Upupa epops ceylonensis*	IV	NA
Reptiles				
1	Common Toad	*Bufo melanostictus*	IV	LC
2	Skipping frog	*Bufo stomaticus*	IV	LC
3	Krait	*Bungarus caeruleus*	IV	NA
4	Banded krait	*Bungarus multicinctus*	-	NA

Sl.No	Common Name	Scientific name	Wildlife Schedule	IUCN Red List Status
5	Kashmir Rock Agama	*Laudakia tuberculata*	-	NA
6	Bronze Grass Skink	*Eutropis macularia*		NA
7	Garden lizard	*Calotes versicolor*	-	NA
8	House lizard	*Hemidactylusfrenatus*	-	LC
9	Cobra	*Naja naja*	II	LC
10	Rat snakes	*Ptyas mucosus*	-	NA

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

Table No. 3.16, List of endemic / Local flora & fauna authenticated by Range Forest Officer, Hamirpur

S.NO	Local Name	Botanical Name	Local Name	Botanical Name
	Flora		**Fauna**	
1	Kamal	*Mallotus philippensis*	Fox	*Vulpes bengalensis*
2	Bamboo	*Dendro calamus strictus*	Brown Sparrow	*Emberiza citrinella*
3	Congress grass	*Parthenium*	Goh	*Varanus komodoerisis*
4	Mango	*Mangi ferainolica*	Nevla	*Herpestes edwardsi*
5	Aakhe	*Rubus ellipticus*	Jungli Murga	*Gallus gullus*
6	Chil	*Pinus roxburghi*	Peacock	*Pavocristatus*
7	Kachnar	*Bauhina veriegata*	Kakar	*Muntiacus*
8	Gandela	*Murraya kaengii*	Suar	*Sus scrofa*
9	Garna	*Carissa opaca*	Khargose	*Oryctolagus cuniculus*

3.7 SOCIAL IMPACT ASSESSMENT, REHABILITATION & RESETTLEMENT (R&R)

INTRODUCTION

The proposed project is for Extraction of Sand, Stone and Bajri from Govt. land falling in Hamirpur district of Himachal Pradesh. The Environmental Impact Assessment (EIA) study report is prepared for obtaining Environmental Clearance (EC) from SEIAA Himachal Pradesh for the proposed Extraction/Collection of Sand, Stone & Bajri Project.

As the lease area is greater than >5.0 ha, so, it comes under *Activity no. 1(a) & Category B1* as per the MoEF&CC, New Delhi Gazette dated 14th September, 2006 amended till date.

Demography

Demography is one of the important indicators of environmental health of an area. It includes population, sex ratio, number of households, literacy, population density, etc. In order to assess the Demographic & Socio-economic features of the area, Census data 2011, for the concerned District Hamirpur of Himachal Pradesh state was compiled and placed in the form of tabulation and graphical representation.

Demography of the District Hamirpur, Himachal Pradesh

As per the census records 2011, the total population of Hamirpur district is 4, 54,768 comprising of 2, 17,070 males and 2, 37,698 females. Out of the total population of the district 93.1% lives in rural areas while 6.9% lives in urban area

The decadal growth rate of district comes 10.2%. The growth rates for the rural and urban areas of the district are 10.7 & 4.1%, respectively. The density of population in Hamirpur district comes to 407 persons per sq.km against the state density of 123 persons.

There are 1,095 females for every thousand males in Hamirpur district. The sex ratios for rural and urban areas of the district are 1,109 & 926, respectively. It is observed that the sex ratio in the age group of 0-6 years is much lower in relation to the overall sex ratio figures of the district. It comes to 887 for total population in the age group of 0-6 years. In rural areas the sex ratio in this age group is 886 and in urban areas it is 907 only.

According to 2011 Census, the total workers including main and marginal workers constitute 53.2% of the total population of the district. In which males and females are 54.7 & 51.8%, respectively. Of the total workers the share of main workers is 27.7% and the marginal workers is 25.5%. The remaining 46.8% of population belongs to the category of non-workers.

As per Census 2011 Hamirpur district reported 3, 58,091 persons as literates constituting 88.2% of the total population. The proportion of male and female literates in the district is 94.4 & 82.6%, respectively. The total literacy rates of rural and urban areas are 87.8% & 92.5%, respectively.Of the 4, 54,768 total population of the district, 24.0% belongs to Scheduled Castes and 0.7% to Scheduled Tribes.

Methodology

In order to assess the Demographic & Socio-economic features along with the 10km distance based on field surveys and public consultations undertaken during the baseline field study

period and Census records 2011, for the concerned district Hamirpur of Himachal Pradeshstate respectively was compiled and placed in the form of tabulation and graphical representation. Entire study area is observed predominantly rural.

Purpose of the Study

Socio-economic study was conducted to establish the baseline demographic features and impacts due to this Sand, Stone & Bajri Mining project, as operation phase of any project invariably leads to Socio-economic changes. The construction phase of any kind of project could lead to unplanned and haphazard development of slums of various size and description with little or rudimentary.

Description of Social Environment

As per the Census Records 2011, the study area has a total of 316 revenue villages and 1 Town i.e. Bhota (NP) under two Districts namely Hamirpur (300 villages & 1 Town) and Bilaspur(16 village) of Himachal Pradesh state respectively. Out of the total no. of 316 villages of the study area, 2 villages are observed as uninhabited village.

Overall study area revenue villages are falling mainly under nine (09) tehsils namely Tira-Sujanpur, Nadaun, Galore, Hamirpur, Barsan, Dhatwal & Bhoranj of Hamirpur district and Ghumarwin & Bharari of Bilaspur district respectively in Himachal Pradesh State.

Population Distribution within 10 km radial Study Zone

As per the Census Records 2011, the total population of 10 km study zone was recorded as 98831persons of 317revenue villages/Townsof Hamirpur and Bilaspur district inHimachal Pradesh. Male-female wise total population was recorded as 47039 males (47.6%) and 51792 (52.4%) females respectively.

Total number of 'Households' was observed as 22653in the 10 km radius study zone. Scheduled Caste ('SC') population was observed as 23487 persons, which accounts as 23.8% to the total population of the study zone andconsisting of 11567males (49.2%) and 11920 females (50.8%) in the 10km study zone. Scheduled Tribes ('ST') population was also observed as 635 persons (0.6%) consisting of 333 males (52.4%) and 302 females (47.6%) in the 10 km study zone.The child population of the study area is recorded as 10477(10.6%) and comprising of 5532 (52.8%)males&4945 (47.2%) females respectively.

Village wise details of population distributionare given as follows in table 3.17:

Table 3.17 :Village-wise Population Distribution (10km Study Zone)

Name of Village/Town	No of	Total Population	Child Population (0-6 Years)

	Households	Total	Male	Female	Total	Male	Female
1. District Hamirpur, HP							
Chaloh (60/10)	19	76	27	49	4	3	1
Tang (17/41)	29	114	61	53	7	4	3
Paniala (25/2)	9	51	25	26	4	2	2
Palasi (24/20)	28	121	54	67	9	4	5
Bumbloo (23/17)	20	98	49	49	7	5	2
Palasi (28/15)	140	592	264	328	71	33	38
Phal Khas (28/8)	124	513	247	266	59	35	24
Karsai (28/11)	48	182	70	112	20	11	9
Loharkur (36/40)	32	140	59	81	13	8	5
Galor Khas (36/37)	156	777	369	408	87	41	46
Badaran (36/25)	54	214	92	122	20	8	12
Guriah (36/28)	44	182	89	93	20	13	7
Mer (36/41)	75	317	144	173	35	17	18
Ropri (36/23)	18	91	42	49	9	2	7
Pahlwin (36/32)	30	119	58	61	14	9	5
Phangsana (28/14)	35	143	62	81	10	4	6
Lajiana (28/16)	81	366	163	203	39	20	19
Bandos (36/27)	63	250	110	140	18	10	8
Baroh (36/26)	25	84	37	47	10	4	6
Dhiana (36/33)	15	92	45	47	5	3	2
Naraina (36/29)	6	29	16	13	3	3	0
Dodwin (36/36)	60	228	92	136	24	13	11
Bhaloo (36/30)	72	278	103	175	37	22	15
Busiar (36/31)	44	221	106	115	17	9	8
Lasmai (36/39)	47	222	116	106	21	12	9
Hareta (36/42)	260	1094	550	544	106	66	40
Tikkar (37/32) III	59	307	162	145	30	19	11
Galot Khurd (39/5)	38	162	73	89	16	10	6
Galot Kalan (39/6)	76	344	160	184	29	13	16
Nalwin (39/8)	58	271	125	146	37	21	16
Bakarti (37/4)	129	579	291	288	76	48	28
Chamsai (39/3)	39	143	68	75	15	8	7
Khihrwin (39/25)	89	388	190	198	45	28	17
Baloni (39/24)	88	374	175	199	50	29	21
Pharsi	31	117	55	62	8	4	4
Ser (39/18)	148	546	243	303	54	29	25
Rakhla (39/16)	17	66	28	38	8	5	3
Dhaned Khas (39/19)	98	391	166	225	46	25	21
Lingwin (39/17)	60	251	125	126	26	15	11
Khatwin (39/23)	84	431	207	224	36	18	18
Kotla (39/21)	42	172	76	96	23	13	10
Lalin (39/22)	77	313	128	185	39	23	16
Tuklehra (39/14)	19	94	39	55	15	10	5
Dhurghara (39/12)	10	37	15	22	6	2	4
Dehran (39/15)	14	70	22	48	6	1	5
Pharnoal (39/2)	191	766	364	402	91	49	42
Dalyahu (39/13)	45	208	112	96	16	12	4
Gharan (39/7)	106	478	229	249	54	32	22
Gajoh (46/29)	46	194	94	100	19	9	10
Jasaur (46/14)	13	65	32	33	12	3	9
Lahar (46/30)	198	922	460	462	100	48	52
Dhalot (45/26)	45	207	106	101	12	7	5
Gasota (45/7)	117	541	273	268	48	22	26
Bharthian (45/11)	32	152	76	76	17	8	9

Sai Brahmana (45/21)	24	107	58	49	11	4	7
Gulela (45/8)	14	67	31	36	3	3	0
Daryota (45/23)	112	460	234	226	37	24	13
Halana (45/25)	98	441	221	220	36	24	12
Thana (42/51) II	43	172	95	77	28	17	11
Tikkar (42/46)	118	502	256	246	61	34	27
Kadhriana (42/54)	118	513	239	274	59	26	33
Didhwin (42/49)	72	272	134	138	20	11	9
Chakrowa (42/25)	14	51	24	27	5	4	1
Jhinkari (42/13)	53	215	105	110	31	22	9
Baghetu (42/11)	144	606	315	291	65	33	32
Chauntara (42/14)	85	380	177	203	35	18	17
Mair (42/19)	145	644	301	343	74	41	33
Pandhwin (42/7)	131	479	201	278	53	26	27
Jarl (42/16) II	31	161	80	81	19	6	13
Chalyara (42/17)	21	95	48	47	15	9	6
Goata (42/18)	75	335	168	167	35	18	17
Bhagot (42/5)	41	183	87	96	25	15	10
Phaphan (42/6)	45	202	90	112	17	8	9
Tikkar (42/12) III	18	77	39	38	7	3	4
Palasi (42/2)	22	104	57	47	7	4	3
Daraundla Uperla (42/8)	43	173	80	93	18	8	10
Bhola (42/1)	29	130	64	66	16	6	10
Kothi (42/29)	45	209	100	109	31	15	16
Nahlwin (42/44)	179	668	306	362	70	30	40
Lundri (42/31)	93	414	187	227	38	16	22
Bindli (42/81)	3	13	6	7	1	0	1
Badar (42/42)	60	282	131	151	31	13	18
Sahnwin (42/34)	53	209	92	117	13	6	7
Kakriana (42/35)	74	315	148	167	33	14	19
Chauki Kankari (42/52)	326	1442	708	734	142	76	66
Bumana (42/33)	81	315	154	161	33	17	16
Samrala (42/48)	102	436	191	245	44	21	23
Dhanrasi (42/47)	56	264	127	137	30	20	10
Gahlian (45/24)	133	511	207	304	65	31	34
Balu (42/45)	73	356	173	183	44	28	16
Rumera (45/38)	10	51	24	27	4	2	2
Bani (47/1)	52	201	100	101	14	11	3
Paddar (30/2)	7	28	9	19	1	1	0
Dulera (30/7)	57	267	128	139	22	12	10
Dandru (30/14)	50	229	111	118	23	13	10
Samela (30/11)	38	183	91	92	24	13	11
Seheli (31/17)	60	246	116	130	28	14	14
Sadoh (31/12)	8	36	13	23	8	4	4
Ragar Padhian (31/20)	36	174	88	86	19	11	8
Kakar (31/13)	6	29	13	16	2	1	1
Ropa Brahmana (31/7)	14	68	41	27	5	3	2
Dhar (31/24)	Uninhabited Village						
Baritar (31/18)	64	240	108	132	25	15	10
Samlehara (31/21)	59	303	136	167	40	20	20
Telkar (31/4)	49	214	99	115	29	12	17
Romehera (31/8)	62	254	103	151	18	7	11
Ropa Rajputtan (31/19)	60	269	116	153	37	19	18
Sasan (31/10)	9	40	20	20	4	2	2
Jabhal Kheri (13/5)	53	239	123	116	22	14	8
Barsar (13/1)	770	3390	1762	1628	360	183	177

Satrukha (13/4)	13	49	23	26	5	3	2
Pathliar (13/3)	87	405	207	198	46	28	18
Bhalt (33/24)	148	589	284	305	44	26	18
Chhaproh (12/9)	90	420	211	209	46	30	16
Nain (12/8)	84	402	192	210	31	20	11
Rapar (33/39)	50	230	119	111	18	8	10
Jajal (33/15)	60	302	149	153	42	20	22
Ghangot Kalan (33/36)	168	754	367	387	56	30	26
Ghangot Khurd (33/35)	31	140	65	75	17	8	9
Dhakyana (33/3)	14	53	26	27	7	7	0
Gutiana (33/22)	40	188	86	102	21	13	8
Badhu (33/14)	20	95	47	48	8	4	4
Gata Panga (33/25)	20	97	48	49	18	10	8
Nara (33/38)	108	522	245	277	61	35	26
Narkar (33/23)	40	164	70	94	14	8	6
Banan (33/2)	14	57	26	31	4	2	2
Mohlwin (33/12)	14	70	36	34	8	8	0
Kotlu (33/18)	99	401	176	225	42	18	24
Garli Khas (33/21)	99	457	204	253	61	29	32
Bahna (33/7)	102	418	197	221	41	20	21
Kheri (33/20)	62	255	112	143	29	14	15
Bagg (33/1)	2	8	4	4	1	1	0
Sunwin Rajputtan (33/30)	53	217	107	110	15	8	7
Pelehra (33/10)	55	220	106	114	23	15	8
Kohdera (33/5)	30	128	64	64	16	8	8
Taradol (32/8)	10	35	19	16	2	2	0
Dabriana (32/17)	79	299	129	170	25	13	12
Langheree (32/28)	10	41	20	21	9	5	4
Baliya Kalan (32/33)	42	191	85	106	24	15	9
Mattkar (33/33)	69	247	127	120	24	16	8
Dhuma (33/29)	13	78	32	46	12	3	9
Khajian (33/34)	132	638	311	327	65	37	28
Guria Khurd (33/32)	7	35	20	15	5	3	2
Guria Kalan (33/37)	73	366	181	185	29	12	17
Lohane (32/20)	14	68	36	32	5	3	2
Kaswar (32/31)	105	465	208	257	54	25	29
Birswin (32/24)	58	265	122	143	23	13	10
Ghamarwin (32/25)	122	520	253	267	70	35	35
Barni (32/23)	52	251	110	141	32	14	18
Rahil (32/19)	8	38	17	21	3	2	1
Baggi (32/18)	42	195	89	106	13	6	7
Kowa (32/22)	42	184	92	92	14	5	9
Kuthera (32/6)	7	36	19	17	3	1	2
Karwen (32/5)	39	179	87	92	16	5	11
Bani Khas (32/2)	127	529	254	275	50	25	25
Mangroli (32/7)	29	116	59	57	9	7	2
Samoh (32/11)	82	370	179	191	33	20	13
Tukhani (32/3)	76	297	131	166	21	13	8
Makteri (32/29)	43	162	69	93	18	7	11
Nanawan (35/20)	193	869	430	439	91	47	44
Lalhani (35/1)	14	96	49	47	11	4	7
Raein (35/18)	24	113	57	56	17	9	8
Daghol (35/10)	8	43	22	21	4	2	2
Bear Kalan (35/16)	81	377	170	207	32	18	14
Bear Khurd (35/15)	34	159	81	78	16	8	8
Tikkar Rajputtan (32/16)	103	495	256	239	49	26	23

Tikkar Brahmana (32/15)	95	400	179	221	45	18	27
Kothi (35/13)	55	207	93	114	19	11	8
Bakroh (35/12)	23	91	44	47	7	4	3
Har (35/14)	89	413	208	205	46	24	22
Akrana Brahmana (35/11)	9	40	17	23	5	3	2
Akrana Rajputtan (35/6)	24	118	64	54	9	8	1
Goeta Rajputtan (35/9)	16	87	40	47	12	6	6
Goeta Brahmana (35/7)	12	66	33	33	11	8	3
Ghamarli (35/3)	30	140	62	78	11	5	6
Awah Buhla (40/11)	86	378	186	192	47	26	21
Awah Upperla (40/17)	59	233	113	120	20	14	6
Kudhar (40/4)	62	286	136	150	26	16	10
Sunwin (40/1)	45	207	102	105	32	19	13
Kuthulag (40/6)	20	83	35	48	11	7	4
Dhanota (40/7)	9	57	25	32	11	5	6
Musan (40/5)	30	152	70	82	21	12	9
Makar (40/13)	120	513	252	261	54	31	23
Khangalta (40/18)	97	369	181	188	25	15	10
Panjarar (40/16)	28	137	70	67	16	13	3
Saloni (40/2)	63	298	143	155	27	17	10
Galoh (40/12)	41	185	86	99	21	9	12
Dhakoa (40/9)	40	176	83	93	17	11	6
Badhan (40/47)	19	91	47	44	10	3	7
Bahal Bhatan (40/46)	36	161	86	75	14	10	4
Bahal (40/15)	3	13	6	7	2	0	2
Chhek (40/32)	50	214	109	105	23	11	12
Pahlu (40/44)	204	930	458	472	112	59	53
Porla (40/45)	21	95	42	53	20	15	5
Kathla (40/38)	16	79	43	36	13	10	3
Baeri (40/28)	123	540	267	273	64	36	28
Kasiri (40/20)	27	147	69	78	30	18	12
Jharnot (40/34)	37	154	73	81	19	11	8
Jindwin Brahmana (40/41)	13	42	16	26	2	0	2
Ujhan (40/43)	63	324	159	165	35	15	20
Ghalon (40/21)	56	201	103	98	22	14	8
Chuan (40/42)	51	199	90	109	21	11	10
Morsu Sultani (40/27)	17	89	38	51	10	1	9
Morsu Garlan (40/22)	29	147	60	87	19	4	15
Thamani Upperli (41/21)	34	147	73	74	13	3	10
Sour (41/17)	93	408	205	203	45	27	18
Pundar (41/13)	80	358	176	182	44	26	18
Dain (41/26)	151	728	345	383	86	43	43
Mansui Upperli (41/14)	34	157	71	86	20	12	8
Mansui Jhikli (41/10)	43	185	97	88	13	6	7
Chhorab (41/12)	97	408	204	204	50	28	22
Lohder Khas (41/18)	38	153	71	82	16	9	7
Suphan (41/9)	25	69	33	36	3	3	0
Oled Sidhu (41/20)	27	98	35	63	13	8	5
Amboha Jhikla (41/6)	20	84	37	47	10	8	2
Dhamani (41/22) I	48	227	108	119	30	16	14
Choa (41/24)	39	156	61	95	19	10	9
Bahal Rattun (41/11)	5	18	6	12	3	1	2
Jandroh (41/25)	24	96	40	56	9	2	7
Bhota (NP)	300	1453	738	715	145	73	72
Ghulera (34/101)	86	378	188	190	35	22	13
Changar (34/105)	101	402	157	245	56	19	37

Sunahni (34/108)	14	53	25	28	4	2	2
Godee (34/112)	82	409	182	227	56	28	28
Dagwar (34/107)	121	598	295	303	68	34	34
Suhari (34/109)	107	491	238	253	56	31	25
Tangar (34/110)	44	189	99	90	13	7	6
Lahri Ghumara (34/84)	1	6	2	4	0	0	0
Bijhri (34/16)	437	1855	877	978	196	107	89
Lakho (34/13)	93	366	160	206	40	24	16
Garari (34/12)	37	211	111	100	26	15	11
Bhanwanee (34/10)	22	105	49	56	14	7	7
Tikkar (34/2) II	30	124	49	75	15	5	10
Chalsaee (34/7)	26	111	47	64	14	2	12
Chakrala (34/3)	31	136	71	65	10	7	3
Bahl Thakru (34/6)	45	196	92	104	19	10	9
Bidu (34/22)	106	576	292	284	46	21	25
Bhahal Arjun (34/5)	54	247	118	129	30	15	15
Dulchehra (34/4)	114	438	212	226	48	26	22
Chhakmoh (34/8)	462	2045	1011	1034	190	100	90
Sakroh (34/21)	89	408	182	226	44	18	26
Jarl (34/26) I	96	422	196	226	49	25	24
Chalali (34/32)	30	101	47	54	13	7	6
Samela (34/25) I	101	412	197	215	36	22	14
Sathwin (34/60)	209	893	387	506	85	42	43
Bara (34/23)	41	171	69	102	21	7	14
Baroh (34/20)	20	80	36	44	5	0	5
Khlawat (34/58)	64	350	168	182	47	22	25
Bodhan (34/18)	65	303	141	162	30	15	15
Kohla (34/17)	71	313	140	173	29	16	13
Pairawin (34/80)	91	405	184	221	49	31	18
Mathohal (34/72)	39	168	77	91	25	13	12
Chatpahl (34/70)	10	47	22	25	4	1	3
Behal (34/71)	44	180	80	100	11	5	6
Chalali (34/67)	9	40	23	17	3	2	1
Kot (34/75) I	83	346	161	185	31	14	17
Padian (34/73)	43	217	106	111	19	10	9
Kachhwin (34/94)	83	340	150	190	41	19	22
Kariala (34/99)	37	137	60	77	18	7	11
Dandwin (34/102)	59	229	106	123	20	13	7
Bharyan (34/93)	5	26	10	16	3	3	0
Sariana (34/91)	52	220	85	135	30	11	19
Janen (34/98)	69	335	158	177	46	28	18
Samthana Khurd (34/97)	90	381	186	195	41	21	20
Samthana Kalan (34/100)	296	1168	558	610	119	68	51
Pandthiani (34/89)	40	153	74	79	21	12	9
Dhanghota (34/82)	206	880	414	466	112	56	56
Kharoul (34/81)	18	75	36	39	9	5	4
Ghumarth (34/78)	67	329	157	172	38	15	23
Thana (34/77) I	25	134	68	66	12	10	2
Tang (34/76)	7	29	13	16	1	0	1
Dakhyora (34/56)	61	212	92	120	16	5	11
Tikkar (34/50) I	13	65	29	36	7	3	4
Maharal (34/62)	345	1518	755	763	181	103	78
Ghumarli (44/26)	68	261	131	130	25	17	8
Kailvin (44/68)	18	76	33	43	7	3	4
Thuthwani Rajputtan (44/58)	44	183	89	94	18	8	10
Sasal (44/67)	22	91	45	46	9	6	3

Badar (44/65)	73	350	167	183	36	13	23
Neri (42/57)	29	139	60	79	24	14	10
Behal Bagg (42/58)	29	125	56	69	17	9	8
Kot (42/63) II	61	233	96	137	32	13	19
Mehal Khas (42/60)	87	318	147	171	32	14	18
Pandtehri (42/65)	12	66	29	37	13	6	7
Buthwi Tangrian (42/69)	43	155	70	85	13	6	7
Jujani (42/66)	24	92	37	55	14	7	7
Tikkar Khurarian (42/72)	90	363	201	162	34	18	16
Balet (42/23)	54	241	127	114	24	10	14
Nandhan (42/32)	43	198	90	108	31	18	13
Balokhar (42/37)	117	495	237	258	48	27	21
Kotlu (42/39) II	63	257	122	135	19	10	9
Seu (42/38)	68	276	126	150	22	10	12
Ludhwin (42/3)	62	241	111	130	27	13	14
Patta (42/4)	173	665	285	380	68	41	27
Jharlog Upperla (42/91)	82	348	158	190	33	16	17
Ladror Khurd (42/93)	173	684	311	373	70	39	31
Ladror Kalan (42/84)	202	847	389	458	88	45	43
Dhasmai (42/95)	44	206	100	106	23	14	9
Lathwan (42/94)	72	295	136	159	16	12	4
Khuthri (42/96)	226	865	387	478	84	45	39
Thana (42/90) II	38	170	79	91	25	15	10
2. District Bilaspur, HP							
Mund Khar (245)	68	378	186	192	36	17	19
Dhaloh (250)	97	435	207	228	37	21	16
Taraun (274)	293	1329	617	712	111	58	53
Damehr (287)	104	456	204	252	49	25	24
Lahot (290)	128	586	295	291	69	40	29
Badsara (292)	33	164	79	85	21	12	9
Gugal (289)	36	163	81	82	19	11	8
Damehra (288)	44	178	92	86	19	11	8
Lehri Sarail (272)	569	2639	1271	1368	298	148	150
Hari Talyangar (273)	201	947	468	479	109	52	57
Chhajoli (271)	97	429	207	222	48	26	22
Patta Malotra (257)	48	200	88	112	17	5	12
Dangar (256)	302	1290	592	698	144	72	72
Jangal Drahla Da Phat (256/1)	Uninhabited Village						
Dakhiot Uperla (254)	44	182	94	88	12	9	3
Chokhna (253)	123	540	245	295	63	36	27
TOTAL (10 km)	**22653**	**98831**	**47039**	**51792**	**10477**	**5532**	**4945**
Source-Census of India, 2011							

Table 3.18:Village-wise SC & STPopulation Distribution (10kmStudy Zone)

Name of Village/Town	No of Households	Scheduled Castes			Scheduled Tribes		
		Persons	Males	Females	Persons	Males	Females
1. District Hamirpur, HP							
Chaloh (60/10)	76	0	0	0	0	0	0
Tang (17/41)	114	15	7	8	0	0	0
Paniala (25/2)	51	0	0	0	25	14	11
Palasi (24/20)	121	0	0	0	0	0	0
Bumbloo (23/17)	98	13	6	7	0	0	0
Palasi (28/15)	592	207	95	112	0	0	0

Phal Khas (28/8)	513	209	106	103	0	0	0
Karsai (28/11)	182	3	2	1	0	0	0
Loharkur (36/40)	140	7	4	3	0	0	0
Galor Khas (36/37)	777	265	130	135	0	0	0
Badaran (36/25)	214	7	5	2	0	0	0
Guriah (36/28)	182	16	10	6	0	0	0
Mer (36/41)	317	204	104	100	0	0	0
Ropri (36/23)	91	6	3	3	0	0	0
Pahlwin (36/32)	119	0	0	0	0	0	0
Phangsana (28/14)	143	0	0	0	0	0	0
Lajiana (28/16)	366	0	0	0	0	0	0
Bandos (36/27)	250	0	0	0	0	0	0
Baroh (36/26)	84	0	0	0	0	0	0
Dhiana (36/33)	92	0	0	0	0	0	0
Naraina (36/29)	29	0	0	0	0	0	0
Dodwin (36/36)	228	0	0	0	0	0	0
Bhaloo (36/30)	278	0	0	0	0	0	0
Busiar (36/31)	221	59	29	30	0	0	0
Lasmai (36/39)	222	0	0	0	0	0	0
Hareta (36/42)	1094	62	34	28	1	1	0
Tikkar (37/32) III	307	54	29	25	0	0	0
Galot Khurd (39/5)	162	26	8	18	0	0	0
Galot Kalan (39/6)	344	150	73	77	0	0	0
Nalwin (39/8)	271	22	7	15	0	0	0
Bakarti (37/4)	579	139	73	66	0	0	0
Chamsai (39/3)	143	0	0	0	0	0	0
Khihrwin (39/25)	388	77	42	35	0	0	0
Baloni (39/24)	374	35	17	18	0	0	0
Pharsi	117	111	52	59	0	0	0
Ser (39/18)	546	29	10	19	0	0	0
Rakhla (39/16)	66	66	28	38	0	0	0
Dhaned Khas (39/19)	391	47	19	28	0	0	0
Lingwin (39/17)	251	0	0	0	0	0	0
Khatwin (39/23)	431	162	80	82	0	0	0
Kotla (39/21)	172	0	0	0	0	0	0
Lalin (39/22)	313	0	0	0	0	0	0
Tuklehra (39/14)	94	0	0	0	0	0	0
Dhurghara (39/12)	37	0	0	0	0	0	0
Dehran (39/15)	70	0	0	0	0	0	0
Pharnoal (39/2)	766	81	42	39	27	15	12
Dalyahu (39/13)	208	0	0	0	0	0	0
Gharan (39/7)	478	63	31	32	0	0	0
Gajoh (46/29)	194	14	9	5	0	0	0
Jasaur (46/14)	65	0	0	0	0	0	0
Lahar (46/30)	922	387	199	188	11	6	5
Dhalot (45/26)	207	36	17	19	0	0	0
Gasota (45/7)	541	83	42	41	1	1	0

Bharthian (45/11)	152	0	0	0	0	0	0
Sai Brahmana (45/21)	107	17	10	7	0	0	0
Gulela (45/8)	67	0	0	0	0	0	0
Daryota (45/23)	460	31	19	12	0	0	0
Halana (45/25)	441	34	17	17	0	0	0
Thana (42/51) II	172	110	62	48	0	0	0
Tikkar (42/46)	502	22	11	11	0	0	0
Kadhriana (42/54)	513	185	90	95	0	0	0
Didhwin (42/49)	272	21	9	12	0	0	0
Chakrowa (42/25)	51	0	0	0	0	0	0
Jhinkari (42/13)	215	79	39	40	0	0	0
Baghetu (42/11)	606	280	145	135	3	1	2
Chauntara (42/14)	380	95	44	51	0	0	0
Mair (42/19)	644	219	101	118	0	0	0
Pandhwin (42/7)	479	174	75	99	0	0	0
Jarl (42/16) II	161	33	16	17	0	0	0
Chalyara (42/17)	95	12	6	6	59	29	30
Goata (42/18)	335	124	65	59	0	0	0
Bhagot (42/5)	183	9	4	5	0	0	0
Phaphan (42/6)	202	29	14	15	68	35	33
Tikkar (42/12) III	77	6	3	3	0	0	0
Palasi (42/2)	104	0	0	0	0	0	0
Daraundla Uperla (42/8)	173	66	31	35	0	0	0
Bhola (42/1)	130	0	0	0	0	0	0
Kothi (42/29)	209	49	13	36	0	0	0
Nahlwin (42/44)	668	321	158	163	0	0	0
Lundri (42/31)	414	0	0	0	0	0	0
Bindli (42/81)	13	0	0	0	0	0	0
Badar (42/42)	282	58	25	33	0	0	0
Sahnwin (42/34)	209	0	0	0	0	0	0
Kakriana (42/35)	315	68	33	35	0	0	0
Chauki Kankari (42/52)	1442	401	203	198	27	16	11
Bumana (42/33)	315	90	45	45	0	0	0
Samrala (42/48)	436	0	0	0	0	0	0
Dhanrasi (42/47)	264	53	28	25	0	0	0
Gahlian (45/24)	511	148	66	82	0	0	0
Balu (42/45)	356	143	67	76	0	0	0
Rumera (45/38)	51	25	12	13	0	0	0
Bani (47/1)	201	54	28	26	0	0	0
Paddar (30/2)	28	0	0	0	0	0	0
Dulera (30/7)	267	47	22	25	0	0	0
Dandru (30/14)	229	45	23	22	0	0	0
Samela (30/11)	183	45	22	23	0	0	0
Seheli (31/17)	246	21	10	11	0	0	0
Sadoh (31/12)	36	13	5	8	0	0	0
Ragar Padhian (31/20)	174	144	76	68	0	0	0
Kakar (31/13)	29	0	0	0	0	0	0

Ropa Brahmana (31/7)	68	25	15	10	0	0	0
Dhar (31/24)	Uninhabited Village						
Baritar (31/18)	240	24	11	13	0	0	0
Samlehara (31/21)	303	40	17	23	0	0	0
Telkar (31/4)	214	93	44	49	8	4	4
Romehera (31/8)	254	59	21	38	0	0	0
Ropa Rajputtan (31/19)	269	135	65	70	0	0	0
Sasan (31/10)	40	7	3	4	0	0	0
Jabhal Kheri (13/5)	239	57	30	27	19	11	8
Barsar (13/1)	3390	1072	545	527	83	45	38
Satrukha (13/4)	49	23	11	12	0	0	0
Pathliar (13/3)	405	227	117	110	73	41	32
Bhalt (33/24)	589	100	52	48	0	0	0
Chhaproh (12/9)	420	102	55	47	0	0	0
Nain (12/8)	402	73	36	37	0	0	0
Rapar (33/39)	230	41	17	24	0	0	0
Jajal (33/15)	302	0	0	0	1	0	1
Ghangot Kalan (33/36)	754	176	88	88	0	0	0
Ghangot Khurd (33/35)	140	87	37	50	20	10	10
Dhakyana (33/3)	53	0	0	0	0	0	0
Gutiana (33/22)	188	0	0	0	0	0	0
Badhu (33/14)	95	95	47	48	0	0	0
Gata Panga (33/25)	97	0	0	0	0	0	0
Nara (33/38)	522	114	57	57	0	0	0
Narkar (33/23)	164	0	0	0	0	0	0
Banan (33/2)	57	0	0	0	0	0	0
Mohlwin (33/12)	70	0	0	0	0	0	0
Kotlu (33/18)	401	47	23	24	0	0	0
Garli Khas (33/21)	457	121	54	67	0	0	0
Bahna (33/7)	418	33	11	22	0	0	0
Kheri (33/20)	255	16	5	11	0	0	0
Bagg (33/1)	8	0	0	0	0	0	0
Sunwin Rajputtan (33/30)	217	216	107	109	0	0	0
Pelehra (33/10)	220	82	43	39	0	0	0
Kohdera (33/5)	128	10	6	4	0	0	0
Taradol (32/8)	35	26	14	12	0	0	0
Dabriana (32/17)	299	28	16	12	0	0	0
Langheree (32/28)	41	0	0	0	0	0	0
Baliya Kalan (32/33)	191	0	0	0	0	0	0
Mattkar (33/33)	247	69	38	31	0	0	0
Dhuma (33/29)	78	13	5	8	0	0	0
Khajian (33/34)	638	82	42	40	0	0	0
Guria Khurd (33/32)	35	0	0	0	0	0	0
Guria Kalan (33/37)	366	99	52	47	0	0	0
Lohane (32/20)	68	0	0	0	0	0	0
Kaswar (32/31)	465	65	34	31	0	0	0
Birswin (32/24)	265	127	62	65	0	0	0

Ghamarwin (32/25)	520	204	108	96	0	0	0
Barni (32/23)	251	41	20	21	0	0	0
Rahil (32/19)	38	0	0	0	0	0	0
Baggi (32/18)	195	20	12	8	0	0	0
Kowa (32/22)	184	86	44	42	0	0	0
Kuthera (32/6)	36	0	0	0	0	0	0
Karwen (32/5)	179	64	34	30	0	0	0
Bani Khas (32/2)	529	65	34	31	0	0	0
Mangroli (32/7)	116	6	3	3	0	0	0
Samoh (32/11)	370	12	7	5	0	0	0
Tukhani (32/3)	297	57	26	31	0	0	0
Makteri (32/29)	162	0	0	0	0	0	0
Nanawan (35/20)	869	193	101	92	0	0	0
Lalhani (35/1)	96	0	0	0	0	0	0
Raein (35/18)	113	16	7	9	0	0	0
Daghol (35/10)	43	31	16	15	0	0	0
Bear Kalan (35/16)	377	13	7	6	0	0	0
Bear Khurd (35/15)	159	0	0	0	0	0	0
Tikkar Rajputtan (32/16)	495	50	29	21	0	0	0
Tikkar Brahmana (32/15)	400	8	4	4	0	0	0
Kothi (35/13)	207	19	12	7	0	0	0
Bakroh (35/12)	91	24	15	9	0	0	0
Har (35/14)	413	70	39	31	0	0	0
Akrana Brahmana (35/11)	40	0	0	0	0	0	0
Akrana Rajputtan (35/6)	118	0	0	0	0	0	0
Goeta Rajputtan (35/9)	87	78	37	41	0	0	0
Goeta Brahmana (35/7)	66	0	0	0	0	0	0
Ghamarli (35/3)	140	4	3	1	0	0	0
Awah Buhla (40/11)	378	229	118	111	0	0	0
Awah Upperla (40/17)	233	81	37	44	0	0	0
Kudhar (40/4)	286	47	26	21	1	0	1
Sunwin (40/1)	207	42	22	20	0	0	0
Kuthulag (40/6)	83	0	0	0	0	0	0
Dhanota (40/7)	57	0	0	0	0	0	0
Musan (40/5)	152	0	0	0	0	0	0
Makar (40/13)	513	86	47	39	1	1	0
Khangalta (40/18)	369	95	50	45	0	0	0
Panjarar (40/16)	137	0	0	0	0	0	0
Saloni (40/2)	298	37	16	21	0	0	0
Galoh (40/12)	185	0	0	0	0	0	0
Dhakoa (40/9)	176	0	0	0	0	0	0
Badhan (40/47)	91	0	0	0	0	0	0
Bahal Bhatan (40/46)	161	44	26	18	0	0	0
Bahal (40/15)	13	13	6	7	0	0	0
Chhek (40/32)	214	26	10	16	0	0	0
Pahlu (40/44)	930	359	185	174	1	0	1
Porla (40/45)	95	0	0	0	0	0	0

Kathla (40/38)	79	0	0	0	0	0	0
Baeri (40/28)	540	170	84	86	1	1	0
Kasiri (40/20)	147	39	21	18	0	0	0
Jharnot (40/34)	154	50	19	31	0	0	0
Jindwin Brahmana (40/41)	42	6	3	3	0	0	0
Ujhan (40/43)	324	35	14	21	0	0	0
Ghalon (40/21)	201	93	49	44	0	0	0
Chuan (40/42)	199	3	1	2	0	0	0
Morsu Sultani (40/27)	89	0	0	0	0	0	0
Morsu Garlan (40/22)	147	70	29	41	0	0	0
Thamani Upperli (41/21)	147	69	36	33	0	0	0
Sour (41/17)	408	162	78	84	0	0	0
Pundar (41/13)	358	237	116	121	0	0	0
Dain (41/26)	728	199	100	99	0	0	0
Mansui Upperli (41/14)	157	75	36	39	0	0	0
Mansui Jhikli (41/10)	185	70	32	38	0	0	0
Chhorab (41/12)	408	212	108	104	0	0	0
Lohder Khas (41/18)	153	43	23	20	0	0	0
Suphan (41/9)	69	13	6	7	0	0	0
Oled Sidhu (41/20)	98	0	0	0	0	0	0
Amboha Jhikla (41/6)	84	0	0	0	0	0	0
Dhamani (41/22) I	227	0	0	0	0	0	0
Choa (41/24)	156	7	4	3	0	0	0
Bahal Rattun (41/11)	18	0	0	0	0	0	0
Jandroh (41/25)	96	31	14	17	0	0	0
Bhota (NP)	1453	469	234	235	0	0	0
Ghulera (34/101)	378	75	36	39	0	0	0
Changar (34/105)	402	62	22	40	0	0	0
Sunahni (34/108)	53	0	0	0	0	0	0
Godee (34/112)	409	90	45	45	0	0	0
Dagwar (34/107)	598	195	91	104	0	0	0
Suhari (34/109)	491	285	143	142	0	0	0
Tangar (34/110)	189	4	2	2	0	0	0
Lahri Ghumara (34/84)	6	6	2	4	0	0	0
Bijhri (34/16)	1855	165	85	80	2	1	1
Lakho (34/13)	366	0	0	0	0	0	0
Garari (34/12)	211	0	0	0	0	0	0
Bhanwanee (34/10)	105	0	0	0	0	0	0
Tikkar (34/2) II	124	0	0	0	0	0	0
Chalsaee (34/7)	111	0	0	0	0	0	0
Chakrala (34/3)	136	19	10	9	0	0	0
Bahl Thakru (34/6)	196	39	22	17	0	0	0
Bidu (34/22)	576	129	70	59	0	0	0
Bhahal Arjun (34/5)	247	55	25	30	0	0	0
Dulchehra (34/4)	438	98	49	49	0	0	0
Chhakmoh (34/8)	2045	552	279	273	5	2	3
Sakroh (34/21)	408	89	43	46	0	0	0

Jarl (34/26) I	422	22	12	10	0	0	0
Chalali (34/32)	101	96	45	51	0	0	0
Samela (34/25) I	412	65	34	31	0	0	0
Sathwin (34/60)	893	308	140	168	0	0	0
Bara (34/23)	171	5	2	3	0	0	0
Baroh (34/20)	80	0	0	0	0	0	0
Khlawat (34/58)	350	101	53	48	0	0	0
Bodhan (34/18)	303	0	0	0	0	0	0
Kohla (34/17)	313	29	13	16	0	0	0
Pairawin (34/80)	405	232	108	124	0	0	0
Mathohal (34/72)	168	0	0	0	0	0	0
Chatpahl (34/70)	47	9	4	5	0	0	0
Behal (34/71)	180	32	15	17	0	0	0
Chalali (34/67)	40	0	0	0	0	0	0
Kot (34/75) I	346	104	51	53	0	0	0
Padian (34/73)	217	0	0	0	0	0	0
Kachhwin (34/94)	340	84	43	41	0	0	0
Kariala (34/99)	137	30	13	17	0	0	0
Dandwin (34/102)	229	39	20	19	0	0	0
Bharyan (34/93)	26	8	4	4	0	0	0
Sariana (34/91)	220	11	5	6	0	0	0
Janen (34/98)	335	186	84	102	0	0	0
Samthana Khurd (34/97)	381	139	67	72	0	0	0
Samthana Kalan (34/100)	1168	689	345	344	46	26	20
Pandthiani (34/89)	153	11	5	6	0	0	0
Dhanghota (34/82)	880	210	96	114	0	0	0
Kharoul (34/81)	75	50	24	26	0	0	0
Ghumarth (34/78)	329	100	52	48	0	0	0
Thana (34/77) I	134	20	12	8	0	0	0
Tang (34/76)	29	18	8	10	0	0	0
Dakhyora (34/56)	212	86	42	44	0	0	0
Tikkar (34/50) I	65	28	13	15	0	0	0
Maharal (34/62)	1518	666	340	326	3	1	2
Ghumarli (44/26)	261	142	65	77	0	0	0
Kailvin (44/68)	76	19	6	13	0	0	0
Thuthwani Rajputtan (44/58)	183	9	4	5	0	0	0
Sasal (44/67)	91	19	9	10	0	0	0
Badar (44/65)	350	317	156	161	0	0	0
Neri (42/57)	139	0	0	0	0	0	0
Behal Bagg (42/58)	125	55	27	28	0	0	0
Kot (42/63) II	233	37	16	21	0	0	0
Mehal Khas (42/60)	318	12	2	10	0	0	0
Pandtehri (42/65)	66	3	2	1	0	0	0
Buthwi Tangrian (42/69)	155	37	17	20	0	0	0
Jujani (42/66)	92	2	1	1	0	0	0
Tikkar Khurarian (42/72)	363	59	30	29	0	0	0
Balet (42/23)	241	61	32	29	0	0	0

Nandhan (42/32)	198	58	27	31	0	0	0
Balokhar (42/37)	495	152	75	77	0	0	0
Kotlu (42/39) II	257	140	74	66	0	0	0
Seu (42/38)	276	111	57	54	0	0	0
Ludhwin (42/3)	241	0	0	0	0	0	0
Patta (42/4)	665	218	89	129	0	0	0
Jharlog Upperla (42/91)	348	41	20	21	1	0	1
Ladror Khurd (42/93)	684	173	83	90	0	0	0
Ladror Kalan (42/84)	847	89	45	44	0	0	0
Dhasmai (42/95)	206	15	8	7	0	0	0
Lathwan (42/94)	295	57	25	32	0	0	0
Khuthri (42/96)	865	159	72	87	2	1	1
Thana (42/90) II	170	55	26	29	0	0	0
2. District Bilaspur, HP							
Mund Khar (245)	378	164	82	82	0	0	0
Dhaloh (250)	435	116	58	58	0	0	0
Taraun (274)	1329	313	146	167	146	71	75
Damehr (287)	456	127	52	75	0	0	0
Lahot (290)	586	224	113	111	0	0	0
Badsara (292)	164	10	5	5	0	0	0
Gugal (289)	163	8	3	5	0	0	0
Damehra (288)	178	52	27	25	0	0	0
Lehri Sarail (272)	2639	654	323	331	0	0	0
Hari Talyangar (273)	947	202	102	100	0	0	0
Chhajoli (271)	429	58	33	25	0	0	0
Patta Malotra (257)	200	0	0	0	0	0	0
Dangar (256)	1290	471	220	251	0	0	0
Jangal Drahla Da Phat (256/1)	Uninhabited Village						
Dakhiot Uperla (254)	182	37	22	15	0	0	0
Chokhna (253)	540	87	41	46	0	0	0
TOTAL (10KM)	**98831**	**23487**	**11567**	**11920**	**635**	**333**	**302**
Source-Census of India, 2011							

Sex Ratio

The 'Sex Ratio' of the study area is a numeric relationship between females and males of an area and bears paramount importance in the present day scenario where the un-ethnic pre-determination of sex and killing of female foetus during pregnancy is practiced by unscrupulous medical practitioners against the rule of the law of the country. It is evident that by contrast the practice of female foeticide is not prevalent in the study area.

The 'Sex Ratio' was observed as 1095females per 1000 males in the District. The same was recorded as 1101females for every 1000 males in the study area. The child (0-6 year age) sex ratio of the study area was observed as 894 female children per 1000 male children.

The village wise male-female population distribution for the study area is depicted and shown by graphical representation inTable.... & Figure.....

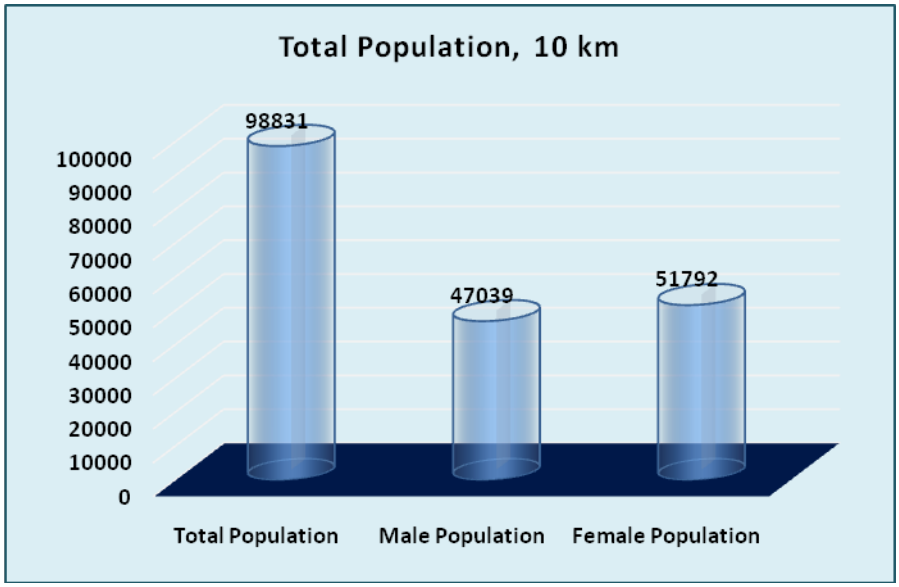


Figure 3.7 :Male-Female wise Population Distribution

Scheduled Caste & Scheduled Tribe Population

On the basis of the village wise SC & ST population distribution of the study area during 2011, the 'Scheduled Castes'population was observed as 23487 persons consisting of 11567 males and 11920females respectively in the study area which accounts as 23.8% to the total population (98831persons) of the study area. Scheduled Tribes ('ST') population was observed as 635 persons,accounts as 0.6% to the total population of the study zone consisting of 333 males and 302females in the 10 km study zone.It implies that the rest 75.6% of the total population belongs to the general category.

Male-female wise distribution of 'SC' & 'ST'population in the study area is graphically shown inFigure .....&.... as follows.

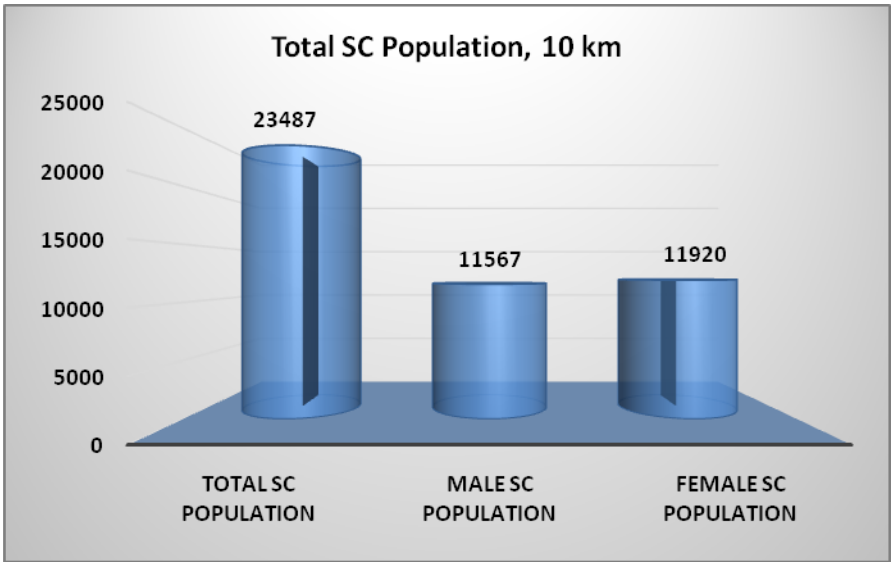


Figure 3.8 :Scheduled Caste Population in the Study Area

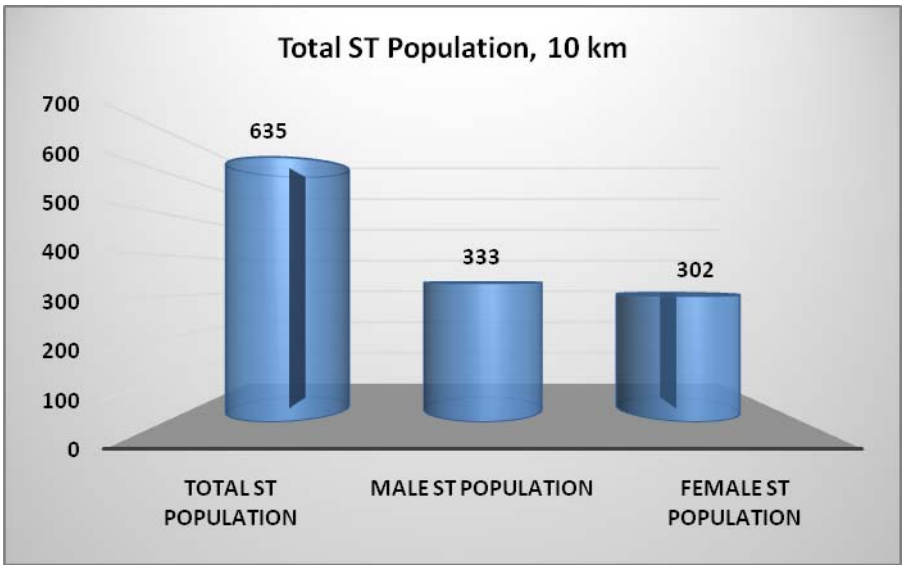


Figure 3.9 : Scheduled Tribes Population in the Study Area

Literacy Rate

Literacy level is quantifiable indicator to assess the development status of an area or region. Male-Female wise literates and illiterates population is represented inTable …..Total literates population was recorded as77131 persons (78.0%) in the study area.Table ……reveals that Male-Female wise literates are observed as 38940&38191 persons respectively, implies that the 'Literacy Rate' is recorded as 78.0% with male-female wise percentages being 39.4% &38.6% respectively.

The Male-Female wise graphical representation of literates & illiterates population in study area villages/town is shown inFigure …...

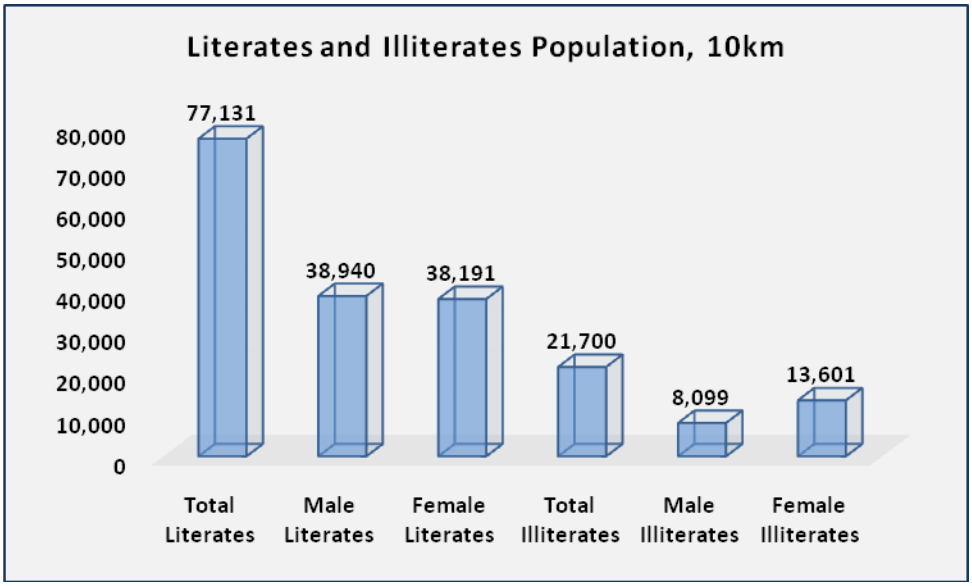


Figure 3.10:Male-Female wise Distribution of Literates & Illiterates

Table 3.19…:Male-Female wise Literates and Illiterates in 10km Study Zone

Name of Village/Town	Total Population	Literates			Illiterates		
		Persons	Males	Females	Persons	Males	Females
1. District Hamirpur, HP							
Chaloh (60/10)	76	56	21	35	20	6	14
Tang (17/41)	114	106	57	49	8	4	4
Paniala (25/2)	51	39	22	17	12	3	9
Palasi (24/20)	121	104	49	55	17	5	12
Bumbloo (23/17)	98	76	36	40	22	13	9
Palasi (28/15)	592	450	209	241	142	55	87
Phal Khas (28/8)	513	378	194	184	135	53	82
Karsai (28/11)	182	136	55	81	46	15	31
Loharkur (36/40)	140	107	43	64	33	16	17
Galor Khas (36/37)	777	622	312	310	155	57	98
Badaran (36/25)	214	157	75	82	57	17	40
Guriah (36/28)	182	132	71	61	50	18	32
Mer (36/41)	317	233	115	118	84	29	55
Ropri (36/23)	91	72	40	32	19	2	17
Pahlwin (36/32)	119	85	44	41	34	14	20
Phangsana (28/14)	143	105	51	54	38	11	27
Lajiana (28/16)	366	284	134	150	82	29	53
Bandos (36/27)	250	213	97	116	37	13	24
Baroh (36/26)	84	53	29	24	31	8	23
Dhiana (36/33)	92	77	40	37	15	5	10
Naraina (36/29)	29	25	13	12	4	3	1
Dodwin (36/36)	228	177	75	102	51	17	34
Bhaloo (36/30)	278	198	75	123	80	28	52
Busiar (36/31)	221	176	88	88	45	18	27
Lasmai (36/39)	222	179	102	77	43	14	29
Hareta (36/42)	1094	880	466	414	214	84	130
Tikkar (37/32) III	307	249	136	113	58	26	32
Galot Khurd (39/5)	162	124	57	67	38	16	22
Galot Kalan (39/6)	344	275	134	141	69	26	43
Nalwin (39/8)	271	204	95	109	67	30	37
Bakarti (37/4)	579	459	236	223	120	55	65

Chamsai (39/3)	143	104	52	52	39	16	23
Khihrwin (39/25)	388	292	149	143	96	41	55
Baloni (39/24)	374	278	140	138	96	35	61
Pharsi	117	88	45	43	29	10	19
Ser (39/18)	546	427	210	217	119	33	86
Rakhla (39/16)	66	48	23	25	18	5	13
Dhaned Khas (39/19)	391	297	131	166	94	35	59
Lingwin (39/17)	251	189	102	87	62	23	39
Khatwin (39/23)	431	345	178	167	86	29	57
Kotla (39/21)	172	126	62	64	46	14	32
Lalin (39/22)	313	219	94	125	94	34	60
Tuklehra (39/14)	94	64	25	39	30	14	16
Dhurghara (39/12)	37	27	13	14	10	2	8
Dehran (39/15)	70	51	20	31	19	2	17
Pharnoal (39/2)	766	562	280	282	204	84	120
Dalyahu (39/13)	208	164	93	71	44	19	25
Gharan (39/7)	478	401	191	210	77	38	39
Gajoh (46/29)	194	151	80	71	43	14	29
Jasaur (46/14)	65	44	25	19	21	7	14
Lahar (46/30)	922	711	381	330	211	79	132
Dhalot (45/26)	207	183	94	89	24	12	12
Gasota (45/7)	541	453	246	207	88	27	61
Bharthian (45/11)	152	123	66	57	29	10	19
Sai Brahmana (45/21)	107	85	49	36	22	9	13
Gulela (45/8)	67	57	27	30	10	4	6
Daryota (45/23)	460	378	204	174	82	30	52
Halana (45/25)	441	374	190	184	67	31	36
Thana (42/51) II	172	131	72	59	41	23	18
Tikkar (42/46)	502	364	197	167	138	59	79
Kadhriana (42/54)	513	417	208	209	96	31	65
Didhwin (42/49)	272	223	108	115	49	26	23
Chakrowa (42/25)	51	41	19	22	10	5	5
Jhinkari (42/13)	215	158	78	80	57	27	30
Baghetu (42/11)	606	495	273	222	111	42	69
Chauntara (42/14)	380	304	149	155	76	28	48
Mair (42/19)	644	481	233	248	163	68	95
Pandhwin (42/7)	479	365	165	200	114	36	78
Jarl (42/16) II	161	122	65	57	39	15	24
Chalyara (42/17)	95	68	37	31	27	11	16
Goata (42/18)	335	265	139	126	70	29	41
Bhagot (42/5)	183	143	69	74	40	18	22
Phaphan (42/6)	202	156	77	79	46	13	33
Tikkar (42/12) III	77	69	36	33	8	3	5
Palasi (42/2)	104	85	49	36	19	8	11
Daraundla Uperla (42/8)	173	135	70	65	38	10	28
Bhola (42/1)	130	104	57	47	26	7	19
Kothi (42/29)	209	152	78	74	57	22	35
Nahlwin (42/44)	668	512	253	259	156	53	103
Lundri (42/31)	414	331	164	167	83	23	60
Bindli (42/81)	13	10	6	4	3	0	3
Badar (42/42)	282	231	117	114	51	14	37
Sahnwin (42/34)	209	176	84	92	33	8	25
Kakriana (42/35)	315	270	130	140	45	18	27
Chauki Kankari (42/52)	1442	1168	600	568	274	108	166
Bumana (42/33)	315	262	135	127	53	19	34
Samrala (42/48)	436	344	162	182	92	29	63

Dhanrasi (42/47)	264	208	102	106	56	25	31
Gahlian (45/24)	511	394	169	225	117	38	79
Balu (42/45)	356	282	142	140	74	31	43
Rumera (45/38)	51	41	21	20	10	3	7
Bani (47/1)	201	167	85	82	34	15	19
Paddar (30/2)	28	24	8	16	4	1	3
Dulera (30/7)	267	212	107	105	55	21	34
Dandru (30/14)	229	186	94	92	43	17	26
Samela (30/11)	183	146	76	70	37	15	22
Seheli (31/17)	246	178	93	85	68	23	45
Sadoh (31/12)	36	24	9	15	12	4	8
Ragar Padhian (31/20)	174	133	70	63	41	18	23
Kakar (31/13)	29	22	10	12	7	3	4
Ropa Brahmana (31/7)	68	57	35	22	11	6	5
Dhar (31/24)	Uninhabited Village						
Baritar (31/18)	240	196	92	104	44	16	28
Samlehara (31/21)	303	233	109	124	70	27	43
Telkar (31/4)	214	167	85	82	47	14	33
Romehera (31/8)	254	194	87	107	60	16	44
Ropa Rajputtan (31/19)	269	195	86	109	74	30	44
Sasan (31/10)	40	35	17	18	5	3	2
Jabhal Kheri (13/5)	239	198	107	91	41	16	25
Barsar (13/1)	3390	2694	1463	1231	696	299	397
Satrukha (13/4)	49	36	18	18	13	5	8
Pathliar (13/3)	405	306	166	140	99	41	58
Bhalt (33/24)	589	465	238	227	124	46	78
Chhaproh (12/9)	420	323	168	155	97	43	54
Nain (12/8)	402	316	163	153	86	29	57
Rapar (33/39)	230	196	108	88	34	11	23
Jajal (33/15)	302	226	121	105	76	28	48
Ghangot Kalan (33/36)	754	634	326	308	120	41	79
Ghangot Khurd (33/35)	140	107	53	54	33	12	21
Dhakyana (33/3)	53	39	19	20	14	7	7
Gutiana (33/22)	188	139	67	72	49	19	30
Badhu (33/14)	95	78	41	37	17	6	11
Gata Panga (33/25)	97	68	37	31	29	11	18
Nara (33/38)	522	392	191	201	130	54	76
Narkar (33/23)	164	126	60	66	38	10	28
Banan (33/2)	57	38	21	17	19	5	14
Mohlwin (33/12)	70	56	28	28	14	8	6
Kotlu (33/18)	401	306	146	160	95	30	65
Garli Khas (33/21)	457	345	167	178	112	37	75
Bahna (33/7)	418	336	170	166	82	27	55
Kheri (33/20)	255	204	93	111	51	19	32
Bagg (33/1)	8	7	3	4	1	1	0
Sunwin Rajputtan (33/30)	217	160	85	75	57	22	35
Pelehra (33/10)	220	169	81	88	51	25	26
Kohdera (33/5)	128	103	56	47	25	8	17
Taradol (32/8)	35	28	15	13	7	4	3
Dabriana (32/17)	299	259	114	145	40	15	25
Langheree (32/28)	41	28	14	14	13	6	7
Baliya Kalan (32/33)	191	142	64	78	49	21	28
Mattkar (33/33)	247	200	105	95	47	22	25
Dhuma (33/29)	78	61	28	33	17	4	13

Khajian (33/34)	638	511	266	245	127	45	82
Guria Khurd (33/32)	35	26	16	10	9	4	5
Guria Kalan (33/37)	366	279	151	128	87	30	57
Lohane (32/20)	68	56	32	24	12	4	8
Kaswar (32/31)	465	366	177	189	99	31	68
Birswin (32/24)	265	215	103	112	50	19	31
Ghamarwin (32/25)	520	405	212	193	115	41	74
Barni (32/23)	251	201	95	106	50	15	35
Rahil (32/19)	38	30	15	15	8	2	6
Baggi (32/18)	195	168	82	86	27	7	20
Kowa (32/22)	184	155	83	72	29	9	20
Kuthera (32/6)	36	32	18	14	4	1	3
Karwen (32/5)	179	149	81	68	30	6	24
Bani Khas (32/2)	529	436	224	212	93	30	63
Mangroli (32/7)	116	102	52	50	14	7	7
Samoh (32/11)	370	301	154	147	69	25	44
Tukhani (32/3)	297	238	110	128	59	21	38
Makteri (32/29)	162	130	61	69	32	8	24
Nanawan (35/20)	869	698	372	326	171	58	113
Lalhani (35/1)	96	78	44	34	18	5	13
Raein (35/18)	113	81	45	36	32	12	20
Daghol (35/10)	43	36	19	17	7	3	4
Bear Kalan (35/16)	377	290	138	152	87	32	55
Bear Khurd (35/15)	159	106	57	49	53	24	29
Tikkar Rajputtan (32/16)	495	403	225	178	92	31	61
Tikkar Brahmana (32/15)	400	300	149	151	100	30	70
Kothi (35/13)	207	155	75	80	52	18	34
Bakroh (35/12)	91	63	30	33	28	14	14
Har (35/14)	413	310	168	142	103	40	63
Akrana Brahmana (35/11)	40	30	14	16	10	3	7
Akrana Rajputtan (35/6)	118	96	53	43	22	11	11
Goeta Rajputtan (35/9)	87	66	32	34	21	8	13
Goeta Brahmana (35/7)	66	46	24	22	20	9	11
Ghamarli (35/3)	140	116	55	61	24	7	17
Awah Buhla (40/11)	378	285	145	140	93	41	52
Awah Upperla (40/17)	233	176	87	89	57	26	31
Kudhar (40/4)	286	226	113	113	60	23	37
Sunwin (40/1)	207	159	78	81	48	24	24
Kuthulag (40/6)	83	64	27	37	19	8	11
Dhanota (40/7)	57	42	19	23	15	6	9
Musan (40/5)	152	111	53	58	41	17	24
Makar (40/13)	513	399	205	194	114	47	67
Khangalta (40/18)	369	305	156	149	64	25	39
Panjarar (40/16)	137	107	56	51	30	14	16
Saloni (40/2)	298	223	112	111	75	31	44
Galoh (40/12)	185	136	67	69	49	19	30
Dhakoa (40/9)	176	138	68	70	38	15	23
Badhan (40/47)	91	72	42	30	19	5	14
Bahal Bhatan (40/46)	161	128	73	55	33	13	20
Bahal (40/15)	13	7	4	3	6	2	4
Chhek (40/32)	214	173	94	79	41	15	26
Pahlu (40/44)	930	712	378	334	218	80	138
Porla (40/45)	95	69	27	42	26	15	11
Kathla (40/38)	79	59	32	27	20	11	9
Baeri (40/28)	540	385	200	185	155	67	88
Kasiri (40/20)	147	102	46	56	45	23	22

Jharnot (40/34)	154	122	60	62	32	13	19
Jindwin Brahmana (40/41)	42	33	15	18	9	1	8
Ujhan (40/43)	324	267	138	129	57	21	36
Ghalon (40/21)	201	161	88	73	40	15	25
Chuan (40/42)	199	160	75	85	39	15	24
Morsu Sultani (40/27)	89	74	37	37	15	1	14
Morsu Garlan (40/22)	147	117	52	65	30	8	22
Thamani Upperli (41/21)	147	121	67	54	26	6	20
Sour (41/17)	408	328	168	160	80	37	43
Pundar (41/13)	358	271	138	133	87	38	49
Dain (41/26)	728	566	284	282	162	61	101
Mansui Upperli (41/14)	157	120	56	64	37	15	22
Mansui Jhikli (41/10)	185	151	86	65	34	11	23
Chhorab (41/12)	408	288	154	134	120	50	70
Lohder Khas (41/18)	153	118	55	63	35	16	19
Suphan (41/9)	69	63	30	33	6	3	3
Oled Sidhu (41/20)	98	77	26	51	21	9	12
Amboha Jhikla (41/6)	84	67	29	38	17	8	9
Dhamani (41/22) I	227	185	89	96	42	19	23
Choa (41/24)	156	118	48	70	38	13	25
Bahal Rattun (41/11)	18	14	5	9	4	1	3
Jandroh (41/25)	96	70	33	37	26	7	19
Bhota (NP)	1453	1196	640	556	257	98	159
Ghulera (34/101)	378	307	160	147	71	28	43
Changar (34/105)	402	292	127	165	110	30	80
Sunahni (34/108)	53	42	22	20	11	3	8
Godee (34/112)	409	288	135	153	121	47	74
Dagwar (34/107)	598	475	249	226	123	46	77
Suhari (34/109)	491	370	186	184	121	52	69
Tangar (34/110)	189	151	88	63	38	11	27
Lahri Ghumara (34/84)	6	5	2	3	1	0	1
Bijhri (34/16)	1855	1447	720	727	408	157	251
Lakho (34/13)	366	277	130	147	89	30	59
Garari (34/12)	211	167	95	72	44	16	28
Bhanwanee (34/10)	105	82	41	41	23	8	15
Tikkar (34/2) II	124	93	40	53	31	9	22
Chalsaee (34/7)	111	88	44	44	23	3	20
Chakrala (34/3)	136	107	61	46	29	10	19
Bahl Thakru (34/6)	196	158	80	78	38	12	26
Bidu (34/22)	576	474	263	211	102	29	73
Bhahal Arjun (34/5)	247	192	95	97	55	23	32
Dulchehra (34/4)	438	342	178	164	96	34	62
Chhakmoh (34/8)	2045	1650	861	789	395	150	245
Sakroh (34/21)	408	306	151	155	102	31	71
Jarl (34/26) I	422	316	155	161	106	41	65
Chalali (34/32)	101	70	37	33	31	10	21
Samela (34/25) I	412	322	161	161	90	36	54
Sathwin (34/60)	893	702	329	373	191	58	133
Bara (34/23)	171	125	56	69	46	13	33
Baroh (34/20)	80	62	34	28	18	2	16
Khlawat (34/58)	350	264	135	129	86	33	53
Bodhan (34/18)	303	246	123	123	57	18	39
Kohla (34/17)	313	263	121	142	50	19	31
Pairawin (34/80)	405	322	146	176	83	38	45
Mathohal (34/72)	168	131	63	68	37	14	23
Chatpahl (34/70)	47	37	19	18	10	3	7

Behal (34/71)	180	138	70	68	42	10	32
Chalali (34/67)	40	33	18	15	7	5	2
Kot (34/75) I	346	275	141	134	71	20	51
Padian (34/73)	217	173	95	78	44	11	33
Kachhwin (34/94)	340	260	125	135	80	25	55
Kariala (34/99)	137	104	50	54	33	10	23
Dandwin (34/102)	229	182	87	95	47	19	28
Bharyan (34/93)	26	18	6	12	8	4	4
Sariana (34/91)	220	167	70	97	53	15	38
Janen (34/98)	335	238	112	126	97	46	51
Samthana Khurd (34/97)	381	283	143	140	98	43	55
Samthana Kalan (34/100)	1168	913	463	450	255	95	160
Pandthiani (34/89)	153	106	53	53	47	21	26
Dhanghota (34/82)	880	644	320	324	236	94	142
Kharoul (34/81)	75	62	30	32	13	6	7
Ghumarth (34/78)	329	256	131	125	73	26	47
Thana (34/77) I	134	111	56	55	23	12	11
Tang (34/76)	29	24	13	11	5	0	5
Dakhyora (34/56)	212	160	81	79	52	11	41
Tikkar (34/50) I	65	45	23	22	20	6	14
Maharal (34/62)	1518	1138	596	542	380	159	221
Ghumarli (44/26)	261	210	111	99	51	20	31
Kailvin (44/68)	76	65	30	35	11	3	8
Thuthwani Rajputtan (44/58)	183	151	81	70	32	8	24
Sasal (44/67)	91	74	39	35	17	6	11
Badar (44/65)	350	275	146	129	75	21	54
Neri (42/57)	139	92	41	51	47	19	28
Behal Bagg (42/58)	125	91	44	47	34	12	22
Kot (42/63) II	233	164	76	88	69	20	49
Mehal Khas (42/60)	318	246	128	118	72	19	53
Pandtehri (42/65)	66	38	20	18	28	9	19
Buthwi Tangrian (42/69)	155	125	63	62	30	7	23
Jujani (42/66)	92	70	30	40	22	7	15
Tikkar Khurarian (42/72)	363	263	150	113	100	51	49
Balet (42/23)	241	194	113	81	47	14	33
Nandhan (42/32)	198	146	69	77	52	21	31
Balokhar (42/37)	495	388	200	188	107	37	70
Kotlu (42/39) II	257	201	104	97	56	18	38
Seu (42/38)	276	221	106	115	55	20	35
Ludhwin (42/3)	241	194	98	96	47	13	34
Patta (42/4)	665	518	238	280	147	47	100
Jharlog Upperla (42/91)	348	269	130	139	79	28	51
Ladror Khurd (42/93)	684	514	251	263	170	60	110
Ladror Kalan (42/84)	847	657	325	332	190	64	126
Dhasmai (42/95)	206	163	82	81	43	18	25
Lathwan (42/94)	295	247	119	128	48	17	31
Khuthri (42/96)	865	681	323	358	184	64	120
Thana (42/90) II	170	134	62	72	36	17	19
2. District Bilaspur, HP							
Mund Khar (245)	378	308	159	149	70	27	43
Dhaloh (250)	435	342	172	170	93	35	58
Taraun (274)	1329	1049	519	530	280	98	182
Damehr (287)	456	337	161	176	119	43	76
Lahot (290)	586	450	244	206	136	51	85
Badsara (292)	164	128	65	63	36	14	22
Gugal (289)	163	132	69	63	31	12	19

Damehra (288)	178	135	72	63	43	20	23
Lehri Sarail (272)	2639	2026	1040	986	613	231	382
Hari Talyangar (273)	947	744	393	351	203	75	128
Chhajoli (271)	429	329	171	158	100	36	64
Patta Malotra (257)	200	158	77	81	42	11	31
Dangar (256)	1290	973	470	503	317	122	195
Jangal Drahla Da Phat (256/1)	Uninhabited Village						
Dakhiot Uperla (254)	182	145	76	69	37	18	19
Chokhna (253)	540	409	192	217	131	53	78
TOTAL (10KM)	**98831**	**77131**	**38940**	**38191**	**21700**	**8099**	**13601**
Source-Census of India, 2011							

Economic Profile of the District

As per the Census records 2011, the economic resources are an important means of subsistence for the working people of the district. The details about economic resources of important sectors are given below in brief.

The economy of the district basically depends on agriculture hence majority of the workers are engaged in agricultural activities. Agriculture is the main Occupation of the people of Himachal Pradesh. It provides direct employment to 70% of the total workers of the state. It also is a premier source of state income (GSDP). About 17% of GSDP comes from agriculture and its allied sectors. Similarly agriculture is also the main occupation of the people of Hamirpur &Bilaspur district.

Workers Scenario:

Occupational Patternwas studied to assess the skills of people in the study area. Occupational pattern helps in identifying major economic activities of the area. In the study area the Main and Marginal Workers population was observed as 30836(31.2%) and 21055(21.3%) respectively of the total population (98831) while the remaining 46940(47.5%) persons were recorded as non-workers. Thus it implies that the semi-skilled and non-skilled work-force required in study area for the project is available in aplenty.

The village-wise main and marginal workers population with further classification as casual, agricultural, households and other workers is shown as follows inTable …….

Table 3.20:Village-wise Occupational Pattern in the Study Area (10km Study Zone)

Name of the Village/Town	MAIN WORK_P	MAIN_ CL_P	MAIN_ AL_P	MAIN_ HH_P	MAIN_ OT_P	MARG WORK_P	MARG_ CL_P	MARG_ AL_P	MARG_ HH_P	MARG_O T_P
1. District Hamirpur, HP										
Chaloh (60/10)	5	0	1	0	4	35	34	0	0	1
Tang (17/41)	68	44	0	0	24	30	29	0	0	1
Paniala (25/2)	12	0	0	0	12	32	32	0	0	0
Palasi (24/20)	29	11	0	0	18	52	50	0	0	2
Bumbloo (23/17)	52	41	0	0	11	18	16	1	0	1
Palasi (28/15)	75	3	0	0	72	335	293	3	0	39
Phal Khas (28/8)	66	5	0	0	61	317	277	2	2	36
Karsai (28/11)	107	105	0	0	2	0	0	0	0	0
Loharkur (36/40)	80	62	1	0	17	4	2	2	0	0
Galor Khas (36/37)	115	83	25	1	6	350	70	228	7	45
Badaran (36/25)	7	1	0	1	5	87	66	3	2	16
Guriah (36/28)	22	14	3	1	4	81	17	52	3	9
Mer (36/41)	68	2	0	0	66	120	120	0	0	0
Ropri (36/23)	16	1	0	0	15	33	31	0	0	2
Pahlwin (36/32)	25	1	0	0	24	46	46	0	0	0
Phangsana (28/14)	89	80	0	0	9	4	3	0	0	1
Lajiana (28/16)	21	2	0	0	19	194	188	2	0	4
Bandos (36/27)	145	144	0	0	1	40	36	0	0	4
Baroh (36/26)	43	42	0	0	1	0	0	0	0	0
Dhiana (36/33)	36	19	0	0	17	3	2	0	0	1
Naraina (36/29)	14	5	0	0	9	2	2	0	0	0
Dodwin (36/36)	16	0	0	0	16	140	119	2	0	19
Bhaloo (36/30)	19	0	0	3	16	136	114	0	2	20
Busiar (36/31)	129	108	0	0	21	12	7	0	1	4
Lasmai (36/39)	154	122	0	0	32	3	3	0	0	0

Hareta (36/42)	192	4	4	6	178	340	319	4	0	17
Tikkar (37/32) III	82	56	1	1	24	81	80	0	0	1
Galot Khurd (39/5)	85	64	3	3	15	62	58	1	0	3
Galot Kalan (39/6)	138	108	2	3	25	147	132	10	0	5
Nalwin (39/8)	109	67	0	0	42	85	82	0	0	3
Bakarti (37/4)	299	136	0	0	163	0	0	0	0	0
Chamsai (39/3)	92	77	0	0	15	34	34	0	0	0
Khihrwin (39/25)	229	174	1	0	54	86	83	0	0	3
Baloni (39/24)	218	143	0	1	74	68	64	0	0	4
Pharsi	68	51	0	0	17	41	41	0	0	0
Ser (39/18)	314	200	1	0	113	82	82	0	0	0
Rakhla (39/16)	37	28	0	0	9	19	19	0	0	0
Dhaned Khas (39/19)	234	194	0	0	40	10	4	0	0	6
Lingwin (39/17)	161	103	1	0	57	49	47	0	0	2
Khatwin (39/23)	25	25	0	0	0	372	290	0	2	80
Kotla (39/21)	96	73	0	0	23	47	46	0	0	1
Lalin (39/22)	172	140	1	0	31	94	94	0	0	0
Tuklehra (39/14)	51	42	0	0	9	17	17	0	0	0
Dhurghara (39/12)	26	21	0	0	5	4	4	0	0	0
Dehran (39/15)	34	30	1	0	3	17	17	0	0	0
Pharnoal (39/2)	444	289	2	2	151	158	153	0	0	5
Dalyahu (39/13)	45	45	0	0	0	146	90	1	0	55
Gharan (39/7)	251	152	17	0	82	67	21	13	2	31
Gajoh (46/29)	171	113	0	0	58	0	0	0	0	0
Jasaur (46/14)	4	1	0	0	3	31	28	0	0	3
Lahar (46/30)	507	318	0	3	186	3	3	0	0	0
Dhalot (45/26)	41	20	0	0	21	14	8	0	1	5
Gasota (45/7)	114	44	6	5	59	352	288	6	5	53
Bharthian (45/11)	46	13	0	0	33	67	65	0	0	2

Sai Brahmana (45/21)	46	21	0	0	25	40	31	0	0	9
Gulela (45/8)	39	27	0	1	11	0	0	0	0	0
Daryota (45/23)	278	207	1	0	70	0	0	0	0	0
Halana (45/25)	255	239	0	0	16	57	57	0	0	0
Thana (42/51) II	48	40	0	0	8	62	62	0	0	0
Tikkar (42/46)	283	100	1	5	177	2	2	0	0	0
Kadhriana (42/54)	276	143	42	2	89	15	13	2	0	0
Didhwin (42/49)	173	101	0	0	72	0	0	0	0	0
Chakrowa (42/25)	11	0	1	0	10	20	20	0	0	0
Jhinkari (42/13)	57	41	0	0	16	60	51	0	1	8
Baghetu (42/11)	420	334	64	3	19	28	8	14	3	3
Chauntara (42/14)	88	45	0	2	41	102	78	0	4	20
Mair (42/19)	300	184	1	2	113	0	0	0	0	0
Pandhwin (42/7)	47	1	0	0	46	214	175	0	0	39
Jarl (42/16) II	27	5	1	0	21	62	60	0	0	2
Chalyara (42/17)	23	6	0	0	17	35	30	0	0	5
Goata (42/18)	104	70	0	0	34	127	103	7	0	17
Bhagot (42/5)	104	92	0	1	11	4	1	0	0	3
Phaphan (42/6)	116	103	1	0	12	8	6	0	0	2
Tikkar (42/12) III	32	24	0	0	8	38	30	0	0	8
Palasi (42/2)	80	52	0	19	9	20	14	0	0	6
Daraundla Uperla (42/8)	153	150	0	3	0	8	7	0	0	1
Bhola (42/1)	110	105	0	5	0	5	4	0	0	1
Kothi (42/29)	37	2	0	1	34	12	2	1	0	9
Nahlwin (42/44)	141	2	2	12	125	6	0	0	0	6
Lundri (42/31)	216	181	1	1	33	8	3	0	0	5
Bindli (42/81)	10	6	0	0	4	2	2	0	0	0
Badar (42/42)	124	88	0	1	35	59	55	1	0	3

Sahnwin (42/34)	45	3	0	0	42	110	106	1	0	3
Kakriana (42/35)	87	70	0	0	17	123	110	0	5	8
Chauki Kankari (42/52)	500	279	4	18	199	531	482	9	3	37
Bumana (42/33)	73	0	0	0	73	153	150	0	2	1
Samrala (42/48)	225	151	24	0	50	63	63	0	0	0
Dhanrasi (42/47)	25	12	4	0	9	221	218	0	0	3
Gahlian (45/24)	237	228	5	1	3	64	15	0	0	49
Balu (42/45)	38	31	0	0	7	282	280	1	0	1
Rumera (45/38)	26	18	0	0	8	16	15	0	0	1
Bani (47/1)	67	48	0	0	19	55	52	2	0	1
Paddar (30/2)	1	0	0	0	1	14	14	0	0	0
Dulera (30/7)	46	14	0	0	32	154	152	0	1	1
Dandru (30/14)	37	0	0	0	37	95	95	0	0	0
Samela (30/11)	39	0	0	3	36	65	65	0	0	0
Seheli (31/17)	21	0	0	0	21	138	135	0	0	3
Sadoh (31/12)	4	0	0	0	4	16	16	0	0	0
Ragar Padhian (31/20)	39	3	0	0	36	47	46	0	0	1
Kakar (31/13)	8	3	0	0	5	1	0	0	0	1
Ropa Brahmana (31/7)	24	5	0	0	19	7	3	0	0	4
Dhar (31/24)	Uninhabited Village									
Baritar (31/18)	88	42	0	0	46	3	1	0	0	2
Samlehara (31/21)	91	51	0	3	37	3	2	0	0	1
Telkar (31/4)	57	29	0	0	28	6	3	0	0	3
Romehera (31/8)	52	1	0	1	50	91	91	0	0	0
Ropa Rajputtan (31/19)	89	73	1	0	15	27	25	0	0	2
Sasan (31/10)	9	0	0	0	9	7	2	4	0	1

Jabhal Kheri (13/5)	36	1	0	0	35	122	121	0	0	1
Barsar (13/1)	985	11	2	12	960	514	442	2	1	69
Satrukha (13/4)	5	0	0	0	5	29	26	3	0	0
Pathliar (13/3)	72	2	0	0	70	209	209	0	0	0
Bhalt (33/24)	280	10	220	8	42	177	149	14	2	12
Chhaproh (12/9)	66	1	0	1	64	184	166	0	0	18
Nain (12/8)	68	0	11	0	57	207	204	0	0	3
Rapar (33/39)	55	2	26	0	27	111	110	1	0	0
Jajal (33/15)	78	4	52	0	22	96	10	57	0	29
Ghangot Kalan (33/36)	495	441	1	5	48	157	0	0	0	157
Ghangot Khurd (33/35)	27	19	0	0	8	52	52	0	0	0
Dhakyana (33/3)	7	1	0	0	6	21	21	0	0	0
Gutiana (33/22)	29	12	0	0	17	81	79	0	0	2
Badhu (33/14)	13	3	0	0	10	44	44	0	0	0
Gata Panga (33/25)	5	1	0	0	4	37	37	0	0	0
Nara (33/38)	305	267	14	1	23	3	3	0	0	0
Narkar (33/23)	79	66	0	0	13	1	1	0	0	0
Banan (33/2)	28	24	0	0	4	0	0	0	0	0
Mohlwin (33/12)	33	21	0	0	12	1	0	0	0	1
Kotlu (33/18)	90	39	3	3	45	123	123	0	0	0
Garli Khas (33/21)	51	3	0	0	48	188	188	0	0	0
Bahna (33/7)	162	83	0	0	79	3	0	0	0	3
Kheri (33/20)	136	105	1	0	30	6	5	0	0	1
Bagg (33/1)	3	3	0	0	0	1	0	0	0	1
Sunwin Rajputtan (33/30)	69	64	0	0	5	57	0	0	0	57
Pelehra (33/10)	61	57	2	0	2	48	0	1	0	47
Kohdera (33/5)	43	20	0	0	23	0	0	0	0	0

Taradol (32/8)	11	7	0	0	4	0	0	0	0	0
Dabriana (32/17)	48	14	20	1	13	1	0	1	0	0
Langheree (32/28)	11	8	0	0	3	1	0	0	0	1
Baliya Kalan (32/33)	56	34	0	0	22	0	0	0	0	0
Mattkar (33/33)	132	106	0	0	26	0	0	0	0	0
Dhuma (33/29)	40	29	0	0	11	0	0	0	0	0
Khajian (33/34)	117	42	0	2	73	103	101	0	0	2
Guria Khurd (33/32)	7	1	1	0	5	21	2	17	0	2
Guria Kalan (33/37)	50	0	1	1	48	204	179	25	0	0
Lohane (32/20)	14	0	2	0	12	41	25	16	0	0
Kaswar (32/31)	207	141	0	0	66	103	97	2	1	3
Birswin (32/24)	151	36	57	12	46	1	0	0	0	1
Ghamarwin (32/25)	275	153	6	0	116	14	2	9	0	3
Barni (32/23)	113	60	0	0	53	5	2	2	0	1
Rahil (32/19)	11	4	0	0	7	12	5	6	0	1
Baggi (32/18)	31	0	0	1	30	101	101	0	0	0
Kowa (32/22)	38	0	0	4	34	92	92	0	0	0
Kuthera (32/6)	5	0	0	0	5	21	21	0	0	0
Karwen (32/5)	33	3	0	0	30	79	79	0	0	0
Bani Khas (32/2)	153	90	0	2	61	3	3	0	0	0
Mangroli (32/7)	26	6	0	0	20	15	0	13	2	0
Samoh (32/11)	168	101	0	9	58	10	1	1	3	5
Tukhani (32/3)	126	104	0	0	22	6	4	0	1	1
Makteri (32/29)	64	38	0	0	26	48	47	1	0	0
Nanawan (35/20)	224	19	0	0	205	307	305	0	0	2
Lalhani (35/1)	20	0	0	0	20	38	38	0	0	0
Raein (35/18)	60	44	0	1	15	0	0	0	0	0
Daghol (35/10)	24	14	3	0	7	0	0	0	0	0
Bear Kalan (35/16)	182	134	3	1	44	4	1	2	0	1

Bear Khurd (35/15)	42	7	0	0	35	75	62	2	1	10
Tikkar Rajputtan (32/16)	110	0	0	0	110	190	190	0	0	0
Tikkar Brahmana (32/15)	79	18	0	1	60	144	143	0	0	1
Kothi (35/13)	39	5	0	0	34	94	92	0	0	2
Bakroh (35/12)	14	1	0	0	13	15	10	0	0	5
Har (35/14)	78	0	1	0	77	133	121	1	0	11
Akrana Brahmana (35/11)	9	4	0	0	5	24	22	0	0	2
Akrana Rajputtan (35/6)	21	0	0	0	21	35	33	0	0	2
Goeta Rajputtan (35/9)	47	28	0	1	18	1	1	0	0	0
Goeta Brahmana (35/7)	39	27	0	0	12	1	1	0	0	0
Ghamarli (35/3)	84	49	0	0	35	0	0	0	0	0
Awah Buhla (40/11)	17	6	1	2	8	155	91	56	3	5
Awah Upperla (40/17)	8	0	0	0	8	111	69	10	14	18
Kudhar (40/4)	59	0	1	1	57	10	0	5	2	3
Sunwin (40/1)	47	0	0	0	47	3	0	1	0	2
Kuthulag (40/6)	13	0	1	0	12	0	0	0	0	0
Dhanota (40/7)	11	0	0	0	11	2	0	0	0	2
Musan (40/5)	37	1	0	0	36	1	0	0	0	1
Makar (40/13)	17	5	2	1	9	5	1	0	1	3
Khangalta (40/18)	210	112	0	2	96	1	0	0	0	1
Panjarar (40/16)	90	72	0	0	18	1	0	0	0	1
Saloni (40/2)	158	119	0	0	39	27	0	0	0	27
Galoh (40/12)	106	96	0	1	9	1	1	0	0	0

Dhakoa (40/9)	100	81	0	0	19	8	5	0	1	2
Badhan (40/47)	34	21	0	0	13	11	3	0	0	8
Bahal Bhatan (40/46)	60	34	0	0	26	18	0	0	0	18
Bahal (40/15)	5	4	0	0	1	3	0	0	0	3
Chhek (40/32)	86	43	0	0	43	15	0	0	0	15
Pahlu (40/44)	522	411	0	0	111	17	4	0	0	13
Porla (40/45)	52	45	1	0	6	0	0	0	0	0
Kathla (40/38)	13	4	0	0	9	32	30	0	0	2
Baeri (40/28)	65	7	0	0	58	248	196	2	0	50
Kasiri (40/20)	89	73	0	0	16	1	1	0	0	0
Jharnot (40/34)	86	61	0	0	25	1	1	0	0	0
Jindwin Brahmana (40/41)	23	14	0	1	8	0	0	0	0	0
Ujhan (40/43)	84	4	0	0	80	105	105	0	0	0
Ghalon (40/21)	151	86	3	0	62	18	17	1	0	0
Chuan (40/42)	154	102	2	0	50	12	12	0	0	0
Morsu Sultani (40/27)	9	0	0	0	9	56	55	0	0	1
Morsu Garlan (40/22)	12	2	0	3	7	89	86	1	2	0
Thamani Upperli (41/21)	32	0	1	1	30	41	24	1	5	11
Sour (41/17)	88	0	0	0	88	110	87	4	0	19
Pundar (41/13)	62	13	2	0	47	80	57	15	2	6
Dain (41/26)	148	15	0	5	128	240	212	0	0	28
Mansui Upperli (41/14)	93	88	0	0	5	0	0	0	0	0
Mansui Jhikli (41/10)	27	0	0	0	27	88	78	0	4	6
Chhorab (41/12)	53	0	0	0	53	178	95	0	61	22
Lohder Khas (41/18)	87	57	10	1	19	0	0	0	0	0
Suphan (41/9)	44	43	0	0	1	0	0	0	0	0

Oled Sidhu (41/20)	63	48	1	0	14	0	0	0	0	0
Amboha Jhikla (41/6)	52	34	0	0	18	0	0	0	0	0
Dhamani (41/22) I	129	118	0	0	11	0	0	0	0	0
Choa (41/24)	90	78	0	1	11	0	0	0	0	0
Bahal Rattun (41/11)	10	9	0	0	1	0	0	0	0	0
Jandroh (41/25)	47	28	0	0	19	3	3	0	0	0
Bhota (NP)	428	28	2	11	387	38	3	1	3	31
Ghulera (34/101)	46	2	0	2	42	160	159	0	0	1
Changar (34/105)	56	33	0	0	23	16	0	0	0	16
Sunahni (34/108)	9	0	0	0	9	0	0	0	0	0
Godee (34/112)	35	17	0	0	18	38	0	0	0	38
Dagwar (34/107)	29	1	0	0	28	339	262	2	0	75
Suhari (34/109)	58	4	0	1	53	104	102	0	0	2
Tangar (34/110)	5	1	0	0	4	108	74	0	0	34
Lahri Ghumara (34/84)	0	0	0	0	0	2	1	0	0	1
Bijhri (34/16)	430	166	3	13	248	69	4	0	5	60
Lakho (34/13)	47	2	0	0	45	208	199	1	0	8
Garari (34/12)	51	2	0	0	49	5	1	0	0	4
Bhanwanee (34/10)	13	1	0	2	10	5	1	0	0	4
Tikkar (34/2) II	26	23	0	0	3	2	2	0	0	0
Chalsaee (34/7)	47	33	0	0	14	26	23	0	0	3
Chakrala (34/3)	38	19	3	0	16	67	66	1	0	0
Bahl Thakru (34/6)	38	3	2	1	32	75	69	0	1	5
Bidu (34/22)	210	156	0	0	54	26	8	0	0	18
Bhahal Arjun (34/5)	18	13	0	0	5	13	4	0	0	9
Dulchehra (34/4)	98	78	0	1	19	4	2	0	0	2
Chhakmoh (34/8)	825	344	2	7	472	54	33	0	2	19
Sakroh (34/21)	128	77	0	0	51	59	49	1	1	8

Jarl (34/26) I	214	165	0	0	49	0	0	0	0	0
Chalali (34/32)	74	72	0	0	2	0	0	0	0	0
Samela (34/25) I	217	194	3	0	20	26	6	20	0	0
Sathwin (34/60)	103	6	0	3	94	199	126	0	2	71
Bara (34/23)	25	14	0	1	10	23	2	0	0	21
Baroh (34/20)	16	7	0	1	8	7	1	0	0	6
Khlawat (34/58)	95	39	0	6	50	71	53	0	0	18
Bodhan (34/18)	109	50	1	0	58	35	32	0	0	3
Kohla (34/17)	37	0	0	0	37	144	102	0	1	41
Pairawin (34/80)	12	0	0	0	12	207	132	0	0	75
Mathohal (34/72)	72	63	0	1	8	5	1	0	0	4
Chatpahl (34/70)	8	2	0	0	6	16	14	0	0	2
Behal (34/71)	35	5	0	0	30	83	79	0	0	4
Chalali (34/67)	8	0	0	0	8	17	15	0	0	2
Kot (34/75) I	34	5	0	0	29	197	158	0	0	39
Padian (34/73)	80	29	0	0	51	35	32	0	0	3
Kachhwin (34/94)	17	0	0	0	17	153	118	0	3	32
Kariala (34/99)	25	0	0	0	25	5	0	0	0	5
Dandwin (34/102)	38	0	0	0	38	11	0	0	0	11
Bharyan (34/93)	1	0	0	0	1	15	15	0	0	0
Sariana (34/91)	15	8	0	0	7	116	93	0	2	21
Janen (34/98)	237	205	2	6	24	8	3	2	2	1
Samthana Khurd (34/97)	81	11	0	0	70	190	175	0	0	15
Samthana Kalan (34/100)	82	4	0	1	77	95	32	2	3	58
Pandthiani (34/89)	35	8	0	1	26	66	62	0	0	4
Dhanghota (34/82)	134	12	4	3	115	284	217	3	1	63
Kharoul (34/81)	30	19	10	0	1	12	6	5	0	1
Ghumarth (34/78)	17	8	0	0	9	47	32	3	0	12

Thana (34/77) I	29	23	0	0	6	6	6	0	0	0
Tang (34/76)	21	20	0	0	1	0	0	0	0	0
Dakhyora (34/56)	77	52	0	0	25	54	41	0	0	13
Tikkar (34/50) I	10	2	2	0	6	33	31	1	0	1
Maharal (34/62)	278	49	32	15	182	304	240	7	4	53
Ghumarli (44/26)	26	0	0	0	26	170	138	27	0	5
Kailvin (44/68)	14	4	0	0	10	4	4	0	0	0
Thuthwani Rajputtan (44/58)	51	14	0	1	36	47	40	0	0	7
Sasal (44/67)	15	9	2	0	4	42	27	1	0	14
Badar (44/65)	71	1	0	1	69	18	12	0	0	6
Neri (42/57)	13	0	0	0	13	103	103	0	0	0
Behal Bagg (42/58)	17	0	0	0	17	51	51	0	0	0
Kot (42/63) II	12	0	0	0	12	90	8	1	0	81
Mehal Khas (42/60)	57	1	0	0	56	111	88	22	0	1
Pandtehri (42/65)	10	2	4	0	4	34	19	15	0	0
Buthwi Tangrian (42/69)	22	0	0	0	22	52	51	1	0	0
Jujani (42/66)	14	0	0	0	14	7	3	0	0	4
Tikkar Khurarian (42/72)	132	12	0	0	120	80	70	0	0	10
Balet (42/23)	47	23	0	0	24	100	88	9	0	3
Nandhan (42/32)	21	0	0	0	21	80	73	4	0	3
Balokhar (42/37)	253	164	14	3	72	2	0	0	0	2
Kotlu (42/39) II	12	4	0	0	8	38	2	3	4	29
Seu (42/38)	85	43	3	7	32	60	38	6	1	15
Ludhwin (42/3)	13	8	1	0	4	26	2	3	0	21
Patta (42/4)	264	13	123	0	128	32	13	15	0	4
Jharlog Upperla (42/91)	78	32	0	1	45	3	2	0	0	1

Ladror Khurd (42/93)	74	7	0	0	67	79	1	0	1	77
Ladror Kalan (42/84)	142	0	0	0	142	45	1	0	0	44
Dhasmai (42/95)	55	23	0	0	32	12	6	0	0	6
Lathwan (42/94)	119	65	4	0	50	9	0	0	0	9
Khuthri (42/96)	403	319	4	6	74	42	27	3	0	12
Thana (42/90) II	32	0	1	0	31	67	64	0	0	3
2. District Bilaspur, HP										
Mund Khar (245)	**89**	**59**	**0**	**1**	**29**	**21**	**12**	**0**	**3**	**6**
Dhaloh (250)	67	30	0	5	32	187	187	0	0	0
Taraun (274)	504	378	1	6	119	280	272	2	2	4
Damehr (287)	218	140	0	0	78	47	42	0	0	5
Lahot (290)	166	18	4	0	144	78	66	3	0	9
Badsara (292)	91	54	0	0	37	0	0	0	0	0
Gugal (289)	59	16	0	0	43	22	21	0	0	1
Damehra (288)	72	41	0	0	31	32	31	1	0	0
Lehri Sarail (272)	922	489	4	1	428	401	330	1	19	51
Hari Talyangar (273)	295	177	5	3	110	357	223	19	5	110
Chhajoli (271)	90	5	0	6	79	52	38	8	0	6
Patta Malotra (257)	101	66	0	0	35	1	1	0	0	0
Dangar (256)	119	2	1	10	106	331	237	61	6	27
Jangal Drahla Da Phat (256/1)	Uninhabited Village									
Dakhiot Uperla (254)	100	68	1	1	30	2	0	0	0	2
Chokhna (253)	183	145	4	1	33	0	0	0	0	0
TOTAL (10KM)	**30836**	**16084**	**916**	**328**	**13508**	**21055**	**16961**	**898**	**223**	**2973**

Source-Census of India, 2011

ABBREVIATIONS:

MAIN WORKERS POPULATION: MAIN WORK_P : **Main workers total population, MAIN_CL_P : Main cultivated labour population, MAIN_AL_P : Main agricultural labour population, MAIN_HH_P : Main workers** population involved in household industries, **MAIN_OT_P :** Main other workers population

MARGINAL WORKERS POPULATION:

MARG WORK_P : Marginal workers total population, **MARG_CL_P :** Marginal cultivated labors total population, **MARG_AL_P :** Marginal agricultural labors population, **MARG_HH_P :** Marginal workers involved in household industries, **MARG_OT_P :** Marginal other workers Population

Distribution of work participation rate of the study area population is shown in **Table ….**as follows;

Table 3.21: Distribution of Work Participation Rate in 10km Study Area

Occupation Class	Year, 2011
Main Workers	**30836 (31.2%)**
Male	17083(55.4%)
Female	13753(44.6%)
Marginal Workers	**21055(21.3%)**
Male	8277(39.3%)
Female	12778(60.7%)
Non-Workers	**46940(47.5%)**
Male	21679 (46.1%)
Female	25261(53.8%)
Total Population (10km)	**98831**
Source: Census of India Records, 2011	

Graphical representation of Workers Scenario is given below asFigure …..

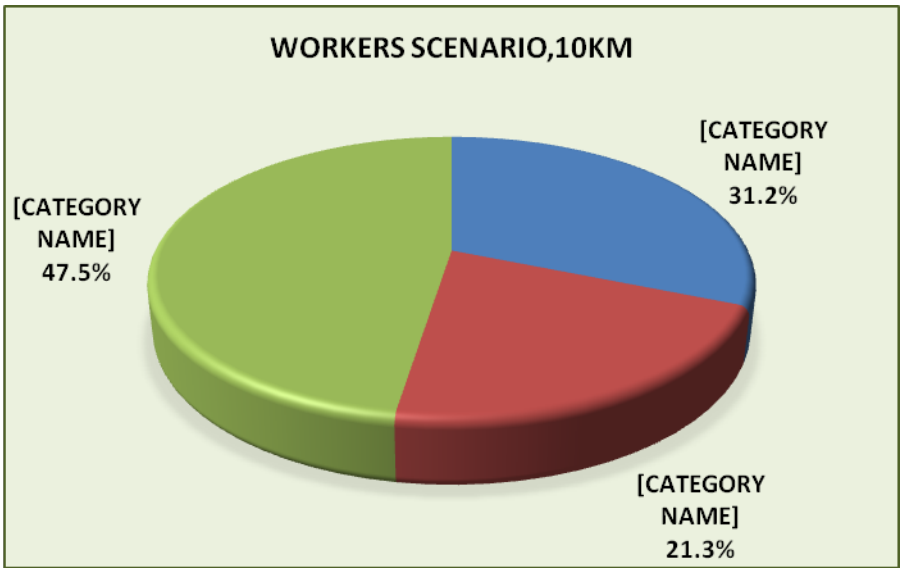


Figure 3.11 :Workers Scenario of Study Area

Composition of Main Workers:

The 'Main Workers' were observed as 30836 persons (31.2%) to the total population of the study area and its composition is made-up of Casual laborers as 16084 (52.2%), Agricultural laborers as 916(3.0%), Household workers 328(1.0%) and other workers as 13508 (43.8%) respectively. Composition of Main workers is shown below asFigure ….

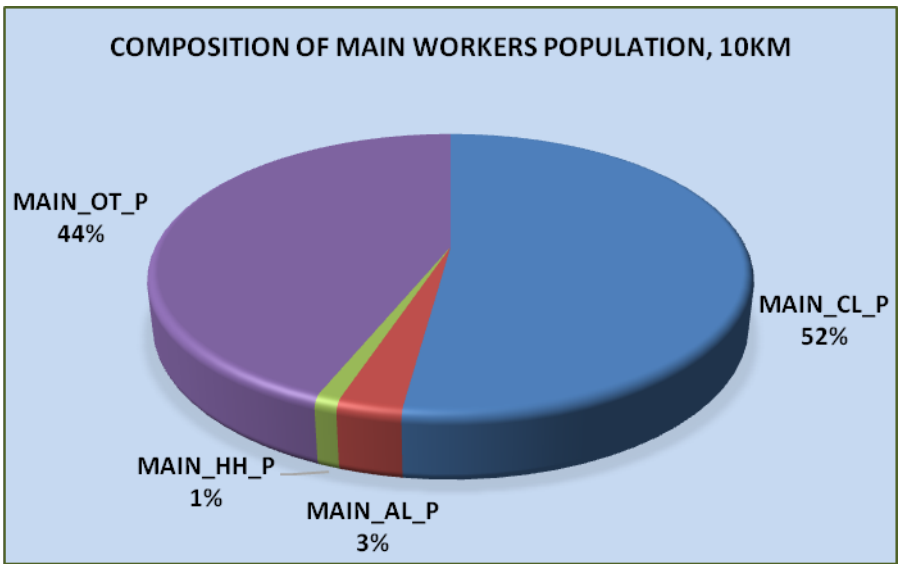


Figure 3.12 :Composition of Main Workers Population

Composition of Marginal Workers:

The total marginal workers are observed as 21055 which constitute 21.3% to the total population (98831) comprise of Marginal Casual Laborers as 16961 (80.6%), Marginal Agricultural Laborers as 898(4.4%), Marginal Household laborers as 223 (1.0%) and marginal other workers were also observed as 2973 (14.0%) of the total marginal workers respectively.

Details about marginal workers in the study area are tabulated in Table …. Composition of Marginal workers is shown inFigure …as follows.

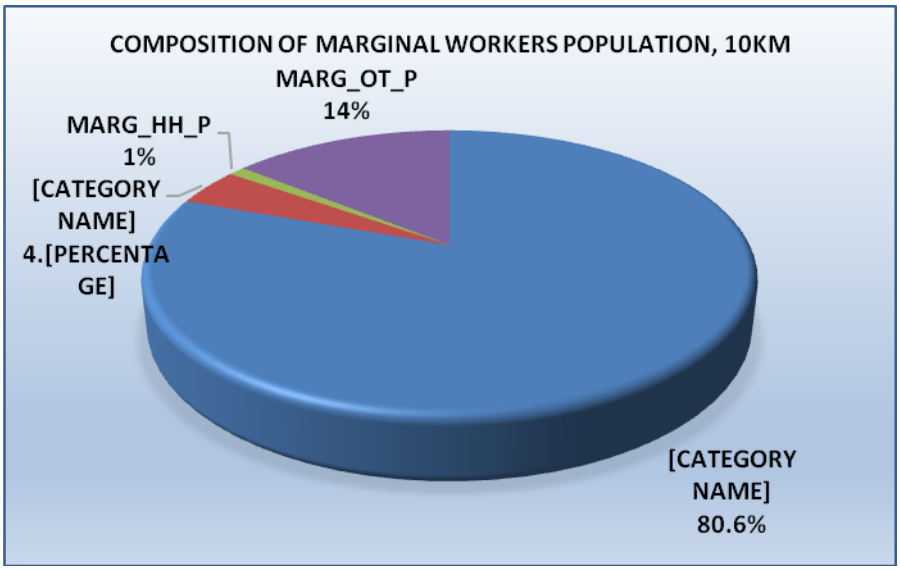


Figure 3.13:Composition of Marginal Workers

Composition of Non-Workers:

The total Non-workers population was observed as 46940 which constitute 47.5% to the total population (98831) of the study area. Male-female wise Non-workers population was recorded as 21679 Males (46.1%) and 25261Females (53.8%) respectively. Details about Total Non-workers in the study area are compiled inTable …. .

Graphical representation of Non-workers population is shown as follows inFigure ….

Table 3.22: Composition of Non-Workers

Non-Workers Population		
Persons	**Males**	**Females**
46940	21679 (46.1%)	25261 (53.8%)

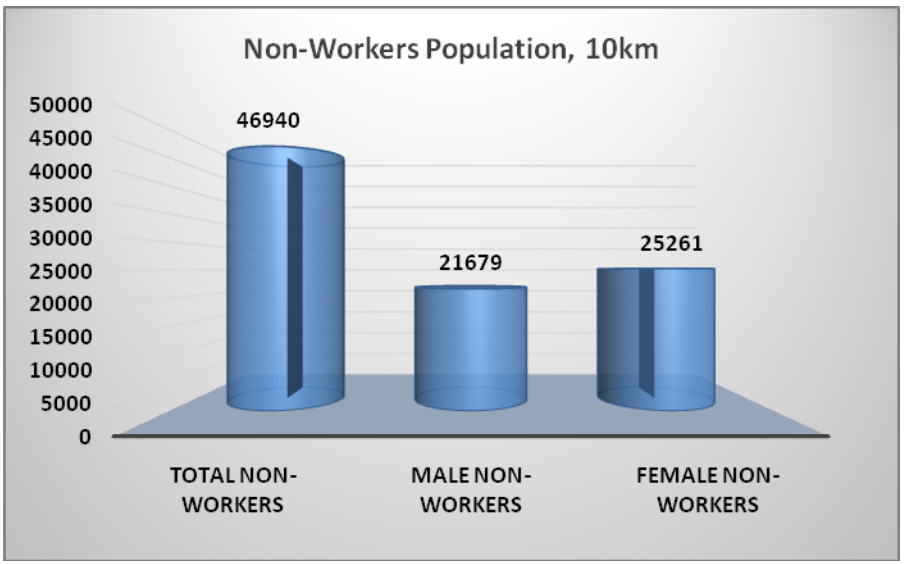


Figure 3.14: Composition of Non-Workers

Basic Infrastructure Facilities Availability *(as per the census records of 2011)*

A review of basic infrastructure facilities (Amenities) available in the study area has been done on the basis of the field survey and Census records, 2011 for the study area inhabited revenue villages of Hamirpur & Bilaspur District in Himachal Pradesh. The study area has average level of basic infrastructure facilities like educational, medical, potable water and power supply, transport& communication network etc.

As per the Census Records 2011, the study area has a total of 316 revenue villages and 1 Town i.e. Bhota (NP) under two Districts namely Hamirpur (300 villages & 1 Town) and Bilaspur (16 village) of Himachal Pradesh state respectively. Out of the total no of 316 villages of the study area, 2 villages are observed as uninhabited village.

Overall study area revenue villages are falling mainly under nine (09) tehsils namely TiraSujanpur, Nadaun, Galore, Hamirpur, Barsan, Dhatwal & Bhoranjof Hamirpur district and Ghumarwin & Bharari of Bilaspur district respectively in Himachal Pradesh State.

Educational Facilities

There isa total no. of138 Primary schools existing in the 10km radius study area.Seventy three (73) no's of Middle schools are foundin the study area. Only thirty eight (38)Higher Secondary School (SS) are available in the study area. Senior Secondary School (SSS) facility is available only in twenty six (26) revenue villagesof the study area. The educational facilities have been further strengthening now and a number of private public schools and colleges are also functioning in the surroundings of the study area. Besides, there are Engineering and Medical colleges available in Towns and District headquarters only. Higher education facilities are available in Towns of the district. There is a considerable improvement in educational facility. The villages of the study area have no such facilities can reach within 5to 10km range.There are six (06) other towns i.e. TiraSujanpur, Nadaun, Hamirpur, Bhota, Talai and Ghumarwin availablein the range of 0 to 30km from the villages/Towns of 10 km radial study area.

There isonly one town namedBhota (NAC)lying under Barsar tehsil of Hamirpur district available in the 10 km radial study area.

Availability of University Education

Palampur Agriculture University is located in Kangra district which not only caters to the needs of this area but also other parts of the state. Besides this University, R.P. Medical College at Tanda and Ayurvedic Medical College at Paprola are important institutions imparting medical education to the students of the state. Govt. Degree College of education at Dharmsala provides education in teaching. In addition to these professional colleges, district has 20 other degree colleges both in private and public sectors. This district has, therefore, sufficient number of degree colleges in both rural and urban areas providing education of degree and above level.

Mother Tongue

During Census 2011 the district recorded as 98.0% people have reported their mother tongue as Hindi and remaining mother tongues are negligible.

Religion

During Census 2011 out of the total population of 4, 54,768 of Hamirpur district, 4, 49,412 (98.8%) have reported their religion as Hindu followed by 3,711 (0.8%) as Muslim. Remaining Sikhs, Buddhist, Christian, Jain and other religions have a negligible representation in the district.

Medical Facilities

The medical facilities are provided by different agencies like Govt. & Private individuals and voluntary organizations in the study area. As per the district census handbook information of 2011, only 3 primary health centersexistsin the study area; most of the study area villages depend upon the towns & district HQ of the study area having such facility. Primary Health Sub-center exists in 20 villages as rural part of the study area. Only 5Mother & Child Welfare Centersarefound in the study area. NoAllopathic Hospital and32Dispensaries exists in the study area. Only seven (07) Family Welfare Centers found in the study area. Overall study area villages are served by average medical facilities. Specialized medical facilities are available only in towns and District Headquarter (HQ) only.

Potable Water Facilities

Potable water facility is available in most of the villages/towns of the study area. The entire study area has average level of potable water facilities. Hand Pump(HP) facility is commonly observed in the study area as potable water facility. Out of total 316 revenue villages,only8 villages(2.5%) are served with River/Canal water in the study area. As per the census records of 2011, only 13 villages (4.1%) being served with Tank/Pond/Lake in the study area.

Communication, Road & Transport Facilities

Apart from Post &Telegraph (P & T) services, transport is the main communication linkage in the study area. About 55 villages (17.4%) were foundserving with Post Office facilities in the study area, remaining villages are depending upon towns of the study area. The study area has average rail and road network, passes from the area. Only onevillagesnamed Balokhar (42/37) of Bhoranj tehsil observed with railway station facility in the study area.

Nearest town is Hamirpurlocated in NNW direction from the mine lease area.The nearest railway station is Una railway station which is at a distance of about 28.0 km in WSW direction. The Nearest airport is Shimla Airport which is around 72 km in SE direction from the mine. The area is well connected with NH-88 & SH-32 which is approx. 5.0 to 6.0km towards NE Direction.

Road transport is the main stay of economic activity in Himachal Pradesh as other means of transport mainly Railways and Airways are negligible. The district fully depends upon road

transport. Though private buses also ply in the state but the passenger transport services to the people of Himachal Pradesh within and outside state are being mainly provided by Himachal Road Transport Corporation.

Banking Facility

The study area has almost all the schedule commercial banks with ATM facility at urban areas and the district HQ. The district Hamirpur has adequate banking facilities, most of the banks are situated at district, sub-district and block HQ.

Power Supply

It is revealed from the compiled information on Amenities availability as per the census record of 2011; most of the villages and towns are electrified for Domestic, Agriculture, and Commercial& for all purposes. Almost all (about 100%) villages and towns of the study area are electrified.

Village/town wise Basic Infrastructure and Amenities availabilities data for the entire study area is compiled and presented inTable 3.22 as follows;

Table 3.23: Village wise Basic Amenities Availability

Name of the Village/Town	Educational				Medical							Drinking Water						CT	Communication & Transport				Approach to the Village				Power Supply				Nearest Town & Distance, km
	P	M	SS	SSS	CHC	PHC	PHSC	MCWC	H	D	FWC	T	W	HP	TW	R	Tk		PO	P&T	BS	RS	PR	KR	NW	FP	ED	EAg.	EC	EA	
1. District Hamirpur, HP																																
Chaloh (60/10)	1	0	0	0	0	0	0	0	0	1	0	1	2	2	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Tira Sujanpur,10km
Tang (17/41)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Nadaun,13km
Paniala (25/2)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Hamirpur,15km
Palasi (24/20) I	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Nadaun,15km
Bumbloo (23/17)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Nadaun,16km
Palasi (28/15) II	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,28km
Phal Khas (28/8)	1	1	0	0	0	0	1	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,26km
Karsai (28/11)	1	1	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,25km
Loharkur (36/40)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	1	1	2	1	1	2	1	1	2	2	1	Hamirpur,22km
Galor Khas (36/37)	1	1	1	1	1	0	0	1	0	1	0	1	2	1	2	2	2	2	1	1	1	2	1	1	2	1	1	2	2	1	Hamirpur,22km
Badaran (36/25)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,20km
Guriah (36/28)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,20km
Mer (36/41)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,24km
Ropri (36/23)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,23km
Pahlwin (36/32)	1	1	1	1	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,24km
Phangsana (28/14)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,26km
Lajiana (28/16)	1	1	1	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,26km
Bandos (36/27)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	1	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,27km
Baroh (36/26)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,25km
Dhiana (36/33)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,24km
Naraina (36/29)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	1	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,21km
Dodwin (36/36)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,22km
Bhaloo (36/30)	0	0	0	0	0	0	0	0	0	1	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,24km
Busiar (36/31)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	2	1	2	1	1	2	2	1	Hamirpur,24km
Lasmai (36/39)	1	1	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	2	1	2	1	1	2	2	1	Hamirpur,24km
Hareta (36/42)	2	2	1	1	0	0	0	0	0	1	0	1	1	1	2	2	2	2	1	1	1	2	1	1	2	1	1	2	2	1	Hamirpur,22km
Tikkar (37/32) III	0	0	0	0	0	0	0	0	0	1	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,14km
Galot Khurd (39/5)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	2	1	2	1	1	2	2	1	Hamirpur,12km

Galot Kalan (39/6)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,12km
Nalwin (39/8)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	2	1	2	1	1	2	2	1	Hamirpur,12km
Bakarti (37/4)	1	1	0	0	0	0	1	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,8km
Chamsai (39/3)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,20km
Khihrwin (39/25)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,20km
Baloni (39/24)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,20km
Pharsi	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	2	1	2	1	1	2	2	1	Hamirpur,20km
Ser (39/18)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	1	1	1	2	2	1	2	1	1	2	2	1	Hamirpur,20km
Rakhla (39/16)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	Hamirpur,20km
Dhaned Khas (39/19)	2	1	1	1	0	0	0	0	0	1	0	1	2	1	2	2	2	2	1	1	1	2	1	1	2	1	1	2	2	1	Hamirpur,20km
Lingwin (39/17)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,20km
Khatwin (39/23)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,20km
Kotla (39/21)	0	0	0	0	0	0	0	0	0	1	0	1	2	1	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	Hamirpur,18km
Lalin (39/22)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,20km
Tuklehra (39/14)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,17km
Dhurghara (39/12)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,16km
Dehran (39/15)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	2	1	2	2	1	Hamirpur,14km
Pharnoal (39/2)	1	1	0	0	0	0	1	0	0	1	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	2	1	2	2	1	Hamirpur,15km
Dalyahu (39/13)	1	1	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,16km
Gharan (39/7)	1	1	1	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,12km
Gajoh (46/29)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Hamirpur,7km
Jasaur (46/14)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	Hamirpur,8km
Lahar (46/30)	1	0	0	0	0	0	1	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	2	1	2	2	2	Hamirpur,8km
Dhalot (45/26)	0	0	0	0	0	0	0	0	0	1	0	1	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	1	Hamirpur,7km
Gasota (45/7)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	2	2	2	1	1	2	2	1	Hamirpur,9km
Bharthian (45/11)	1	1	1	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,10km
Sai Brahmana (45/21)	1	1	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,6km
Gulela (45/8)	1	1	1	0	0	0	0	0	0	1	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,7km
Daryota (45/23)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,9km
Halana (45/25)	1	0	0	0	0	0	0	0	0	1	0	1	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	1	Hamirpur,8km
Thana (42/51) II	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	1	2	2	2	2	2	2	2	1	2	2	1	Hamirpur,11km
Tikkar (42/46)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,10km
Kadhriana (42/54)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	2	1	2	2	1	Hamirpur,10km
Didhwin (42/49)	1	1	1	1	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,10km
Chakrowa (42/25)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,20km
Jhinkari (42/13)	1	1	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,21km

Baghetu (42/11)	1	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,21km
Chauntara (42/14)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	1	Hamirpur,22km
Mair (42/19)	1	1	1	1	0	0	1	0	0	0	0	1	1	1	2	2	2	2	1	2	1	2	1	2	2	2	1	2	2	1	Hamirpur,22km
Pandhwin (42/7)	1	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	Hamirpur,23km
Jarl (42/16) II	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	1	2	2	2	2	1	2	2	1	2	1	1	2	2	1	Hamirpur,24km
Chalyara (42/17)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	1	2	2	2	2	2	2	2	1	2	1	1	2	2	1	Hamirpur,25km
Goata (42/18)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	1	2	2	2	1	2	2	1	2	1	1	2	2	1	Hamirpur,26km
Bhagot (42/5)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	1	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,25km
Phaphan (42/6)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	1	2	2	2	2	2	2	1	2	1	1	2	2	1	Hamirpur,26km
Tikkar (42/12) III	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	1	Hamirpur,26km
Palasi (42/2)	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	2	2	2	1	2	2	1	2	2	1	2	2	1	Hamirpur,24km
Daraundla Uperla (42/8)	1	0	0	0	0	0	0	0	0	0	1	1	2	1	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2	2	1	Hamirpur,25km
Bhola (42/1)	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	1	Hamirpur,24km
Kothi (42/29)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,22km
Nahlwin (42/44)	1	1	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,19km
Lundri (42/31)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,18km
Bindli (42/81)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	1	1	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,16km
Badar (42/42)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	1	1	2	2	2	2	2	1	1	2	1	1	2	2	1	Hamirpur,15km
Sahnwin (42/34)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	1	1	2	2	2	2	2	1	2	2	1	1	2	2	1	Hamirpur,18km
Kakriana (42/35)	1	1	1	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	1	2	1	2	2	1	2	1	1	2	2	1	Hamirpur,11km
Chauki Kankari (42/52)	2	1	1	1	0	0	1	0	0	0	1	1	2	1	2	1	1	2	1	2	1	2	1	2	2	2	1	2	2	1	Hamirpur,15km
Bumana (42/33)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	1	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,15km
Samrala (42/48)	1	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,9km
Dhanrasi (42/47)	1	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	2	1	1	2	1	Hamirpur,15km
Gahlian (45/24)	1	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	2	1	2	1	1	2	2	1	Hamirpur,10km
Balu (42/45)	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	1	2	2	2	1	2	1	1	2	1	1	1	2	1	Hamirpur,15km
Rumera (45/38)	1	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,15km
Bani (47/1)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	2	1	2	2	1	Hamirpur,8km
Paddar (30/2)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Bhota,27km
Dulera (30/7)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Bhota,26km
Dandru (30/14)	1	1	1	0	0	0	0	0	0	1	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,27km
Samela (30/11)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Bhota,26km
Seheli (31/17)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	2	2	Hamirpur,30km
Sadoh (31/12)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	1	1	2	1	1	1	2	2	Talai,20km
Ragar Padhian	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	Talai,17km

(31/20)																															
Kakar (31/13)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Talai,16km
Ropa Brahmana (31/7)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Talai,15km
Dhar (31/24)	Uninhabited Village																														Talai,18km
Baritar (31/18)	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,16km
Samlehara (31/21)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,16km
Telkar (31/4)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,15km
Romehera (31/8)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,15km
Ropa Rajputtan (31/19)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Talai,14km
Sasan (31/10)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	2	2	2	1	1	1	1	1	Talai,14km
Jabhal Kheri (13/5)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	1	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,13km
Barsar (13/1)	2	1	1	0	1	0	0	1	0	1	1	1	2	1	2	2	2	2	1	1	1	2	1	1	2	1	1	1	1	1	Talai,12km
Satrukha (13/4)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	Talai,12km
Pathliar (13/3)	1	1	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	1	2	1	2	1	2	2	1	1	1	1	1	Talai,9km
Bhalt (33/24)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Talai,6km
Chhaproh (12/9)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Talai,7km
Nain (12/8)	1	0	0	0	0	0	0	0	0	1	0	1	2	1	2	2	2	2	1	2	1	2	1	2	2	1	1	1	1	1	Talai,3km
Rapar (33/39)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Talai,7km
Jajal (33/15)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Talai,10km
Ghangot Kalan (33/36)	1	1	1	1	0	0	1	0	0	1	0	1	1	1	2	2	2	2	1	2	1	2	1	1	2	1	1	1	1	1	Talai,11km
Ghangot Khurd (33/35)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Talai,10km
Dhakyana (33/3)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Talai,12km
Gutiana (33/22)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,13km
Badhu (33/14)	1	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,14km
Gata Panga (33/25)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	Talai,11km
Nara (33/38)	1	1	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	1	2	1	2	1	2	2	1	1	1	1	1	Talai,8km
Narkar (33/23)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Talai,12km
Banan (33/2)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Talai,11km
Mohlwin (33/12)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,10km
Kotlu (33/18)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,8km
Garli Khas (33/21)	1	1	1	1	0	0	0	0	0	1	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Talai,10km
Bahna (33/7)	1	1	1	1	0	0	0	0	0	0	0	1	1	1	2	2	2	2	1	2	1	2	1	2	2	1	1	1	1	1	Talai,10km
Kheri (33/20)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	2	1	1	1	1	Talai,11km

Bagg (33/1)	1	1	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Talai,11km
Sunwin Rajputtan (33/30)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Bhota,13km
Pelehra (33/10)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Bhota,11km
Kohdera (33/5)	2	1	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	1	2	2	2	1	2	2	1	1	1	1	1	Bhota,11km
Taradol (32/8)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Bhota,12km
Dabriana (32/17)	1	1	0	0	0	0	0	0	0	1	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,17km
Langheree (32/28)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Bhota,16km
Baliya Kalan (32/33)	2	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,22km
Mattkar (33/33)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,11km
Dhuma (33/29)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Talai,11km
Khajian (33/34)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Talai,12km
Guria Khurd (33/32)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Talai,7km
Guria Kalan (33/37)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Talai,7km
Lohane (32/20)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,21km
Kaswar (32/31)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,23km
Birswin (32/24)	1	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Bhota,22km
Ghamarwin (32/25)	0	0	0	0	0	0	0	0	0	1	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,17km
Barni (32/23)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,20km
Rahil (32/19)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Bhota,18km
Baggi (32/18)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Bhota,16km
Kowa (32/22)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Bhota,17km
Kuthera (32/6)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	2	2	2	2	2	1	2	2	2	2	1	1	1	1	1	Bhota,16km
Karwen (32/5)	0	0	0	0	0	0	0	0	0	0	0	1	1	2	1	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	Bhota,16km
Bani Khas (32/2)	1	1	1	1	0	0	1	0	0	0	0	1	1	1	1	2	2	2	1	2	1	2	1	1	2	1	1	1	1	1	Bhota,16km
Mangroli (32/7)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	1	1	2	1	1	2	1	1	1	1	1	Bhota,15km
Samoh (32/11)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	1	1	1	1	1	1	Bhota,18km
Tukhani (32/3)	1	1	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	1	2	2	1	1	1	1	1	Bhota,15km
Makteri (32/29)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Bhota,16km
Nanawan (35/20)	0	0	0	0	0	0	1	0	0	1	1	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Bhota,13km
Lalhani (35/1)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Bhota,13km
Raein (35/18)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,16km
Daghol (35/10)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	Bhota,15km
Bear Kalan (35/16)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	2	2	2	Bhota,15km
Bear Khurd (35/15)	1	1	1	1	0	0	0	0	0	1	0	1	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	2	2	2	Bhota,14km
Tikkar Rajputtan	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	1	1	2	1	2	2	1	1	2	2	2	Bhota,12km

(32/16)																														
Tikkar Brahmana (32/15)	1	1	1	1	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Bhota,10km
Kothi (35/13)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	1	2	2	2	2	2	1	2	1	1	2	2	2	Bhota,9km
Bakroh (35/12)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Bhota,9km
Har (35/14)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Bhota,9km
Akrana Brahmana (35/11)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Bhota,10km
Akrana Rajputtan (35/6)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Bhota,10km
Goeta Rajputtan (35/9)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Bhota,12km
Goeta Brahmana (35/7)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Bhota,12km
Ghamarli (35/3)	1	1	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	1	2	1	2	1	1	2	1	1	2	2	2	Bhota,11km
Awah Buhla (40/11)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,8km
Awah Upperla (40/17)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Bhota,8km
Kudhar (40/4)	1	1	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,11km
Sunwin (40/1)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,12km
Kuthulag (40/6)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,12km
Dhanota (40/7)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	1	Bhota,12km
Musan (40/5)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,9km
Makar (40/13)	1	0	0	0	0	0	1	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,9km
Khangalta (40/18)	0	0	0	0	0	0	0	0	0	1	0	1	2	1	2	2	2	2	2	1	1	2	1	1	2	1	1	1	1	1	Bhota,8km
Panjarar (40/16)	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,9km
Saloni (40/2)	1	1	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	1	2	2	1	1	1	1	1	Bhota,7km
Galoh (40/12)	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Bhota,6km
Dhakoa (40/9)	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	Bhota,7km
Badhan (40/47)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Bhota,4km
Bahal Bhatan (40/46)	1	0	0	0	0	0	0	1	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,3km
Bahal (40/15)	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Bhota,2km
Chhek (40/32)	1	1	1	1	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	1	1	1	Bhota,2km
Pahlu (40/44)	0	0	0	0	0	0	1	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Bhota,3km
Porla (40/45)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Bhota,3km
Kathla (40/38)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Bhota,5km
Baeri (40/28)	1	1	0	0	0	0	0	0	0	1	0	1	2	1	2	2	2	2	1	2	1	2	1	2	2	1	1	1	1	1	Bhota,5km

Kasiri (40/20)	1	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Bhota,6km
Jharnot (40/34)	1	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Bhota,4km
Jindwin Brahmana (40/41)	1	1	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	1	2	2	1	1	2	2	2	Bhota,5km
Ujhan (40/43)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	1	2	2	1	1	2	2	2	Bhota,2km
Ghalon (40/21)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Bhota,1km
Chuan (40/42)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Bhota,2km
Morsu Sultani (40/27)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Bhota,3km
Morsu Garlan (40/22)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Bhota,1km
Thamani Upperli (41/21)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	1	2	2	1	2	2	1	2	1	1	2	2	2	Bhota,2km
Sour (41/17)	1	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	1	1	2	1	2	2	1	2	1	1	2	2	2	Bhota,2km
Pundar (41/13)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Bhota,3km
Dain (41/26)	1	1	0	0	0	0	1	0	0	1	0	1	2	1	2	2	2	1	1	2	1	2	1	1	2	1	1	2	2	2	Bhota,4km
Mansui Upperli (41/14)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	2	1	2	1	1	2	2	2	Bhota,3km
Mansui Jhikli (41/10)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Bhota,2km
Chhorab (41/12)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Bhota,1km
Lohder Khas (41/18)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	2	1	2	2	1	2	2	2	Bhota,4km
Suphan (41/9)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	Bhota,4km
Oled Sidhu (41/20)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	Bhota,5km
Amboha Jhikla (41/6)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	Bhota,5km
Dhamani (41/22)	1	1	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	Bhota,6km
Choa (41/24)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	Bhota,6km
Bahal Rattun (41/11)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	1	1	2	1	1	2	1	1	2	2	2	Bhota,6km
Jandroh (41/25)	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	Bhota,7km
Bhota (NP)	Urban Part																														Bhota,6km
Ghulera (34/101)	1	1	1	1	0	0	0	0	0	0	0	1	1	1	2	2	2	2	1	2	1	2	2	1	2	1	1	1	1	1	Bhota,12km
Changar (34/105)	1	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,11km
Sunahni (34/108)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Bhota,11km
Godee (34/112)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,12km
Dagwar (34/107)	1	0	0	0	0	0	1	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,10km
Suhari (34/109)	1	1	1	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	1	2	1	2	1	1	2	1	1	1	1	1	Bhota,14km
Tangar (34/110)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Bhota,11km
Lahri Ghumara (34/84)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Bhota,17km
Bijhri (34/16)	2	2	2	1	0	1	0	0	0	1	0	1	1	1	2	2	2	2	1	1	1	2	1	1	2	1	1	1	1	1	Bhota,15km

Lakho (34/13)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Bhota,16km
Garari (34/12)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,16km
Bhanwanee (34/10)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Talai,14km
Tikkar (34/2) II	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,13km
Chalsaee (34/7)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Talai,13km
Chakrala (34/3)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Talai,11km
Bahl Thakru (34/6)	1	1	0	0	0	0	0	0	0	0	0	1	2	2	1	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,11km
Bidu (34/22)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	1	1	1	Talai,13km
Bhahal Arjun (34/5)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,10km
Dulchehra (34/4)	1	0	0	0	0	0	0	0	0	0	0	1	2	2	1	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,10km
Chhakmoh (34/8)	3	1	1	1	0	0	1	0	0	0	0	1	1	1	2	2	2	2	1	1	1	2	1	1	2	1	1	1	1	1	Talai,6km
Sakroh (34/21)	1	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	Talai,8km
Jarl (34/26) I	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Talai,8km
Chalali (34/32)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	Talai,9km
Samela (34/25)	1	1	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,9km
Sathwin (34/60)	1	1	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	1	1	1	Talai,9km
Bara (34/23)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,9km
Baroh (34/20)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Talai,9km
Khlawat (34/58)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Talai,9km
Bodhan (34/18)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,22km
Kohla (34/17)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	1	2	1	2	1	1	2	1	1	1	1	1	Bhota,22km
Pairawin (34/80)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,22km
Mathohal (34/72)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Bhota,18km
Chatpahl (34/70)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,21km
Behal (34/71)	1	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	1	2	1	2	1	1	2	1	1	1	1	1	Bhota,21km
Chalali (34/67)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	2	1	2	1	1	1	1	1	Bhota,21km
Kot (34/75) I	0	0	0	0	0	1	0	0	0	1	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,20km
Padian (34/73)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,15km
Kachhwin (34/94)	1	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Bhota,12km
Kariala (34/99)	1	1	1	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	2	1	2	1	1	1	1	1	Bhota,10km
Dandwin (34/102)	1	1	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	1	2	1	2	2	1	2	1	1	1	1	1	Bhota,12km
Bharyan (34/93)	0	0	0	0	0	0	0	0	0	0	0	1	1	2	1	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,12km
Sariana (34/91)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,11km
Janen (34/98)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,11km
Samthana Khurd (34/97)	2	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Bhota,11km
Samthana Kalan	1	1	1	0	0	0	1	0	0	1	0	1	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	1	1	1	Bhota,10km

(34/100)																														
Pandthiani (34/89)	1	1	1	1	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,9km
Dhanghota (34/82)	1	1	1	1	0	0	1	0	0	1	0	1	1	2	1	2	2	2	1	1	1	2	1	1	2	1	1	1	1	1	Bhota,14km
Kharoul (34/81)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,19km
Ghumarth (34/78)	0	0	0	0	0	0	0	0	0	0	0	1	1	2	1	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,16km
Thana (34/77) I	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	1	1	1	Bhota,19km
Tang (34/76)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,23km
Dakhyora (34/56)	1	1	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Bhota,22km
Tikkar (34/50) I	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	Bhota,17km
Maharal (34/62)	1	1	1	1	0	0	1	0	0	1	0	1	2	1	2	2	2	2	1	1	1	2	1	1	2	1	1	1	1	1	Bhota,27km
Ghumarli (44/26)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Hamirpur,28km
Kailvin (44/68)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,17km
Thuthwani Rajputtan (44/58)	1	1	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,18km
Sasal (44/67)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2	2	1	Hamirpur,16km
Badar (44/65)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,12km
Neri (42/57)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,21km
Behal Bagg (42/58)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Bhota,11km
Kot (42/63) II	1	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	2	2	2	1	1	2	2	1	Bhota,9km
Mehal Khas (42/60)	1	1	1	1	0	1	0	0	0	0	0	1	1	1	2	2	2	1	1	2	1	2	1	2	2	1	1	2	2	1	Bhota,10km
Pandtehri (42/65)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Bhota,11km
Buthwi Tangrian (42/69)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Bhota,8km
Jujani (42/66)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Bhota,15km
Tikkar Khurarian (42/72)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Hamirpur,25km
Balet (42/23)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Bhota,8km
Nandhan (42/32)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Bhota,7km
Balokhar (42/37)	1	1	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	1	1	1	2	1	1	2	2	1	Bhota,7km
Kotlu (42/39)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Bhota,8km
Seu (42/38)	0	0	0	0	0	0	0	0	0	1	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Bhota,10km
Ludhwin (42/3)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Bhota,8km
Patta (42/4)	1	1	1	1	0	0	0	0	0	0	0	1	2	1	2	2	1	2	1	2	1	2	1	1	2	1	1	2	2	1	Bhota,9km
Jharlog Upperla (42/91)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	1	2	1	2	1	2	2	1	1	2	2	1	Bhota,9km
Ladror Khurd (42/93)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Bhota,11km
Ladror Kalan (42/84)	2	1	1	1	0	0	1	0	0	1	0	1	2	1	2	2	2	2	1	1	1	2	1	1	2	1	1	2	2	1	Bhota,12km

Dhasmai (42/95)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Bhota,11km
Lathwan (42/94)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	2	2	1	2	2	1	1	2	2	2	Bhota,13km
Khuthri (42/96)	1	1	1	0	0	0	0	0	0	1	0	1	1	2	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Bhota,13km
Thana (42/90)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	2	1	2	1	1	2	2	1	Bhota,11km
2. District Bilaspur, HP																															
Mund Khar (245)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	1	2	1	2	1	1	2	1	1	1	1	1	Ghumarwin,20km
Dhaloh (250)	1	1	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	2	1	1	2	2	1	1	1	1	Ghumarwin,20km
Taraun (274)	2	1	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	1	2	1	2	1	1	2	1	1	2	2	1	Ghumarwin,20km
Damehr (287)	1	1	1	1	0	0	0	0	0	1	0	1	2	2	2	2	2	2	1	2	1	2	1	2	2	1	1	2	2	1	Ghumarwin,17km
Lahot (290)	1	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Ghumarwin,15km
Badsara (292)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Ghumarwin,19km
Gugal (289)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Ghumarwin,21km
Damehra (288)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	2	1	2	2	2	2	2	1	2	2	1	1	2	2	1	Ghumarwin,18km
Lehri Sarail (272)	1	1	1	1	1	0	1	1	0	0	1	2	1	1	2	2	2	2	1	1	1	2	1	2	2	1	1	2	2	1	Ghumarwin,21km
Hari Talyangar (273)	1	1	0	0	0	0	0	1	0	0	0	2	1	2	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	Ghumarwin,15km
Chhajoli (271)	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Ghumarwin,12km
Patta Malotra (257)	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	1	Ghumarwin,16km
Dangar (256)	3	1	1	1	0	0	1	0	0	0	1	2	2	1	2	2	2	2	1	2	1	2	1	2	2	1	1	2	2	1	Ghumarwin,12km
Jangal Drahla Da Phat (256/1)	Uninhabited Village																														Ghumarwin,10km
Dakhiot Uperla (254)	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	1	2	2	2	1	2	1	1	2	1	1	2	2	1	Ghumarwin,14km
Chokhna (253)	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	1	Ghumarwin,16km
TOTAL (10 KM)	##	**73**	**38**	**26**	**3**	**3**	**20**	**5**	**0**	**32**	**7**	*Status for Availability and Non-Availability is shown as A (1) & NA (2) respectively*																			
Source-http://www.censusindia.gov.in/2011census/dchb/DCHB.html																															

Abbreviations:
Educational Facilities:P-Primary School, **M**-Middle School**, SS**-Higher Secondary Schools, **SSS**-Senior Secondary School
Medical Facilities:CHC- Community Health Centre, **PHC**-Primary Health Centre, **PHSC**-Primary Health Sub-Centre, **MCWC**-Maternity and Child Welfare Centre, **H**-Hospital, **D**-Dispensary, **FWC**-Family Welfare Centre
Drinking Water Facilities:T-Tap Water, **W**-Well Water, **HP**-Hand Pump, **TW**-Tube Well Water, **R**-River Water, **Tk**-Tank Water, **O**-Other Drinking Water Facility, **CT**-Community Toilet
Communication and Transport Facilities: **PO**-Post Office, **SPO**-Sub-Post Office**, PTO**-Post & Telegraph Office, **Tel. -**Telephone Connection, **Mob.**-Mobile Phone Coverage, **BS**-Bus Services, **RS**-Railways Services
Approach to Village:PR-Paved Roads, **KR**-Kuchha Road, **FP**-Foot Path
Power Supply:ED-Power Supply for Domestic use, **E Ag.**-Power Supply for Agricultural use, **EC**- Power supply for Commercial use, **EA**-Electricity for All Purposes
Nearest Town & Distance, km : a for < 5 Kms, b for 5-10 Kms and c for 10+ kms of nearest place where facility is available is given.

Brief Description of Places of Religious, Historical or Archaeological Importance and Tourist interest in Villages and Towns of the District:

Brief description of place of religious, historical or archaeological and tourist interest are as follows;

There are not many places of historical and archaeological importance in the district except Tira Sujanpur and to some extent Nadaun both of which are the headquarters of the respective tehsils;

Tira Sujanpur - Tira Sujanpur has been the picturesque town on the left bank of river Beas 26 km away from the district HQs Hamirpur. It was founded by Raja Abhey Chand the king of ruling Katoch dynasty of Kangra in 1748 A.D.

Nadaun - Nadaun is another town situated on the left bank of river Beas on Hamirpur-Kangra road. In the princely days, it used to be the HQs of the Nadaun Jagir. Maharaja Sansar Chand of Kangra used to hold his court here during the summer for a number of years during his reign.

Hamirpur - Hamirpur town situated on Dharmsala-Bilaspur road is the headquarters of district administration. It was said to have been founded by Raja Hamir Chand of Kangra who built a fort here.

Temple of Deoth Sidh Baba Balak Nath - Deoth- Sidh Baba Balak Nath temple is located bordering Bilaspur district in Bhoranj tehsil of the district. It is a very ancient temple and almost round the year hundreds of people as far as from other states of the country to offer their prayers at this famous temple of Baba Balak Nath.

Major Social and Cultural Events, Natural and Administrative Developments and Significant Activities during the Decade:

Social and Cultural Events

Fairs and Festivals

The people of Hamirpur district celebrate a good number of fairs and festivals round the year which have, by and large, religious sanctity. Some of the important fairs and festivals held in the district are as Gasota Mahadev Fair, Holi Fair, Baba Deothsidh Fair, Gashian Fair, Awah Devi Fair, Chaniari Devi Fair &Tauni Devi Fair, Markanda Fair, and Dei-ka-Naon

Rehabilitation & Resettlement (R & R)

Policy to be adopted (central/state) in respect of the project affected persons including home or land oustees and landless labour.Hence, any planning with respect to rehabilitation & resettlement is not applicable.

4.0 GENERAL

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

Keeping in mind, the environmental baseline scenario as detailed in chapter III and the proposed extraction 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

The Auctioned mining site is located near the village Jangli which is located on the right bank of Sukkar Khad. The site is approachable through an approach road originating from the Bijhari-Barthin road near the village Sathwin. The auctioned area is approximately 11 kms. from Bijhari. The proposed mining site is located in the riverbed of Sukkar Khad. The highest point of the auctioned area is 624 meters above MSL and the lowest point is 621 meters above MSL and the average width of the mining auctioned area is 50 to 110 Mtrs.

Impact on Land Environment

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

a. Top Soil:

The mining activities (not involve top soil) involves the extraction of Stone Boulder, Sand, & Bajri from the river bed. The RBM activity will be limited up to 1 m water table whichever will be less. Unsystematic removal of Stone Boulder, Sand, & Bajri cause bed degradation and will make it unfit for aquatic environment.

Mitigation measures

Since the project is mainly Stone Boulder, Sand, & Bajri deposit extraction (soil deficient) so no loss of top soil is anticipated.

b. Excavation:

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

Mitigation measure

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

c. Waste dumps:

The waste which is Clay/Silt mixed with sand will be used for the maintenance of the approach or for Plantation/Filling works etc. and, if required, the waste will be dumped at the defined dumping place near the proposed site.

Mitigation measure

Not applicable.

IMPACT OF SAND MINING

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

Physical

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

Mitigation measures

- The mining will be restricted up to 3 m below river bed / water table whichever less.
- The RBM will be done in unsaturated zone. Thus, minimum loss to habitat.

- Dredging will not be allowed.

Budget

To determine the budget for Stone, Sand, & Bajri for a particular stream reach, site-specific topographic, hydrologic, and hydraulic information is necessary. This information is used to calculate the amount of Stone Boulder, Sand, & Bajri that can be safely removed from the area without causing undue erosion or degradation, either at the site or at a nearby location, upstream or downstream.

Mining of stone, sand, and bajri in-channel or near-channel can alter the sediment budget and significantly impact channel hydraulics. The effects on aquatic habitat may vary depending on the magnitude and frequency of disturbance, mining techniques, sediment particle size, riparian vegetation characteristics, and the magnitude and frequency of hydrologic events following the disturbance.

Temporal and spatial responses of alluvial river systems are a function of geomorphic thresholds, feedbacks, lags, upstream or downstream transmission of disturbances, and geologic/physiographic controls. Minimization of the negative effects of Stone, Sand, & Bajri mining requires a detailed understanding of the response of the channel to mining disturbances.

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

Mitigation measures

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

- Flow and sediment transport in most rivers and streams are highly variable from year to year, so an annual average rate may be meaningless.
- An "annual average deposition rate" may bear little relation to the sediment transport regimes in a river in any given year.
- The site selection was based on several factors, including minor mineral reserves, site-specific problems such as flooding and submergence of crop lands/fields, excavation needs, and the rate of sediment deposition.
- RBM will be done in a responsible manner.
- Stone Boulder, Sand, and Bajri mining will be restricted to a maximum of 3 m below the bed/water table, whichever is less.
- The RBM will be done in the unsaturated zone.
- No mining will be done near important structures such as bridges, dams, and others to prevent bar skimming.
- Mining will not exceed a certain magnitude.
- Mining will not be carried out in close proximity to dams and other important structures to prevent "hungry water" problems.

4.2 WATER ENVIRONMENT

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

Mining of stone, sand, and bajri from within or near a streambed has a direct impact on the physical habitat characteristics of the stream. These characteristics include geometry, bed evaluation, substrate composition and stability, in-stream roughness elements, depth, velocity, turbidity, sediment transport, stream discharge, and temperature. Altering these

habitat characteristics can have deleterious impacts on both in-stream biota and associated riparian habitat.

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

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

As the project activity will be carried out in the meandering part of the riverbed, none of the project activities will affect the water environment or riparian habitats. Furthermore, no stream will be diverted or truncated, and no water will be pumped from the river or ground. During the lean months, the proposed Stone, Sand, & Bajri mining will not expose the base flow of the river, which will prevent any adverse impact on surface hydrology or ground water regime. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the ordinary sand. As a result, the project activities will not have any adverse effect on the physical components of the environment and, therefore, will not have any effect on the recharge of groundwater or water quality.

4.3 AIR ENVIRONMENT

Anticipated impacts and evaluation

Studies were conducted to evaluate the impact of mining activity on air quality using various modeling techniques. The results showed that the mining operation is unlikely to have a significant impact on air quality. While loading, transportation, and unloading of dry materials in mining operations can contribute to air pollution, the handling of only wet materials in this case eliminates the problem of fugitive dust. Moreover, minerals will be collected and lifted manually, without any blasting, resulting in negligible dust generation. As a result, the amount of dust generated is insignificant compared to the mining process of other hard minerals that involve drilling, blasting, and mechanized loading."

Air Modeling

In general, mining operations generate substantial quantities of airborne respirable dust, which leads to the development of respirable diseases in mine workers. The increasing trend

of mining leads to release of huge amount of dust. This air borne dust particles, generally below 100 micron in size, are nuisance particulates and cause health hazards as an ill effect of mining activities. Extraction activities like drilling, blasting, material handling and transport are a potential source of air pollution. Therefore, a detailed study on emission sources and quantification of pollutant concentration by means of dispersion modeling is required to access the environmental impact of a mine. On the basis of the predicted increments to air pollutant concentrations, an effective mitigation and environmental plan can be devised for sensitive areas. In case of river bed Stone, Sand, & Bajri mining, as there is no blasting and drilling activities, the impacts are caused by material handling and transportation activities.

FUGITIVE DUST- MODELING

In the present study Stone Boulder, Sand, & Bajri extraction site in Bhangani, Tehsil Paonta Sahib, District Sirmaur of Himachal Pradesh State was selected. Air quality modeling was done using line source model as published by USEPA for transportation though roads and the empirical emission factor equations from article, Jyothi Prabha, Gurdeep Singh and I.N.Sinha, 2003 "Emission Factor Equations for Haul roads: The Indian Perspective", Indian Journal of Air Pollution Control Vol. VI No. I March pp 37-43. Emission factors to be used in Line source Dispersion equation is adopted from formula as given below:

$$E = [\{(100-m)/m\}^{0.8} \{s/(100-s)\}^{0.1} u^{0.3} \{2663 + 0.1 (v+fc)\} 10^{-6}] \text{ ---------- (1)}$$

Where

E = Emission Rate (g/sec/m)

m = Moisture Content of the road = 10%

s = Silt Content of the Road = 10%

u = Wind Speed = 2.57 m/s

v = Average Vehicle Speed = 4.5 m/sec

f = frequency of Vehicle movement in no per hour = 2 vehicles / hour

c = Capacity of the dumper in tons = 20 ton

Thus using equation (1)

E = 0.005 g/sec/ m

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

$$C = (2/\pi)^{1/2} \quad (E / \sigma z\, \upsilon) \text{ Exp- } [(h^2) / (2\, \sigma z^2)] \times 10^6 \text{ ---------- (2)}$$

Where

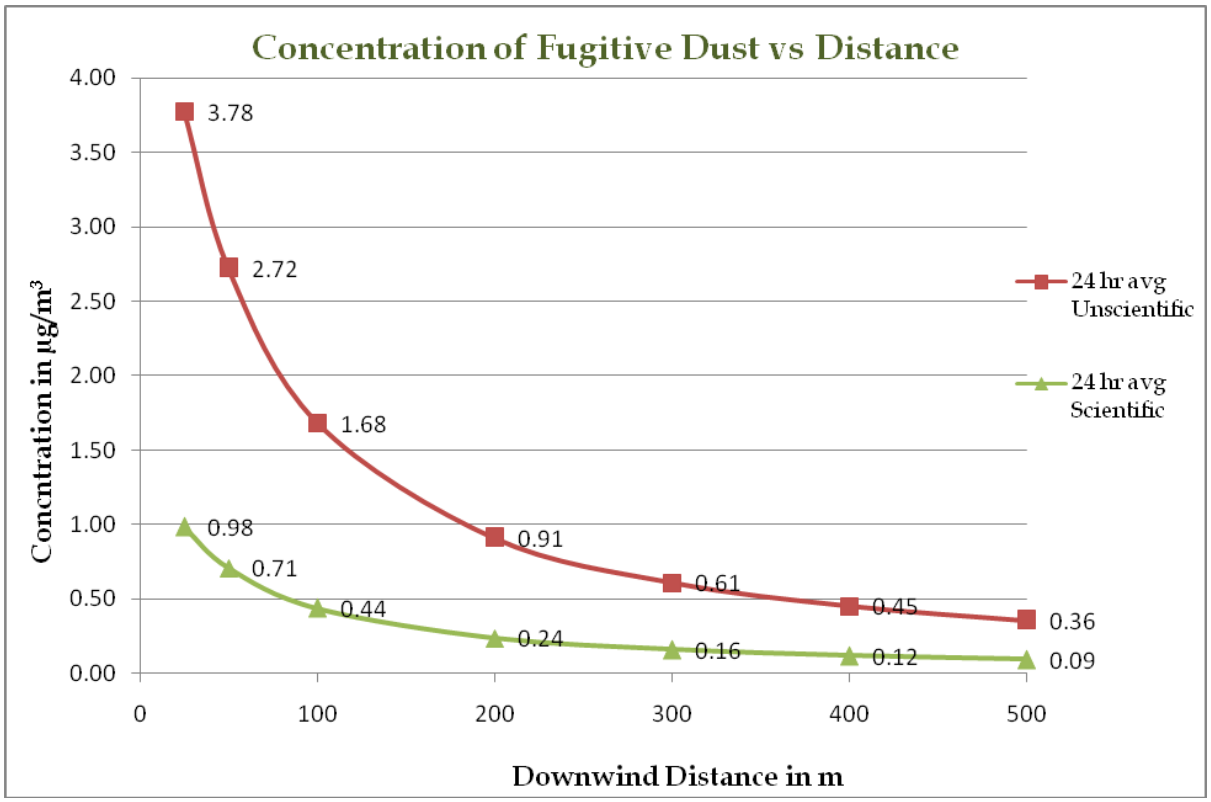
C = Concentration in microgram/ m^3

E = Emission Rate = 0.0052 g/sec/m

υ = Wind Speed = 2.57 m/s

h = 1m

Modeling was done for an infinite line source assuming unpaved road. For conservative calculation wind was assumed to blow at a velocity of 2.57 m/s perpendicular to the road. The results are given in the graph:



It is observed that the ground level concentration (GLC) decreases from 3.78 µg/m^3 at 50 m from the centre line of the road to 0.36 µg/m^3 at 500 m from the centre line of the road. These values have been predicted for a dry unpaved road.

Mitigation measures

The only source of air pollution is the road transport network of trucks. Dust suppression measures, such as water spraying, will be implemented on the roads to reduce dust emissions by 75%. Utmost care will be taken to prevent spillage from the trucks, and overloading will be prevented. Plantation activities along the roads will also help to reduce the impact of dust on nearby villages.

4.4 NOISE ENVIRONMENT

The methodology adopted for sand, stone, and bajri extraction projects involves an open-cast manual mining approach that is primarily non-noisy due to its predominantly manual nature.

Impact on environment

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

Table 4.1, Noise impact

Total time of exposure per day in hour	Sound pressure dB(A)	Remarks
1	2	3
8.0	90	No exposure in excess of 115 dB(A) is permissible
6.0	92	--
4.0	95	For any period of exposure falling in between any figure and lower figure as indicated in column (1), the permissible sound is to be determined by extrapolation or proportionate scale.
3.0	97	
2.0	100	
1 ½	102	
1	105	
¾	107	
½	110	
¼	115	

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

a. Mitigation measures

i. On-site

As mining will be done manually, no machinery will be used. Therefore, no hearing protection is necessary for the miners. Furthermore, well-maintained vehicles will be utilized to minimize noise during vehicle movement.

ii. Off-site

The off-site receptors are not significantly affected as noise generated by mines is insignificant but some disturbances due to vehicle movement cannot be avoided. Plantation will be done along the roadsides, civic amenities, etc. which will more or less dampen the off-site noise level.

4.5 BIOLOGICAL ENVIRONMENT

Table 4.2 Anticipated impact and mitigation measures for biological environment:

Impact Predicted	Mitigation measure
Disturbance to free movement / living of wild fauna viz. Birds, Reptiles etc.	• Noise produced due to vehicular movement for carrying sand materials will be in permissible noise level. Higher noise level in the area may lead to restlessness and failure in detection of calls of mates and young ones; • Care will be taken not to hunt animals /birds by labors; • If wild animals/birds are noticed crossing the core zone, they will not be disturbed at all; • Labors will not be allowed to discards food, plastic etc., which can attract animals/birds near the core site; • Only low polluting vehicles will be allowed for carrying mining materials. All vehicles allowed in the project site area will have to provide valid pollution under control certificate; • Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per noise pollution (regulation and control), rules, 2000, CPCB norms
Disturbance of riparian	• The mine owners will not be allowed to destruct or modify the riparian ecosystem or the wetlands by the side of the

ecosystem/ wetlands	river.
Monitoring of upstream and downstream water quality	• Water quality will be monitored from upstream and downstream area to assess the impact on water quality. Mining activity will be controlled to maintain the clean water conditions.

Impact on Ecology of the Area

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

Stone, sand, and bajri have been widely used in the construction of roads and buildings. Today, the demand for these materials continues to increase. Mining operators, in collaboration with cognizant resource agencies, must ensure that mining activities are carried out in a responsible manner.

Excessive and unscientific riverbed stone boulder, sand, and bajri mining cause river degradation. This can lead to bank erosion, depletion of sand in the streambed causing deepening of rivers and enlargement of river mouths. Any volume of sand exported from streambeds represents a loss to the system.

Excessive and unscientific riverbed material mining is a threat to bridges, river banks, and nearby structures. Stone boulder, sand, and bajri mining also affect the adjoining groundwater system and the local people who use the river.

Uncontrolled mining of riverbed stone boulder, sand, and bajri leads to the destruction of aquatic and riparian habitats through significant changes in channel morphology. These changes include bed degradation, bed coarsening, lowered water tables near the streambed, and channel instability. Such physical impacts can cause the degradation of riparian and aquatic biota and may lead to the undermining of bridges and other structures. Continued extraction may also result in the entire streambed degrading to the depth of excavation

Stone, Sand, and Bajri mining generates additional vehicle traffic that has a negative impact on the environment. Moreover, when access roads cross riparian areas, it can cause adverse effects on the local environment.

Mitigation measures

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

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

Flora and Fauna of Riparian Habitat

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

All species require specific habitat conditions to ensure long-term survival. Native species in streams are uniquely adapted to the habitat conditions that existed before humans began alterations. These have caused major habitat disruptions that favored some species over

others and caused overall declines in biological diversity and productivity. In most streams and rivers, habitat quality is strongly linked to the stability of channel bed and banks. Unstable stream channels are inhospitable to most aquatic species. Factors that increase or decrease sediment supplies often destabilize bed and banks and result in dramatic channel readjustments. For example, human activities that accelerate stream bank erosion, such as riparian forest clearing / Riverbed mining cause stream banks to become net sources of sediment that often have severe consequences for aquatic species. Anthropogenic activities that artificially lower stream bed elevation cause bed instabilities that result in a net release of sediment in the local vicinity. Unstable sediments simplify and, therefore, degrade stream habitats for many aquatic species.

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

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

Mitigation measures

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

- Sand extraction in vegetated riparian areas will be avoided.
- Undercut and incised vegetated banks will not be altered.
- Large woody debris in the riparian zone will be left undisturbed or replaced when moved and not be burnt.

- Sand stockpiles, overburden and/or vegetative debris will not be stored within the riparian zone.
- It is essential that overburden is evenly redistributed over exposed areas as soon as possible after the operation has been completed for faster revegetation.
- Operation and storage of heavy equipment within riparian habitat will be restricted.
- Access roads will not encroach into the riparian zones

  No exotic species will be introduced by the RBM project activity & associated persons at all.

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

The river channel will be filled with sediment deposition, leading to the widening of the channel and eventually causing submergence of nearby areas. Therefore, scientific and systematic mining can help mitigate these potential effects.

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

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

4.6 STATUATORY REQUIREMENTS

Effective resource management cannot be achieved in isolation; it is widely accepted that coordination and integration are necessary. Accordingly, the Department has pursued approaches to achieve coordination and integration wherever possible, resulting in the development of 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, 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
- The Wildlife (Protection) Act, 1972

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5.0 GENERAL

The examination of technology and site alternatives is an extremely important aspect of ensuring long-term sustainability for a project, particularly for large-scale ones that involve significant investments in terms of financial resources, labor, safety, environmental considerations, mineral value, and hazards. River bank mining is a relatively straightforward operation that involves extracting sand, stone, and bajri from river banks with minimal mechanization.

The proposed project is specific to the chosen site, which is determined by the geological setup and the mineable area of the river. As the project is located within the meandering course of the river, there is no disturbance to any objects of economic importance. Therefore, there is limited scope for alternative sites.

Alternative technologies can be utilized for the mining operation, although none have been implemented. This approach also offers a high potential for local employment, contributing to the socio-economic development of the region. Consequently, we have decided to adopt the open-cast manually extraction of sand, stone, and bajri at the selected site."

Therefore, the opencast manually extraction of Sand, Stone & Bajri at the selected site is adopted.

****

6.0 INTRODUCTION

The success of any post-project environmental monitoring program depends on the efficiency of the organizational setup responsible for implementing the program. Regular monitoring of various environmental parameters is also necessary to evaluate the effectiveness of the management program so that necessary corrective measures can be taken if there are any drawbacks in the proposed program. Environmental quality parameters in the work zone and surrounding areas are important for maintaining sound operating practices of the project in line with conformity with environmental regulations. Therefore, the post-project monitoring work is an essential part of EMP.

6.1 PROPOSED SET UP

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

The said team will be responsible for:

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

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

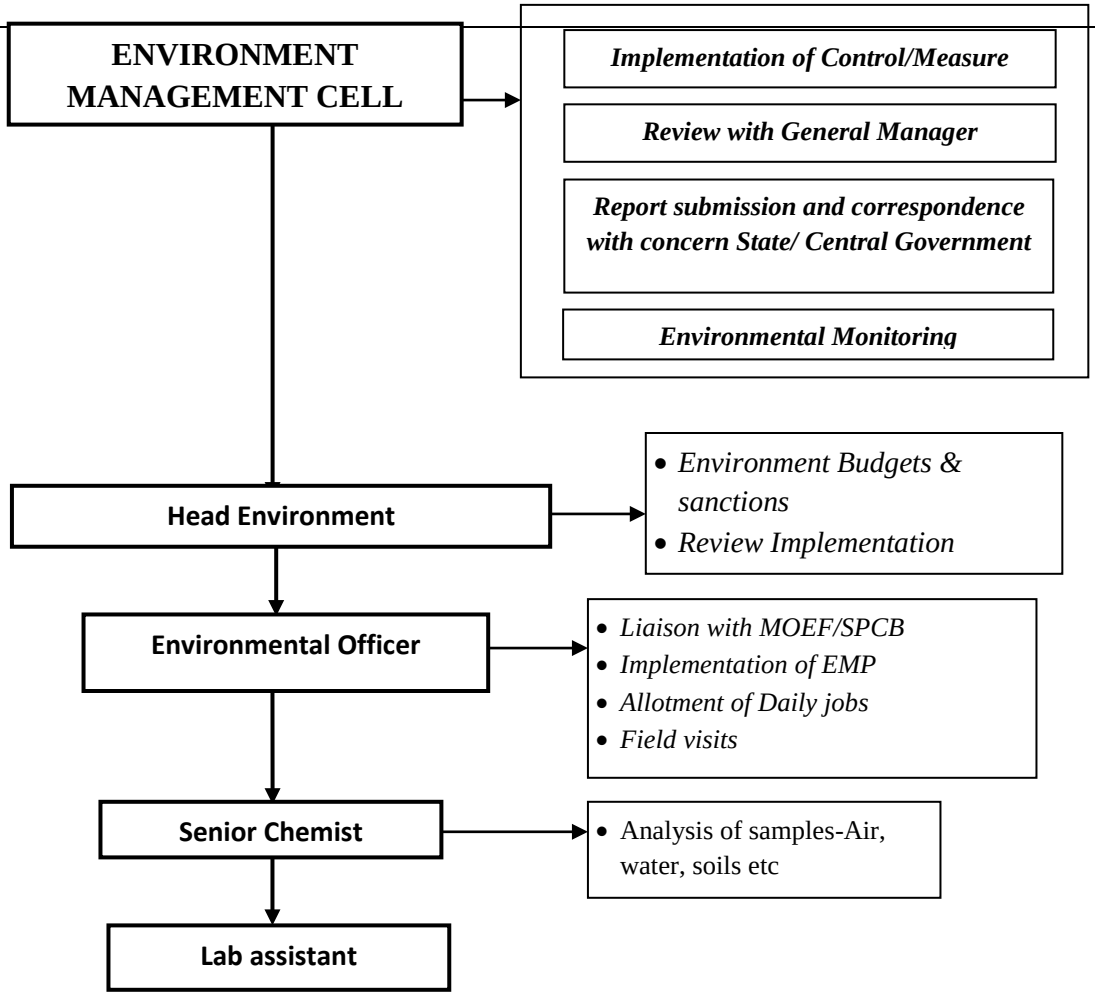

Fig. 6.1 Function of Environmental Management Cell

6.2 MONITORING SCHEDULE AND PARAMETERS

Air Quality Monitoring

Monitoring air quality is essential to evaluate the effectiveness of abatement programs and develop appropriate control measures. The project proponent will monitor ambient air quality in and around the proposed ordinary sand mining projects at a frequency of once every fortnight, or at any other frequency as stipulated by the MoEF, and take appropriate air pollution control measures to ensure that the concentration of PM2.5, PM10, SO2, and NOX remain within acceptable limits.

Water Quality monitoring

Water quality monitoring involves periodic assessment of the quality of surface water and groundwater near the mining project. Surface water samples will be analysed for all parameters according to EPA 1986 standards, while groundwater samples will be analysed for all parameters per IS-10500.

Phreatic surface levels will be continuously monitored throughout the project's lifespan to assess the impact of mining operations on the groundwater regime. A network of observation wells will be located in the villages surrounding the project area for monitoring phreatic surface levels. The water levels will be monitored four times a year during the pre-monsoon and post-monsoon seasons

Noise Level Monitoring

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

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

To assess occupational noise exposure levels, noise level monitoring will be conducted at the work zone. Additionally, noise levels at noise-generating sources such as mineral handling arrangements and vehicle movements, as well as nearby villages, will be monitored to study the impact of higher noise levels. This will enable the implementation of necessary control measures at the source.

Table 6.1: Monitoring Schedule and Parameters

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

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

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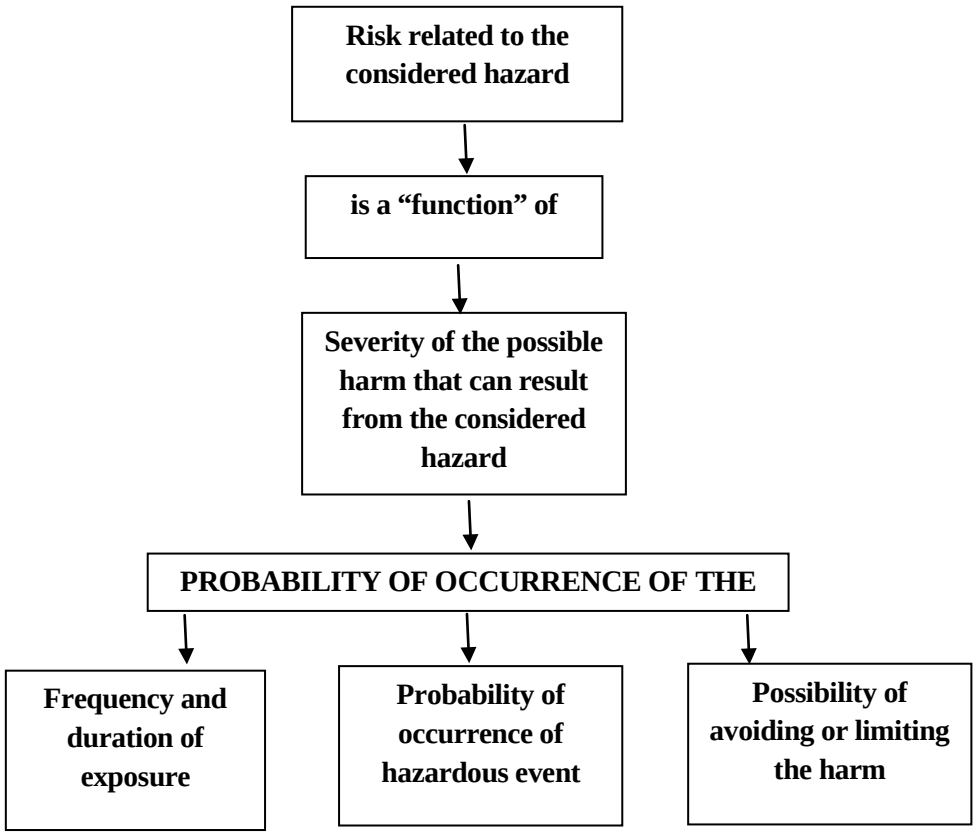
7.0 PUBLIC CONSULTATION

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

7.1 HAZARD IDENTIFICATION AND RISK ASSESSMENT METHODOLOGY

A) **RISK**

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



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

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

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

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

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.

B)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:

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

b.A middle level where it is shown the risk has been reduced to As Low As Reasonably Practicable level and that further risk reduction is either impracticable or the cost is grossly disproportionate to the improvement gained. This is referred as the ALARP region.

c.An intolerable region where risk cannot be justified on any grounds. The ALARP region is kept sufficiently extensive to allow for flexibility in decision making and allow for the positive management initiatives which may not be quantifiable in terms of risk reduction.

Table 7.1:The risk acceptability criteria are given in following table:

1	Risk unacceptance and must be reduced. The actions may include equipment's 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**

Table 7.2: Risk Likelihood Table for Guidance

Step 1: Assess the Likelihood				**Step 2: Assess the Consequences**		
L1	Happens every	Almost	Common or	**C1**	Fatality	Catastrophic

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

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

Risk Rank Likelihood x Consequence	**L1 Almost certain**	**L2 Likely**	**L3 Possible**	**L4 Unlikely**	**L5 Rare**
C1Catastrophic	1	2	4	7	11
C2Major	3	5	8	12	16
C3Moderate	6	9	13	17	20
C4Minor	10	14	18	21	23
C5Insignificant	15	19	22	24	25

RISK RATING:

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

7.2 POTENTIAL HAZARDS & 'ALARP' CONDITION

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

7.3 RISK PRIORITISATION BASED ON HAZARDS

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

The key risk(hazard x probability) event rating associated with sand bed mining and to assess its consequences of such events occurring and the likelihood based on above Table-7.2 are as: -

TheRisk rating of such hazards is as follows:

a) Inundation / Flooding (C1 xL3=4)

b) Quick Sand Condition (C2 x L3=8)

c) Drowning(C5 xL5=25)

d) Accident due to vehicular movement(C3 xL3=13)

e) Accident during sand loading, transporting and dumping=14.

(i.e.,C4 xL2=14)

7.3.1 Accident during sand/mineral loading,transportation and dumping

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

a. The minerals are loaded in the trucks using hand shovels. There is possibility of injury in the hands during loading with shovels.
b. There is possibility that the workers standing on the other side of loading may get injury due to over thrown sand with pebbles.
c. There is possibility of workers getting injured during opening of side covers to facilitate loading.
d. There is possibility of riverbank collapse.

e. There are chances of falling of cattle/children into pits in river bed by overlooking of fenced area near worksite or improper supervision.

7.3.2 Accident due to vehicular movement

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

The minerals loaded in 15T trucks are being sent to through public roads.

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

7.3.3 Inundation/Flooding

The risk rating assigned to this activity is assigned as 4(C1 xL3=4) i.e., it is only possible, if warnings are neglected and work started without assessment of the river bed condition specially during monsoon season ,the event will be catastrophic with major consequences as frequency of this operation is possible. However, the event has to be brought under 'ALARP' Zone by strict supervision based on river water and other metrological data.

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

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

7.3.4 Quick Sand Condition

The risk rating assigned to this activity is assigned as 8(C2 x L3 =5) i.e., it is likely event with major consequences as frequency of this operation is likely but the predicted/assumed intensity(Based on experience) is major.

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

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

$i = i_{cr} = y'/y_w$-;

Where, i = Hydraulic gradient,

i_{cr} = Critical Hydraulic gradient,

y' = submerged unit weight,

y_w = unit weight of water.

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

7.3.5 Drowning

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

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

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

7.4.1 Measures to Prevent Accidents during Loading

1. The 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 in river bed and catchment area, or no pits/pockets are allowed to be filled with such material.
7. Stockpiling of harvested material on the river bank should be avoided.

7.4.2 Measures to Prevent Accidents during Transportation

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

7.4.3 Measures to prevent Dangerous Incidents during Inundation/Flooding

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

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

7.4.4 Measures to Prevent Quick Sand Condition

1. The only way to avoid quick sand condition is by avoiding mineral lifting below water table.

2. The critical hydraulic gradient (i_{cr}) should be maintained at less than 1 to prevent high artesian pressure in a coarse sand area.
3. At least 0.5m sand bed should be left in-situ while harvesting sand from riverbed.

7.4.5 Measure to Prevent Drowning

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

7.5 NATURAL RESOURCE CONSERVATION

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

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8.0 GENERAL

The project's operation will prevent the widening of the river channel and the flooding of surrounding areas caused by sediment buildup. It will also bring overall improvements to the locality, neighborhood, and state by introducing new industries, roads, water supply, electricity, employment opportunities, better living standards, and increased economic growth.

8.1 BENEFIT OF MINING

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

8.2 EMPLOYMENT

The socio-economic conditions in the surrounding villages indicate that employment generation is seasonal, with agricultural and cattle rearing activities being the main sources of income. Additionally, many people work in local mines, but only on a daily wage basis. The proposed mining activity has the potential to provide stable employment opportunities for the local community, which would significantly increase their socio-economic status.

The total direct manpower requirement for the mining operation is expected to be around 70 people, with an additional significant number of indirect employments created through associated activities. This project operation will provide livelihoods to some of the poorest members of society. Depending on the general shifts worked, the proposed manpower for the project is as follows.

Table- 8.1, Employment detail

SI. No	Qualification	No. of persons
1.	Mining Engineer	01
2	Geologist	01
3	Skilled workers	33
4	Unskilled workers	35

Total	**70**

8.3 IMPROVEMENTS IN PHYSICAL AND SOCIAL INFRASTRUCTURE

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

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

8.4 IMPROVEMENTS IN PHYSICAL INFRASTRUCTURE

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

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

8.5 IMPROVEMENTS IN SOCIAL INFRASTRUCTURE

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

Following are the specific impacts: -

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

Table- 8.2, Budget for Corporate Environmental Responsibility (CER)

CER Activity	Capital cost Rs. in lakhs
Deposit Demand Draft (@ Rs. 4.00 lacs per S ha.) under CER, shall be deposited in the form of Demand Drat to the office of Director (DEST), GOHP for which the Director (DEST) will devise a plan in consultation with project proponent	Rs 4 lakhs @ 3.3799 Ha. = 13.5 Lakhs

Table- 8.3, Budget for Occupational Health

Particulars	Recurring Cost per year (Rs.)
For routine checkup	3,00,000
Medical aid as per ESI Scheme	3,00,000
Training	2,00,000
Total	**8,00,000**

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

Health Care facilities: - Lessee will undertake awareness program and community activities like health, camps, medical aids, family welfare camps, AIDS awareness program etc.

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

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

8.6 PLANTATION

The management will provide free saplings of fruit and other trees to local residents during rainy season for plantation, which will increase awareness among workers and nearby villagers about the importance of greenery. Fruit trees can also contribute to their financial gains.

8.7 HEALTH

Periodic medical checkups, as required by the Mines Act/Rules, and other social development and promotional activities will be undertaken, which will improve the overall health status of the residents in the mines' vicinity.

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9.0 INTRODUCTION

To mitigate the adverse impact that may be caused by mining operations and overall scientific development of the local habitat, an environmental management plan (EMP) has been formulated and integrated with the mine planning. Chapter IV of this report discusses the anticipated impacts and mitigative measures based on the results of the present environmental conditions and environmental impact assessment. The EMP considers the implementation and monitoring of environmental protection measures during and after mining operations.

Earlier in this report, the mitigation measures that reduce the impact have already been identified. To further minimize the adverse impact, additional EMPs are enumerated below for implementation.

9.1 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Proper environmental management plan is proposed for "Sand/stone/bajri" extraction project to mitigate the impact during the mining operation.

- Care will be taken that no labour camps will be allowed on river bed.
- Care will be taken that no cooking, or burning of woods will be allowed in the adjoining area.
- Prior to extraction process, short awareness program will be conducted for labours to make them aware to way of working.
- If some causality or injury to animal occurs, it will be informed to forest department and proper treatment will be given.
- No tree cutting, chopping, lumbering, uprooting of shrubs and herbs will be allowed.
- Corridor movement of wild mammals (If exists) will be avoided.
- Care will be taken that noise produced during vehicles movement for carrying sand are within the permissible noise level.
- No pilling of material will be in adjoining area.

9.2 ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION

An Environmental Management Plan serves no purpose if it is not implemented in true spirit. Some loopholes in the EMP can also be detected after it has been implemented and monitored. Therefore, an implementation and monitoring program must be prepared.

The major attributes of the environment are not confined to the mining site alone. The implementation of proposed control measures and monitoring programs have implications for the surrounding area and the region as a whole. As such, mine management should strengthen the existing control measures, as elaborated earlier in this report, and monitor the effectiveness of the control measures implemented within the mining area. This should relate to the following specific areas for an eco-friendly mining plan.

a) Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.

b) Collection of soil samples at strategic locations once in every year and analysis thereof with regard to deleterious constituents, if any.

c) The effectiveness of drainage system depends upon proper cleaning of all drains provided in the surrounding of lease area. Any blockage due to siltation or loose material will be checked at least once in a month.

d) Measurement of water level fluctuations in the nearby ponds, dug wells and bore wells.

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

f) Measurement of noise levels at mine site, stationary and mobile sources, and adjacent villages will be done in every quarter of the year.

g) Plantation and afforestation should be carried out as per the program, which involves planting trees along the road sides and near civic amenities. These areas will be allotted by government bodies as it is not feasible to plant trees near the mine lease area.

Following the plantation, the area will be regularly monitored in every season to evaluate the success rate. Local people should also be involved in the selection of plant species.

Mine management will maintain regular communication with the surrounding villages to update them on the various developmental schemes implemented. They will also consider any immediate requirements that can be taken care of in the near future.

An Environmental Management Cell (EMC) will be responsible for monitoring the Environmental Management Plan (EMP) and its implementation. EMC members should meet once a month to assess the progress and analyze the data collected during the month. The EMC will function according to Figure 6.1 (Section VI)."

EMC will maintain regular communication with both the State Pollution Control Board and the Indian Bureau of Mines, and will send them an annual progress report. Any new industry regulations proposed by the State/Central Pollution Control Board will be duly addressed by EMC.

9.3 PROPOSED SET UP

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

The said team will be responsible for:

(i) Collecting water and air samples from surrounding area and work zone monitoring for pollutants.

(ii) Analyzing the water and air samples.

(iii) Implementing the control and protective measures.

(iv) Co-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) Greenbelt development, etc.

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

9.4 GREENBELT DEVELOPMENT PLAN

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

These plantations will be carried out around mining zone. Most of the area recommended for mining will be used for afforestation/greenbelt as per the "Forest (Conservation) Amendment Rule, 2004". About 2500 trees (as per SSMG guideline) will be planted in five years along both sides of roads and civic amenities in consultation with the local authorities. Variety of wild fruit plants like wild pear, guava, shehtoot, Jamun, Ber, Indian Strawberry will be used for plantation.

Table 9.1: Details of Greenbelt Scheme

Year	No. of Plants	Plants Covered Area (Sq m)
1st	200	2000
2nd	200	2000
3rd	200	2000
4th	200	2000
5th	200	2000
Total	**1000**	**10000**

Table 9.2: Proposed species for plantation

Scientific Name	Common Name	Family	Habitat
Dalbergia Sissoo	Shisham	Fabaceae	Tree
Albizia Lebbeck	Siris	Fabaceae	Tree
Senegalia Catechu	Khair	Fabaceae	Tree
Syzygium Cumini	Jamun	Myrtaceae	Plant
Citrus X sinensis	Orange	Rutaceae	Tree
Chamaedorea Seifrizii	Bamboo	Poaceae	Plant

9.5 BUDGET ALLOCATION FOR EMP IMPLEMENTATION

An annual budget for EMP is essential for the successful implementation of EMP. Since there are currently no pollution control systems in place, no capital cost for a pollution control system has been planned. Instead, the costs will consist of annual operating costs as outlined below. The allocated funds will not be diverted for any other purposes, and top management will be held responsible for ensuring this. The budget will consider both 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. Man power cost for environmental cell
5. Any other cost as per EC condition

Table 9.3 Budget allotted for the Environmental Management Plan

S.NO	TITLE	CAPITAL COST RS IN LAKHS	RECURRING COST/YR RS IN LAKHS	RECURRING COST FOR 5 YRS	TIMELINE
1.	Monitoring of Air, Water, Soil, etc. twice a year.	--	0.8	4.0	Once in a six month (As per CPCB guideline)
2.	Air Pollution Control- Management of Haulage Roads & mine road of 1500 meters including Sprinkling. Tractor trolley with sprinkler (*Depreciate cost of tanker & Sprinkler)	3.0	0.54	2.7	Twice a day & as per requirement
3.	Green Belt Development Area for Plantation= 0.95 Ha **No. of plants = 950 Plants** Cost and No. of plants are as per the ***No.Ft.1790-/71(D)2011-12/Vol-VIII(Norms), Himachal Pradesh**	1.5	----	2.5	As per norms recurring cost for next three years

	Forest Department, Shimla Dated 07 June 2019				
4.	Retaining wall structure/Check Dam 5 Nos. of check dam. 100 Cu.m. each Total = 500 Cu.m. @ Rs 1200 per Cu.m.	6.0	0.1	YEAR I - 0 YEAR II - 0.1 YEAR III - 0.2 YEAR IV – 0.3 YEAR V – 0.4 Total – 1.0	Retaining Wall have been proposed for protect the water to flow out of HFL.
5.	Occupational Health Measures Provision of PPE, First Aid and other, miscellaneous expenditure.	0.50	---	0.50	As per requirement
Total		**11.0**	**1.44**	**10.70**	**---------**

- ***Plants (@Rs. 1,00,000 @ 1000 Plant i.e., Rs.100/ plant***
- ***Maintenance of haul road @ Rs. 2.0 lakh/km***
- ***Salary of Labour for haul road maintenance 2 labor*Rs. 200* 300 days= Rs. 1,20,000/- for one year (Rs. 6.0 lakh for 5 years)***

9.6 MONITORING SCHEDULE AND PARAMETERS

To evaluate the effectiveness of environmental management program regular monitoring of the important environmental parameters to be monitored are shown in Table. 6.1. (Chapter 6).

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10.0 INTRODUCTION OF PROJECT&PROPONENT

The proposed project is for Extraction of Sand, Stone and Bajri from Khasra No. 405,Measuring 03-37-99 Hectares (Govt Land, River Bed) Falling in Mauza Datwal, Mohal Jangli,Tehsil Bijhari, District Hamirpur, Himachal Pradesh. The project has been proposed by Sh. Madan Lal, S/o Sh. Ram ChandR/o Village & P. O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, Himachal Pradesh. Proposed project has been allotted to the proponent vide letter no. Udyog-Bhu (Khani-4) Laghu-936/2020-4869 dated 05-09-2022. Mining plan has been approved vide letter no. Udyog-Bhu (Khani-4) Laghu – 936/2020- 9056 dated 15.12.2022. The estimated project cost is Rs 30 Lakh. The proposed production is 61,599 MTPA.

According to the EIA Notification dated 1st July 2016, a cluster will be formed when the distance between the peripheries of one lease is less than 500 m from the periphery of another lease in a homogeneous mineral area. This is applicable to mine leases or quarry licenses granted on or after 9th September 2013 (Ref: Clause (B) (i), Page No-4 in EIA Notification dated 1st July 2016).

Therefore, based on the EIA Notifications dated 15th January 2016 and 1st July 2016, the project falls under B1 Category with project activity type “1(a)” (Mining of Minerals) with a cluster situation. The area of active mines in the immediate surroundings exceeds 5 hectares, and thus, an EIA and EMP are required to seek Environmental Clearance from SEIAA as per the O.M F. No. L-11011/175/2018/-IA-II (M) dated 12/12/2018.

The Environmental Impact Assessment (EIA) study report is prepared for obtaining Environmental Clearance (EC) from SEIAA Himachal Pradesh for the proposed Extraction of Sand, Stone &Bajri Project.

The proposed project is having area of 03-37-99 Hectares (under cluster approach of area 6-06-30 Hectares (Govt Land, River Bed) and falls under Category- “B1” as per the 500 m cluster Certificate vide letter no. Udyog-Bhu (Khani-4) Laghu-936/2020-9441 Dated 29-12-2022 regarding details of other mines located within 500m of the lease area which is attached

as**Annexure-V.** As per the 500 m cluster Certificate from Mining Officer the details of mining lease area which falls within 500m is given in table 1.1

Table 10.1: Cluster Details

Sr. No.	Name of Mining Lease	Khasra No.	Area in Hectares	Mohal & Mauza	Validity Period	Status of EC/Mining leases whether operating or not operating
1.	Ms. Sikha Kapil, Vill -Gharyani, PO- Lafran, Tehsil Bijhari, District Hamirpur	209/2	02-68-31	Jangli/Datwal	10 years valid from dated 07-12-2021 to 06-12-2031	EC granted and Mining lease is operational

10.1 LOCATION

The proposed project is for Extraction of Sand, Stone and Bajri from Khasra No. 405 Measuring03-37-99 Hectares (Govt Land, River Bed) Falling in Mauza Datwal, Mohal Jangli, Tehsil Bijhari, Himachal Pradesh.

Pillars	Latitude	Longitude
A	31°29'9.00"N	76°36'34.12"E
B	31°28'56.91"N	76°36'32.02"E
C	31°28'56.97"N	76°36'30.35"E
D	31°29'9.07"N	76°36'29.41"E
E	31°29'9.43"N	76°36'25.92"E
F	31°29'8.88"N	76°36'24.83"E
G	31°29'8.44"N	76°36'25.34"E
H	31°29'9.21"N	76°36'26.20"E

Site connectivity:

Nearest Railway Station	Una Railway Station is approx. 28 km towards NW direction.

Nearest National & State Highway	NH-103 ≈ 6.15 Km in E Direction
Nearest Airport	Shimla Airport ≈ 61.3 Km in SE Direction (Aerial distance)
Nearest Town	Bhota - About 15 km away towards NW direction.

10.2 RESERVES

Summary of Geological reserves is as below:

Area in sqm.	Specific Gravity	Depth in metres	Geological Reserves (in MT)
30419	2.25	3	206229
		1	68443

Reserve estimation in the available mineable area

Area proposed for grant of Mining Lease in sqm.	Mineable Area in sqm.	Volume in cum	Boulders (MT) (40%)	Bajri (MT) (30%)	Sand (MT) (25%)	Silt/Clay (MT) (25%)	Total Resource (MT)
33799	30419	30419	27377	20533	13689	6844	68443

10.3 MINING

Extraction will be carried out by opencast manual/ semi-mechanized method without adoption of drilling & blasting. The extraction will be confined to excavation of sand, stone bajri from the River bed (SukkarKhad). Excavation of minerals will be carried out only up to a depth of 1m (No OB/ waste material will be produced in river bed. The sand shall be exploited upto depth of 1.0m bgl or above the groundwater whichever is comes first.

10.4 WATER SUPPLY

In the river bed mining projects, there is as such no need of water to carry out operations, except for dust suppression. The number of working people is 70. Total water requirement will be around 6.15KLD. This water will be supplied from the nearby area.

10.5 BASE LINE DATA

This section contains the description of baseline studies of the 10km radius of the area surrounding "Project of Extraction of Sand, Stone and Bajri at (Govt Land, River Bed) Falling in Mauza Datwal, Mohal Jangli, Tehsil Bijhari, 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 can be assessed.

Environmental data has been collected in relation to proposed mining for: -

(a) Air

(b) Noise

(c) Water

(d) Soil

(e) Ecology and Biodiversity

(f) Socio-economy

Table 10.2 BASELINE ENVIRONMENTAL STATUS

Attribute	Baseline status
Ambient Air Quality	Ambient Air Quality Monitoring reveals that the minimum & maximum concentrations of PM10 for all the 8 AQ monitoring stations were found to be 46.23 µg/m3 & 79.82 µg/m3, respectively and the minimum & maximum concentrations of PM 2.5 were found to be 16.64 µg/m3 and 39.48µg/m3 respectively. As far as the gaseous pollutants SO2 and NOx are concerned, the prescribed CPCB limit of 80 µg/m3 for residential and rural areas has never surpassed at any station. The maximum & minimum concentrations of SO2 were found to be 5.24 µg/m3 & 15.89µg/m3 respectively. The maximum & minimum concentrations of NOx were found to be in between 8.25 µg/m3 & 20.55 µg/m3.
Noise Levels	Noise monitoring was carried out at 08 locations. The results of the monitoring program indicated that both the daytime and night time levels of noise were well within the prescribed limits of NAAQS, at all

	the four locations monitored.
Water Quality	07 Groundwater samples and 03 surface water samples were analyzed and concluded that: The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by Indian Standards IS: 10500. From the Surface water analysisit is evident that most of the parameters of the samples comply with 'Category 'B' standards of CPCB indicating their suitability for Drinking water source after conventional treatment and disinfection.
Soil Quality	Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.25 to 7.62, which shows that the soil is alkaline in nature. Potassium is found to be from 142.69 mg/kg to 284.40 mg/kg. The water holding capacity is found in between 34.32 % to 36.21 %.
Ecology and Biodiversity	There are no Ecologically Sensitive Areas present in the study area, but many reserved forests regions surround the project area
Socio-economy	The implementation of the Sand, Stone & Bajri extraction project on river Sukkar Khad 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.

10.6 BIOLOGICAL ENVIRONMENT

Flora of the Core Zone

The core zone comprises of river sand bed by the side of water channel of Sukkar Khad river basin, where extraction is proposed. No ecologically sensitive plant species has been reported

from this area. The table below here shows the flora of the study area.

Flora of the Buffer Zone

The study area comprise of Sub-Tropical Dry Deciduous Vegetation. Several tropical elements can be seen scattered in the area. Species of Saccharum, Calotropis, Vitex, Zizyphus, etc. are of common occurrence. Tree species viz. Acacia catechu, Albizia lebbeck, Dalbergia sissoo, Morus alba, etc. are found planted along the boundary of the agricultural lands and along the road sides.

Ground vegetation mainly consists of grasses and small shrubs. Among the grasses, *Vetiveria zizanioides*, *Cenchrus ciliaris* are very common in the area. Useful fodder grasses, *Cynodon dactylon, Eleusine indica*, *Trifolium alexandrinum*, etc. are present in the proposed project area.

The large weeds which infest uncultivated tracts are *aak (Calotropis procera), arind (Ricinus communis), dhatura (Datura metel)* and *thor (Opuntia stricta).* Other noxious weeds and those which appear in crops are *pohli*or thistle *(Carthamus oxyacantha), shialkanta (Argemone mexicana), kandyari (Solanum virginianum)* and *bhang (Cannabis sativa).*.

Fauna reported in Core zone:

During the faunal survey in the area no wildlife corridor or movement of animals was recorded from proposed project area. No established habitats of any mammals or birds are noticed in river bed and along the banks. No bird's habitats like nesting, breeding and forging patterns are noticed in the core zone. Local birds are noticed crossing over the banks in search of food. No fixed pattern in migratory behaviour is noticed.

Many domesticated mammal species are reported from buffer zone during the field survey. Common domestic animals like Buffalo, cow, goat etc. can be noticed in open grass fields while grazing. Small mammals like Indian hare (*A Lepus nigricollis*), Indian Palm Squirrel (*Funambulus palmarum)* and field mouse (*Apodemus sylvaticus*) are noticed in vicinity of the village.

Birds like Jungle Myna (*Acridotheres fuscus*), Common Myna (*Acridotheres tristis*), Spotted Owlet *Athene brama,* Cattle Egret (*Bubulcus ibis),* Pied kingfisher (*Ceryle rudis) etc* are of common occurrence.

The reptilians species commonly reported are Common Toad (*Bufo melanostictus*) in settlement area, Garden lizard (*Calotes versicolor*) and Krait (*Bungarus caeruleus)* along shady places in agricultural field or where growth of bushes is noticed.

Table 10.3 Anticipated impact and mitigation measures for biological environment

Impact Predicted	Suggestive measure
Disturbance to free movement / living of wild fauna viz. Birds, Reptiles etc.	If birds are noticed crossing the core zone, they will not be disturbed at all; Labours will not be allowed to discards food, plastic etc., which can attract animals/birds near the core site; Only low polluting vehicles having PUC will be allowed for carrying mining materials. Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per noise pollution (regulation and control), rules, 2000, CPCB norms
Disturbance of riparian ecosystem/ wetlands	The riparian ecosystem or the wetlands will not be destroyed by the mine owners
Monitoring of upstream and downstream water quality	Water quality will be monitored from upstream and downstream area to assess the impact on water quality and plankton and mining activity will be controlled to maintain the clean water conditions.

10.7 LAND ENVIRONMENT

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

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

Mitigation measures

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

10.8 AIR ENVIRONMENT

Anticipated impacts and evaluation

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

Mitigation measures

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

10.9 WATER ENVIRONMENT

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

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

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

10.10 NOISE ENVIRONMENT

Anticipated impacts and evaluation

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

Mitigation measures

As the only impact is due to transportation of extractedStone Boulder, Sand, &Bajri to the construction though village roads, emphasis will be given on the following points.

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

It was found that the extraction activity will not have any significant impact on the biological environment of the region. Since mining activity is carried out only during the day time, the movement of animals during the night will not be hindered. Proper mitigative measure will be taken by the contractor, in consultation with local NGOs working in the study area.

10.11 TRAFFIC ANALYSIS

From the above analysis it can be seen that the V/C ratio will be modified from 0.08 to 0.09 at Village metallic road connected to Karloti- Chatt Road with LOS being “A” and will be modified from 0.10 to 0.11 at Bijhri-Bherthen Road with LOS remain A respectively. So, the additional load on the carrying capacity will be affected to a minimum level.

10.12 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Proper environmental management plan is proposed for “Stone Boulder, Sand, &Bajri” extraction project to mitigate the impact during the mining operation.

- Care will be taken that no labour camps will be allowed on river bed.

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

10.13 ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION

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

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

a. Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.
b. Collection of soil samples at strategic locations once in every year and analysis thereof with regard to deleterious constituents, if any.

c. The effectiveness of drainage system depends upon proper cleaning of all drains provided in the surrounding of lease area. Any blockage due to siltation or loose material will be checked at least once in a month.

d. Measurement of water level fluctuations in the nearby ponds, dug wells and bore wells.

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

f. Measurement of noise levels at mine site, stationary and mobile sources, and adjacent villages will be done in every quarter of the year.

g. Plantation and afforestation should be carried out as per the program, which involves planting trees along the road sides and near civic amenities. These areas will be allotted by government bodies as it is not feasible to plant trees near the mine lease area. Following the plantation, the area will be regularly monitored in every season to evaluate the success rate. Local people should also be involved in the selection of plant species.

10.14 BUDGET ALLOCATION FOR EMP IMPLEMENTATION

Table 10.4Budget allotted for the Environmental Management Plan

S.NO	TITLE	CAPITAL COST RS IN LAKHS	RECURRING COST/YR RS IN LAKHS	RECURRING COST FOR 5 YRS	TIMELINE
1.	Monitoring of Air, Water, Soil, etc. twice a year.	--	0.8	4.0	Once in a six month (As per CPCB guideline)
2.	Air Pollution Control- Management of Haulage Roads & mine road of 1500 meters including Sprinkling. Tractor trolley with sprinkler (*Depreciate cost of tanker & Sprinkler)	3.0	0.54	2.7	Twice a day & as per requirement
3.	Green Belt Development Area for Plantation= 0.95 Ha **No. of plants = 950 Plants** Cost and No. of plants are as per the ***No.Ft.1790-/71(D)2011-12/Vol-VIII(Norms), Himachal Pradesh Forest Department, Shimla Dated**	1.5	----	2.5	As per norms recurring cost for next three years

	07 June 2019				
4.	Retaining wall structure/Check Dam 5 Nos. of check dam. 100 Cu.m. each Total = 500 Cu.m. @ Rs 1200 per Cu.m.	6.0	0.1	YEAR I - 0 YEAR II - 0.1 YEAR III - 0.2 YEAR IV – 0.3 YEAR V – 0.4 Total – 1.0	Retaining Wall have been proposed for protect the water to flow out of HFL.
5.	Occupational Health Measures Provision of PPE, First Aid and other, miscellaneous expenditure.	0.50	---	0.50	As per requirement
Total		**11.0**	**1.44**	**10.70**	**---------**

- ***Plants (@Rs. 1,00,000 @ 1000 Plant i.e., Rs.100/ plant***
- ***Maintenance of haul road @ Rs. 2.0 lakh/km***
- ***Salary of Labour for haul road maintenance 2 labor*Rs. 200* 300 days= Rs. 1,20,000/- for one year (Rs. 6.0 lakh for 5 years)***

10.15 MONITORING SCHEDULE AND PARAMETERS

Table 10.5Monitoring Schedule and Parameters

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

6	Socio-economic condition of local, population, physical survey	Once in 3 or 4 years

10.16 BENEFIT OF MINING

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

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CONSULTANTS ENGAGED

Consultant Contact Details:

P & M Solution

Address –C-88, Sector 65, Noida

Mobile no. - +91 8377871554, 8826287364, 0120-4321723

Website- www.pmsolution.in

Consultant accreditation details are given below:

Quality Council of India

National Accreditation Board for Education & Training

CERTIFICATE OF ACCREDITATION

P and M Solution

First Floor, C-88, Sector-65, Noida, Uttar Pradesh- 201301

Accredited as Category -A organization under the QCI-NABET Scheme for Accreditation of EIA Consultant Organizations: Version 3 for preparing EIA/EMP reports in the following sectors:

Sl. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1.	Mining of minerals including opencast / underground mining	1	1 (a) (i)	A
2.	River Valley projects	3	1 (c)	B
3.	Metallurgical industries (ferrous & non-ferrous)	8	3 (a)	B
4.	Highways,	34	7 (f)	A
5.	Building and construction projects	38	8 (a)	B
6.	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in IA AC Minutes dated December 20, 2019 on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/20/1223 dated February 3, 2020. The accreditation needs to be renewed before the expiry date by P and M Solution, Noida following due process of assessment.

Sr. Director, NABET
Dated: February 3, 2020

Certificate No.
NABET/EIA/1922/IA0053

Valid till
Dec 10, 2022

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.

National Accreditation Board for Education and Training

QCI/NABET/ENV/ACO/23/2770 June 02, 2023

To

P and M Solution
C-88, Sector-65 Noida
Noida, UP

Sub.: Extension of Validity of Accreditation till Sept 01, 2023 – regarding
Ref.. 1. Certificate no. NABET/EIA/1922/IA0053
2. Request e-mail dated May 30, 2023

Dear Sir/Madam

This has reference to the accreditation of your organization under the QCI-NABET EIA Scheme, the validity of **P and M Solution** is hereby extended till Sept 01, 2023 or completion of the assessment process, whichever is earlier.

The above extension is subject to the submitted documents/required information with respect to your application and timely submission and closure of NC/Obs during the process of assessment.

You are requested not to use this letter after expiry of the above stated date.

With best regards.

(A K Jha)
Sr. Director, NABET

S No	Name	EC/FAE	DETAILS
1	Subhash Kumar	EC	EC
2	Rahul Kumar	FAE	AQ
3	TapanMajumdar	FAE	GEO, HG
4	Jatin Kumar Srivastava	FAE	SC
5	Manoj Kumar Pandey	FAE	EB
6	Dr R K Tewari	FAE	RH,AP
7	Neha Singh	FAE	NV
8	AbhayNath Mishra	FAE	SE
9	HussainZiauddin	FAE	WP
10	PoonamKumariMangalam	FAE	LU

Laboratory Details:

Noida Testing Laboratory

GT-20 Sector 117 Noida

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ANNEXURE I

Terms of reference (TOR)

State Level Environment Impact Assessment Authority
Himachal Pradesh
Ministry of Environment, Forest & Climate Change, Government of India,
at Department of Environment Science & Technology,
Paryavaran Bhawan, Near US Club, Shimla-1
Ph: 0177-2656559, 2659608 Fax: 2659609

F. No. HPSEIAA/2022/1029 – 1382-89 Dated: 16/5/ 2023

To

Sh. Madan Lal,
S/o Sh. Ram Chand, Village & PO Gandalwin,
Tehsil-Ghumarwin, District Bilaspur, HP.

Subject: **Project proposal for Mining of Minerals – Terms of References-reg.**

Sir/Madam,

This has a reference to your online application No. SIA/HP/MIN/413181/2023 for approval of Terms of References for undertaking Environment Impact Assessment Study for further seeking Environmental Clearance under Environment Impact Assessment Notification, 2006.

The proposal has been appraised as per prescribed procedure in the light of provisions under the Environment Impact Assessment Notification, dated 14th September 2006 on the basis of documents viz; Form-I, Pre-feasibility Report, Proposed ToRs etc. by the State Expert Appraisal Committee constituted by the competent authority in its 88th meeting held on 19-20th January, 2023. The said project involves following salient features:

a)	Proposal No.	SIA/HP/MIN/413181/2023 HPSEIAA/2022/1029
b)	Project type	Extraction of Sand, Stone & Bajri.
c)	Project Location	Khasra number 405 falling in Mauza & Mohal Datwal & Jangli, Tehsil Bijhar, Distt. Hamirpur, HP.
d)	Jamabandi	Jamabandi for the year 2020-2021
e)	Land Status	Government Land.
f)	Capacity	61,599 TPA.
g)	Mining Area	3-37-99 Hectare, Government land, river bed.
h)	Leases with in 500 meter from the periphery of the area applied.	One mining lease exist within 500 meters: 1. Ms. Sikha Kapil (2-68-31 Hect.)
i)	Letter of Intent	LOI extended and valid up to 04.09.2023
j)	Validity period of ToR	3 Years as per the provision of EIA Notification 2006 & OM No. J-11013/41/2006-IA-11 (I) (Part) dated 29/08/2017 issued by MoEF&CC, GoI

The SEIAA examined the proposal in its 61st meeting held on 21st April, 2023 and considered the recommendations made by SEAC in its 89th meeting held on 16th February, 2023. After considering the recommendations of the State Level Expert Appraisal Committee, the State level Environmental Impact Assessment Authority under the provisions of EIA Notification 2006, accord approval to standard Terms of References as published by MoEF&CC, GoI afresh for Mining of Minerals, for the purpose of preparing Environment Impact Assessment Report, Environment Management Plan for obtaining prior Environment Clearance with public consultation, if applicable, with the following additional conditions:

1. The project proponent shall also assess the air quality of the area using Air Quality Models.
2. The project proponent shall assess and provide comprehensive details of muck disposal in the final EIA/ EMP report.
3. The project proponent shall provide details of labour, its management.
4. The traffic/ vehicle flux assessment shall be included in the EIA/ EMP.
5. The project proponent may use baseline data for EIA/ EMP reports from already formulated EIA/ EMP as per the provision of EIA notification 2006 with prior consent of the respective proponent and his undertaking to be submitted to the SEAC.

16/5/23
Member Secretary
State Level Environment Impact Assessment Authority
Himachal Pradesh

Endst. No. As Above. Dated: 2023. 2
Copy to following for further necessary action:

1. The Secretary (Environment), Ministry of Environment, Forests & Climate Change (MoEF&CC), GoI, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi - 110003
2. The Chairman, Central Pollution Control Board, Him Parivesh Bhawan, CBD-cum-office Complex, East Arjun Nagar, New Delhi-110032.
3. The Chairman, Himachal Pradesh State Pollution Control Board, Shimla-171009.
4. The Director (Environment, Science & Technology) to the GoHP, Shimla-171001.
5. The Adviser (IA), MoEF&CC, GoI, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi - 110003.
6. The Integrated Regional Office, MoEF&CC, CGO Complex, Shivalik Khand, Longwood, Shimla, HP-171001.
7. The Monitoring Cell, MoEF&CC,GoI, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi - 110003
8. Record File.

Member Secretary
State Level Environment Impact Assessment Authority
Himachal Pradesh

ANNEXURE II

Letter of Intent (LOI) & LOI Extension letter

No. Udyog-Bhu(Khani-4)Laghu-936/2020 - 4869
Government of Himachal Pradesh
Department of Industries
Geological Wing

Dated: Shimla-171001 5/9/2020

LETTER OF INTENT

The Tender-cum-Auction of Minor Mineral Quarries of Barsar Sub Division, District Hamirpur was held on 05.03.2020 by the Auction Committee constituted under the Chairmanship of Additional Deputy Commissioner, Hamirpur, District Hamirpur, H.P. During the auction of Sukkar khad (Jangli), the highest annual auction bid of Rs. 12,00,000/- (Rs. Twelve lacs) only was offered by Sh. Madan Lal, S/o Sh. Ram Chand, Village & P.O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, H.P. On the basis of recommendation of the Auction Committee, the matter was referred to the Government for approval and as per approval conveyed by the Government vide letter No. Ind-II-(F)2-5/88-II dated 07.07.2020, the Letter of Intent for extraction of Sand, Stone & Bajri from Sukkar khad (Jangli) over an area measuring 03-37-99 Hects. bearing khasra number 405 (Government land) falling in Mauza & Mohal Datwal & Jangli, Tehsil Bijhar, District Hamirpur, H.P. for a period of 10 years is hereby issued subject to the following conditions:-

1. The party shall get the area demarcated from the revenue authorities and shall erect permanent boundary pillars to the satisfaction of the Mining Officer so as to clearly depict the area for which letter of Intent is issued. A copy of the demarcation report shall also be submitted to the Mining Officer concerned.

2. The party shall have to submit the approved Mining Plan under Rule 35 of Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of illegal Mining, Transportation and Storage) Rules, 2015.

3. The party shall have to obtain Environment Clearance under the provision of Environment Protection Act, 1986 from the Competent Authority.

4. The party shall pay the 25% amount of the offered bid amount as upfront premium (non-refundable) within one month from date of issue of this Letter of Intent, which shall be adjustable against first quarterly installment of the quarry.

The party shall have to comply all the notified terms and conditions of auction held on 05.03.2020.

The Letter of Intent is subject to any order passed by the Hon'ble Supreme ourt of India/Hon'ble National Green Tribunal/Hon'ble High Court of Himachal Pradesh or ther concerned Department from time to time in this regard. This letter of intent is valid only for btaining requisite clearance from the Competent Authority.

The grant order imposing all the conditions and stipulations relevant as per rule shall be issued only after completion of the above conditions numbers 1 to 5 and after completing requisite codal formalities. This Letter of Intent shall be valid for period of two years. Thereafter, extension of period shall be granted only after reviewing of the progress made for fulfillment of the above said documents. The party shall not resort to any mining activities till the signing of contract agreement.

State Geologist
Himachal Pradesh

Registered:

Sh. Madan Lal, S/o Sh. Ram Chand,
Village & P.O. Gandalwin,
Tehsil Ghumarwin, District Bilaspur, H.P.

Endst. No. Udyog-Bhu(Khani-4)Laghu-936/2020 Dated: 2020

Copy to following for information and necessary action:

1. The Additional Chief Secretary (Industries) to the Government of Himachal Pradesh with reference to his letter No. Ind.-B-(F)2-5/88-II dated 07.07.2020 for information please.
2. The Additional Deputy Commissioner, Hamirpur, District Hamirpur, H.P. for information please.
3. The Divisional Forest Officer, Hamirpur, District Hamirpur, H.P. for information please.
4. The Mining Officer, Hamirpur, District Hamirpur, H.P.
5. Guard file.

State Geologist
Himachal Pradesh

No. Udyog-Bhu(Khani-4)Laghu-936/2020
Government of Himachal Pradesh,
Department of Industries,
Geological Wing,
Dated: Shimla-171001, the 2022

From: Director of Industries
Himachal Pradesh

To

Sh. Madan Lal S/o Sh. Ram Chand,
Village & P.O. Ghandalwin,
Tehsil Ghumarwin, Distt Bilaspur, (H.P).

Subject:- Extension of Letter of Intent.

Sir,

In continuation to this office letter No. Udyog-Bhu(Khani-4)Laghu-936/2020-4169 dated 05.09.2020 vide which a Letter of Intent was issued favour of Sh. Madan Lal S/o Sh. Ram Chand, Village & P.O. Ghandalwin, Tehsil Ghumarwin, District Bilaspur for the auctioned site Sukker Khad (Jangli) over an area measuring 03-37-99 hects. (Govt. land river bed), bearing Kh. No. 405, falling in Mauza Datwal, Mohal Jangli, Tehsil Bijhar, District, Hamirpur, H.P. for a period of two years for the pupose of obtaining requisite clearance and completing other codal formalities as mentioned in the Letter of Intent. The period of Letter of intent has been expired on 04.09.2022.

On the basis of request of the applicant vide letter dated 28.12.2022, the validity period of 'Letter of Intent' is hereby hereby extended for further term of one year w.e.f. 05.09.2022 onward in favour of the applicant. All the terms & conditions as imposed vide earlier letter of intent dated 05.09.2020 shall remain applicable. The applicant shall not resort to any mining activities till getting the final grant order in this behalf.

Yours faithfully,

Director of Industries,
Himachal Pradesh

Endst. No. Udyog-Bhu(Khani-4)Laghu-936/2020 Dated
Copy to:-
The Mining Officer, Hamirpur, Distt. Hamirpur, H.P. for information and necessary action.

Director of Industries,
Himachal Pradesh

ANNEXURE II

Approved Mining Plan

REGISTERED

No. Udyog-Bhu(Khani-4)Laghu-936/2020 - 9056
Government of Himachal Pradesh
Department of Industries
"Geological Wing"
Dated; Shimla- 171001, 15/12 2022

To

Sh. Madan Lal, S/o Sh. Ram Chand,
Village & P. O.Gandalwin,
Tehsil Ghumarwin, District Bilaspur, H. P.

Subject:- **Approval of Mining Plan of auctioned area on contract for extraction of sand, stone & bajri from Sukkar Khad-(Jangli) bearing Khasra No. 405 over an area measuring 03-37-99 Hect (Govt. land) falling in Mauza & Mohal Datwal & Jangli, Tehsil Bijhar, District Hamirpur, H. P. for which letter of intent has been issued on 5.9.2020.**

Dear Sir,

In exercise of powers conferred by Rule 36 of Himachal Pradesh Minor Mineral (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules 2015, I hereby approve the above said Mining Plan (of the auctioned area) for the purpose of obtaining Environment Clearance for which the letter of intent has been issued on 3.9.2020. The mining plan is approved for a period of five years from the date of execution of agreement. This approval is subject to the following conditions:--

1. That the Mining Plan is approved without prejudice to any other laws applicable to the mine/area from time to time whether made by the Central/State govt. or any other authority.
2. That this approval of the Mining Plan does not in any way imply the approval of Govt. in terms of any other provisions of the H. P. Minor Minerals (Concession) Revised Rules, 1971 now repealed as Himachal Pradesh Minor Mineral (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules 2015 or any other laws including Forest (Conservation) Act, 1980, Environment Protection Act, 1986 and the rules made there under and other relevant statutes, orders and guidelines as may be applicable to auctioned area from time to time.
3. That the Mining Plan is approved without prejudice to any orders or directions from any Court of competent jurisdiction.
4. That in case State Geologist, Geologist, any other inspecting officer/official of Geological Wing Department of Industries, after field inspection notices that proposals made and workings shown in the auctioned area by the RQP need certain corrections/ amendments due to change in conditions either natural or manmade, the inspecting officer can recommend necessary amendments in the Mining Plan at any point of time in the interest of environment and mineral conservation.
5. That the contractor shall procure Environment clearance from the competent authority as per Environmental Impact Assessment notification, 2006 and amendments/notifications issued time to time in this regard.
6. That the approval of proposed mining operations is restricted to the auctioned area only.
7. That in case additional conditions are imposed by the Ministry of Environment & Forests Govt. of India while according clearance under EIA notification dated 14.9.2006 and any condition imposed by the

State Govt. while granting auctioned area the same shall have to be incorporated by making necessary amendments in the Mining Plan by the contractor through R. Q. P.

8. That in case auctioned area is not renewed or is terminated or working is suspended before the expiry of the contract period due to any reason, the approval of Mining Plan shall stand automatically cancelled.
9. That the contractor shall carry out production of mineral in accordance to the production shown in Mining Plan and Environmental Clearance whichever is less.
10. That no person shall undertake mining operations in the auctioned area, except in accordance with Mining Plan approved under sub rule (2) of Rule 39 of Himachal Pradesh Minor Mineral (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules 2015.
11. That the contractor shall carry out working in the auctioned area as per Mining Plan only after obtaining permission to work in the auctioned area from the competent authority.
12. That if the mining operations are not carried out in accordance with the approved Mining Plan the State Geologist, Geologist, Assistant Geologist and the Mining Officer, may order suspension of all or any of the mining operations and permit continuation of only such operations as may be necessary to restore the conditions in the auctioned quarry as envisaged under the said Mining Plan.
13. That if anything is found to be concealed as required under various Rules and guidelines pertaining to mining in the context of the Mining Plan and the proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.
14. That in case of any violation of terms and conditions of the approved Mining Plan, the financial assurance deposited by the said contractor shall be liable to forfeited.

Enclosed:- Copy of approved Mining Plan.

Yours faithfully,

Geologist (Zone-II)
Himachal Pradesh

Endst. No. As above. Dated; 2022

Copy for kind information to:-

1. The Mining Officer, Hamirpur, Distt. Hamirpur, H. P. alongwith a copy of Mining Plan for further necessary action.
2 Sh. Arun Dhiman S/o Sh. Jagan Nath Village & PO Dhaloon (Panchpuli) Tehsil Nagrota Bagwan, District Kangra H.P.

Geologist (Zone-II)
Himachal Pradesh

MINING PLAN

(INCLUDING PROGRESSIVE MINE CLOSURE PLAN)

AUCTIONED AREA

MINERAL – SAND, STONE AND BAJRI

KHASRA NOS. – 405 (RIVER BED)
AREA 03-37-99 HECTARES (GOVT. LAND)

MAUZA & MOHAL DATWAL & JANGLI, TEHSIL BIJHAR,
DISTRICT HAMIRPUR, HIMACHAL PRADESH

CONTRACTOR

SH.MADAN LAL S/O SHRI RAM CHAND,
VILLAGE & P.O. GANDALWIN, TEHSIL GHUMARWIN,
DISTRICT BILASPUR, HIMACHAL PRADESH.

Seal of Geological wing, Industries Dept. Govt. of H.P. APPROVED

PREPARED BY

Arun Dhiman
S/o Sh Jagan Nath
Village & PO Dhaloon (Panchpulli)
Tehsil Nagrota Bagwan, District Kangra
Himachal Pradesh -176056
RQP No. H.P./ RQP/25/2/2019 (Valid up to 24-09-2024)
Mobile No.98165 79485 Email Id arundhiman77@yahoo.com

PREPARED AND SUBMITTED UNDER

THE HIMACHAL PRADESH MINOR MINERALS (CONCESSION) AND MINERALS (PREVENTION OF ILLEGAL MINING, TRANSPORTATION AND STORAGE) RULES, 2015

INDEX

Geological Wing, Industries Deptt. Govt. of H.P. APPROVED

SALIENT FEATURES OF GRANTED LEASE AREA

1	Project		Mining Project (Auctioned area)
2	Name of Mineral		Sand, Stone & Bajri
3	Application Type		Athrough Auction
4	Applicant Address		Sh. Madan Lal S/o Sh. Ram Chand R/o Village & P.O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, Himachal Pradesh
5	Location of Mine	Village	Jangli
		Mauza & Mohal	Datwal & Jangli
		Khasra Nos.	405
		Land Type	Govt. Land
		Panchyat	Jangli
		District	Hamirpur
		State	Himachal Pradesh
6	Name of Stream/River		Sukkar Khad
7	Total Auctioned Area		3-37-99 Hectares
8	Total Minable area		3-04-19 Hectares
9	Total Mineable Quantity		68443 MTPA
10	Coordinates of Area		31°29'9.56"N- 76°36'34.55"E (U/S)
			31°29'8.93"N-76°36'29.61"E (D/S)
11	Elevations	Highest	624
		Lowest	621
12	Average width of River at Applied area		150-200
13	Period of mining lease		As per LoI
14	Ultimate Pit Limit		1 metre from Surface Level
15	Method of Mining		Manual
16	No. of Working Days		300
17	End use of mineral		For already established Stone Crusher Unit
18	Manpower requirement		15-20 persons
19	Distances (In Kms)	Una 72 Kms. Hamirpur 40 Kms. Nadaun 59 Kms. Shimla 115 Kms. Chandigarh 190 Kms.	

Geology Wing, Industries Dept. Govt. of H.P. APPROVED

भूगर्भीय शाखा
उद्योग विभाग शिमला
Geological wing
Deptt. of Industries
Shimla
APPROVED. Udyog Bhawan (Geology) Shimla 936/20 — 9056
With Condition
शर्तों के साथ अनुमोदित
Vide Letter No.
Dated
दिनांक 15/12/22

Geologist (Zone-II)
Geological Wing
Deptt. of Industries Shimla-1

INTRODUCTION: -

Sh. Madan Lal S/o Sh. Ram Chand R/o Village & P.O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, Himachal Pradesh, has been issued a letter of intent by the Department vide letter No Udyog-Bhu (Khani-4)Laghu-936/2020-4869 dated 05.09.2020 for the grant of Auctioned Area on contract for the extraction of Stone, Bajri and Sand over an area situated in Khasra No.405 measuring 03-37-99 Hectares (Government Land) in Mauza & Mohal Datwal & Jangli, Tehsil Bijhar, District Hamirpur of Sukkar Khad (Jangli). The Auctions were held on 05.03.2020 by the auction committee constituted under the Chairmanship of Additional Deputy Commissioner, Hamirpur, Distt. Hamirpur. The auction for the said area in Sukkar Khad had the highest bid of Rs. 12,00,000/- quoted by Sh. Madan Lal S/o Sh. Ram Chand R/o Village & P.O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, Himachal Pradesh. On the basis of the recommendations of the Committee, the Government vide letter No. Ind-II-(F)2-5/88-II dated 07.07.2020 conveyed the approval for the issuance of a letter of Intent in favour of Sh. Madan Lal S/o Sh. Ram Chand R/o Village & P.O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, Himachal Pradesh is being the highest bidder.

While granting a letter of intent, the department has imposed the following conditions: -

1 The party shall get the area demarcated from the revenue authorities and shall erect permanent boundary pillars to the satisfaction of the Mining Officer so as to clearly depict the provisional granted area. A copy of the demarcation report shall also be submitted to the Mining Officer.

2 ***The party shall have to submit the approved Mining Plan under Rule 35 of Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of illegal Mining Transportation and Storage) Rules, 2015.***

3 The party shall have to obtain Environment Clearance under the provisions of the Environment Protection Act, 1986 from the competent authority and Forest Clearance in the case of Forest land.

4 The party shall pay the 25% amount of the offered bid amount as per upfront premium (non-refundable) within one month from the date of issue of the letter of intent, which shall be adjustable against the first quarterly instalment of the quarry.

5 The party shall have to comply with all the notification terms and conditions of the auction held on 12.12.2018

The Contractor approached and requested the undersigned having R.Q.P. No. H.P./R.Q.P./22/2/2019 for preparation of the Mining Plan of the site to fulfil condition no. 2 of the Letter of Intent. Chapter–III of Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of illegal Mining Transportation and Storage) Rules, 2015 deals with the development and conservation of minerals and it is provided under Rule 35(1) that "No Auctioned Area or

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

contract shall be granted unless there is a mining plan approved from the Competent Authority. The said mining plan shall be prepared in accordance with Form "M" appended with the said Rules."

The Mining Plan of the area has been prepared as per the format circulated (Form-M) by the State Geologist Himachal Pradesh and in accordance with the various provisions made in the Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2015.

On the request of the said Contractor to prepare the Mining Plan, the mapping of the Auctioned Area was carried out encompassing Topographical, Lithological and other features. The Mining Plan includes the systematic and scientific exploitation of minor minerals from within the Auctioned Area compassing a phased program for afforestation and point of public utility.

1. GENERAL

1.1 Name and address of the Contractor

1.1.a Name of the Contractor — Sh. Madan Lal S/o Sh. Ram Chand

1.1.b Address of the Contractor — R/o Village & P.O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, Himachal Pradesh.

1.2 Status of the Contractor — Individual

1.3 Mineral which the Contractor intends to mine

The Contractor intends to mine Stone, Bajri and Sand from the Auctioned Area to be used in the proposed stone crusher unit.

1.4 Period for which the Auctioned Area is to be granted

10 years as per the Tender conditions and also as per the provisions of Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2015.

1.5 Name and Address of H.P.R.Q.P. preparing the Mining Plan

Arun Dhiman
S/o Sh Jagan Nath,
Village & PO Dhaloon (Panchpuli),
Tehsil Nagrota Bagwan, District Kangra
Himachal Pradesh -176056
RQP No. H.P./ RQP/25/2/2019
Valid Up to 24-09-2024
Mobile No. 98165 79485
Email Id arundhiman77@yahoo.com

Surveyed By: Sh. C P Negi (Retired Surveyor)
Geological Wing (Department of Industries)

1.6 Name of Prospecting Agency.

The area has been discovered by the department and further investigated by the R.Q.P. as he has a vast experience in mineral exploration. For carrying out prospecting of the mineral deposit, the preliminary information regarding the Geological set-up and occurrence of minerals in the area granted on auction for mining purposes and in its surroundings has been gathered from the previous work done by the Geological Survey of India and State Government agencies from time to time. Further, the detailed prospecting of the area was carried out by the RQP himself.

2. LOCATION DETAIL OF THE AUCTIONED AREA

Location

The Auctioned mining site is located near the village Jangli which is located on the right bank of Sukkar Khad. The geographical location of the Auctioned Area is covered under Survey of India Toposheet No. H43E10. The index Location Map of the mine site falling in the Sub-Tehsil Datwal is enclosed in Figure 1.1. The location of the mine area is marked in the toposheet and the high-resolution satellite image is shown in Figures 1.2 and 1.3 respectively. The pictorial view of the mine site is shown in Figure 1.4

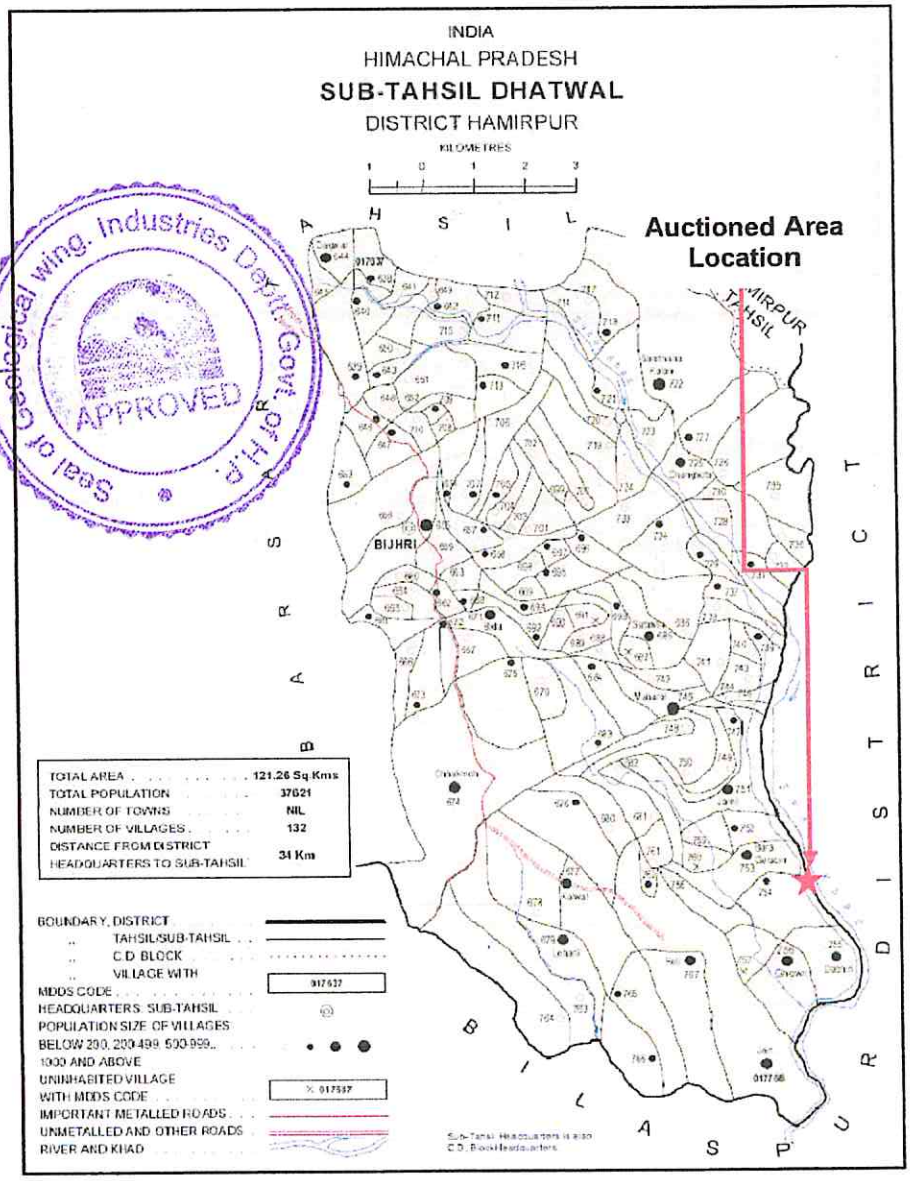

Figure 1.1: Index Map of Sub-Tehsil Datwal showing Auctioned Area

(Detailed Location Map enclosed as Plate No. – I).

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

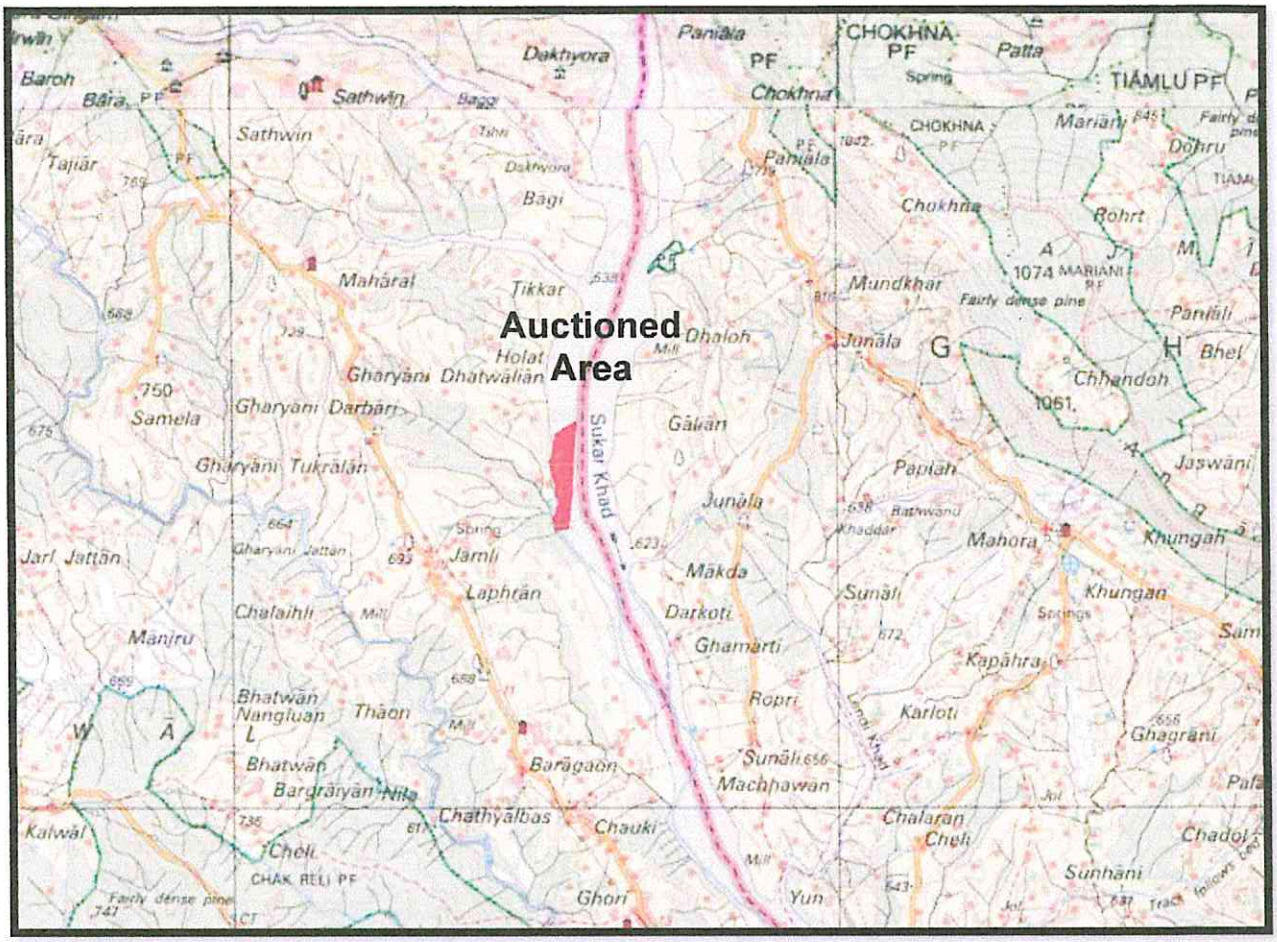

Figure 1.2: Location of mine area in Toposheet

Topo-sheet number new H43E10

2.1 Coordinates of Site

Table 1.1 Table showing boundary pillar coordinates

Pillar No	Latitude	Longitude
P1	31°29'9.57"N	76°36'31.43"E
P2	31°29'8.90"N	76°36'22.63"E
P3	31°29'9.39"N	76°36'27.10"E
P4	31°28'57.12"N	76°36'27.90"E
P5	31°28'57.26"N	76°36'29.70"E

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REG.NO. – H.P./R.Q.P/25/2/2019

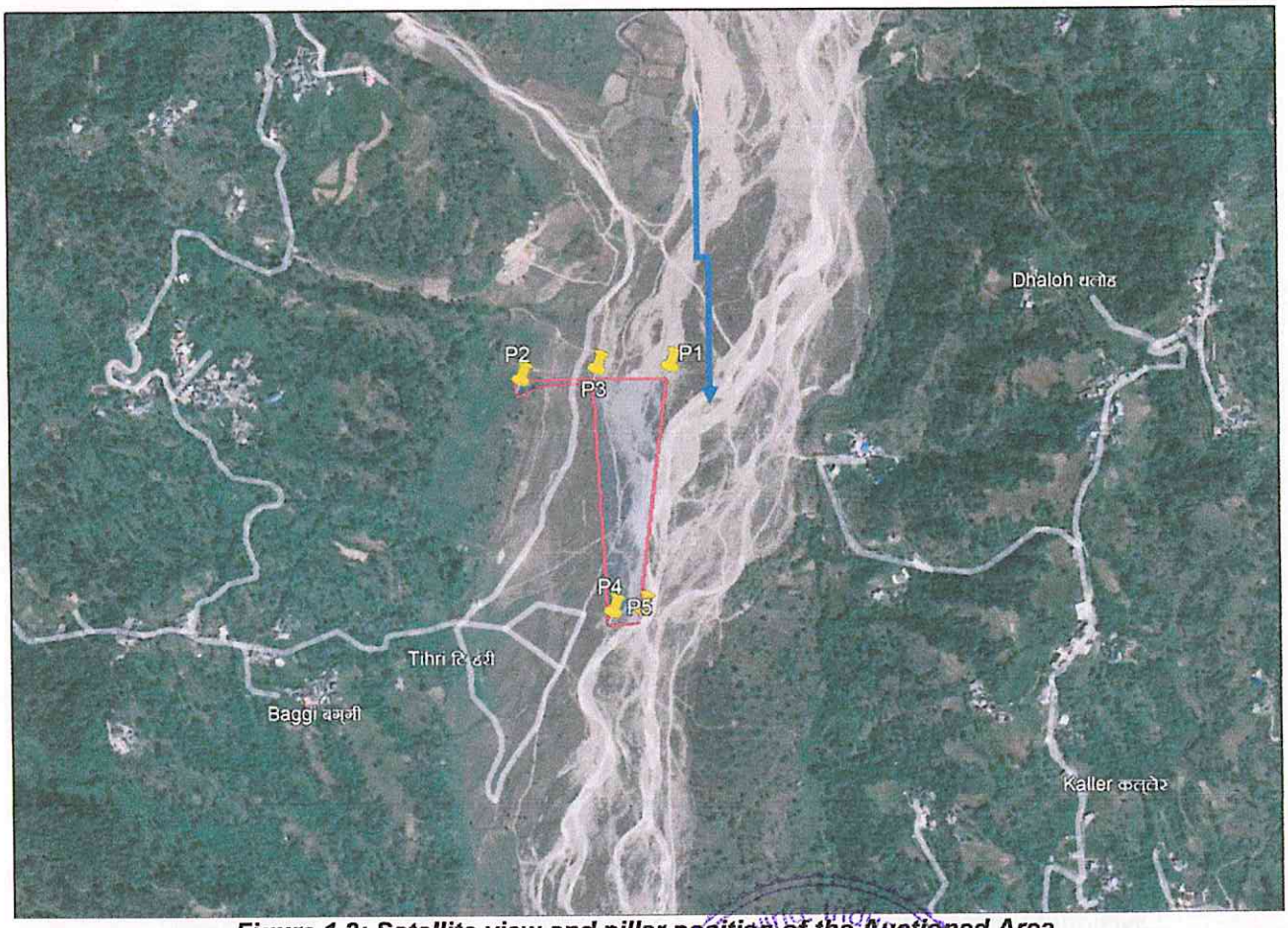


Figure 1.3: Satellite view and pillar position of the Auctioned Area

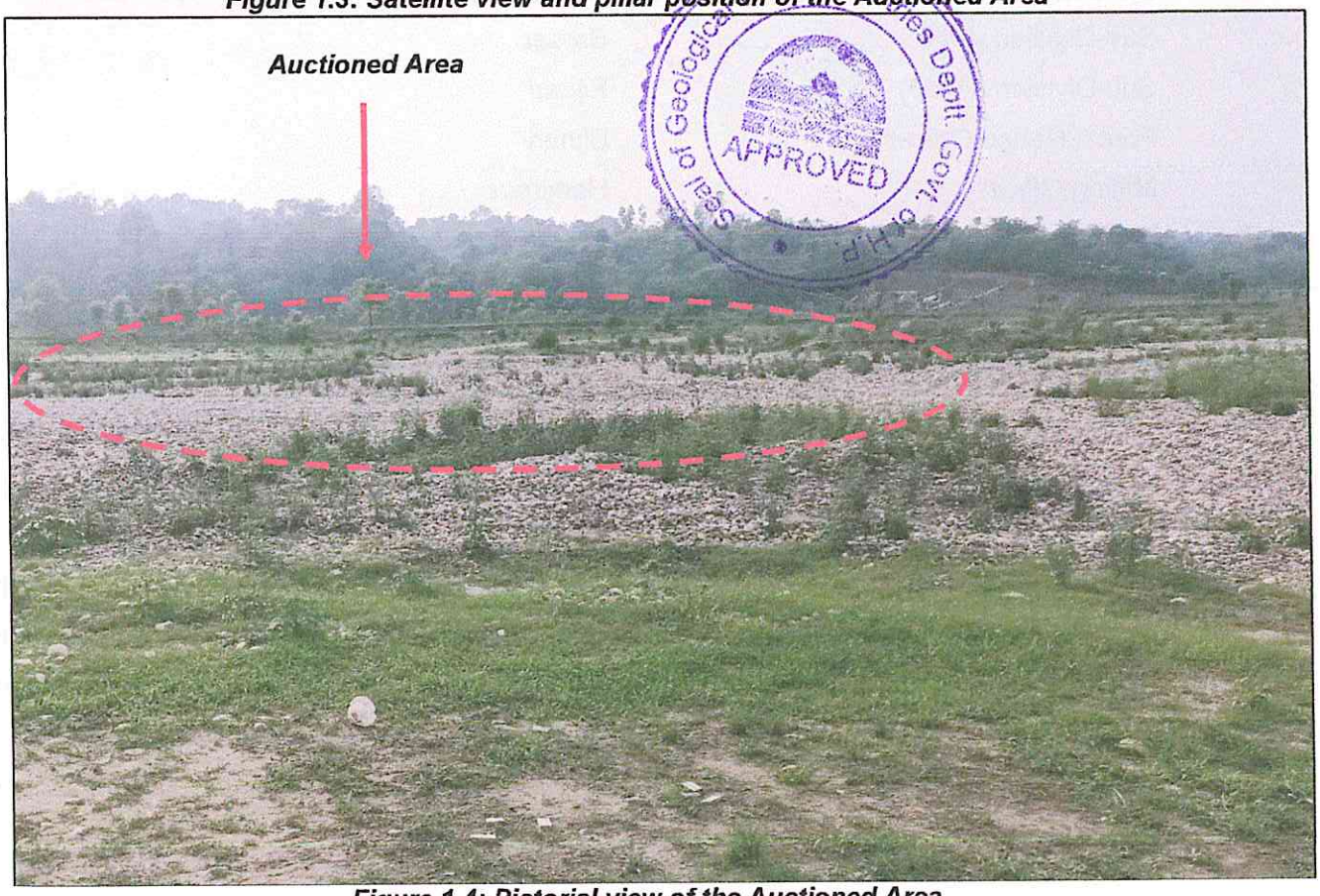


Figure 1.4: Pictorial view of the Auctioned Area

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

2.2 Detail of the area, Revenue record

2.2 (a) Revenue Details of the Area

1.2 Table Showing Details of the Area

Khasra No.	Name of the Owner	Kisam	Mauza & Mohal	Area in Hects.	Name of the Panchayat
405	Government Land	Gair Mumkin Khad	Datwal & Jangli	03-37-99	Jangli
Total				**03-37-99**	

As per the revenue record, the area is Govt. Land classified as Gair Mumkin Khad

2.2(b) Address Details

Village	Jangli
Patwar Circle	Jamli
Post Office	Lafran
Tehsil	Bijhar
District	Hamirpur

2.3 Nearest Departments

Sub- Divisional Officer (Civil)	Barsar
Divisional Forest Officer	Hamirpur
Sub-Division (IPH)	Barsar
Sub-Division (PWD)	Bijhari
Forest Range Officer	Bijhari
Mining Officer	Hamirpur

2.4 Distance from important places in Kilometres

Una	72 Kms.
Hamirpur	40 Kms.
Nadaun	59 Kms.
Shimla	115 Kms.
Chandigarh	190 Kms.

2.5 Approach to the Area: -

The Auctioned mining site is located near the village Jangli which is located on the right bank of Sukkar Khad. The site is approachable through an approach road originating from the Bijhari–Barthin road near the village Sathwin. The auctioned area is approximately 11 kms. from Bijhari. The proposed mining site is located in the riverbed of Sukkar Khad. The highest point of the auctioned area is 624 meters above MSL and the lowest point is 621 meters above MSL and the average width of the mining auctioned area is 50 to 110 Mtrs.

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

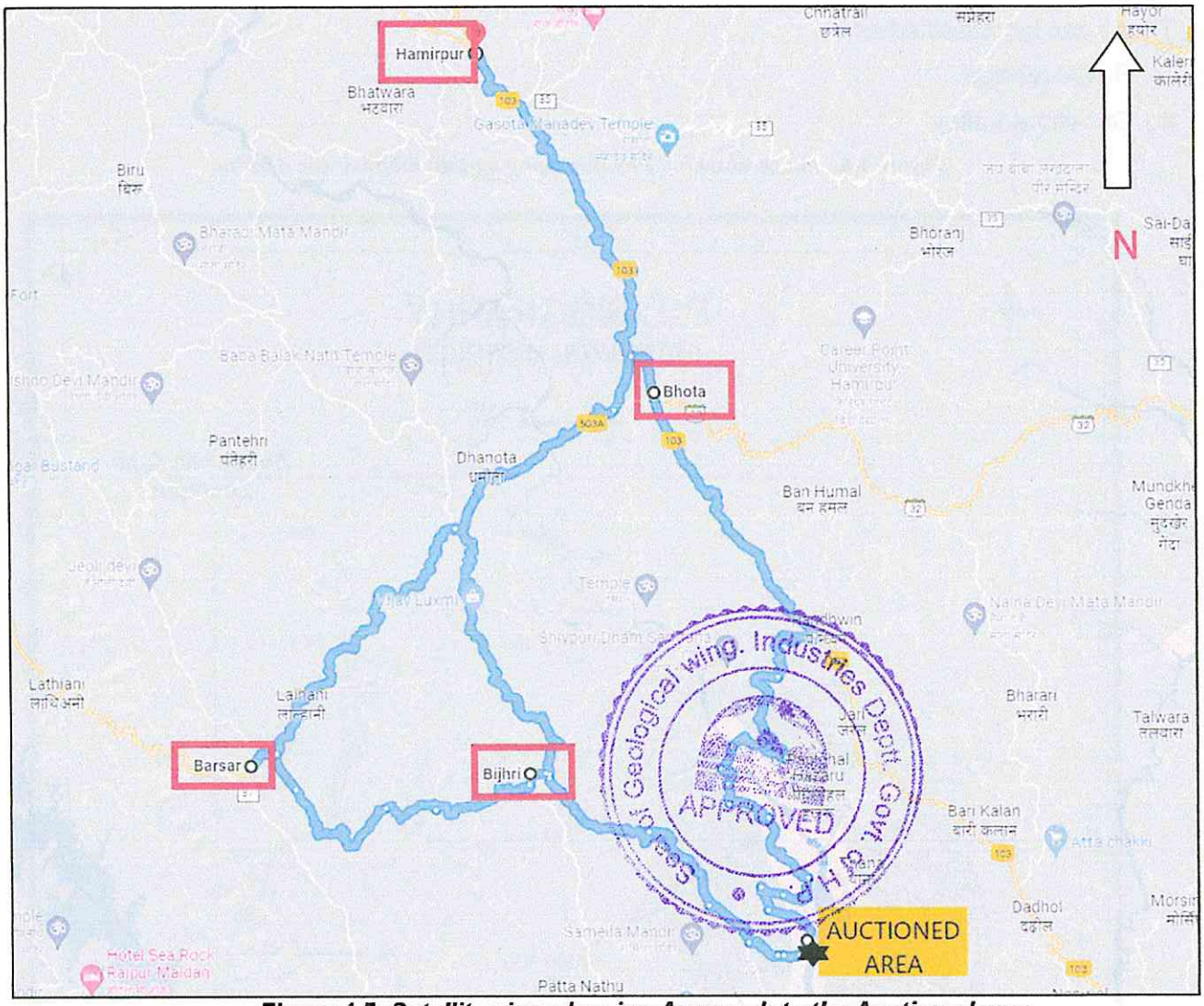


Figure 1.5: Satellite view showing Approach to the Auctioned area

3. PHYSIOGRAPHIC ASPECTS OF THE DISTT HAMIRPUR

3.1 General

Hamirpur district is bounded in the north by the Beas River which separates it from the Kangra district. In the east Bakkar and Sir Khad separate it from the Mandi district. In the south, it is bounded by the Bilaspur district and on the west by Una district.

The elevation varies from 450 meters above MSL (Near the confluence of Mutard/Masoh Khad with river Satluj) to 1235 meters above MSL (Near Awah Devi) having the configuration ranging from almost flatlands that border the portion of the river Satluj to the lofty height of the cliff, ergs and precipitous slopes of the hill ranges. Most of the district lies within the range of 600 to 900 Mts. above MSL. In the eastern part of the district, it varies from 900 to 1200 meters above MSL and in the NW part of the district, it varies from 300 to 600 meters above MSL. Geomorphologically, the district can be divided into the following two categories:

I. Moderately steep to the low hill and the intervening valley of Siwalik.

II. Fluvial valley

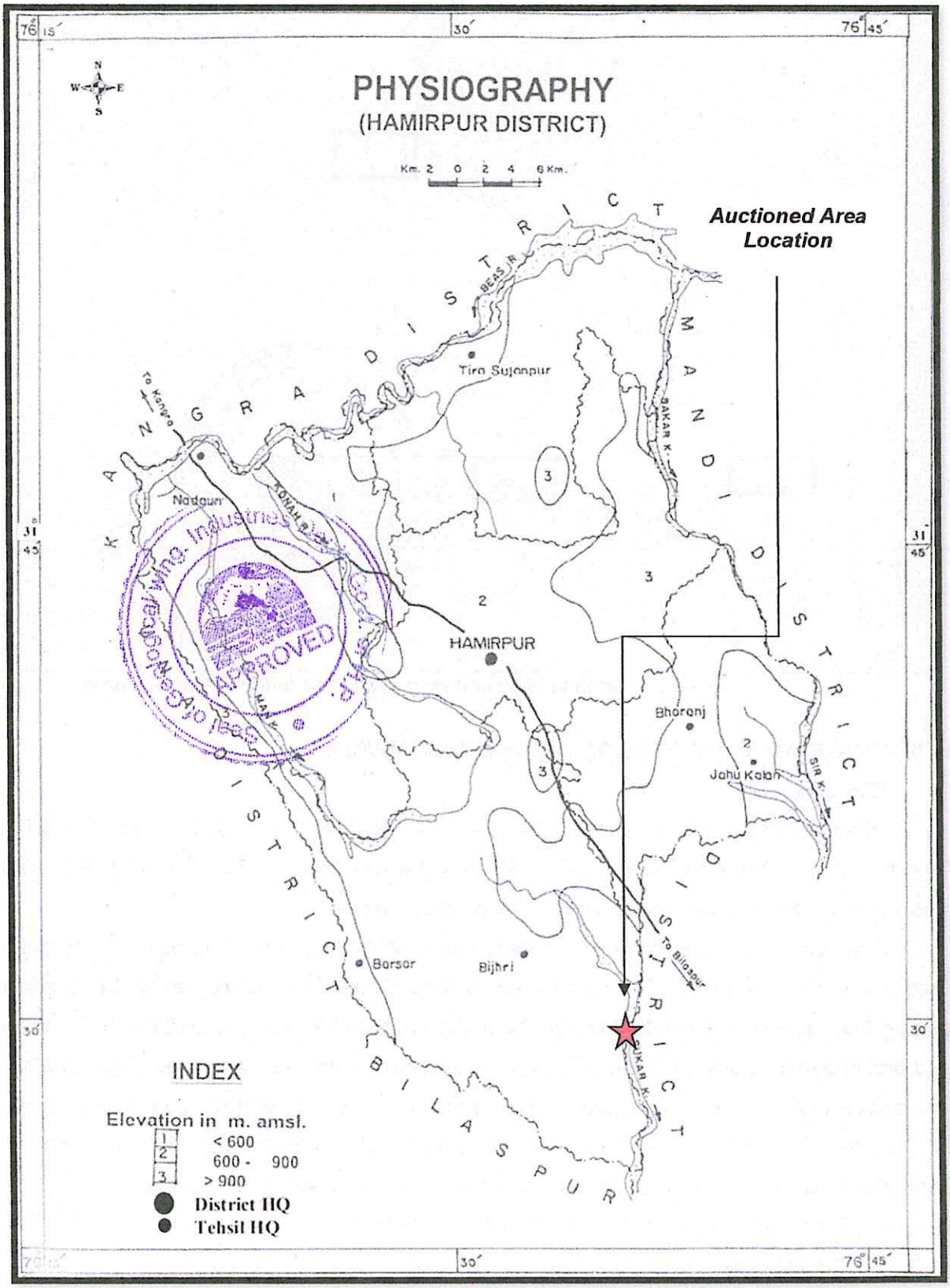
Mining Plan–Auctioned area

These can be classified as:

(i). Fluvial terrace

(ii). Structural Valley

Figure 1.6: Image showing Physiography and drainage of the district



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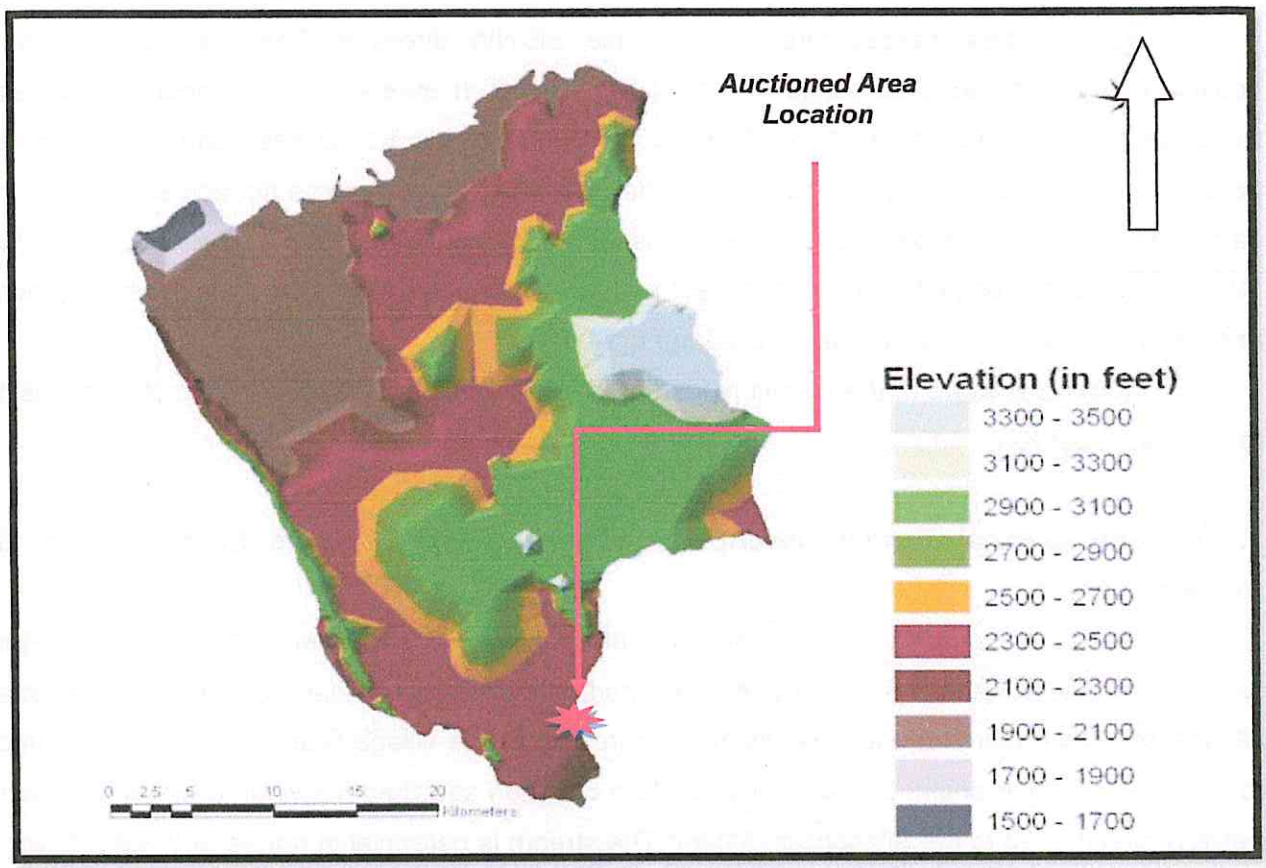


Figure 1.7 Image showing Elevation profile of District

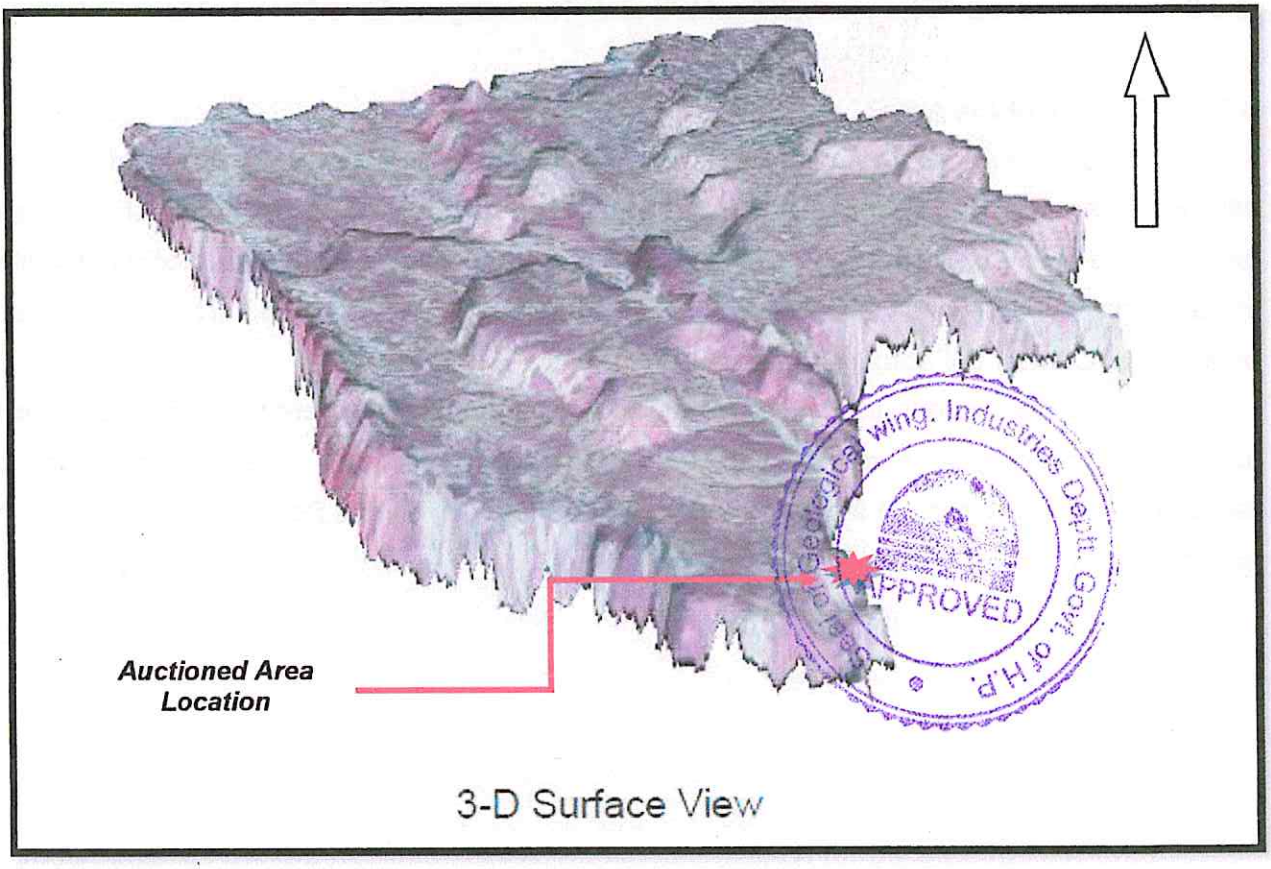


Figure 1.8: Image showing 3-D Surface View of District

Three principal ranges nearly run in the SE-NW direction. The Jakh Dhar runs in continuation of the Kail Dhar range in the Kangra district. It enters Hamirpur near Nadaun and traverses in the southeast direction. The town of Hamirpur lies to the east range. The hills are bare, rugged and full of deep ravines. The Chhabutra hills have the same dip and strike as in the Jakh Dhar and continue beyond the river Beas as a mass of rugged and broken hills. The Sola Singhi Dhar is the longest range of the tract and is known by various names such as Chintpurni and Jaswan Dhar in Una and Sola Singhi Dhar in Hamirpur.

The general slope of the district is less than 10 meters per Km but at some places, it is 10 to 20 meters per Km.

3.2 Altitude, General Terrain Description, with map and Contours Encompassing the Auctioned area:-

The map of the Auctioned Area on a 1:2000 scale with a one-meter contour interval is Plate No III. The Sukkar Khad is a tributary of Seer Khad and it originates near the village Dagwar at an altitude of 1016 meters. and leaves District Hamirpur near the village Riana where the R.L. drops to 538 meters. Near origin, it flows in the eastern direction and then it swings towards the south-eastern direction up to the Bilaspur boundary. The stream is perennial in nature and water flows in it only during the rainy season. The highest point of the auctioned area is 624 meters above MSL and the lowest point is 621 meters above MSL and the average width is 50 to 110 Mtrs.

3.3 Climate of the Area

The climate varies from semi-tropical to semi-arctic from place to place depending on the altitude of the region. The months from April to June are pleasant and comfortable at higher altitudes and humid in the lower hills. The months of July to September are the months of rainfall. Himachal Pradesh experiences an average annual rainfall of about 160 cm. The winter season begins from October to February and is very severe.

The region has four distinct seasons. The area experiences severe winter from December to March followed by a servers summer season lasting from April to June. The area receives rainfall under the influence of the southwest monsoon from July to mid-September followed by the post-monsoon season lasting up to November.

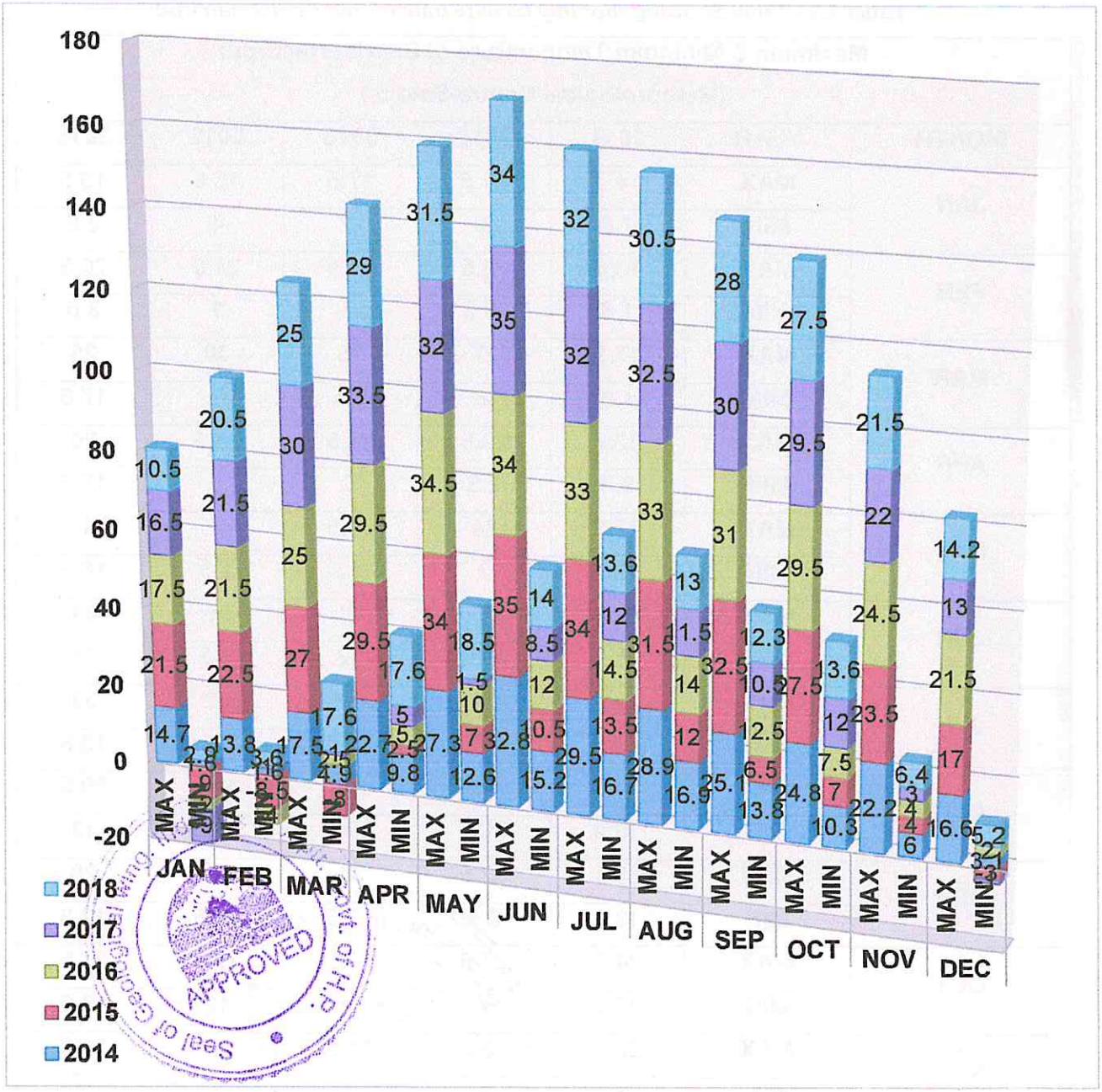
Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

Table 1.3 - Table Showing monthly climate data of the district Hamirpur

Maximum & Minimum Temperature of District Hamirpur (Meteorological Centre-Saloni)						
MONTH	YEAR	2014	2015	2016	2017	2018
JAN	MAX	14.7	21.5	17.5	16.5	10.5
	MIN	1.6	-9	-2	-9	2.9
FEB	MAX	13.8	22.5	21.5	21.5	20.5
	MIN	1.6	-8.5	-4	1	3.6
MAR	MAX	17.5	27	25	30	25
	MIN	4.9	-8	2.5	1	17.6
APR	MAX	22.7	29.5	29.5	33.5	29
	MIN	9.8	2.5	5	5	17.6
MAY	MAX	27.3	34	34.5	32	31.5
	MIN	12.6	7	10	1.5	18.5
JUN	MAX	32.8	35	34	35	34
	MIN	15.2	10.5	12	8.5	14
JUL	MAX	29.5	34	33	32	32
	MIN	16.7	13.5	14.5	12	13.6
AUG	MAX	28.9	31.5	33	32.5	30.5
	MIN	16.9	12	14	11.5	13
SEP	MAX	25.1	32.5	31	30	28
	MIN	13.8	6.5	12.5	10.5	12.3
OCT	MAX	24.8	27.5	29.5	29.5	27.5
	MIN	10.3	7	7.5	12	13.6
NOV	MAX	22.2	23.5	24.5	22	21.5
	MIN	6	4	4	3	6.4
DEC	MAX	16.6	17	21.5	13	14.2
	MIN	3.1	-3	2	-1	5.2

Source: Meteorological Department, Govt. of India

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019



Graph1.1- Monthly climate data of the district Hamirpur

3.4 Rainfall

Rainfall varies significantly with the altitude of the area. The catchment area receives rainfall due to western disturbances that pass over the northwestern part of the country during the winter months. The rainy season generally starts in mid-July and extends up to mid-September. Also during winter Rainfall was experienced between 15th of December to 15th of February.

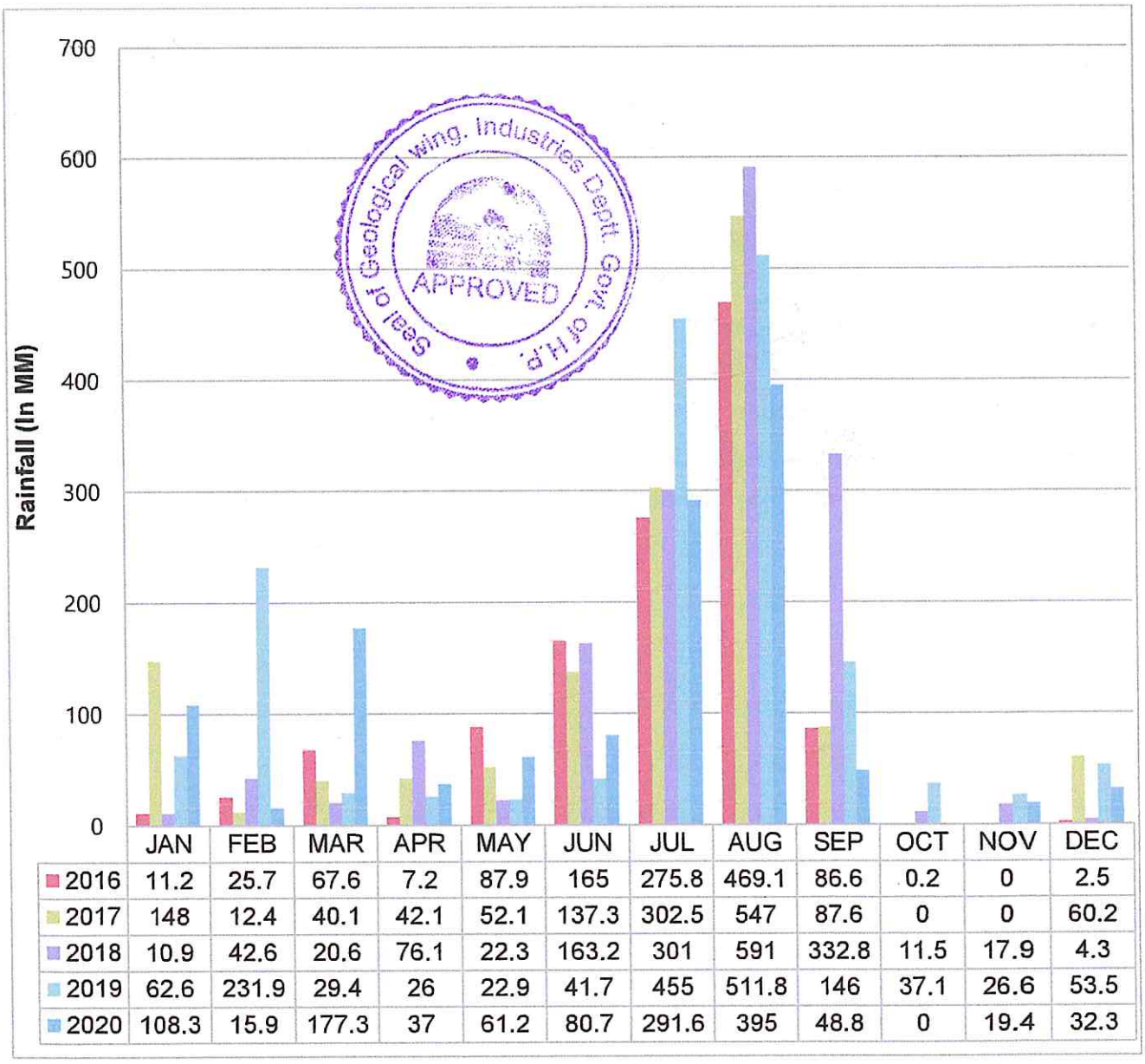
The following table shows the quantum of rainfall during the year 2016 to 2020 adjoining the Auctioned Area as per IMD.

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

Table 1.4- Table Showing monthly rainfall data of the district Hamirpur

HAMIRPUR DISTRICT RAINFALL IN MILLIMETERS (R/F)												
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	RAINFALL (IN mm)											
2016	11.2	25.7	67.6	7.2	87.9	165	275.8	469.1	86.6	0.2	0	2.5
2017	148	12.4	40.1	42.1	52.1	137.3	302.5	547	87.6	0	0	60.2
2018	10.9	42.6	20.6	76.1	22.3	163.2	301	591	332.8	11.5	17.9	4.3
2019	62.6	231.9	29.4	26	22.9	41.7	455	511.8	146	37.1	26.6	53.5
2020	108.3	15.9	177.3	37	61.2	80.7	291.6	395	48.8	0	19.4	32.3

Source: Meteorological Department, Govt. of India



Graph 1.2 - Monthly rainfall data of the district Hamirpur

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

3.5 Any Other Important Feature

Hamirpur District is situated between 76° 18' to 76 ° 44' East longitudes and 31° 25' to 31° 52' North latitude. The district is bounded in the north by the Beas River which separates it from the Kangra district. In the east Bakkar and Seer Khads separate it from the Mandi district. In the south, it is bounded by Bilaspur district and on the west by Una District. The tract is hilly and covered by the Siwaliks range. The elevation varies from 400 meters to 1100 meters having the configuration ranging from the almost flat lands that border the portion of rivers Beas to the lofty heights of cliffs and precipitous slopes of hill ranges. Three principal ranges run in a South-Easterly direction. It is situated at a lower elevation and comparatively warmer but has some hilly ranges covered with Pine forests. It is not a typical "Hilly & Chilly" type of climate in district Hamirpur, as it is closer to the plains. During winter, the climate is cold and during summer the temperature is hot. Temperature does sometimes cross the 40-degree Celsius mark in summer. At present few items viz. building stone, sand, stone grit, etc. are being exploited in the name of mineral resources. In addition to its glass and silica sand pebbles are also found in the area of Kunan, Man and Sukar Khads but as yet no commercial exploitation of these minerals has been made.

The present site is a part of Sukkar Khad, a tributary of Seer Khad. The Auctioned area is within the riverbed of Sukkar Khad and it forms the catchment area of the Satluj River.

3.6. Description of the Auctioned Area in which the mining site is situated: -

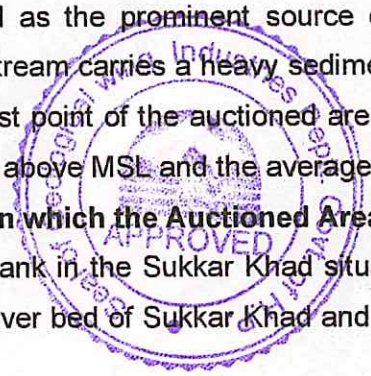
The Auctioned area is situated in the riverbed of Sukkar Khad. The stream is seasonal in nature and water flows only during the monsoon/rainy season. Near origin, it flows in the eastern direction and then it swings towards the south-eastern direction up to the Bilaspur boundary. The stream is seasonal in nature and water flows in it only during the rainy season.

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

PART- I
DESCRIPTION OF GEOMORPHOLOGY AND MINE DEVELOPMENT

1.1 GENERAL

The Auctioned site is a part of Sukkar Khad a tributary of Seer Khad. The Auctioned area lies in the riverbed of Sukkar Khad and it forms the catchment area of the Satluj River. The Sukkar Khad is a tributary of Seer Khad and it originates near the village Dagwar at an altitude of 1016 meters. and leaves District Hamirpur near the village Riana where the R.L. drops to 538 meters. Near origin, it flows in the eastern direction and then it swings towards the south-eastern direction up to the Bilaspur boundary. The stream is seasonal in nature and water flows in it only during the rainy season. The riverbed of Sukkar Khad is occupied with recent deposits comprising predominantly of boulders, Sand, and river-borne Bajri. The boulder beds are considered as the prominent source of river-borne deposits and during the monsoon season, the stream carries a heavy sediment load and deposits it over the riverbed annually. The highest point of the auctioned area is 624 meters above MSL and the lowest point is 621 meters above MSL and the average width is 50 to 110 Mtrs.



1.2 Name of the River/Stream Bed on which the Auctioned Area is situated

The site is located on the Right bank in the Sukkar Khad situated near the village Jangli. The Auctioned area is within the river bed of Sukkar Khad and it forms the catchment area of the Satluj River.

1.3 Drainage System

The general drainage pattern of the Rivers/ streams in the district is the dendritic pattern. All rivers/streams of Hamirpur district are forming part of two major river system catchments i.e. Beas river catchment and the Satluj River catchment. The northern half part of the district form the catchment area of the Beas River and the southern half part forms the catchment of the Satluj River. The present site forms part of the Satluj Drainage system.

1.4 Type of Drainage

The Sukkar Khad forms a sub-dendrite and dendrite type of drainage pattern.

1.5 Origin of river/stream

Sukkar Khad originates near the village Dagwar at an altitude of 1016 meters. and leaves District Hamirpur near the village Riana where the R.L. drops to 538 meters.

1.6. Altitude at the origin.

About 1016 meters above mean sea level and the elevation drops to 538 meters above MSL at the confluence point with Seer Khad. The highest point of the auctioned area is 624 meters above MSL and the lowest point is 621 meters above MSL.

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

1.7 Geometry of the Catchment of the River impacting the Replenishment of Deposits.

In the catchment, 9 streams are draining water into the Sukkar Khad. Other minor streams of smaller magnitude also form part of the catchment area.

The geometry of the Sukkar River

Total Area of catchment = 194.00 Sq. Km.

Area of catchment up to mining site = 94.25 Sq. Km

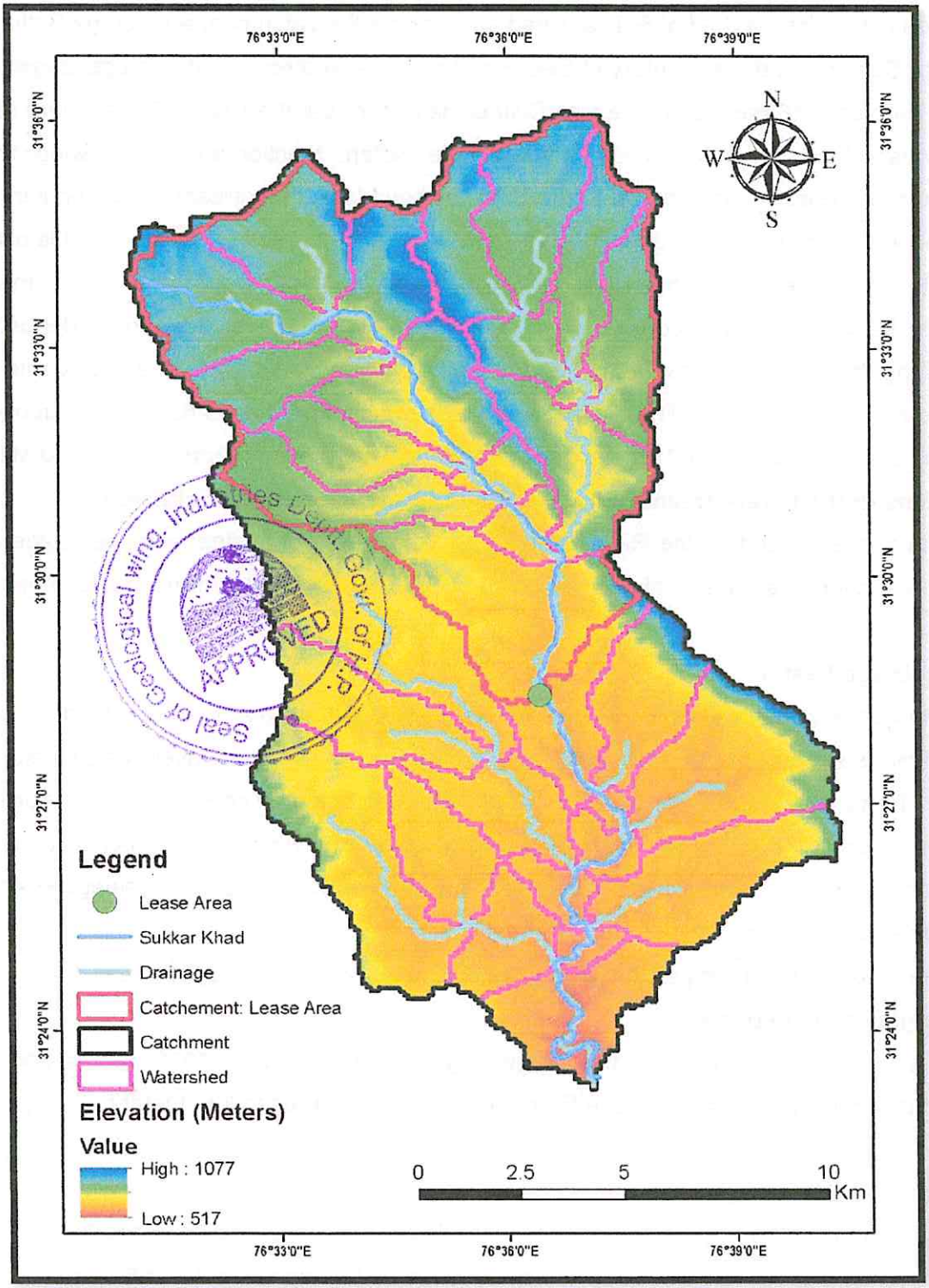


Figure 1.9 : Geometry of the Catchment of the River and mining Auctioned Area

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

The following are the different ingredients of the Sukkar Khad

Number of tributaries on right bank	4
Number of tributaries on left bank	5
Stream order up to Auctioned Area	2
The maximum length of the watershed	24 Km
Maximum breadth of the watershed	12 Km

Length breadth ratio = 2:1, Higher the ratio, the higher is the asymmetry of the watershed.

The cycle of erosion at the Auctioned Area is old.

Profile of River Bed

Elevation at origin	1016 M
Elevation at Mining Area	620 to 615 M
Total length of river	31.00 Km
Total length of the river up to Auctioned Area	18.1 Km
Cumulative Elevation Loss	396M
Average Slope	2.20 % i.e. about 1.26°
Slope angle at Auctioned Area	2.44 % i.e. about 1.31°

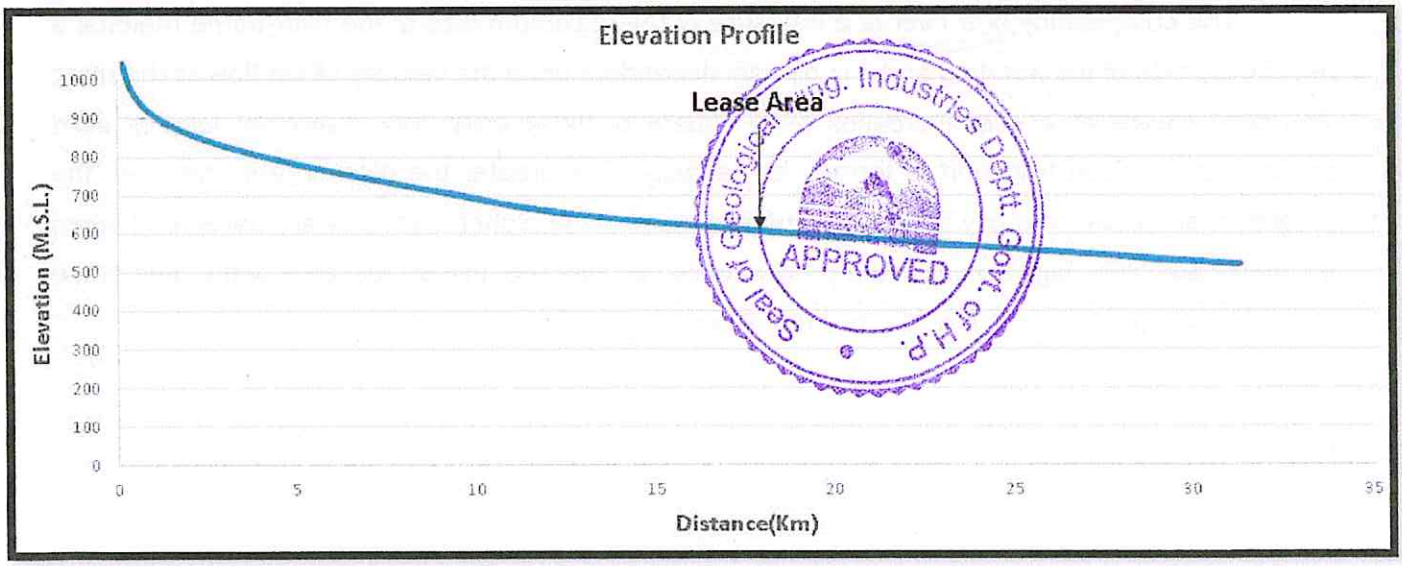


Figure 1.10 : Profile of the Sukkar Khad

Replenishment of river bed material will be very much dependent on rainfall and run-off from the surrounding watershed area. The rate of erosion in the watershed area and the ability of the various streams to transport the eroded material in a River have a direct relation with the quantity of sediment transported in the downstream areas. The degree, as well as length of the slope, is going to influence the process of sediment erosion. In contrast to surface erosion, mass

movements have always been common on steep slopes. A large part of the sediment load brought from the catchment area of this Khad is deposited due to a decrease in the water velocity

1.8 Annual Deposition of River/ Stream Bed

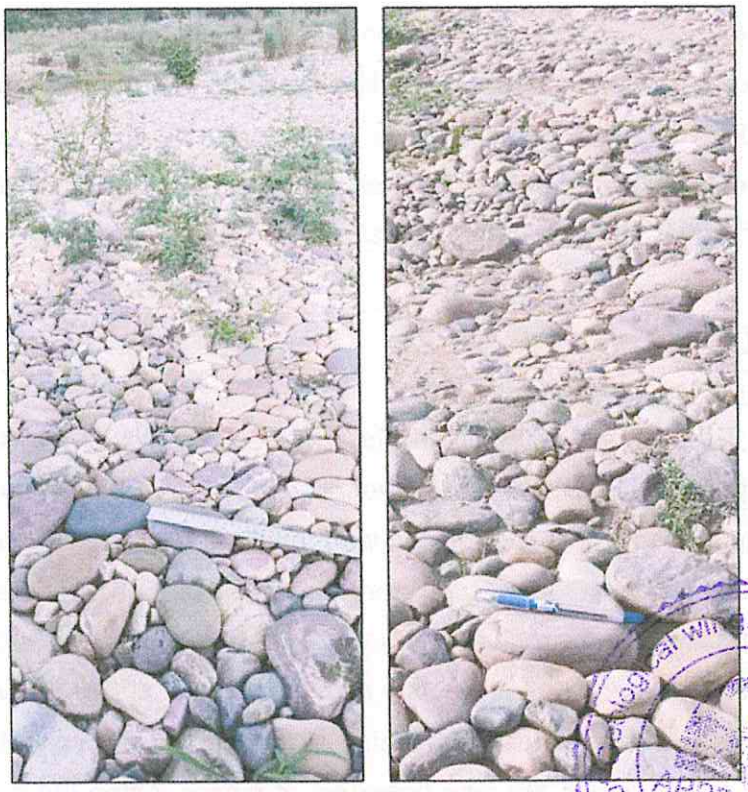
The Auctioned Area has reached 'The mature Stage which is the zone of deposition during floods. The mining area gets all the deposition, which otherwise would have spread all over the flood plain of the Khad, now accumulates within the confined area of Bunds. Therefore, the area is treated as a single mining block for mining.

The Khad/Stream has sufficient capacity to replenish almost equivalent to the stress on the Auctioned area as the Sukkar Khad traverses through Siwalik rocks comprising of Siwalik rocks of Middle and Lower Siwaliks. The middle and lower Siwalik contain medium to coarse-grained sandstone and red clay alternation, soft pebbly with subordinate clay stone, and a locally thick prism of the conglomerate of middle Siwalik. These rocks are soft to moderately hard in nature. The catchment area hills comprise low-lying hills moderately steep to steep. The tributaries of this stream have carved a wide flood plain as the banks comprise soft rocks hence, leading to higher deposition in this area. Sukkar Khad is approximately 300 - 170 meters wide in the Auctioned area.

1.9 The Competency of River/ Stream at the Auctioned Site

The competency of a river is a measure of the maximum size of the river-borne material a river is capable of transporting and it is directly dependent upon the velocity of the flow of the river. The competence of a river increases as a square of its velocity. The maximum load of solid particles a river can transport is termed its capacity. The greater the discharge in the river, the greater shall be the capacity for hauling the sediments. The higher velocities are developed when the rivers are in the high stage. In the present case, on average, the competency of the river at the mine site is 25 to 15cm x 20 to 10 cm x 16 x 8 cm.

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019



1.11 Image showing the competency of the Sukkar Khad

1.10 Meandering Pattern of the River near the Auctioned mining site

The meandering in the river course is generally noticed, although, at some places, they are straight and narrow. Due to the increase in the drainage area and the discharge, the river valley becomes wider on the downstream side with a generally flattened gradient. The Khad flows North to South direction at the Auctioned Area.

During the monsoons, the flood water level raises about 1.50 meters to 2.00 meters for a short spell of time. The landform being depositional, the meandering thread constantly changes during the rains depending upon the water level. The highest flood level is the maximum rise level and the lowest flood level is the riverbed level.

1.11 Altitude of the Auctioned mining site

The highest contour in the Auctioned Area is 624 Mts. and the lowest is 621 Mts.

1.12 Description of the Ground water table in the Auctioned Area, before and Post Monsoon.

The area is in the Siwalik system, which consists of a boulders bed and has minimum water retention capacity. The area is a part of the Perennial River; therefore, the water table is the water table of the river at a particular point of time near the course of the river. The riverbed level in the Auctioned area varies between 624 amsl to 621 m amsl and the average bed level is 622 AMSL as is evident from the surface area map. The mine shall be worked up in 3 feet depth below the

natural surface level of the ground at any section. As per information gathered as well as based on the previous and ongoing development works like the construction of Bridges and Bore wells by the HPPWD and I&PH departments respectively, the average depth of the water table is more than five meters Thus, the groundwater table shall not intersect with the bottom of mining pits. The area is a part of the Perennial River; therefore, the water table is always well below the riverbed level.

(2). GEOLOGY

2.1 The geology of the catchment Area

The Siwalik Group mainly represents the rocks of the district and also of the catchment area. In addition to this at a few places, the newer alluvium of the Quaternary age is also present.

In the advent of Neocene a depression was formed in front of the rising mountains (Proto-Himalaya) This depression becomes a repository of a thick sequence of the molasses sediments of the Siwalik Group comprising conglomerates of friable micaceous sandstone, siltstone and clay stone. The conglomerates in general are poorly cemented but at places, they are very hard. These consist mainly of pebbles and cobbles of quartzite, stray pebbles of granite, limestone, Sandstone, breccias and lumps of clay stone are also observed at places. Often the size of pebbles is large enough to be called as boulders. The conglomerates not only occur as a regular band but also as lenticular bands alternative to micaceous sandstone and clay beds. The sediments were bough down 2 to 25 million years ago by the numerous fast-flowing rivers issuing forth from the rapidly rising mountain mass of the Himalayas in the north. The Siwalik Group is divisible into three sub-groups respectively the Lower, Middle and upper on the basis of the Lithostratigraphy.

Siwalik Group

The Siwalik Group in the Himachal Himalaya forms a parallel foothill belt in the Sub-Himalayan zone, extending along the southern margin of the Palaeogene Sirmaur Group belt from the Ravi to the Yamuna and forms part of the larger Sub-Himalayan mega belt extending from Potwar basin in NW to the Arunachal foot-hill in SE. In the Himachal Himalaya, it has the maximum width between Hoshiarpur and Jogindernagar.

The Siwalik sediments, though occurring as an independent structural belt, are also seen to overlie the Muree in the Jammu sector of the Kashmir Himalaya and the Kasauli in the Himachal Himalaya. Pilgrim (1910) recorded a gradual transition from Muree beds to Lower Siwalik in the Rawalpindi and Jhelum districts of Pakistan and from Kasauli to Lower Siwaliks (Nahan) in the Himachal Himalaya. This fact assumes importance because there is a tendency to ignore this normal relationship between the Siwalik and Sirmaur Groups at Dharamsala, Sarkaghat and Nalagarh.

At Haritalyangar near Bilaspur, the Lower Siwalik is seen resting on the Dagshai with an unconformity, which is described as the most striking discordance in the whole sequence of

freshwater deposits and evidently representing a period of considerable earth movements (Pascoe, 1964)

The Siwalik Group is divisible into three subgroups respectively the Lower, Middle and Upper on the basis of lithostratigraphy (Table—Karunakaran and Ranga Rao, 1979).

Lower Siwalik Subgroup

The Lower Siwalik subgroup consists essentially of a sandstone-clay alternation. The lower boundary of the Lower Siwalik does not crop out at the surface in the Jawalamukhi sector. In a deep well drilled in the overthrust block of the Jawalamukhi Thrust, however, the Lower Siwalik is found conformably is also marked by an increase in the percentage of heavy minerals giving a dark appearance to the rock and incoming of less rounded heavy minerals like staurolite and unstable types like zoisite and epidote.

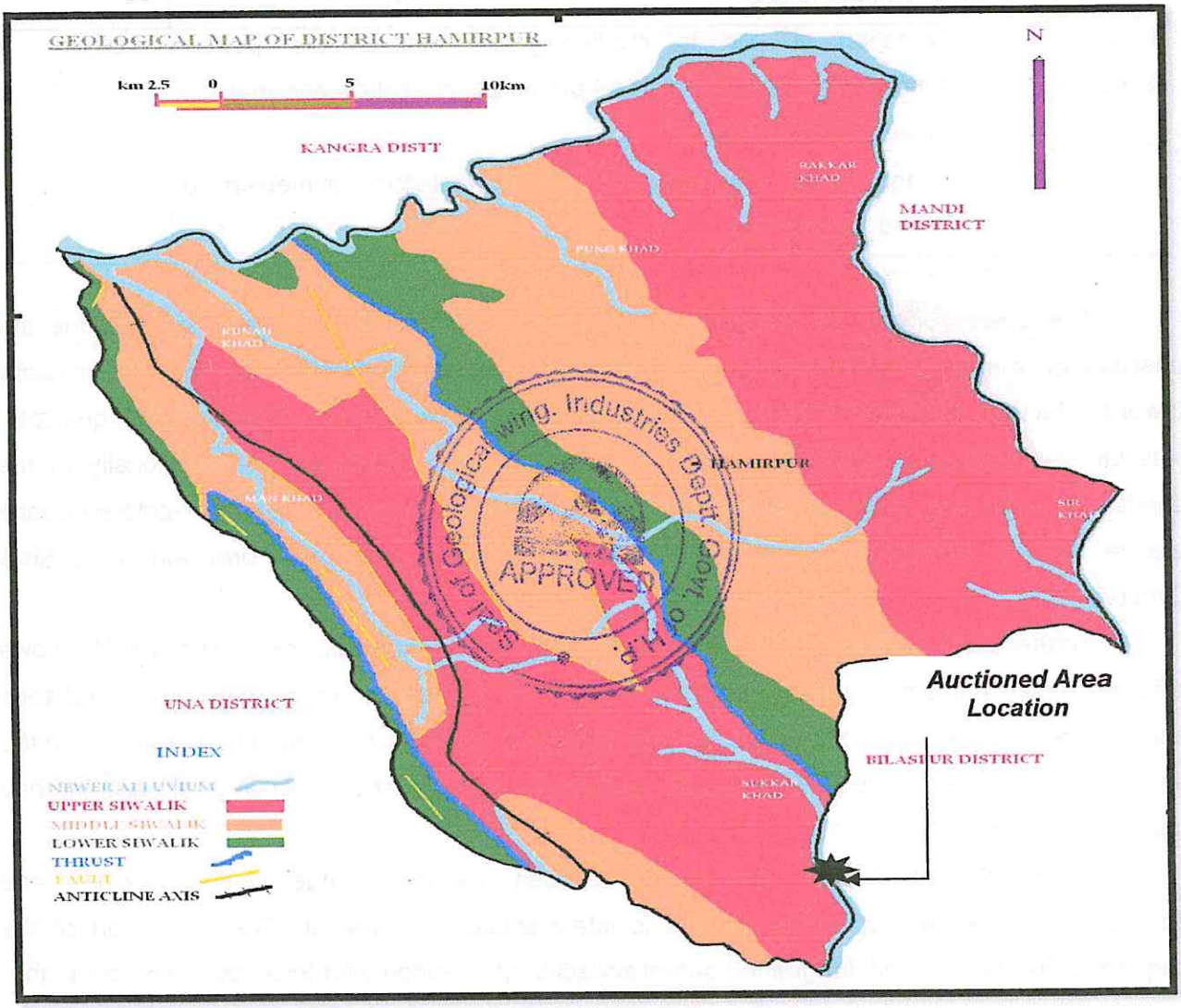


Figure 1.12 : Geological map of District Hamirpur

1.5- Table Showing Litho-stratigraphy of the area

Sub Group	Lithology	Thickness (approx.)
Upper Siwalik	B) predominantly massive boulders with red and orange clay as matrix and minor sandstone and earth, buff and brown clay stone A) Sandstone, clay and conglomerate alternation.	2300 m
Middle Siwalik	B) Massive sandstone with minor conglomerate and local variegated clay stone. A) Predominantly medium to coarse-grained sand stone and red clays alternation, soft pebbly with subordinate clay stone, locally thick prism of conglomerate	1400 m. to 2000 m
Lower Siwalik	B) Alternation of fine to medium-grained sporadically pebbly sandstone, calcareous cement and prominent chocolate and maroon clays tone in the middle part. A) Red and mauve clay stone with thin intercalations of medium to fine-grained sandstone	1600 m

The Lower Siwalik at Jawalamukhi is 1600 m in thickness. Several subdivisions are possible on the basis of the sandstone-shale ratio. Clasts are present only locally especially towards the top of the formation, usually consisting of well-rounded, grey-coloured quartzite, Kasauli sandstone and Shali dolomite in 1 or 2 cm size. Clasts are present locally in the sandstone, especially towards the top and these usually consist of grey and pink-colored quartz arenite possibly belonging to either the Sundernagar Group or the Khairi Formation of the Shali Group.

Further east of Jawalamukhi at the inner edge of the foot-hills, the Lower Siwalik shows different facies. Immediately overlying the Kasauli, there is a unit of coarse feldspathic sandstone and orange-coloured clays. Higher up, angular classes of quartz arenite and chert are found in the sandstone. The main Lower Siwalik sequence consists of conglomerate ending with boulder bed containing clasts

In the Paror-Sarkaghat area, lying between the inner edge of the foot-hills and Jawalamukhi, the lithology of the Siwalik is intermediate in character. The lower part of the sequence consists of medium-grained sub-greywacke interbedded with thick red clays, but higher up in the sequence, sandstones are coarser and clasts become more frequent while clays are less developed. The uppermost horizon consists of a conglomerate with well-rounded clasts of grey quartzite possibly derived from the Shali Group. The total thickness of the Lower Siwalik in the western flank of the Sarkaghat anticline is 1900 m.

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

Middle Siwalik Subgroup

The middle Siwalik Subgroup comprises of a large thickness of coarse micaceous sandstone, and some inter beds of earthy clay. It normally succeeds the Lower Siwalik consists of sub greywacke to arkoses interbedded with clay stone and calcareous matter occurring in segregations rather than disseminated throughout the sandstones. The sandstones are less well-sorted than those in Lower Siwalik. Clays are dull-coloured and silty. Clasts are common in coarser clastic, especially towards top and consist of fragments of metamorphic rocks occurring in the Dhauladhar range and Mandi Volcanics. The thickness of Middle Siwalik 1390 in the gorge of Banganga River, SW of Kangra. Petrologically the Lower boundary of the Middle Siwalik coincides with the influx of kyanite in the heavy mineral assemblage (Karunakaran and Ranga Rao, 1979).

Lateral facies changes are common. In the Jawalamukhi area, a thick prism of conglomerate occurs in the Middle Siwalik, which within 15 km on either side changes to typical Middle Siwalik sandy facies. The thickness near the Beas River is 1890 m. In the Jawalamukhi sector, the middle Siwaliks, which are of nature of channel and flood plain deposits in both NW. At the outer margins these areas, Middle Siwalik is transitional to flood plain facies, especially in the lower part of the sequence. Higher-up massive arkosic sandstones occur in the Bhakra gorge section, Middle Siwalik sequence is about 1400 in thickness, is divisible into two lithostratigraphic units. The lower litho-association is 750 m thick with alternations of moderately hard, well-bedded, medium to coarse-grained sandstone and red sandy clays. The overlying unit consists mainly of thick, soft to moderately hard, massive, coarse to medium-grained sandstones with thin intercalations of red and grey clays.

Along the northern edge of the foot hills, the Middle Siwalik becomes predominantly conglomeratic with pebbles derived from the Sirmaur Group and the Sunder Nagar -Shali Groups. The lack of roundness of the clasts suggests a short-distance transport. The conglomerates are generally very thick (2000 m in the Mandi area). Such conglomerates, representing piedmont deposits are found at Bilaspur, Sarkaghat, Palampur, Bakloh and other areas, and they indicate that the Himalayan uplift had already begun with antecedent erosion.

In the SE Sirmaur areas, on the other hand, the middle Siwalik which is nearly 2000 m thick, consists of alternations of clay and sandstones in the lower part and massive sandstones in the upper part. It contains a moderately rich assemblage of opaques, garnet, tourmaline, epidote, staurolite, zoisite, zircon, rutile, chlorite and kyanite marker attended by Lithological changes in the Siwalik points to a major change in depositional pattern, accompanied by earth movements resulting in the area north of the Siwalik basin.

Upper Siwalik Subgroup

The upper Siwalik Subgroup can be easily separated from the under lying Middle Siwalik on the basis of distinct Lithological change. In the Kangra area where the middle Siwalik, the

conglomerates contains clasts of basic volcanic rocks of the Mandi – Darla Volcanic with a very thin (10 m) transitional zone between them which may even suggest a local break between Middle and Upper Siwalik. The upper Siwalik conglomerates conation red and orange coloured clay as a matrix. NE of Jawalamukhi, in the Lambagaon syncline only 600 to 900 m. of upper Siwalik are exposed as the upper part is overlapped by the post-Upper Siwalik, Neogal conglomerates and red clays. In these, the clasts are smaller and more well-rounded than those of the Upper Siwalik. They probably belong to the first interglacial period of the Pleistocene and therefore, the top of the Upper Siwalik extends into the Lower Pleistocene. The time interval between the two represents the last phase of the Himalayan orogeny.

The conglomeratic facies of the Upper Siwalik is found in the main Mandi mainly in the Lambagaon syncline and in the area immediately to the SE of the main tectonic divide between the Siwalik belt and the Sirmaur belt. South wards, the conglomeratic facies comes progressively higher in the sequence, under lain by grits and arkoses sandstone. SW of Jawalamukhi, for example, 1500 m Upper Siwalik area exposed consisting of 1040 m lower pebbly sand stone sequence, often with grey and brown clay bands and 460 m of conglomerate overlying them. This situation continues along the Nadaun dun. At Bhakra gorge, the Upper Siwalik is 2350 meters thick, divisible into a lower member of 1730 meters thick, and an Upper Member 620 meters thick. The Lower Member mainly consists of soft, massive, pebbly, sand stone with thin intercalation of conglomerates, and grey sandy clays become prominent enough at the top of the formation to be identified separately has a Sub-Member, 215 m thick at Bhakra. North West wards, the clays are replaced by massive sand stone and conglomerates which pass once more in to clay, sand stone succession near Pathankot.

In the outer foot-hills belt, in Janauri, the Upper Siwalik is mainly a sandstone inter bedded with silts. Conglomerates occur only in the North western part of the structure. The Upper Siwalik is 2300 m thick. Further south-westwards, in the planes, the sandy facies of the Upper Siwalik extends all the way up to the Delhi- Lahore arch which separates the Punjab platform from the Rajasthan Platform. The thickness of the Upper Siwalik decreases steadily from 1610 m at Hoshiarpur to 445 m at Zira near the top of the arch in Punjab. In the planes, there is to be no discordance between the post- Siwalik alluvium and the Upper Siwalik.

2. 2 Geology of the Area

The Auctioned Area is situated in the river course of Sukkar Khad and the stream course is covered with river-borne deposits which comprise Boulders, Cobbles, Pebbles, Sand and Silt deposits forming channel deposits of annual deposition. The deposits above high flood level are categorized as terrace deposits which comprise Boulders, Cobbles, Pebbles, Sand and Silt. In the catchment area rocks of the Siwalik, formation are exposed which comprises an alternate sequence of sand stone and clay/silt stone. The following table shows the classification of the rock according to age.

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

Channel Deposits	Boulders, Cobbles, Pebbles, Sand silt and clay
Terrace Deposits	Boulders, Cobbles, Pebbles, Sand silt and clay

----------Unconformity ----------

Dharmsala group- Sandstone, Clay /Siltstone

The area submerges during the monsoon season, therefore; no permanent vegetation is possible in the riverbed; however, seasonal grass grows in the stable lands of the River. For the calculation of the number of minerals, a one-meter depth has been taken into consideration.

2.3 The Nature of boulders, cobbles, sand etc.

The river-borne material consists of the boulder, pebbles, cobble, Bajri, sand and silt. The boulders, cobbles and pebbles are mainly of quartzite, occasionally of sandstone and granite, and are rounded to sub-rounded in shape.

2.4 The nature of rocks of the bank and their attitude:

In this part, the River passes through area with a comparatively gentle slope having wider river width and has convex banks. There will be no change in the river course due to mining as the river course is mainly guided by the hydraulic gradient of surface water and the geological conditions of the bank as it passes through a well-cemented conglomeratic formation of the Upper Siwalik group of rocks. In the Auctioned Area, the river section is well-defined and is confined between both the Banks.

Figure 1.13 : Pictorial view of the Bank of the river of Auctioned Area

2.5 The description of Annual Deposition with Respect to the Geology of the Catchment Area.

The particles deposited in the river bed depend upon the energy of the river. The Sukkar River traverses through Siwalik rocks comprising of Siwalik rocks of Middle and Lower Siwaliks. The middle and lower Siwalik contain medium to coarse-grained sandstone and red clay alternation, soft pebbly with subordinate clays stone, and a locally thick prism of the conglomerate of middle Siwaliks. These rocks are soft to moderately hard in nature. The deposition of river-borne material mostly takes place during the monsoon season when the river is in full spate and brings lots of sediments/materials as they move downstream. The River flows in rapids in its initial reaches which results in erosion of boulders, Bajri, sand, etc. and deposited/scattered in the bed of the river in the downstream areas. The tributaries of this stream have carved a wide flood plain as the banks are comprised of soft rock. The annual deposition is around six cms to 25 cms in general depending upon the location.

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

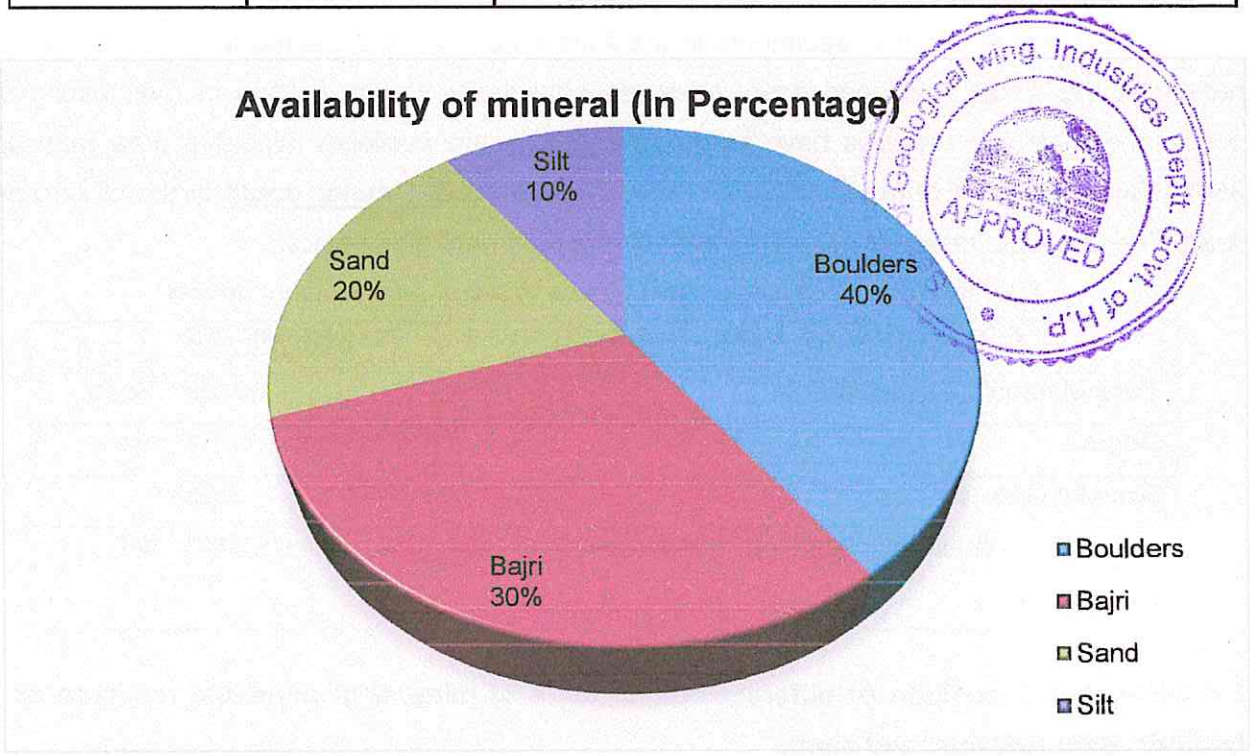
(3) RESERVES ESTIMATE

3.1 Percentage-wise Distribution of stone, gravel sand etc.

The different constituents of river-borne deposits such as Boulder, Bajri, Sand and silt /clay based on size classification were considered for reserve calculation. Although it is not possible to mark these units separately on the geological map as such two pits at different locations of 1x1x1 meter were got dug in the Auctioned Area and the material so excavated was separated into different sizes and their percentage was worked out and this percentage was taken into account during the calculation of reserves. The results of the test pit dug are given in the following table:

1.6 - Table showing % age of minor mineral constituents

1	Boulder	40%(40 mm. to 60 cms Size)
2	Bajri	30%(5 mm to 40mm)
3	Sand	20%(2 mm to 5 mm)
4	Silt	10% (<2 mm)



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1.3 : Pie chart showing Availability of minerals (In Percentage)

3.2 Estimate of Geological Reserves of Each Mineral

An average of specific gravity i.e. 2.25 is taken into consideration for the calculation of mineral potential in the area Auctioned for Mining purposes. As per information gathered as well as based on the previous and ongoing development works like the construction of Bridges and Bore wells by the HPPWD and I&PH departments respectively, the average depth of sediments in and

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

around the Auctioned Area is more than 3 meters. On the basis of this information, following are the geological reserves calculated up to **3 meters** depth in the Auctioned Area :-

1.7 - Table showing geological reserves of minor mineral constituents

ESTIMATION OF MINEABLE GEOLOGICAL RESERVES UPTO THREE METERS (IN MT) IN A MINEABLE AREA	
Total Auctioned Area	33799 Sq. m
Total Mineable Area Available	30419 Sq. m
Depth	3 Mtr.
Specific Gravity	2.25
Estimated Mineable Geological Reserves up to the Depth of Three Meter	206229 MT

However, as the mineral replenishes every year, the reserves are always renewable and shall not exhaust as such geological reserves in rivers bed has no relevance to the production.

3.3 Estimate of mineable reserves of Boulder, Bajri (gravels) and Sand

The average depth of sediments in the Auctioned Area is expected to be more than 3.00 meters in the whole Auctioned Area; however, considering the guidelines of river bed mining policy, the mineable reserves have been computed in the available mineable area measuring 30419 Sq.m. area out of the total 33799 Sq.m. area up to **one-meter depth** in the of Auctioned Area. The Mineable reserves up to the depth of one meter are given below:

1.8 - Table showing estimated reserves of minor mineral constituents

ESTIMATION OF MINEABLE RESERVES UP TO ONE METER	
Total Mineable Area Available	30419 Sq. m
Depth	1 Mtr.
Specific Gravity	2.25
Estimated Mineable Reserves up to the Depth of One Meter	68443 MT

3.4 Estimated deposition of different constituents of mineral of mineable reserves of the boulder, Bajri (gravels) and sand.

The maximum annual extraction of RBM from the Auctioned Area is 68443 metric tonnes per annum only. Due to the excavation of minor minerals from the Auctioned area up to the depth of 3 feet only, this section of a stream creates conditions conducive for deposition and the Auctioned Area fully replenished by sediments transport during periods of higher flows i.e., during the monsoon/rainy seasons. Hence it has been observed that in this type of stream, the mineral excavated will be replenished during the monsoon season when the river is in full spate.

As the mineral replenishes every year, the reserves are always renewable and shall not exhaust as such geological reserves in rivers bed has no relevance to the production size. The material excavated up to one-meter depth would be replenished during the rainy season (i.e. Non-working Season). Thus, it the feasible to take out 168443 metric tons of RBM/year during the running of the riverbed mine in question.

(4) MINE DEVELOPMENT AND PLAN OF PROGRESSIVE MINING

4.1 Development and production Programme for the First Five years

The purpose of Mining is to use the material in the proposed stone crusher unit for manufacturing Grit and Sand (M-Sand/Crusher Sand/ Stone Dust). The river-borne material contains boulders, sand, Bajri and silt. Silt does not have any market value and this material will be used for rehabilitation work. In order to calculate the mineable reserves, the following points are taken into consideration.

1 A Geological map is prepared (Scale 1:2000) and main Litho-units were marked on the plan to know the surface spread of each unit.

2 The different constituents of river-borne deposits such as boulder, Bajri, sand and silt/clay based on size classification were considered for reserve calculation.

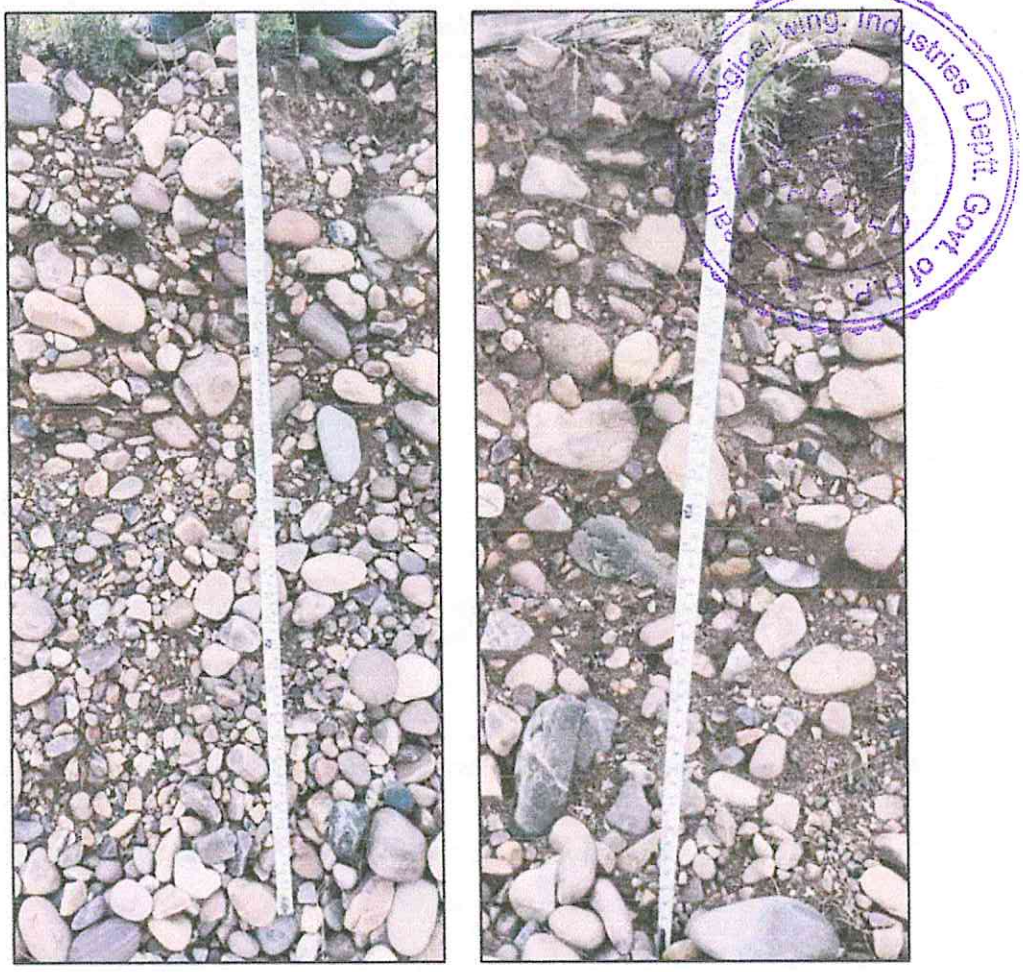


Figure 1.14 : Image showing pits excavated and types of mineral in the Auctioned Area

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

Although, it is not possible to mark these units separately on the geological map as such two pits at different locations in the Auctioned Area of 1x1x1 meter were dug in Auctioned Area and the material so excavated was separated into different sizes and their percentage was worked out and this percentage was taken into account during the calculation of reserves.

3 Keeping in view the high replenishment factor every year, the whole block shall be explored every year.

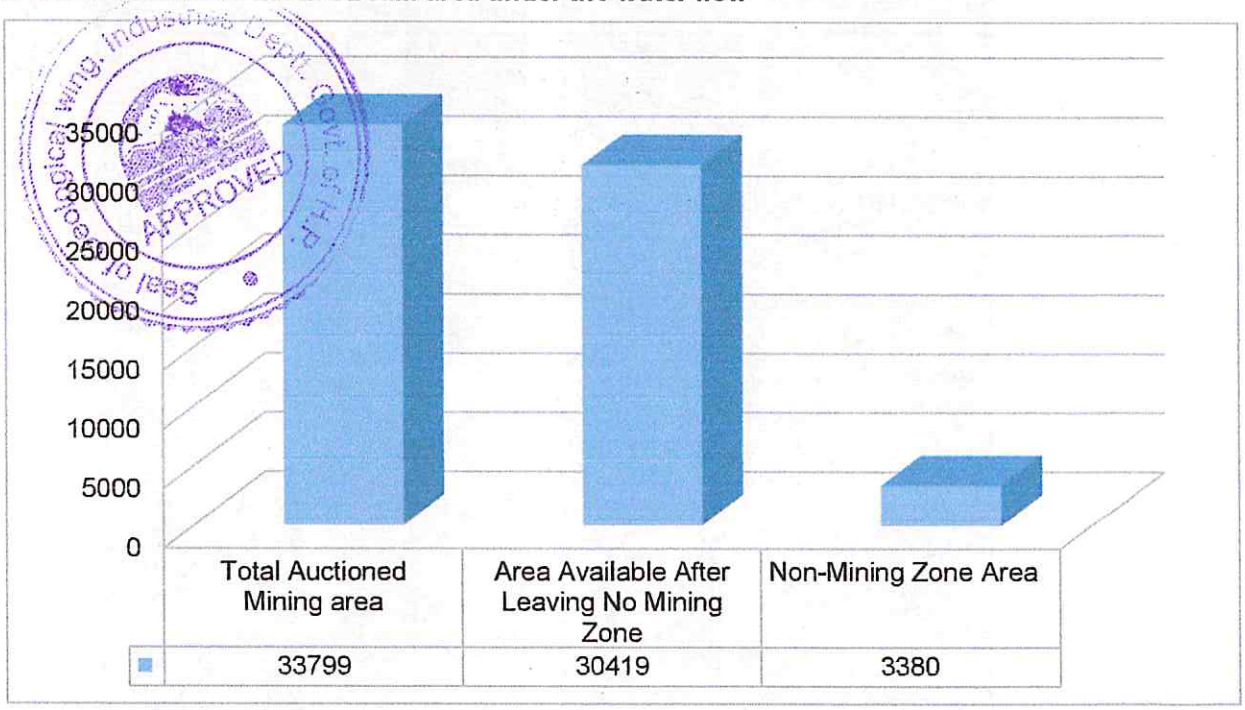
4 The mining shall be undertaken manually.

5 The total available mineable area is almost 90% of the total Auctioned Area. The non-mineable (i.e. 20%) area includes the area laying outside the highest flood level, the leaving1/10th area and the area that lies within the stream flow.

1.9 - Table showing mineable Area and the total mineable area available after leaving the no Mining Area

Total Auctioned Mining area	**33799 Sqm.**
Area Available After Leaving No Mining Zone	**30419 Sqm.**
Non-Mining Zone Area	**3380 Sqm.**

Note: - The no mining zone area includes an area lying outside HFL or leaving 1/10th area from the river banks and the in stream area under the water flow



1.4 Graph showing mineable area after leaving no mining zone & total auctioned mining area.

6 The Mineable reserves have been calculated as per the available reserves in the left out mineable area after leaving the no mining areas.

7 The average specific gravity of the minor mineral has been taken as 2.25 for calculation of reserves and one-meter depth is taken for calculation of reserves.

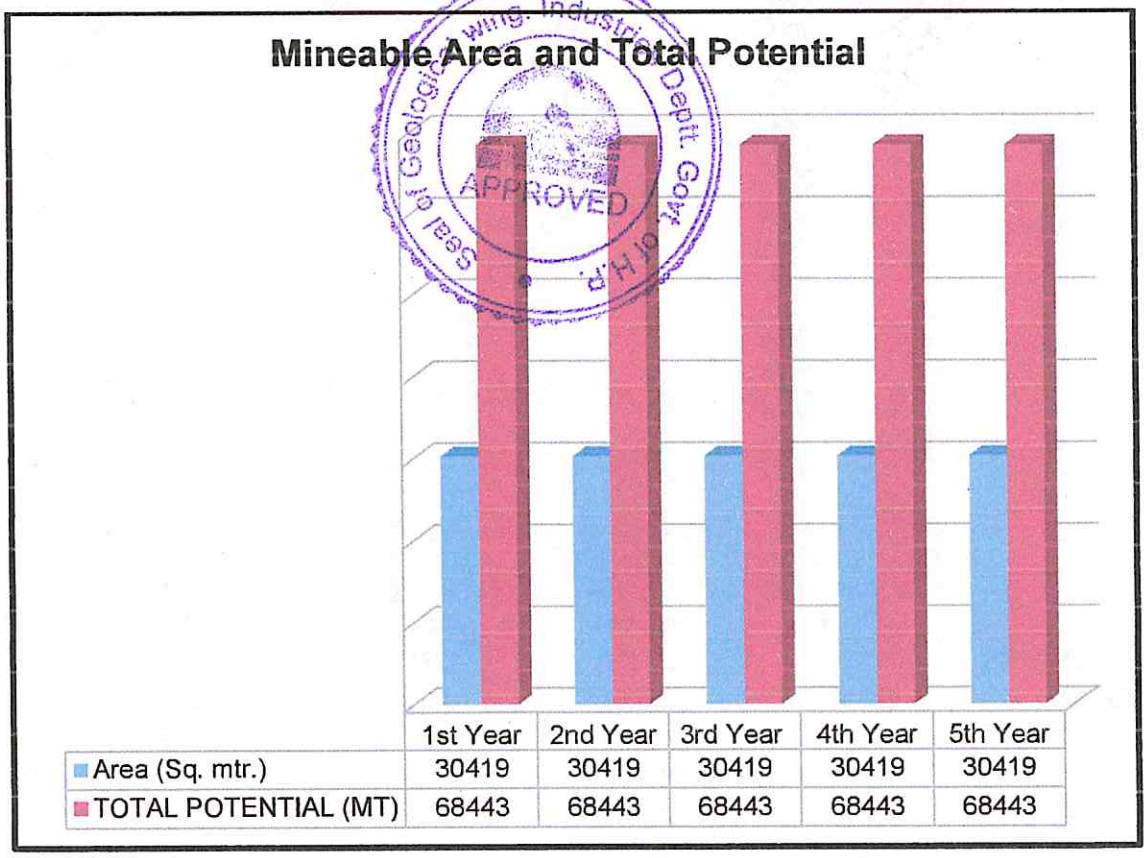
1.10 Table showing the total available mineable area and Potential in mineable Area

MINEABLE RESERVES UP TO ONE METER	
Total Mineable area available	30419 Sq. m
Depth	1 Mtr.
Avg. Specific Gravity	2.25
Mineable reserves (In Mt)	68443 MT

8 The total mineral production from the mineable area is about 155250 metric tonnes per annum including silt and clay

1.11 - Table showing the total mineable area and the potential mineable area

YEAR	TOTAL MINEABLE AREA AVAILABLE (In Sq. m)	TOTAL MINERAL POTENTIAL (In MT
1st Year	30419	68443
2nd Year	30419	68443
3rd Year	30419	68443
4th Year	30419	68443
5th Year	30419	68443
TOTAL		**342215**



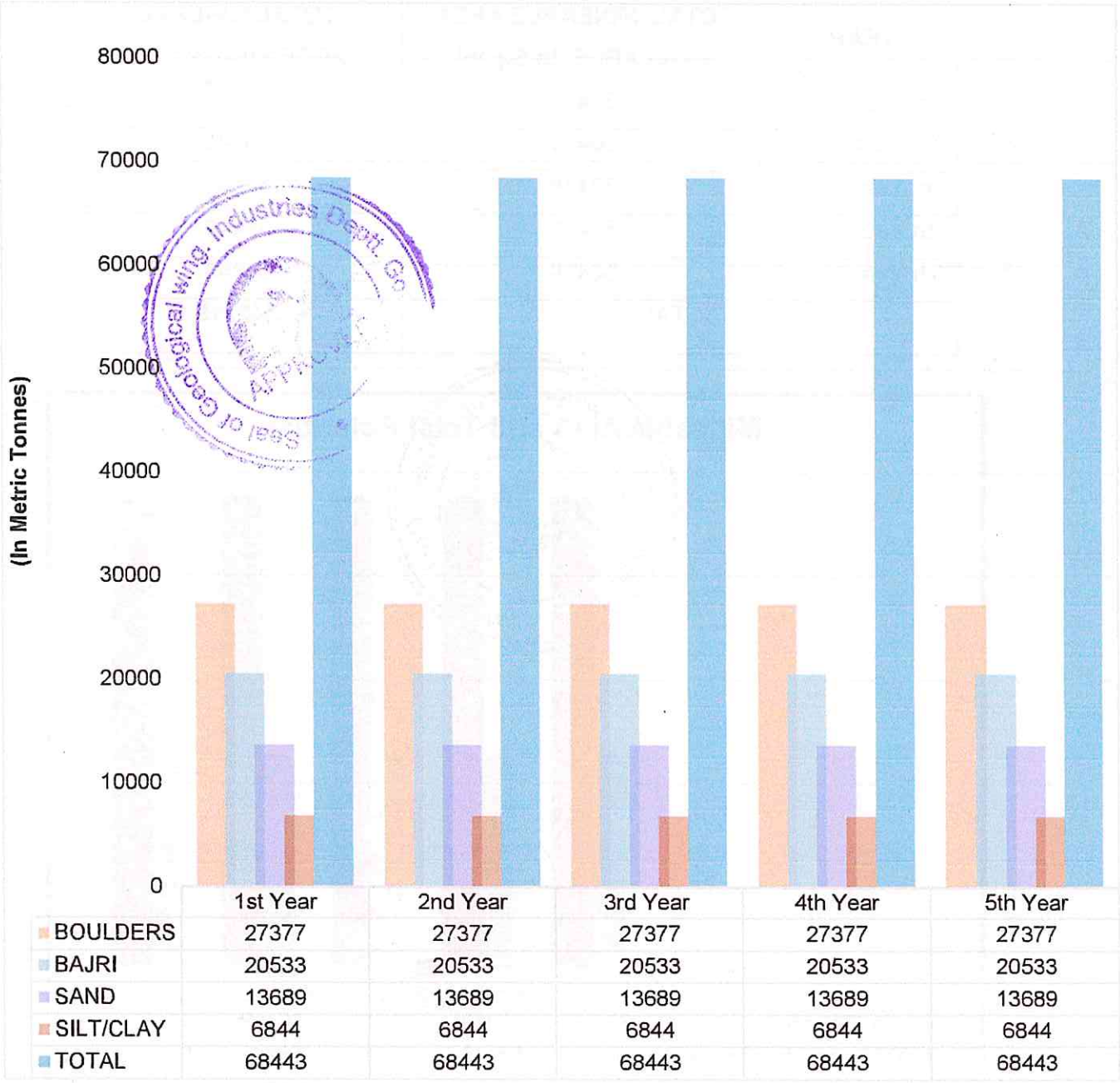
1.5 - Graph Showing Mineable area and total potential

1.12 -Table showing five years mineral potential in the mineable auctioned area

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

Mining Plan–Auctioned area

YEAR	BOULDERS	BAJRI	SAND	SILT/CLAY	TOTAL POTENTIAL
	40%	30%	20%	10%	
1st Year	27377	20533	13689	6844	68443
2nd Year	27377	20533	13689	6844	68443
3rd Year	27377	20533	13689	6844	68443
4th Year	27377	20533	13689	6844	68443
5th Year	27377	20533	13689	6844	68443
TOTAL	**136886**	**102665**	**68443**	**34222**	**342215**



1.6 - Graph showing year wise mineral potential in the Mineable area

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

1.7 - Graph showing five years of mineral potential in the Mineable area

4.2 Year-Wise Production Detail

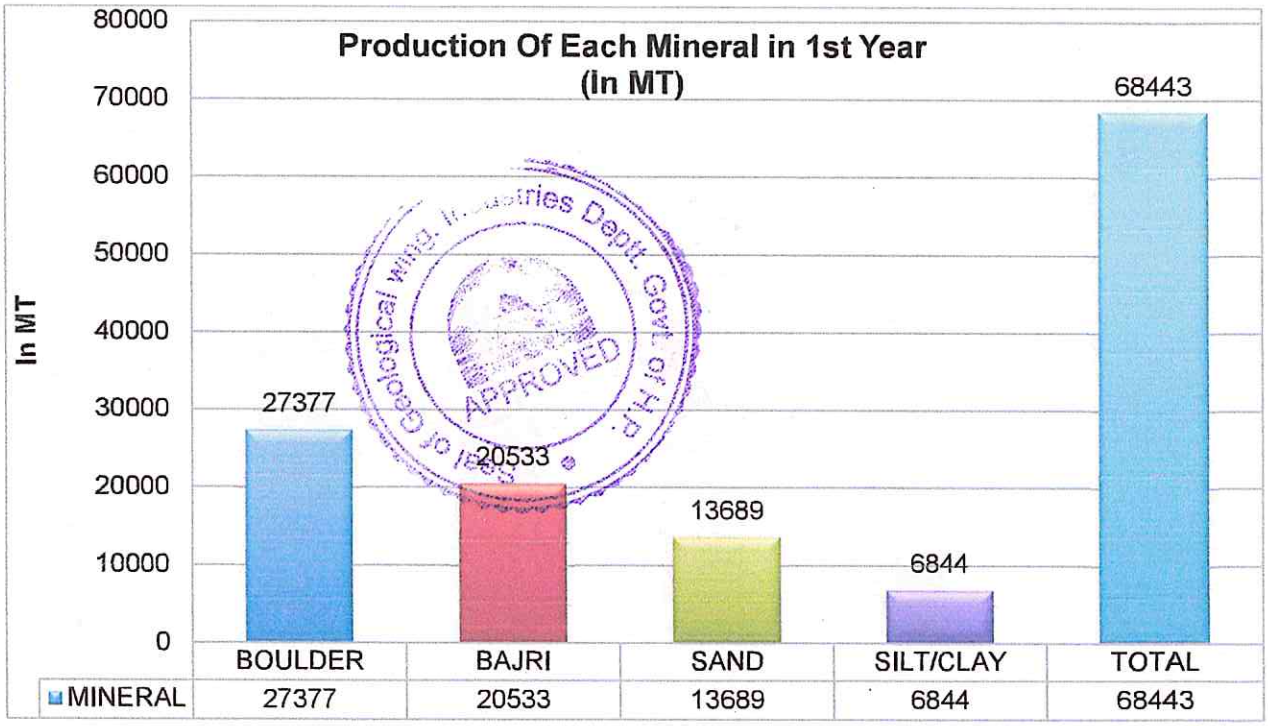
The Area lies in the riverbed of the Sukkar and gets adequately replenished during monsoon as well as during winter rains when the river gets a heavy load for a short period. The river level is raised up to 1.5 - 2 meters during monsoon rains/rainy seasons. The mining has been planned in the full block up to a depth of 1.00 meters to give a better chance for replenishment. The worked-out block shall get replenishment during the rainy season for recharging the worked-out area and the worked-out area shall be fully replenished. A total of 30419 square meters of the area shall be available for work every year.

4.2 (a) Development and Production in the First Year (Plate No IV)

During **1st Year** of the development and production Programme, mining is proposed in 30419 square meters only. The production of each mineral Constituent will be as under:-

Table 1.13 - Production of Each Mineral in the First Year (In MT)

Production Of Each Mineral in the First Year (In MT)	
Boulder	27377
Bajri	20533
Sand	13689
Silt/clay	6844
TOTAL	**68443**



1.8 - Graph Showing Production of Each Mineral in First Year

Afforestation –To restore the ecosystem and mitigate the ecological losses due to the mining, proper afforestation shall be proposed by the contractor will be undertaken in private land. The process should involve the forest department, requiring body and the community. Apart from that, Plantations along the river banks shall also be done by the Contractor.

Protection of banks – A retaining structure will be constructed at the C-1 location as marked in Plate No.-IV.

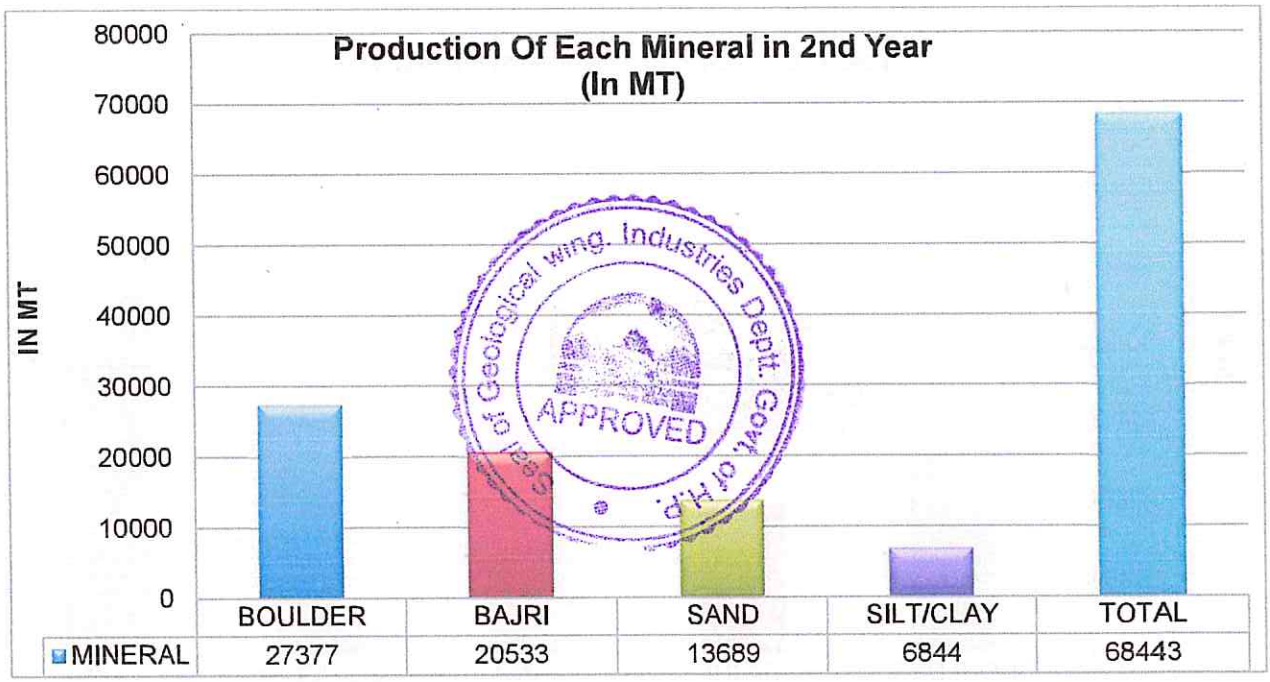
Soil dump – The waste material present in the Auctioned Area shall be brought to the stone crusher unit along with Stone, Bajri and Sand and separated after screening and washing. Further, the Contractor shall dump the waste material at appropriate dumping sites and should also find out the possibility to use the material in the maintenance of approach roads and plantation works etc.

4.2 (b) Development and Production Programme during 2nd Year (Plate No IV)

During the **2nd year,** mining is proposed in the 30419 Square meters only. The production of each mineral Constituent will be as under:-

Table1.14 – Production of Each Mineral in the Second Year (In MT)

Production Of Each Mineral in the Second Year (In MT)	
Boulder	27377
Bajri	20533
Sand	13689
Silt/clay	6844
TOTAL	**68443**



1.9 - Graph Showing Production of Each Mineral in the Second Year

Afforestation –To restore the ecosystem and mitigate the ecological losses due to the mining, proper afforestation shall be proposed by the contractor and will be undertaken in private land. The process should involve the forest department, requiring the body and the community. Apart from that, Plantations along the river banks shall also be done by the Contractor.

Protection of banks – A retaining structure will be constructed at the C-2 location as marked in Plate No.-IV.

Soil dump – The waste material present in the Auctioned Area shall be brought to the stone crusher unit along with Stone, Bajri and Sand and separated after screening and washing. Further, the Contractor shall dump the waste material at appropriate dumping sites and should also find out the possibility to use the material in the maintenance of approach roads and plantation works, etc.

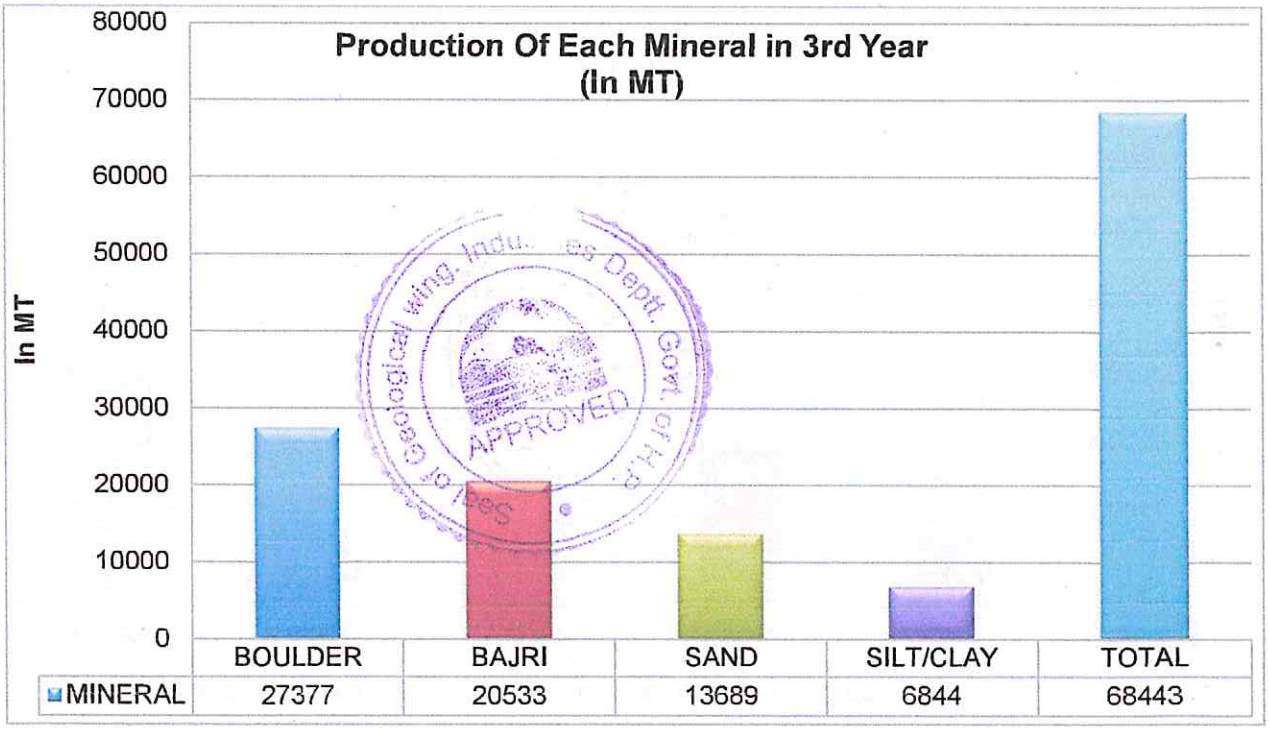
Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

4.2 (c) Development and Production Programme during 3rd Year (Plate No IV)

During **Third-year** mining is proposed in the 30419 Square meters only. The production of each mineral constituent will be as under:-

Table1.15 – Production of Each Mineral in the Third Year (In MT)

Production Of Each Mineral in the Third Year (In MT)	
Boulder	27377
Bajri	20533
Sand	13689
Silt/clay	6844
TOTAL	**68443**



1.10 - Graph Showing Production of Each Mineral in the Third Year

Afforestation –To restore the ecosystem and mitigate the ecological losses due to the mining, proper afforestation shall be proposed by the contractor and will be undertaken on private land. The process should involve the forest department, requiring body, and the community. Apart from that, Plantations along the river banks shall also be done by the Contractor.

Protection of banks – A retaining structure will be constructed at the C-3 location as marked in Plate No.-IV.

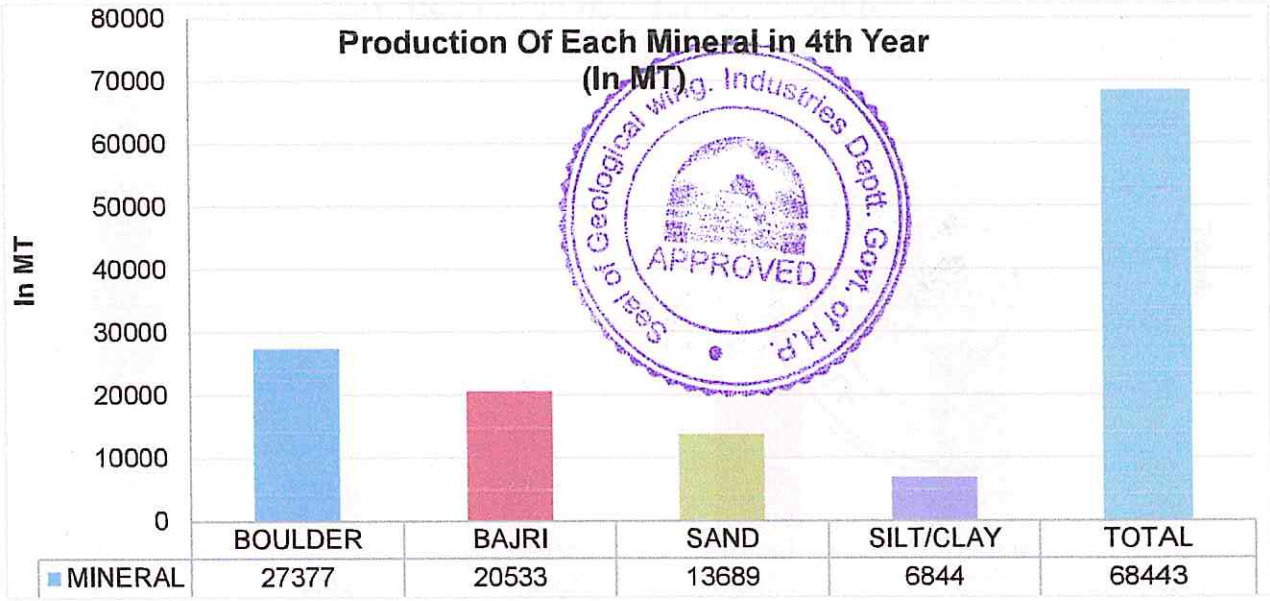
Soil dump – The waste material present in the Auctioned Area shall be brought to the stone crusher unit along with Stone, Bajri and Sand and separated after screening and washing. Further, the Contractor shall dump the waste material at appropriate dumping sites and should also find out the possibility to use the material in the maintenance of approach roads and plantation works etc.

4.2. (d) Development and Production Programme during 4th Year (Plate No IV)

During **Fourth-year** mining is proposed in the 30419 Square meters only. The production of each mineral Constituent will be as under:-

Table 1.16- Production of Each Mineral in the fourth Year (In MT)

Production Of Each Mineral in the Fourth Year (In MT)	
Boulder	27377
Bajri	20533
Sand	13689
Silt/clay	6844
TOTAL	**68443**



1.11 -Graph Showing Production of Each Mineral in the Fourth Year

Afforestation –To restore the ecosystem and mitigate the ecological losses due to the mining, proper afforestation shall be proposed by the contractor and will be undertaken on private land. The process should involve the forest department, requiring the body and the community. Apart from that, Plantations along the river banks shall also be done by the Contractor.

Protection of banks – A retaining structure will be constructed at the C-4 location as marked in Plate No.-IV.

Soil dump – The waste material present in the Auctioned Area shall be brought to the stone crusher unit along with Stone, Bajri and Sand and separated after screening and washing. Further, the Contractor shall dump the waste material at appropriate dumping sites and should also find out the possibility to use the material in the maintenance of approach roads and plantation works, etc.

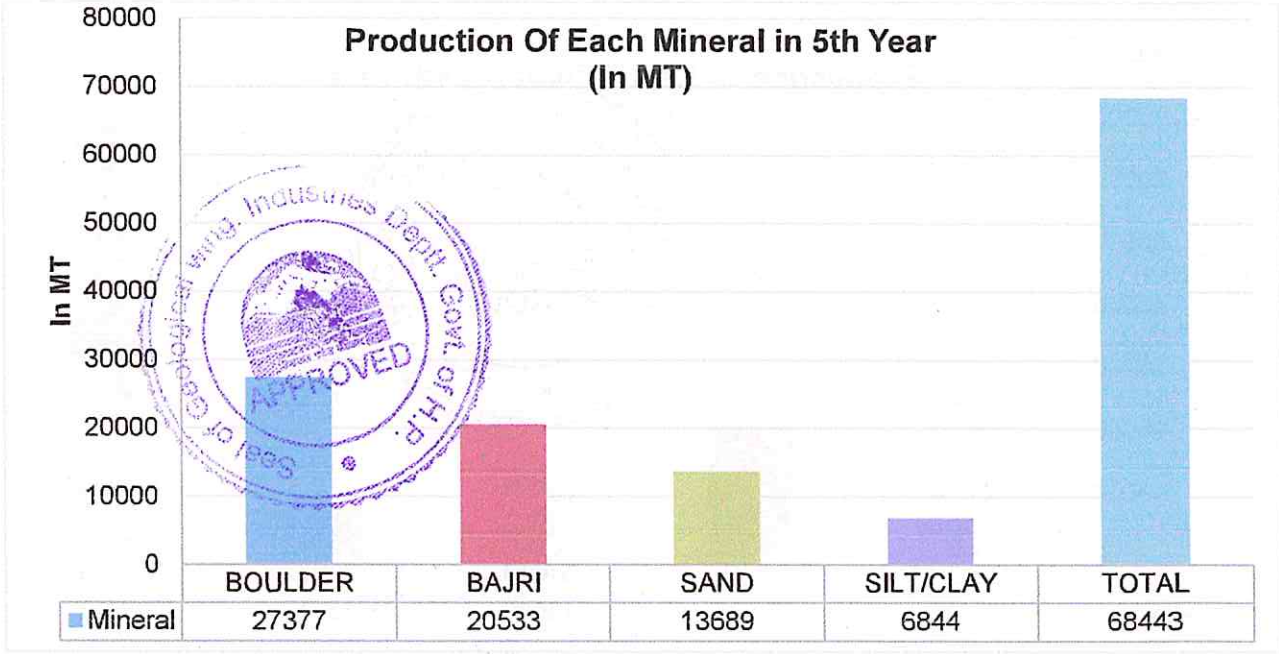
Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

4.2. (e) Development and Production Programme during 5th Year (Plate No IV)

During the **5th year,** mining is proposed in the 30419 Square meters only. The production of each mineral Constituent will be as under:-

Table1.17 – Production of Each Mineral in* Fifth Year *(In MT)

Production Of Each Mineral in the Fifth Year (In MT)	
Boulder	27377
Bajri	20533
Sand	13689
Silt/clay	6844
TOTAL	**68443**



1.12 -Graph Showing Production of Each Mineral in the Fifth Year

Afforestation –To restore the ecosystem and mitigate the ecological losses due to the mining, proper afforestation shall be proposed by the contractor and will be undertaken on private land. The process should involve the forest department, requiring the body and the community. Apart from that, Plantations along the river banks shall also be done by the Contractor.

Protection of banks – A retaining structure will be constructed at the C-5 location as marked in Plate No.-IV.

Soil dump – The waste material present in the Auctioned Area shall be brought to the stone crusher unit along with Stone, Bajri and Sand and separated after screening and washing. Further, the Contractor shall dump the waste material at appropriate dumping sites and should also find out the possibility to use the material in the maintenance of approach roads and plantation works, etc.

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

4.3 End-use of mineral

The Stone, Bajri and Sand shall be brought to the stone crusher unit and after screening and washing the material will be crushed manufacturing Grit and Sand. There is a huge demand for construction materials, like coarse aggregate and fine aggregate required in concrete works of various infrastructure development works. The minor mineral excavated from the Auctioned Area will be crushed in the stone crusher unit and further sold in the open market as per demand

4.4 Detail of Road transport:-

The Auctioned Area is in the river bed and there is very low to no traffic from the Auctioned Area till the main road. However; for the transportation of the loaded vehicles to the nearest approach road, the vehicles may pass through private as well as Govt. Lands. The project proponent shall be made necessary arrangements between land owners (Pvt. & Govt.) and will take care of other issues if any at his own for the mineral transportation to the nearest road.

The main connectivity of this is with the Bijhari – Barthin road. Even on this road, the traffic is not that too high. This road is in enough good condition to bear the additional truck/ transport created by the mining operations. As per the proposed production of 61599 {68443-6844=61599 MT (excluding wastage)} metric tonnes of material shall be transported in a year by trucks. At this rate, only 205 metric tonnes of material shall be transported at an average per day (Total working days 300/year) for which average 23 to 24 trucks with 09 metric tonnes capacity are required.

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

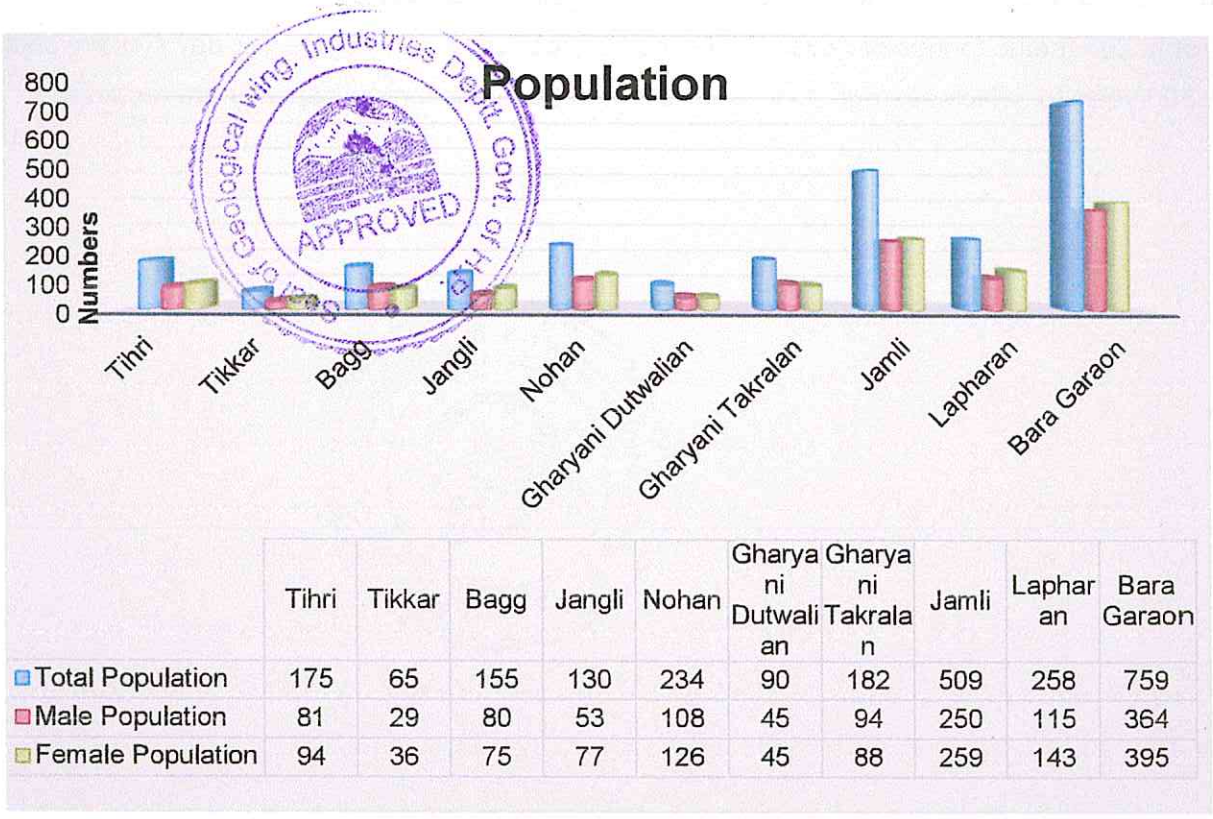
PART –II
ENVIRONMENT MANAGEMENT PLAN

(1) BASELINE DATA

1.1. Detail of Population Distribution

1.18 - Table Showing Details of Population Distribution

Sr. No.	Name of Villages	Total Population	Male Population	Female Population
1	Tihri	175	81	94
2	Tikkar	65	29	36
3	Bagg	155	80	75
4	Jangli	130	53	77
5	Nohan	234	108	126
6	GharyaniDutwalian	90	45	45
7	GharyaniTakralan	182	94	88
8	Jamli	509	250	259
9	Lapharan	258	115	143
10	Bara Garaon	759	364	395



	Tihri	Tikkar	Bagg	Jangli	Nohan	Gharyani Dutwalian	Gharyani Takralan	Jamli	Lapharan	Bara Garaon
Total Population	175	65	155	130	234	90	182	509	258	759
Male Population	81	29	80	53	108	45	94	250	115	364
Female Population	94	36	75	77	126	45	88	259	143	395

1.13 Graph Showing Details of Population Distribution

1.2 Socio Economy of the Village

The general economy of the village in agriculture and animal husbandry based and people go to find out job opportunities in for flung industrial area outside the state of Himachal as there is no industry in the nearby area. Therefore, any job opportunity created by any entrepreneur may be

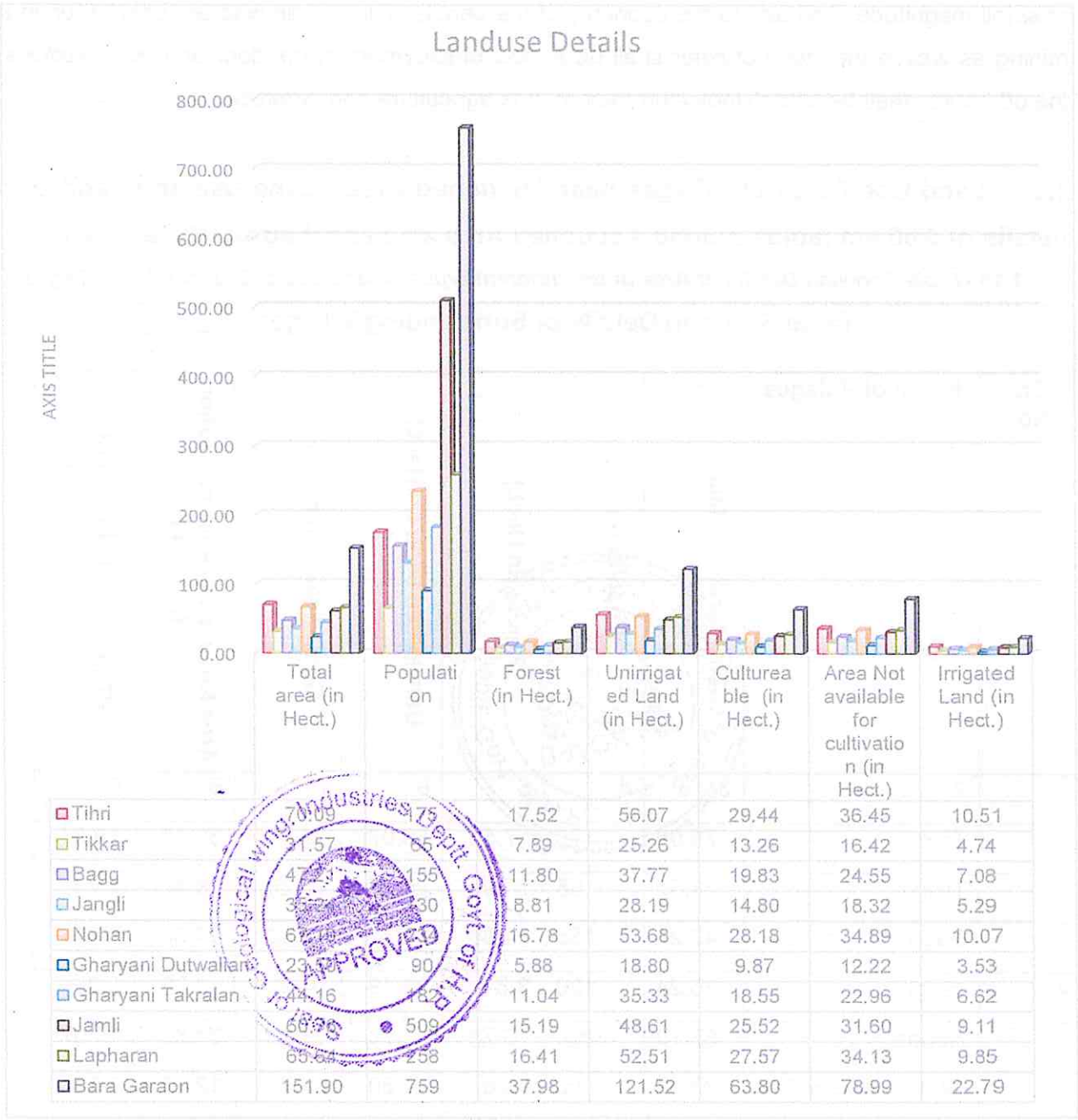
of small magnitude shall add to the economy of the people. The people who are offered job in the mining as well in the stone crusher shall be a local employment at the door and such workers in the off hours, shall be able to look after their routine agriculture and livestock.

1.3 Land Use Detail of Villages near Auctioned Area:- Land use and Land cover details of 5.00 km radius around Auctioned Area also attached as (Plate no 2.)

1.19 -Table Showing Details of Area under different types of land use of Surrounding Villages

Table Showing Details of Surrounding Villages

Sr. No.	Name of Villages	Total area (in Hect.)	Population	Forest (in Hect.)	Unirrigated Land (in Hect.)	Cultureable (in Hect.)	Area Not available for cultivation (in Hect.)	Irrigated Land (in Hect.)
1	2	3	4	5	6	7	8	9
1	Tihri	70.09	175	17.52	56.07	29.44	36.45	10.51
2	Tikkar	31.57	65	7.89	25.26	13.26	16.42	4.74
3	Bagg	47.21	155	11.80	37.77	19.83	24.55	7.08
4	Jangli	35.24	130	8.81	28.19	14.80	18.32	5.29
5	Nohan	67.10	234	16.78	53.68	28.18	34.89	10.07
6	GharyaniDutwalian	23.50	90	5.88	18.80	9.87	12.22	3.53
7	GharyaniTakralan	44.16	182	11.04	35.33	18.55	22.96	6.62
8	Jamli	60.76	509	15.19	48.61	25.52	31.60	9.11
9	Lapharan	65.64	258	16.41	52.51	27.57	34.13	9.85
10	Bara Garaon	151.90	759	37.98	121.52	63.80	78.99	22.79



	Total area (in Hect.)	Populati on	Forest (in Hect.)	Unirrigated Land (in Hect.)	Culturea ble (in Hect.)	Area Not available for cultivatio n (in Hect.)	Irrigated Land (in Hect.)
Tihri	70.09	379	17.52	56.07	29.44	36.45	10.51
Tikkar	31.57	85	7.89	25.26	13.26	16.42	4.74
Bagg	47.21	155	11.80	37.77	19.83	24.55	7.08
Jangli	35.23	130	8.81	28.19	14.80	18.32	5.29
Nohan	67.10	362	16.78	53.68	28.18	34.89	10.07
Gharyani Dutwallan	23.53	90	5.88	18.80	9.87	12.22	3.53
Gharyani Takralan	44.16	182	11.04	35.33	18.55	22.96	6.62
Jamli	60.76	509	15.19	48.61	25.52	31.60	9.11
Lapharan	65.64	258	16.41	52.51	27.57	34.13	9.85
Bara Garaon	151.90	759	37.98	121.52	63.80	78.99	22.79

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1.14 - Graph Showing General Land Use Pattern of Surrounding Villages

1.4 AGRICULTURE

The landholding in the district are small and scattered. The farmers grow more than two crops in a year so as to get maximum production from the land. The crop rotation followed in the district are:

I. Maize- Toria-Wheat

II. Maize-Potato-Potato

III. Maize- Toria-Wheat-Baisakhi Moong

IV Paddy Wheat

V Maize-Wheat

Wheat and Maize are major crops of the district. These are followed by gram, Paddy and other pulses. Besides these, Barley, Ragi, Mustered, Seasmum and Sugarcane are also grown in the district. Peas, Carrot, Cabbage, Lady finger, Tomato, Brinjal, Capsicum, Cauliflower, Cucumber, Pumpkin etc. vegetables are also grown.

About 95% of the total cultivable area in the district is rain fed. Hence production of the district mainly depends upon rain.

1.20 - Table Showing Crop Pattern Surrounding Mining Area

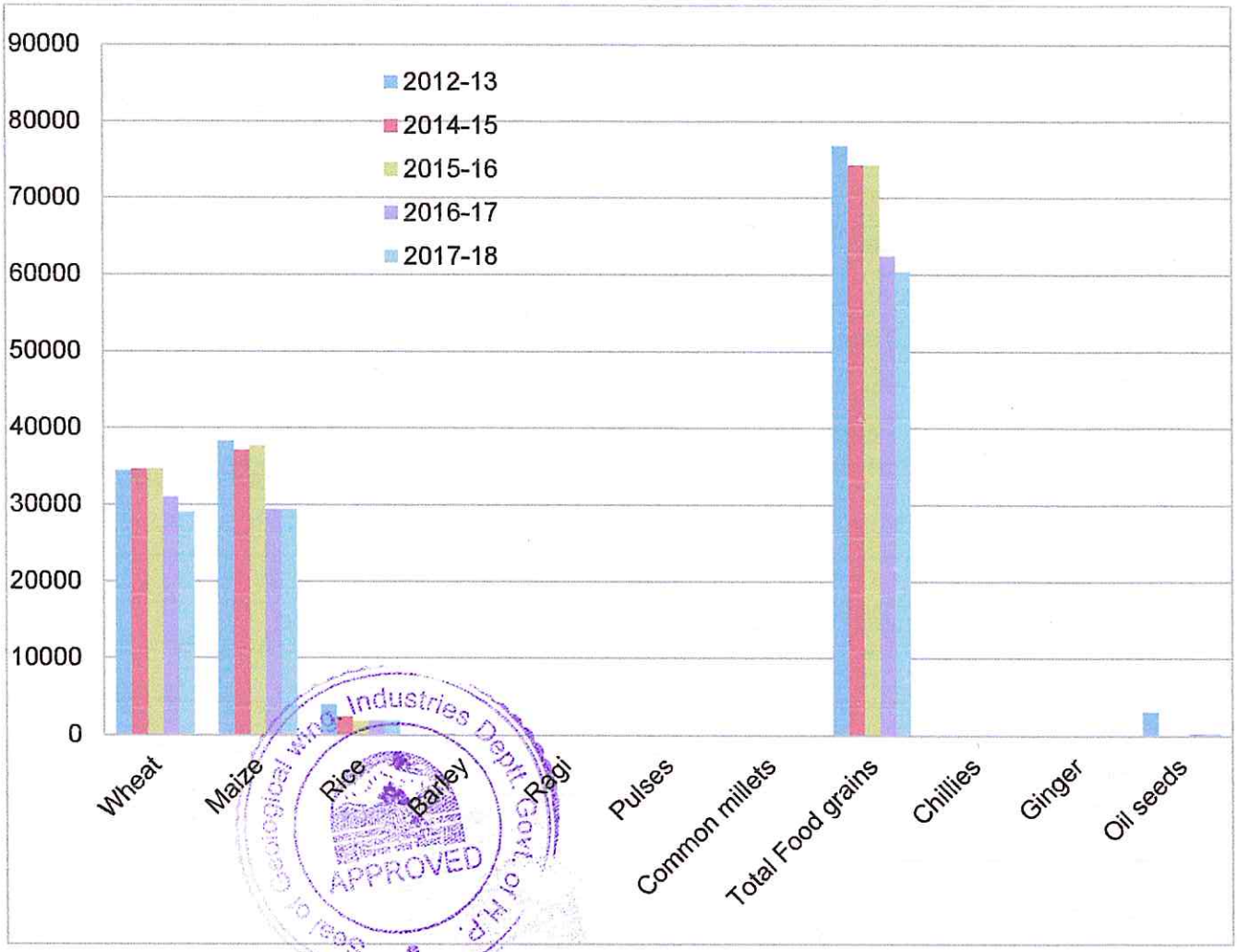
June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Maize				Wheat				Maize			
Maize			Toria			Wheat			Maize		
Maize			Potato			Wheat			Maize		
Maize			Potato			Potato			Maize		
Bhindi				Cauliflower				French Bean / Tomato / brinjal / Capsicum Cucurbits			
Sesame						Sarson/Raya/G.Sarson					
Ginger/Colacasia/Turmeric			Potato			Wheat			Ginger		
Paddy						Wheat					
Paddy						Barseem					
Paddy						Potato					
Kulthi Mah						B. Sarson/Raya/G. Sarson/Taramira(Eruca Sativa)					
Mash						Wheat					
Maize+ Mash						Wheat					
Arhar											

1.21 - Table Showing Area under various Agriculture Crops in Hamirpur

Table showing Area under Different Crops in Hectares at Hamirpur District

Year	Wheat	Maize	Rice	Barley	Ragi	Pulses	Common millets	Total Food grains	Chillies	Ginger	Oil seeds
2012-13	34452	38294	3957	82	...	16	6	76807	11	4	3068
2014-15	34668	37129	2339	131	...	7	...	74274	1	72	64
2015-16	34690	37674	1820	99	...	7	...	74290	9	8	66
2016-17	31038	29422	1871	38	...	24	...	62393	10	9	248
2017-18	29038	29422	1871	38	...	25	...	60393	10	9	248

Source: Directorate of Land Records, HP

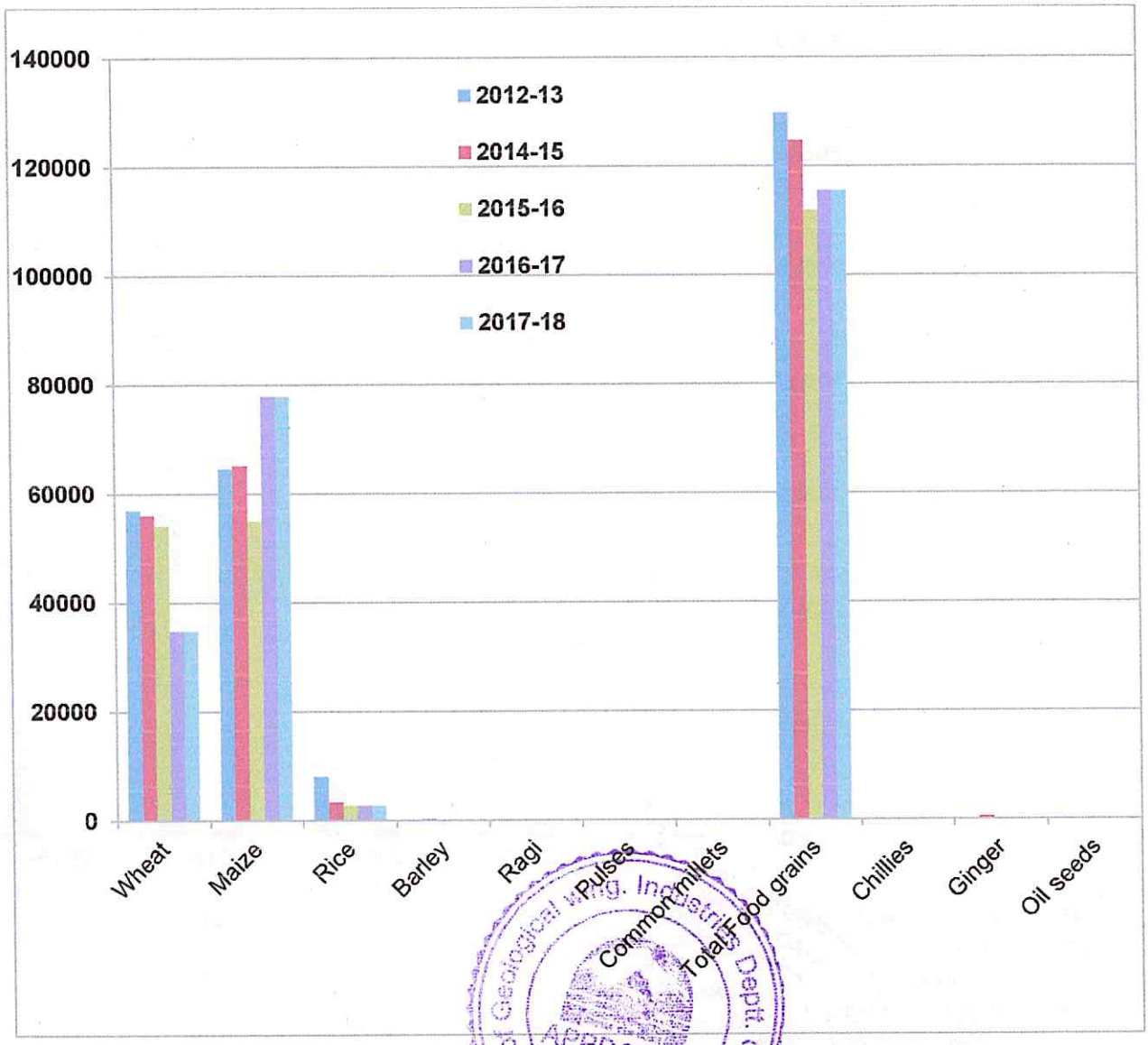


1.15 - Graph Showing Area under various Agriculture Crops in District Hamirpur

1.22 - Table Showing Production of Agriculture Crop in Hamirpur

Table showing Production of Different Crops in MT at Hamirpur District											
Year	**Wheat**	**Maize**	**Rice**	**Barley**	**Ragi**	**Pulses**	**Common millets**	**Total Food grains**	**Chillies**	**Ginger**	**Oil seeds**
2012-13	57000	64570	8064	141	...	8	3	129786	3	28	44
2014-15	56013	65034	3370	228	...	4	...	124648	1	504	33
2015-16	54102	54939	2656	167	...	13	...	111877	2	56	63
2016-17	34789	77868	2741	63	...	10	...	115471	5	62	81
2017-18	34789	77868	2741	63	...	11	...	115471	5	62	81

Source: Directorate of Land Records, HP



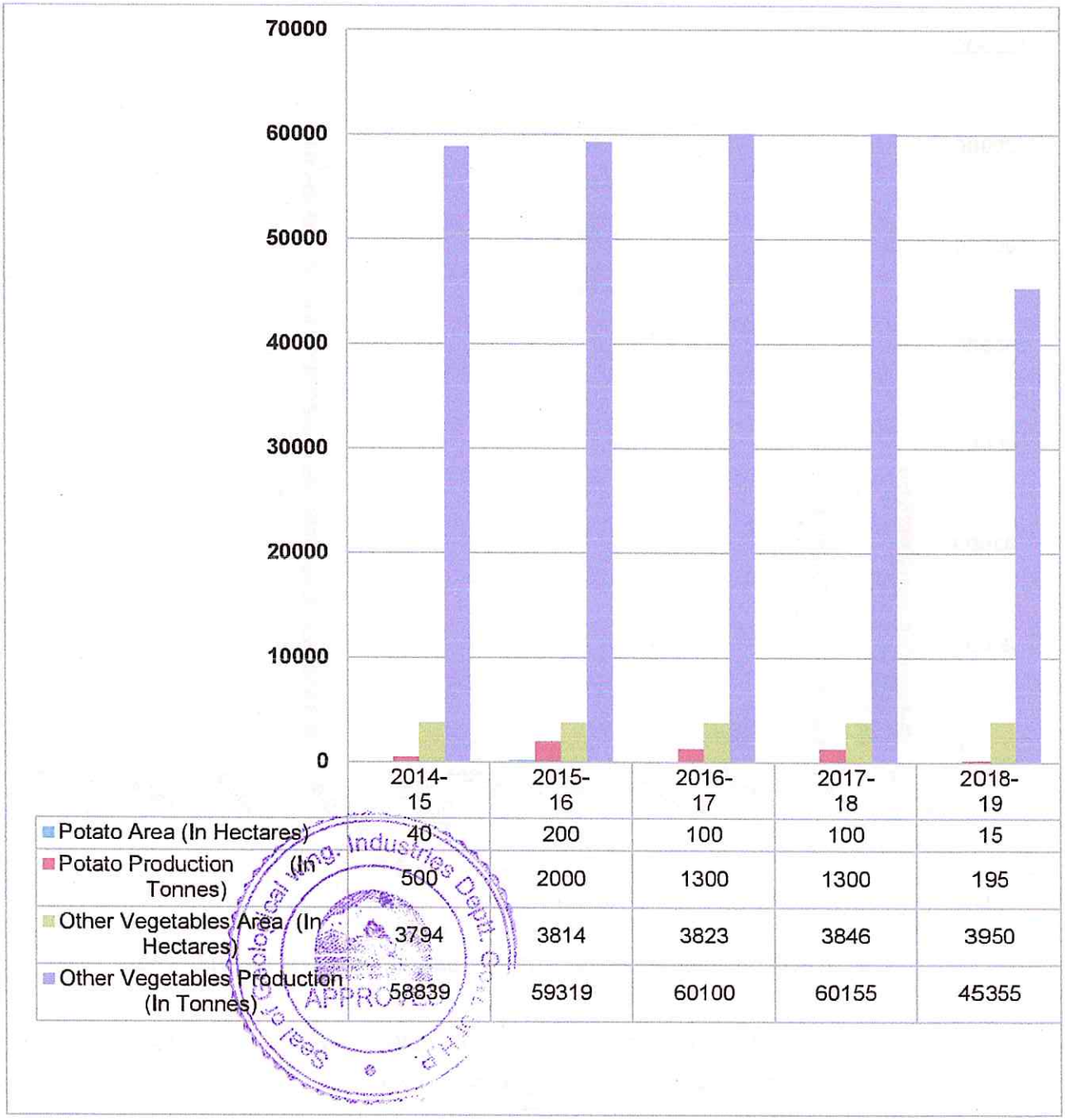
1.16 - Graph Showing Production of Agriculture Crop in District Hamirpur

1.23 - Table Showing Area &Production of Vegetables in District Hamirpur

Area & Production of Vegetables (Distt Hamirpur)				
Year	Potato		Other Vegetables	
	Area (In Hectares)	Production (In Tonnes)	Area (In Hectares)	Production (In Tonnes)
2014-15	40	500	3794	58839
2015-16	200	2000	3814	59319
2016-17	100	1300	3823	60100
2017-18	100	1300	3846	60155
2018-19	15	195	3950	45355

Source: Directorate of Land Records, HP

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019



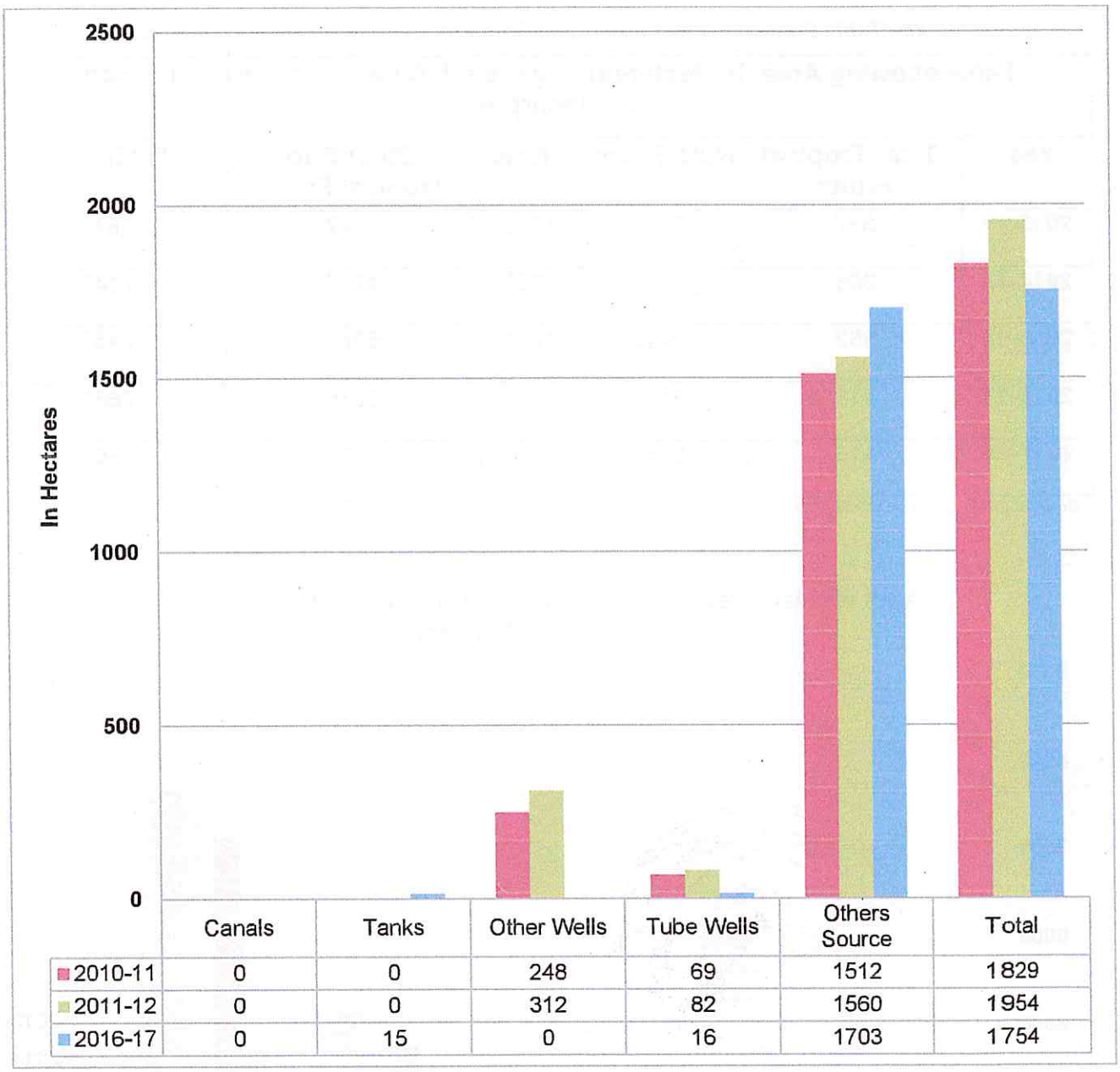
	2014-15	2015-16	2016-17	2017-18	2018-19
Potato Area (In Hectares)	40	200	100	100	15
Potato Production (In Tonnes)	500	2000	1300	1300	195
Other Vegetables Area (In Hectares)	3794	3814	3823	3846	3950
Other Vegetables Production (In Tonnes)	58839	59319	60100	60155	45355

1.17 - Graph Showing Area & Production of Vegetables in District Hamirpur

1.24 - Table Showing Net Irrigated area of the district

Table showing Net Irrigated Area of Hamirpur by source (in Hectares)						
Year	**Canals**	**Tanks**	**Other Wells**	**Tube Wells**	**Others Source**	**Total**
2010-11	...	...	248	69	1512	1829
2011-12	...	...	312	82	1560	1954
2016-17	...	15	...	16	1703	1754

Source: Directorate of Land Records, HP



	Canals	Tanks	Other Wells	Tube Wells	Others Source	Total
2010-11	0	0	248	69	1512	1829
2011-12	0	0	312	82	1560	1954
2016-17	0	15	0	16	1703	1754

1.18 - Graph Showing Net Irrigated area of the district

1.5 HORTICULTURE:

Following important fruits are grown in the district:

I Plum
II. Peach
III. Apricot
IV. Pear
V Nuts and dry fruits
VI Citrus fruits
VII. Sub-Tropical fruits like Mango, Guava, Lichi, Papaya etc.

Seal of Geological wing, Industries Deptt. Govt. of H.P.
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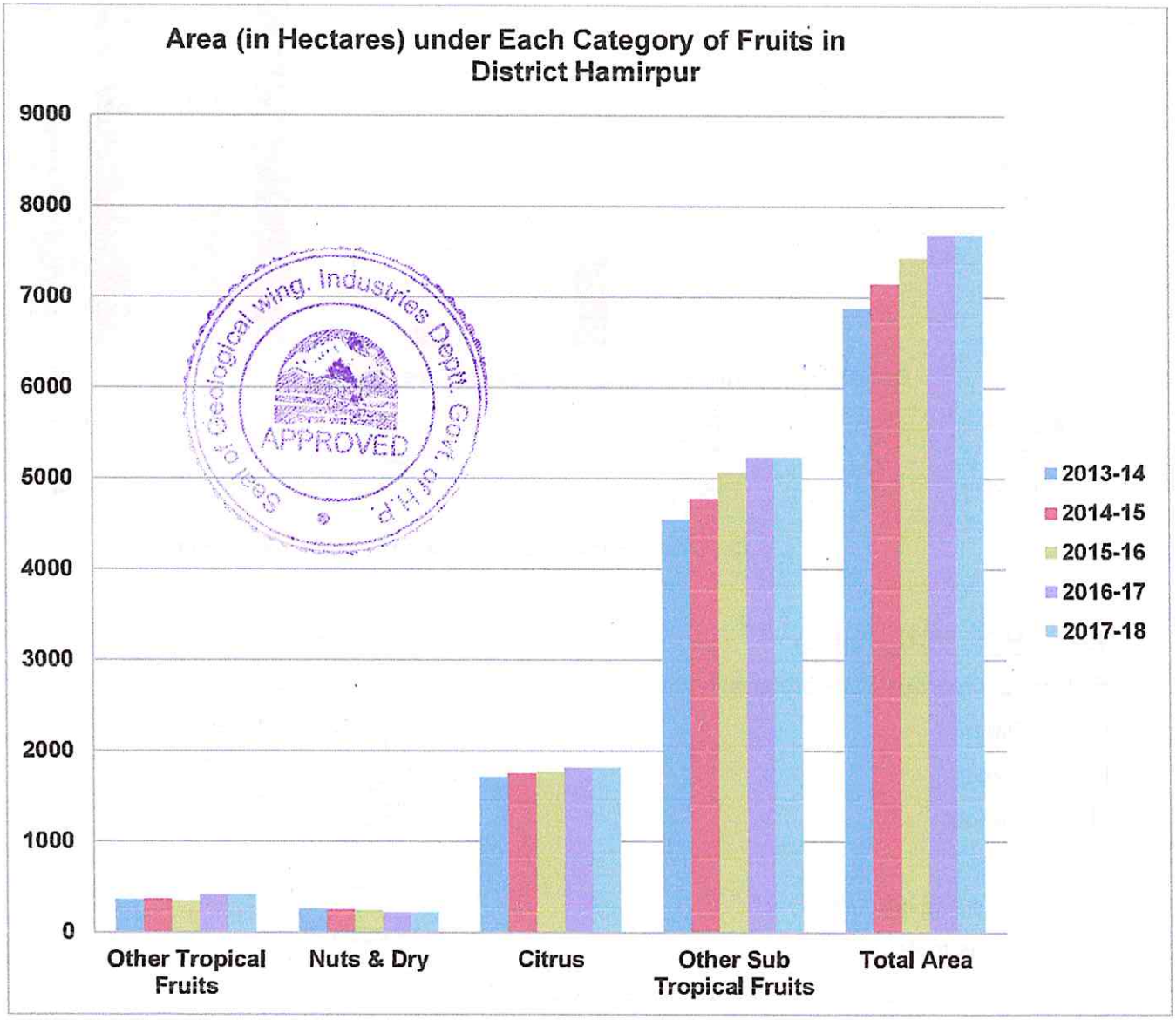
REG.NO. – H.P./R.Q.P/25/2/2019

1.25 - Table Showing Area under Each Category of Fruits in District Hamirpur

Table showing Area (In Hectares) under Each Category of Fruits in District Hamirpur					
Year	Other Tropical Fruits	Nuts & Dry	Citrus	Other Sub Tropical Fruits	Total Area
2013-14	357	262	1710	4547	6876
2014-15	366	254	1750	4777	7147
2015-16	352	244	1771	5070	7437
2016-17	415	215	1816	5235	7681
2017-18	415	215	1816	5235	7681

Source: Directorate of Horticulture, HP

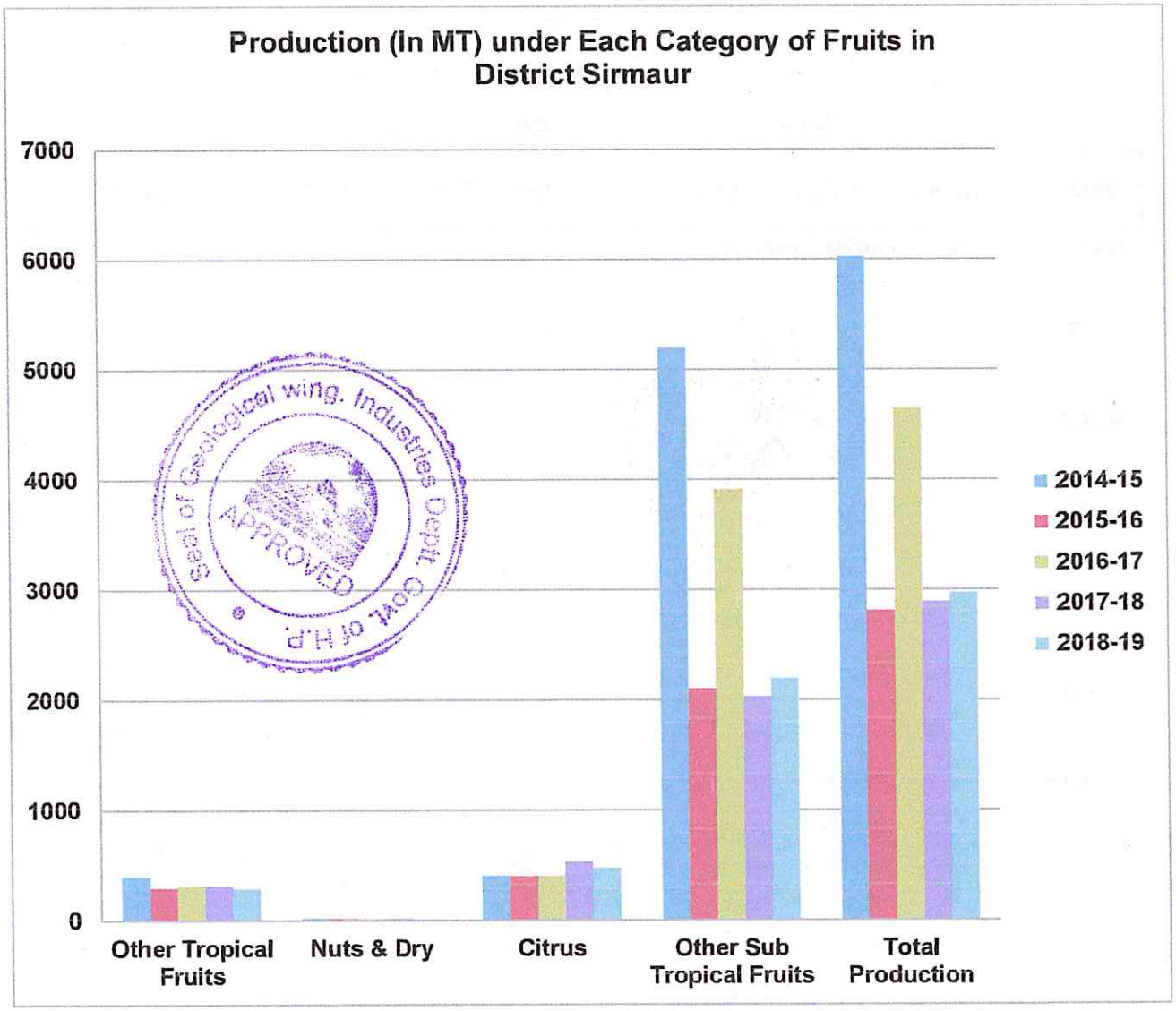


1.19 - Graph Showing Area under Each Category of Fruits in Hamirpur district

1.26 - Table Showing Production under Each Category of Fruits in District Hamirpur

Table showing Production (In MT) under Each Category of Fruits in District Hamirpur					
Year	Other Tropical Fruits	Nuts & Dry	Citrus	Other Sub Tropical Fruits	Total Production
2014-15	398	20	408	5199	6025
2015-16	295	18	400	2097	2810
2016-17	316	16	404	3908	4644
2017-18	316	16	531	2029	2892
2018-19	294	12	477	2193	2976

Source: Directorate of Horticulture, HP



1.20 - Graph Showing Production under Each Category of Fruits in Hamirpur district

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

1.6 ANIMAL HUSBANDRY:

Following livestock in the district:

I. Cow
II. Ox
III. Buffalo
IV. Sheep
V Goat
VI. Ponies

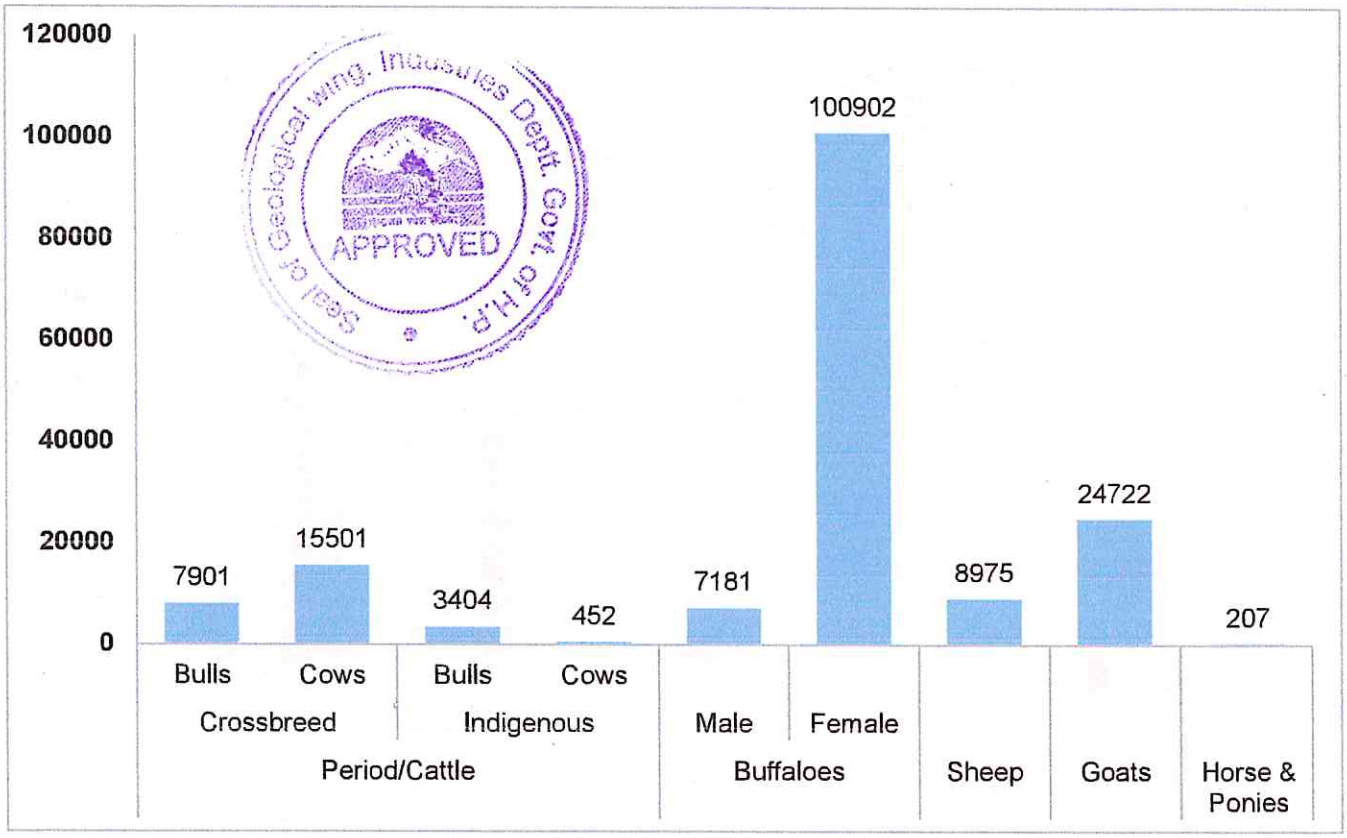
Following are important poultry bids:

I. Fowl
II. Ducks (Rare)

1.27 - Table Showing Livestock Census of the District Hamirpur 2012

Animal Husbandry Population in District Hamirpur										
Year	Status	Period/Cattle				Buffaloes		Sheep	Goats	Horse & Ponies
		Crossbreed		Indigenous		Male	Female			
		Bulls	Cows	Bulls	Cows					
2012	At Hamirpur	7901	15501	3404	452	7181	100902	8975	24722	207

Source: Directorate of Animal Husbandry, HP



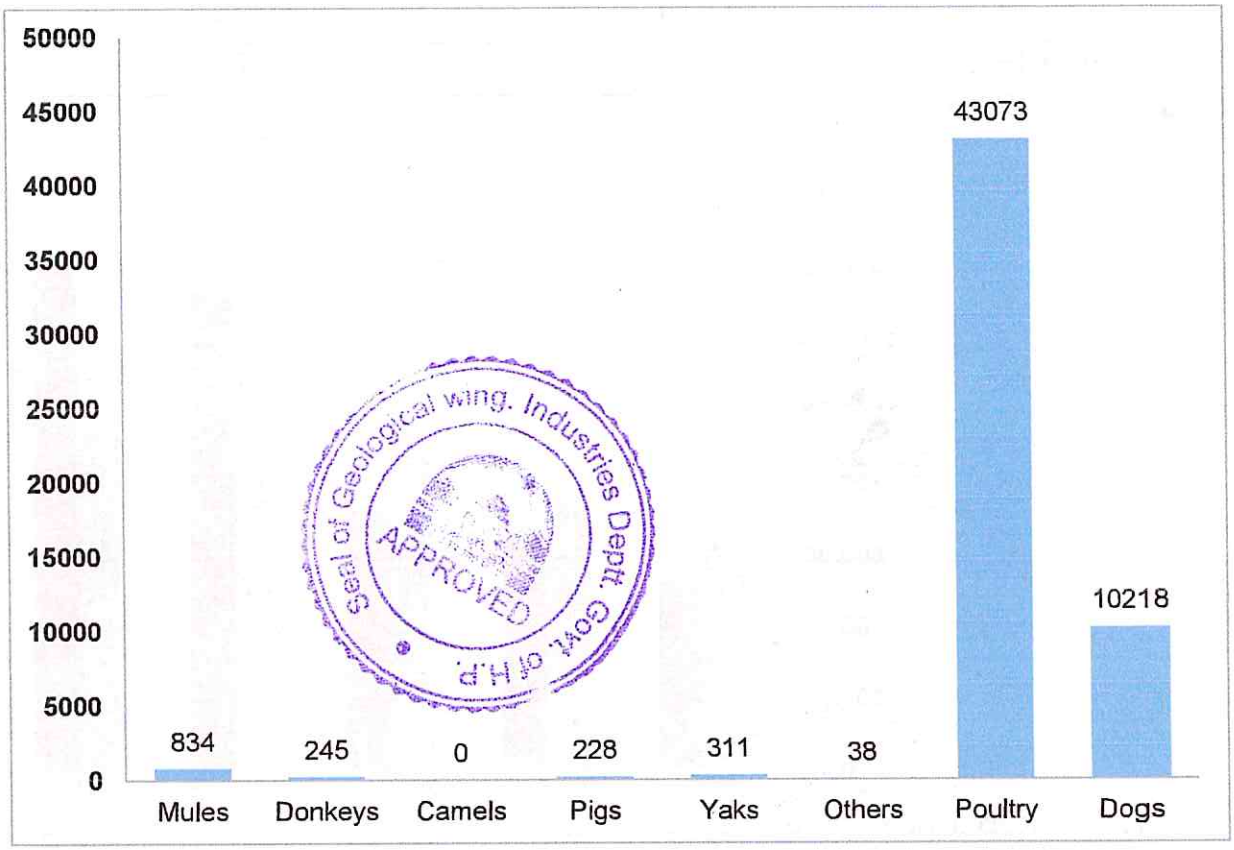
1.21 - Graph Showing Livestock census of the District

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

1.28 - Table Showing other Live Stock census District Hamirpur 2012

Other Livestock							
Mules	**Donkeys**	**Camels**	**Pigs**	**Yaks**	**Others**	**Poultry**	**Dogs**
834	245	...	228	311	38	43073	10218

Source: Directorate of Animal Husbandry, HP



1.22- Graph Showing other Live Stock census of the district

1.7 FISHERIES

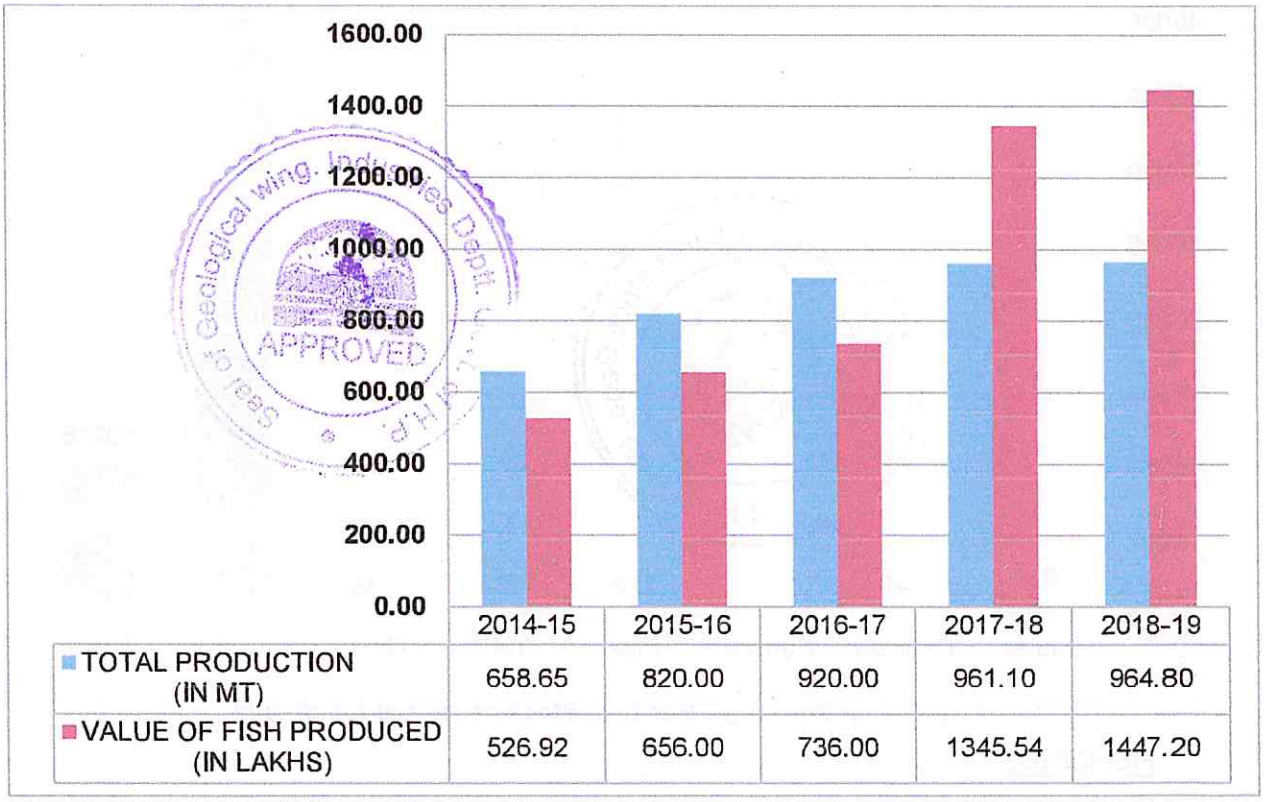
Following are important fishes in the River Beas and its main tributaries like Kunah, *Khad, Pung Khad and Man Khad* and of Satluj River are Sir Khad and Sukkar Khad.

I. Tor putitora (Mahaseer)
II. Schizothorareplagiostomus (Gulguli)
III. Lebeodero (Gid)
IV. LabeoCalbasu (Kalbans)
V. Channapunctatus(Sal)
VI. Mystusseenghala (Singhara)
VII. Labeodicheilus (Kunhi)

1.29 - Table Showing annual production of fisheries and its value of catch

Table showing Annual Production of Fisheries at District Hamirpur		
YEAR WISE	TOTAL PRODUCTION (IN MT)	VALUE OF FISH PRODUCED (IN LAKHS)
2014-15	658.65	526.92
2015-16	820.00	656.00
2016-17	920.00	736.00
2017-18	961.10	1345.54
2018-19	964.80	1447.20

Source: Fisheries Department, HP



Graph 1.23 : Total production and value of fish catch in district Hamirpur

1.8 FLORA AND FAUNA OF THE AREA

Flora

The majority of the Hamirpur district consist of Chil forest. Under the second category of the forest the Khair is predominant species. The third category consists of broad leave species but have lot of bushy growth as well.

The forest in the district, have been divided in to three categories:

1. Lower Siwalik Chil Pine forest
2. Northern dry mixed deciduous scrub forest.
3. Broad leaved forest.

The most prominent verities of trees found in the area are

Simbal (Bombexmalabaricum)

Mango (Magniferaindica)

Tun (Cedrela toana)

Several species of acasia and albizia

Salambra (Odinawodier)

Termnalia

Jamun (Enginia jambolana)

Larger tour

Bamboo

Shurubs

Vitex

Munj

Ber

Ipomea

Dodenea

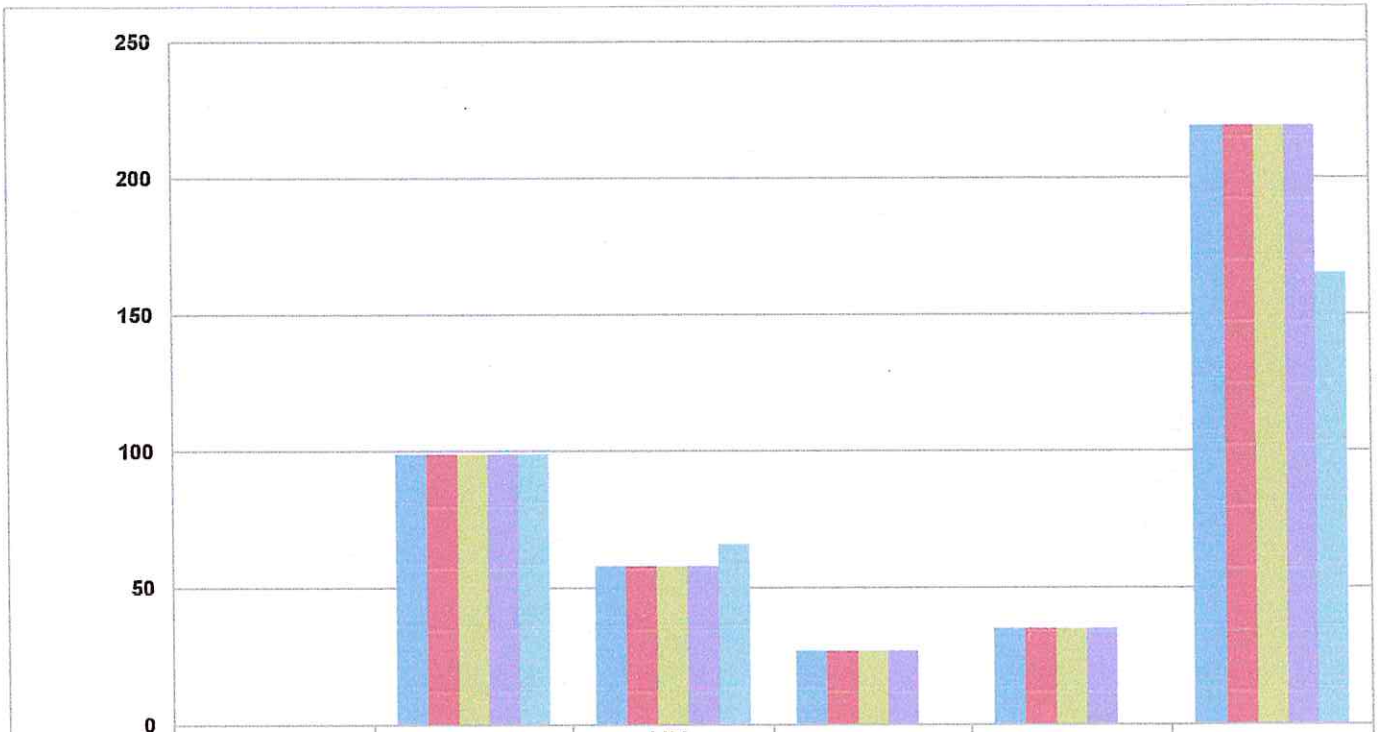
The forest area in Himachal Pradesh for the three years measured during 2001-2002. 2002-2003 and 2007-2008 is given in the following table:

1.30 - Table Showing classification of forest area in district Hamirpur

CLASSIFICATION OF FOREST AREA (IN SQ.KM.) OF HAMIRPUR DISTRICT						
YEAR	**RESERVED FOREST**	**DEMARACATED PROTECTED FORESTS**	**UN-DEMARACATED PROTECTED FORESTS**	**UNCLASSIFIED FORESTS**	**OTHERS FORESTS**	**TOTAL**
2012-13	...	99	58	27	35	219
2013-14	...	99	58	27	35	219
2015-16	...	99	58	27	35	219
2016-17	...	99	58	27	35	219
2017-18	...	99	66	...	...	165

Source: Forest Department, HP

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019



	RESERVED FOREST	DEMARACATED PROTECTED FORESTS	UN-DEMARACATED PROTECTED FORESTS	UNCLASSIFIED FORESTS	OTHERS FORESTS	TOTAL
2012-13	0	99	58	27	35	219
2013-14	0	99	58	27	35	219
2015-16	0	99	58	27	35	219
2016-17	0	99	58	27	35	219
2017-18	0	99	66	0	0	165

1.24 - Graph Showing classification of forest area in district Hamirpur

1.31 - Table Showing forest area of District Hamirpur

FOREST AREA OF HAMIRPUR DISTRICT				
YEAR	**GEOGRAPHICAL AREA BY PROFESSIONAL SURVEY (SQKM)**	**FOREST AREA (SQKM)**	**% OF FOREST AREA TO GEOGRAPHICAL AREA IN THE DISTRICT**	**% OF TOTAL FOREST AREA IN THE DISTRICT**
2012-13	1118	219	19.6	0.6
2013-14	1118	219	19.6	0.6
2015-16	1118	219	19.6	0.6
2016-17	1118	219	19.6	0.6
2017-18	1118	165	14.76	0.44

Source: Forest Department, HP

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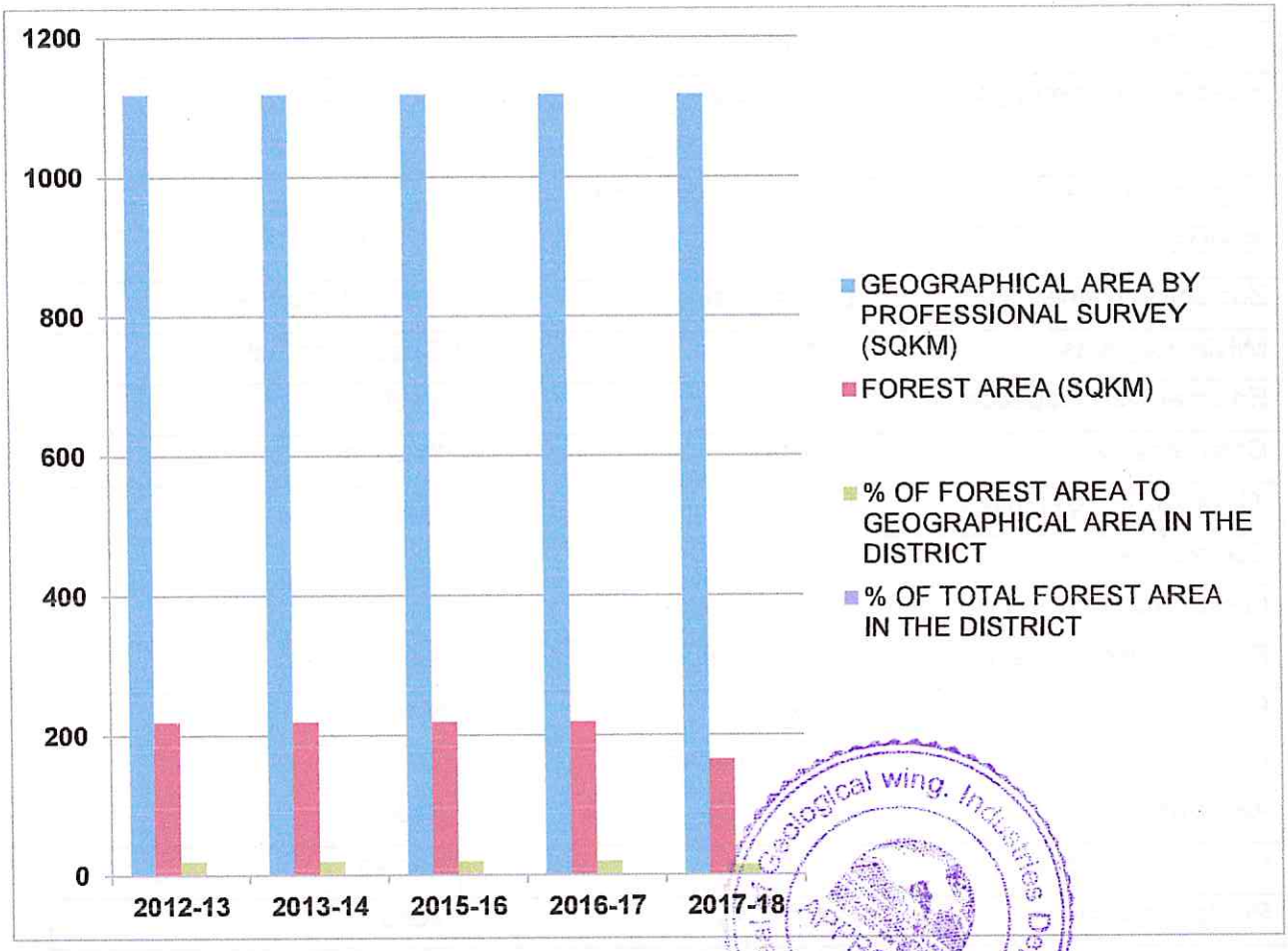
REG.NO. – H.P./R.Q.P/25/2/2019



1.25 - Graph Showing forest area of Distt. Hamirpur

Fauna

Table 1.32 :Mammals in Hamirpur district

Zoological Name	English Name	Common Name
Felis bengalensis	Lepard cart	Mirag Bagh
Felis Chane	Jungle Cat	Jangli Billi
Muntucusmuntisk	Barking Sear	Kakkar
Vaulpesbengalnsis	Fox	Lomari,Fohiki
Comis aureus	Jackal	Giddar
Macaca mulatta	Ressus monkey	Lal Bandar
Preshytes entellus	Langour	Langour
Hystrix indica	Porcupine	Sehal
Lepus nigricoilis	Hare	Khargosh,Sehru,Farru
Axis	Spotted Dear	Chital
Cervus unicolor	Samber	Samber
Hylopetesfimbriatus	Flying Squirrel	
Panthra pardus	Leopard	Cheetah
Paradoxurus hermaphrodites	Indian civet	Sakralu

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

Felis chaus	Jungle cat	
Hipposiderous armiger	The great Himalayan leaf nosed Bat	Chamgadar
Pagumalavarta	Himalayan Palm civet	
BIRDS		
Zoological Name	English Name	Common Name
Milvus migrants	Vulture	Cheel, gidhEell
Endynamysscolopacca	Koel	Koel
Colambialivia	Pigeon	Kabuttar
Coracias benglalenses	Blue jay	Nilkantha
Columslivia	Hawk	Baj
Francoliusfrancolinus	Black partridge	Kala Tittar
Francolinuspondicerians	Grey partridge	Safed Tittar
Payocrisslatus	Pea cock	Mor
Coturnix colurnix	Common quail	Bater
Alectorisgraeca	Chakor	Chakor
Crovus splendens	Crow	Kanwa
Prottaculakarneri	Parrot	Totta
Picoisesmacei	Fulvour breasted pied woodpecker	Kathfoura
Strptopaliadecaocto	Ring dove	Ghugi
Strptopaliachinesis	Spotted dove	
Accipiter badius	Shikra	
Aquila rapexvindhian	Tawny eagle	
Dacula bicolor	Green pigeon	
Parus rufomuchalis	Titus	
Picuscamus	Black napped woodpecker	Wood pecker
Drycocopusjavensis	Woodpecker	
Acidotheres tristis	Common Myna	Ghatari
Terpsiphone paradise	Pradise flycatcher	Chotipinja
Passer domesticus	House sparrow	
Arduelisspinoides	Himalayan green finch	Chiria

Around mining d out area and surrounding hills following are the common animals and birds

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

ANIMALS

Leopard	Hare
Wild Bore	Jackal
Barking Deer (kakkar)	Monkey
Samber	Pig

BIRDS

Chakor	Crow
Red Jungle Fowl	Black Partridge (kala Tittar)
Grey partridge (safedTittar)	Wood pecker

1.9 Climate of the area

The region has four distinct seasons. It is not a typical "Hilly & Chilly" type of climate in district Hamirpur, as it is closer to the plains. During winter, the climate is cold but during summer the temperature is hot. Temperature does sometimes cross the 44 degree Celsius mark in summer. The area experiences severe winter from December to March followed by servers summer season lasting from April to June. The area receives rain fall under the influence of south - west monsoon from July to mid-September followed by post-monsoon season lasting up to November. The terrain in general has profound influence on the temperatures of a region. The temperature generally rises from the beginning of March till June, which is the hottest month of the year with mean minimum and maximum temperature of 25.6°C to 44°C respectively. With the onset of monsoons by the end of the June temperature begins to fall. The drop in day temperature is much more than the drop in night temperature. The night temperature falls rapidly after the withdrawal of monsoons by mid-September. The month of January is cooler month with the mean maximum and minimum temperature being 24°C and 1.7°C respectively. Under the influences of western disturbance, the temperature falls appreciably during winters and it may go even below 0°C.Rainfall varies significantly with altitude of the area. The catchment area receives rainfall due to western disturbances that pass over the north -western part of the country during winter months.

Humidity is generally low throughout the year. During the summer season, humidity is lowest at 36%. During monsoon months, it goes as high as 80-90%. The highest levels of humidity are observed in August. The average humidity during synoptic hours is 53% and 62% respectively. Snowfall is received in the higher reaches of the Dhauladhar ranges. The average minimum and maximum temperatures are 3°C and 45°C

Table 1.33 - Table Showing climate details of the district

CLIMATE OF THE DISTRICT HAMIRPUR H. P.			
CLIMATE	WINTER	SUMMER	RAINY SEASON
PERIOD	NOV.-MID MARCH	MID MARCH -JUNE	JULY-SEPTEMBER
Weather	Cool	Hot	Humid

The temperature in the area varies between maximum reaching to 39 – 40 degree Celsius in May – June and minimum being recorded 2-3 degree Celsius in December – January.

Average temperatures

Summer Temperatures may rise to a maximum of 44° c. The temperature generally remains 35°c to 40° c

Autumn The temperature may go to a maximum of 36°c. The temperature usually remains between 16°c to 27° c in autumn. The lowest temperatures may go up to 13°c

Winter Temperatures are cool and sometimes chilly. The average temperature in winter Nov to February remains at 7°c to 15°and 0°c to 5°c

Spring The climate remains quite pleasant. The temperature remains max16°c to 25°c and 9°c to 16° min

(2) ENVIRONMENT MANAGEMENT PLAN

2.1 Impact on Air

In riverbed manual mining, dust emissions are generated during various mining activities, material handling and due to plying of transportation trucks in the Auctioned Area and also on haul roads. The magnitude of mining is not very high and restricted to the limited area as such there is hardly any impact on the environment. The major part of dust emission can be caused due to vehicular movement which too at a smaller extent i.e. up to approach road which can be reduced by controlled vehicular movement.

Apart from these mitigation measures, the idle running of transport vehicles at the mine site shall be avoided. The sprinkling of water on the surface of haul roads and over the silt/clay disposal in the plantation area shall involve a major cost component of the works towards air pollution control.

2.2 Impact on Water

The major impact due to riverbed surface mining is the increased siltation owing to sediment particles coming under the influence of the current and due to toe erosion of bank in the Auctioned Area . spillage of stone and sand into the flowing water should be avoided during transportation. The plantation under the green belt programme shall also help in checking the

erosion of the bank. Besides this, the ambient air noise level monitoring shall be periodically carried out at locations. For control of the toe erosion of banks retaining structures/Gabion structures shall have to be erected as per the approved mine plan.

There is no water spring near the Auctioned Area, However, some percolation wells are located at safe distance from the Auctioned Area . No mining operations shall be carried out under the flowing water hence, mining has no adverse impact on the flow of the river. Neither there is any intake of Kuhl within the Auctioned Area nor below the Auctioned Area, which could be affected by the mining operations.

2.3 Impact on Noise Level

The area is away from the habitation and the noise shall be caused only by plying tractors/tippers/trucks to bring mineral to the stone crusher site, which shall be kept under control by proper lubrication and the working would only be done during day time to keep noise level below the permissible limit prescribed. No blasting operations are involved as the process is only to lift the material manually and to load in tractors/tippers/trucks hence, the noise level will not exceed the required level.

On the other hand, the green belt shall be developed along with the haul road as well as in the area earmarked for plantation within the project area. The other types of equipment like earplug/muff and noise level monitoring during mining shall be provided under occupational health and safety plan and environmental monitoring plan.

2.4 Waste Disposal Arrangement, if Any

The wastage material in the form of silt/clay excavated along with minor mineral shall be separated by screening and washing and dumped at the appropriate dumping site. The waste material (Silt) shall be used for the maintenance of the approach road to the various access roads in road filling, Granular sub-base for road works and plantation works etc.

2.5 Socio-Economic benefits

The mining shall employ to approx. 40 to 45 local people who are unskilled and need an additional source of income when they are free from agriculture engagements and shall help raise additional source of income.

2.6 Transport of Mineral

The Auctioned Area is in the river bed and there is very low to no traffic from the Auctioned Area till the main road. The main connectivity of this is with the Bijhari – Barthin road. Even on this road, the traffic is not that too high. However; for the transporation of the loaded vehicles to the nearest approach raod, the vehicles may pass through private as well as Govt. Lands. The project proponent shall made necessary arrangements between land owners (Pvt. & Govt.) and will take care of other issues if any at his own for the mineral transportation to the nearest road.

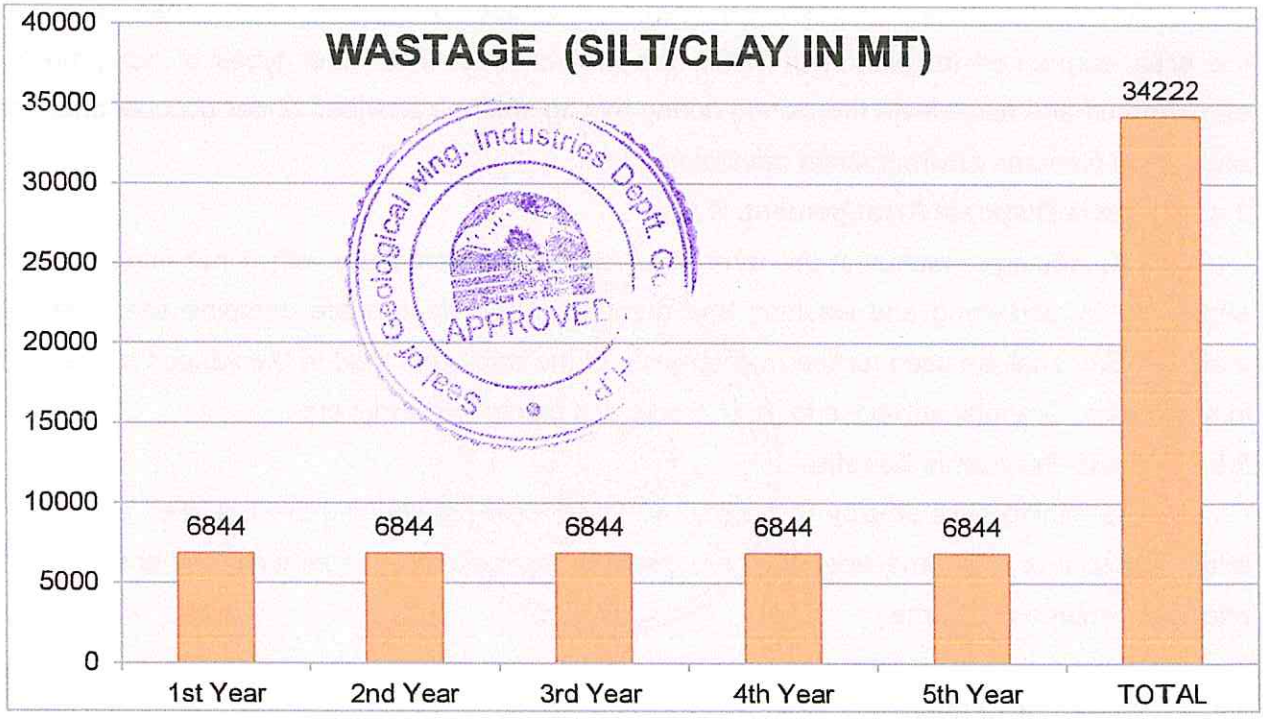
PART-III
PROGRESSIVE MINE CLOSURE PLAN/ RECLAMATION PLAN

1.1 MINE WASTE DISPOSAL

A) Year wise generation of mine waste

Table 1.34 - Production of mine waste During Five Years

YEAR	SILT/CLAY
1st Year	6844
2nd Year	6844
3rd Year	6844
4th Year	6844
5th Year	6844
TOTAL	**34222**



1.26 Graph showing Silt Generation in Five Years

B) Year wise disposal of waste and soil cover

The wastage material in the form of silt/clay excavated along with minor mineral shall be separated by screening and washing and dumped at the appropriate dumping site. The waste material (Silt) shall be used for the maintenance of the approach road to the various access roads in road filling, Granular sub-base for road works and plantation works etc.

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

C) Cost of Mine Waste Disposal

The material shall be brought to the dump site manually and mechanically and it shall add little addition to the mining cost around Rs.10/- per tonne of waste. The total waste production in 5 years is 34222 tonnes. The total cost of dumping shall be around Rs.3,42,220 in 5 years.

1.2 Top Soil Arrangement

There is no top soil available in the river bed.

1.3 Preventive Retaining Structures

a) The entire area is situated within the high flood level and during heavy rains in the catchment area of river experience heavy floods which may cause bank Erosions. In order to protect river bank from erosion near area, retaining structures will be raised along the banks of River near to the Auctioned Area marked as C-1 to C-5 in the respective year wise scheme in (Plate No IV).

b) Each retaining structure/Gabion/Crate Wire structures shall cost Rs. 40,000 and total cost for construction of these in five years shall be 2,00,000.

1.4 Plantation Work

a) The area lies in the regular course of the Sukkar Khad. As the maximum part of the area lies within the HFL of the river and flooded during the rainy season which is not suitable land for the growth of any Plantation or grassing etc.

b) In the present case of riverbed mining, the mine waste material is silt and clay which have been proposed to be disposed of in the area designated for plantation and shall be properly dressed and levelled for the creation of the green belt/plantation. Thus, no surface dumps have been proposed under the plan. Besides this the small heaps of finer material like sand are likely to be formed during the screening process.

c) Based on the characteristics of soil, topography and climatic conditions of the area, plantation of grasses/bushes and other tree species will be done by the Contractor.

Table 1.35 - Table showing Year wise area proposed for plantation

Sr No	Year	Area in Sq Mts.	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

d) Plantation before the onset of monsoon season will be done progressively until the final closure of the mine.

e) Green Belt shall be properly designed in consultation with the forest department. Plantation shall be carried out as per the periodical plantation programme.

f) Fast-growing and evergreen trees, trees with broadleaf resistant to specific pollutant and those which would maintain the regional ecological balance, soil and hydrological conditions shall be favoured.

g) Green belt area within the along the haul roads, river banks, dumping sites shall be developed.

h) Besides this, some local labours shall be engaged for watch and ward and plantation activity with proper maintenance.

i) The plantation/regressing and its maintenance cost will be borne by the Contractor. Also, a green belt will be developed in consultation with the local panchayat and forest department along approach roads in order to minimize pollution.

j) The estimated survival rate proposed to be achieved shall be 80%

(2) Strategy for protection of point of public utility etc.: -

No point of public utility or of interest need to be protected while undertaking mining operations.

(3) Manpower development: -

Around 40 to 45 unskilled people shall be employed to carry on the mining and associated activities and preference shall be given to employing 100%, local people.

(4) Use of Mineral: -

The extracted minor mineral shall be used in the stone crusher unit which to be established for manufacturing grit to be used for construction purpose. Also, additional requirements shall be explored to use the waste material in road construction and other works.

(5) Any other relevant information:-

During the mining activities, safety is an essential job requirement to be ensured, for which adequate arrangements for lighting, security etc. will be made in the Auctioned area.

In the Mining site, the following safety measures will be adopted after anticipating the hazard risk:

- ✓ All the provisions of Mines Act 1952, Metalliferous Mines Regulations, 1961, Mineral Conservation and Development Rules, and other laws applicable to mine will be strictly complied with.
- ✓ Personnel working in dusty areas will be provided with a wear protective respiratory

Arun Dhiman
REG.NO. – H.P./R.Q.P/25/2/2019

devices.

- ✓ Experienced drivers with valid documents will be permitted for the transportation of minerals
- ✓ Occupational health check-ups for all the employees/workers should be undertaken periodically (on annual basis) to observe any changes due to exposure to dust, and corrective measures should be taken immediately if needed.
- ✓ All emergency no's, like the hospital, Police, and fire service will be provided at the site. All mining personnel should be aware of the nearest health centres and hospitals. First aid kits will be provided at the site.
- ✓ All persons in a supervisory capacity will be provided with proper communication facilities.
- ✓ Road signage shall erect and maintain at appropriate stretches after the assessment of the site.

****

CERTIFICATE

Certified that the provisions of the Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2015 Metalliferous Mines Regulation 1961 and other guidelines issued from time to time in this regard have complied with the preparation of Mining Plan of ***Government Auctioned Land*** *for mining comprising of Khasra No.405(Government Land) measuring 03-37-99 Hectares(River Bed) in Mauza & Mohal Datwal & Jangli, Tehsil Bijhar, District Hamirpur, Himachal Pradesh in Sukkar Khad, for the extraction of Sand, Stone and Bajri for the manufacture of grit and stone dust in favour of Sh. Madan Lal S/o Shri Ram Chand, Village & P.O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, Himachal Pradesh*

While preparing the mining plan including a progressive mine closure plan, all statutory rules, regulations, orders made by competent authorities of the State or Central Government or orders passed by Courts have been taken into consideration.

The information provided and the data furnished in this Mining Plan is correct to the best of my knowledge.

Seal of Geological wing, Industries Dept. Govt. of H.P. APPROVED

Date:

Place:

Arun Dhiman
S/o Sh Jagan Nath,
Village & PO Dhaioon (Panchpulli),
Tehsil Nagrota Bagwan, District Kangra
Himachal Pradesh -176056

RQP No. *H.P./ RQP/25/2/2019*
Valid Upto *24-09-2024*
Mobile No. *98165 79485*
Email Id *arundhiman77@yahoo.com*

DECLARATION

This is to declare that the Mining Plan includes Progressive Mine Closure Plan for ***Government Auctioned Land*** *for mining comprising Khasra No.405(Government Land) measuring 03-37-99 Hectares(River Bed) in Mauza & Mohal Datwal & Jangli, Tehsil Bijhar, District Hamirpur, Himachal Pradesh in Sukkar Khad, for the extraction of Sand, Stone and Bajri for the manufacture of grit and stone dust has been prepared with my consent and approval and that we/I shall abide by all commitment thereunder.*

"The Mining Plan and 'Progressive Mine Closure Plan" complies with all statutory rules, regulations, orders made by competent authorities of State or Central Government or orders passed by courts have been taken into consideration and wherever specific permission is required, shall be obtained.

We undertake to implement all the measures proposed in this Mining Plan and Progressive Mine Closure Plan in a time-bound manner.

We have deposited a sum of Rs. .....with the competent authority of the State Government in form of a Fixed Deposit Receipt as a financial assurance of the same. In case of default on my/our part, the approval of the Mining Plan may be withdrawn and the aforesaid sum assured may be forfeited.

Date: -

Place:-

Applicant

Sh.Madan Lal S/o Shri Ram Chand,

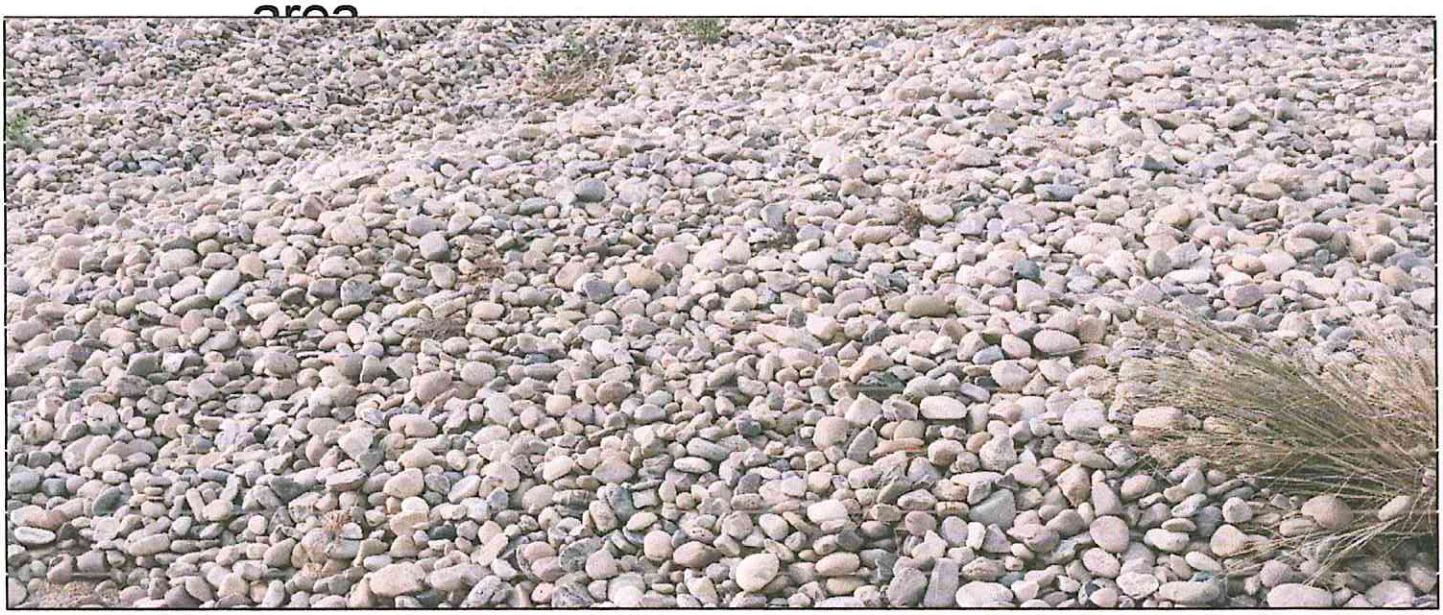
Address

Village & P.O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, Himachal Pradesh

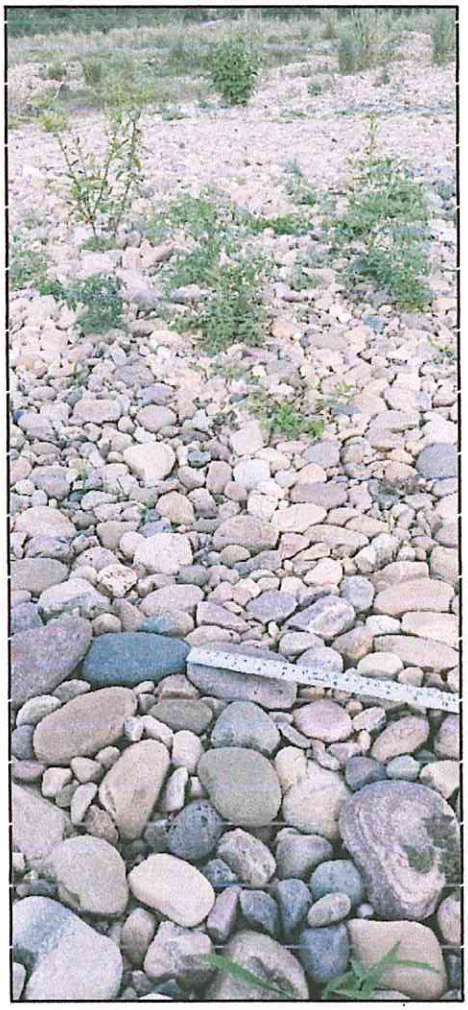
Photograph of the Auctioned area

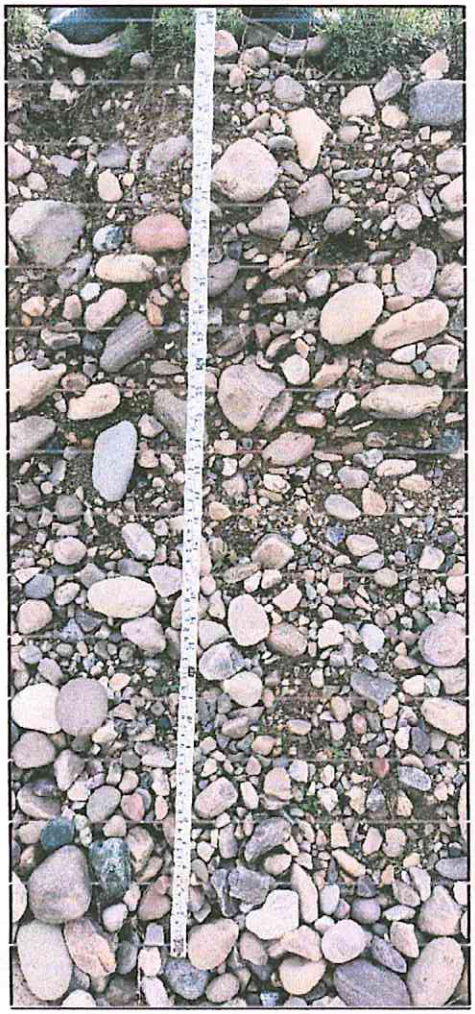
Photograph of the Auctioned area

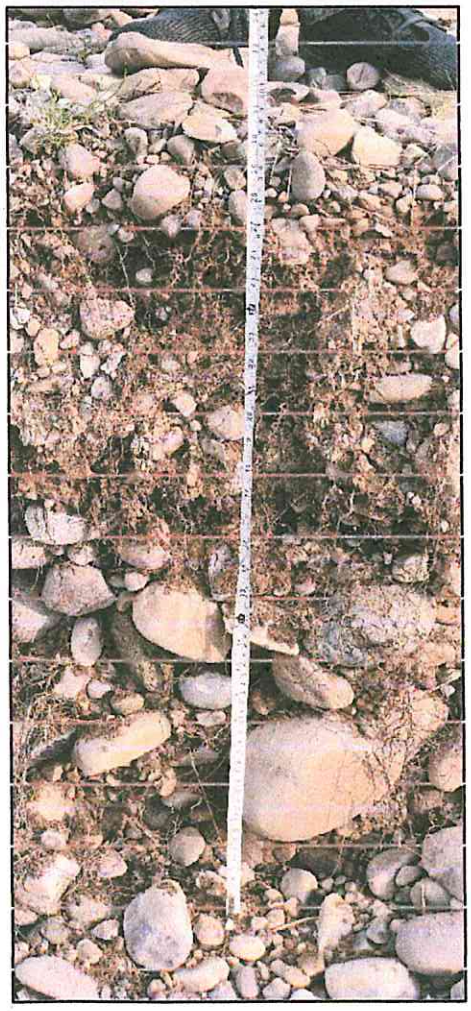
area2

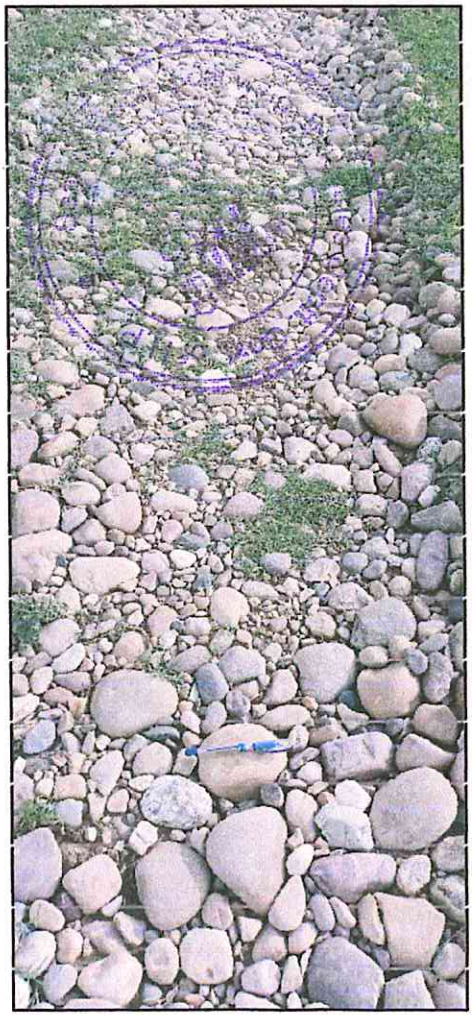


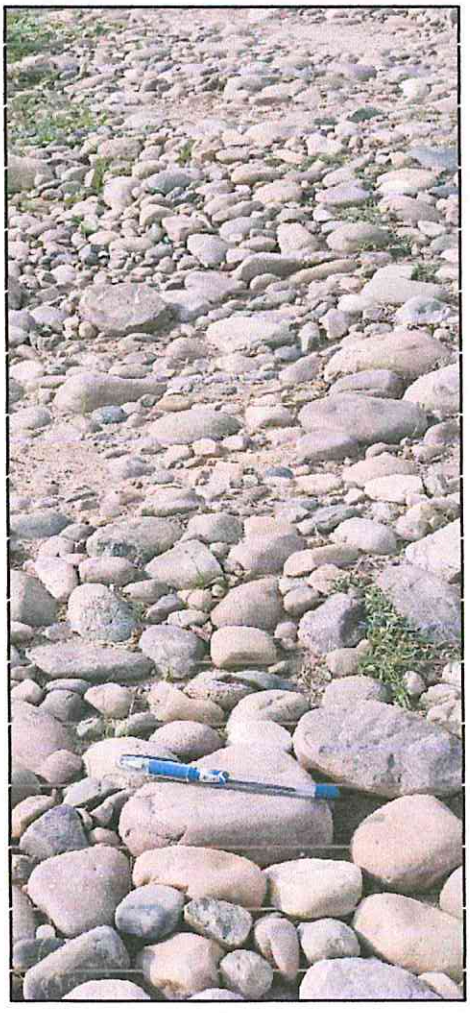
Photograph of the Auctioned area











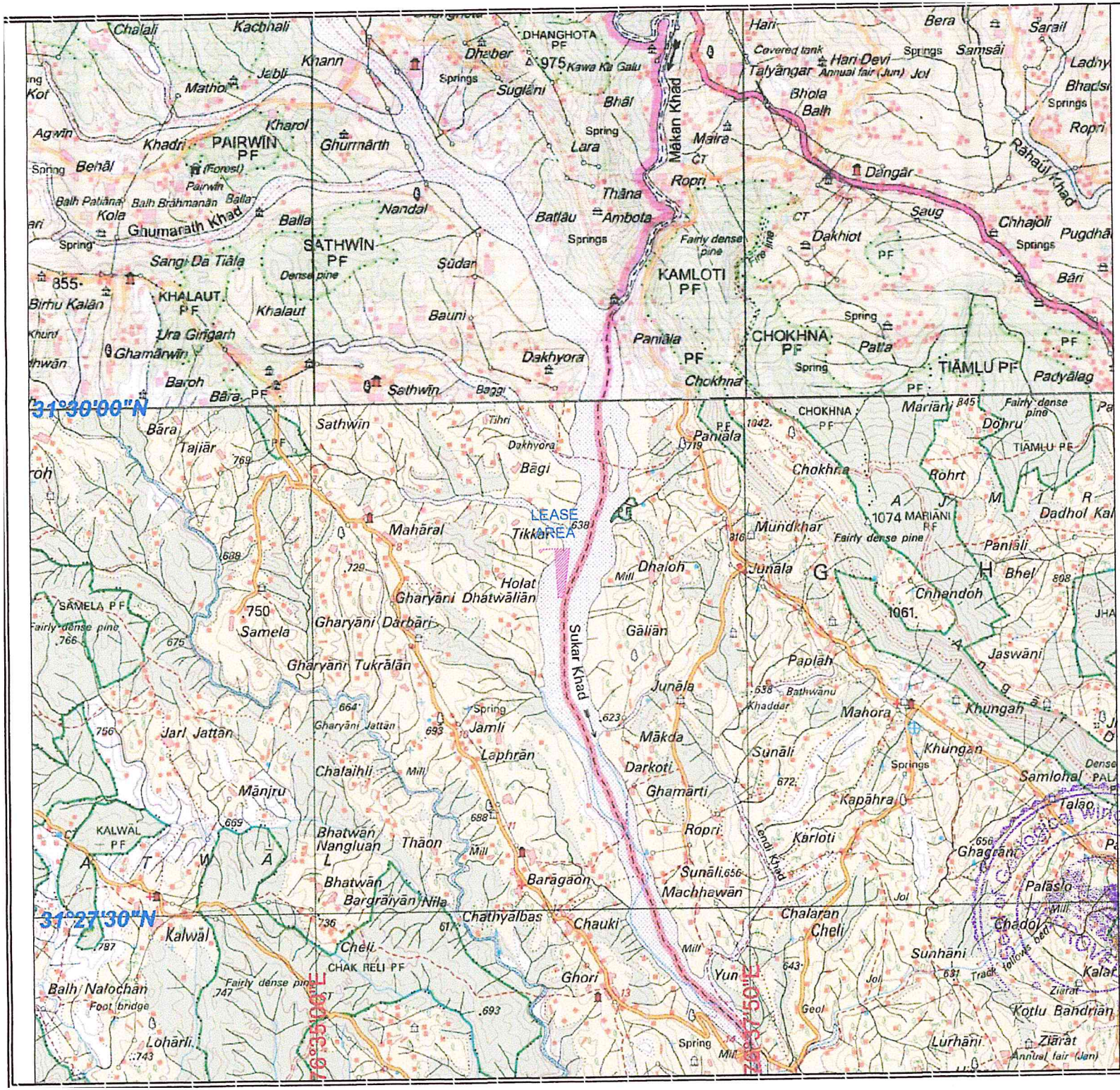


PLATE -2

CONVENTIONAL SYMBOLS

Express highway with toll, with bridge, with distance stone
Roads, metalled: according to importance
Roads, double carriageway: according to importance
Unmetalled road, Cart-track, Pack-track with pass, Foot-path
Streams: with track in bed, undefined, Canal
Dams: masonry or rock-filled; earthwork, Weir
River: dry with water channel, with island & rocks, Tidal river
Submerged rocks, Shoal, Swamp, Reeds
Wells: lined; unlined, Tube-well, Spring, Tanks: perennial; dry
Embankments: road or rail, tank, Broken ground
Railways, broad gauge: double; single with station; under constn
Railways, other gauges: double; single with distance stone; do.
Mineral line or tramway, Kiln, Cutting with tunnel
Contours with sub-features, Rocky slopes, Cliffs
Sand features (1)flat, (2)sand-hills(permanent), (3)dunes(shifting)
Towns or Villages: inhabited; deserted, Fort
Huts: permanent; temporary, Tower, Antiquities
Temple, Chhatri, Church, Mosque, Idgah, Tomb, Graves
Lighthouse, Lightship, Buoys: lighted; unlighted, Anchorage
Mine, Vine on trellis, Grass, Scrub
Palms: palmyra, other, Plantain, Conifer, Bamboo, Other trees
Areas: cultivated, wooded, Surveyed tree
Boundary, international
" state: demarcated; undemarcated
" district, subdivision, tahsil or taluk, forest
Boundary pillars: surveyed; unlocated
Heights, triangulated: station; point; approximate
Bench-mark: geodetic, tertiary, canal
Post office, Telegraph office, Overhead tank
Rest house or Inspection bungalow, Circuit house, Police station
Camping ground, Forest: reserved, protected
Spaced names: administrative; locality or tribal (KIKRI, NAGA)
Hospital, Dispensary, Veterinary, Hospital / Dispensary
Aerodrome, Heliport, Tourist site
Power line: with pylons surveyed; with poles unsurveyed

0.0 1.0 2.0
Distance in Kilometers

AUCTIONED AREA

Applicant	Sh. Madan Lal S/o Shri Ram Chand
Address	Village & P.O. Gardalwin TehsilGhumarwin District Bilaspur Himachal Pradesh

Land use Land Cover Map
Based on Soil Toposheet
Toposheet No.- H43E11
(Source:Soil)

Prepared and Certified By:
Arun Dhiman (RQP)
Reg. No. HP/RQP/25/2/2019
(Valid upto 24-09-2024)
V.P.O. Dhaloon (Panchpuli)
Distt. Kangra (H.P.) 176056

PLATE -2

INDIA

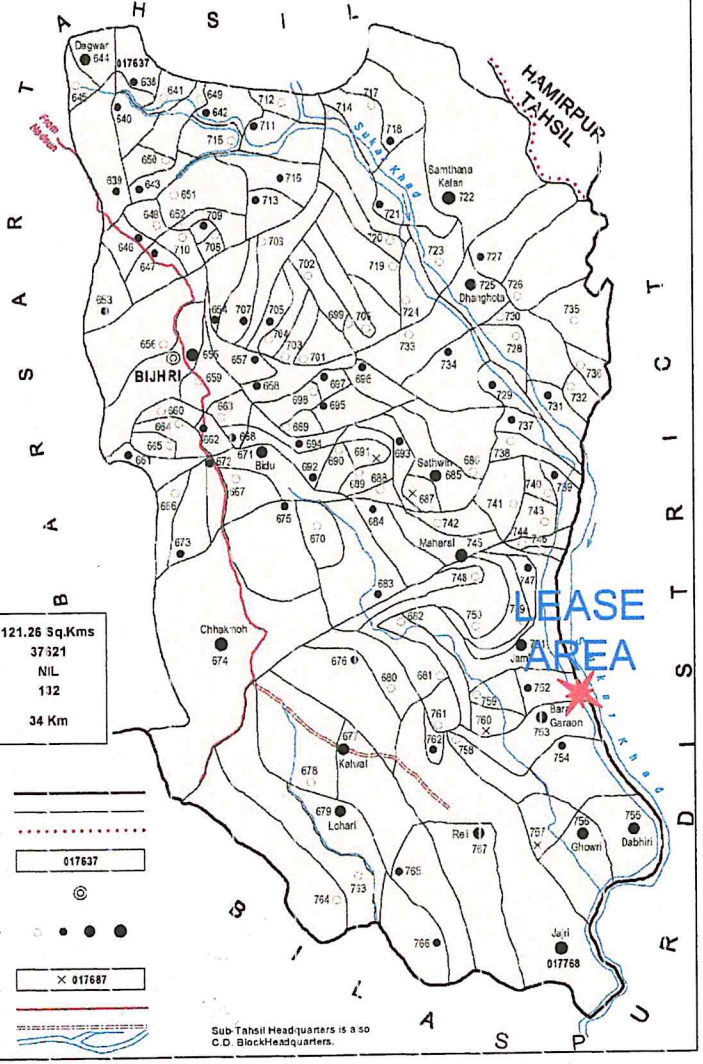
HIMACHAL PRADESH

SUB-TAHSIL DHATWAL

DISTRICT HAMIRPUR

KILOMETRES

1 0 1 2 3



TOTAL AREA	121.26 Sq.Kms
TOTAL POPULATION	37321
NUMBER OF TOWNS	NIL
NUMBER OF VILLAGES	132
DISTANCE FROM DISTRICT HEADQUARTERS TO SUB-TAHSIL	34 Km

BOUNDARY, DISTRICT

,, TAHSIL/SUB-TAHSIL

,, C.D. BLOCK

,, VILLAGE WITH MDDS CODE — 017637

HEADQUARTERS: SUB-TAHSIL ©

POPULATION SIZE OF VILLAGES: BELOW 200, 200-499, 500-999, 1000 AND ABOVE

UNINHABITED VILLAGE WITH MDDS CODE — × 017687

IMPORTANT METALLED ROADS

UNMETALLED AND OTHER ROADS

RIVER AND KHAD

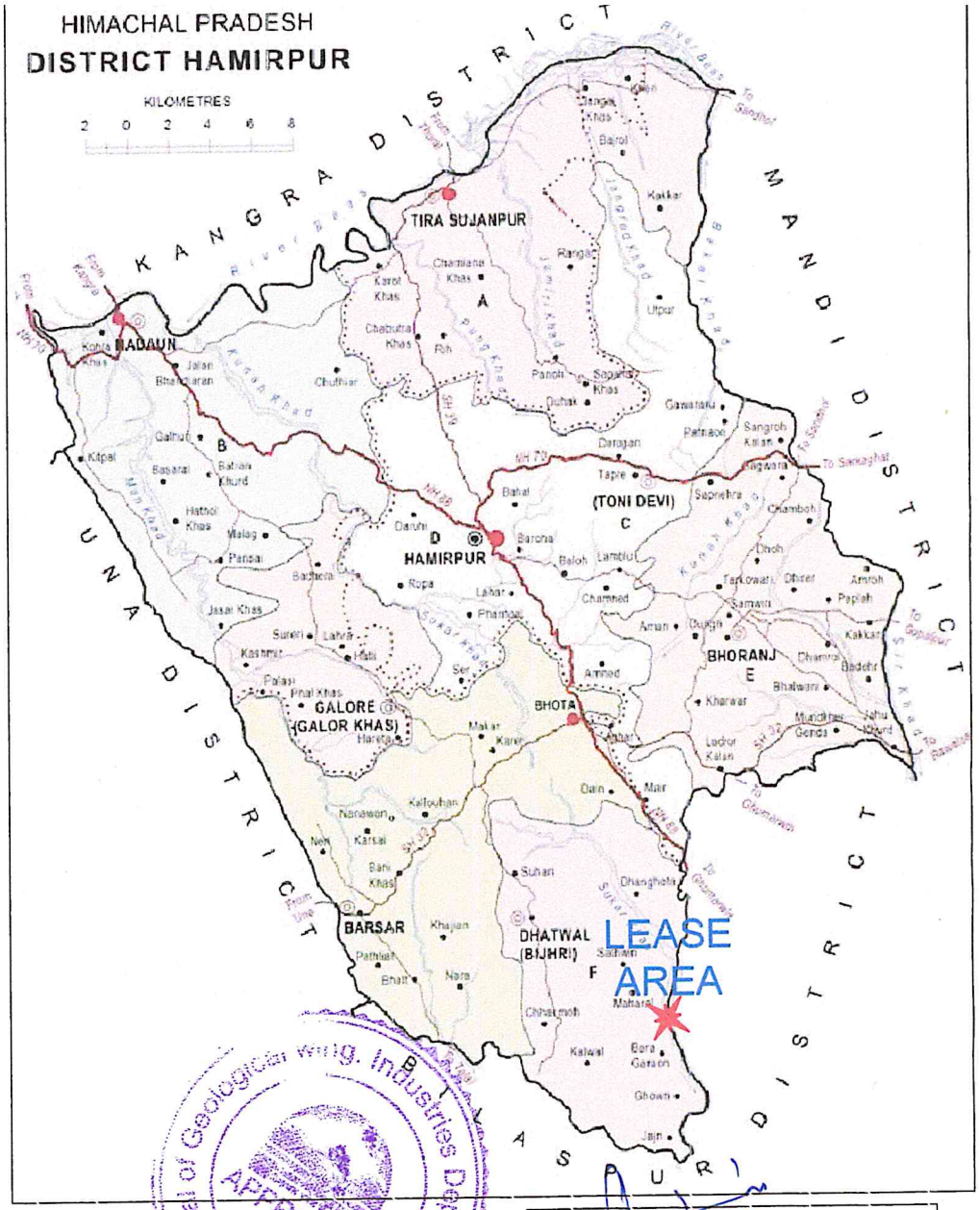
Sub-Tahsil Headquarters is also C.D. BlockHeadquarters.

HIMACHAL PRADESH

DISTRICT HAMIRPUR

KILOMETRES

2 0 2 4 6 8



Applicant	Sh.Madan Lal S/o Shri Ram Chand
Address	Village & P.O. Gandalwin Tehsil Ghumarwin District Bilaspur Himachal Pradesh

LOCATION OF THE AREA

AUCTIONED AREA

PLATE -1

Seal of Geologist Mtg. Industries Deptt. Govt. H.P. APPROVED

Prepared and Certified By

Arun Dhiman (RQP)

Reg. No HP/RQP/25/2/2019

(Valid upto 24-09-2024)

V.P.O. Dhaloon (Panchpuli)

Distt. Kangra (H.P.) 176056

Plate No. 3.

GEOLOGICAL INDEX

- CHANNEL DEPOSIT
- TERRACE DEPOSIT

TOPOGRAPHICAL INDEX

- LEASE BOUNDARY
- 624.00 — SURVEY STATION
- 624 / 625 — CONTOUR LINE
- H.F.L. — HIGHEST FLOOD LEVEL
- EXISTING ROAD
- HAUL ROAD

SUKAR KHAD AUCTION	
OWNER	SH. MADAN LAL
SCALE	1:2000 (1 CM = 20 METERS)
CONTOUR INTERVAL	1.00 METER.

GEOLOGICAL PLAN AND SURFACE FEATURES.

COORDINATES : -

A ⊕ N-31°29'07.00" E-76°36'35.70"

B ⊕ N-31°28'57.02" E-76°36'24.40"

CERTIFIED THAT THE PLAN IS CORRECT.

Arun Dhiman (RQP)
Reg. No. HP/RQP/25/2/2019
(Valid upto 24-09-2024)
V.P.O. Dhaloon (Panchpuli)
Distt. Kangra (H.P.) 176056

Plate No. III.

Seal of Geological wing, Industries Deptt. APPROVED

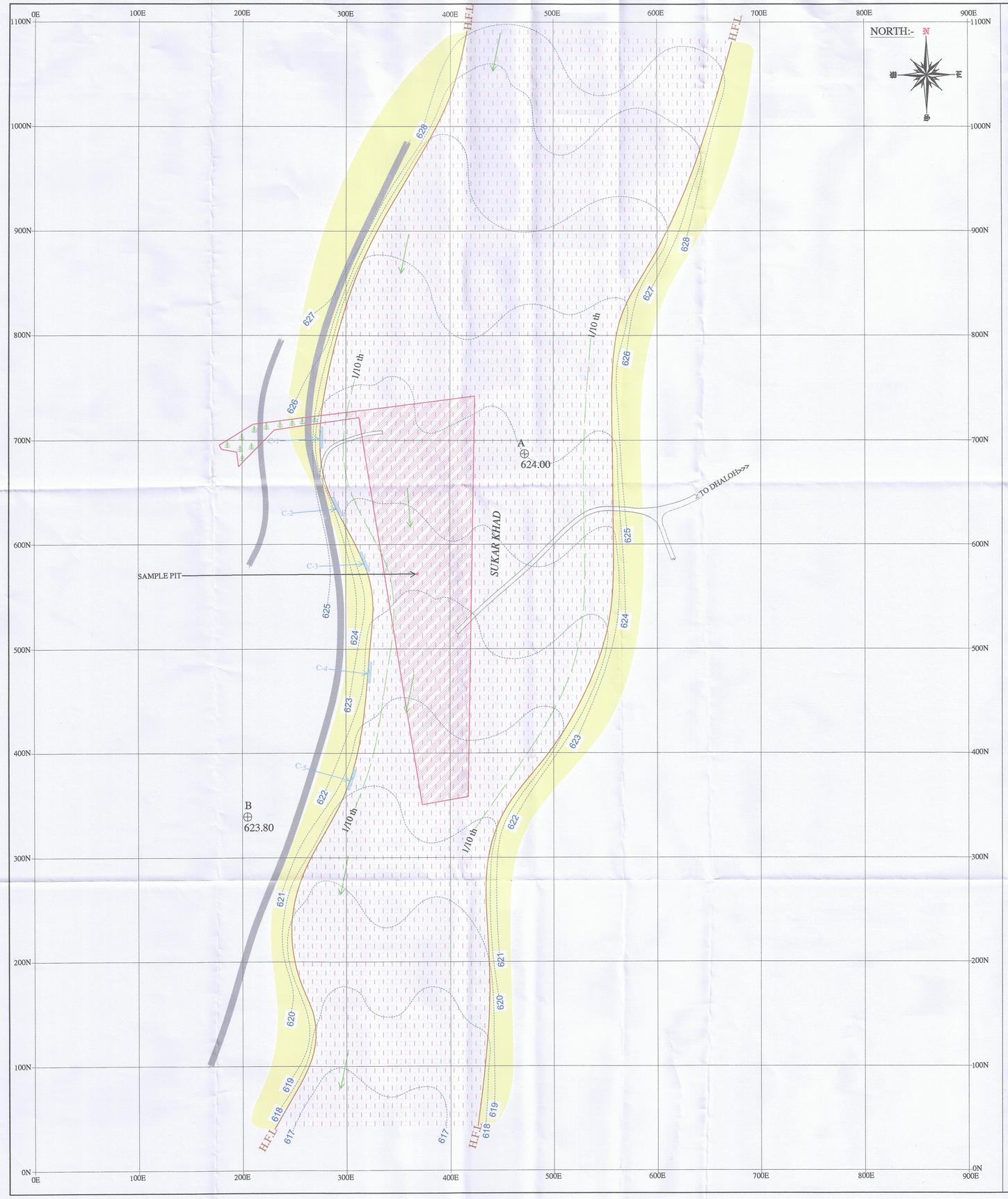


Plate No. 4.

GEOLOGICAL INDEX

- CHANNEL DEPOSIT
- TERRACE DEPOSIT

TOPOGRAPHICAL INDEX

- LEASE BOUNDARY
- 624.00 — SURVEY STATION
- 624 / 625 — CONTOUR LINE
- H.F.L. — HIGHEST FLOOD LEVEL
- EXISTING ROAD
- HAUL ROAD
- 1/10 th — PROHIBITED ZONE
- CHECK DAM
- WORKING AREA
- P — PLANTATION
- SAMPLE PIT

SUKAR KHAD AUCTION

OWNER	SH. MADAN LAL
SCALE	1:2000 (1 CM = 20 METERS)
CONTOUR INTERVAL	1.00 METER.

GEOLOGICAL PLAN SHOWING PIT POSITION AT THE 1ST TO 5TH YEAR.

COORDINATES : -

A ⊕ N-31°29'07.00" E-76°36'35.70"

B ⊕ N-31°28'57.02" E-76°36'24.40"

CERTIFIED THAT THE PLAN IS CORRECT.

Arun Dhiman (RQP)
Reg. No. HP/RQP/25/2/2019
(Valid upto 24-09-2024)
V.P.O. Dhaloon (Panchpuli)
Distt. Kangra (H.P.) 176056.

Seal of Geological wing, Industries Deptt. H.P. APPROVED

Plate No. IV.

ANNEXURE IV

500m Cluster Certificate

No. Udyog-Bhu(Khani-4)Laghu-936/2020 - 944)
Government of Himachal Pradesh
Department of Industries
"Geological Wing"
Dated, Shimla-171001, the 29/12/ 2022

To

Sh. Madan Lal S/o Sh. Ram Chand,
Village & P.O. Ghandalwin,
Tehsil Ghumarwin, Distt Bilaspur, (H.P).

Subject: Regarding distance certificate of 500 Mtrs.

Sir,

Enclosed please find herewith the distance certificate issued by the Mining Officer, Hamirpur, regarding distance of other mining leases/auctioned area within 500 mtrs. from the periphery of the auctioned quarry bearing Kh. No. 405, measuring 03-37-99 hects. (Govt. land, river bed auctioned area) falling in Mohal Jangli, Mauza Datwal, Tehsil Bijhar (Datwal), District Hamirpur for which Letter of Intent has been issued in favour of Sh Madan Lal S/o Sh. Ram Chand, Village & P.O. Ghandalwin, Tehsil Ghumarwin, Distt Bilaspur duly countersigned by the undersigned for taking further necessary action.

Yours faithfully

Encl/As above.

Geologist-Zone-II,
Himachal Pradesh,

Endst. No. Udyog-Bhu(Khani-4)Laghu-936/2020 Dated
Copy to the Mining Officer, Hamirpur, with reference to letter No. Udyog-Bhu-(Laghu)/HMR/Auction (Sukker Khad-Jangli))-1233 dated 27.12.2022 for information.

Geologist-Zone-II,
Himachal Pradesh,

CERTIFICATE

It is certified that as per the records of this office (Mining office /Industries department, Himachal Pradesh, one mining leases is granted/sanctioned by the department within 500 meters from the periphery of the area auctioned on dated 05.03.2020 for the grant of the mineral concession in favour of Sh. Madan Lal s/o Sh Ram Chand, resident of Village & P.O-Ghandalwin, Tehsil-Ghumarwin, District-Bilaspur (H.P) comprising of an area bearing Khasra No. 405 measuring 03-37-99 hectares (Govt. Land, riverbed, auctioned area) falling in Mauza-Datwal, Mohal-Jangli, Tehsil- Bijhar (Datwal), District-Hamirpur (H.P)

The Status of the existing/granted mining lease is as under:

Sr. No	Name of the Mining Lease and lease holder	Khasra No.	Area in hectares	Mohal & Mauza	Validity period	Status of the EC/ Mining lease, whether operating or not operating
01	Ms . Sikha Kapil,Vill - Gharyani, PO-Lafran, Teh-Bijher Distt-Hamirpur	209/2	02-68-31	Jangli/ Datwal	10 years valid from dated 07-12-2021 to 06-12-2031	EC granted and mining lease is operational

Mining Officer
Hamirpur, Distt. Hamirpur (H.P.)

Mining Officer, Hamirpur
Department of Industries
Himachal Pradesh

Geologist, Zone-II
Department of Industries
Himachal Pradesh

प्रमाण पत्र

प्रमाणित किया जाता है कि नम्बर खसरा ५०५ महाल जांगली मौजा ढटवाल त० ढटवाल (बिझड़ी) जिला हमीरपुर (हि.प्र.) जमाबन्दी वर्ष 2021-22 [illegible] से लगभग 100 मीटर दूरी पर स्थित है तथा माइनिंग lease area के साथ स्थित है। जो lease area खसरा न० ५०५ के साथ स्थित है वह जीवा चौहल में सुरेन्द्र सिंह आदि की मालकियती भूमि है।

P.C. जयपाल
9/12/2022

रिपोर्ट पटवारी

Naib Tehsildar
Tehsil Dhatwal at Bijhari
Distt Hamirpur (H.P.)

ANNEXURE V

Joint Inspection Report

JOINT INSPECTION REPORT OF THE MINOR MINERAL QUARRIES (GOVERNMENT LAND) PROPOSED FOR AUCTION IN DISTRICT HAMIRPUR.

The Joint inspection of the 4 sites/quarries proposed for the auction in the government land for extraction of minor mineral falling in the Sukkar Khad Barsar Sub-Division, District Hamirpur was conducted on dated 07.08.2019 under the Chairmanship of Sub-Divisional Magistrate, Barsar, District-Hamirpur. The following members/officers/officials of the Joint Inspection Committee were present during the course of said Joint inspection:-

Sr. No.	Name of the official	Designation & Department	Designation in the Joint inspection committee
1	Sh. Pardeep Kumar	SDM, Barsar	Chairman
2	Er. Prem Datyal	JE, I&PH , Barsar	Rep. of I&PH
3	Er. Santosh Kumar	JE HPPWD , Bijhari	Rep. of HPPWD
4	Sh Hem Raj	Range Forest Officer, Bijhari	Member
5	Sh. Harvinder Singh	Mining Officer	Member Secretary
6	Sh Birbal Kumar	Concerened Patwari	---

The committee was assisted by the Sh. Birbal Kumar, concerned Halqa Patwari, who ensured to identify the boundaries of areas proposed for the auction. During the course of the inspection, the committee was appraised by the Mining officer; Hamirpur that the sites/quarries of the Sukkar Khad has been recommended in the survey documents and sufficient amount of minor minerals are available, whereas these sites are mostly vulnerable for the illegal mining activities in the sub-Division. Hence keeping in the view of the above stated facts, these areas may be put for auction to cater the demand of raw material in the respective areas accordingly.

It was further apprised by the Mining Officer that as per the Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2015, the following are the restrictions for the grant of the mining lease:-

1. No mining lease shall be granted in respect of land within a distance of two kilometers from the immediate outer limits of Municipal Corporation/Municipal Committee, one kilometer from the immediate outer limits of Nagar Panchayat,

2. No mining lease shall be granted up to 100 meters from the edge of National Highway/Express way, 25 meters from the edge of State Highway and 10 meters from the edge of other roads
3. No river or stream bed mining shall be carried on or allowed to be carried on within two hundred meters upstream and downstream of water supply/ irrigation scheme and within two hundred meters upstream and two hundred meters to five hundred meters downstream of bridge or the distances as specified by the Joint Inspection Committee whichever more is.

After the deliberations regarding the grant & restrictions of the mineral concessions, the Joint Inspection committee visited the area falling in the tributary of the Sukkar Khad (Nallah) **comprising of Khasra No. 396 & 639 (Govt. Land) measuring 11-02-85 Hectares falling in Mauza/Mohal – Datwal/Bug** entered as Gair Mumkin Khad in the revenue records falling in the Tehsil- Bijhari Datwal. The proposed area starts near to the Govt. School **Dhakyora** towards the up-stream. During the Inspection of this area, it was found that as one temple is under construction towards the left bank and some cultivable land was lying towards the edge of the right banks of the stream adjacent to the identified area. There is no I&PH scheme adjoining to the area so there was no objection for the same by I&PH department. There is no structure of HPPWD department adjacent to the said area except one HPPWD link road, as it exists near the proposed area, but as it is more than 10 meters from the proposed area, there is no objection by the HPPWD department. The representative of the HPPWD department also informed the committee that if, this area is proposed and recommended for the auction, no damage should be caused to the road during the excavation by any interested bidder. Further the representative of Forest Department raised the objection of plants/trees near the banks of the tributary of Sukkar Khad. Further, the chairman & committee members decided to reduce the area towards both the banks of the identified area, where the plants and cultivable land is observed which may take time and the fresh inspection may be carried out after reducing the area, if this identified patch has to be put for auction. It was also apprised by the Mining Officer that, as this area is tributary of the Sukkar Khad, it is not mentioned in the approved survey document. Therefore, after deliberations, the committee decided not to recommend the said area in this inspection and afresh inspection may be carried out after completing the formalities.

9/9

Thereafter, the committee then visited the area comprising of **Khasra no. 405 falling in Mauja- Datwal and Mohal- Jangali measuring 03-37-99 hectares** entered as "Gair Mumkin Khad" in the revenue records falling in the Tehsil- Bijhari Datwal on the right bank of the Sukkar Khad and some of the Terrace deposits . The area contains sufficient amount of the minor minerals and during the course of the inspection, the committee found this area feasible for auction as there is no existing I&PH scheme or any kind of road or other structure of the HPPWD department near the said area. The representative of Forest Department also agreed to put this area for auction as there are no trees near the boundaries of this area. So after the deliberations, the committee agreed to put this area for auction and recommended it for the grant of the mineral concession to cater the demand of minor minerals in the area, which can be used for open sale in the market or to set up mineral based industry and to restrict the illegal mining activities in the area.

Thereafter, The committee then visited the area comprising of **Khasra no. 899 falling in Mauja- Datwal and Mohal- Lafran measuring 08-58-45 Hectares** entered as "Gair Mumkin Khad" in the revenue records which lies on the right bank of the Sukkar Khad. This area also contains sufficient amount of the minor minerals and during the course of the inspection, the committee found this area feasible for auction as there is no I&PH scheme or any kind of road or other structure of the HPPWD department falling in the Hamirpur district. The representative of Forest Department also agreed to put this area for auction, as there are no trees near the boundaries of the this area. It is also worth to mention here that; representative of the I&PH Department informed the committee that one scheme of I&PH department falling under the Jurisdiction of the district Bilaspur is under construction phase on the left Bank of the Sukkar Khad opposite to the area proposed for auction and while extracting the minor minerals, proper precautions may be kept in mind; so that no damage is be caused to the I&PH scheme. Therefore, the committee agreed to put this area for auction and recommended it for the grant of the mineral concession to cater the demand of minor minerals in the area which can be used for open sale in the market or to set up of the mineral based industry and to restrict the illegal mining activities in the area.

Further, the committee visited the area comprising of **Khasra no. 1302/4 falling in Mauja- Datwal and Mohal- Chowki measuring 06-88-82 Hectares** entered as Gair Mumkin Khad in the revenue records and the area proposed for the auction lies in the riverbed of Sukkar Khad along with some of the area as terrace deposits. During the course of the inspection, the committee found this area suitable for the auction as there is no I&PH scheme or any kind of road or other structure of the HPPWD department adjacent to the said area and there are no trees existing in the area, thus there was no objection by I&PH, HPPWD and forest department for the same. It is also worth to mention here that as the proposed area is part of riverbed/Khad bed and the terrace deposits, sufficient amount of the minor minerals are available in the site, which can be used for open sale in the market or to set up of the mineral based industry. Therefore, the committee agreed to put this area for auction and recommended it for the grant of mineral concession to cater the demand of minor minerals and to restrict the illegal mining activities in the area.

Hence on the basis of the observations of the sub-Divisional Joint Inspection Committee which visited the above mentioned areas under the Chairmanship of Sub-Divisional Magistrate, Barsar, the above mentioned sites and the Khasra No's are recommended for the auction/grant of mineral concession in the government land, after completing the due codal formalities. It was also decided by the committee that, all the selected bidders, who takes these areas in the auction, will abide all the rules/instructions/notifications issued from time to time by the concerned authorities or court orders and will not get indulged in any kind of illegal mining activities. Further, the chairman of the Joint Inspection Committee (JIC) also informed the members that strict vigil against the illegal mining should be kept in these area by all the duty holders to whom the powers has been conferred; especially the custodian department may take the necessary action in the matter accordingly.

The details of the areas inspected along with the recommendations are mentioned as below:-

Sr. No.	Name of the Khad/ River	Name of the quarry	Khasra no.	Area (in Hectares)	Mauja/ Mohal	Type of land (Govt. Land)	Recommended or not-recommended
1	Sukkar Khad	Tributary Sukkar Khad (Bug)	396 &639	11-02-85	Datwal/ Bug	Gair Mumkin Khad	**Not Recommended**
2	Sukkar Khad	Sukkar Khad (Jangli)	405	03-37-99	Datwal/ Jangli	Gair Mumkin Khad	Recommended
3	Sukkar Khad	Sukkar Khad (Lafran)	899	08-58-45	Datwal/ Lafran	Gair Mumkin Khad	Recommended
4	Sukkar Khad	Sukkar Khad (Chowki)	1302/4	06-68-82	Datwal/ Chowki	Gair Mumkin Khad	Recommended

Note: - (The Sr. No. 01, Sukkar Khad (Bug) is the tributary of the Sukkar Khad and the area does not falls in the main Sukkar Khad.)

Seal and Signatures of the committee members:-

Assistant Engineer HPPWD Sub Division Barsar, Distt. Hamirpur AE, HPPWD/ Representative	Assistant Engineer I&PH Sub-Division Barsar AE, I&PH/Representative	Rep. H.P.P.C.B Una
Mining Officer Hamirpur, Distt. Hamirpur (H.P.) Mining Officer District Hamirpur	Range Forest Officer, Forest Range Bijhari DFO/Range Forest Officer Bijhari-Datwal	Sub-Divisional Officer(C). Barsar

C/S

Divisional Forest Officer
Hamirpur Forest Division
HAMIRPUR (H.P.)

H.P. STATE POLLUTION CONTROL BOARD
Regional Office Una

Phase-IV Rakkar Colony, Tehsil & Distt. Una, Pin-174303 (H.P.)
Phone: 01975-238131
Website : http://www.hppcb.nic.in e-mail : pcbrouna@gmail.com

No: HPSPCB/RO/Una/Mining File/2019: – 922 Dated: 16/09/2019

From: **Environmental Engineer**

To

The Mining Officer,
Hamirpur,
Distt. Hamirpur (HP).

Subject: Joint Inspection of river bed area's (Govt. Land) falling in Sukker Khadd & Garli Khadd identified for auction.

Sir,

With reference to your office letter No. Ind/Udhyog/Hamirpur/Bhu/Khani/Auction/Barsar/-374 dated 30/07/2019 on the subject cited above. In this regard it is submitted that, the 6 Nos. sites/area having mineral potential has been inspected on dated 30/08/2019 by JEE HPSPCB Una for conducting auction as detailed below:

Sr. No.	Name of the Khad/ River	Name of the quarry	Khasra no.	Area (in Hectares)	Mauja/ Mohal	Type of land (Govt. Land)
1	Sukkar Khad	Tributary Sukkar Khad (Bug)	396 &639	11-02-85	Datwal/ Bug	Gair Mumkin Khad
2	Sukkar Khad	Sukkar Khad (Jangli)	405	03-37-99	Datwal/ Jangli	Gair Mumkin Khad
3	Sukkar Khad	Sukkar Khad (Lafran)	899	08-58-45	Datwal/ Lafran	Gair Mumkin Khad
4	Sukkar Khad	Sukkar Khad (Chowki)	1302/4	06-68-82	Datwal/ Chowki	Gair Mumkin Khad
5	Garli Khad	Garli Khad (Garli Khas)	1468, 1767, 1768	04-90-09	Garli/ Garli Khas	Gair Mumkin Khad
6	Garli Khad	Garli Khad (usnad Garli)	944, 1242, 1261	07-43-59	Garli/ Usnad Kalan	Gair Mumkin Khad

The HP State Pollution Control Board has no Objection, if the above said areas ~~may be~~ all auctioned as per the Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2015, with the following terms & conditions,

- The Mining shall be carried out as per the practices and policies of mining departments.
- The mining lease area is a river bed mining area in Gair Mumkin Swan, So the sand, stone & Bajri should be picked up manually.
- No blasting shall be carried out.
- Natural course of river/Khadd shall not be disturbed & especially step shall be taken to control the soil erosion.
- No mechanical work/JCB allowed in the mining lease area.
- Any guidelines issued by State Pollution Control Board Shall be binding.
- The Proponent shall obtain the Env. Clearance from the competent authority as per the orders of Hon'ble supreme court dt. 27.02.2012 & Hon'ble High Court dt. 15.06.2012 & 14.09.2012. The proponent shall not carry out any mining activity till EC obtained from the competent authority.

Yours faithfully,

Er. S.K Dhiman,
Environmental Engineer

Sh. Kishal
for immediate n/a.
Singh
21/09/2019

ANNEXURE VI

List Of Flora & Fauna

OFFICE OF DEPUTY CONSERVATOR OF FORESTS,
HAMIRPUR FOREST DIVISION, HAMIRPUR, HP, 177001,
Phone & Fax 01972-224922, e-mail – dfohamirpur@gmail.com

No\RK 10968 **dated** 26/12/2022

To:

Sh Madan Lal s/o Sh Ram Chand,
r/o VPO Ghandalwin, Tehsil Bharari,
Distt Bilaspur, HP

Subject:- Issuance of certificate of Flora and Fauna.

Sir,

As desired by you vide application dated 21.12.2022, the list of Flora and Fauna in respect to land comprising in Khasra No. 405, area measuring 03-33-99 ha. of tika Jangli, Mauja Dhatwal is enclosed herewith for information and necessary action at your end please.

It is further intimated that there is No National Park, Sanctuaries, Habitat for migratory birds, wild life corridors, tiger/Elephant reserves, interstate boundaries within the jurisdiction of Hamirpur Forest Division.

Encls:- As Above.

Yours faithfully,

Deputy Conservator of Forests,
Hamirpur Forest Division,
Hamirpur, - 177001

List of endemic/Local Flora and Fauna of Khasara No. 405 (Govt. land) in Mauza Dhatwal and Mohal Jangali.

S.No	Detail of Floura		S.No	Detail of Founa	
	Local Name	Botanical Name		Local Name	Botanical Name.
1.	Gandela	Murraya Koengii	1.	Suar	Sus Scrafa
2.	Chil	Pinus Roxberghi	2.	Kakar	Muntiacus
3.	Kachnar	Bahunia Verigeta	3.	Pea-Cock.	Pavocristatus
4.	Aakhe	Rubus ellipitieus	4.	Khargosh	Dry ctalagus Cuniculus
5.	Garna	Carissa epaca	5.	Jangli Murga	Gallus gallus.
6.	Kamal	Mallotus Philipperisis	6.	Fox	Vulpes bergalensis
7.	Mango	Mangi firaizdica	7.	Nevla	Herpestes edwardei
8.	Congress Grass	Partheniu m	8.	Brown Sparroo	Emberiga Citrinella
9.	Bamboo	Dendro calmus Strictus.	9.	Goh.	Varahas Komadolcis.

D/A Bijhari

Range Forest Officer,
Forest Range Bijhari

I/c Sathiy Beat.

Deputy Conservator of Forests,
Hamirpur Forest Division,
Hamirpur (H.P.)

List of Fast Growing species of Hamirpur Forest Division

S No	Botanical Name	Local Name
1	Acacia arabica	Kikar
2	Acacia caesia	Refan, dhangar
3	Acacia farnesiana	(Introduced)
4	Adhatoda vasica	Basute
5	Albizzia lebbek	Siris (Sarin)
6	Grewia laevigata	Dhamriana
7	Bauhinia malabarica	Karal
8	Bauhinia purpurea	Karal
9	Bauhinia racemosa	Karal
10	Bauhinia variegate	Kachnar
11	Boehmiria platyphylla	Padara
12	Boehmiria regulosa	Ligga
13	Calotropis procera	Ak
14	Dalbergia sissoo	Tahil, Shisham
15	Gmelina arborea	Gumbar
16	Grewia elastica	Phalsa, Pheruman
17	Grewia laevigata	Dhamriana
18	Grewia oppositifolia	Biul, Dhaman
19	Melia azedarach	Bakain, Drek
20	Moringa pterygosperma	Suhanjna
21	Morus alba	Tut (cultivated)
22	Morus laevigata	Shahtut
23	Morus serrata	Karun (cultivated)
24	Odina wodier	Kehmbel
25	Ougeinia dalbergioides	Sannan
26	Rubus lasiocarpus	Kala Akha
27	Rubus paniculatus	Akha
28	Salix elegans	Bashal
29	Salix tetrasperma	Badhla, willow
30	Saurauja napaulensis	Bhakara
31	Vitex negundo	Bana

Deputy Conservator of Forests,
Hamirpur Forest Division,
Hamirpur, HP

ANNEXURE VII

Revenue Record

राजस्व विभाग, हिमाचल प्रदेश - नकल जमाबंदी

एस.सी.ए रसीद संख्या: 2355152020737061

जिला : हमीरपूर
तहसील : ठटवाल स्थित बिझड़ी
कानूनगोवृत : महारल
पटवार वृत : जमली
हदबस्त न. : 34/51 मोहाल : जांगली

नाम : .....
पिता/पति : .....

नकल शुल्क : 1
सेवा शुल्क : 10
कुल शुल्क : 11

साल : 2020-2021 रकबा ईकाई: है-आ-सै

खेवट नं. ..... नाम पत्ती या तरफ मय नाम नम्बरदार ..... मुताबला व शरह मुआमला व हबूब	खतौनी नं. ..... लगान जो मुजारा अदा करता है व तफसील शरह व तदाद	नाम मालिक व एहवाल	नाम काश्तकार व एहवाल	नाम चाह व दीगर वसायल आबपाशी	नम्बर खसरा हाल	रकबा हर खेत व मिजान खाता मय किस्म अराजी मीट्रीक ईकाइयों में	हिस्सा या पैमाना हकीयत व तरीका बाछ	कैफियत
1	2	3	4	5	6	7	8	9
41 मिन 37 ..... बशरहा खेवट न. (1) ..... 0.00 माल	49 मिन 44	हिमाचल प्रदेश सरकार	कब्जा स्वंय ताबे हकूक बर्तन बर्तनदारान		405 ,,	03-37-99 गै.मु.खड्ड	कब्जा व पड़ता बशरह खेवट न. (1)	नोट :खसरा नम्बर 1- 20-23-24- के खुदरौ द्रखतान मलकीयत सरकार है नोट : खसरा नम्बर 3- 7-9-10-11-12-13- 16- के खुदरौ द्रकतान मलकीयत सरकार है

ग्रामीण राजस्व अधिकारी
पटवार वृत.....
जिला.....

21/12/2022

Common Service Center (HP)
Gram Panchayat Baragram
Bandhana Rani
CSC ID 266532750013

Certified that this copy has been generated from the database of Revenue Department at Central Server- HP as accessed by the Lok Mitra Kendra Bandhana Rani on 21-December-2022

To Verify; enter the Copy No above Bar Code at https://himbhoomilmk.nic.in
For Validity Refer : Notific. No:Rev-C(F)/10-1/2009 Dated 14-Feb-2011

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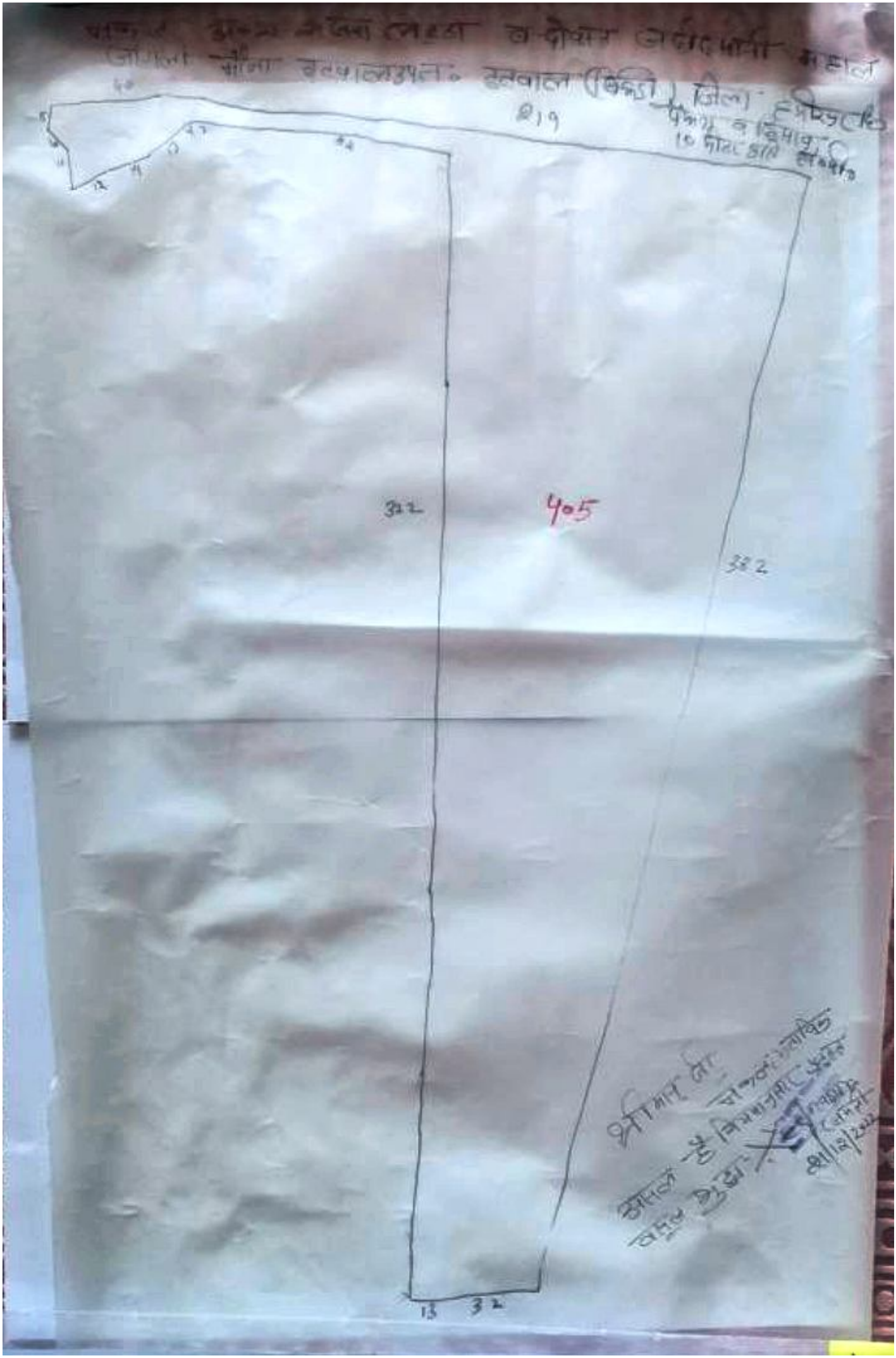
405
32
32
13
32

EXECUTIVE SUMMARY

OF

EXTRACTION/COLLECTION OF SAND, STONE AND BAJRI

PROPOSAL NO	**SIA/HP/MIN/413181/2023**
AREA	**3-37-99 Ha.**
PRODUCTION	**61,599 MTPA**
LOCATION	**Khasra No. 405, Mauza Datwal, Mohal Jangli, Tehsil Bijhari, District Hamirpur, Himachal Pradesh.**

APPLICANT

Sh. Madan Lal

S/o Sh. Ram Chand,

R/o Village & P. O. Gandalwin, Tehsil Ghumarwin,

District Bilaspur, H.P

CONSULTANT

P&M Solution

C-88, Sector 65, Noida -201301 – U.P

A QCI –NABET Accredited Organization

EXECUTIVE SUMMARY

INTRODUCTION

The proposed project is for Extraction of Sand, Stone and Bajri from Khasra No. 405, measuring an area 03-37-99 Hectares (Govt Land, River Bed) Falling in Mauza Datwal, Mohal Jangli, Tehsil Bijhari, District Hamirpur, Himachal Pradesh. The project has been proposed by Sh. Madan Lal, S/o Sh. Ram Chand R/o Village & P. O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, Himachal Pradesh. Proposed project has been allotted to the proponent vide letter no. Udyog-Bhu (Khani-4) Laghu-936/2020-4869 dated 05-09-2022. Mining plan has been approved vide letter no. Udyog-Bhu (Khani-4) Laghu – 936/2020- 9056 dated 15.12.2022. The estimated project cost is Rs 30 LaFkh. The proposed production is 61,599 MTPA.

Other mines also exist within 500 meters of the mining project whose cluster area is more than 5.0 hectares.As per MoEF&CC, New Delhi Gazette dated 14th September 2006 and amended thereof, the proposed project is categorized as **Category 'B1'** project.

Sr. No.	Name of Mining Lease	Khasra No.	Area in Hectares	Mohal & Mauza	Validity Period	Status of EC/Mining leases whether operating or not operating
1.	Ms. Sikha Kapil, Vill -Gharyani, PO- Lafran, Tehsil Bijhari, District Hamirpur	209/2	02-68-31	Jangli/Datwal	10 years valid from dated 07-12-2021 to 06-12-2031	EC granted and Mining lease is operational

PROJECT DESCRIPTION

LOCATION

The proposed project is for Extraction of Sand, Stone and Bajri from Khasra No. 405,measuring an area 03-37-99 Hectares (Govt Land, River Bed) Falling in Mauza Datwal, Mohal Jangli, Tehsil Bijhari, Himachal Pradesh.

Pillars	Latitude	Longitude
A	31°29'9.00"N	76°36'34.12"E
B	31°28'56.91"N	76°36'32.02"E
C	31°28'56.97"N	76°36'30.35"E
D	31°29'9.07"N	76°36'29.41"E
E	31°29'9.43"N	76°36'25.92"E
F	31°29'8.88"N	76°36'24.83"E
G	31°29'8.44"N	76°36'25.34"E
H	31°29'9.21"N	76°36'26.20"E

Connectivity

The nearest railway station is Una Railway Station is approx. 31.65 km towards West direction. The Nearest airport is Jubbarhatti Grant Airport, Shimla is approx. 61.8 km towards SE direction. The leased area is well-connected, with the first approach road is connected to the village road, about 280 meters to the east, which further connects to the link metalled road (Karloti-Chatt Road) towards Ghumarwin, about 15 kilometers to the north.

The second approach road is connected to the village road, about 650 meters to the west, which further connects to the link metalled road (Bijhri-Bherthen Road) towards Hamirpur, about 40 kilometers to the northwest. The nearest NH-103 About 5.4 Km in East direction

Salient Features of Project

Name of the applicant	Sh. Madan Lal, S/o Sh. Ram Chand
Address of Lessee	Village & P. O. Gandalwin, Tehsil Ghumarwin, District Bilaspur, Himachal Pradesh.
Name of Mine	Minor Mineral Lease for extraction of Stone, Sand and Bajri falling in Mauza Datwal, Mohal Jangli, Tehsil Bijhar, District Hamirpur by Sh. Madan Lal, S/o Sh. Ram Chand
Village	Datwal&Jangli
Tehsil	Bijhari
District & State	District Hamirpur, Himachal Pradesh
Mineral	Sand,Bajri& Stone
Area (ha)	03-37-99 ha. (Govt Land, River Bed)

MINING/ EXTRACTION

Extraction will be carried out by opencast manual/ semi-mechanized method without adoption of drilling & blasting. The extraction will be confined to excavation of sand, stone bajri from the river bed (Sukkar Khad). Excavation of minerals will be carried out only up to a depth of 1m.

RESERVE AND PRODUCTION

Summary of Geological reserves is as below:

Area in sqm.	Specific Gravity	Depth in metres	Geological Reserves (in MT)
30419	2.25	3	206229
		1	68443

Summary of Mineable Reserves

Area proposed for grant of Mining Lease in sqm.	Mineable Area in sqm.	Volume in cum	Boulders (MT) (40%)	Bajri (MT) (30%)	Sand (MT) (25%)	Silt/Clay (MT) (25%)	Total Resource (MT)
33799	30419	30419	27377	20533	13689	6844	68443

Year wise Production detail

Year	Area for mining in Sqm.	Quantity of Sand (M.T.)	Quantity of Stone (M.T.)	Quantity of Bajri (M.T.)	Quantity of Silt/ Clay (M.T.)	Total (M.T.)
		20 %	**40%**	**30%**	**10%**	
1st year	30419	13689	27377	20533	6844	**68443**
2nd year	30419	13689	27377	20533	6844	**68443**
3rd Year	30419	13689	27377	20533	6844	**68443**
4th Year	30419	13689	27377	20533	6844	**68443**
5th Year	30419	13689	27377	20533	6844	**68443**
Total		**68443**	**136886**	**102665**	**34222**	**342215**

Note: The proposed production is 61,599 MTPA.

SITE FACILITIES AND UTILITIES

Water Supply

Water will be provided to workers for drinking & domestic purpose. Water will also be required for dust suppression. A total of6.15KLD water will be required for the proposed project. Fresh water will be only used for drinking purpose.

Temporary Rest Shelter

A temporary rest shelter will be provided for the workers near to the site for rest. In addition, first aid box along with anti-venoms to counteract poison produced by certain species of small insects, if any and sanitation facility i.e.septic tank or community toilet facility will be provided for the workers.

BASELINE ENVIRONMENTAL STATUS

Environmental data has been collected in relation to proposed mining for Air, Noise, Water, Soil, and Flora& Fauna. The baseline environment study was carried out over an area with radial distance of 10 km around the mining lease area during pre monsoon season from March 2023 to May 2023.

Table Baseline Environmental Status

Attribute	Baseline status
Ambient Air Quality	Ambient Air Quality Monitoring reveals that the minimum & maximum concentrations of PM10 for all the 8 AQ monitoring stations were found to be 46.23 µg/m3 & 79.82 µg/m3, respectively and the minimum & maximum concentrations of PM 2.5 were found to be 16.64 µg/m3 and 39.48µg/m3 respectively. As far as the gaseous pollutants SO2 and NOx are concerned, the prescribed CPCB limit of 80 µg/m3 for residential and rural areas has never surpassed at any station. The maximum & minimum concentrations of SO2 were found to be 5.24 µg/m3 & 15.89µg/m3 respectively. The maximum & minimum concentrations of NOx were found to be in between 8.25 µg/m3 & 20.55 µg/m3.
Noise Levels	Noise monitoring was carried out at 08 locations. The results of the

	monitoring program indicated that both the daytime and night time levels of noise were well within the prescribed limits of NAAQS, at all the four locations monitored.
Water Quality	07 Groundwater samples and 3 surface water samples were analyzed and concluded that: The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by Indian Standards IS: 10500. From the Surface water analysisit is evident that most of the parameters of the samples comply with 'Category 'B' standards of CPCB indicating their suitability for Drinking water source after conventional treatment and disinfection.
Soil Quality	Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.25 to 7.62, which shows that the soil is alkaline in nature. Potassium is found to be from 142.69 mg/kg to 284.40 mg/kg. The water holding capacity is found in between 34.32 % to 36.21 %.
Ecology and Biodiversity	There are no Ecologically Sensitive Areas present in the study area, but many reserved forests regions surround the project area
Socio-economy	The implementation of the Sand, Stone &Bajri extraction project on river Sukkar Khad 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.

ANTICIPATED ENVIRONMENTALIMPACTS

Impact on Air Environment

The proposed extraction activities loading and movement of other transport vehicles used in mining will generate dust (SPM/RSPM). Proper water sprinkling shall be carried out at the mine

site. The mineral will be transported by road through covered tarpaulin trucks/tippers to reduce the fugitive emission caused by the wind.

Impact on Water Environment

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

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

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

As the project activity is carried out in the meandering part of the river bed, none of the project activities affect the water environment or riparian habitats. In the projects, it is not proposed to divert or truncate any stream. No proposal is envisaged for pumping of water either from the river or tapping the ground water.

Impact on Land Environment

The proposed extraction of stream bed materials, mining below the existing streambed, and alteration of channel-bed form and shape may lead to several impacts such as erosion of channel bed and banks, increase in channel slope, and change in channel morphology if, the operations are not carried out systematically.

The systematic and scientific removal ofSand, Stone &Bajriwill not cause bed degradation. The silt and clay generated as waste will be used for plantation or filling up low lying area elsewhere.The mining is planned in non-monsoon seasons only, so that the excavated area gets replenished gradually during the monsoons each year.

Impact on Noise Environment

The proposed extraction activity is manual/mechanical in nature. No drilling & blasting is envisaged for the mining activity. Hence, the only impact is anticipated is due to movement of vehicles deployed for transportation of minerals. The vehicles will be maintained in good running condition so that noise will be reduced to minimum possible level.

Impact on Biological Environment

As the proposed extraction will be carried out in a scientific manner, not much significant impact is anticipated. No mining will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many of the species. The site has no vegetation; no clearance of vegetation will be done. Haul roads will be sprinkled with water which would reduce the dust emission, thus avoiding damage to the crops.

Impact on Socio Economic Environment

The impact of extraction activity in the area is positive on the socio-economic environment of the region. Sand, Stone &Bajriextractionwill be providing employment to local people whenever there is requirement of manpower.

POST PROJECT ENVIRONMENTAL MONITORING

S.No.	Description of Parameters	Schedule of Monitoring
1	Air Quality	24 hourly samples twice a week in each season except monsoon
2	Water Quality (Surface &Groundwater)	Once a season for 4 seasons in a year
3	Soil Quality	Once in a year in project area
4	Noise Level	Twice a year for first two years & then once a year
5	Socio-economic Condition	Once in 3 years
6	Plantation Monitoring	Once in a season

ADDITIONAL STUDIES

Public Hearing

Public hearing is yet to be conducted.

Risk Assessment

The complete extraction operation will be carried out under the management control and direction of a qualified mine manager holding. The DGMS have been regularly issuing standing orders, model standing orders and circulars to be followed by the mine management in case of disaster, if any. Moreover, mining staff will be sent to refresher courses from time to time to keep them alert.

Disaster Management Plan

Emergency preparedness is an important aspect in the planning of Disaster Management. Personnel would be trained suitably and prepared mentally and physically in emergency response through carefully planned, simulated procedures. Similarly, the key personnel and essential personnel shall be trained in the operations.

PROJECT BENEFITS

Physical Benefits: Road Transport, Market, Enhancement of green cover & Creation of community assets.

Social Benefits: Increase in Employment Potential, Contribution to the Exchequer, Increased Health related activities, educational attainments &strengthening of existing community facilities.

Environmental Benefits:

- Controlling river channel and protection of banks.
- Reducing submergence of adjoining agricultural lands due to flooding.
- Reducing aggradation of river level.
- A check on illegal mining activity.

CORPORATE ENVIRONMENTAL RESPONSIBILITY

Corporate environmental Responsibility for activities related to education, social causes, healthcare & environmental.

Budget for Corporate Environmental Responsibility (CER)

CER Activity	Capital cost Rs. in lakhs

Deposit Demand Draft (@ Rs. 4.00 lacs per S ha.) under CER, shall be deposited in the form of Demand Drat to the office of Director (DEST), GOHP for which the Director (DEST) will devise a plan in consultation with project proponent	Rs 4 lakhs @ 3.3799 Ha. = 13.5 Lakhs

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

- Extraction will be done from the bed leaving safety zone from bank.
- The maximum working depth will remain above ground water table of the area.
- Provide health facilities to the workers & surrounding people in the impact area to reduce the health impacts.
- Ensuring wildlife protection & arranging awareness campaigns for the same.
- Minimize activities that release fine sediment to the *river*.
- Effective mitigation measures will be adopted to minimize disturbance during transportation & handling of minerals
- Establishment of reclamation program with plantation of local/native &fast-growing species
- Establishment of restoration plan during the closure of mine at the onset of monsoon season.
- Establishment of effective Disaster Management Plan to take timely precautionary measures to avoid effects of impending disasters.
- Establishment of effective Monitoring Program monitored by Environment Management Cell.

Budget allotted for the Environmental Management Plan

S.NO	TITLE	CAPITAL COST RS IN LAKHS	RECURRING COST/YR RS IN LAKHS	RECURRING COST FOR 5 YRS	TIMELINE
1.	Monitoring of Air, Water, Soil, etc. twice a year.	--	0.8	4.0	Once in a six month (As per CPCB guideline)

2.	Air Pollution Control-Management of Haulage Roads & mine road of 1500 meters including Sprinkling. Tractor trolley with sprinkler (*Depreciate cost of tanker & Sprinkler)	3.0	0.54	2.7	Twice a day & as per requirement
3.	Green Belt Development Area for Plantation= 0.95 Ha **No. of plants = 950 Plants** Cost and No. of plants are as per the ***No.Ft.1790-/71(D)2011-12/Vol-VIII(Norms), Himachal Pradesh Forest Department, Shimla Dated 07 June 2019**	1.5	----	2.5	As per norms recurring cost for next three years
4.	Retaining wall structure/Check Dam 5 Nos. of check dam. 100 Cu.m. each Total = 500 Cu.m. @ Rs 1200 per Cu.m.	6.0	0.1	YEAR I - 0 YEAR II - 0.1 YEAR III - 0.2 YEAR IV – 0.3 YEAR V – 0.4 Total – 1.0	Retaining Wall have been proposed for protect the water to flow out of HFL.
5.	Occupational Health Measures Provision of PPE, First Aid and other, miscellaneous expenditure.	0.50	---	0.50	As per requirement
Total		**11.0**	**1.44**	**10.70**	**---------**

- ***Plants (@Rs. 1,00,000 @ 1000 Plant i.e., Rs.100/ plant***
- ***Maintenance of haul road @ Rs. 2.0 lakh/km***
- ***Salary of Labour for haul road maintenance 2 labor*Rs. 200* 300 days= Rs. 1,20,000/- for one year (Rs. 6.0 lakh for 5 years)***

CONCLUSION

Based on the EIA study it is observed that there will be an increase in the dust pollution, which will be controlled by sprinkling of water and plantation. There will be an insignificant impact on ambient environment and ecology due to the mining activities moreover the mining operation will lead to direct and indirect employment generation in the area.Green belt development around the area will also be taken up as an effective pollution mitigative technique, as well as to control the pollutants released from the premises of the Mine. Monitoring program will be followed till the mining operations continue. Hence, it can be

summarized that the development of the mine will have a positive impact on the socio-economic environment of the area and lead to sustainable development of the region.

****

कार्यकारी सारांश

रेत, स्टोन और बजरी खनन परियोजना

के लिए

खसरा न. 405

मौजा दतवाल, मोहाल जंगली,

तहसील - बिझरी, जिला- हमीरपुर,

हिमाचल प्रदेश

क्षेत्रफल 03-37-99 हेक्टेयर,

उत्पादन 61,599 मीट्रिक टन प्रति वर्ष

आवेदक

श्री मदन लाल

पुत्र श्री राम चंद,

निवासी गांव और डाकघर गंदलविन, तहसील घुमारवीं, जिला बिलासपुर, हिमाचल प्रदेश

एनवायरनमेंट कन्सल्टेंट

पी & एम सल्यूशन

(क्वालिटी कौंसिल ऑफ़ इंडिया द्वारा मान्यता प्राप्त)

सी-88 सेक्टर 65 नॉएडा उत्तर-प्रदेश

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कार्यकारी सारांश

- **परियोजना और प्रस्तावक का परिचय**

प्रस्तावित परियोजना से रेत , पत्थर और बजरी के निष्कर्षण के लिए है जिसका खसरा नंबर 405 क्षेत्रफल 03-37-99 हेक्टेयर जो मौजा दतवाल , मोहाल जंगली, तहसील - बिझरी, जिला हमीरपुर हिमाचल प्रदेश में स्थित है परियोजना का प्रस्ताव श्री मदन लाल के नाम पर प्रस्तावित है। प्रस्तावक को **LOI** पत्र संख्यांक Udyog-Bhu(Khani-4)Laghu-936/2020-4869 दिनांक 05-09-2022 को जारी हुआ है । खनन योजना पत्र सं. Udyog-Bhu (Khani-4) Laghu - 936/2020- 9056 दिनांक 15.12.2022 को जारी हुआ है ।

प्रस्तावित उत्पादन 61 ,599 एमटीपीए है। खनन परियोजना के 500 मीटर के दायरे में अन्य खदानें भी मौजूद हैं जिनका क्लस्टर क्षेत्र 5.0 हेक्टेयर से अधिक है। , इसलिए यह एमओईएफ, नई दिल्ली राजपत्र दिनांक 14 सितंबर 2006 के अनुसार यथा संशोधित सूचनाओ के अनुसार बी1 श्रेणी के अंतर्गत आता है।

<u>परियोजना विवरण</u>

स्थान

प्रस्तावित परियोजना खसरा नंबर 405, मौजा दतवाल, मोहाल जंगली, तहसील - बिझरी, जिला हमीरपुर, हिमाचल प्रदेश में स्थित है।

अक्षांश	देशांतर
31°29'9.00"N	76°36'34.12"E
31°28'56.91"N	76°36'32.02"E
31°28'56.97"N	76°36'30.35"E
31°29'9.07"N	76°36'29.41"E
31°29'9.43"N	76°36'25.92"E
31°29'8.88"N	76°36'24.83"E

31°29'8.44"N	76°36'25.34"E
31°29'9.21"N	76°36'26.20"E

कनेक्टिविटी

- निकटतम रेलवे स्टेशन उना रेलवे स्टेशन लगभग 31.65 किमी पश्चिम दिशा में स्थित है।
- निकटतम राष्ट्रीय राजमार्ग लगभग 5.4 किमी पूर्व दिशा में स्थित है।
- निकटतम हवाई अड्डा जुब्बड़हट्टी ग्रांट एयरपोर्ट , शिमला लगभग 61.8 किमी, दक्षिण पूर्व दिशा में स्थित है।

परियोजना की मुख्य विशेषताएं

आवेदक का नाम	श्री मदन लाल
पट्टेदार का पता	निवासी गांव और डाकघर गंदलविन, तहसील घुमारवीं, जिला बिलासपुर, हिमाचल प्रदेश
प्रोजेक्ट नाम	रेत, स्टोन और बजरी खनन परियोजना
गांव	मौजा दतवाल, मोहाल जंगली
तहसील	बिझरी
जिला और राज्य	हमीरपुर, हिमाचल प्रदेश
खनिज	रेत, स्टोन और बजरी
क्षेत्रफल (हेक्टेयर)	03-37-99 हेक्टेयर

खनन/निष्कर्षण

परियोजना में केवल नदी के किनारे से रेत, स्टोन और बजरी का निष्कर्षण किया जाएगा यह एक मैनुअल व अर्ध्य यांत्रिकीकृत विधि से किया जायेगा खनिजों की खुदाई केवल **01** मीटर की गहराई तक की जाएगी।

रिज़र्व और उत्पादन

भूवैज्ञानिक भंडार का सारांश नीचे दिया गया है:

Area in sqm.	Specific Gravity	Depth in metres	Geological Reserves (in MT)
30419	2.25	3	206229
		1	68443

खनन योग्य भंडार का सारांश

Area proposed for grant of Mining Lease in sqm.	Mineable Area in sqm.	Volume in cum	Boulders (MT) (40%)	Bajri (MT) (30%)	Sand (MT) (25%)	Silt/Clay (MT) (25%)	Total Resource (MT)
33799	30419	30419	27377	20533	13689	6844	68443

वर्ष वार उत्पादन विवरण

Year	Area for mining in Sqm.	Quantity of Sand (M.T.)	Quantity of Stone (M.T.)	Quantity of Bajri (M.T.)	Quantity of Silt/ Clay (M.T.)	Total (M.T.)
		20 %	40%	30%	10%	
1st year	30419	13689	27377	20533	6844	**68443**
2nd year	30419	13689	27377	20533	6844	**68443**
3rd Year	30419	13689	27377	20533	6844	**68443**
4th Year	30419	13689	27377	20533	6844	**68443**
5th Year	30419	13689	27377	20533	6844	**68443**
Total		**68443**	**136886**	**102665**	**34222**	**342215**

नोट: प्रस्तावित उत्पादन 61,599 एमटीपीए है।

- **साइट सुविधाएं और उपयोगिताएं**
- **जल की आपूर्ति**

श्रमिकों को पीने और घरेलू उपयोग के लिए पानी उपलब्ध कराया जाएगा। धूल दमन के लिए भी पानी की आवश्यकता होगी। प्रस्तावित परियोजना के लिए कुल 6.15 KLD पानी की आवश्यकता होगी। ताजे पानी का उपयोग केवल पीने के उद्देश्य से किया जाएगा।

अस्थायी विश्राम आश्रय

श्रमिकों के विश्राम के लिए स्थल के निकट अस्थायी विश्राम गृह की व्यवस्था की जाएगी। इसके अलावा, छोटे कीड़ों की कुछ प्रजातियों , यदि कोई हो, द्वारा उत्पादित जहर का मुकाबला करने के लिए एंटी-वेनम के साथ प्राथमिक चिकित्सा बॉक्स और श्रमिकों के लिए स्वच्छता सुविधा यानी सेप्टिक टैंक या सामुदायिक शौचालय की सुविधा प्रदान की जाएगी।

पर्यावरणीय स्थिति

वायु, ध्वनि, जल, मिट्टी और वनस्पति और जीवों के लिए प्रस्तावित खनन के संबंध में पर्यावरण संबंधी आंकड़े एकत्र किए गए हैं। मार्च 2023 से अप्रैल 2023 तक प्री मानसून मौसम के दौरान खनन पट्टा क्षेत्र के आसपास **10** किमी की रेडियल दूरी वाले क्षेत्र में आधारभूत पर्यावरण अध्ययन किया गया हैं।

बेसलाइन पर्यावरण स्थिति

विशेषता	आधारभूत स्थिति
पर्यावरणीय वायु की गुणवत्ता	परिवेशी वायु गुणवत्ता निगरानी परिणामों से पता चलता है कि सभी 08 निगरानी स्टेशनों के स्थान के लिए पीएम 10 की न्यूनतम और अधिकतम सांद्रता में क्रमशः 46.26 माइक्रोग्राम प्रति घन मीटर और 79.82 माइक्रोग्राम प्रति घन मीटर पाई गई। पीएम 2.5 की न्यूनतम और अधिकतम सांद्रता क्रमश: 16.64 माइक्रोग्राम प्रति घन मीटर और 39.48 माइक्रोग्राम प्रति घन मीटर पाई गई। SO2 के लिए न्यूनतम और अधिकतम सांद्रता क्रमशः 5.24

	माइक्रोग्राम प्रति घन मीटर और 15.89 माइक्रोग्राम प्रति घन मीटर पाई गई। NO2 के लिए न्यूनतम और अधिकतम सांद्रता क्रमशः 5.24 माइक्रोग्राम प्रति घन मीटर और 8.25 माइक्रोग्राम प्रति घन मीटर पाई गई।
शोर का स्तर	08 स्थानों पर ध्वनि निगरानी की गई। निगरानी कार्यक्रम के परिणामों ने संकेत दिया कि निगरानी के सभी 08 स्थानों पर दिन और रात दोनों समय के शोर का स्तर NAAQS की निर्धारित सीमा के भीतर था।
जल की गुणवत्ता	07 भूजल नमूनों और 3 सतही जल नमूनों का विश्लेषण किया गया और निष्कर्ष निकाला गया कि: सभी स्रोतों से भूजल पीने के उद्देश्यों के लिए उपयुक्त रहता है क्योंकि सभी घटक भारतीय मानक आईएस: 10500 द्वारा प्रख्यापित पेयजल मानकों द्वारा निर्धारित सीमा के भीतर हैं। सतही जल विश्लेषण से यह स्पष्ट है कि नमूनों के अधिकांश पैरामीटर सीपीसीबी के 'श्रेणी 'बी' मानकों का अनुपालन करते हैं, जो पारंपरिक उपचार और कीटाणुशोधन के बाद पेयजल स्रोत के लिए उनकी उपयुक्तता का संकेत देते हैं।
मिट्टी की गुणवत्ता	चिन्हित स्थानों से एकत्र किए गए नमूनों से पता चलता है कि मिट्टी रेतीली है और पीएच मान 7.25 से 7.62 के बीच है, जो दर्शाता है कि मिट्टी प्रकृति में क्षारीय है।
पारिस्थितिकी और जैव विविधता	अध्ययन क्षेत्र में कोई पारिस्थितिक रूप से संवेदनशील क्षेत्र मौजूद नहीं है, लेकिन कई आरक्षित वन क्षेत्र परियोजना क्षेत्र के चारों ओर हैं
सामाजिक- अर्थव्यवस्था	सुक्कर खड पर रेत, पत्थर और बजरी निष्कर्षण परियोजना के कार्यान्वयन से स्थानीय लोगों को प्रत्यक्ष और अप्रत्यक्ष रूप से रोजगार के अवसर मिलेंगे। अध्ययन क्षेत्र में अभी भी शिक्षा , स्वास्थ्य, आवास, पानी,

	बिजली आदि का अभाव है। यह उम्मीद की जाती है कि प्रस्तावित खनन परियोजना और संबंधित औद्योगिक और व्यावसायिक गतिविधियों के कारण इसमें काफी हद तक सुधार होगा।

- **प्रत्याशित पर्यावरणीय प्रभाव**
- **वायु पर्यावरण पर प्रभाव**

खनन में प्रयुक्त अन्य परिवहन वाहनों की प्रस्तावित निकासी गतिविधियों के लोडिंग और आवाजाही से धूल (SPM/RSPM) उत्पन्न होगी। खदान स्थल पर पानी का उचित छिड़काव किया जाएगा। हवा के कारण होने वाले उत्सर्जन को कम करने के लिए खनिज को सड़क मार्ग से ढके हुए तिरपाल ट्रकों/टिपरों के माध्यम से ले जाया जाएगा।

- **जल पर्यावरण पर प्रभाव**

एक धारा के भीतर या उसके पास से रेत , पत्थर और बजरी के निष्कर्षण का धारा के भौतिक आवास विशेषताओं पर सीधा प्रभाव पड़ता है। इन विशेषताओं में ज्यामिति, नदी तल मूल्यांकन, सब्सट्रेट संरचना और स्थिरता , धारा खुरदरापन तत्व , गहराई, वेग, मैलापन, तलछट परिवहन, धारा निर्वहन और तापमान शामिल हैं। इन आवास विशेषताओं को बदलने से स्ट्रीम बायोटा और संबंधित रिपेरियन आवास दोनों पर हानिकारक प्रभाव पड़ सकते हैं। नदी तल सामग्री खनन के परिणामस्वरूप बायोटा के हानिकारक प्रभाव तीन मुख्य प्रक्रियाओं के कारण होते हैं:

• नदी तल में परिवर्तन के परिणामस्वरूप प्रवाह पैटर्न में परिवर्तन
• निलंबित तलछट की अधिकता
• नदी के किनारे की वनस्पतियों और जलधाराओं के आवास को नुकसान

चूंकि परियोजना गतिविधि नदी तल के किनारे वाले हिस्से में की जाती है इसलिए परियोजना की कोई भी गतिविधि जल पर्यावरण या तटवर्ती आवासों को प्रभावित नहीं करती है। परियोजनाओं में किसी धारा को मोड़ना या काट-छाँट करना प्रस्तावित नहीं है। नदी से पानी पंप करने या भूजल दोहन के लिए किसी प्रस्ताव पर विचार नहीं किया गया है।

- **भूमि पर्यावरण पर प्रभाव**

धारा तल सामग्री की प्रस्तावित निकासी, मौजूदा धारा के नीचे खनन, और चैनल-बेड के रूप और आकार में परिवर्तन से कई प्रभाव हो सकते हैं जैसे कि चैनल बेड और बैंकों का क्षरण , चैनल ढलान में वृद्धि , और चैनल आकारिकी में परिवर्तन , यदि, संचालन व्यवस्थित रूप से नहीं किया जाता है।

रेत, पत्थर और बजरी को व्यवस्थित और वैज्ञानिक तरीके से हटाने से तलों का क्षरण नहीं होगा। अपशिष्ट के रूप में उत्पन्न गाद और मिट्टी का उपयोग अन्यत्र वृक्षारोपण या निचले क्षेत्र को भरने के लिए किया जाएगा। खनन की योजना केवल गैर-मानसून मौसमों में ही बनाई जाती है, ताकि हर साल मानसून के दौरान उत्खनित क्षेत्र धीरे-धीरे फिर से भर जाए।

- **शोर पर्यावरण पर प्रभाव**

प्रस्तावित निष्कर्षण गतिविधि प्रकृति में मैनुअल/अर्ध-मशीनीकृत है। खनन गतिविधि के लिए किसी ड्रिलिंग और ब्लास्टिंग की परिकल्पना नहीं की गई है। इसलिए , खनिजों के परिवहन के लिए तैनात वाहनों की आवाजाही के कारण एकमात्र प्रभाव प्रत्याशित है। वाहनों को अच्छे चलने की स्थिति में रखा जाएगा ताकि शोर को न्यूनतम संभव स्तर तक कम किया जा सके।

- **जैविक पर्यावरण पर प्रभाव**

जैसा कि प्रस्तावित निष्कर्षण वैज्ञानिक तरीके से किया जाएगा , बहुत अधिक महत्वपूर्ण प्रभाव का अनुमान नहीं है। मानसून के मौसम के दौरान जलीय जीवन पर प्रभाव को कम करने के लिए कोई खनन नहीं किया जाएगा जो मुख्य रूप से कई प्रजातियों के लिए प्रजनन का मौसम है। साइट में कोई वनस्पति नहीं है ; वनस्पति की कोई निकासी नहीं की जाएगी। सड़कों पर पानी का छिड़काव किया जाएगा जिससे धूल का उत्सर्जन कम होगा , जिससे फसलों को नुकसान से बचा जा सकेगा।

- **सामाजिक आर्थिक पर्यावरण पर प्रभाव**

क्षेत्र में निष्कर्षण गतिविधि का प्रभाव क्षेत्र के सामाजिक-आर्थिक वातावरण पर सकारात्मक है। जब भी जनशक्ति की आवश्यकता होगी , रेत, पत्थर और बजरी निकासी स्थानीय लोगों को रोजगार प्रदान करेगी।

क्र.सं.	पैरामीटर का विवरण	निगरानी की अनुसूची
1	वायु की गुणवत्ता	मानसून के मौसम के अलावा हर मौसम में सप्ताह में दो बार 24 घंटे के नमूने
2	जल की गुणवत्ता (सतही और भूजल)	एक साल मे 4 सीजन के लिए एक सीजन मे एक बार
3	मिट्टी की गुणवत्ता	परियोजना क्षेत्र में वर्ष में एक बार
4	शोर स्तर	परियोजना जांच क्षेत्र मे दो साल मे एक बार
5	सामाजिक-आर्थिक स्थिति	3 साल में एक बार
6	वृक्षारोपण निगरानी	एक बार मौसम में

- **अतिरिक्त अध्ययन**

सार्वजनिक सुनवाई - जनसुनवाई होनी बाकी है।

- **जोखिम आकलन**

एक योग्य खान प्रबंधक होल्डिंग के प्रबंधन नियंत्रण और निर्देशन के तहत पूर्ण निकासी संचालन किया जाएगा। डीजीएमएस नियमित रूप से स्थायी आदेश , मॉडल स्थायी आदेश और आपदा के मामले में खान प्रबंधन द्वारा पालन किए जाने वाले परिपत्र , यदि कोई हो, जारी करता रहा है। इसके अलावा, खनन कर्मचारियों को समय-समय पर पुनश्चर्या पाठ्यक्रमों में सतर्क रखने के लिए भेजा जाएगा।

- **आपदा प्रबंधन योजना**

आपदा प्रबंधन की योजना बनाने में आपातकालीन तैयारी एक महत्वपूर्ण पहलू है। कर्मियों को उपयुक्त रूप से प्रशिक्षित किया जाएगा और सावधानीपूर्वक नियोजित , नकली प्रक्रियाओं के माध्यम से आपातकालीन प्रतिक्रिया में मानसिक और शारीरिक रूप से तैयार किया जाएगा। इसी तरह, प्रमुख कर्मियों और आवश्यक कर्मियों को संचालन में प्रशिक्षित किया जाएगा।

- **<u>परियोजना के लाभ</u>**

भौतिक लाभ: सड़क परिवहन, बाजार, हरित आवरण का संवर्धन और सामुदायिक संपत्ति का निर्माण।

सामाजिक लाभ: रोजगार क्षमता में वृद्धि, राजकोष में योगदान, स्वास्थ्य संबंधी गतिविधियों में वृद्धि, शैक्षिक प्राप्ति और मौजूदा सामुदायिक सुविधाओं का सुदृढ़ीकरण।

पर्यावरणीय लाभ:

- नदी चैनल को नियंत्रित करना और तटों की सुरक्षा।
- बाढ़ के कारण आसपास की कृषि भूमि के जलमग्न को कम करना।
- नदी के स्तर में वृद्धि को कम करना।
- अवैध खनन गतिविधि पर एक जाँच।

❖ **कॉर्पोरेट पर्यावरण उत्तरदायित्व**

लगभग रु. 13.50 लाख कॉर्पोरेट पर्यावरण उत्तरदायित्व के लिए आवंटित किए जाएंगे जो की शिक्षा, सामाजिक कार्यों, स्वास्थ्य देखभाल और पर्यावरण से संबंधित गतिविधियाँ में किए जाएंगे ।

सीईआर गतिविधि	पूंजी लागत (लाख में)
सीईआर के तहत डिपॉजिट डिमांड ड्राफ्ट (4.00 रुपये लाख प्रति हेक्टेयर), डिमांड ड्राफ्ट के रूप में निदेशक (डीईएसटी) के कार्यालय में जमा किया जाएगा। GOHP जिसके लिए निदेशक (DEST) परियोजना प्रस्तावक के परामर्श से एक योजना तैयार करेंगे	4 लाख रुपये * 3.3799 हेक्टेयर = 13.5 लाख

<u>पर्यावरण प्रबंधन योजना (ईएमपी)</u>

• बैंक से सेफ्टी जोन छोड़कर बेड से निकासी की जाएगी।

• अधिकतम कार्य गहराई क्षेत्र के भूजल स्तर से ऊपर रहेगी।

• स्वास्थ्य पर पड़ने वाले प्रभावों को कम करने के लिए प्रभाव क्षेत्र में कामगारों और आसपास के लोगों को स्वास्थ्य सुविधाएं प्रदान करना।

• वन्यजीव संरक्षण सुनिश्चित करना और इसके लिए जागरूकता अभियान चलाना।

• नदी में महीन तलछट छोड़ने वाली गतिविधियों को कम से कम करें।

• खनिजों के परिवहन और संचालन के दौरान अशांति को कम करने के लिए प्रभावी शमन उपाय अपनाए जाएंगे

• स्थानीय/देशी और तेजी से बढ़ने वाली प्रजातियों के वृक्षारोपण के साथ सुधार कार्यक्रम की स्थापना

• मानसून के मौसम की शुरुआत में खदान के बंद होने के दौरान बहाली योजना की स्थापना।

• आसन्न आपदाओं के प्रभाव से बचने के लिए समय पर एहतियाती उपाय करने के लिए प्रभावी आपदा प्रबंधन योजना की स्थापना।

• पर्यावरण प्रबंधन प्रकोष्ठ द्वारा निगरानी में प्रभावी निगरानी कार्यक्रम की स्थापना।

ईएमपी कार्यान्वयन के लिए बजट आवंटन

क्रमांक	विवरण	पूंजीगत लागत (लाख प्रति वर्ष में)	आवर्ती लागत (लाख प्रति वर्ष में)	आवर्ती लागत 5 साल के लिए	समयावधि
1	वर्ष में दो बार वायु, जल, मिट्टी आदि की निगरानी।	--	0.8	4.0	छह महीने में एक बार (सीपीसीबी के दिशानिर्देश के अनुसार)
2	वायु प्रदूषण नियंत्रण- छिड़काव सहित 500 मीटर की ढुलाई सड़कों और खदान सड़क का प्रबंधन। स्प्रिंकलर के साथ ट्रैक्टर ट्रॉली	3.0	0.54	2.7	दिन में दो बार और आवश्यकता के अनुसार
3	हरित पट्टी विकास वृक्षारोपण के लिए क्षेत्र = 0.95 हेक्टेयर पौधों की संख्या = 950 पौधे लागत और पौधों की संख्या *सं.फीट.1790-/71(डी)2011-12/वॉल्यूम-VIII(मानदंड), हिमाचल प्रदेश वन विभाग, शिमला दिनांक 07 जून 2019 के अनुसार है	1.5	----	2.5	मानदंडों के अनुसार अगले तीन वर्षों के लिए आवर्ती लागत
4	रिटेनिंग वॉल स्ट्रक्चर/चेकडैम 5 चेक डैम की संख्या। कुल = 100 घन मीटर प्रत्येक कुल = 500 घन@*(@रु. 1200/घन घन मीटर	6.0	0.1	वर्ष I - 0 वर्ष II - 0.1 वर्ष III - 0.2 वर्ष IV - 0.3 वर्ष V –0.4 Total –1.0	एचएफएल से पानी को बाहर निकलने से बचाने के लिए रिटेनिंग वॉल प्रस्तावित की गई है।
5	व्यावसायिक स्वास्थ्य उपाय पीपीई, प्राथमिक चिकित्सा और अन्य, विविध व्यय का प्रावधान।	0.50	----	0.50	आवश्यकता अनुसार
कुल		**11.0**	**1.44**	**10.70**	

निष्कर्ष

ईआईए अध्ययन के आधार पर यह देखा गया है कि धूल प्रदूषण में वृद्धि होगी , जिसे पानी के छिड़काव और वृक्षारोपण से नियंत्रित किया जाएगा। खनन गतिविधियों के कारण परिवेशी पर्यावरण और पारिस्थितिकी पर नगण्य प्रभाव पड़ेगा इसके अलावा खनन कार्य से क्षेत्र में प्रत्यक्ष और अप्रत्यक्ष रूप से रोजगार सृजन होगा। क्षेत्र के चारों ओर हरित पट्टी विकास को प्रभावी प्रदूषण शमन तकनीक के साथ-साथ खदान के परिसर से निकलने वाले प्रदूषकों को नियंत्रित करने के लिए भी लिया जाएगा। खनन कार्य जारी रहने तक निगरानी कार्यक्रम का पालन किया जाएगा। इसलिए, यह संक्षेप में कहा जा सकता है कि खदान के विकास से क्षेत्र के सामाजिक-आर्थिक वातावरण पर सकारात्मक प्रभाव पड़ेगा और क्षेत्र का सतत विकास होगा।

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