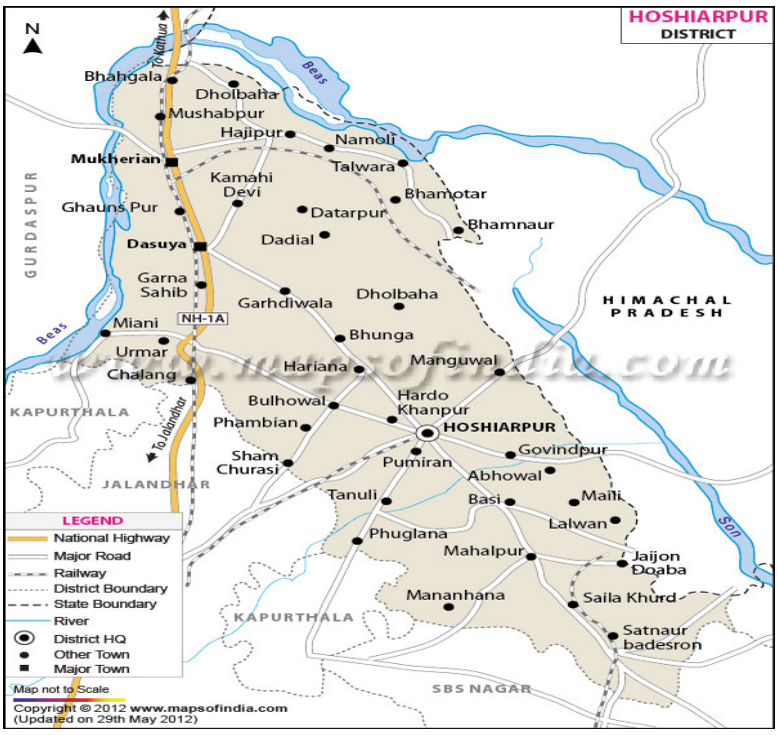
DISTRICT SURVEY REPORT
OF
DISTRICT HOSHIARPUR

As per Notification no. S.O.141 (E) New Delhi, the 15th January, 2016 of Ministry of Environment Forest and Climate change Government of India



District Industry Centre, Hoshiarpur
Department of Industries & Commerce, Government of Punjab

District Survey Report in respect of Minor Mineral Quarries/Deposits of District Hoshiarpur, Punjab.

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PREFACE

In Compliance to the Notification Issued by the Ministry of Environment, Forest and Climate change Dated 15.01.2016, the preparation of District survey report of Choe bed mining, river bed mining and other minor minerals is in accordance appendix 10 of the notification. It is also mentioned here that the procedure of preparation of District Survey Report is as per notification guidelines. Every effort have been made to cover sand mining locations, areas & overview of Mining activity in the district with all its relevant features pertaining to geology & mineral wealth in replenishable and non-replenishable areas of rivers, seasonal stream and other sand sources. This report will be a model and guiding document which is a compendium of available mineral resources, geographical set up, environmental and ecological set up of the District and is based on data of various departments, published reports, and websites. The data may vary due to flood, heavy rains and other natural calamities. Therefore, it is recommended that Sub Divisional Level Committee may take into consideration all its relevant aspects / data while scrutinizing and recommending the application for EC to the concerned authorities.

1. INTRODUCTION OF DISTRICT HOSHIARPUR

Hoshiarpur District is a district of Punjab state in northern India. Hoshiarpur, one of the oldest districts of Punjab, is located in the North-east part of the Punjab state and shares common boundaries with Gurdaspur district in the north-west, Jalandhar and Kapurthala districts in south-west, Kangra and Una districts of Himachal Pradesh in the north-east. Hoshiarpur district comprises 4 sub-divisions, 10 community development blocks, 9 urban local bodies and 1417 villages. The district has an area of 3365 km^2 and a population of 14,80,736 persons as per census 2001.

Hoshiarpur along with the districts of Nawanshehar, Kapurthala and parts of Jalandhar represents one of the cultural region of Punjab called Doaba or the Bist Doab - the tract of land between two rivers namely Beas and Sutlej. The area along with the Shivalik foothills on the right side of Chandigarh-Pathankot road in Hoshiarpur is submountainous and this part of the district is also known as Kandi area. The two rivers, Sutlej and Beas along with two other seasonal streams provide drainage to the region. Besides these, the Kandi region is full of seasonal streams.

It falls into two nearly equal portions of hill and plain country. Its eastern face consists of the westward slope of the Solar Singhi Hills; parallel with that ridge, a line of lower heights belonging to the Siwalik Range traverses the district from south to north, while between the two chains stretches a valley of uneven width, known as the Jaswan Dun. Its upper portion is crossed by the Sohan torrent, while the Sutlej sweeps into its lower end through a break in the hills, and flows in a southerly direction until it turns the flank of the central range, and debouches westwards upon the plains. This western plain consists of alluvial formation, with a general westerly slope owing to the deposit of silt from the mountain torrents in the sub-montane tract. The Beas has a fringe of lowland, open to moderate but not excessive inundations, and considered very fertile. A considerable area is covered by government woodlands, under the care of the forest department. Rice is largely grown, in the marshy flats along the banks of the Beas. Several religious fairs are held, at Anandpur Sahib, Dasuya, Mukerian and Chintpurni, all of which attract an enormous concourse of people. The district, owing to its proximity to the hills, possesses a comparatively

cool and humid climate. Cotton fabrics are manufactured, and sugar, rice, other grains and indigo are among the exports.

Hoshiarpur is also known as a City of Saints. There are many Deras in this district. The District Govt. College was once a campus for Punjab University.

HISTORICAL BACKGROUND

Hoshiarpur town is located in the North- East of the Punjab. It falls proximity to Shiwalik foot hills. The city is located on Jalandhar-Dharmshala N.H.70 at the Distance of 40 Km from Jalandhar and 135 Km from Chandigarh. Shiwalik foot rains at the distance of about 8 to 10 Km. to the North- East of the city. The Bhangi Choe and its branches flow through the city. As census 2001 the population of city was 1, 49,668 persons.

Hoshiarpur is situated at North latitude 31'-35'-0" to 27'-30'-0"and East longitude of 75'-50-30" to75'-59'-0" with the general elevation of 299.03 m above the sea level .Hoshiarpur is also connected with Tanda, Phagwara, Garhshankar, Dasuya. It is also gateway to H.P. Distt. Dharmshala, Una, Hamirpur and others religious such as Mata Chintapurni Mandir, Dera Baba Badbhag Singh, Mandir Baba Balak Nath and etc. are connected to Punjab through Hoshiarpur.

The area of present Hoshiarpur District was also part of Indus Valley Civilization. Recent excavations at various sites in the district have revealed that the entire area near the Shiwalik foothills was selected for habitation not only by the early Paleolithic man but also by those in the protohistoric and historic periods. In the explorations, seven early Stone Age sited a Atbarapur, Rehmanpur and Takhni, 30-40 km north of Hoshiarpur District in the foothills of Shiwalik, have been discovered where the stone artifacts have been found. Besides these excavations, among the archaeological remains in the Hoshiarpur District, the remains of temples at Dholbaha, 24 km north of Hoshiarpur, and especially the local legends throw valuable light on the ancient history of the district.

The legends associate several places in the district with pandavas. Dasua is mentioned in epic of Mahabharata as the seat of Raja Virat in whose services the Pandavas remained for thirteen years during their exile. Bham, about 11 km west of Mahalpur is said to be the place where the Pandavas passed their exile. Lasara, about 19 km north Jaijon, also contains a stone temple stated to date back to the

time of Pandavas. According to the chinese pilgrim, Hieun Tsang, the area of Hoshiarpur was dominated by a tribe of Chandrabansi Rajputs, who maintained an independent existence for centuries before the Muhammadan conquest.

In the Hoshiarpur District, Shiwaliks from Talwara on the Beas to Rupnagar on the Satluj have revealed the presence of Acheolian and Soanian cultures. From the shiwalik frontal range in the Hoshiarpur District, sixteen sites have been reported to have yielded Stone Age tools. Out of these, besides the Soanian tools, these sited in Hoshiarpur District have yielded Acheolian assemblage.

The Atbarapur group has yielded a large number of Stone Age tools. This group consisting of Atbarapur, Rehamanpur and Takhni close to the dry beds of the choe are located at the foothills of the Shiwaliks, about 8 km north-east from the town of Hariana, Atbarapur has yielded 80 tools consisting of 9 hand axes, 19 cleavers, 17 pebble-tools, 28 flakes and 7 cores/core choppers. All the tools in the collection are either on flakes or cores. The raw material is quartzite of varying colures, viz. Green, blue, brown, etc. The tools are fashioned mainly out of fine to medium grained quartzite. In the recent archaeological excavations, some fine pieces of sculptures of Gandhara dating back to 1000 AD and after have been discovered hare.

Dera Baba Charan Shah (Bahadarpur) Rani Di Smadh 9 .The archaeological explorations made during the recent years have revealed the antiquity of the Hoshiarpur District to the Harappan Period. On the basis of surface exploration, the few sites have been brought on the Archaeological map of India and the traces of the selfsame people as at Harappa and Mohenjo-Daro have also been detected in the Hoshiarpur District at varios places. Places of interest & tourist interest also includes fort of Raja Sansar Chand at Bajwara, Ancient Shiva Temple, Mata Rajni Devi Temple and Gurdwara Bhai Joga Singh. Gurdwara Bahi Joga Singh Ji.LEGAL FRAMEWORK FOR MASTER PLAN .

Hoshiarpur district is located in the north-east part of the State. It falls in the Jalandhar Revenue Division and is situated in the Bist Doab, Doaba region of the State. The district is submountainous and stretches of river Beas in the north-west.

It lies between north latitude 30 degree-9 and 32 degree-05 and east longitude 75degree -32 and 76degree -12’.

It shares common boundaries with Kangra and Una districts of Himachal Pardesh in the north east, Jalandhar and Kapurthala districts (interspersed

2. OVERVIEW OF MINING ACTIVITY IN DISTRICT HOSHIARPUR

District Hoshiarpur is situated in the foothill of Shiwaliks. Shiwaliks is the youngest of all the mountains in India. Shiwaliks landscape has been categorized under Indo - Gangetic plains. District Hoshiarpur is located in Indo-gangetic plains and in satluj sub basin. Minor minerals in district Hoshiarpur are mainly deposited by seasonal streams and by two most important rives ie satluj and Beas. Mainly three types of Minor Minerals constituents such as crushed stone material from gravel are required for any type of construction apart from other material like cement and steel. In the earlier time the mud houses/buildings were constructed with the use of mud. However with the passage of time, new techniques of development activities were started. As such the demand of Minor Mineral started on an increasing trend. In order to meet the requirement of raw material for construction, the extraction of sand carried out manually / semi- mechanized process from the choe bed and river beds. The local residents used to lift sand etc. from the choe bed and river beds to meet out their bonafide requirement. However after coming into being the Punjab Minor Mineral rules 1964, and amended rules in 2013. The mining is regulated in accordance with the rules. The area of district covered with alluvial deposits which comprises of sand, clay and gravel. The presence of minor mineral is suitable here for mining. The area of Kandi belt of Hoshiarpur II with Bhunga and Talwara is covered with undulating plains at the foothills of Shivalik Ranges. Some part of the district covered with floodplains ie Dasuya, Mukerian and Tanda blocks comes under flood plains and is nearly one fourth of the total area of this district. The seasonal strams ie Choe are refilled during the rainy season. The river bed areas so excavated dug during one season other than rainy season will get refilled depending upon the rainfall in which the material so deposited .In District Hoshiarpur 8 quarries of sand and one quarry of gravel are working.

3. THE LIST OF MINING LEASES IN DISTRICT HOSHIARPUR WITH LOCATION, AREA AND PERIOD OF VALIDITY

Sr No	District Name	Location	Area In Hac.	Period of Validity
1	Hoshiarpur	Harta	**10.29**	**Five year**
2	Hoshiarpur	Bassigulam Hussain	**46.29**	**Five year**
3	Hoshiarpur	Kaillon	**8.27**	**Five year**
4	Hoshiarpur	Bahadurpur	**18.98**	**Five year**
5	Hoshiarpur	Fatehgarh Niara	**41.73**	**Five year**
6	Hoshiarpur	Sukhchainpur	**1.52**	**Five year**
7	Hoshiarpur	Hardo khanpur	**15.98**	**Five year**
8	Hoshiarpur	Patti	**5.81**	**Five year**
9	Hoshiarpur	Saido Patti	**13.04**	**Five year**
10	Hoshiarpur	Bohan	**12.7**	**Five year**
11	Hoshiarpur	Hargarh	**8.29**	**Five year**
12	Hoshiarpur	Khalwana	**15.15**	**Five year**
13	Hoshiarpur	Deowal	**11.62**	**Five year**
14	Hoshiarpur	Digana Kalan	**29.24**	**Five year**
15	Hoshiarpur	Dadiana kalan	**8.38**	**Five year**
16	Hoshiarpur	Shergarh	**15.27**	**Five year**

4. **DETAILS OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEARS:**

Name of Mineral	2013-2014	2014-2015	2015-2016
Sand/Soil	**99146571/-**	**80511716/-**	**43560986 /-**
Gravel	**0**	**0**	**0**

5. **DETAIL OF PRODUCTION OF SAND OR BAJARI OR MINOR MINERAL IN LAST THREE YEARS**

MINOR MINERALS

NAME OF MINERALS	2013	2014	2015
SAND	1041873.360	759715.400	195356.990
GRAVEL	0	0	0

6. **PROCESS OF DEPOSITION OF SEDIMENTS IN THE RIVERS OF DISTRICT HOSHIARPUR**

- Running water is the most important agent of erosion on the continents and the stream valleys are the most common landforms.
- Rivers flowing to the oceans drain about 68 % of the Earth's land surface. The remainder of the land either is covered by ice or drains to closed basins.
- River gradually moulds the land by eroding away the material in some place and depositing it in other place.
- A river system consists of a main channel (trunk stream) and all of the tributaries that flow into it or joining the trunk stream.
- **A RIVER SYSTEM CAN BE DIVIDED INTO THREE SUBSYSTEMS:**
- **Collecting system** (branches) -- consisting of a network of tributaries in the headwater region, collects and funnels water and sediment to the main stream
- **Transporting system** (trunk) -- the main trunk stream, which functions as a channelway through which water and sediment move from the collecting area toward the ocean. (Erosion and deposition also occur in a river's transporting system)
- **Dispersing system** (roots) -- consists of a network of distributaries at the mouth of a river (delta), where sediment and water are dispersed into an ocean, a lake, or a dry basin

Parts of River

- **Tributary** : a stream flowing into or joining a larger stream
- **Distributaries :** numerous stream branches into which a river divides where it reaches its delta
- **Upstream** : moves toward headwater (up the regional slope of erosion)

River Map of Hoshiarpur

- **Downstream :** moves toward mouth of river (delta)
- **Delta :** a large, roughly triangular body of sediment deposited at the mouth of a river
- **Meander :** a broad, looping bend in a river
- **Braided:** river is divided into multiple channels by alluvial islands. Braided rivers tend to have steeper gradients

7. GENERAL PROFILE OF THE DISTRICT HOSHIARPUR

The area of present Hoshiarpur District was also part of Indus Valley Civilization. Recent excavations at various sites in the district have revealed that the entire area near the Shiwalik foothills was selected for habitation not only by the early palaeolithic man but also by those in the protohistoric and historic periods. In the explorations, seven early Stone Age sited a Atbarapur, Rehmanpur and Takhni, 30-40 km north of Hoshiarpur District in the foothills of Shiwalik, have been discovered where the stone artifacts have been found. Besides these excavations, among the archaeological remains in the Hoshiarpur District, the remains of temples at Dholbaha, 24 km north of Hoshiarpur, and especially the local legends throw valauble light on the ancient history of the district.

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mainly out of fine to medium grained quartzite. In the recent archaeological excavations, some fine pieces of sculptures of Gandhara dating back to 1000 AD and after have been discovered hare. A list of stone tools yielding sited explored by the Department of Archaeological, Punjab is given in Appendix-1 at the end of the chapter.

The archaeological explorations made during the recent years have revealed the antiquity of the Hoshiarpur District to the Harappan Period. On the basis of surface exploration, the following new sited have been brought on the Archaeological map of India and the traces of the selfsame people as at Harappa and Mohenjadaro have also been detected in the Hoshiarpur District at the following places:-

S.No.	**Name Of Village**	**Name Of Tehsil**
1	Daulatpur	Hoshiarpur
2	Rahamanpura	Hoshiarpur
3	Atbarapur	Hoshiarpur
4	Takhni	Hoshiarpur
5	Naroor	Hoshiarpur
6	Khangali	Hoshiarpur
7	Dholbaha	Hoshiarpur
8	Phappal	Hoshiarpur
9	Ram Tatwali	Hoshiarpur
10	Kot and its western Slopes	Garhshankar
11	Lalwan	Garhshankar
12	Manual	Balachaur
13	Gapalrian	Dasua
14	Mahatpur	Dasua
15	Kupowal	Garhshankar
16	Garhi	Garhshankar
17	Khanni	Garhshankar
18	Sham Churasi (Rural)	Hoshiarpur
19	Teheh (Pachrali)	Garhshankar
20	Ram Colony Camp	Hoshiarpur
21	Pakhowal	Hoshiarpur

22	Zahura	Dasua
23	Hajipur	Garhshankar
24	Jkam	Dasua
25	Tanda Urmur	Dasua

(B.B Lal, S.P. Gupta, Frontiers of the Indus Civilization (P 526) and Madhu Hala, Prachin Punjab Di Sanskriti (Delhi, 1990)

The archaeological excavations carried out at Dholbaha, situated at a distance of about 30 km to the north-west of Hoshiarpur, reveal its relationship with the pre-historic period. This area has been a place of habitation right form the very early times, the archaeological discoveries have related its antiquities to the pleistocene period. Fossils and stone tools found in this picturesque valley indicate the appearance of early man here in this region. Presence of fossils and beautiful sand stone sculptures of medieval period underline the importance of Dholbaha and tend to establish the fact that Dholbaha valley was occupied by the affluent iconolatry at various intervals. The sculptures and other findings excavated from Dholbaha pertain to the Gurjara Prathihara Period (C-800-1100 A D). In the 10th Century A D Shiwalik areas came under the influence of Pratiharas. During that period, the art of the local tribes took a definite shape. In AD 965, Jaipal came to the throne and thus the Hindu Shahi style penetrated into the valley of Dholbaha. In AD 988, the rulers of Parmaras remained paramount power upto AD 1260.

Area & Population (2011 Census)

Total area (Sq. Km.)	3386
Total population	15,86,625
Male	8,09,057
Female	7,77,568
Total SC Population	5,57,504
Male (SC)	2,84,322
Female (SC)	2,73,182
Female per 1000 male	961
Literacy Rate (Total)	84.6%

Male	88.8%
Female	80.3%
Density of population (per sq. km.)	469
Total No. of villages.	1416 + 3*=1419
No. of Inhabited villages	1385 + 3*=1388
No. of Un-inhabited villages	31
No. of Towns	10
No. of Villages counted as Census Towns for Census purposes	3*
Percentage increase in population (2001-2011)	7.1

*Villages namely Hajipur and Rakri of tehsil Mukerian (Total population 11813) & village Chohal of tehsil Hoshiarpur (population 7304) were counted as Census Towns for census purpose. The total population 19,117 of these three villages has been included in Urban Population by the Census Department.

Population (2011 Census)

Tehsil	Rural			Urban			Total population	%age Rural	%age Urban
	Male	Female	Total	Male	Female	Total			
Hoshiarpur	189724	181311	371035	99267	90044	189311	560346	66.2	33.8
Dasuya	153601	150700	304301	28878	27326	56204	360505	84.4	15.6
Garhshankar	153499	148897	302396	14730	13585	28315	330711	91.4	8.6
Mukerian	137646	136278	273924	31712	29427	61139	335063	81.8	18.2
Total	634470	617186	1251656	174587	160382	334969	1586625	78.9	21.1

Source: Director, Census Operation, Punjab

Administrative Divisions

The District comprises of four Sub-Divisions, ten Development Blocks, eight Municipal Councils and two Notified Area Committees, as per details given below:

SUB-DIVISIONS (4)

1. Hoshiarpur
2. Dasuya
3. Mukerian
4. Garhshankar

DEVELOPMENT BLOCKS (10)

1. Hoshiarpur-I
2. Hoshiarpur-II
3. Bhunga
4. Tanda
5. Dasuya
6. Mukerian
7. Talwara
8. Hajipur
9. Mahilpur
10. Garhshankar

MUNICIPAL COUNCILS (8)

1. Hoshiarpur
2. Hariana
3. Tanda
4. Dasuya
5. Mukerian
6. Garhdiwala
7. ShamChaurasi
8. Garhshankar

NOTIFIED AREA COMMITTEE

1. Mahilpur
2. Talwara

Religion

Hindus are the largest religious group in the District, closely followed by adherents of Sikhism

- Hindus 63.07%
- Sikhs 33.92%
- Christians 0.94%
- Muslims 1.46%
- Others 0.61%

Education

Hoshiarpur is one of the oldest districts of Punjab. It has a long tradition of educational attainments. The D.A.V. & Singh Sabha movements result in establishments of many educational institutions. On the eve of partition, the Punjab University, Lahore .was shifted to Govt. College, Hoshiarpur and remained there till the early sixties when it was shifted to Chandigarh.As a result of this, the district has many luminaries in various fields of society.

Total No. of Ed. Institutes: 1727

The number of Educational Institutions and the number of staff and students are given in the following table:

The following type of institutions also exists in this district

Category	No.of Educational Institutions			No. of teachers		
	Boys	Girls	Total	Male	Female	Total
1. Colleges	12	5	17	325	249	574
2. Teacher Training College	0	1	1	14	6	20
3. Senior Secondary Schools	71	6	77	1306	780	2086
4. High schools	165	13	178	1396	948	2344
5.Middle Schools	182	4	186	628	484	1112
6. Primary schools	1256	3	1259	1307	2197	3504
7.E.E.T.	1	0	1	12	8	20
8.Polytechnic Institute	1	0	1	59	13	72
9. Technical Industries Art.& Craft Schools	5	2	7	115	24	139

8. LAND UTILIZTION PATTERN IN THE DISTRICT: FOREST, AGRICULTURE ETC.

Agriculture

Major fruits grown in the district are Kinnow, Mango, Peach,litchi, pear, Guava etc. and among the vegetables Potato has the major share followed by Peas, cauliflower, tomato, cabbage, brinjal etc. Under floriculture marigold annual chrysanthemum and goadieli are grown.

Item	**Area in (000) Hects.**
1. Total geographical area	339
2. Forests	109
3. Barren land	1
4. Land use other than cultivation	24
5. Permanent pastures	1
6. Present waste land	1
7. Area under cultivation	203
8. Irrigation area	154
9. Unirrigated area	49
10. Area sown more than once	145
11. Gross cropped area	348
12.Cropping intensity	171%

Forests

Particulars	Area in sq. km
i) Reserve forests	27
ii) Protected forests	153
iii) Un-classified forests	21
iv) Total area under forest	201
v) Under Sec. 4 & 5 of Punjab Land Preservation Act.	893
iv) Total area under forest	201
v) Under Sec. 4 & 5 of Punjab Land Preservation Act.	893
vi) Total area under Forests (iv + v)	1094
Percentage of forest area in the district to total area under forest in Punjab	32.85%

Animal Husbandry

1. Veterinary Hospitals	92
2. Dispensaries/insemination centres	91
3. Veterinary Pharmacists	77
4. Veterinary Pharmacists	159
5. Poultry Service Centres	5

Other Statics
Small scale / Large / Medium Industries

Particulars	Small scale Industries	Large/Medium Industries
1. Total Units	9,109	33
2. fixed Capital (Rs. in Crores)	100.45	1069.03
3. Production (Rs. in Crores)	159.01	1371.64
4. Employment (No.)	29,085	14,912

Medical Institutions

Item	Rural	Urban	Total
1. Hospitals	7	6	13
2. Primary Health Centers	34	2	36
3. Dispensaries	81	29	110
4. Hospitals/CHCs/PHCs	5	3	8
Total	127	40	167

Ayurvedic dispensaries	46
Unani dispensaries	2
Homeopathic dispensaries	7

Rural Development

1. No. of Blocks	10
2. No. of Gram Panchayats	1317
3. No. of Focal Points	44
4. Centrally sponsored Schemes being implemented	1. Consolidated Rural Development Program 2. Swarnjayanti Gram Swarozgar Yojana 3. Sampurna Gramin Rozgar Yojana 4. Indira Awaas Yojana 5. Prime Minister Gramodva Awaas Yojana 6. Rural Sanitation scheme 7. Watershed Development Programme

Roads

1. Total length National Highway	109.63 Km.
2.Total length of State Highway	485.80
3. Total length of Link roads.	3041.00
4. No. of inhabited villages linked	1,396
11.No. of Telephone connections	94,583
12. No. of banks	217

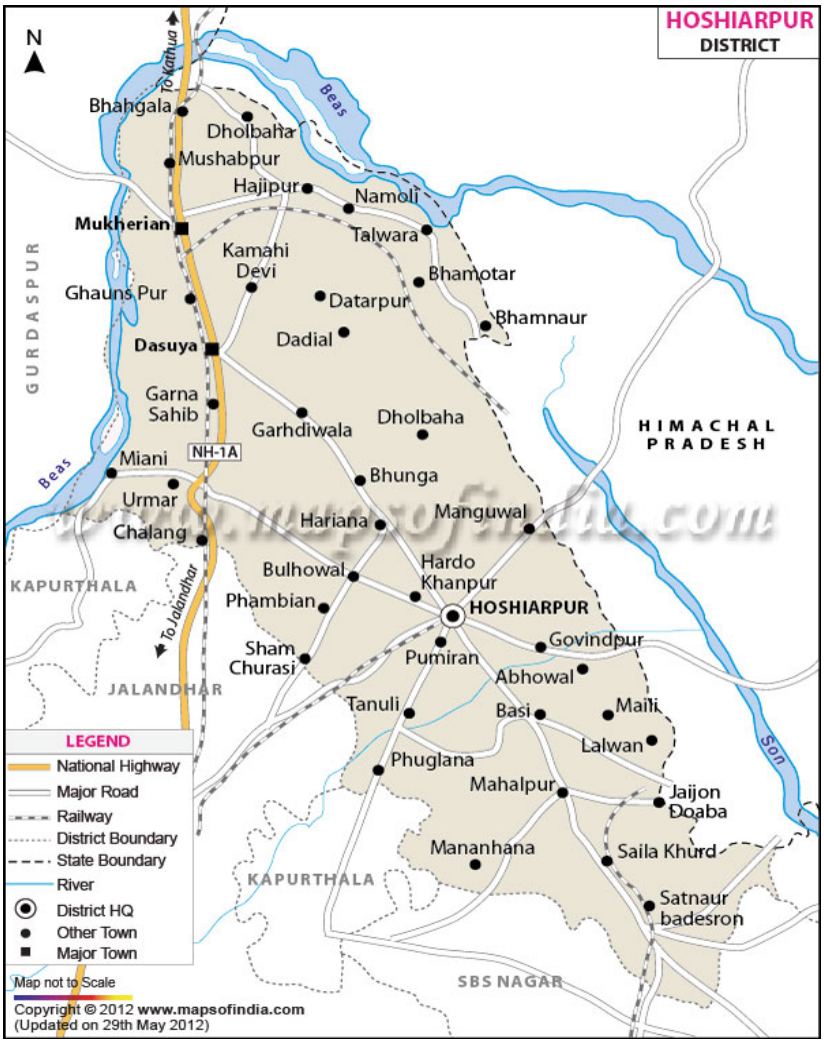
Revenue

1. No. of Tehsils	4
2. No. of Sub Tehsils	5
3. No. of Patwar Circles	425
4. No. of Kanungos	51 working against 51 posts
5. No. of Patwaris	324 working against 434 posts.

Fisheries

1. Area where Fish is stocked in (Hects.)	260
2. No. of Fingerlings (000)	2,448
3. Fishing licences issued	1
4.Fish seed farms	1
5. Production of fish (No. in lacs)	8.19

Map of district Hoshiarpur



Map of Villages in District Hoshiarpur

9. PHYSIOGRAPHY OF THE DISTRICT HOSHIARPUR

Hoshiarpur is geographically located towards the east of Punjab state. At a height of 296 meters above the sea level, the city experiences comparatively mild climate due to its huge forest reserves and hilly terrains. Hoshiarpur city is the district headquarters for Hoshiarpur district which is divided into four tehsils, 10 blocks, and 5 sub tehsils for administrative purposes. Hoshiarpur I and Hoshiarpur II are the major cities of this district which shares its borders with Kangra and Una districts of Himachal Pradesh in north east direction with Jalandhar and Kapurthala flanking it from southwest.

It is bordered by Gurdaspur district of Punjab in northwest direction. Falling in Bist Doab of Doaba region, this entire district is spread over the area of about 3365 sq km out of which 34% area is covered by dense forests. It is quite rich in minerals as well. Maize and Paddy are the chief Kharif crops while wheat and oil seeds of Mustard and Sunflower are the principal Rabi crops in Hoshiarpur.

Topography of District Hoshiarpur

The district Hoshiarpur is located in Indo Gangetic plains and Sutlej sub basin constituting the part of Indus Main basin. Topography of Hoshiarpur is divided into three main regions. The fertile region of Dasuya, Mukerian and Tanda blocks comes under flood plains and is nearly one fourth of the total area of this district. The main cultivable areas of Hoshiarpur are located under this region with adequate irrigation facilities. The second topographical region is Kandi belt of Hoshiarpur II with Bhunga and Talwara being its other significant parts. This is the region that is covered with undulating plains at the foothills of Shivalik Ranges.

Geography of Hoshiarpur, Physical Features of Hoshiarpur, Climate

The slopes of this region fall towards the western parts of district with soil erosion caused by the small streams of water inundating this area. This region is nearly the half of Hoshiarpur district and cultivation is generally rain fed here. The third region of this district has Hoshiarpur I, Garh Shankar, and Mahilpur as main areas. This topographical region also has undulating plains with sandy soil.

The soil of Hoshiarpur region is yellowish to dark brown with sand forming major portion of it. Calcareous sand, sandy loams and silts are the main components of soil here. There are alluvial deposits of piedmont and fluvial types occupying whole district with better ground water conditions.

There are mineral deposits of white quartzite in several areas of district. Some areas also have calcareous Tufawith shells of invertebrates. Coal, clay, and building materials like gravel and boulder are also found in this region.

Flora and Fauna of District Hoshiarpur

Hoshiarpur is quite rich in flora as well with numerous varieties found in its forests. The main trees found in thedistrict are Phulahi, Kikar, Drek, Shisham, Siris, Mulberry, and Ber. Thick groves are found in borders of the choes due to good soil quality. There are other trees grown for their properties and usage. These include Aisam for fodder, Amla for pickle making, Amaltas for tanning, Bahera for medicinal uses, Ber for its fruits and hard woods that give protection to nearby crops. Other trees found in Hoshiarpur region are Chil, Dhaman, Gauhin, Phaguri, Harar, Kakkar, Jaman, Kamila, Maulsari, Lasura, and Neem.

The shrubs mainly found in this region are Garna, Mendar, and Basuti. These shrubs are commonly used as firewood, for hedging, and as manure. Bamboo and Bambusa Bambos are the principal grasses in this district. They are available in three varieties viz, bans, nal, and magar. The other varieties of grass found are Kharkana, Kahi, Khabal, Bagar, Bui, Boru, Nara, and Bulrush. All the parts of these grasses are usable for various purposes ranging from thatching to rope making.

Geography of Hoshiarpur, Physical Features of District Hoshiarpur, Climate

The district has huge forests and one wildlife reserve at Takhni Rehmapur. In the jungles, Partridges, Hare, Wild Boar, and Hog Deer are found with occasional spotting of Sambhar, Barking Deer, and Spotted Deer. There are

sightings of Jungle Cat, Indian Mongoose, Indian Jackal, Fruit Bat, Indian Porcupine, Black Buck, and Nilgai in the forests of district. Hoshiarpur has numerous varieties of resident and migratory birds including Plain Leaf Warbler,Brown Chi††cha††, Rose Finch, Yellow Headed Wagtail, European Bee Eater, Demosile Crane, Ruddy Sheldrake,Pintail, White Eyed Poachard, Mallard, and Gadwall.

Water Bodies in District Hoshiarpur

Though the district of Hoshiarpur lacks a perennial river, it has tributaries of Beas and Sutlej inundating its land towards North Western and Southern directions. Beas River enters this district at Talwara and after a distance of 40 km forms the boundary between Hoshiarpur and Gurdaspur districts. The White Bein and Black Bein tributaries of this river occupy a major portion of district and they contain water all through the year. They originate in a jhil and then proceed like a master stream with lesser width but greater depth.

Other main water bodies found in this district are the seasonal streams called choes. They have strong presence throughout this district and they are generally named after the areas through which they are passing. In the rainy season, these choes get flooded with water and then this water shrinks away fast leaving the thick deposits of sand and silt behind. They originate from Shivalik slopes and take shape of wide channels after entering the foothill plains. There are more than 100 choes flowing in this district though their channelization has been done to avoid any disaster caused by over flooding. Apart from these, there are many dams and canals like Shan Nahar Canal and Bist Doab Canal present in Hoshiarpur.

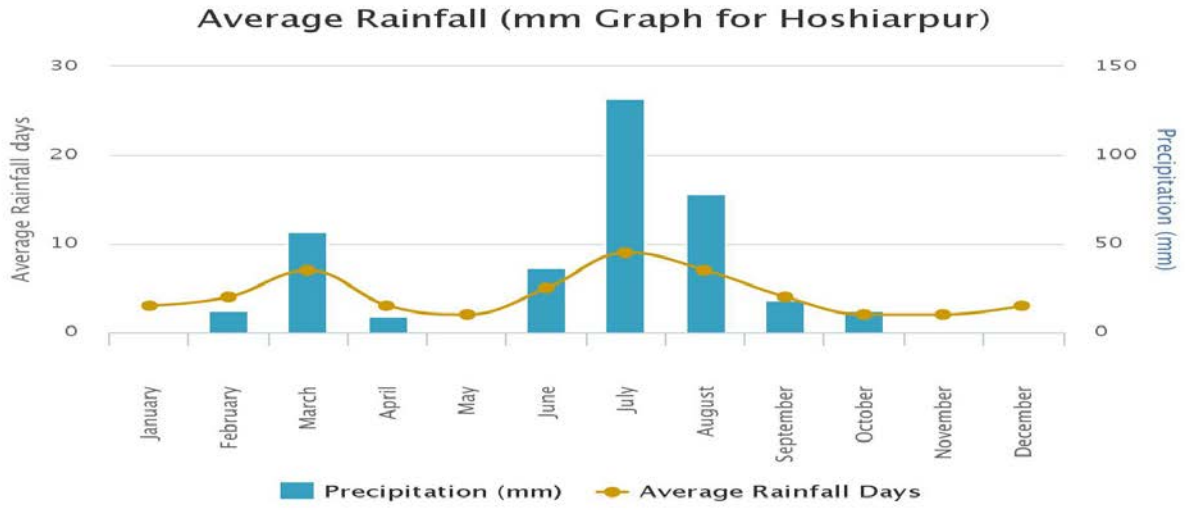
10. RAINFALL: MONTH WISE

(i) Rainfall

Records of rainfall in the district are available for 5 stations, for a sufficiently long periods. The details of the rainfall at these stations and for the district as a whole are given in tables 1 and 2. The average annual rainfall in the district is 833.5 mm About 77 per cent of the annual rainfall in the district is received during the short monsoon season-July to September. Rainfall amounting to about 17 per cent of the normal is received during the cold season in association with passing western disturbances. The rainfall in the district in general, increases from the south-west towards the north-east and varies from 635.4 mm at Tanda to 1017.2 mm at Una (Himachal Pradesh). The variation in the rainfall from year to year in the district is appreciable. During the 50-years period, 1901 to 1950, the highest annual rainfall amounting to 178 per cent of the normal occurred in 1917 while the very next year had to lowest annual rainfall which was only 52 per cent of the normal. The annual rainfall in the district was less than 80 per cent of the normal in 12 years in this 50-year period. Two consecutive years of rainfall less than 80 per cent of the normal occurred thrice. Considering the rainfall at individual stations 3 and 4 consecutive years of such low rainfall occurred once at Garhshankar and Tanda, respectively. It will be seen from table 2 that the annual rainfall in the district was between 600 and 1,100 mm (i.e. within about 30 per cent of the annual) in 37 year out of 50.

On an average there are 41 rainy days (i.e. days with rainfall of 2.5 mm or more) in a year in the district. This number varies from 29 at Tanda to 49 at Una (Himachal Pradesh).

The heaviest rainfall in 24 hours recorded at any station in the district was 360.7 mm at Hoshiarpur on August 19, 1878.



Frequency of Annual Rainfall in the Hoshiarpur District

(Date 1901 –1950)

Range in mm		No. of years	Range in mm		No. of years
401-500	..	1	910-1000	..	9
501-600	..	6	1001-1100	..	4
601-700	..	9	1101-1200	..	0
701-800	..	8	1201-1300	..	3
810-900		7	1301-1400 1401-1500	.. ..	2 1

(ii) Temperature. –There is no meteorological observatory in the district. The description which follows is mainly based on the records of the observatories in the neighbouring districts. After about the middle of March temperatures begin to rise steadily till June which is usually the hottest month of the year with the mean daily maximum temperature at about 39^{o} C and the mean daily minimum about 24^{o} C. In May and June, the maximum temperature may be on individual days exceed 45^{o} C. With the advance of the south-west monsoon over the district early in July the day temperatures decrease appreciable while the nights arge nearly as warm as the nights in the summer season. With the increase in the moisture in the air during the south-west monsoon season the weather is often sultry in between the rains. After about the middle of September temperatures begins to decrease, the fall in night temperature being more rapid. January is the coldest month of the year with the mean daily maximum temperature at about 19o C and the mean daily minimum at about 5o C. In the wake of passing western disturbances in the winter season cold waves affect the district and the minimum temperature

may go down to a degree or two below the freezing point of water, and frosts may occur.

(iii) Humidity. –In the south-west monsoon season the humidities are high. In the rest of the year the air is comparatively driver. The driest part of the year is the summer season when in the afternoons the relative humidities are less than 25 per cent.

(iv) Atmospheric Pressure and Winds

Cloudiness. –During the monsoon season and for short spells of a day or two in association with passing western disturbances the skies are partly too heavily clouded and occasionally overcast. During the rest of the year the skies are mostly or lightly clouded.

(v) Winds. –Winds are generally light with some increase in wind force during the late summer and monsoon seasons. In the post monsoon and winter seasons, winds are light and variable in direction in the mornings and mainly from the west to north-west in the afternoons. In April and May, winds are mostly from directions between north-west and northeast. By June, easterlies and south-easterlies also blow and in the south-west monsoon season winds are more commonly from directions between north-east and south-east.

Special Weather Phenomena. –Western disturbances affect the district during the cold season causing widespread rain. Dust storms and thunderstorms occur in the latter part of the summer season. Thunderstorms also occur in the cold season and rain in the monsoon is often associated with thunder. Occasional fog occurs in the cold season.

Tabular view for temperature and precipitation per month

	Temperature			Precipitation
Months	**Normal**	**Warmest**	**Coldest**	**Normal**
January	12.8°C	18.9°C	6.7°C	2
February	14.8°C	21.0°C	8.5°C	3
March	19.4°C	26.0°C	12.8°C	4
April	26.7°C	34.6°C	18.8°C	1
May	31.1°C	38.8°C	23.3°C	2
June	33.0°C	39.6°C	26.2°C	4
July	30.5°C	34.9°C	26.1°C	11
August	28.8°C	32.9°C	24.8°C	9
September	28.5°C	33.4°C	23.4°C	4
October	24.9°C	32.0°C	17.7°C	0
November	19.0°C	26.4°C	11.6°C	1
December	14.1°C	20.7°C	7.4°C	2

11. GEOLOGY AND MINERAL WEALTH

Humans build, make, and eat things. If you cannot grow those critical things you must mine them from the Earth. The term mineral resources cover all solid earth materials that are mined to make modern life possible.

(i) Geological Formation

The Upper Shiwaliks and the Quaternary deposits constitute the main geological formations of the area. The Upper Shiwaliks comprise conglomerate beds, friable sandstone, and siltstone and clay beds. Stray pebbles of granite, limestone and sand stones are also present. Sand stones are soft and friable. Lumps of clay and pellets are also met within the sandstone. At places sand stones show well developed cross-bedding and suggest the possibility of eolian origin. The sand stones contain a large portion of the mica flakes and concretions of clay. They are susceptible to weathering as a result of which there is a considerable collection of sand as talus cones.

Quaternary deposits constitute gravel beds, alluvial fans and river terraces. They contain sand and clay in varying proportions. River terraces are seen flanking the present day streams and at some places they occupy the ridges. Gravel beds constitute an important source of white quartzite fragments.

Recently ammonite fossils have been encountered in the Shiwaliks formations near Garhshankar.

(ii) Mineral Resources

White quartzite Fragments. –Huge deposits of white quartzite fragments have been located in Garhshankar area of District Hoshiarpur. Investigations carried out by the State and the Central departments have proved the existence of about 4.53 million tones of white quartzite fragments.

Calcareous Tufa. –Isolated pockets of calcareous tufa have also been located in the Birampur and Hajipur area of Tahsil Garhshankar. So far about 1.6 million tones of calcareous tufa deposits have been proved to exist in this area. The presence of shells of invertebrates confirms it to be of fresh water origin.

Coal –Occurrence of coal has been reported in Ramtawali and Dholbaha area of the district.

Clays. –Besides the above minerals, thin beds of good quality industrial clays have also been found in Shiwaliks formation exposed in Garhshankar area of the district.

Building Materials –The boulder and gravel are found in the various ephemeral streams as well as in perennial streams. These are found around Jaijon, Garhshankar and Talwara area of District Hoshiarpur.

Sand used as building material is found in the villages, viz. Jadu Janda, Nasrala, Daewal, Sukhiabad (Bhangi Cho), Baupur and Mandial.

Brick earth is found in huge quantities throughout the district except in the hilly areas and sandy tract.

(iii) Seismicity. –Hoshiarpur District lies near the foothills of Himalayas. The great Himalayan boundary fault and several other active tectonic features lie about 100-150 km to the north-east of Hoshiarpur. A number of earthquakes of slight to moderate intensities and a few of great intensity have been located on this fault system.

The records show that Hoshiarpur area came under maximum seismic intensity VII on the Modified Mercalli Scale of 1931[1] during the Kangra earthquake of 4th April 1905. But considering the location of number of faults in the area and their active seismic status, it is felt that more representative seismic intensity for the area would be between VII and VIII M.M.

Location of Choe Beds in District Hoshiarpur

Beas River

Drainage system with description of main rivers.

Sr. No.	Name of River	Area drained (Sq.KM)	% Area drained in the District.
A	River Beas Downstream Mirthal Bridge to village Rara Tahli length=50 KM	50x1200' or 50x0.366= 18.30 Sq.KM	-

Salient Features of Important Rivers and Streams:

Sr. No.	Name of the River or Stream	Total length in the District (In KM)	Place of origin	Altitude at origin.
1	River Beas Downstream Mirthal Bridge to village Rara Tahli	50 KM	Pong Dam	=

Portion of the River or stream recommended for Mineral concession	Length of area recommended for mineral concession (In KM)	Average width of area recommended for mineral concession (In Mtr)	Area recommended for mineral concession (In square Meter)	Mineable mineral potential (In Metric Tonne) (60% of Total mineral potential)
Begpur complex	3000' or 0.915 KM	300' or 91 Mtr.	900000 Sft or 83574 Sqm.	540000 Sft or 50144 Sqm Or 31838 MT 60%= 19100 MT
Rara Complex	600' or 0.182 KM	200' or 61 Mtr.	120000 Sft or 11143 Sqm	72000 Sft or 6685 Sqm Or 4245 MT 60%=2547 MT
Mewa Miani Complex	1000' or 0.305 KM	300' or 91 Mtr.	300000 Sft of 27858 Sqm	180000 Sft. Or 16715 Sqm Or 8490 MT 60%=5094 MT

Total=	1.402 KM	243 Mtr.	122578 Sqm	73544 Sqm Or 44573 MT 60%=26741 MT

Mineral Potential

Boulder (MT)	Bajri (MT)	Sand (MT)	Total Mineable Mineral Potential (MT)
-	-	4500000 Cft. Or 127350 Cum (Begpur Complex)	31838 MT
-	-	600000 Cft. Or 16980 Cum (Rara Complex)	4245 MT
-	-	1200000 Cft. Or 33960 Cum (Mewa Miani Complex)	8490 MT
		Total=	44573 MT

Annual deposition.

Boulder (MT)	Bajri (MT)	Sand (MT)	Total Mineable Mineral Potential (MT)
-	-	Depending upon the rain fall and flow of discharge in River Beas.	-

Sr.No.	River or Steam	Portion of the River or stream recommended for Mineral concession	Length of area recommended for mineral concession (In KM)	Average width of area recommended for mineral concession (In Mtr)	Area recommended for mineral concession (In square Meter)	Mineable mineral potential (In Metric Tonne) (60% of Total mineral potential)
1	River Beas Downstream Mirthal Bridge to village Rara Tahli length=50 KM	Begpur complex	3000' or 0.915 KM	300' or 91 Mtr.	900000 Sft or 83574 Sqm.	540000 Sft or 50144 Sqm Or 31838 MT 60%= 19100 MT
		Rara Complex	600' or 0.182 KM	200' or 61 Mtr.	120000 Sft or 11143 Sqm	72000 Sft or 6685 Sqm Or 4245 MT 60%=2547 MT
		Mewa Miani Complex	1000' or 0.305 KM	300' or 91 Mtr.	300000 Sft of 27858 Sqm	180000 Sft. Or 16715 Sqm Or 8490 MT 60%=5094 MT

RECOMMENDATIONS

During the preparation of the district survey report prominent choe beds and rivers has been studied in detail, it is also important to mention here that because of the regular demand of sand, stone and bajri for the developmental activities in the respective areas, auction of a number of quarries has been done to fulfill the local people requirements .There are number of streams are prone to illegal mining, It is suggested that the auctions of quarries be done regularly to meet out the local demand subject to the approval from the joint Inspection Committee as per Punjab Minor Mineral Rules 2013 .These mineral concessions shall also reduce demand load and will be helpful to minimize illegal extraction of minerals, failure of which may result in to illegal mining at odd hours and shall be haphazard and more detrimental to the local ecology. Irrespective of it following geo-scientific considerations is also suggested to be taken into account during the outside and inside river bed mining in a particular area:

- Mining below subterranean water level should be avoided as a safeguard against environmental contamination and over exploitation of resources.
- Abandoned stream channels or terrace and inactive floodplains may be preferred rather than active channels and their deltas and floodplains.
- Stream should not be diverted to form inactive channel.
- Large rivers and seasonal streams whose periodic sediment replenishment capacities are larger, may be preferred than smaller rivers and seasonal streams.
- Segments of braided river system should be used preferably falling within the lateral migration area of the river regime that enhances the feasibility of sediment replenishment. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly meandering segment of a river should be selected for mining in such a way as to avoid natural eroding banks and to promote mining on naturally building (aggrading) meander components.
- Mining area should be demarcated on the ground with pillars so as to avoid illegal unscientific mining.

- It is recommended that Sub Divisional Level Committee may take into consideration all its relevant aspects / data while scrutinizing and recommending the application for EC to the concerned Authority.