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**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 SURVEY REPORT

**Department of Industries & Commerce,
Government of Punjab**



District Gurdaspur

Year 2016

Location of Gurdaspur District in Punjab



Fig. 1: Map of Punjab showing location of District Gurdaspur .

District survey report in compliance to the notification dated 15.1.2016 and 20.1.2016 issued by ministry of environment, forest and climate change.

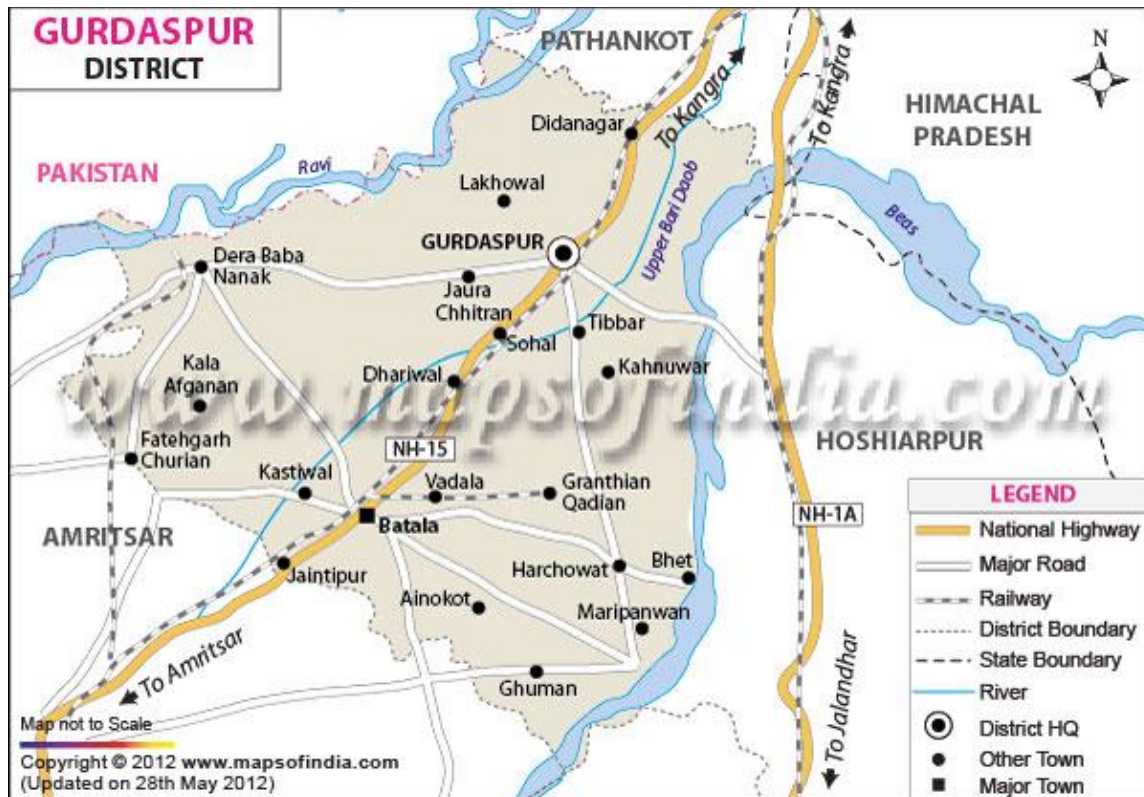


Fig. 2: Map of district Gurdaspur.

In compliance the notification issued by Ministry of Environment, Forest and climate change issued on dated 15.1.2016, the preparation of District Survey Report of River bed mining and other minor mineral is in accordance to appendix 10 of the notification. It is also mentioned here that the procedure of preparation is as per notification.

DISTRICT SURVEY REPORT

DISTRICT GURDASPUR

With reference to Gazette notification of 15th January 2016 of Ministry of Environment, Forest and Climate Change, the District Environment Impact Assessment Authority (DEIAA) and District Environment Assessment Committee (DEAC) are to be constituted by the Divisional Commissioner for prior environmental clearance of mining of minor minerals. The DEIAA and DEAC will scrutinize and recommend the prior environmental clearance of mining of minor minerals on the basis of District Survey Report. This 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, journals and websites.

1). INTRODUCTION :-

Gurdaspur district is a district in the state of Punjab, situated in the northwest part of the Republic of India. Gurdaspur is the district headquarters. It internationally borders Narowal District of the Pakistani Punjab, the Punjab districts of Amritsar, Pathankot, Kapurthala and Hoshiarpur. Two main rivers Beas and Ravi passes through the district. The Mughal emperor Akbar is said to have been enthroned in a garden near Kalanaur, a historically important town in the district. The district is at the foothills of the Himalayas.

As of 2011 it is the third most populous district of Punjab (out of 22), after Ludhiana and Amritsar and Batala is the largest city in the district which hold 31 percent of total district population.

Gurdaspur was founded by Guriya Ji in the beginning of 17th century. On his name, this city was named as Gurdaspur. He bought land for Gurdaspur from Jats of Sangi Gotra.

Little is known about the ancient history of the district except a few antiquities like the rock temples at Mukteshwar Gurdaspur along with its neighbouring districts was the same of the explicit of Alexander, who came up to River Beas in his grand design of world conquest. He fought a grim battle with the Kathaians at Sangala which is located near Fatehgarh in Gurdaspur. On 27 July 2011 a part of district

is carved out to form a new district Pathankot, which was earlier a part of Gurdaspur. Pathankot district now comprises two sub-divisions of Pathankot and Dharkalan along with two sub-tehsils namely Narot Jaimal Singh and Bamial.

2). OVERVIEW OF MINING ACTIVITY

Mainly three types of Minor Minerals constituents such as Sand, Stone and Bajri 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 passes of time, new technique of development activities were started. As such the demand of Minor Minerals started an increasing trend. In order to meet the requirement of raw material for construction, the extraction of sand, stone and bajri carried out exclusively from the river beds. The demand of sand is mainly met through by river borne sand whereas the demand of bajri/grit is either through river borne collection or through manufactured grit by stone crushers. The demand of dressed or undressed stone is met through the broken rock material from the hill slope.

The local residents used to lift gravel etc. from the 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. At present about

9(nine) mining quarries have been granted/executed under the above said rules in the different parts of the District and 7 (seven) quarries under process for getting the environment clearance .-

3) LIST OF MINING QUARRIES IN THE DISTRICT AND LOCATION AREA AND PERIOD OF VALIDITY:-

SR. No.	LOCATION	AREA (Hectare)	PERIOD OF VALIDITY
1	MUGLAN	04.39	30.9.2020
2	KISANA	01.92	30.9.2020
3	KANGRA	08.01	30.9.2020
4	CHAKK RAM SAHAY	19.20	02.7.1919
5	JANDI	05.53	30.9.2020
6	TOOR	04.80	19.2.2020
7	RAMWAL	04.85	19.2.2020
8	BIANPUR	204.0	19.2.2020
9	TANDA	02.40	19.2.2020
10	SIDHPUR	08.00	Case is under process for E.C.
11	BHAINI PASWAL	08.00	Case is under process for E.C.
12	GUNIAN	05.61	Case is under process for E.C.
13	GURCHAKK	08.54	Case is under process for E.C.
14	RAMPUR TALWARA	09.40	Case is under process for E.C.
15	SAMRAI	13.70	Case is under process for E.C.
16	RAJI BELI	19.20	Case is under process for E.C.

4) DETAILS OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEARS:-

SR. NO	YEAR	ROYALTY(RS.)	
		SAND	GRAVEL
1	2013	1254600	3378690
2	2014	NIL	NIL
3	2015	1425000	360000

5) DETAIL OF PRODUCTION OF SAND OR BAJRI OR MINOR MINERAL IN LAST THREE YEARS IN DISTT:-

SR. No.	YEAR	SAND (IN MT)	GRAVEL(IN MT)
1	2013	41820	112623
2	2014	NIL	NIL
3	2015	47500	12000

6) PROCESS OF DEPOSITION OF SEDIMENTS IN THE RIVERS OF THE DISTRICT:-

The deposition in a river bed is more pronounced during rainy season although the quantum of deposition varies from stream to stream depending upon numbers of factors such as catchment, lithology, discharge, river profile and geomorphology of the river course. where annual deposition is much more even two to three metres, but it is noticed that during flood season whole of the pit so excavated is

completely filled up and as such the excavated area is replenished with new harvest of minerals.

In order to calculate the mineral deposits in the stream beds, the mineral constituents have been categorized as clay, silt, sand, bajri and boulder. However during present calculation, the waste material i.e silt which vary from 10 to 20% in different streams has also been included in the total production. Further the Survey of India Topo-Sheets are used as base map to know the extent of river course. The mineral reserves have been calculated only upto 1.00 metre depth although there are some portions in the river beds such as channel bars, point bars and central islands where the annual deposition is raising the level of river bed thus causing shifting of the rivers towards banks resulting in to cutting of banks and at such locations, removal of this material upto the bed level is essential to control the river flow in its central part to check the bank cutting. While calculating the mineral potentials, the mineral deposits lying in the sub-tributaries of that particular stream/river has not been taken into consideration. Since these mineral deposits are adding annually to the main river, the mineral deposits will be much more.

There are two rivers Ravi and Beas and one Chakki Stream in District Gurdaspur.

A) RIVER BEAS :-



Fig.3: River Beas in District Gurdaspur.

The river rises 4,361 metres (14,308 ft) above sea-level on the southern face of Rohtang Pass in Kullu. It traverses the Mandi District and enters the Kangra District at Sandhol, 590 metres (1,940 ft) above sea-level. During its lower course the Beas is crossed by numerous ferries, many of which consist of inflated skins (darais). Near Reh in Kangra District it divides into three channels, which reunite after passing Mirthal, 300 metres (980 ft) above sea-level. On meeting the Sivalik Hills in Hoshiarpur, the river sweeps sharply northward, forming the boundary with Kangra District. Then bending round the base of the Sivalik Hills, it

takes the southerly direction, separating the districts of Gurdaspur and Hoshiapur. After touching the Jullundur district for a short distance, the river forms the boundary between Amritsar and Kapurthala. Finally the Beas joins the river Sutlej at the south-western boundary of Kapurthala district of Punjab after a total course of 470 kilometres (290 miles). It enter in Distt. Gurdaspur from Village Bianpur and goes upto Village Bhol Bagha. Total length of river Beas is 49 Kms. in Gurdaspur District.

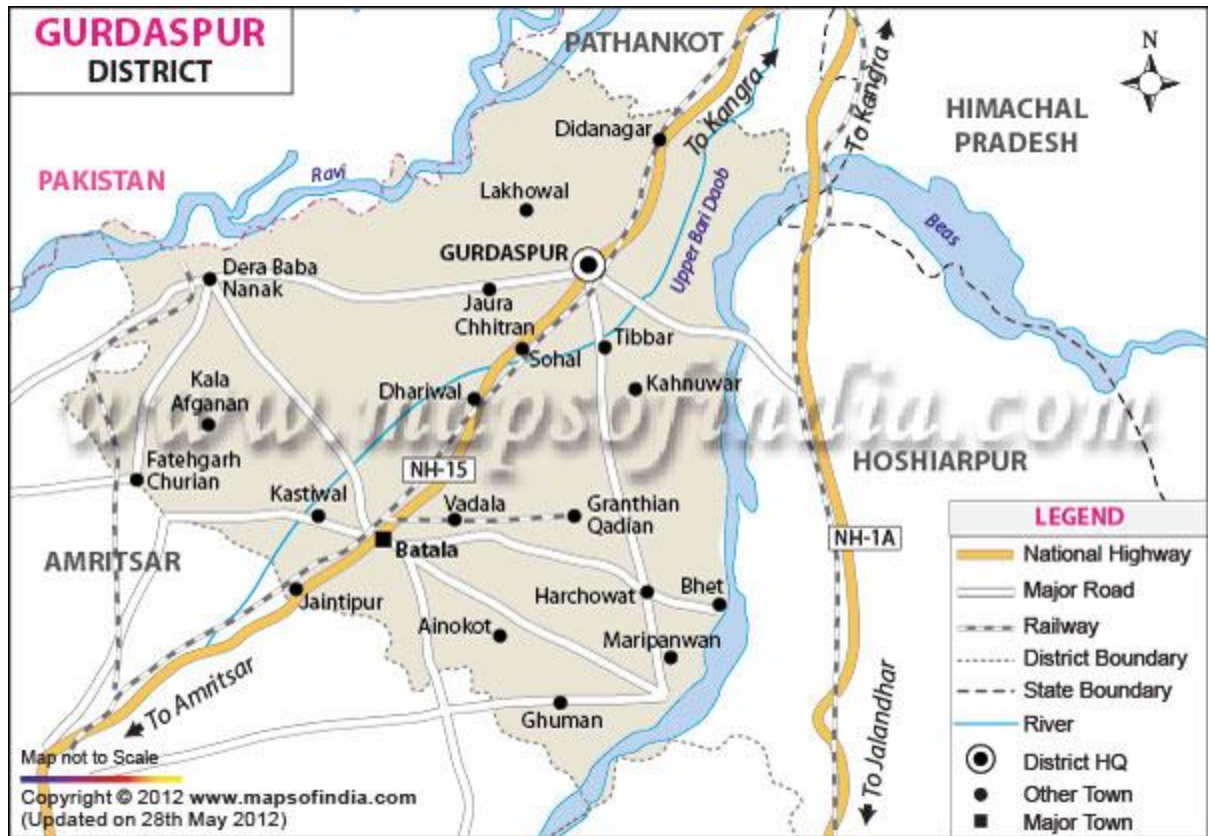


Fig.4: Beas and Ravi river's catchment in District Gurdaspur.

B) RIVER RAVI :-

The main Ravi River flows through the base of Dalhousie hill, past the Chamba town. It is at an elevation of 856 metres (2,807 ft) (where a long wooden bridge existed to cross the Ravi River). It flows into the south-west, near Dalhousie, and then cuts a gorge in the Dhauladhar Range, before entering the Punjab plain near Madhopur and Pathankot. It then flows along the Indo–Pak border for 80 kilometres (50 miles) before entering Pakistan and joining the Chenab River. The total length of the river is about 725 kilometres (450 miles).^[2] and total length of Ravi in Distt. Gurdaspur is 8 to 10 Kms.

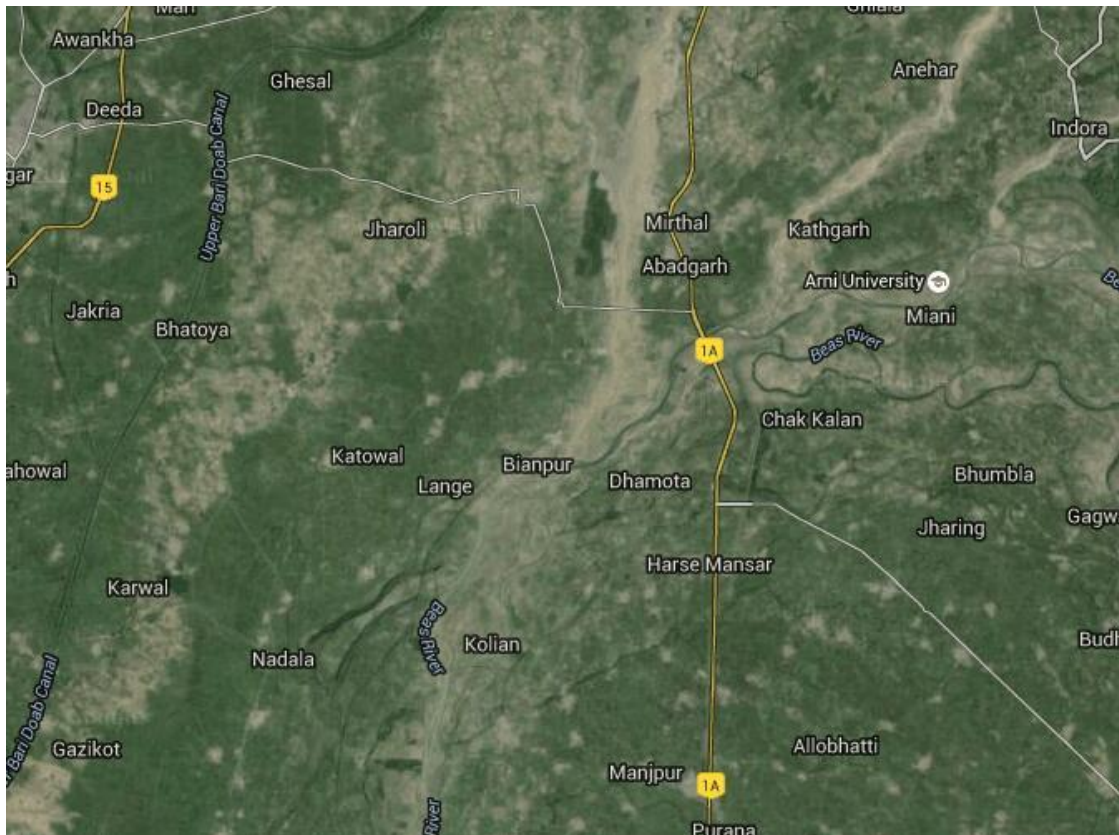


Fig. 5: River System and Power Resources.

C) CHAKKI STREAM:-

Chakki River bed falling in both the state of Himachal and Punjab and is being undertaken in the length of 3 Kms. long stretch falling from Village Bianpur and upto with Beas River in Milwan.

The Beas and Ravi are the two main rivers which flow through the district, both of which originate near the Rohtang pass in the adjoining state of Himachal Pradesh. Like other rivers of the Punjab the water of the Beas and the Ravi fluctuate from season to season and from year to year. This fluctuating discharge of the rivers does not permit their navigational use depends upon the rainfall.

There are number of local swampy depression popularly known as Chhams. The largest of there is the Kahnuwan Chhamb which stretches along the Beas river in Gurdaspur tehsil. Another swampy depression is the Keshopur Chhamb but this Chhamb alongwith other erst while chhams of Dhan Rai, Narod Budiulzama, Paniar, Bucha Nangal and Naranwali, have practically been reclaimed now.

The district possesses a fairly dense network of canals of the Upper Bari Doab Canal system which irrigates most of the area of the district. Its main branches are Lahore branch, Kasur branch and the Sabhraon branch. The Ravi Beas link which was completed around 1954, diverts

part of the Ravi water into the Chakki khad which is a tributary of the Beas.

7) GENERAL PROFILE OF THE DISTRICT

A) LOCATION:

The Gurdaspur district is the northernmost district of Punjab state. It falls in the Jalandhar division and is sandwiched between rivers Ravi and Beas. The district lies between north-latitude 31°-36' and 32°-34' and east longitude 74°-56' and 75°-24' and shares common boundaries with Pathankot district in the north, Beas River in the north-east, Hoshiarpur district in the south-east, Kapurthala district in the south, Amritsar district in the south-west and Pakistan in the north-west.

B) TEHSILS:

Sr. No.	Subdivision/Tehsil	Inhabited Villages	Uninhabited Villages	Area (Km²)	Population	Density per Km²
1	Gurdaspur	679	37	1369	744092	544
2	Batala	347	5	936	618105	660
3	Dera Baba Nanak	131	6	305	115660	379
Total		1157	48	2610	1477857	566

C) SUB TEHSILS:

SR. No.	Name of Sub-Tehsil
1	Kahnuwan
2	Kalanaur
3	Sri Hargobindpur
4	Qadian
5	Dinanagar
6	Fatehgarh Churian
7	Dhariwal
8	Naushera Majha Singh

D) BLOCKS:

SR. No.	Name of Blocks
1	Gurdaspur
2	Kalanaur
3	Sri Hargobindpur
4	Qadian
4	Dinanagar
5	Fatehgarh Churian
6	Dhariwal
7	Naushera Majha Singh
8	Batala
9	Fatehgarh Churian
10	Dorangla
11	Kahnuwan

E) MUNICIPAL COUNCILS:

SR. No.	Name of Municipal Councils
1	Gurdaspur
2	Dera Baba Nanak
3	Sri Hargobindpur
4	Qadian
4	Dinanagar
5	Fatehgarh Churian
6	Dhariwal
7	Batala
8	Fatehgarh Churian

F) IMPROVEMENT TRUSTS

SR. No.	Name of Improvement Trust
1	Gurdaspur
2	Batala

G) POPULATION:

According to the 2011 census Gurdaspur district has a population of 2,299,026, roughly equal to the nation of Latvia or the US state of New Mexico. This gives it a ranking of 196th in India (out of a total of 640). The district has a population density of 649 inhabitants per square kilometre (1,680/sq miles). Its population growth rate over the decade 2001–2011 was 9.3%. Gurdaspur has a sex ratio of 895 females for every 1000 males, and a literacy rate of 81.1%.

H) RELIGION:

Hindus are the largest religious group in the District, closely followed by Sikhs. Gurdaspur also has highest share of Christians in the state.

- Hindus = 46.7%
- Sikhs = 43.6%
- Christians = 7.7%
- Muslims = 1.2%
- Others = 0.8%

I) LAND UTILISATION PATTERN IN THE DISTRICT:

Total area of the District is 2,61,000 Hectare.

District	Forest Area (Hectare)	Agriculture Area (Hectare)	Horticulture Area (Hectare)	Mining Land (Hectare)
Gurdaspur	6480	220819	2925.9	220

a) Forest:

The district is rich in animals and birds which include some of the rare species. The animals and birds that are found in the district are- (1) Ghoral, (2) Kakar, (3) Kastura, (4) Panther or Leopard, (5) Snow Leopard, (6) Wild Boar, (7) Spotted Deer or Chital, (8) Sambar, (9) Porcupine, (10) Himalyan Pine Martin etc. Apart from the important game animals described above animals like Jackal, Monkey, Langoor, Fox etc. are also met within the area. There is a variety of birds in the

district like Monal pheasant, Snow cock, Western horned Tragopan, Juguriam, Pea-cock, Ring dove, Spotted dove, Shikara, Parrot, Tawny Eagle, Green Pigeon, Pigeon, Gritton Vulture, Tits, Nut Cracker, Pies, Wood Peaker, Crow, Himalyan Fly Catcher, etc. which are found in the tract of this district.

Table-1: Vernacular and Botanical Names of plants grown in the District.

Sr. No.	Vernacular Name	Botanical Name
1.	Bil	Aegle marmelos
2.	Neem	Azadirachta indica
3.	Tun	Cedrela toone
4.	Aam(cultivated)	Mangifera indica
5.	Kikar	Acacia arbaica
6.	Khair	Acacia catech
7.	Behera	Terminalia belerica
8.	Harrer	Terminalia chebula
9.	Kinu	Diospyross fomentosa
10.	Toot(cultivated)	Morus alba
11.	Palakh	Ficus rumphii
12.	Pipal(cultivated)	Ficus religisa
13.	Rumbal	Ficus glomerata

b) Agriculture:

Agriculture is the main occupation of the people in the District, having different types of soil and agro-climate conditions which are quite suitable for the growing of various types of cereals, vegetables, fruits and other crops. The major crops grown in the district are Wheat, Paddy, Maize, Barley, and Millet. Besides these, potato and a variety of vegetable like green-peas, cauliflower, cabbage, spinach tomatoes, etc. are also grown in the district. The economy is mostly agrarian and majority of population is depending on agriculture and activities allied to it for earning their lively hood. The most of the land is un-irrigated and depended upon the rainy season for irrigation. Soil in the district varies from sandy loam to clay. The part of the lands are irrigated and the irrigation facilities are provided by lifting water from streams, shallow, dug wells and medium to deep tube wells in the valley area.

c) Horticulture:

The topography and agro-climatic conditions of the district are quite suitable for the productions of various fruits. The topography of the district can be grouped into three categories namely, High hill areas located at the higher elevation, mid hill areas and low lying valley areas. Fruits of various kinds depending upon the terrain, climatic condition and soil are grown in the district. The Main horticulture produce of the area can be classified into four categories.

- 1 Citrus Fruits
- 2 Sub-tropical Fruits
- 3 Nuts and dry fruits
- 4 Other temperate fruits

Table. 2: Area under each fruit and their production.

A. Citrus		
Name of fruit	Area (Hectare)	Production (Ton)
Orange	5184	12460
Malta	604	2597
Lemon	2540	2993
Galgal	482	3083
Other	14	113
B. Sub Tropical Fruits		
Mango	19580	15515
Litchi	2302	2044
Guava	655	435
Papaya	86	503
Grapes	16	21
Logath	45	52
C. Nuts and Dry Fruits		

Almonds	414	175
Walnuts	198	176
Pea nuts	169	108
D. Other Temperate Fruits		
Plums	414	1055
Peach	209	509
Apricot	32	70
Pear	420	2125
Kiwi	8	11

J) PHYSIOGRAPHY OF THE DISTRICT

i) Location

The Gurdaspur district is the northernmost district of Punjab state. It falls in the Jalandhar division and is sandwiched between rivers Ravi and Beas. The district lies between north-latitude 31°-36' and 32°-34' and east longitude 74°-56' and 75°-24' and shares common boundaries with Pathankot district in the north, Beas River in the north-east, Hoshiarpur district in the south-east, Kapurthala district in the south, Amritsar district in the south-west and Pakistan in the north-west.

All the Tehsils of the district namely Gurdaspur, Batala and Dera Baba Nanak are plain and similar to the rest of the Punjab plains in structure. The landscape of the district has varied topography comprising undulating plain, the flood plains of the Ravi and the Beas and the upland plain. To its south lies an area of about 128 km² which is highly dissected and is an undulating plain. Its elevation ranges from about 305 to 381 metres above sea level. It is traversed by a number of choas and has an undulating topography.

The flood plains of the Ravi and the Beas are separated from the upland plain by sharp river-cut bluffs. They are low lying, with slightly uneven topography. Sand dominates in the soil structure of the flood plains, but it diminishes in both quantity and coarseness in the upland plain. The upland plain covers a large part of the district particularly. Its elevation ranges from about 305 metres above sea level in the north-east to about 213 metres above sea level in the south-west, with a gentle gradient of about 1 metre in 1.6 km. This is the most important physiographic unit in the district.

ii) Climate

There are mainly two seasons i.e. summer and winter. The summer season falls between the months of April to July and the winter November to March. In summer season the temperature touches 44 °C and sometimes higher. June is the hottest month and January is the

coldest one. Mostly the rain falls in the month of July. The winter rains are experienced during January and February. Dust storms occurs in the month of May and June.

iii) Rainfall

The south-west monsoon generally arrives in the first week of July and continues up to the end of August. Seventy percent of the rainfall occurs during this period.

iv) Ecology

The changes in ecology system are inevitable, consequences of development process. The denudation of forests due to increasing population, urbanization industrialization have accelerated the process of environmental degradation in the district. Therefore, preservation of the ecology is one of the most important goals of the district planning.

The vegetation varies in the district depending on the soil, topography and elevation. In the plain, large scale of a forestation has been under taken by the forest department. Where water facilities are available, Shisham, mulberry, eucalyptus and poplar are being planted. In the Kallar area, kinar prosopis and eucalyptus has been planted. Besides mango and mulberry, other fruit trees cultivated in the district include orange, Kinnow lemon tree and others.

v) Hydrology

The ground water in this region is suitable for irrigational and domestic uses. The sub soil water depth ranges from 5 to 8 metres in most part of the district. Due to Dhusi bandh and stepped floods the water table has gone very low.

vi) Soils

The soils are loamy with a clay content below 10 percent. They contain small quantities of lime but the magnesium content is high. They are well supplied in potash and phosphoric acid but the quantities available are low. The agriculture is dependent to a large extent on the nature of its soils which in turn, is influenced materially by climatic factors. The soil of the district is quite alluvial and fertile.

The district consists of three kinds of soils viz, Riarki, Bangar and Bet. The area of Dhariwal Ghuman, Qadian, Harchowal and Sri Hargobindpur is called Riarki. The western side of Kahnuwan lake up to Aliwal canal is called Bangar and the area between the rivers of Beas and Ravi is known as Bet. Near about 300 villages of the district fall in Bet Area. The cultivable waste land is fallow or covered with bushes or jungle which may not be put to any use. Lands under that ching grass bamboo, bushes, tree crops etc. which are not included under forests have been considered as cultivable waste. As for example, all growing

lands which are permanent pastures, meadows, grazing lands within the forests, etc.

vii) Minerals

The sand is found from the River bed of the Ravi and Beas river. The Ravi Beas link which was completed around 1954, diverts part of the Ravi water into the Chakki khad which is a tributary of the Beas Chakki stream which linked into the Beas river is also flowing in the Gurdaspur District. The gravel is found from the bed of the chakki stream.

viii) Infrastructure [River system and power resources]

The Beas and Ravi are the two main rivers which flow through the district, both of which originate near the Rohtang Pass in the adjoining state of Himachal Pradesh. Like other rivers of the Punjab the water of the Beas and the Ravi fluctuate from season to season and from year to year. This fluctuating discharge of the rivers does not permit their navigational use depending upon the rainfall.

There are number of local swampy depressions popularly known as chhamb. The largest of there is the Kahnuwan Chhamb which stretches along the Beas river in Gurdaspur tehsil. Another swampy depression is the Keshopur Chhamb but this Chhamb along with other erst while chhamb of Dhan Rai, Narod Budiulzama, Paniar, Bucha Nangal and Naranwali, have practically been reclaimed now.

The district possesses a fairly dense network of canals of the Upper Bari Doab Canal system which irrigates most of the area of the district. Its main branches are Lahore branch, Kasur branch and the Sabhraon branch. The Ravi Beas link which was completed around 1954, diverts part of the Ravi water into the Chakki khad which is a tributary of the Beas.

ROADS:

Total Length Of Roads	: 3956.00 Km
Link Road Plan	: 2556.00 Km
Plan Roads	: 939.00 Km
National Highway	: 124.00 Km
State Highway	: 45.57 Km

Table 3: Rainfall Data: Month wise (IN M.M.)**Year 2012-13**

District	June 2012	July 2012	Aug 2012	Sept 2012	Oct 2012	Nov 2012	Dec 2012	Jan 2013	Feb 2013	March 2013	April 2013	May 2013	Total
Gurdaspur	18	117	402	83	3	Nil	33	31	69	9	Nil	Nil	765

Year 2013-14

District	June 2013	July 2013	Aug 2013	Sept 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	March 2014	April 2014	May 2014	Total
Gurdaspur	64	251	372	66	58	16	30	41	59	25	45	Nil	1027

Year 2014-15

District	June 2014	July 2014	Aug 2014	Sept 2014	Oct 2014	Nov 2014	Dec 2014	Jan 2015	Feb 2015	March 2015	April 2015	May 2015	Total
Gurdaspur	21	124	348	101	28	Nil	15	27	51	126	129	2	972

Year 2015-16

District	June 2015	July 2015	Aug 2015	Sept 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	March 2016	April 2016	May 2016	Total
Gurdaspur	64	187	309	136	17	6	Nil	Nil	4	51	12	--	786

Table 4: Drainage System With Description Of Main Rivers

Sr.No	Name Of The River	Area Drained (Km ²)	% Area Drained In The District
1	RAVI	1400	54 %
2	BEAS	1000	38%
3	CHAKKI	210	08%

Table 5: Salient Features Of Important Rivers And Streams.

S. No.	Name of the River or Stream	Total Length in the District (Km.)	Place of origin	Altitude at origin
1	RAVI	08	VILLAGE MARARA	305 to 381
2	BEAS	40	VILLAGE RAMWAL	305 to 381
3	CHAKKI	03	VILLAGE RAMWAL	305 to 381

Table 6: Mineral Potential (Area)

Portion of the River or Stream Recommended for Mineral	Length of area recommended for mineral concession (km)	Average width of area recommended for mineral concession (m)	Area recommended for mineral concession (m ²)	Mineable mineral potential (MT) (60% of total mineral potential)
RAVI (08 KM)	06	500	03	77,62,392
BEAS (40 KM)	15	400	06	1,55,24,784
CHAKKI (03KM)	02	400	0.8	20,87,464
Total of the District	15	1300	9.8	25374640

Table 7: Mineral Potential (Quantity)

Boulder (MT)	River Bed Bajri (MT)	Sand (MT)	Total Mineable Mineral Potential (MT)
NIL	NIL	77,62,392	77,62,392
NIL	7,00,000	1,48,24,784	1,55,24,784
NIL	10,87,464	10,00,000	20,87,464

K) ANNUAL DEPOSITION

The sudden increase hydraulic radius, the carrying capacity of the river decreases as a result of which all the load carrying by the river is deposited.

The boulder beds are considered the prominent source of river borne deposits during monsoon the stream carries heavy sediments load and deposit it annually on the river bed. This stream has developed a high flood plain near the confluence of rivers as during flood season the velocity of this stream is checked by the water of rivers and most of sediment load is deposited near the confluence point.

The annual replenishment in the river is depend upon the velocity of the river. Annual replenishment is depend upon the period of rainy season and rainfall at different places of the flow of River. To calculate the replenishment data at this stage is very difficult. It is suggested that before considering the report for environment clearance Joint inspection

Team report must be collected as per Punjab Minor Mineral rules 2013 because the regular demand of sand stone and bajri for the development activities in this respective areas. Before approval of the quarries is suggested that joint inspection committee report may be demanded as per Punjab Minor Mineral rules 2013.

L) GENERAL RECOMMENDATIONS/CONCLUSIONS:

During the preparation of the present report prominent rivers/ streams has been studied in detail, as the rest of the streams/rivers either have very insignificant annual replenishment/ approachability problem or are very narrow at most of the places and as such are not fit for grant of mineral concession for mineral based industries, however 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, such streams are prone to illegal mining, It is suggested that the auctioned of of quarries regularly to meet out the mineral local demand subject to the approval from the joint Inspection Committee as per Punjab Minor Mineral 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 are also suggested to be taken into account during the river bed mining in a particular area:

1. Abandoned stream channels or terrace and inactive floodplains may be preferred rather than active channels and their deltas and floodplains.
2. Stream should not be diverted to form inactive channel.
3. Mining below subterranean water level should be avoided as a safeguard against environmental contamination and over exploitation of resources.
4. Large rivers and streams whose periodic sediment replenishment capacities are larger, may be preferred than smaller rivers.
5. 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.
6. 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.

7. Continued riverbed material mining in a given segment of the river will induce seasonal scouring and intensify the erosion activity within the channel. This will have an adverse effect not only within the mining area but also both in upstream and downstream of the river course. Hazardous effects of such scouring and enhanced erosion due to riverbed mining should be evaluated periodically and avoided for sustainable mining activities.
8. Mining area should be demarcated on the ground with Pucca pillars so as to avoid illegal unscientific mining.
9. The auction shall be done as per the recommendation /approval of the Sub-Divisional Level Committee as per Punjab Minor Mineral rules 2013.