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GOVERNMENT OF RAJASTHAN

OFFICE OF THE SENIOR GEOLOGIST

MIINES & GEOLOGY DEPARTMENT, ALWAR

JAIPUR – REGION/ZONE

FINAL REPORT

OF

PROJECT NO. BM/3 (Year 2007-08)

BM/4 (Year 2008-09)

Prospecting for base metals n/v Lohiti, Isra KaBas, Badhin, Nalpur, Kalipahari, Kishorpura etc. in tehsil Bansur and Behror district Alwar.

SUBMITTED BY

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Page – 50

On Rms map Bm 3 (2007-08) Total block – 6 blocks
1 – Base metal
2, 3, 7 for granite
4, 5 - Mlstone

On Rms map of BM 4 – Total block 1
block no. 6

ABSTRACT

Geologically the area has complex lithology belonging to Ajabgarh group of Delhi super group, represented by brecciated ferruginous quartzite, interlayer with phyllite, and quartzite with garnetiferous chlorite schist and carbonaceous phyllite. These are intruded by post Delhi granite, pegmatite and quartz veins.

The rock assemblages of the area seem to be favourable for base metals.Copper in form of bornite , and malachite in schist was noticed n/v Lohiti, Mahanpur, Manchi and Isra Ka Bas. At places poorly developed gossans with limonitic material were also seen in the area.

During the year , 315 sq. km area was covered under regional mineral survey and 20 sq. km area was mapped under regional geological mapping. 2.00 sq. km area was mapped in detail. 99 numbers of samples were drawn from the area, among which 35 samples were chemically analysed.

During the course of detail geological mapping an old working and a ruined smelter were found near village Mirapur. On the eastern slope of the hill copper staining was noted at places in about 3.5 km. long strip. This year work is initiated in the rest part of the block.

CONTENT

List of Plates

1.INTRODUCTION :

Geologically the area has complex lithology belonging to Ajabgarh group of Delhi super group, represented by brecciated ferruginous quartzite, interlayer with phyllite, and quartzite with garnetiferous chlorite schist and carbonaceous phyllite. These are intruded by post Delhi granite, pegmatite and quartz veins.

The rock assemblages of the area seem to be favourable for base metals.Copper in form of bornite , and malachite in schist was noticed n/v Lohiti, Mahanpur, Manchi and Isra Ka Bas. At places poorly developed gossans with limonitic material were also seen in the area.

During the year , 315 sq. km area was covered under regional mineral survey and 20 sq. km area was mapped under regional geological mapping. 2.00 sq. km area was mapped in detail . 99 numbers of samples were drawn from the area, among which 35 samples were sent for chemical analysis to directorate results are awaited.

During the course of detail geological mapping an old working and a ruined smelter were found near village Mirapur. On the eastern slope of the hill copper staining was noted at places in about 3.5 km. long strip.

The analysis results shows Pb ranging from 18 ppm to 2090 ppm, Cu from 4.5 ppm to 309 ppm, Zn 3 ppm to 112.50 ppm, sulphur is found in 2 samples ranging from 0.56 to 1.36 %. Au is found absent in all samples.

2. LOCATION AND ACCESSIBILITY:

Area is located n/v Lohiti, Durhera, Baraud, Kishorepura, Chula etc. in tehsil bansur district Alwar. It falls in G.T. sheet no. 54 A/5 & A/6 and area is bounded is given below :-

Latitude : 27°42'12" to 27°58'32"

Longitude : 76°16'00" to 76°30'00"

Approach : Area can be approached by Delhi –Jaipur N.H.No.8 and also it can be approached from Alwar by Alwar-Behror S.H.No.25 and AlwarKotputli road. It is about 45 km. from Alwar head quarter.

3.TOPOGRAPHY :

Topographically the area is undulating with moderate to low lying hills, along with this plain area is covered by flood plains of Sahibi river. Sahibi river channel passes through the area . Dendritic type of drainage is peculiar in the area, resulting into nallas which ultimately join the river.

4. PHYSIOGRAPHY:-

The area undulating topography between low to moderately high hills trending NE-SW. Part of the area stidied has plain land which is used for agriculture purpose. The drainage of the area has dendritic type pattern. The western part has several nallas with ravines. Nallas are

seasonal only. The Ruparel river passes from the south eastern part of the project area.

5. METEROLOGY :-

Climate of the area is semi arid. The temperature during summer rises upto 46°C while in the winters it drops below 3°C. Notabe diurnal variations, in temperature experienced during summers. Air remains mostly dry with average humidity being approximately 70%.During year the approximate rain fall remains about 600-650mm.

6. FLORA AND FAUNA :-

The area is rich in floral and faunal assembleges, typical of ravine region. These are thinly distributed. Mostly trees like Pipal, Dhoak , Babool, Banyan etc. are found in the area. Thorny bushes and shrubs are thriving in depressions and valleys. Wild animals like Jackal, Fox Wild boar, Sambhar etc. are inhabiting in this region. Wheat, Barley, Maize, Mustard are the crops of the area.

7. REGIONAL GEOLOGY :-

The rocks of Delhi super group constitute, the main Aravalli mountain and extend continuously from Gujrat border in the south-west to Delhi in the north-east over a distance of about 700 km. Highly folded and faulted superacrustal rocks of the Delhi super group cover most part of Alwar region except in the southern part where isolated exposures of pre-Delhi rocks are met with. The stratigraphic sequence of Delhi super group shows continuous thick pile of sediments having

a cumulative thickness more than 6000 mtrs. The sequence starts with a basal conglomerate which is arkosic at places. The entire sequence shows a facies change from calcareous member in the lower to arenaceous member in the middle and to predominantly argillaceous members in the upper portion. Based on this diagnostic lithological characteristic the sub division of the Delhi rocks have been proposed by Heron(1971) viz lower Raialo series, middle Alwar series and the upper Ajabgarh series. But in the subsequent publication Raialo rocks were give a distinct status. Detailed remapping in the recent years has called for some modification in the stratigraphic succession of the Delhi rocks.

The general stratigraphic succession of the area is given below :

Post Delhi	intrusive	Quartz veins
Delhi Slate	Ajabgarh	Quartzite with carbonaceous phyllite
Super schist	Group	Quartzite inerlayered with garnetiferous
Group		Quartzite inerlayered with phyllite
		Brecciated quartzite
		Impure limestone

8. GEOLOGY OF THE AREA :

The rock type exposed in the area are brecciated quartzite , interlayered with phyllite, garnetiferous schist and quartos phyllite and carbonaceous phyllite/ slate and quartzite of Ajabgarh group of Delhi super group. These are intruded by quartz veins of post Delhis. The general attitude of the rock is N 15°-20°E dipping towards west.

9. DETAILS OF THE WORK DONE: The statement showing target vis-à-vis achievements made during the year are tabulated below :-

Sr.No.	Nature of work	Annual targets	Achievements up to 2007-08	Achievements up to 2008-09	Total
1.	R.M.S(Sq.Km.)	300	150	165	315
2.	R.G.M(Sq.Km.)	20	10	10	20
3.	D.G.M(Sq.Km.)	2.00	1.00	1.00	2.00
4.	Sampling (Nos.)	As regd.	60	39	99

9.1 REGIONAL MINERAL SURVEY :

Regional mineral survey was done on R.F. 1:50,000 in **first block** near villages Kothal, Satalpur, Dabariya Dhani, Nagal Bhawsingh, Lohiti, Mahanpur etc. tehsil Bansur district Alwar.

Topographically the area is undulating with moderate to high hills, trending NE-SW, along with this the plain area is covered with flood plains of Sabi river, which passes along the area.

The rocks types exposed in the area are brecciated quartzite, interlayer with phyllite, garnetiferous schist, quartzose phyllite and carbonaceous phyllite of Ajabgarh group of Delhi super group. These are intruded by pegmatite and quartz veins of post Delhi age.

Reconnaitory traverses were taken in the vicinity of village Lohiti. This is an isolated hill, which is moderately high. This hill has quartzite and schistose quartzite. These rocks are grey and light brown in colour and ferrugeneous in nature. Garnet bearing schist is also observed on the western slope of hill, it is grey in colour and has crenulation cleavage developed. Except ferrugeneous nature of rocks, on the western slope only no other indication of copper staining and presence of any metallic mineral is found in this hill part. The general attitude of rock is N 60^0-70^0 with 40^0 dip towards SE is noted.A pegmatite vein is seen in the above mentioned rocks, it is across the strike. It is seen in 10-12 mt. in length and 30-40 cms. in width, this pegmatite has white coloured feldspar, muscovite and quartz.

An other hill which starts from village Lohiti and continues in the north for a distance of 7-8 km., was also covered. The eastern slope of the hill is studied presently. The part of the hill area covered has quartzose schist and garnet bearing staurolite schist. On the southern tip of the hill a pegmatite vein is observed. It is 8X1mt. in dimension and has quartz, feldspar and muscovite minerals. The entire part of the

hill contains grey coloured crenulated garnet bearing schist. Very little or poor staining of copper, probably due to malachite, bornite or azurite is seen in the schist. Samples of the same rock have been collected for chemical analysis.

In the same strike, on the eastern slope of the hill, the schist rock is continued up to village Mahanpur Ki Dhani (Giral). At this location malachite, azurite staining is again seen in the nalla and it's near by area. This rock has two sets of joints, among which one is perpendicular to the strike and other is oblique (360^0) to the strike. The general attitude of rock is $N40^0E$ with almost vertical dip. Samples for chemical analysis from this location have also been collected.

The area near villages Unchhpur, Majara Rawat, Ospur, Ramnagar, Gunta, Shahpur, Dhakla, etc. topographically this area is almost plain and covered with alluvium and has agriculture fields. This area has flood plains of Karnali river, which is a tributary to the Sabi river. Traverses were taken up all around the area but no where exposure of rock is found. Although, the area covered has the nallas and thin channels which are coming out from the near by hills. It is supported that these nallas and channels must have mineral content, which come along with flowing water. So it is worth to collect the soil samples from the nallas and channels near the hill area. Samples were drawn at a depth of 30cm. from the nalla bed. These samples would be analysed for different elements.

Regional mineral survey was continued near villages Dhirpur, Harsora, Narol, Bawali ka Bas, Bhauriyawas, Manala ki Dhani, Dhani Naruka, Bamanwas etc. Topographically the area is undulating with moderate to high hills, trending NE-SW, along with this the plain area is covered with agricultural fields.The rocks types exposed in the area are quartzite, interlayer with phyllite, schist of Ajabgarh group of Delhi super group.

Reconnaitory traverses were taken in the vicinity of village Hamirpur. This is an isolated hill, which is moderately high. This hill has quartzite, This rock is grey and light brown in colour and at places ferrugeneous in nature. It is hard and compact in nature.

The general attitude of rock is N 60^0-70^0 with 40^0 dip towards SE is noted. Thin bands of phyllite and schist were found in the vicinity of villages Rathauro ki Dhani. The phyllite is grey in colour. Part of the area covered has plain land with top soil cover. This land is being used for agriculture purpose.

In the vicinity of villages Chhipati, Bhuriyawas, Monala Ki Dhani, Dhani Naruka, Kishorpura etc. topographically the area covered is almost plane with flood plains of Banganga river. Part of the area has moderately high hill. The plain area is used for agriculture purpose.

The area near village Kishorpura has a moderately high hill. It also trends in NE-SW direction. This hill contains the only rock quartzite. The quartzite is hard and massive in nature although it is unevenly jointed and fractured. At places the rock is ferrugineous in

composition in small patches. Looking to it's nature it can be used as masonry stone.

Regional mineral survey was carried out in the **second block** near villages Badhin , Dunbas, Basai Chauhan, Nagal, Dangiwas, Khagal ki Dhani,Chabariyawas, Debar ki Dhani, Mina ki Dhani, Jhira ki Dhani, Majara Dhakora, Dhani Kishna , Bheribas, Isampur, Jaton ki Dhani, Jalalpur, Nangalia, Karora, Dhis and Kankar Dopa Hamjapur ,Dughera,Fatehpur, Dhandaria, Pipli, Majara Kath, Isrisingh Pura etc. It was done on R.F.1:50,000.

Topographically the area is undulating with flood plains of karnali river. Most of the area is covered with alluvium and blown sand . Exposures of rocks are seen at places in form of low lying mounds and hillocks. Dendritic type of drainage pattern is peculiar in the area. In the vicinity of villages Khagal ki dhani and Mina ki dhani, the only rock found exposed is quartzite. It is light brown and light gray coloured. It is hard and massive and has fine to medium grains of silica. The rock belongs to the Ajabgarh group of Delhi super group. The general trend of the rock is N20°-25° E with 60°-65° dip due west.

The hill in the south of village Badhin contains garnet bearing staurlite schist. It is dark grey in colour with cleavage plains. Crenulation cleavages are well developed at places in the rock. Looking to the condition of rock it seems that the rock has undergone at least two phases of deformation. Copper staining of malachite and azurite is seen at places. The general trend of the rock is N20°-25°E

with 60°-65° dip due west. Quartz veins of 1mt. to 2mt.wide and 8 to 10 mt. in length are seen in the area. These are post depositional and almost oblique to the strike of the rock. Quartz is smoky and dull white colour, it is non crystalline.

Near villages Bheribas, Islampur, Jaton ki Dhani, Jalalpur, Nangalia, Karora, Dhis and Kankar Dopa topographically the area is undulating with flood pains of Sabi river. Most of the area is covered with alluvium and blown sand. Exposures of rocks are seen at places in the form of low lying mounds and hillocks. Dendritic type of drainage pattern is peculiar in the area. In the vicinity of the villages Bheribas small exposures of the rock quartzite are seen. It is light brown and light grey coloured. It is hard and massive and has fine to medium grains of silica. The rock belongs to the Ajabgarh group of Delhi super group.

Small exposures of rocks are seen in the north of the village Dhis. The rock exposed is schist which is grey in color with cleavage plains. Crenulations cleavages are well developed at places in the rock. Looking to the condition of the rock it seems that, the rock has undergone at least two phases of deformation. Copper Staining is not seen in the rock.

In the vicinity of the villages Dhis, Kankar Dopa, Kankar Baraud, Nagla Rudh etc. Most of the area is covered with alluvium and blown sand. Exposures of the rock are seen at places in form of low lying mounds and hillocks. Dendritic type of drainage pattern is peculiar in the area. In the vicinity of the villages Bheribas small exposures of the

rock quartzite are seen. It is light brown and light grey coloured. It is hard and massive and has fine to medium grains of silica.

Near villages Kankar Dopa and Nagla Rudh is covered with alluvium and blown sand. Small exposures of rocks are seen near village Kankar Dopa at places in the form of small mounds. In this hill dark grey coloured phyllite is exposed. It is hard but splittable. At surface the rock is weathered. Staining of any copper mineral is not seen in the area. The general trend of the rock is N20°-25°E with 60°-65° dip due west. Dendritic type of drainage pattern is peculiar in the area.Small exposures of rocks are seen in the vicinity of Nagla Rudh. . Crenulation cleavages are well developed at places in the rock. Looking to the condition of the rock it seems that, the rock has undergone at least two phases of deformation. Copper Staining is not seen in the rock.

Near villages Dhundaria, Hamjapur, Dughera, Fetehpur, Dhandaria, pipli etc. topographically the area is almost plain and area is covered with blown sand and alluviaum because of the flood plains of Sabi river. Few small mounds were found exposed in the area. The hill part contains quartzite mainly. This rock quartzite is light grey, light brown in colour. It is at places hard and compact but most of the places it is weathered. The rock contains little mica laminae in between the bedding planes. The general trend of the rock is N20°-25°E with 60°-65° dip due west. No where any copper staining is seen in the rock. The Sabi river passes along the area covered and has the flood plains of the river. Dendritic type of drainage pattern is peculiar in the area.All the drainage merges in to the Sabi river.

Regional mineral survey was continued near villages Majara Kath, Isrisingh Pura, Kali Pahari etc. topographically the area is undulating with moderately high hill and plain land with blown sand cover. This hill is comprised of quartzite, phyllite and schist.

This quartzite is light brown in colour. It is at places hard and compact but most of the places it is weathered. The rock is ferruginous at places. Phyllite and schist are grey in colour with clear bedding planes. These rocks are weathered and loose on the surface. No where any copper staining were seen in the rock. Some part of the area is covered with blown sand and alluvium. Some small scattered mounds are seen in the area, containing phyllite and schist.

9.2 REGIONAL GEOLOGICAL MAPPING:

An area of 20 sq. km. was covered under regional geological mapping on R.F. 1:10,000 in following different blocks:

9.2.1. Mahanpur Block:

Topographically the area has moderate to high hills, trending

NE-SW, geologically the rocks belong to Ajabgarh group of Delhi super group. During the course of regional geological mapping only eastern slope of the hill was covered. The entire area covered has dark grey coloured garnet bearing staurolite schist. This rock is soft ion the surface due to effect of weathering. At places the rock has ferrugineous impurity on the surface. This rock has fractures and joints, atleast two sets of joints are seen, one is oblique (360^0) to the

strike. The general attitude of rock is N40^{0}E and dip 80^0-85^0 due west.

The schist rock is soft on the surface but it is found hard at depth, it has well developed crenulations cleavages. Looking to the condition of rock it seems that this area has gone under at least two phases of deformation. At places on surface of rock and some times on cleavage plains copper staining of probably malachite, azurite or bornite have been seen at places. This staining have been collected and sent for chemical analysis. It has been noted that staining is found more in the nalla.

9.2.2. Mirapur Block:

Topographically the area has moderate to high hills, trending NE-SW geologically the rocks being to Ajabgarh group of Delhi super group. During the present course of regional geological mapping only eastern slope of the hill was covered. The entire area covered has dark grey coloured garnet bearing staurolite schist. This rock is soft on the surface due to effect of weathering . At places the rock has ferruginous impurity on the surface. This rock has fractures and joints, at least two sets of joints are seen, one is oblique (360) to the strike .The general attitude of the rock is N40^0 E and dip 80^0-85^0 due west.

The schist rock is soft on the surface but it is found hard at depth, it has well developed crenulations cleavages. Looking to the condition of rock it seems that this area has gone under at least two phases of deformation. At places on surface of rock and some times on cleavage plains copper staining of probably malachite, azurite or Bornite have been seen at places,

This staining indicates the presence of copper in the rock. In the west of village Mirapur along the nalla the schist rock has sulphur content. Samples have been drawn for chemical analysis. Above this location but in the nalla some slag pieces were seen scattered. When entire near by area was inspected carefully, the remains of ruined smelter were seen. On the basis of presence of this ruined smelter the area was again carefully scanned, just above this site an old working was found. It is about 3-4 X 3 X 1-1.5 mt. in dimension. Probably it was dug to take out the coppper in ancient times, which was further smelted on the site. Almost near the top of the hill a pegmatic vein, containing quartz, feldspar and mica was seen . It runs paralled to the strike of the rock. It is about 250 mt. in length and 1-2 mt. in dimention. ; Regional geological mapping was done in 2 Sq. km. area n/v. Harsora and Dhirpur. It was done on R.F. 1: 10,000. Topographically the area is undulating with moderate to high hills, trending NE-SW, along with this the plain area is covered with agricultural fields. The rocks types exposed in the area are granite. It is post Delhis in age.

This area has a moderately high hill, consisting entirely of granite. This granite is grayish and creamish in colour . It is weathered on the surface. It shows typical granitic weathering. It contains quartz, Feldspar and mica as constituent mineral. The granite shows porphyritic texture in which quartz and feldspar are present as phynocrysts. On the surface big size boulders of granite are seen. Although it is weathered on the surface but blocks can be excavated . It is leucocratic color and porphyritic texture make it less attractive. Part of the area has alluvium and soil cover, this part is being used for agriculture purpose.

9.2.3. Mantha Block:

Regional geological mapping was also done in 2 sq.km. area n/v. Mantha and Guwara. Topographically the area is undulating with moderate to high hills, trending NE-SW, along with this the plain area is covered with agriculture fields.

The rocks type exposed in the area is granite. It is post Delhi in age.

This area has a moderately high hill, consisting entirely of granite . This granite is grayish, pale and cream in colour. It is weathered on the surface. It shows typical granitic weathering. It contains quartz, feldspar and mica as constituent mineral. The granite shows porphyritic texture in which quartz and feldspar are present as phynocrysts. On the surface big size boulders of granite are seen. Although it is weathered on the surface but blocks can be excavated . It is leucocratic colour and porphyritic texture make it less attractive . Part of the area has alluvium and soil cover, this part is being used for agriculture purpose.

9.2.4. Harsora Block:

Regional geological mapping was also done in 2 sq.km. area n/v. Harsora, Topographically the area is undulating with moderate to high hills, trending NE-SW, along with this the plain area is covered with agricultural fields.

The rocks type exposed in the area is granite. It is post Delhi age.

This area has a moderately high hill, consisting entirely of granite. This granite is grayish, pale and cream in color. It is weathered on the surface. It shows typical granitic weathering. It contains quartz, feldspar and mica as constituent mineral. The granite shows porphyritic texture in which quartz and feldspar are present as phynocrysts. On the surface big size bounders of granite dare seen. Although it is weathered on the surface but blocks can be excavated its leucocratic color and porphyritic texture make it less attractive. Part of the area alluvium and soil cover, this part is being used for agriculture purpose.

9.2.5. Baberi Block :

Regional Geological Mapping was done n/v Baberi, it was done on R.F 1:10,000.The entire part of the hill contains grey in coloured crenulated garnet bearing schist. Very little or poor staining of copper, probably due to malachite, boronite or azurite is seen in the schist. Copper staining is again seen in the nalla and its near by area. This rock has two sets of joints, among which one is perpendicular to the strike and other is oblique(360°) to the strike.The general attitude of the rock is N40°E with almost vertical dip. Samples for chemical analysis from the location have also been collected.

9.2.6. Badhin Block :

Regional Geological Mapping was done n/v Badhin. Topographically the area is undulating with moderately high NE-SW trending hill. The hill part in the south of village Badhin contains garnet bearing

staurolite schist. The rock belongs to the Ajabgarh group Delhi super group. It is dark grey in colour with cleavage planes. . Crenulation cleavages are well developed at places in the rock. Looking to the condition of the rock it seems that, the rock has undergone at least two phases of deformation. The rock is poorly ferrugineous at places. The general trend of the rock is N20°-25°E with 60°-65° dip due west. A pegmatite vein containing mostly quartz with minor mica is mapped. It is 50 to 60 mts. in length and 10 to 12 mts in width. Quartz is white and dull white in colour and it is non crystalline. This vein is post depositional and almost oblique to the strike of the rock.

Part of the area is covered with blown sand and alluvium. The Sabi river passes along the area covered and has the flood plains of the river. Dendritic type of drainage pattern is peculiar in the area. All the drainage merges in to the Sabi river.

9.2.7. Nalpur Block :

Regional Geological Mapping was done n/v Nalpur. Topographically the area is undulating with moderately high NE-SW trending hill. The hill part in the east and west part of village Nalpur contains schist and phyllite. This rock belongs to the Ajabgarh group Delhi super group. It is dark grey in colour with cleavage planes. Crenulation cleavages are well developed at places in the rock. Looking to the condition of the rock it seems that, the rock has undergone at least two phases of deformation. The rock is poorly ferrugineous at places. The general trend of the rock is N20°-25°E with 60°-65° dip due west.

9.2.8. Majara kath and Isrisingh Pura Block :

Regional Geological Mapping was done n/v Majara kath and Isrisingh Pura. Topographically the area is undulating with moderately high hill and plain land with blown sand cover. Plain area is covered with blown sand and alluvium because of the flood plains of Sabi river. The hill is trending almost NE-SW. This hill is comprised of quartzite, phyllite and schist.

This rock quartzite is light brown in colour. It is at places hard and compact but most of the places it is weathered. The rock is ferrugineous at places. Phyllite and schist are grey in colour with bedding planes. These rocks are weathered and loose on the surface. The general trend of the rock is N20°-25°E with 60°-65° dip due west.No where, any copper staining is seen in the rock. Some part of the area is covered with blown sand and alluvium. The Sabi river passes along the area covered and has the flood plains of the river. Dendritic type of drainage pattern is peculiar in the area. All the drainage merges in to the Sabi river. Some small scattered mounds are also seen in the area, containing phyllite and schist.

9.3. DETAILED GEOLOGICAL MAPPING : An area of 2 sq. km. was covered under detailed geological mapping on R.F. 1:2,000 in following different blocks:

9.3.1. Mirapur Block:

Detailed geological mapping in 1.00 sq.km. area was done on R.F.1:2000 near village Mirapur tehsil Bansur district Alwar.

Topographically the area has moderate to high hlls , trending NE-SW , geologically the rocks belong to Ajabgarh group of Delhi super group.

The entire area covered has dark grey coloured garnet bearing stauroulite schist. This rock is soft on the surface due to effect of weathering. At places the rock has ferruginous impurity on the surface. This rock has

fractures and joints, at least two sets of joints are seen, one is oblique (360) to the strike. The general attitude of the rock is N40 / 85-88 due west.

The schist rock is soft on the surface but it is found hard at depth, it has well deveploved crenulation cleavages, Looking to the condition of rock it seems that this area has gone under at least two phases of deformation . At places on surface of rock and some times on cleavage plains copper staining of probably malachite, azurite or bornite have been seen at places.

This staining indicates the presence of copper in the rock. In the west of village Mirapur along the nalla the schist rock has sulphur content. Samples have been drawn for chemical analysis. Above this location but in the nalla some slag pieces were seen scattered. When entire near by area was inspected carefully, the remains of ruined smelter were seen. On the basis of presence of this ruined smelter the area was again carefully scanned, just above this site an old working was found. It is about 3-4 X 3 X 1-1.5 mt. in dimension. Probably it was dug to take out the copper in ancient times, which was further

smelted on the site. Almost near the top of the hill a pegmatic vein, containing quartz, feldspar and mica was seen . It runs paralled to the strike of the rock. It is about 250 mt. in length and 1-2 mt. in dimension.

9.3.2. Badhin Block :

Detailed geological mapping was done covering about 1.00 Sq. Km. area was done on R.F 1:2000 n/v Badhin tehsil Behror district Alwar.

Topographically the area is undulating with moderately high NE-SW trending hill. The hill part in the south of village Badhin contains garnet bearing staurolite schist. The rock belongs to the Ajabgarh group Delhi super group. It is dark grey in colour with cleavage planes. Crenulation cleavages are well developed at places in the rock. Looking to the condition of the rock it seems that, the rock has undergone at least two phases of deformation. The rock is poorly ferrugineous at places. The general trend of the rock is N20°-25°E with 60°-65° dip due west. A pegmatite vein containing mostly quartz with minor mica is mapped. It is 50 to 60 mts. in length and 10 to 12 mts in width. Quartz is white and dull white in colour and it is non crystalline. This vein is post depositional and almost oblique to the strike of the rock.

Part of the area is covered with blown sand and alluvium. The Sabi river passes along the area covered and has the flood plains of the river. Dendritic type of drainage pattern is peculiar in the area. All the drainage merges in to the Sabi river.

The entire part of the hill contains grey in coloured crenulated garnet bearing schist. Very little or poor staining of copper, probably due to malachite, boronite or azurite is seen in the schist. Copper staining is again seen in the nalla and its near by area. This rock has two sets of joints, among which one is perpendicular to the strike and other is oblique(360°) to the strike.The general attitude of the rock is N40°E with almost vertical dip. Samples for chemical analysis from the location have also been collected.

10. SAMPLING :

99 no. of spot samples of schist and quartz were collected from the area and thirty five numbers were chemically analyzed, The analysis results shows Pb ranging from 18 ppm to 2090 ppm, Cu from 4.5 ppm to 309 ppm, Zn 3 ppm to 112.50 ppm, sulphur is found in 2 samples ranging from 0.56 to 1.36 %. Au is found absent in all samples.

The result is as follows :

S. No.	Sample Mark	Location	Content in percent/ppm					SiO_2 %	Fe_2O_3 %	Al_2O_3 %	Sulpher %
			Pb	Cu	Zn	Au	Ag				
1	SG/AL/BM-3/1	Mirapur	115.50	99	56.50-	-	-	57.14	36	4.30	A
2	SG/AL/BM-3/2	Mirapur	18	76.50	44	-	-	55.04	35.60	5.95	A
3	SG/AL/BM-3/3	Mahanpur	A	28.50	35	-	-	60.26	31.60	3.50	A
4	SG/AL/BM-3/4	Mirapur	A	20	12.5	-	-	93.96	2.00	1.30	1.36
5	SG/AL/BM-3/5	Mirapur	A	8.5	17	-	-	93.86	2.40	1.55	0.56
6	SG/AL/BM-3/6	Mirapur	53.50	54	70.50			10.84	77.60	1.90	A
7	SG/AL/BM-3/7	Mirapur	35.50	161.50	78			16.52	65.60	2.10	A
8	SG/AL/BM-3/8	Mahanpur	302.50	178.50	56			10.28	67.60	9.50	A
9	SG/AL/BM-3/9	Mahanpur	A	22.50	13.50			93.38	3.20	2.55	A
10	SG/AL/BM-3/10	Mirapur	A	31	18			90.12	6.80	3.00	A
11	SG/AL/BM-3/11	Mirapur	53.50	309	112.50			20.92	60	7.70	A
12	SG/AL/BM-3/12	Mahanpur	A	37	28.50			88.40	6.40	2.80	A
13	SG/AL/BM-3/13	Mahanpur	A	31	18.50			88.96	5.60	2.60	A
14	SG/AL/BM-4/1	Baberi	A	A	33.50	A	0.9	73.78	5.20	10.30	-
15	SG/AL/BM-4/2	Baberi	A	A	29	A	0.4	75.54	5.20	9.30	-
16	SG/AL/BM-4/3	Baberi	A	11.50	30	A	5.2	74.46	8.80	7.55	-
17	SG/AL/BM-4/1	Badhin	A	4.5	47.5	-	-	91.74	-	-	-
18	SG/AL/BM-4/2	Badhin	A	A	42.5	-	-	94.26	-	-	-
19	SG/AL/BM-4/1	Baberi	A	37	A	A	1.7	-	-	-	-
20	SG/AL/BM-4/2	Baberi	A	52	35	A	2.0	-	-	-	-
21	SG/AL/BM-4/3	Baberi	A	22	A	A	2.0	-	-	-	-
22	SG/AL/BM-4/4	Baberi	A	37	A	A	4.2	-	-	-	-
23	SG/AL/BM-4/5	Baberi	2090	44	A	A	4.0	-	-	-	-
24	SG/AL/BM-4/6	Baberi	1666	44	A	A	2.0	-	-	-	-
25	SG/AL/BM-4/7	Baberi	250	51.5	3.0	A	0.45	-	-	-	-
26	SG/AL/BM-4/8	Baberi	204.50	66.0	28	A	A	-	-	-	-
27	SG/AL/BM-4/9	Baberi	45.5	51.5	16.5	A	A	-	-	-	-
28	SG/AL/BM-4/210	Badhin	113.5	59.0	55.5	A	A	-	-	-	-
29	SG/AL/BM-4/11	Badhin	136.5	88.0	11.0	A	A	-	-	-	-
30	SG/AL/BM-4/12	Badhin	272.5	59.0	A	A	A	-	-	-	-
31	SG/AL/BM-4/13	Badhin	91.0	29.5	28.0	A	A	-	-	-	-
32	SG/AL/BM-4/14	Badhin	1250	51.5	A	A	A	-	-	-	-
33	SG/AL/BM-4/15	Badhin	113.5	103	4.0	A	A	-	-	-	-
34	SG/AL/BM-4/16	Badhin	295.5	44.0	A	A	A	-	-	-	-
35	SG/AL/BM-4/17	Badhin	1303	130	A	A	2.47	-	26	-	-

11. RESERVE :

The encouraging results could not receive so far the reserve could not be calculated.

12. EXPENDITURE : -

(1) Project No. & year---- BM/3,4 (2007-08 & 2008-09)

(2) Expenditure on R.G.M. [@ Rs. 15000 up to 10sq. km]

20 sq. km =Rs. 30,000. 00

(3) Expenditure on D.G.M. [@ Rs. 11,250 up to 50 Hect.&Rs. 250/ Hect. More than 50 Hect.]

2.00 sq. km =Rs. 48,750.00

(4) Sampling charges [@ 10/samples]

Spot samples (99 nos) = Rs. 990.

(5) Chemical analysis [Rs.600/samples]

35 nos. =Rs. 21,000

Rs. 100740

(6) Supervision charges [@ 10% of the expenditure] = Rs.10074

Total expenditure incurred on project =Rs.1,10,814

(Rupees one lacs ten thousands eight hundred fourteen only).

13. CONCLUSION & RECOMMENDATION:-

Geologically the area has complex lithology belonging to Ajabgarh group of Delhi super group, represented by brecciated ferruginous quartzite, interlayer with phyllite, and quartzite with garnetiferous chlorite schist and carbonaceous phyllite. These are intruded by post Delhi granite, pegmatite and quartz veins.

The rock assemblages of the area seem to be favourable for base metals.Copper in form of bornite , and malachite in schist was noticed n/v Lohiti, Mahanpur, Manchi and Isra Ka Bas. At places poorly developed gossans with limonitic material were also seen in the area.

During the year , 315 sq. km area was covered under regional mineral survey and 20 sq. km area was mapped under regional geological mapping. 2.00 sq. km area was mapped in detail . 99 numbers of samples were drawn from the area, among which 35 samples were chemically analysed and the analysis result reveal the occurrence of Pb, Cu, Zn, Ag these elements ranging from Pb ranging from 18 ppm to 2090 ppm, Cu from 4.5 ppm to 309 ppm, Zn 3 ppm to 112.50 ppm, sulphur is found in 2 samples ranging from 0.56 to 1.36 %. Au is found absent in all samples.

During the course of detail geological mapping an old working and a ruined smelter were found near village Mirapur. On the eastern slope of the hill copper staining was noted at places in about 3.5 km. long strip.

On the basis of above result it is concluded that the area has the occurrence of Pb, Cu, Zn, Ag but the values are poor although this study is based on the surface indications only.

ACKNOWLEDGEMENT

The authors are highly grateful to ***Sh. A.K. Trivedi***, Suptdg. Geologist, Jaipur region, Jaipur and ***Sh. S.K.Swami***, the then Addl. Director, Geology, Jaipur Zone, Jaipur and ***Sh. M.M.Sharma*** Addl. Director, Geology, Jaipur Zone, Jaipur under their guidance geological studies were carried out. Authors extend thanks to their colleagues and field staff, particularly to***Sh. Ram Kishore Sharma***, Field Man, who supported in many ways to complete this work.

2202
6

PROJECT NO. BM/4

F.S. 2008-09

CONTINUATION OF PROSPECTING FOR BASE METALS N/V LOHITI, ISRA KA BAS, BADHIN, NALPUR, KALIPAHARI, KISHORPUR ETC. TEHSIL BANSUR AND BEHROR DISTRICT ALWAR

SCALE 1CM =500 MT.

PART OF G.T. SHEET NO. 54 A/5

One Block No 6 - Base metal

INDEX

	ALLUVIUM
	QUARTZ VEIN
	QUARTZITE
	STAUROLITE SCHIST
	COPPER STAINING
62-Y	DIP- STRIKE

2202
4

REGIONAL GEOLOGICAL MAP OF AREA
N/V MAHANPUR, TEH. BANSUR, DISTT. ALWAR
PROJ. NO. BM/3 (F.S) - 2007-08

Scale 1cm = 100 mt.

Past of G.T. Sheet No 54 A/5 & A/6.

76° 18' 50"
27° 45' 52"
A
76° 19' 15"
27° 45' 34"
B
27° 45' 34"
76° 17' 40"
27° 44' 18"
D
76° 18' 05"
27° 44' 05"
C
Mahanpur

INDEX

- ALLUVIUM
- Garnet bearing Staurolite Schist
- Copper Staining

GEOLOGIST

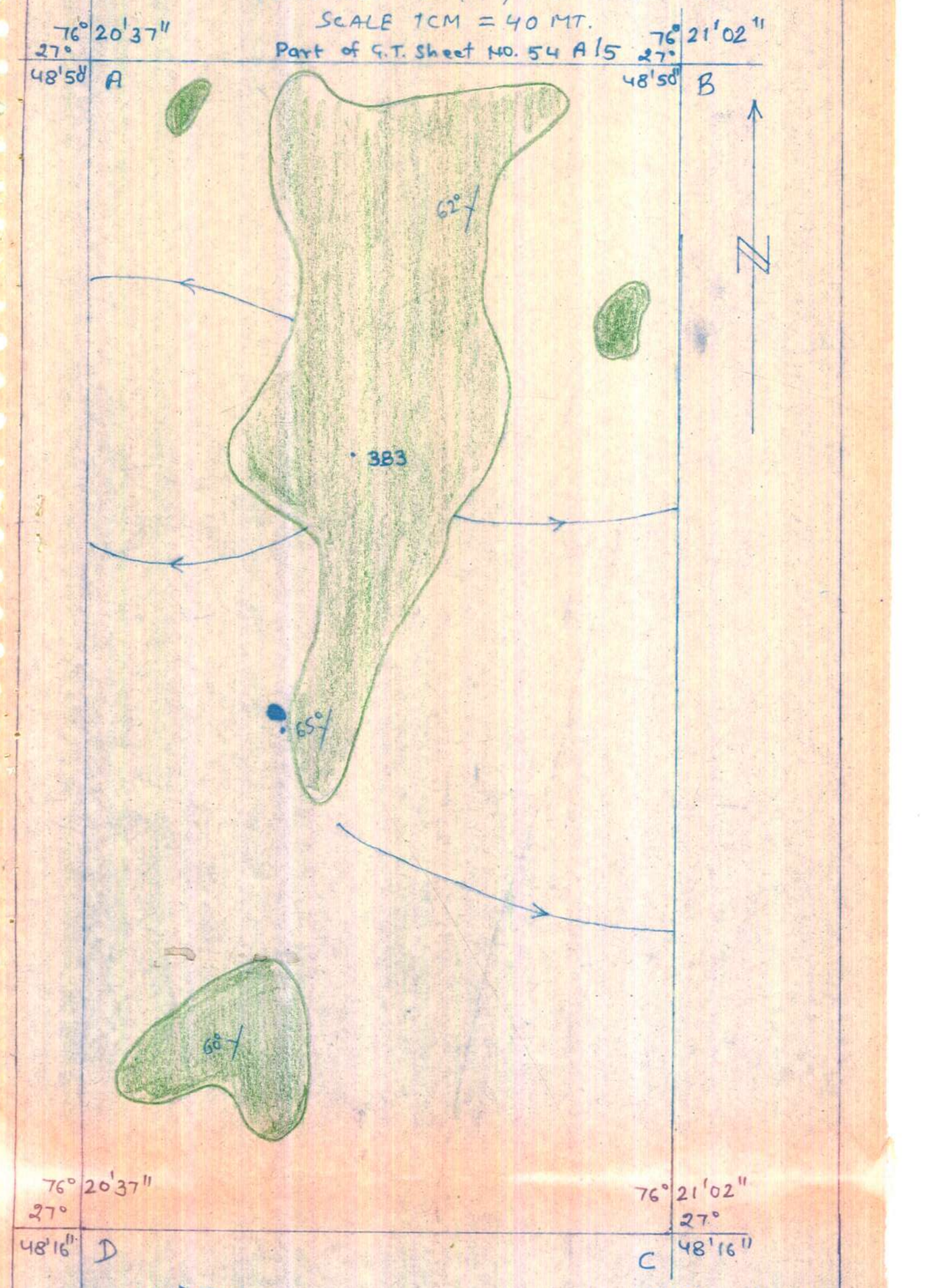
2202
13

DETAILED GEOLOGICAL MAP OF AREA N/V BABERI, TEH. BANSUR, DIST. ALWAR

PROJ. NO. BM/4, F.S. 2008-09

SCALE 1CM = 40 MT.

Part of G.T. Sheet No. 54 A/5



INDEX

- ALLUVIUM
- STAUROLITE SCHIST
- NALA DIRECTION
- RIVER CHANNEL

60°/ DIP-STRIKE

GEOLOGIST SR. GEOLOGIST.

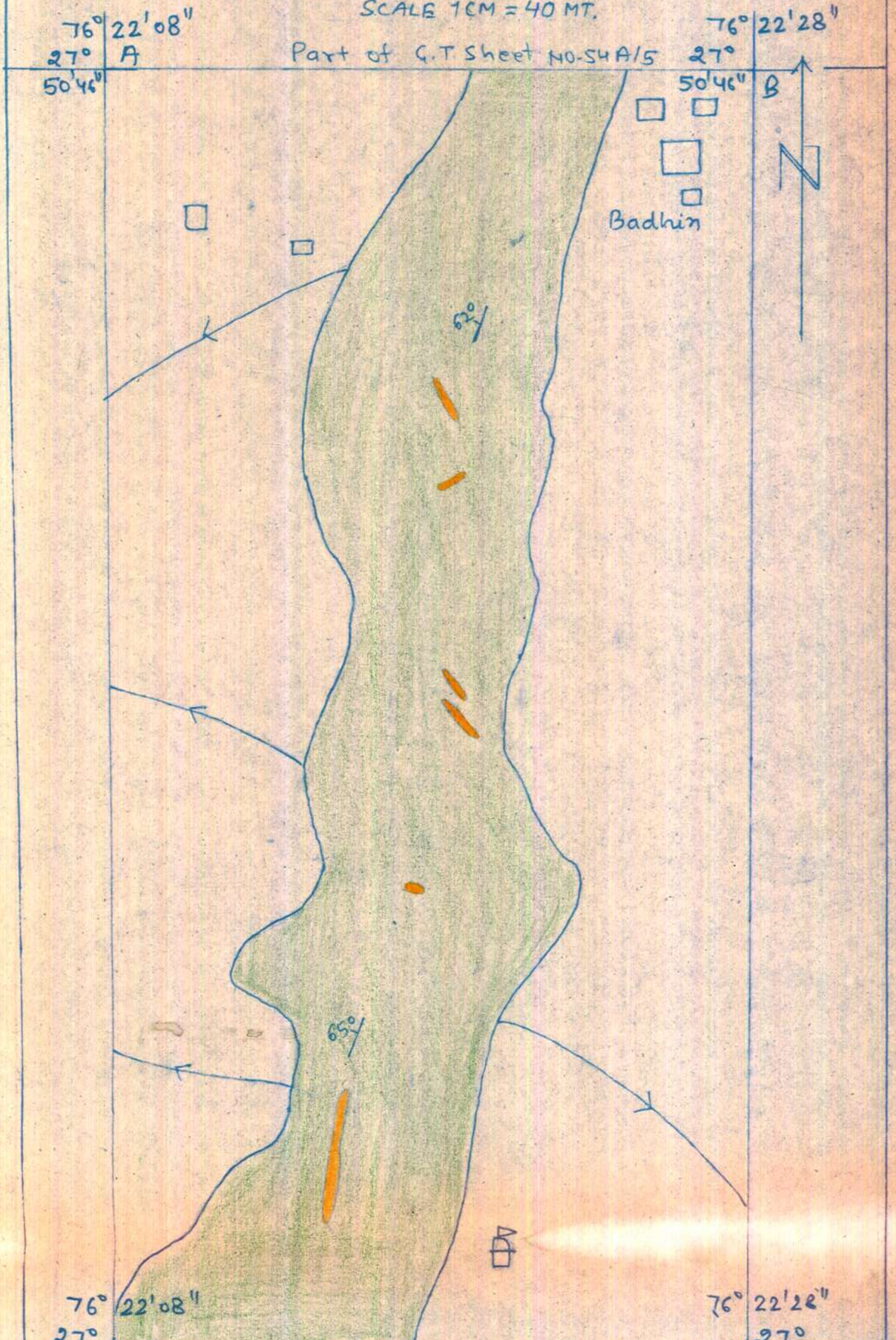
2202/12

DEETAILED GEOLOGICAL MAP OF AREA N/V BADHIN TEH. BANSUR, DIST. ALWAR

PROJ. NO. BM/4 F.S. 2008-09

SCALE 1CM = 40 MT.

Part of G.T Sheet NO-54A/5



INDEX

- ALLUVIUM
- QUARTZ VEIN
- STAUROLITE SCHIST

65° DIP-STRIKE

TEMPLE

GEOLOGIST SR-GEOLOGIST.

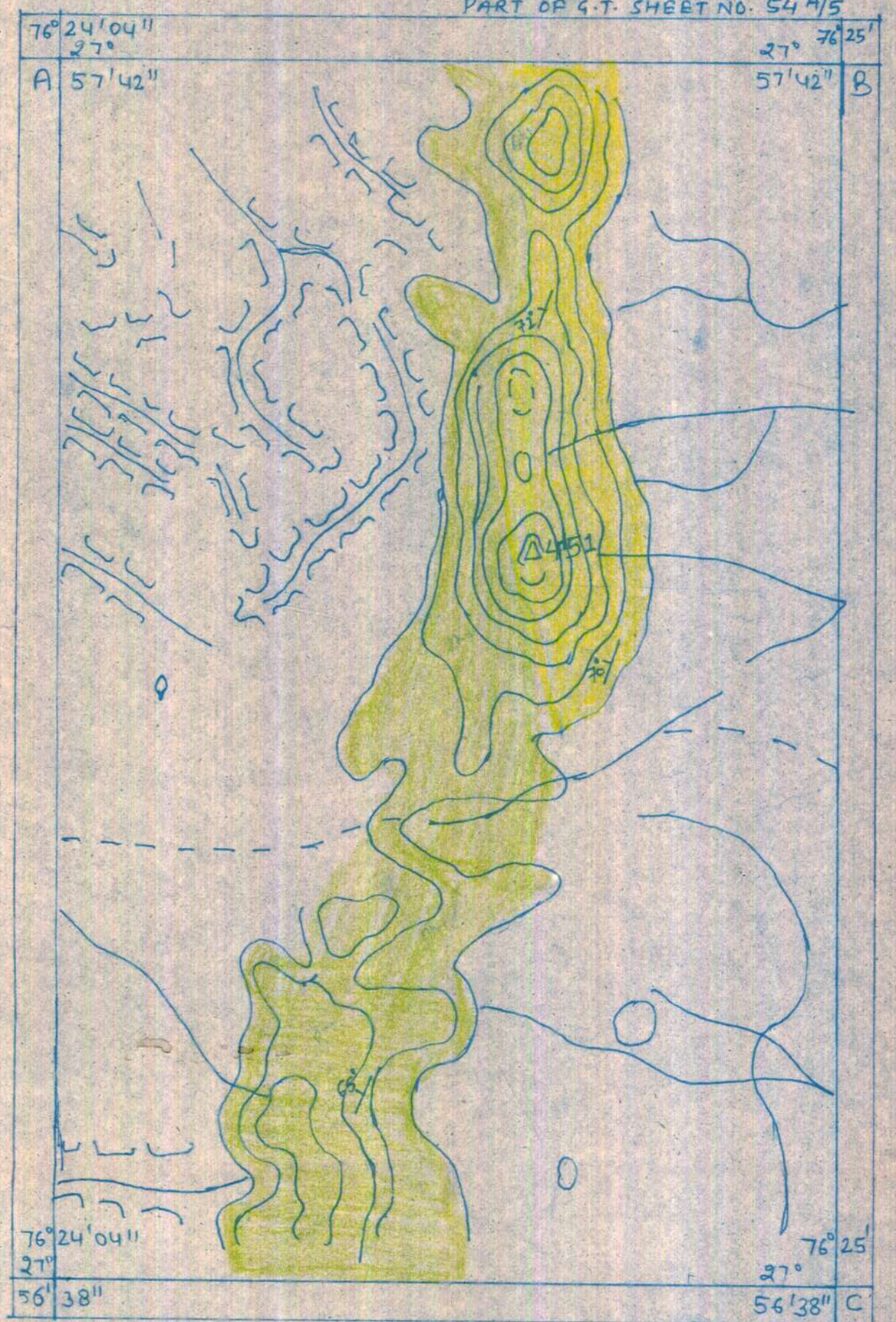
2202
1Φ

REGIONAL GEOLOGICAL MAP OF THE AREA N/V MAJARA KATH, TEH. BEHROR, DISTT. ALWAR

(PROJECT NO. BM/4 F.S. 2008-09)

SCALE 1CM = 100 MT.

PART OF G.T. SHEET NO. 54 A/5



INDEX

65° DIP - STRIKE

ALLUVIUM

QUARTZIT

PHYLLITE / SCHIST.

GEOLOGIST

SR. GEOLOGIST

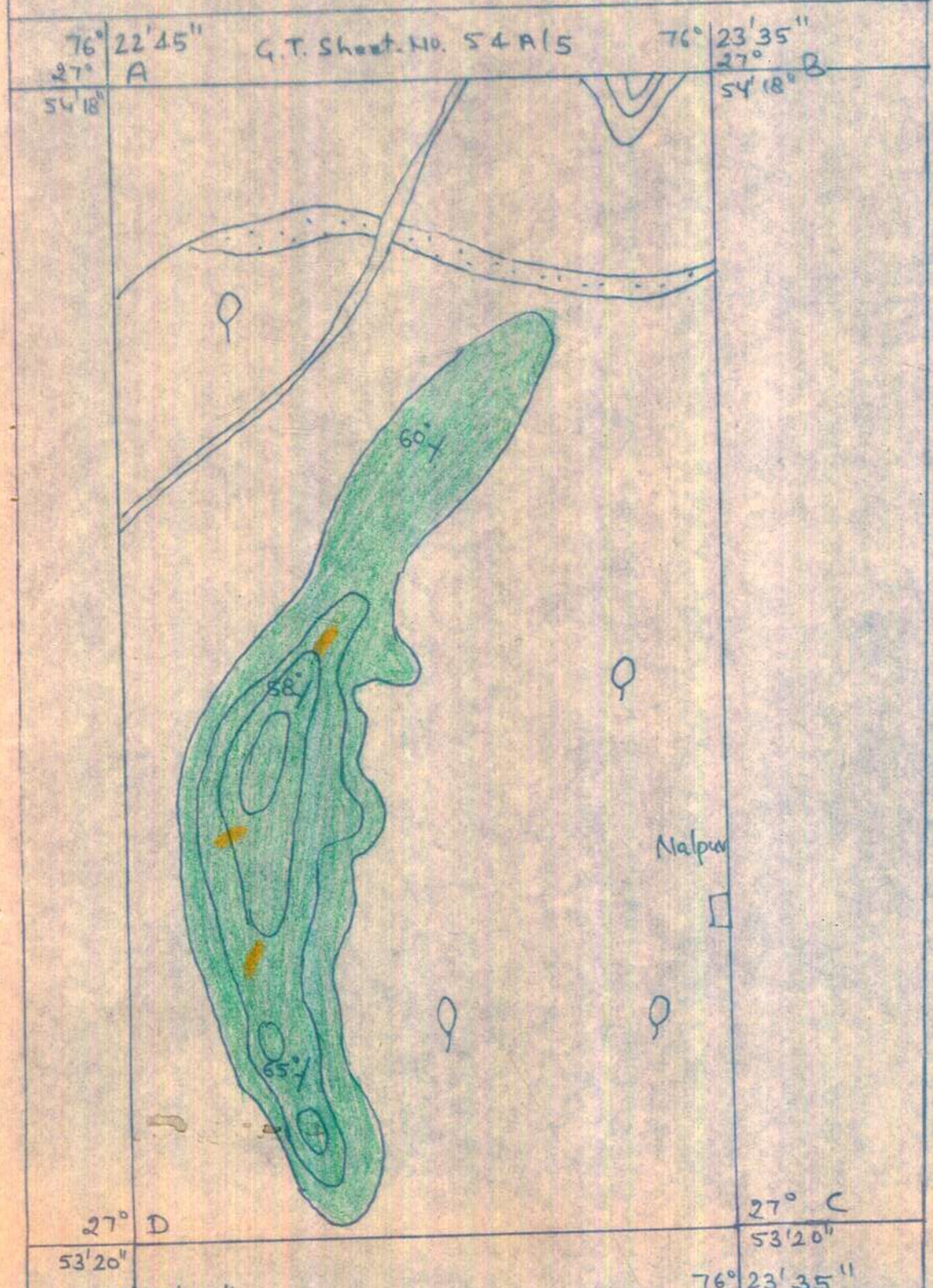
2202
10

PROJECT NO - BM-4 F.S. 2008-09

REGIONAL GEOLOGICAL MAP N/V NALPUR

TEHSIL BEHROR, DISTRICT ALWAR (RAJ)

Scale 1cm = 100 mt.



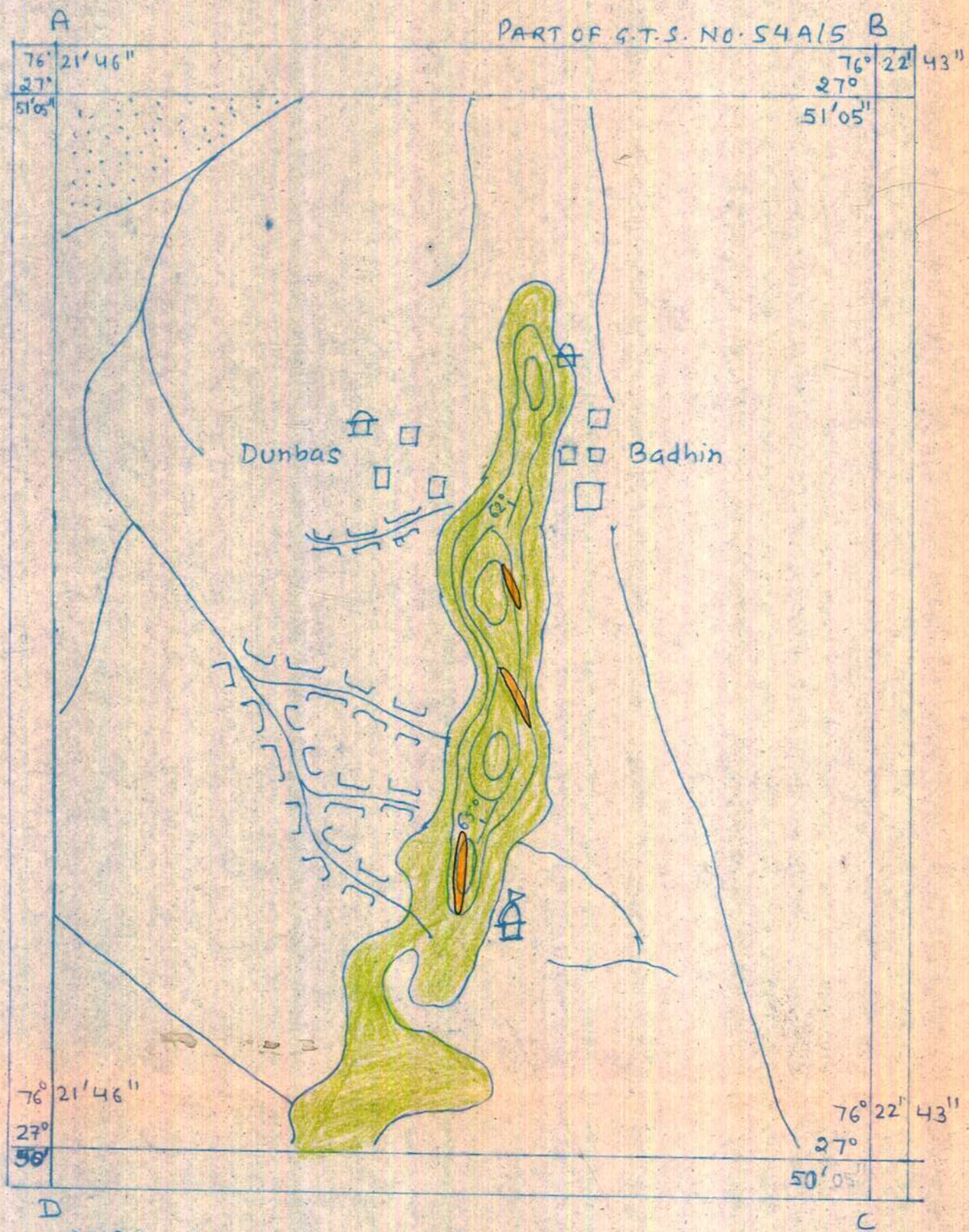
INDEX

	ALLUVIUM		
	QUARTZ VEIN		
	PHYLLITE/SCHIST		
65°y	Dip & strike	Geologist	Sr. Geologist, Alwar

2202
9

REGIONAL GEOLOGICAL MAP OF AREA N|V BADHIN, TEH. BANSUR, DISTT. ALWAR (PROJECT NO. BM/4 F.S. 2008-09)

SCALE 1CM = 100 MT.



INDEX

- ALLUVIUM
- QUARTZ VEIN
- STAUROLITE SCHIST.

65° DIP-STRIKE

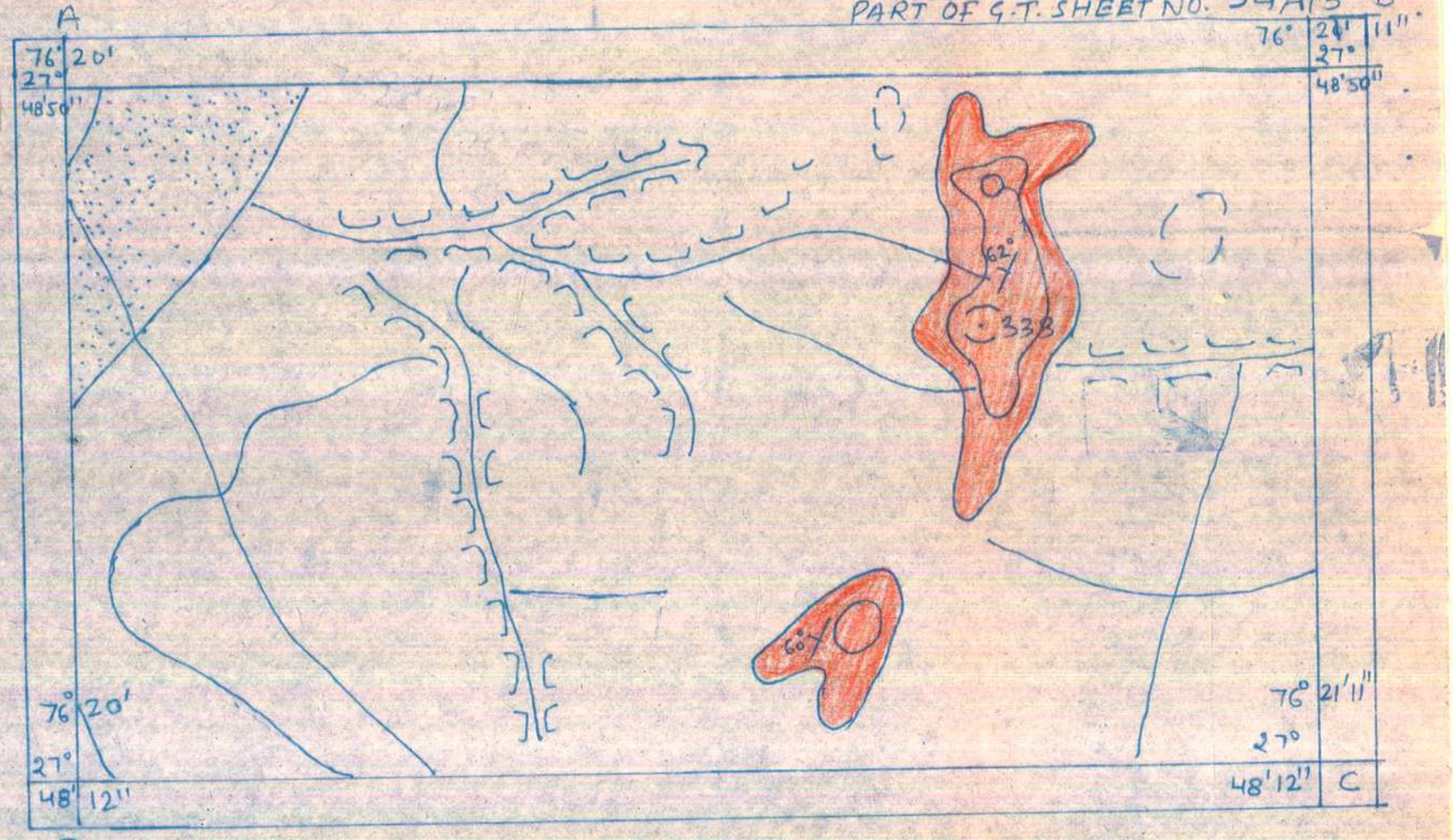
GEOLOGIST. SR. GEOLOGIST.

REGIONAL GEOLOGICAL MAP OF AREA N/V BABERI TEH. BANSUR, DISTT. ALWAR (2008-09, Proj. No. BM/4)

2202/8

SCALE 1CM = 100MT.

PART OF G.T. SHEET NO. 54A/5



INDEX

- ALLUVIUM
- STAUROLIT SCHIST
- NALA
- RIVER CHANNEL

60°

GEOLOGIST

SR. GEOLOGIST.

2202/5

PROJECT NO. BM-3 F.S. 2007-08

REGIONAL GEOLOGICAL MAP NIV HARSORA

TEHSIL BANSUR, DISTRICT ALWAR (RAJ.)

INDEX

	ALLUVIUM
	GRANITE
	HABITATION
	METALLED ROAD

Geologist

Sr. Geologist, Alwar

2202
3

REGIONAL GEOLOGICAL MAP OF AREA

N/V MIRAPUR, TEH. BANSUR, DISTT. ALWAR

PROJ-NO. BM/3 (F.S. 2007-08)

Scale: 1 cm = 100 mt. Part of G.T. Sheet No. 54 A/5

INDEX

- ALLUVIUM
- QUARTZ VEIN
- STAUROLITE SCHIST.
- COPPER STAINING.
- 60° DIP-STRIKE.
- OLD WORKING PIT.

GEOLOGIST. SR. GEOLOGIST.

2202
2

REGIONAL GEOLOGICAL MAP OF AREA N/V MANTHA, TEH. BANSUR, DISTT. ALWAR

PROJECT NO: BM-3
F.S.- 2007-08

SCALE 1 cm = 100 mt.

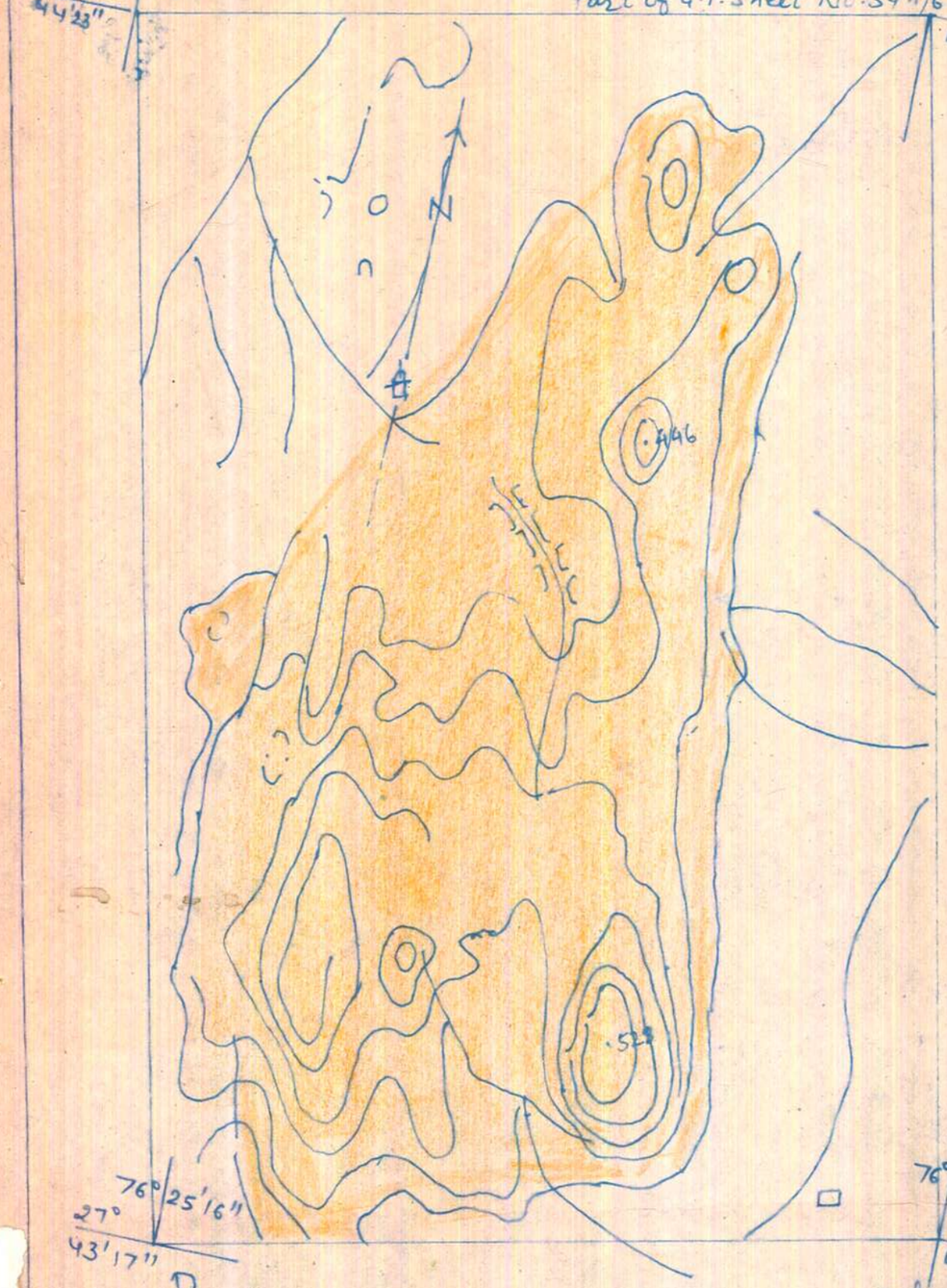
Part of G.T. Sheet No. 54 A/6

A — 27° 44'23" / 76° 25'27"

B — 27° 44'27" / 76° 26'16"

C — 27° 43'12" / 76° 26'03"

D — 27° 43'17" / 76° 25'16"



INDEX

- ALLUVIUM
- GRANITE
- NALA

GEOLOGIST. SR. GEOLOGIST.

2202
1

Block 1- base metal
Block 2,3 and 7 for granite
Block 4,5 for M/stone

PROJECT NO. BM/3

F.S.(2007-08)

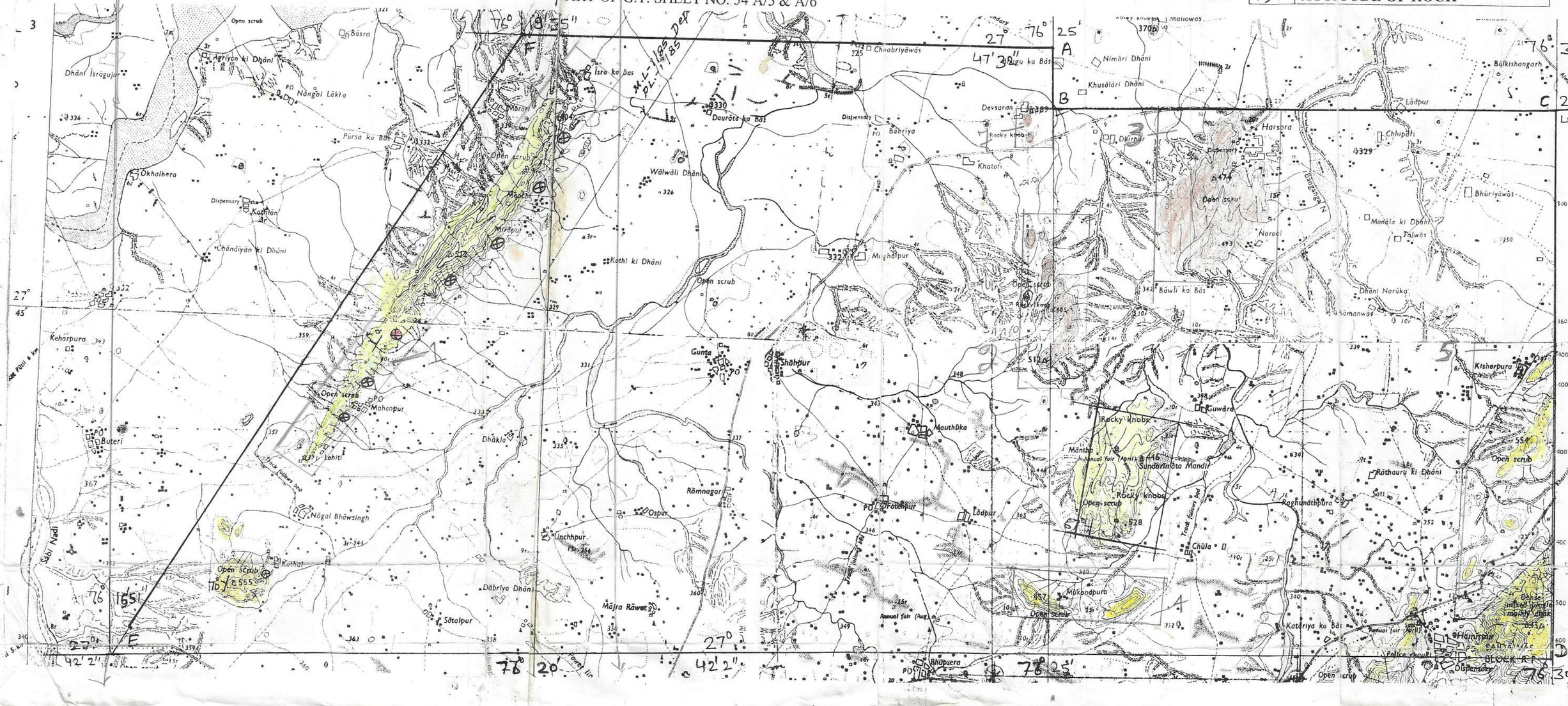
PROSPECTING FOR BASE METALS N/V LOHIT,ISRA KA BAS, BADHIN, NALPUR, KALIPAHARI, KISHORPUR, ETC. TEHSIL BANSUR & BEHROR, DISTRICT ALWAR

SCALE 1CM= 500 MT.

PART OF G.T. SHEET NO. 54 A/5 & A/6

INDEX

	ALLUVIUM
	PEGMATITE & QUARTZ VEIN
	GRANITE
	QUARTZITE
	SCHIST/ PHYLLITE
⊕	BASE METAL
45°	ATTITUDE OF ROCK



2202
6

DETAILED GEOLOGICAL MAP OF AREA

N/V MIRAPUR, TEH. BANSUR, DISTT. ALWAR

PROJ. NO. BM/3 F.S.- 2007-08

SCALE 1 CM = 20 MT.

76° 19'48" 27° 46'35"

404 (G.T. Station)

355°/875 mt.

76° 20'03" 27° 46'23"

62°

62°

60°

76° 18'20" 27° 46'06"

76° 19'33" 27° 45'56"

INDEX

- ALLUVIUM
- PEGMATITE VEIN
- GARNET BEARING STAUROLITE SCHIST.
- SULPHUR BEARING SCHIST
- COPPER STAINING
- OLD WORKING
- RUINED SMELTER
- NALA DIRECTION
- 60°/ DIP-STRIKE

GEOLOGIST

SR. GEOLOGIST
ALWAR