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Annual Report of Exploration Activities - May 1999 to
April 2000 - EL11/96
Allen N R and McCormack J + S K*
Allen, N.R. EL11/96

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EL 11/96

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20th April 2000

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Location of Tenement and Summary of Geology

Location of tenement and access

EL 11/96, comprising an area of 6 square kilometers, is located approximately 3 km NE of Pioneer, as illustrated in figure 1.

Access is provided by 4-wheel-drive track from Garibaldi Rd., approximately 1.5 km W of the junction with the Gladstone main road.

Summary of the geology of the area

All the outcropping rocks in the area are Devonian coarse-grained granite/adamellites, with some small fine-grained granite/adamellite areas. In the western half of the lease the areas of exposed granite are separated by deeply greisenised (mostly kaolinised) regions. Most of these greisenised areas show lines of surface quartz fragments with a trend of 340° (T). In at least three cases these lines of surface quartz fragments indicate quartz veins still in place within the greisenised granite. Silcrete is usually encountered near the indicated quartz veins.

Figure 2 shows the area of the lease. Also shown are the seven sample lines and other spot sample locations. The areas where native metals were found are marked, and are each assigned a number to enable the native metals and alloys listed in Table 1 to be correlated with sites.

Previous Exploration of the Area

Except for the old tin-mining excavations in the SW corner of the lease (Nolan's old mine), and Mr. McCormack's mining lease adjoining the N end of the lease, there are no records of any previous exploration activity in the area. Nevertheless some limited activity has occurred, and is evidenced by some surface clearing and test pits, but this activity is very old. One area occurs just west of line 6 near where there is also evidence of an old camp and an old fence. A number of test pits occur in an area about 100 m east of line 1, close to the track. About 50 m to the S of location 11 (line 5) on Figure 2, some of the loose surface granite rocks have been pushed up into quite a large mound, although no other evidence of excavation (e.g. a pit) is obvious. At about 60 m east on line 4 there is an old test pit, and there are other pits, apparently randomly located, around this area. Location 16 is within an excavation known as "Nolan's old workings".

Interest in the area, which led to the present exploration lease, commenced with the discovery of native metal particles in the ground immediately to the S of the lagoon on Mr. McCormack's mining lease. This was followed by the marking-out of two prospecting claims in 1995, which contained the two most obvious quartz veins in the hills immediately to the S of Mr. McCormack's mining lease. The continuing discovery of native metals and alloys on these claims, and the apparent association of these native metals with the indicated quartz veins, led to an application for the present exploration lease.

During 1996/1997 and 1997/1998 geochemical sampling was carried out along the indicated lines in Figure 2. Each sample location was also examined for the presence of native metals and for chromites and Mg-ilmenites. This allowed mapping of occurrences for these particles, and showed that they were spatially associated with the quartz veins. At the same time the geochemical sampling and analysis did not indicate the presence of significant mineralisation, but did produce a correlation between quartz veins, native metals, chromite and Mg-ilmenite, and small geochemical "highs". One of the more significant geochemical highs occurred at 75 east and 100 east on line 4, where copper assayed at around 120 ppm. As it was thought that this value could be due to some error, the area was re-sampled, but the new samples were destroyed by fire before they were analysed.

Analysis of quartz from the line 5 samples suggested that the geochemical highs, at least along line 5, were of a secondary nature, and were probably not associated with the granite in the area.

The results obtained during 1996/1997 and 1997/1998 were not encouraging for the discovery of an economic mineral deposit, but were geologically and geochemically puzzling.

Exploration Philosophy

While one of the main reasons for exploring the area is simply to shed light on the geological and geochemical puzzle posed by the presence of the native metals, chromites and Mg-ilmenites, and their association with the quartz veins, there is also the consideration that the presence of the native metals may be indicating some hidden deposit of economic value. The nature (or existence) of any such deposit can not be determined by the presence of the native metals alone, and for this reason it has not been possible to state the type of deposit being sought.

Exploration of the area is therefore based primarily on geological problem solving rather than on an economically driven programme.

Summary of Exploration Work Carried Out from May 1996 to May 1997

Details of this work are given in the 1996/1997 report on exploration activities. A brief summary is given below.

Five separate lines, totalling approximately 1.5 km in length were pegged out and sampled at 25 m intervals. Approximately 2 kg samples were taken at each site. About a quarter of each sample was used for chemical analysis by neutron activation and AAS. The remainder of each sample was panned to a heavy mineral concentrate and examined for native metals, chromites and Mg-ilmenites. These were then subjected to electron microprobe analysis, and many of the native metals were later photographed.

Magnetic field measurements and radiation measurements were made at 5 m intervals along each pegged line. Self-potential and electromagnetic measurements were also made.

The results of all the above measurements and analyses were given in the previous report.

Summary of Exploration Work Carried Out from May 1997 to May 1998

Details of this work are given in the 1997/1998 report on exploration activities. A brief summary is given below.

Acid-insoluble residues from line 5 samples were analysed using the method developed by Dr. Jan van Moort. In this method most of the secondary mineralisation is removed, leaving only that mineralisation which occurred with the formation of the quartz. The aim of this analysis was to look for evidence of any mineralisation associated with the emplacement of the quartz veins themselves.

Line 2 was examined further for chromites and Mg-ilmenites.

Summary of Exploration Work Carried Out from May 1998 to May 1999

Details of this work are given in the 1998/1999 report on exploration activities. A brief summary is given below.

The quartz veins indicated on lines 2 and 5 were examined in more detail by back-hoe excavation. Quartz from these veins was also re-analysed by PIXE/PIGME at Lucas Heights in Sydney. The anomalous copper values previously obtained on line 4 were further examined by re-sampling the previous holes and extending the sampling area 50 m to the north and 25 m to the south, using a 25 m grid.

A new E-W line, line 6 on figure 2, was marked out. Geochemical samples were taken, at 25 m intervals from within the clay horizon, and analysed for Cu, Ni, Pb, Zn and Mg. Radiation measurements every 5 m were also taken. For each geochemical sample location, the quartz within the sample was analysed by PIXE/PIGME at Lucas Heights. An anomalous copper value obtained on line 6 (at 25 m west) was also further examined by extending the sample area around this location, on a 25 m grid.

Water samples were taken from most stream and water-filled test holes on the lease. These samples were analysed by AA for the elements listed above.

Exploration Work Carried Out from May 1999 to May 2000

Work during 1999-2000 has concentrated on the NE portion of the lease, with some theoretical re-examination of spinel (chromite) compositions and their significance in the light of a paper by Kamenetsky et al (1999).

Area 6 was extended 150 metres further to the east and 125 metres to the north, and a further 18 samples taken on a 25 metre grid by hand auger from within the clay horizon. Sampling in this area by hand auger had to be suspended when very hard silcrete was encountered further to the north and north-east. An attempt was made to penetrate the silcrete with a small motorised auger. This succeeded, but the silcrete persisted below the extent of the auger bit (only 1 metre long). Silcrete has been quite a sampling problem in many areas on the lease.

Second-hand components for a larger trailer-mounted auger drill were purchased, and several weeks fabrication work produced an operational auger drill rig, towed and powered by a tractor and capable of drilling to depths of 12 metres with 65mm diameter augers. It was hoped that this would not only penetrate most of the silcrete, but also determine depths to solid rock under the areas of interest.

A series of four holes was drilled along line 6 (at 40W, 60W, 75W and 90W, - see figure 3) as an initial trial of the auger. These holes were really a learning exercise, but samples were taken by lifting the auger at 3 metre depth intervals and then removing a sample from the first 30 cm of the drill. An attempt was made to penetrate the silcrete at line 6-50E-115N, and this proved successful. However the drill proved very difficult to use where there was any substantial slope. This could have been corrected with a prior levelling of the site, but this was not carried out at this early stage. In any case, with the exception of the area around 6-50E-115N, most of the areas planned for auger drilling were reasonably level.

Because the highest values obtained for zinc and lead in previous sampling had come from a location to the north of line 1 (at number 2 on figure 2), along the trend of vein 1, an initial series of auger holes was drilled at 10 to 12 metre intervals in a roughly E-W direction in this area (line 7 on figure 2). Samples from these holes were analysed by AA for Cu, Pb, Ni, Zn, Mg, and Ca. Very hard silcrete was encountered towards the western end of this line, which the auger drill itself was unable to penetrate. However the silcrete was eventually penetrated in two places. An old back-hoe hole (from when this area was part of a prospecting claim about 4 years ago) had also failed to penetrate the silcrete, but the exposure of the silcrete and the filling of the hole with water over the intervening years had apparently softened it enough for the auger drill to descend. Another penetration was accomplished further west by crow-bar and sledge-hammer (over almost a full day).

A portion of each sample was also panned to a heavy mineral concentrate. The concentrate was separated into magnetic fractions and examined under a microscope. In particular the concentrates were examined for cassiterite, sulphides and possible native metals, and possible chromites. Any interesting particles were made into a grain mount, although the use of the auger made pollution more of a possibility than for the previous hand-dug pits.

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Results

Geochemical

The analysis results for the hand auger sampling around line 6 are illustrated in figures 3 to 8, where they have been added to the results from the 1998-1999 report (Mg and Ca were not analysed for in the 1998-1999 data). Note that the silcrete in holes 6-75W-25S and 6-75W-50S was thin enough to be penetrated with the small motorised auger, and new analysis figures have been obtained from the clay underneath the silcrete. The analysed values are given in appendix A.

Figure 9 illustrates the analysis results from the initial auger drilling trials on line 6. Samples here were taken at 3 metre (10') intervals, with the first sample taken at 3 metres. The original soil sample results (taken at about 1 metre) have been used to indicate shallower values. The analysis values are shown in appendix B. The holes at 6-40W and 6-60W did not reach hard rock, but were stopped when the drill reached very firm dry clay and appeared to be labouring to go further. This later turned out to be more a problem of machinery operation than a limitation of the drill. The drilling of this series of holes, while providing samples for analysis, was mainly carried out as a learning stage.

Figures 10 to 15 illustrate the main auger drilling results for line 7 (see figure 2 for location). Most holes reached solid rock. Two holes encountered impenetrable silcrete at about 1 m, and were abandoned. The silcrete had broken down in the old back-hoe excavation, but the hole here gave difficulties due to water flow and the very soft ground, and would not support the weight when rods were being changed. It was abandoned at about 8 m. There appears to be a considerable underground water flow down the hill (towards the north) in this area, with water sometimes flowing unassisted from the hole when the hole reached depths of between 2 and 4 metres. It is interesting that the Zn, Mg and Ni profiles are broadly similar. The Zn and Pb values in particular are very much higher than has been seen anywhere previously in this area.

Mineralogy

Figure 16 shows the distribution of native metals and sulphides for the line 7 auger holes. With the equipment available it was not possible to reliably distinguish between some sulphides and some native metals, but the impression is that native metals are not occurring at the deeper levels. Many of these particles have been mounted for later analysis. However the sample from hole 45.8W at just over 3 m contained many small galena particles, and the deepest samples from holes 69W, 80W and 98W all contained plentiful pyrite particles. Surprisingly no galena was identified from hole 34.6W (at 6m) or 45.8W (at 8 to 9m). Some possible chromites were found for holes west of 58W. These were mounted for later identification by analysis.

The position marked on figures 10 to 15 as "Location 1" was the first location where native zinc was identified about 5 years ago, from samples taken from a depth of about 4m in a pit dug by excavator. It is now clear that this pit had been placed almost directly over the point where the highest zinc values rise towards the surface.

Although copper or brass particles were found quite frequently in the samples from the line 6 area, no copper or brass particles were found in any of the samples from line 7.

For the eastern part of line 7, cassiterite was only found in the samples nearer to the surface, but for the western end of the line cassiterite particles were found in all samples. Just above the solid granite the numbers of cassiterite particles correlated roughly with the amount of pyrite in the sample. Figure 17 shows the approximate distribution of cassiterite. The values were estimated by counting the particles and calculating approximate weights.

Below 6m at hole 98W on line 7, and coinciding with the appearance of abundant pyrite and an increase in cassiterite, the sample contained many grey fragments with the appearance of feldspar. These contained green and white phenocrysts, and were determined by XRD (R. Bottrill, Mineral Resources Tasmania, - email communication) to be mainly orthoclase with minor plagioclase and traces of kaolin and possibly epidote. The XRD report from Mineral Resources Tasmania is not yet to hand.

When the analysed chromite compositions are plotted by TiO_2 and Al_2O_3 content, as suggested by Kamenetsky et al (1999), the results are as shown in figure 19. Kamenetsky considers that the relationship between the TiO_2 and Al_2O_3 contents of spinels allows discrimination between spinels from different magmas and geodynamic settings. Kamenetsky's compositional fields are indicated on figure 19. The impression from figure 19 is that the EL 11/96 chromites come from two different sources, SSZ (supra subduction zone) and MORB (mid ocean ridge) peridotites. This is emphasised by the fact that there is a distinct compositional difference for line 2 between chromites from the eastern end (MORB peridotite) and the western end (SSZ peridotite). Lines 4 and 5 chromites also plot in the MORB peridotite field, while both types of chromite compositions occur in close proximity everywhere on line 1.

Structure

Figure 18 shows an area in the NE of the lease where a well-defined NW-trending valley between granite outcrops appears to have been cut by a NE-trending fault, with the E side being displaced about 50m to the NE. This possible fault is approximately parallel to the proposed fault line indicated in figure 13 of the 1999 report. No quartz particles were found along either section of the NW-trending valley that might indicate it marked an extension of vein 1 further to the NW, although the alignment with vein 1 is quite close. Surface vein quartz particles were instead found about 100m further to the NE, and these gave the same approximate trend as vein 1. It is a possibility that the NW-trending valley may have originally been aligned with vein 2 (figure 18), before moving about 75m to the NE along the fault proposed in the previous report.

The location of silcrete or hard-pan in the area is also shown on figure 18, and appears to be associated with the vein system, mainly with vein 1.

Discussion

Line 7 is just to the south of the tertiary gravels laid down by the old Ringarooma river, but below a depth of about 1 m the clays have the texture of weathered granitic rocks and are certainly not old river sediments. Holes drilled through the old river sediments near the lagoon in the extreme north-east of the exploration lease also encounter similar weathered granites below the old river sediments. However it is possible that at least some of the weathered granites drilled in line 7 may have come from further up the hill to the south. Only about 50 m to the south of line 7, and above it, a large section of the hillside appears to have slumped some distance down-hill. Considering the high ground-water flow in this area, such slumping would appear quite possible. In the light of such high ground-water flow, the AAS values obtained for Zn and Pb (using aqua regia) are quite anomalous

If the north-eastern quartz vein (figure 2) is extended to the north, it would be expected to cross line 7 somewhere between 50W and 80W, and this is consistent with the analysis results for line 7. Possible hillside slumping and high ground-water flow could have considerably distorted geochemical patterns nearer the surface, but just above solid rock there appears to be a zoning of Pb, Cu/Ni/Zn, and Fe (indicated by the pyrite) from east to west, and centering around 60W. The cassiterite and pyrite at 98W bring to mind the narrow tin-bearing veins in weathered granite that exist in an old tin mine at the southern end of Fly-By-Night creek, just to the S of Gladstone. However, the Zn and Pb values at line 7 would appear to be something different.

The chromite compositions shown in figure 19, if the MORB and SSZ peridotite origins are accepted, have interesting implications for the geological history of the area, including their possible formation either earlier or in the same sequence of events that also produced the folding of the Mathinna beds and the intrusion of the granites. How they have come to be associated with fractures and veins in the granite is another question. The compositional differences between chromites from the eastern and western ends of line 2 argues against their transport into the area from more distant sources. Much could be learned from further detailed microprobe analysis of chromites obtained in the past two years.

Conclusions

The auger drilling results show that this method of exploration is the most effective that we have used so far on this lease. From the line 7 results it can be seen that our previous method of sampling at depths of generally less than 1 m would have revealed very little by comparison.

Vein 1 (figure 2) continues to the north through line 7, intersecting line 7 between 50W and 80W, but is indicated by the line 7 results to probably be more complex than just a single narrow quartz vein through the granite. The cassiterite and pyrite occurring on the western end of this line are interpreted tentatively as being similar to the narrow tin-bearing veins through

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the granite at Fly-By-Night Creek near Gladstone, and as probably indicating older activity than the Zn and Pb concentrations 40 or 50 m further to the east.

The Zn and Pb concentrations encountered in the line 7 auger drilling, in a location with such a high ground-water flow above the fresh rock, are very interesting and warrant further investigation along the indicated trend of vein 1.

The apparent faulting indicated on figure 18 needs confirmation, but is probably of a more academic than economic interest, especially in the light of the short time left to run on this lease.

Future Exploration

Further auger drilling is planned about 100 m to the south of line 7, across the indicated trend of vein 1, and in the vicinity of location 3 on figure 2. Small copper spheres were encountered in this area several years ago, but analysis results were not at all impressive at shallow depths of 1 m.

Further auger drilling along line 6, along the eastern end of line 5, and in the vicinity of line 4 could produce interesting results. Line 6 crosses a previously proposed NE trending fault line, line 5 crosses an apparent junction of two different granitic rock types, and shallow sampling on line 4 has given the highest Cu value yet obtained on the lease. However it is unlikely that available time will allow all of this to be achieved. In the light of the line 7 results in this report, it is unfortunate that the auger drill only became available at the end of 1999.

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Figure 1

Location of EL 11/96

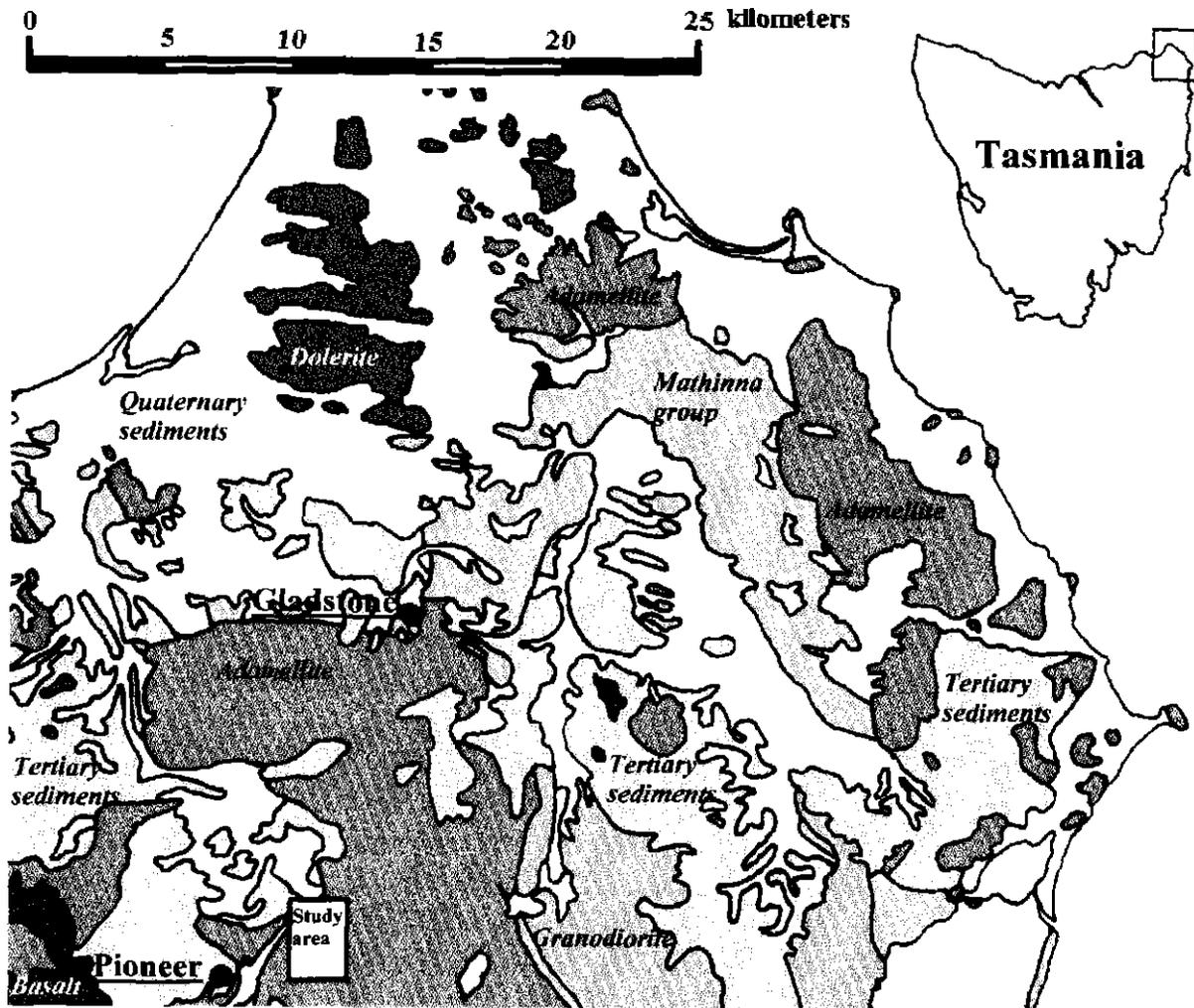


Figure 2
The lease area, showing sample lines, and sulphide and native metal occurrences

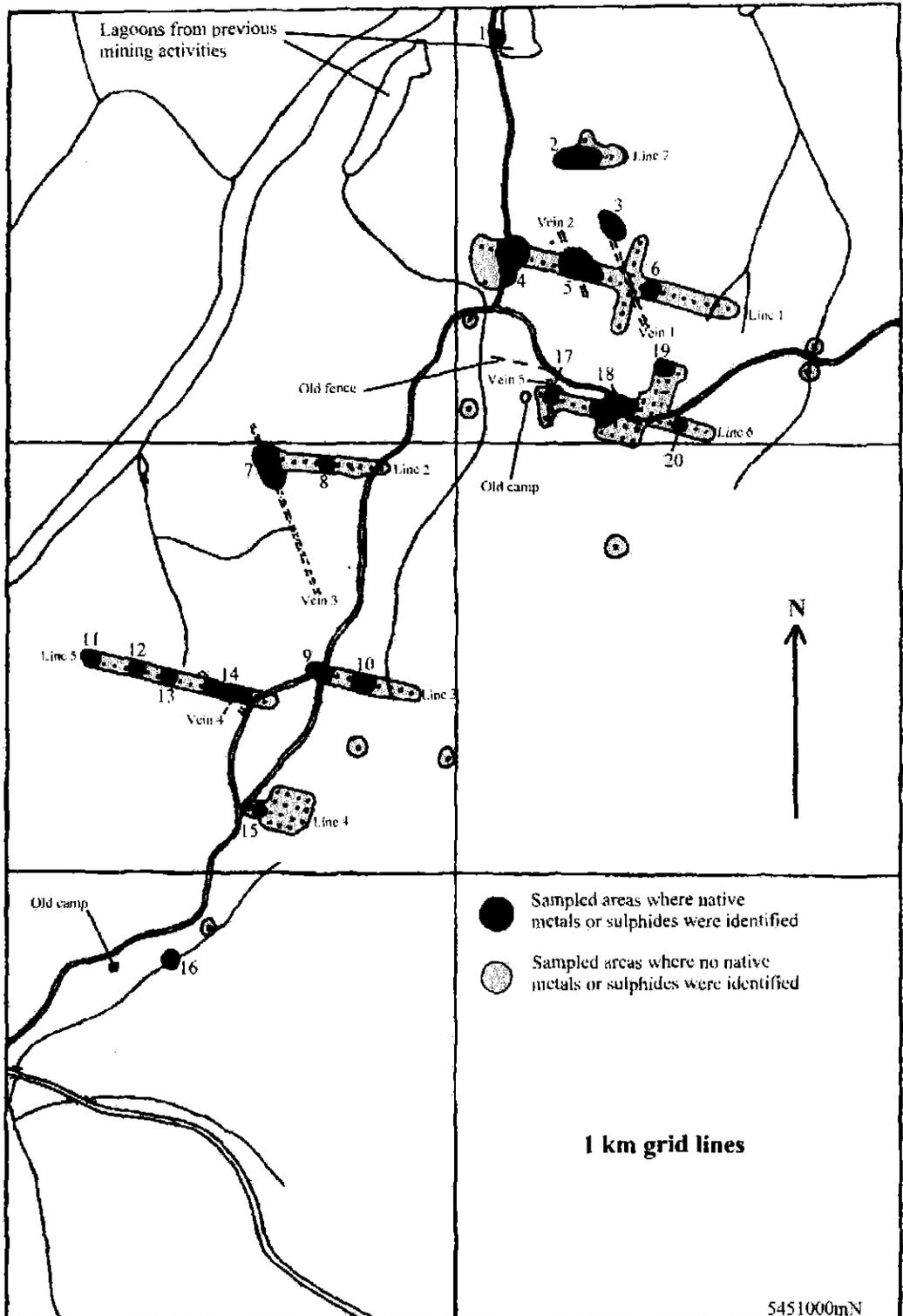


Figure 3

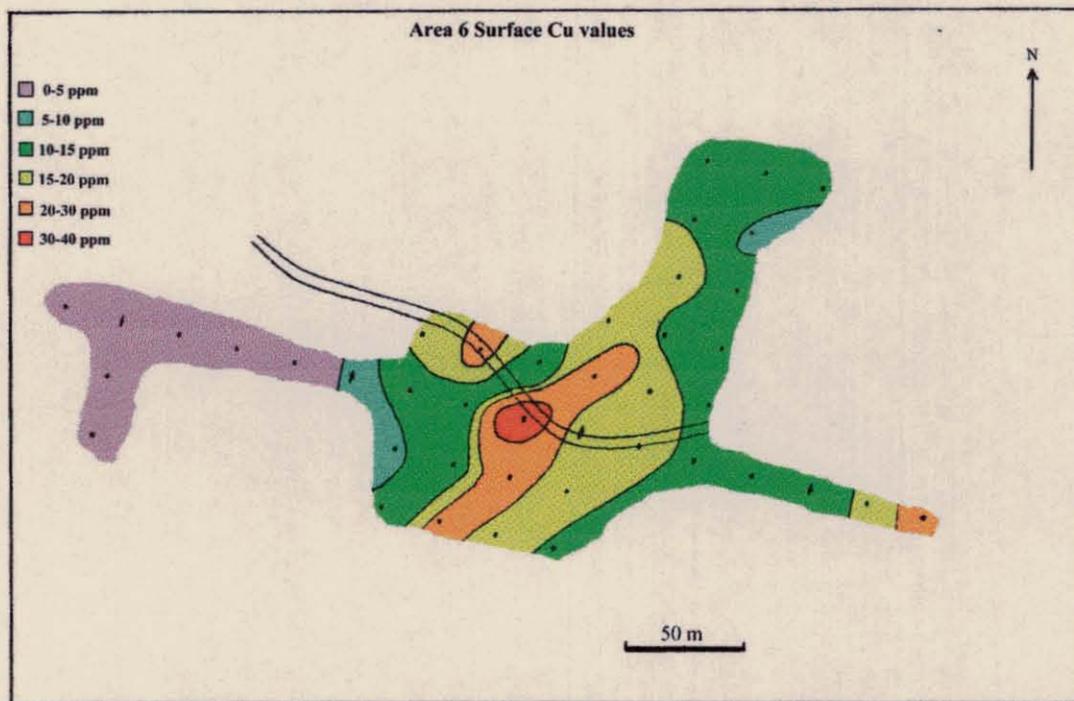
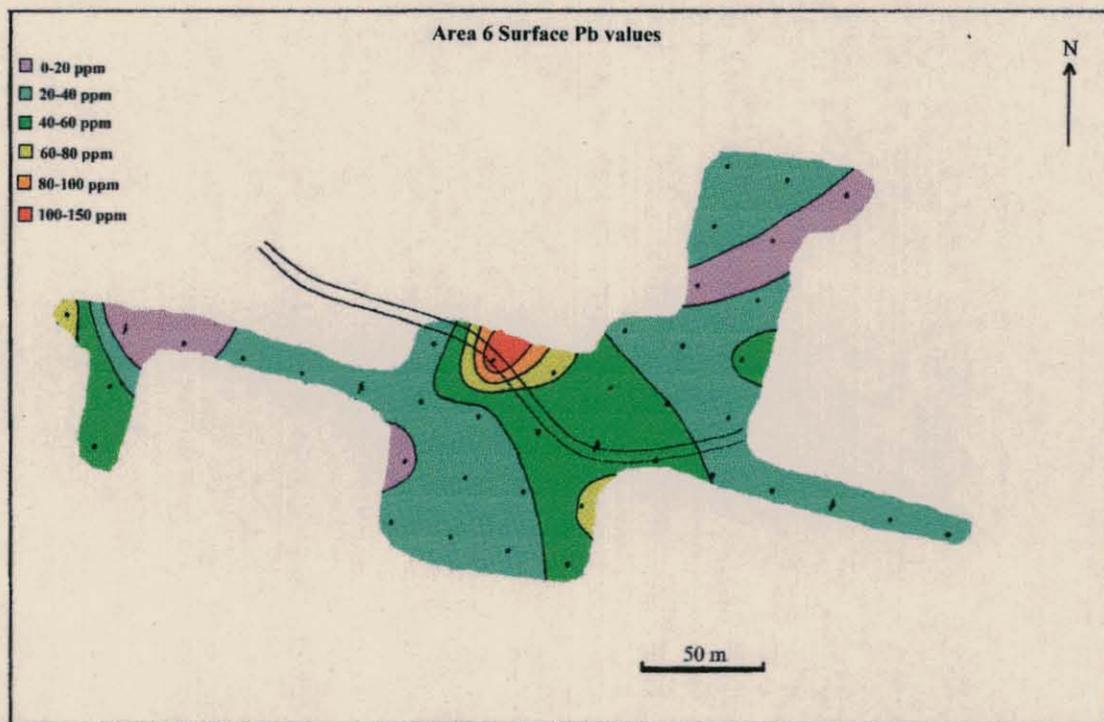


Figure 4



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Figure 5

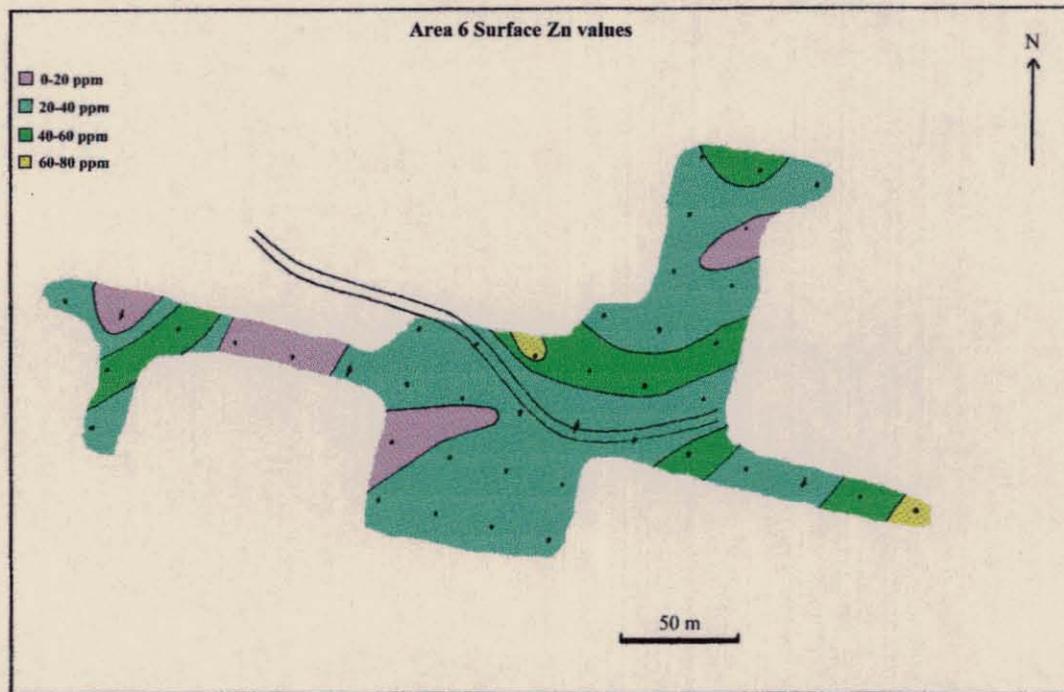
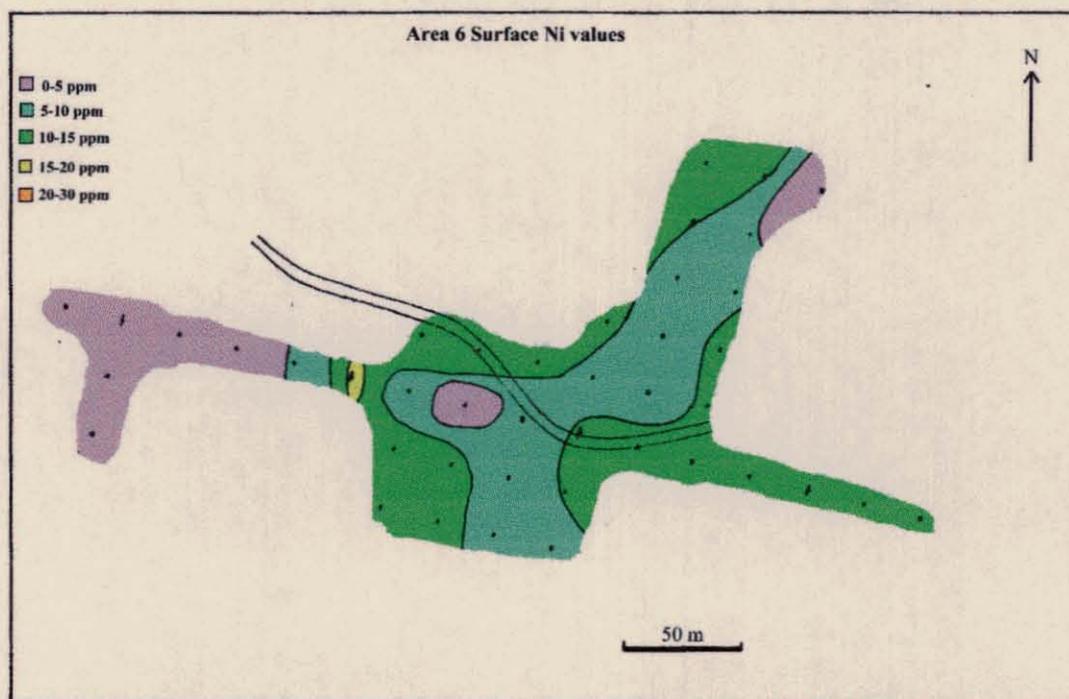


Figure 6



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Figure 7

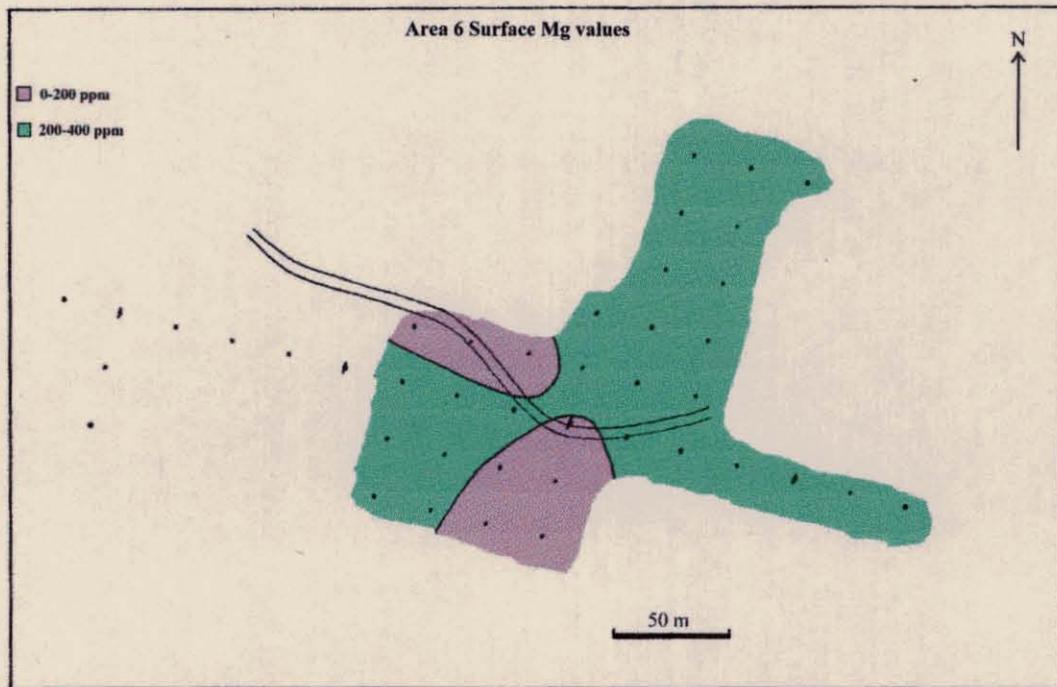
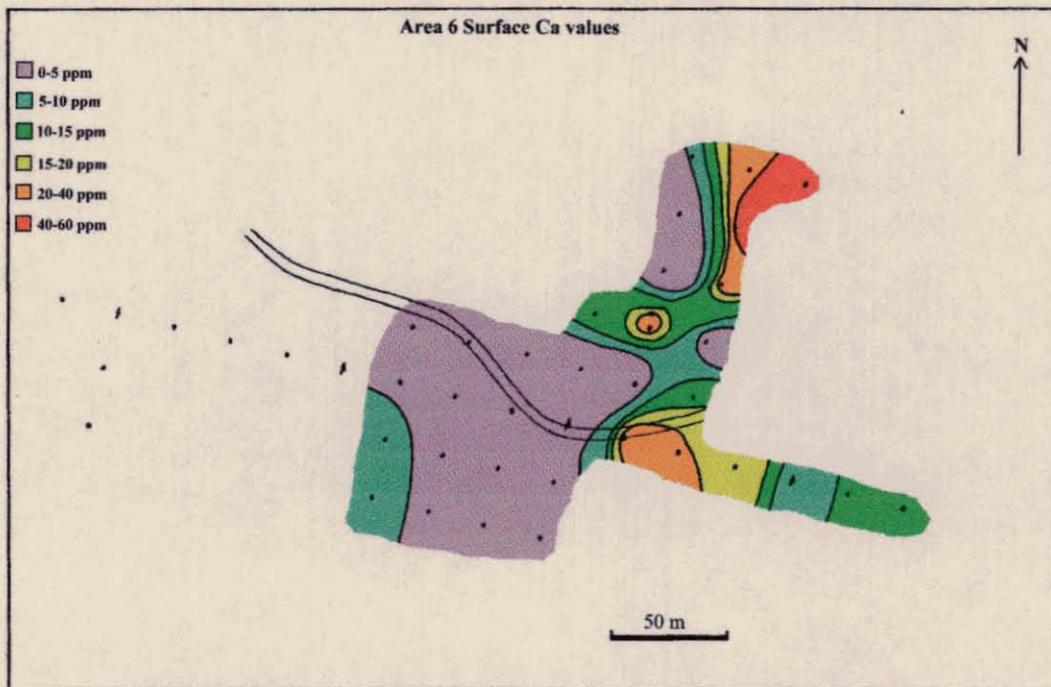


Figure 8



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Figure 9

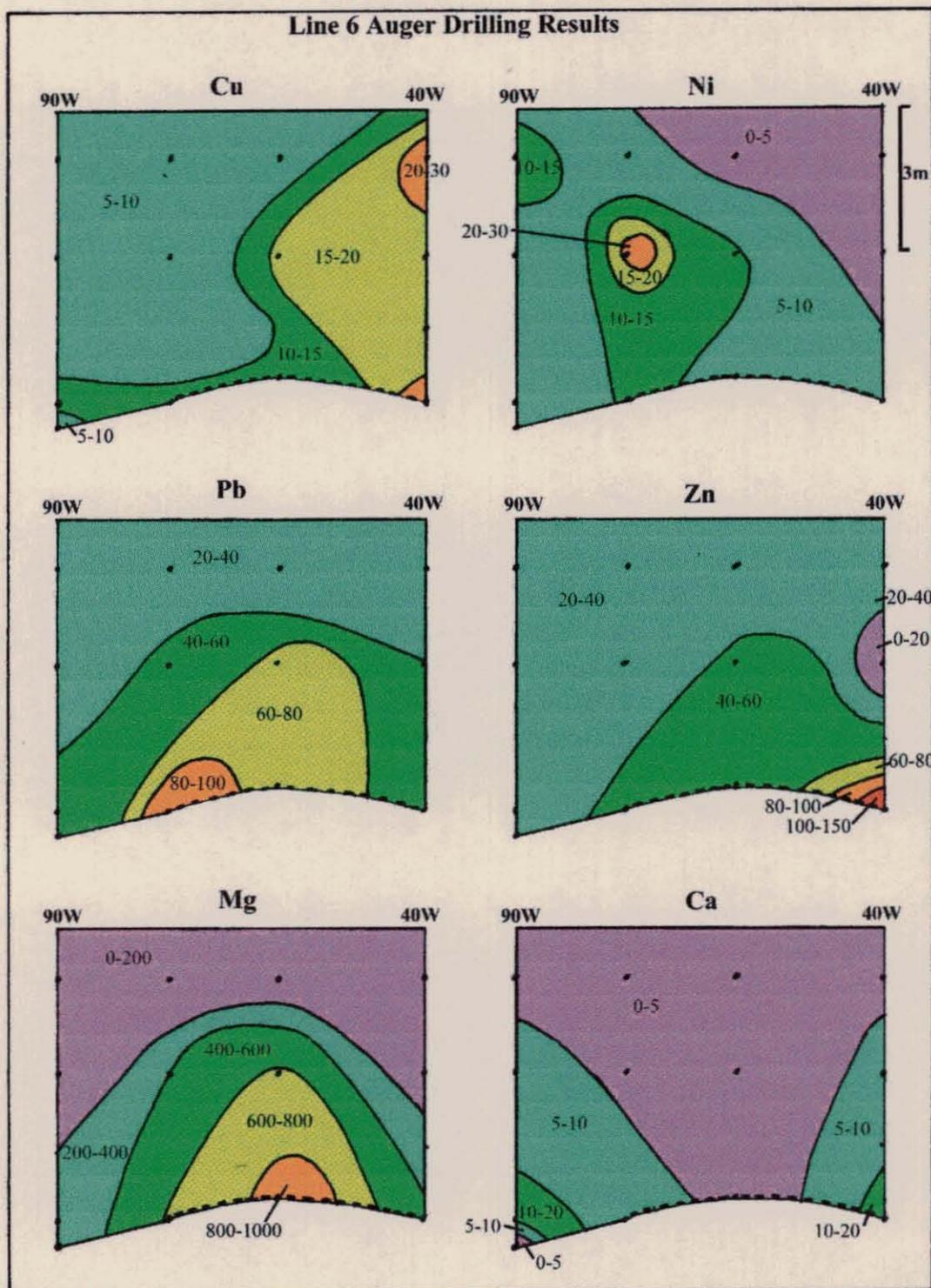


Figure 10

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**Line 7 Auger Drilling Results
Cu Results**

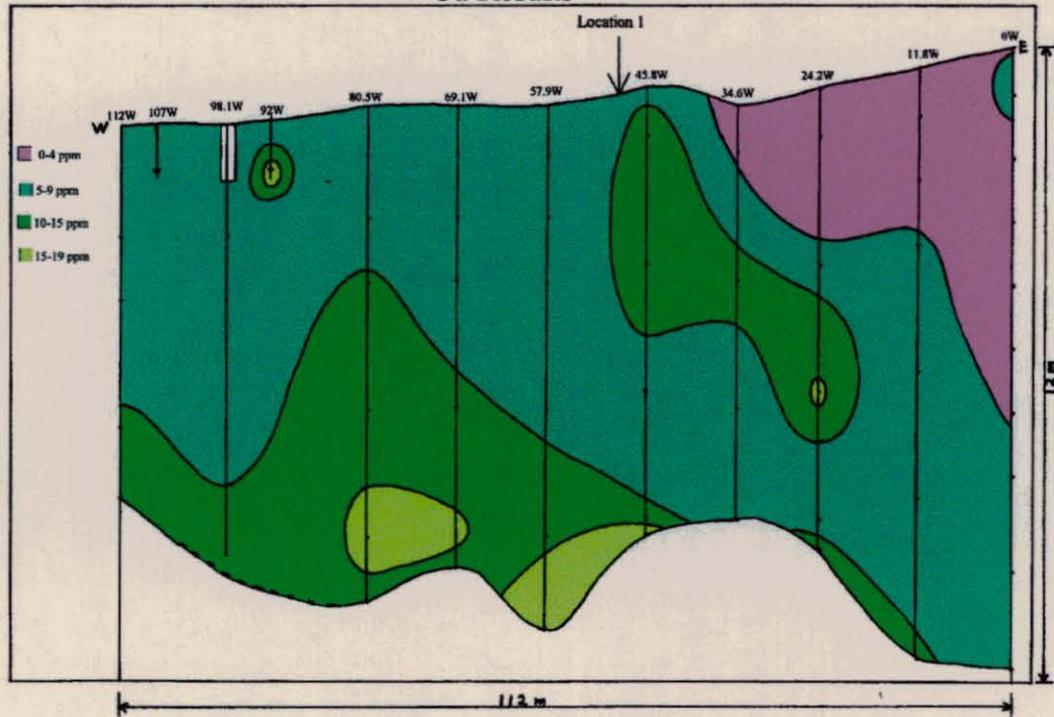
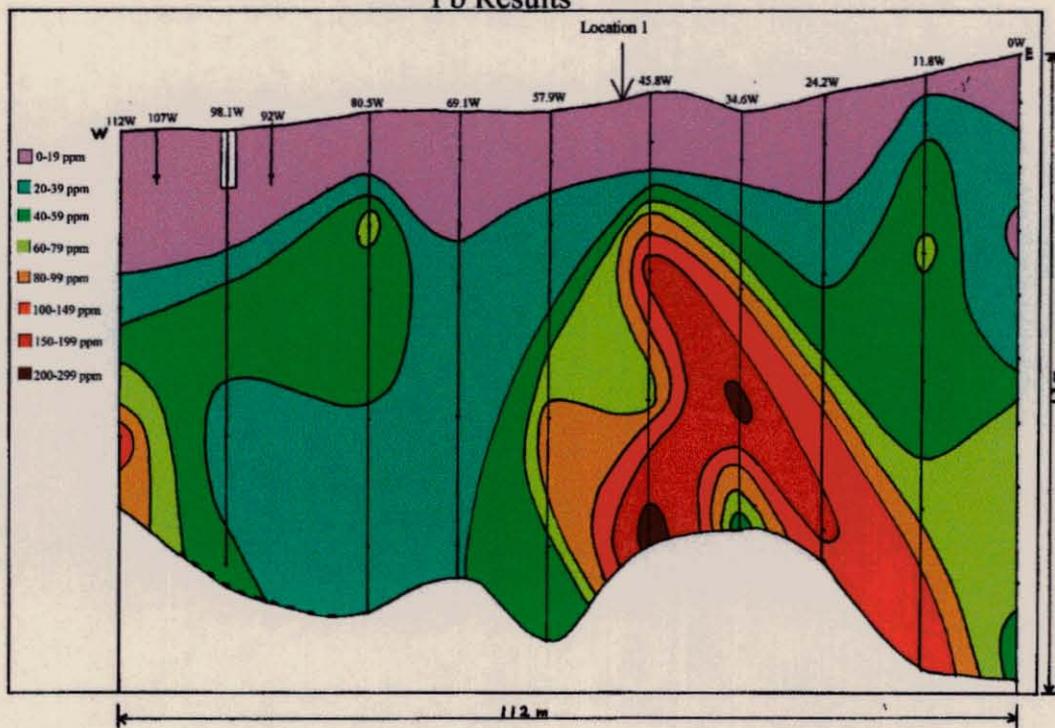


Figure 11

**Line 7 Auger Drilling Results
Pb Results**



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Figure 12

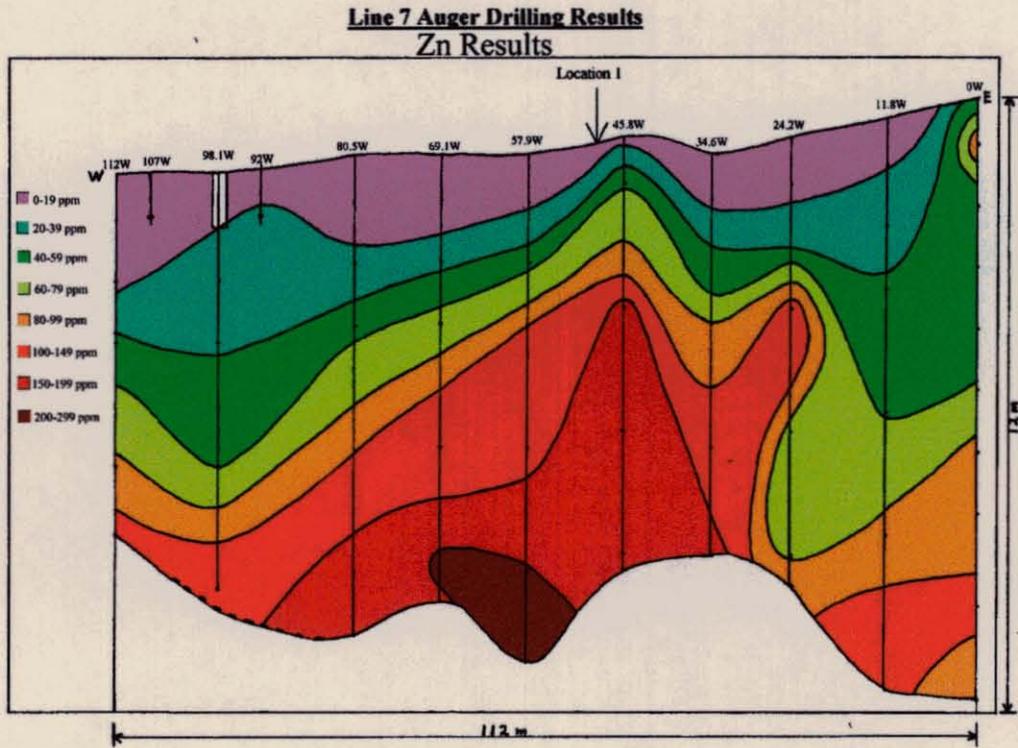
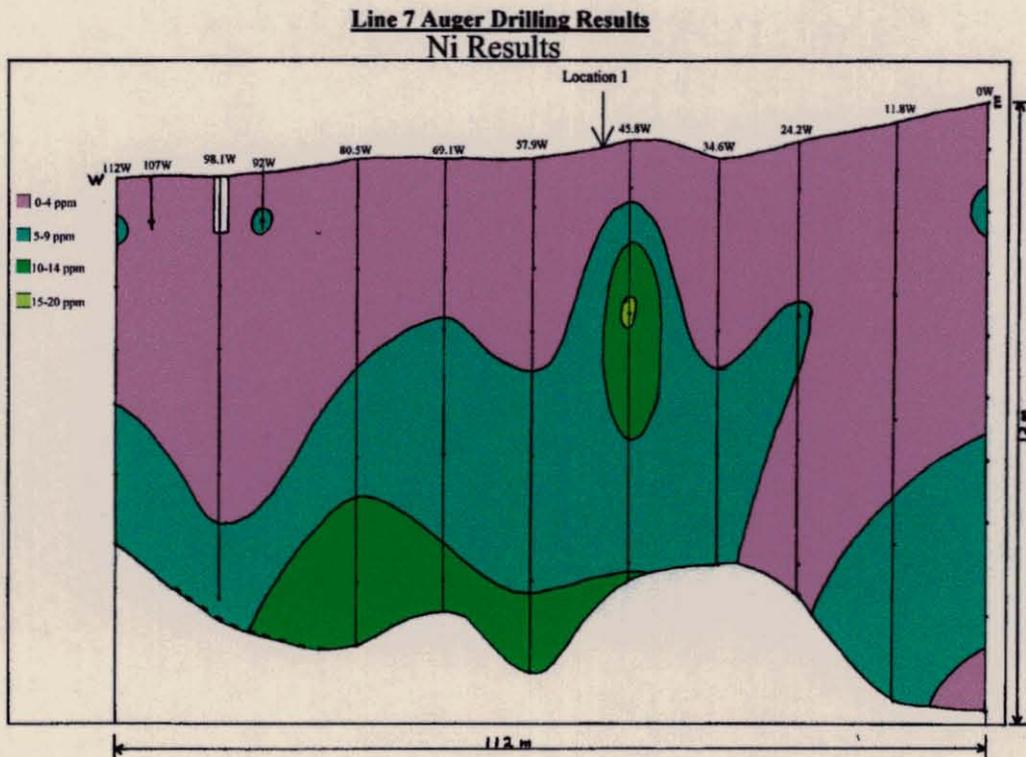


Figure 13



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Figure 14

**Line 7 Auger Drilling Results
Mg Results**

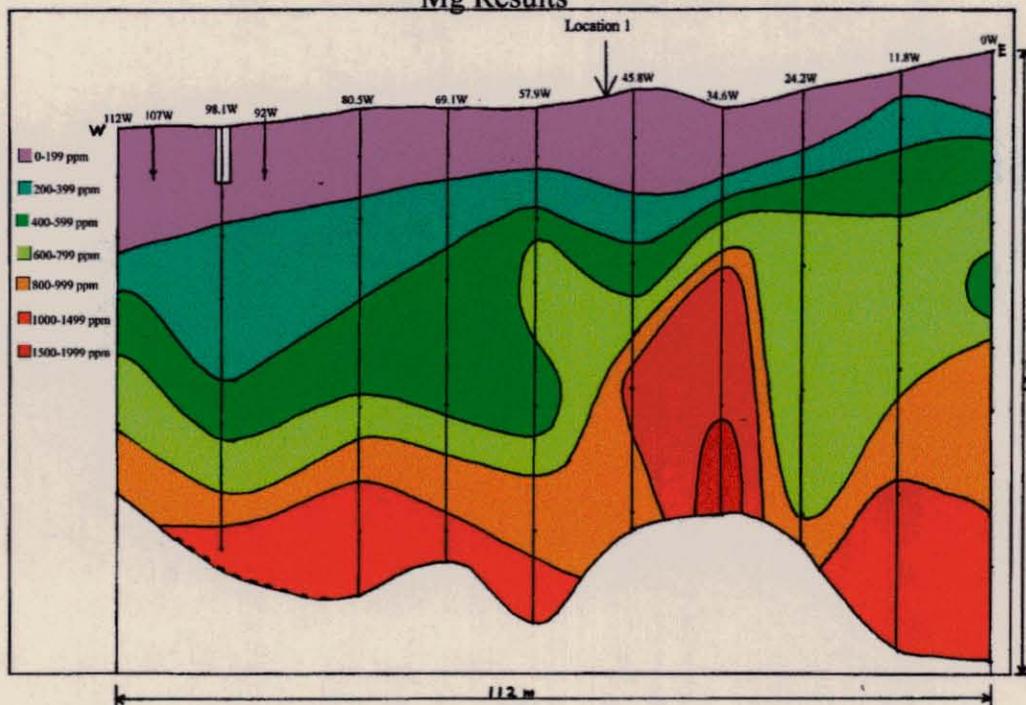
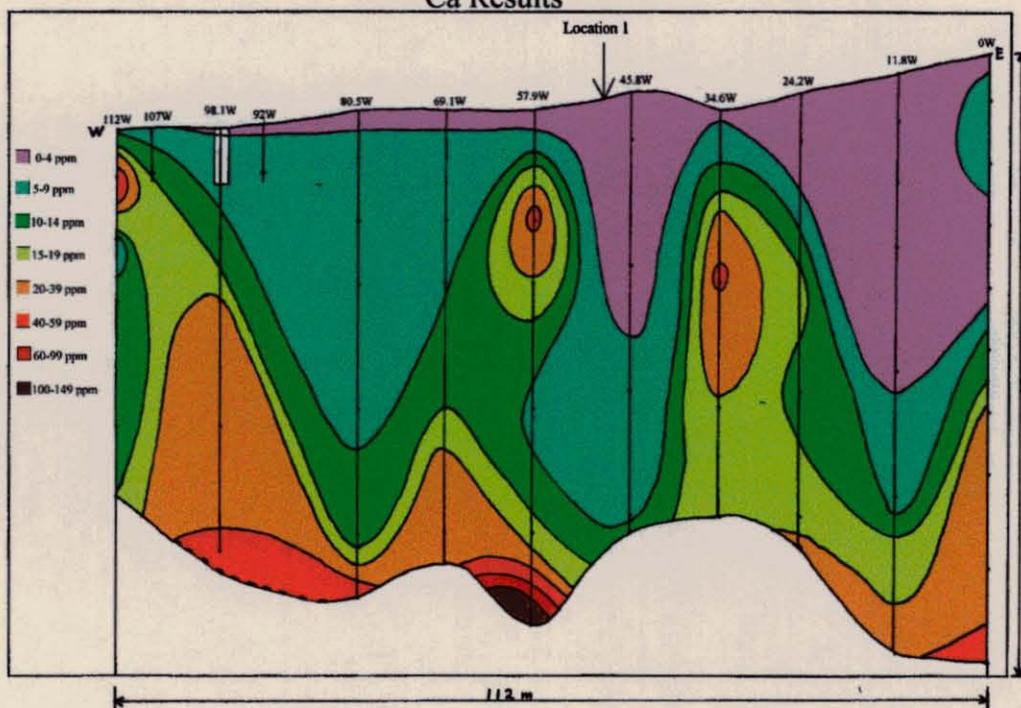


Figure 15

**Line 7 Auger Drilling Results
Ca Results**



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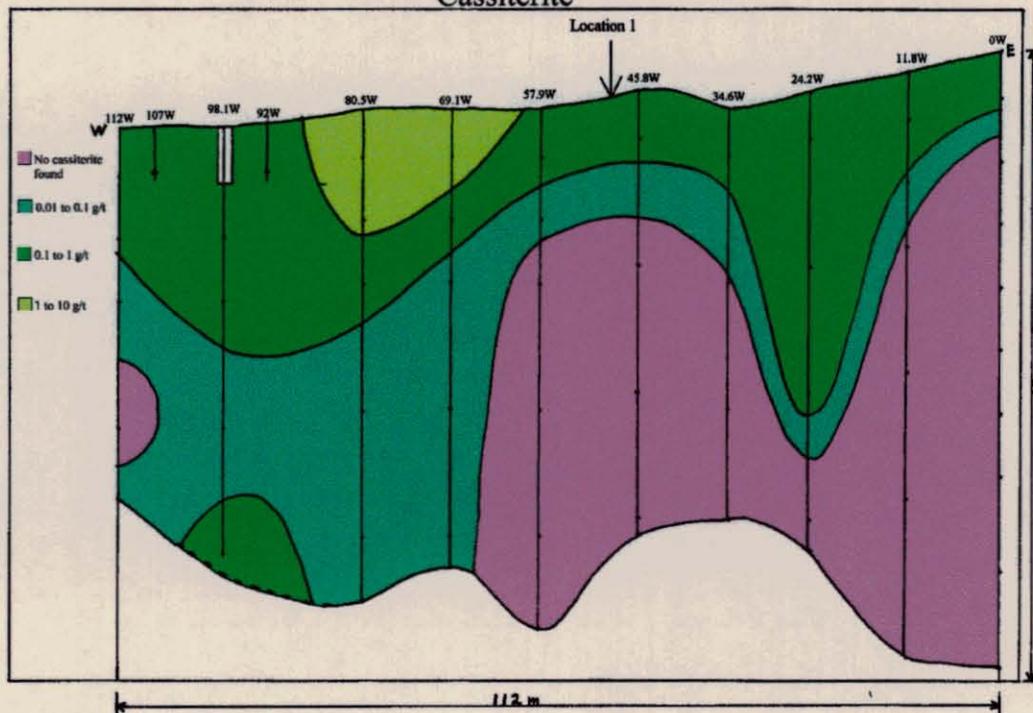
Figure 16

**Line 7 Auger Drilling Results
Sulphides and Nativel Metals**



Figure 17

**Line 7 Auger Drilling Results
Cassiterite**



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Figure 18

Location of possible faults and known silcrete

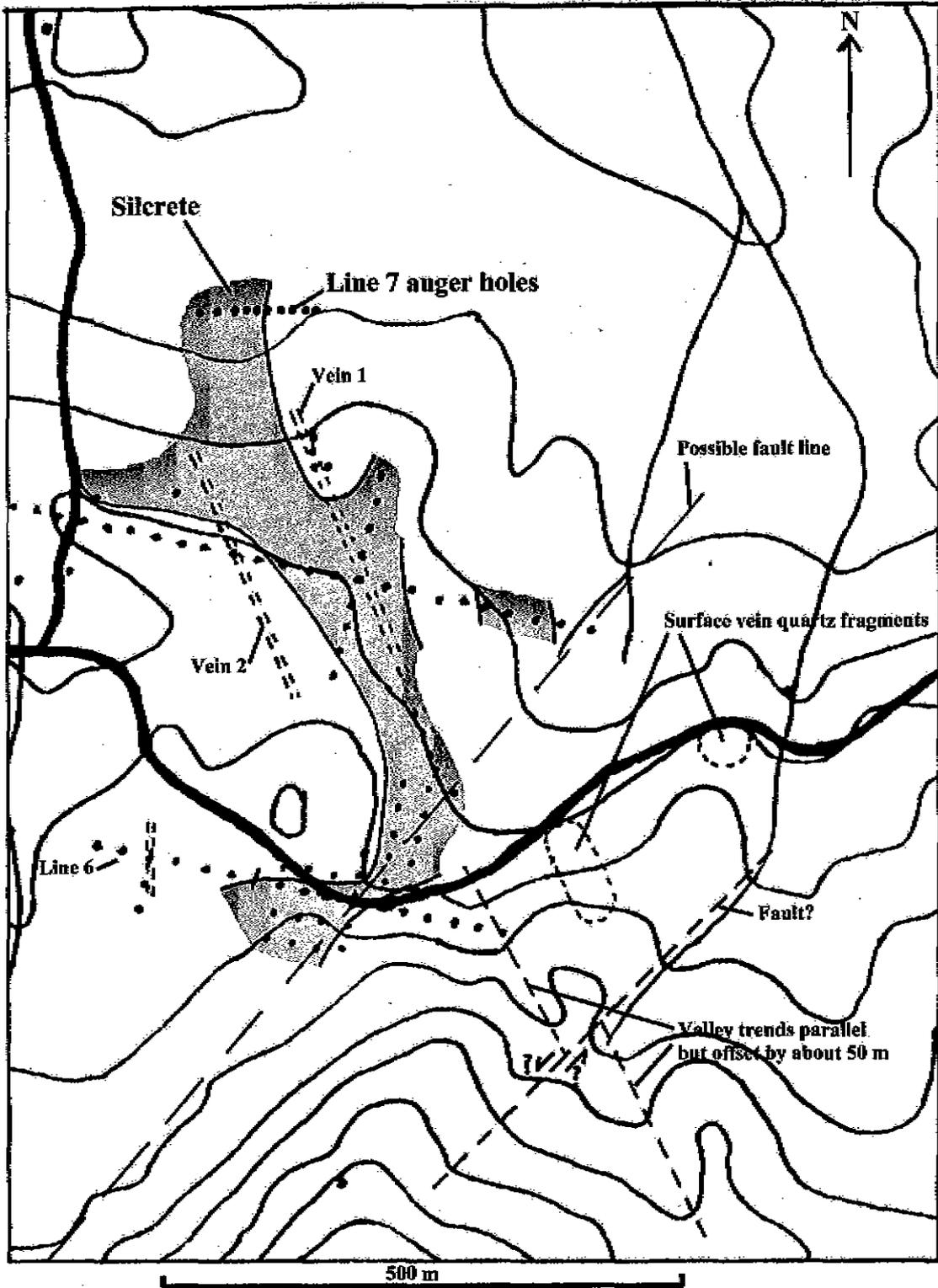
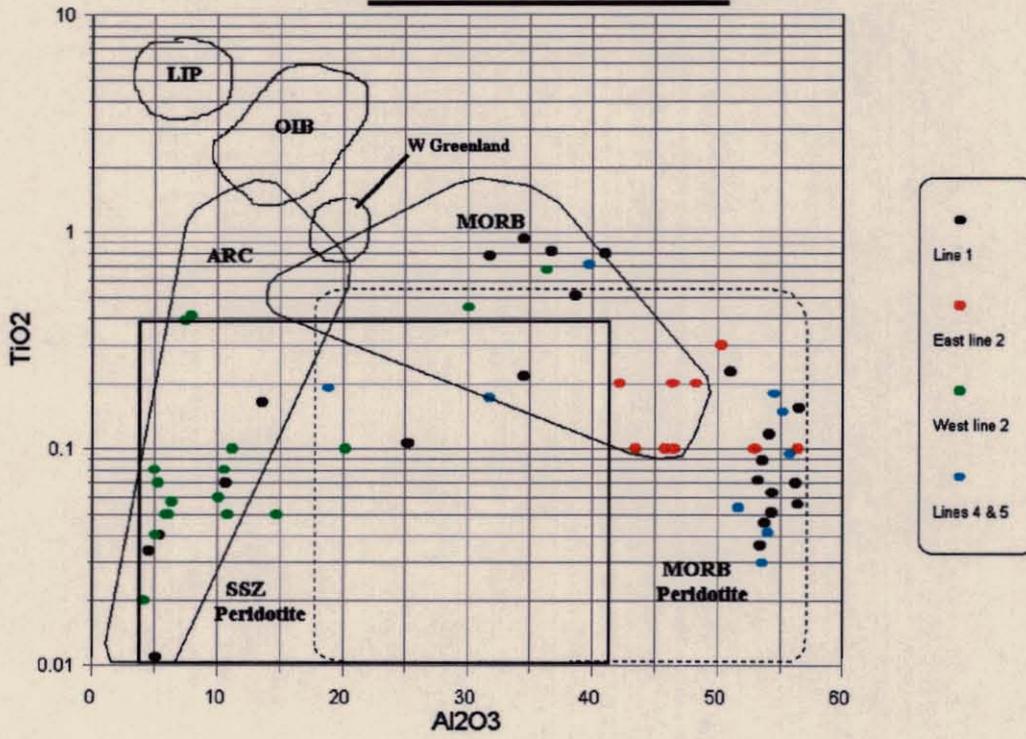


Figure 19

EL 11/96 Chromites



Appendix A**Line 6 Surface Sampling Results**
(results in ppm)**Main E_W (0S) line**

Location	Cu	Ni	Zn	Pb	Ca	Mg
225W	3	5	65	83	12.5	85
200W	0	3	9	3		
175W	6	3	72	6		
150W	3	3	22	31		
125W	3	6	16	31		
100W	6	19	25	34		
75W	6	6	22	31		
50W	8	3	50	22		
25W	50	3	25	25		
0W	3	6	31	25		
25E	20	10	35	50	38	143
50E	20	10	68	48	25	140
75E	20	10	35	30	18	143
100E	13	13	33	23	8	145
125E	23	15	63	30	13	143
150E	28	10	70	25	15	145

(N-S line at 25W)

Location	Cu	Ni	Zn	Pb	Ca	Mg
50S	15	8	33	15	0	343
25S	23	8	33	35	4	270
0S	28	5	20	50	0	145
25N	11	10	20	65	1	375

(N-S line at 0W)

Location	Cu	Ni	Zn	Pb	Ca	Mg
50S	10	5	33	50	3	343
25S	18	10	33	60	4	303
0S	16	10	20	53	4	250
25N	25	8	43	45	3	165
50N	20	10	40	13	18	145

(N-S line at 25E)

Location	Cu	Ni	Zn	Pb	Ca	Mg
0S	18	9	33	58		
25N	18	9	41	40		
50N	13	5	25	28		
75N	18	5	23	15		
100N	15	6	35	23		
125N	15	9	39	30		

(N-S line at 200W)

Location	Cu	Ni	Zn	Pb	Ca	Mg
200W-0S	0	3	9	3		
200W-25S	3	2	43	45	20	155
200W-50S	2	3	35	55	0	178

(N-S line at 75W)

Location	Cu	Ni	Zn	Pb	Ca	Mg
50S	13	9	21	28	13	185
25S	8	0	3	5	0	25
0S	20	25	24	38	0	140
25N	19	10	25	23	3	235

(N-S line at 50E)

Location	Cu	Ni	Zn	Pb	Ca	Mg
0S	15	10	40	40		
25N	15	6	25	35		
50N	18	9	48	40		
75N	14	5	26	25		
100N	8	4	19	15		
125N	15	11	40	28		

(N-S line at 50W)

Location	Cu	Ni	Zn	Pb	Ca	Mg
50S	23	13	36	33	3	143
25S	14	11	31	23	3	183
0S	14	15	19	23	3	175
25N	23	10	33	115	0	235

(N-S line at 75E)

Location	Cu	Ni	Zn	Pb	Ca	Mg
0S	15	8	31	33		
125N	15	1	35	15		

647025

Appendix B**Line 6 Auger drill sampling results**
(results in ppm)

Location	Depth (m)	Cu	Ni	Pb	Zn	Mg	Ca
25E-80N	3.0	5	8	35	18	298	3
	6.1	8	5	25	20	368	5
	11.9	8	3	28	40	875	28
50E-115N	3.0	5	8	20	10	113	0
	6.1	8	5	23	25	263	1
	8.5	13	3	30	20	303	9
	9.4	13	3	85	16	325	25
40W-0N	2.7	15	3	40	21	78	6
	4.6	18	5	50	45	313	8
	6.1	20	5	50	105	445	13
60W-0N	3.0	15	10	68	46	600	1
	5.5	10	5	68	53	980	3
75W-5N	3.0	8	20	58	30	400	3
	6.1	10	10	93	58	605	8
90W-0N	3.0	8	5	28	31	193	9
	6.1	10	5	53	28	330	11
	6.4	8	3	55	20	400	3

647026

Appendix C**Line 7 Auger Drill Sampling Results**

(values in ppm)

112W

Depth (m)	Cu	Ni	Pb	Zn	Mg	Ca
0.91	8	5	4	10	93	53
2.13	8	3	14	10	93	8
3.35	8	3	25	45	470	15
5.79	10	6	105	85	793	13
7.32	10	8	83	105	980	15

107W

Depth (m)	Cu	Ni	Pb	Zn	Mg	Ca
0.91	7.5	1.25	2.5	6.25	72.5	10

98.1W

Depth (m)	Cu	Ni	Pb	Zn	Mg	Ca
2.13	8	4	19	28	265	13
3.35	8	3	53	38	315	28
5.79	6	3	28	53	433	25
8.23	13	8	43	138	1325	45

92W

Depth (m)	Cu	Ni	Pb	Zn	Mg	Ca
0.91	15	8.75	7.5	25	52.5	7.5

80.5W

Depth (m)	Cu	Ni	Pb	Zn	Mg	Ca
0.91	9	4	0	3	57	8
2.13	8	3	60	28	293	5
3.35	10	4	48	57	358	5
5.79	10	5	38	100	673	5
8.23	16	13	38	180	1328	13
9.45	13	11	35	195	1488	40

69.1W

Depth (m)	Cu	Ni	Pb	Zn	Mg	Ca
0.91	10	3	0	10	143	9
2.13	5	3	8	38	303	8
3.35	8	5	35	78	555	8
5.79	10	6	28	113	470	14
8.23	15	13	38	228	1230	25
8.84	13	9	33	175	1338	28

57.9W

Depth (m)	Cu	Ni	Pb	Zn	Mg	Ca
0.91	5	4	5	8	85	8
1.83	5	3	38	45	535	43
3.35	5	4	25	105	738	18
5.79	8	5	88	110	463	6
8.23	13	8	50	213	1050	18
10.06	18	13	50	250	1328	123

45.8W

Depth (m)	Cu	Ni	Pb	Zn	Mg	Ca
0.91	10	1	15	45	113	0
3.35	13	15	175	165	428	0
5.79	8	9	75	158	1020	8
8.23	10	9	225	180	843	8
8.53	15	11	250	190	932	13

34.6W

Depth (m)	Cu	Ni	Pb	Zn	Mg	Ca
0.91	1	0	0	3	113	5
3.35	10	3	0	88	1263	43
5.79	8	8	0	135	1425	18
7.92	8	9	0	150	1538	19

24.2W

Depth (m)	Cu	Ni	Pb	Zn	Mg	Ca
0.91	3	0	1	5	138	1
3.35	5	5	3	143	788	16
5.79	15	3	8	70	575	10
8.23	5	3	8	70	788	18
8.84	11	3	9	90	950	28

11.8W

Depth (m)	Cu	Ni	Pb	Zn	Mg	Ca
0.91	3	1	0	18	328	4
3.35	5	4	0	53	660	4
5.79	5	3	0	57	713	3
8.23	5	5	0	83	1263	9
11.28	10	8	0	125	1335	33

0W

Depth (m)	Cu	Ni	Pb	Zn	Mg	Ca
0.91	8	4	5	85	148	8
2.13	3	5	3	45	535	6
3.35	3	4	3	57	745	3
4.57	3	3	4	35	450	1
5.79	3	3	6	60	900	10
7.01	3	5	7	90	925	24
8.23	5	5	0	93	1050	19
10.06	8	5	0	102	1188	23
11.89	9	4	0	88	1388	49