PLACER DEVELOPMENT LIMITED

EXPLORATION DEPARTMENT

REPORT ON THE SANCA ANOMALY

JAIM CLAIM

NELSON MINING DIVISION

NTS 82F 7E

Lat: $49^{\circ}23'$N
Long: $116^{\circ}33^{\circ}$W

OWNER: PLACER DEVELOPMENT LTD.

BY

J.J. HYLANDS, P.ENG.
MARCH 7, 1980

COVERING WORK COMPLETED DURING PERIOD
JUNE 25 - JUNE 29, 1979.

TABLE OF CONTENTS

ILLUSTRATIONS

1.0 INTRODUCTION

The Jaim claim of 9 units is located immediately west of Mt. Dickson, in the headwaters of the "East Fork" of Sanca Creek, which flows westward into Kootenay Lake 38 km NNW of Creston, B.C. (Figures 1 and 2). A well graded logging road, maintained by Wynndel Box and Lumber Company, provides access to the edge of the claim. The claimed area is a cirque underlain by fine and medium grained quartz monzonites of the north eastern lobe of the Early Cretaceous Bayonne Batholith.

1.1 HISTORY

Results of a reconnaissance stream sediment sampling program undertaken in 1978 showed that the samples from the streams draining the cirque were anomalous in Mo, Cu, Zn, Ag, U and W. The Jaim claim was staked by Placer Development Ltd. on June 26, 1979, followed by rock and detailed stream sediment sampling and reconnaissance geological mapping. The detailed sampling revealed that the entire basin is anomalous; mapping did not find a source for the anomaly.

1.2 GEOLOGY

Geological mapping was essentially reconnaissance, at a scale of 1:10,000. Continuous bedrock exposure was found along the headwall of the cirque (Plate I); only a few outcrops were found within it. The total area surveyed was 250 ha.

1.3 GEOCHEMISTRY

Twenty-one silt and eleven rock samples were collected from the cirque. The silt samples were collected at approximately 150 m intervals from the two streams and from tributaries.

2.0 GEOLOGY

To date the geological mapping reveals a fairly simple picture (Map 1). Two varieties of quartz monzonite underlie the claim - fine grained, slightly porphyritic quartz monzonite on the north, in fairly sharp intrusive contact with equigranular medium grained quartz monzonite on the south. Towards Jackson Peak to the north the fine grained phase becomes fine to medium grained and equigranular; south of Mount Dickson the medium grained phase becomes porphyritic with the appearance of orthoclase phenocrysts. Superimposed on both phases is a regional jointing pattern with a general attitude of $320^{\circ}/80^{\circ}$ S to 90°. Scattered aplite dykes occur parallel to the regional jointing. A highly silicified zone was found near sample point 7 (Map 1).

FIGURE 1

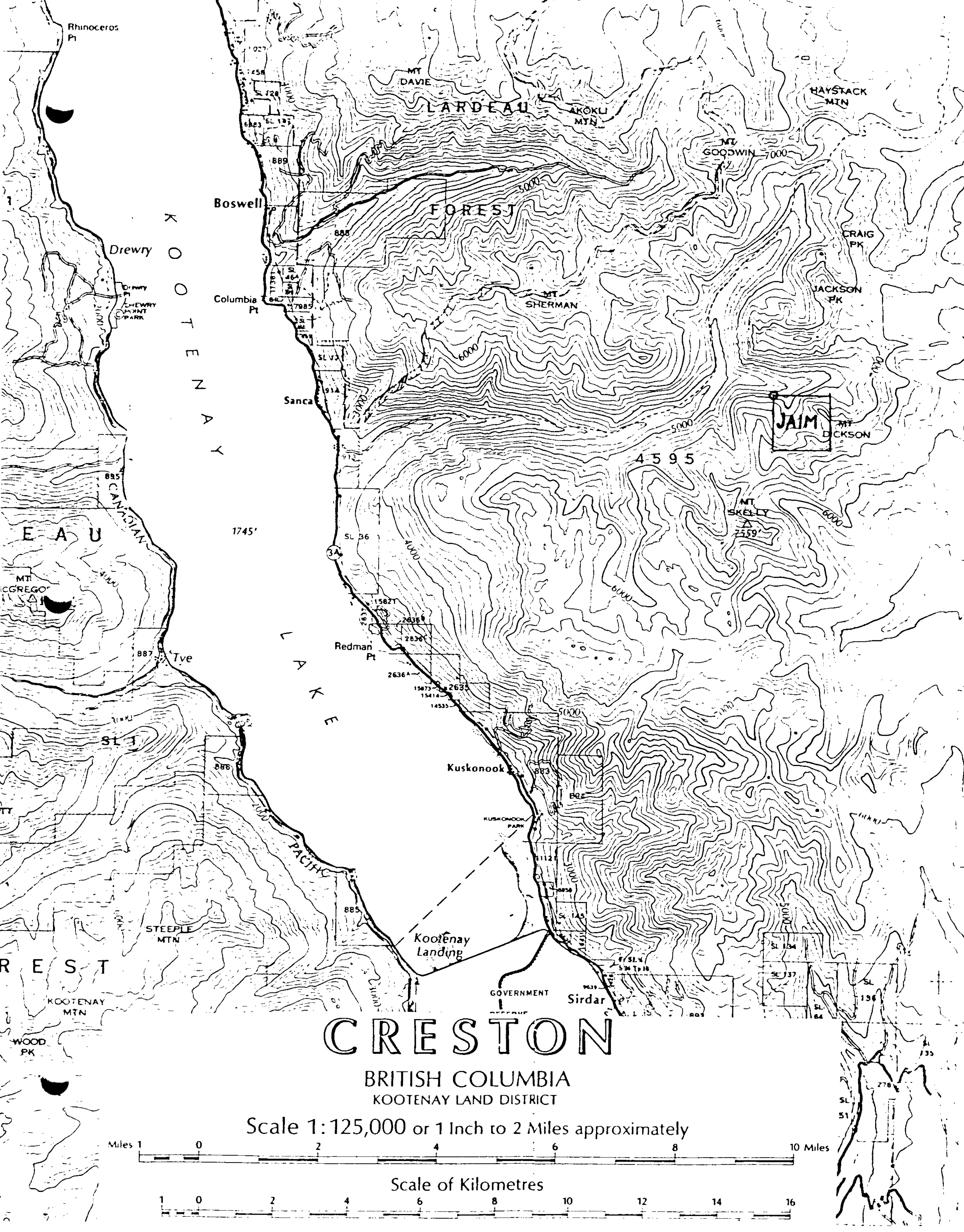
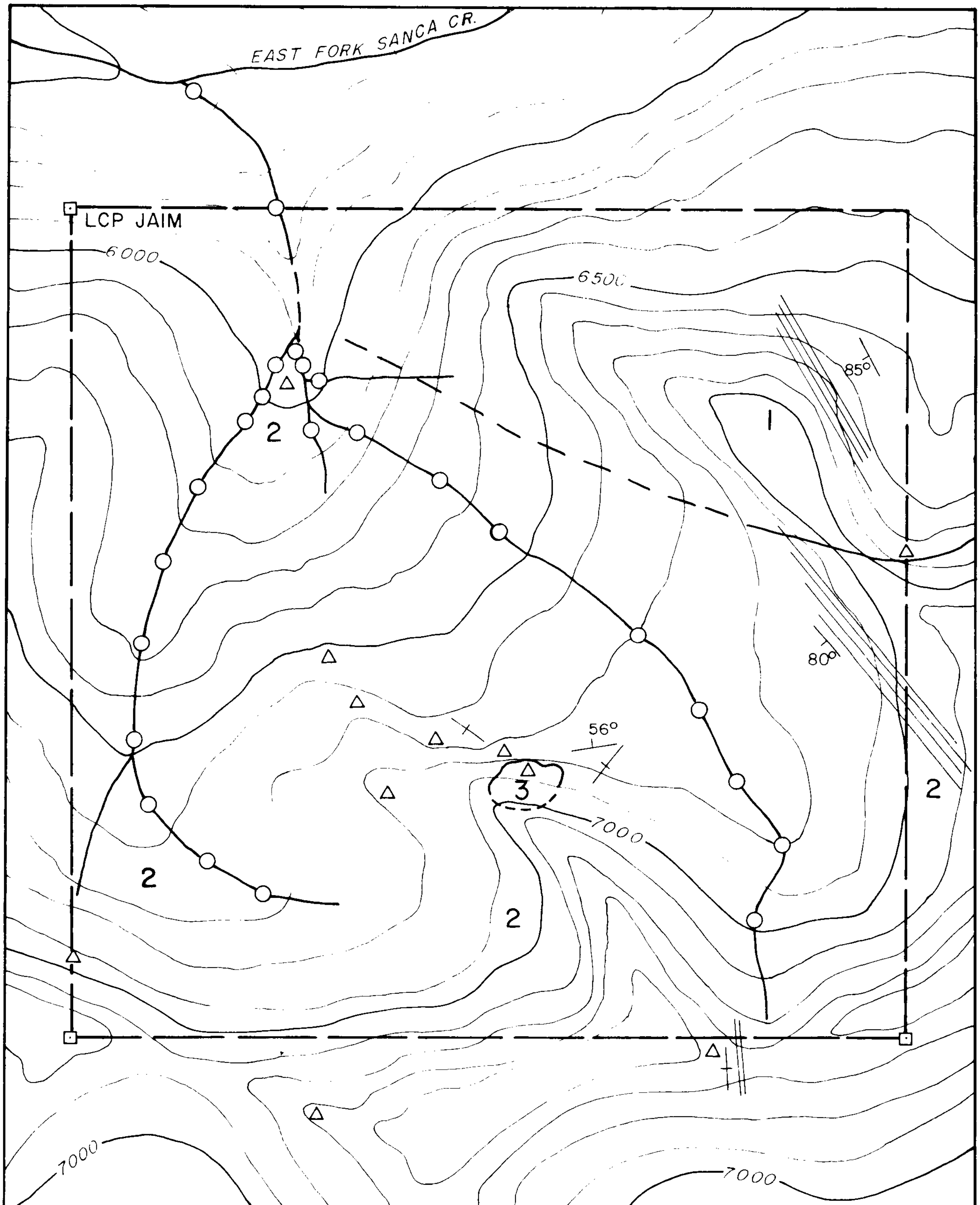

CRESTON
BRITISH COLUMBIA
KOOTENAY LAND DISTRICT
Scale 1:125,000 or 1 Inch to 2 Miles approximately
Miles 1 0 2 4 6 8 10 Miles
Scale of Kilometres
1 0 2 4 6 8 10 12 14 16
KOOTENAY LAKE
Rhinoceros Pt
Boswell
Drewry
Columbia Pt
Sanca
Redman Pt
Kuskonook
KUSKONOOK PARK
Kootenay Landing
Sirdar
GOVERNMENT
Tye
LARDEAU
FOREST
MT DAVIE
AKOKLI MTN
HAYSTACK MTN
MT GOODWIN
CRAIG PK
JACKSON PK
MT SHERMAN
JA1M
MT DICKSON
4595
MT SKELLY
7559'
1745'
MT McGREGOR
STEEPLE MTN
KOOTENAY MTN
WOOD PK
CANADIAN PACIFIC
SL 1
SL 36
SL 134
SL 137
SL 145
3A
5000
6000
7000
4000
3000

FIGURE 2

Metres 1000 500 0

UNLESS VERIFIED OR SURVEYED, THE MAP POSITION OF A
NER POST IS BASED ON THE LOCATOR'S SKETCH. FOR FUR
URMATION, APPLY TO THE OFFICE OF THE MINING DIVISION
RED.

OF MICROFILM: 79·11·01



0 100 200 300 400 500
METRES

1	FINE GRAINED QUARTZ MONZONITE
2	MEDIUM GRAINED QUARTZ MONZONITE
3	HIGHLY SILICIOUS ZONE
	CLOSELY-SPACED JOINTING
80°	ATTITUDE OF JOINTS

N

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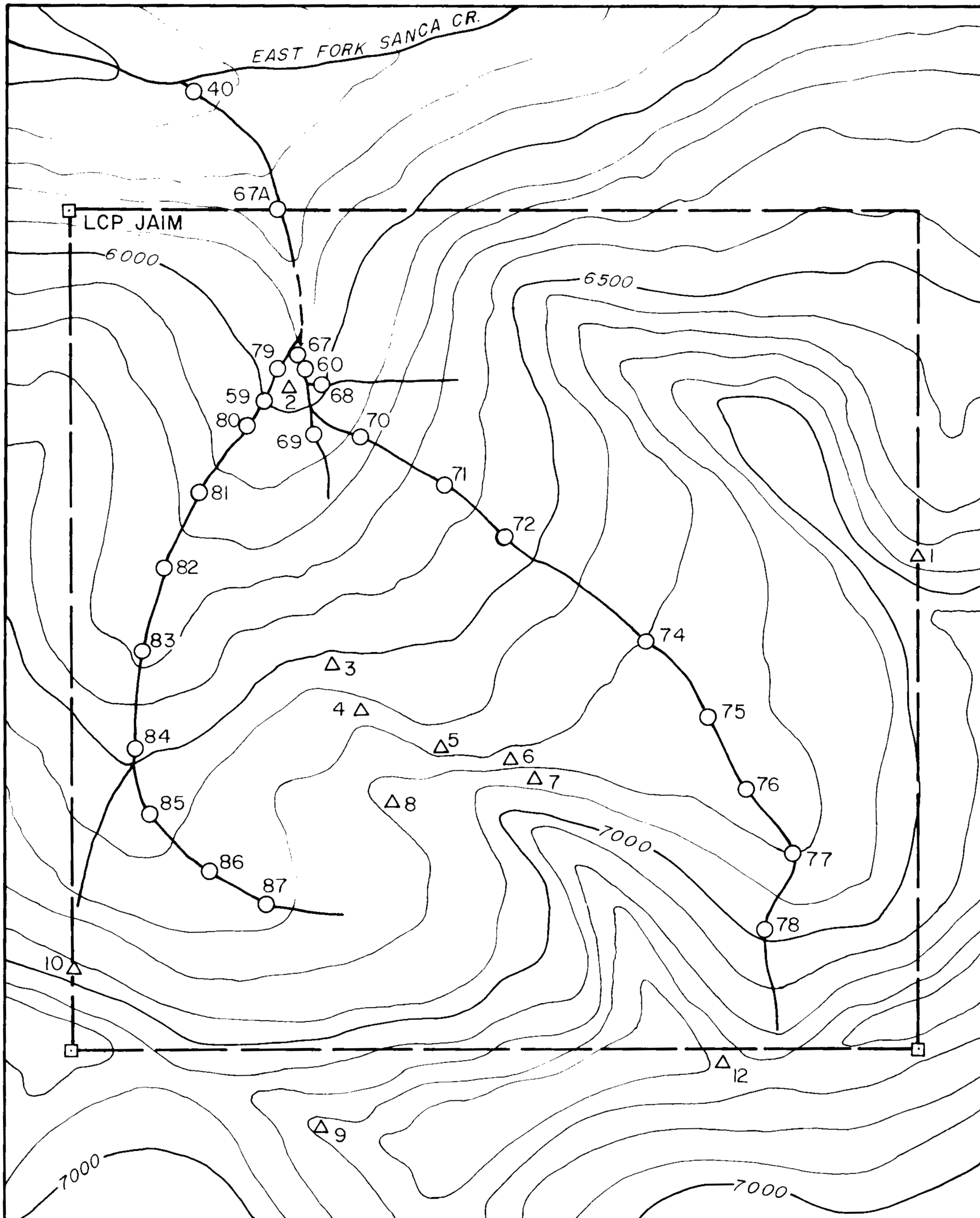
GEOLOGY

MAP 1



0 100 200 300 400 500
METRES

○ SILT SAMPLE, SAMPLE NUMBER
△ ROCK SAMPLE, SAMPLE NUMBER

N

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GEOCHEMICAL SAMPLE LOCATION	
	MAP 2

Plate I. View to the east of the headwall of the cirque. Mount Dickson (7600 feet elevation) is on far left.

Plate II. Fine grained quartz monzonite with greisen veinlets, Pencil is 15 cm long.

2.1 PETROLOGY

The following descriptions are based on hand specimen examinations.

a) Fine grained phase: Grey, holocrystalline, hypidiomorphic, slightly porphyritic quartz monzonite.
Ground Mass: 0.5 mm orthoclase, plagioclase, quartz; 0.5-2.0 mm ragged flakes of biotite
Phenocrysts: 1.5-3.0 mm orthoclase with quartz, comprises 3% to 5% of rock.

b) Medium grained phase: Grey, holocrystalline, hypidiomorphic, locally porphyritic quartz monzonite.
Ground Mass: 2.0-3.0 mm orthoclase, plagioclase, quartz, biotite, very minor hornblende.
Phenocrysts: 1.5-3.0 cm zoned euhedral orthoclase, increasing from 1% near Mount Dickson to more than 10% at Mount Skelly.

c) Aplite: Light grey to pinkish grey, aphanitic, slightly porphyritic.
Phenocrysts: 0.5 mm rounded quartz, 20 mm equant orthoclase.

2.2 STRUCTURE

A strong regional jointing is evident in the near vertical walls of the headwall of the cirque (Plate I). The most prominent set strikes 320°/70° to 80° W. A second, poorly developed fracture direction strikes 260° to 280° and dips 50° to 70° N. Aplite dykes and quartz veins appear to parallel the north westerly striking set of joints.

Large boulders seen along the access road up the East Fork provide evidence that there are two sets of "mineralized" joints at approximately 90° - at least two facets of many boulders are joint planes. The same was seen less frequently in talus blocks. Pieces of talus were somewhat "flaggy", with two parallel joint faces 15 cm to 30 cm apart. On the flat surface so exposed were noted the closer spaced, approximately parallel greisenized joints seen in Plate II.

2.3 ALTERATION

There were no readily apparent signs of widespread or even incipient hydrothermal alteration. Greisen was strictly confined to joints and shears, with only minor wall rock replacement by quartz-muscovite being evident. The large silicified zone noted at sample site 7 occurs in a near vertical cliff face; the lateral extent is at present unknown. The contact zone between the medium grained phase and total quartz replacement is relatively narrow, being in the order of a metre or two. No molybdnite or pyrite was found in the quartz, although the sample analyzed was above background level in Mo and Cu, and anomalous in Ag.

2.4 MINERALIZATION

Minor molybdenite mineralization was found in all intrusive phases, associated with quartz-muscovite $\pm$ pyrite $\pm$ magnetite veins and veinlets. Although topaz has not been recognized megascopically, these will be referred to as greisen veinlets. In general, when magnetite was present in these veinlets, molybdenite was not. The predominant trend of the veinlets was WSW, but dips varyed from 60^{o} NE to 60^{o} SW. In the fine grained phase the greisen veinlets were usually less than 3.0 mm thick and spaced 1.0m to 2.0m apart. As the contact with the coarse grained phase was approached the frequency of veinlets increased to two to three per metre or more (Plate II).

In the medium grained phase the veinlets decreased in number but increased in thickness, occassionally reaching 4.0 cm. The thicker veins were filled with quartz, with muscovite and minor pyrite as 1 mm salvages. In both phases the veinlets could be traced for up to 4.0 m. Very rarely the veins swelled to 15.0 cm diameter clots with minor MoS_2.

Occassional boulders of meta sediments were seen along the ridges and within the cirque, but not in situ. Minor MoS_2 was recongnized in two such boulders, in thin quartz-pyrite veins approximately parallel to bedding.

A 20 cm wide greisen-filled shear, trending 355^{o}/90^{o}, was seen near sample site 12. Ovoid pods, up to 40 cm by 25 cm, of molybdenite bearing greisen were found. Elsewhere the greisen contained abundant magnetite.

3.0 GEOCHEMISTRY

Both silt and rock samples were collected to determine if a local anomaly existed in the cirque. Due to a low snow pack, water levels were very low at the end of June and good silt samples could be collected. For the same reason the ridges and cirque were clear of snow. No soil sampling was attempted because "B" horizon soils were poorly developed to not present at all.

3.1 STREAM SEDIMENT GEOCHEMISTRY

To follow-up the 1978 regional survey silt samples were taken at approximately 150 m intervals up both streams draining the cirque, starting with a re-sample of the 1978 sample. Samples were obtained from the finest fraction (non-organic) of stream sediment from widely spaced intervals, with a plastic spoon, at each sample site. The samples were placed in numbered Kraft paper bags, air dried and shipped to Placer Development's analytical facility in Vancouver. Twenty-one samples were collected and analyzed for Mo, Cu, Zn, Pb, Co, Ni Ag, Au, U and W. The results are shown on Maps 3 to

10, and listed in Appendix I. Based on the results of the regional survey, the following levels (Table 1) were chosen as background, mildly anomalous and strongly anomalous, for the elements indicated. The remaining elements analyzed for, Co, Ni, Au, gave background results.

TABLE 1 Background and Anomalous Levels, Sanca Area

Element	Background ppm	Mildly Anomalous ppm	Strongly Anomalous
Mo	4	8-16	32
Cu	40	65-100	160
Zn	65	100-160	250
Pb	32	50-80	125
Ag	0.1	0.4-0.8	1.6
U (Silts)	20	40-80	160
U (Rocks)	2	4-8	16
W	10	20-40	80
F (Rocks)	200	400-800	1600

From the results shown on Maps 2 to 10 it can be seen that the stream sediment samples contained highly anomalous amounts of Mo, Cu and W, mildly anomalous amounts of U, Ag and Zn, and slightly above background Pb.

The Mo, Cu and W results show a steady if erratic increase in value up both streams. Zinc values appear to peak about half way up both streams. Pb results follow Mo in the eastern branch, Zn in the western brance. Ag values do not have a well defined pattern, but generally increase up the western branch and decrease up the eastern stream. U values increase going up gradient in the eastern basin, but remain relatively constant in the western basin.

The geochemical patterns described above fit, in a gross manner, the zoning defined around molybdenum deposits such as Henderson and Climax. That is, Mo, Cu and W increase towards the center of mineralization, whereas Zn, Pb and Ag form halos peripheral to the molybdenite concentration. The patterns defined, indicate, when considered in conjunction with the know geology, that the center of mineralization could lie beneath the highly silicified zone.

3.2 LITHOGEOCHEMISTRY

Eleven samples of bedrock were taken while traversing the claim. The analytical results obtained from the eleven bedrock samples are presented on Maps 2 to 10, and listed in Appendix II.

The results are difficult to interpret in a concise manner. There appears to be a general increase in Mo, Cu, Zn, Ag, W and F towards sample sites 3 and 4. The higher Mo content from Sample 5 is explained by visible MoS_2 in the sample; high W in samples 4 and 8 by tiny specks of scheelite. Neither molybdenite or scheelite could be seen in Sample 9. No explanation could be found by visual means for the high Cu and very high Ag results of sample 1. A possible explanation for these lithogeochemical patterns is that the source lies somewhere at depth below the centre of the claim.

3.3 ANALYTICAL METHODS

All analyses were performed in the Placer Development Research Laboratory, Vancouver. The samples were dried at approximately 90°C and sieved to -80 mesh. The -20 mesh +80 mesh fraction of stream sediments and any -80 mesh fraction of all samples remaining after analytical procedures in retained. For Mo, Cu, Zn, Pb, Ni and Co the samples were digested in 2:1 perchloric: nitric acid, boiling for four hours, and the metal concentrations determined by atomic absorption spectroscopy (AAS). For Ag the samples were digested with five molar nitric acid, and concentration determined by AAS. Hydrobromic acid was used to digest samples for Au; a mixture of hydrochloric, perchloric and nitric acids for W; followed by determination by AAS. Uranium and fluorine were determined by fusion digestion of samples followed by fluorimetric analysis for U and specific ion electrode for F.

4.0 CONCLUSIONS

The highly anomalous values returned by the stream sediment samples preclude abandoning this area until a satisfactory explanation is obtained. The high metal values could be caused by contribution from the greisen veins. The two greisen samples analyzed, although they gave relatively high W results, were not particularly high in Mo and F and were low in Cu, Pb, Ag and U. It would be difficult to rationalize the apparent element zoning if the elements involved were derived from the greisen veins. It is therefore concluded that the anomalous results are due to primary dispersion within the quartz monzonite, of which the greisen veins are only one expression.

5.0 RECOMMENDATIONS

To test the hypothesis presented above it will be necessary to:

1) prepare a detailed geology map,
2) undertake a close spaced rock sampling program,
3) contour soil sample at approximately 200 foot vertical intervals, and
4) diamond drill.

6.0 SANCA PROJECT

EXPLORATION COST STATEMENT

Room and Board - Motel in Creston:

J.J. Hylands, Senior Geologist - 3 days @ $25 = $75
D.M. Jenkins, Senior Geologist - 3 days @ $25 = $75

$ 150.00

Salaries:

J.J. Hylands - 4 days @ $150 = $600
D.M. Jenkins - 4 days @ $150 = $600

$1200.00

Transportation:

Vancouver-Creston-Vancouver 920 mi @ $0.25/mi = $230
Creston-Sanca-Creston 60 mi x 2 trips x $0.25/mi =$ 30

$260.00

Geochemical Costs:

Sediment Sample Analysis:

Mo = $1.25, Cu = $0.65, Pb = $0.65, Ag = $2.00,
Au = $3.50, Co = $0.65, Ni = $0.65, U = $2.75,
W = $4.00

Total Cost = $16.75 21 Samples x $16.75 = $351.75

Rock Sample Analyses:

Above cost plus: pulverizing charge = $1.25
F = $3.50, Bi = $2.50, Na = $2.00,
K = $2.00

Total Cost = $25.50 11 Samples x $25.50 = $280.50

$ 632.25

TOTAL COST $2242.25

7.0 STATEMENT OF QUALIFICATIONS

I, J.J. Hylands, with a business address at 700 Burrard Building, 1030 West Geogria Street, Vancouver, British Columbia, V6E 3A8, do hereby certify that I have supervised or carried out the field work and have assessed and interpreted the data from this geological and geochemical sampling program on the JAIM claim group.

I also certify that:

1) I am a graduate of the University of British Columbia, Vancouver (B.A.Sc. Geological Engineering, Option I, 1966).

2) I have engaged in the study and practice of mineral exploration since graduation, in Canada, the United States and the Philippines.

3) I am a Professional Engineer registered in the Province of British Columbia.

Respectfully submitted,
PLACER DEVELOPMENT LIMITED

J.J. Hylands, P. Eng.

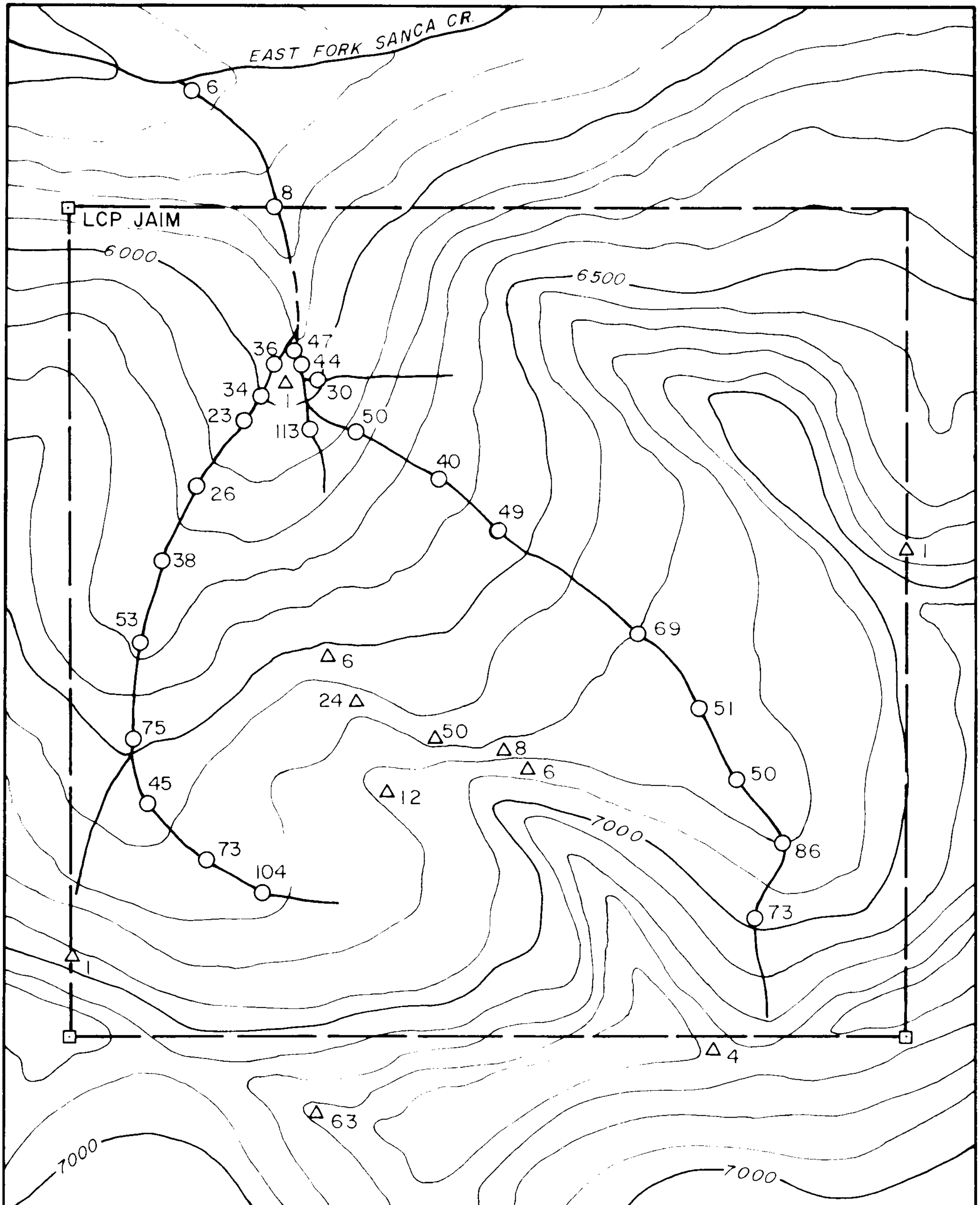
8.2 ROCK SAMPLE RESULTS

Sample No.	Description	Mo	Cu	Zn	Pb	Ni	Co ppm	Ag	Au	U	W	F	Bi	Fe	Na %	K
1	Fgr. QM	1	740	99	52	13	9	26.0	0.02	0.5	11	220	32	1.6	1.88	3.0
2	Mgr. QM	1	50	34	10	9	6	1.05	0.02	5.7	5	150	14	1.0	1.06	2.0
3	Mgr. QM	6	73	43	12	11	7	1.10	0.02	1.9	5	500	21	1.3	1.67	2.9
4	Mgr. QM, w/ vnlts	24	61	29	10	10	8	0.62	0.02	2.9	300	155	21	1.3	2.10	3.4
5	Aplite, w/ MoS_2	5	53	35	8	12	9	0.45	0.02	2.9	10	180	18	1.6	2.05	3.0
6	Leuco porphyry	8	32	13	10	9	6	0.42	0.02	7.6	5	90	14	0.5	2.00	4.1
7	White quartz	6	35	10	5	12	6	0.43	0.02	0.9	5	60	8	0.5	0.18	0.3
8	Greisen	12	26	13	8	10	7	0.28	0.02	2.9	400	320	12	1.1	0.63	2.6
9	Mgr. QM	63	48	40	10	10	6	0.23	0.02	8.0	220	290	15	1.1	1.32	2.4
10	Mgr. QM	1	81	26	10	11	9	0.35	0.02	1.9	5	230	32	1.3	1.08	1.8
12	Greisen	4	32	38	5	10	11	0.25	0.02	3.8	30	870	18	2.6	0.30	3.7

8.1 STREAM SEDIMENT SAMPLE RESULTS

Sample No.	Mo	Cu	Zn	Pb	Ni	Co	Ag	Au	U	W
40	6	21	19	2	3	5	0.02-	--	3.6	37
59	34	54	98	49	22	10	0.20	--	46	5-
60	44	216	220	34	20	13	0.48	0.02-	65	65
67A	8	31	15	6	3	5	0.25	0.02-	4.5	45
67	47	238	208	32	15	15	0.88	0.02-	64	120
68	30	207	159	29	12	12	1.12	0.02-	68	64
69	113	351	195	33	13	17	1.20	0.02-	60	135
70	50	313	170	31	13	12	1.98	0.02-	51	38
71	40	245	190	33	12	13	0.87	0.02-	57	48
72	49	239	191	31	12	11	0.68	0.02-	73	62
74	69	271	156	34	11	11	0.78	0.02-	85	78
75	51	240	210	34	12	11	0.72	0.02-	89	91
76	50	164	93	42	10	10	1.04	0.02-	110	95
77	86	175	87	54	10	12	0.48	0.02-	95	142
78	73	238	97	55	14	13	0.49	0.02-	62	90
79	36	119	111	30	9	10	0.53	0.02-	53	121
80	23	82	78	22	7	9	0.38	0.02-	32	160
81	26	109	103	26	8	11	0.52	0.02-	49	100
82	38	196	143	35	12	12	0.65	0.02-	43	72
83	53	220	161	41	13	14	0.83	0.02-	49	74
84	75	270	134	42	12	14	1.15	0.02-	57	97
85	45	239	207	39	13	14	0.62	0.02-	22	190
86	73	196	123	37	11	11	1.03	0.02-	42	97
87	104	290	105	37	11	12	0.56	0.02-	48	500

Samples 40,59,60 analyzed in 1978
Samples 67 - 87 analysed in 1979



0 100 200 300 400 500

METRES

○ SILT SAMPLE, PPM

△ ROCK SAMPLE, PPM

N

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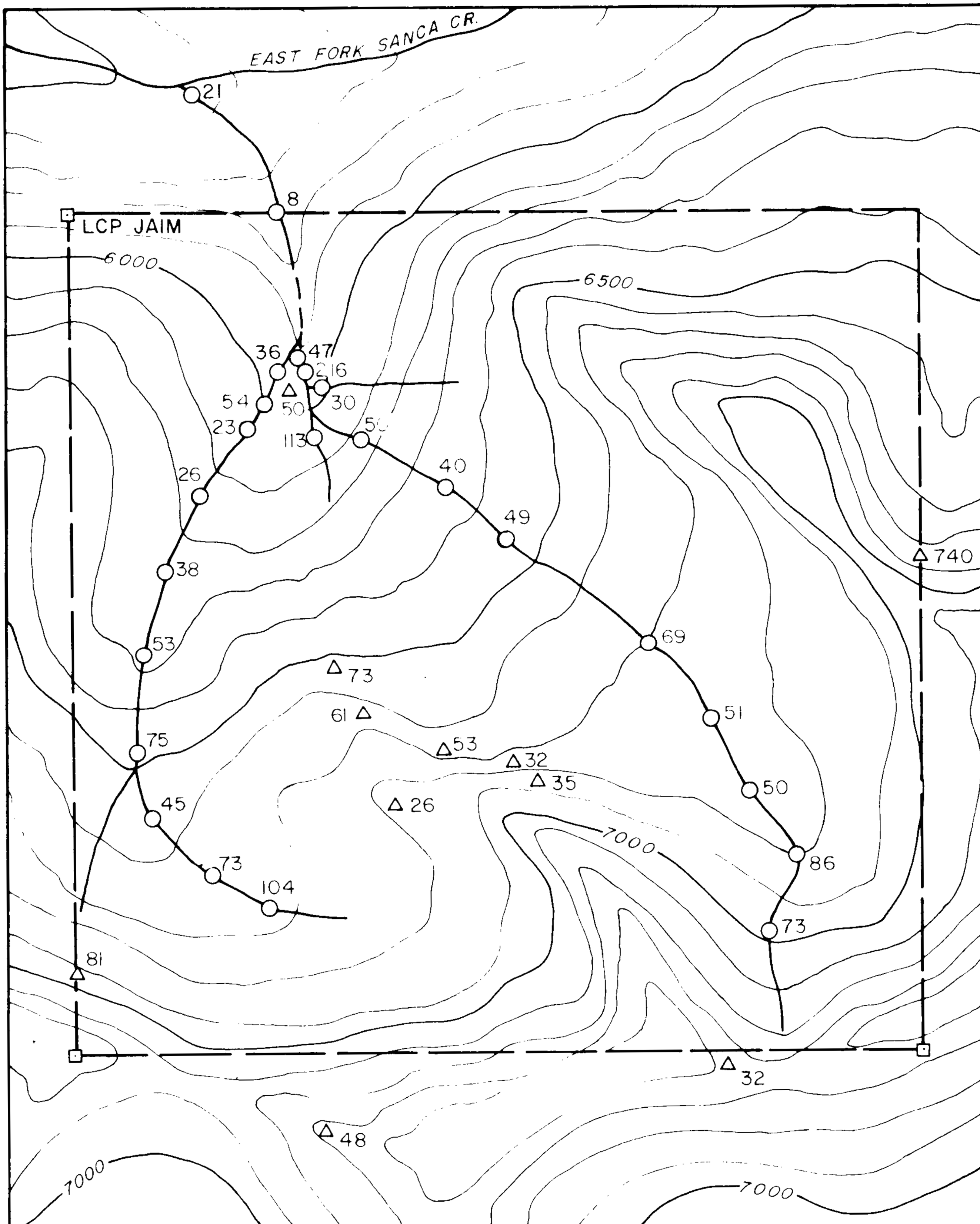
GEOCHEMICAL SAMPLE RESULTS
MOLYBDENUM

MAP 3



○ SILT SAMPLE, PPM

△ ROCK SAMPLE, PPM

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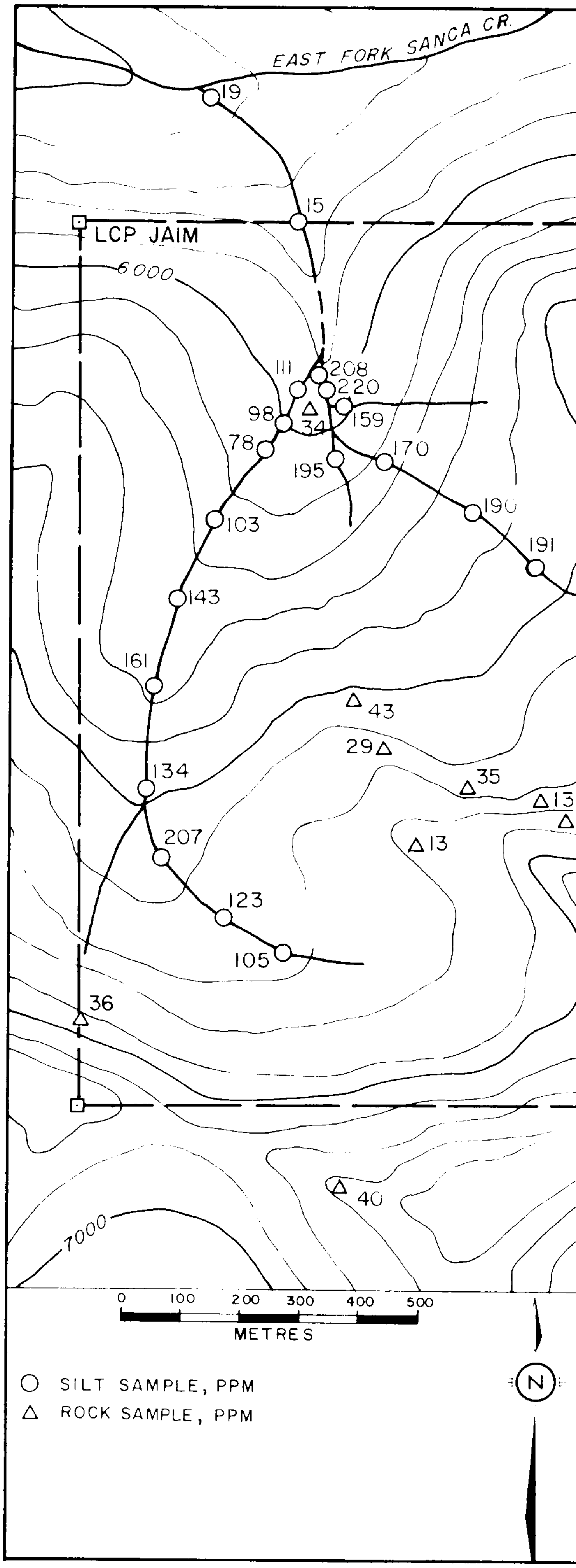
GEOCHEMICAL SAMPLE RESULTS COPPER

MAP 4



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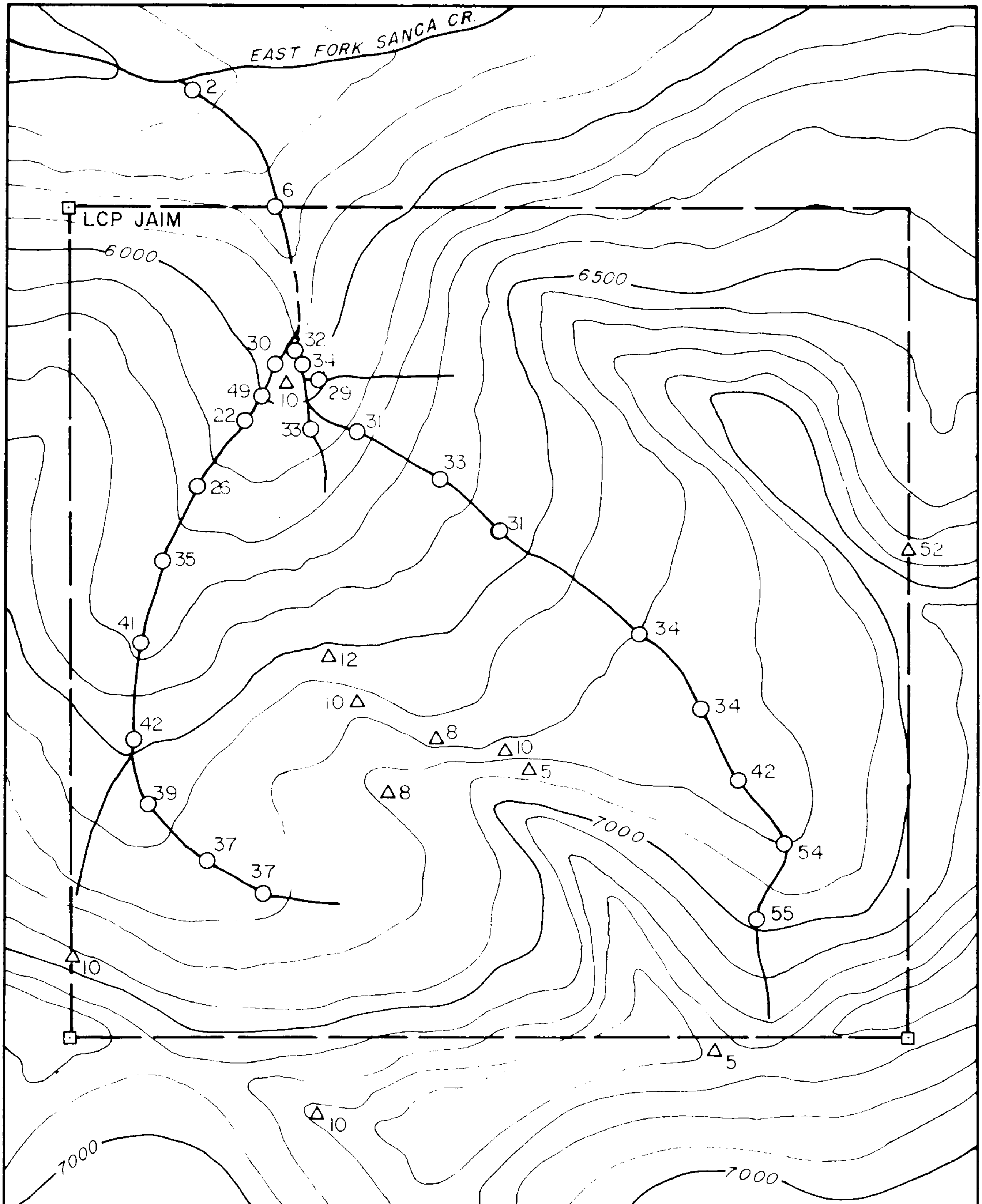
GEOCHEMICAL SAMPLE RESULTS
ZINC

MAP 5



○ SILT SAMPLE, PPM

△ ROCK SAMPLE, PPM

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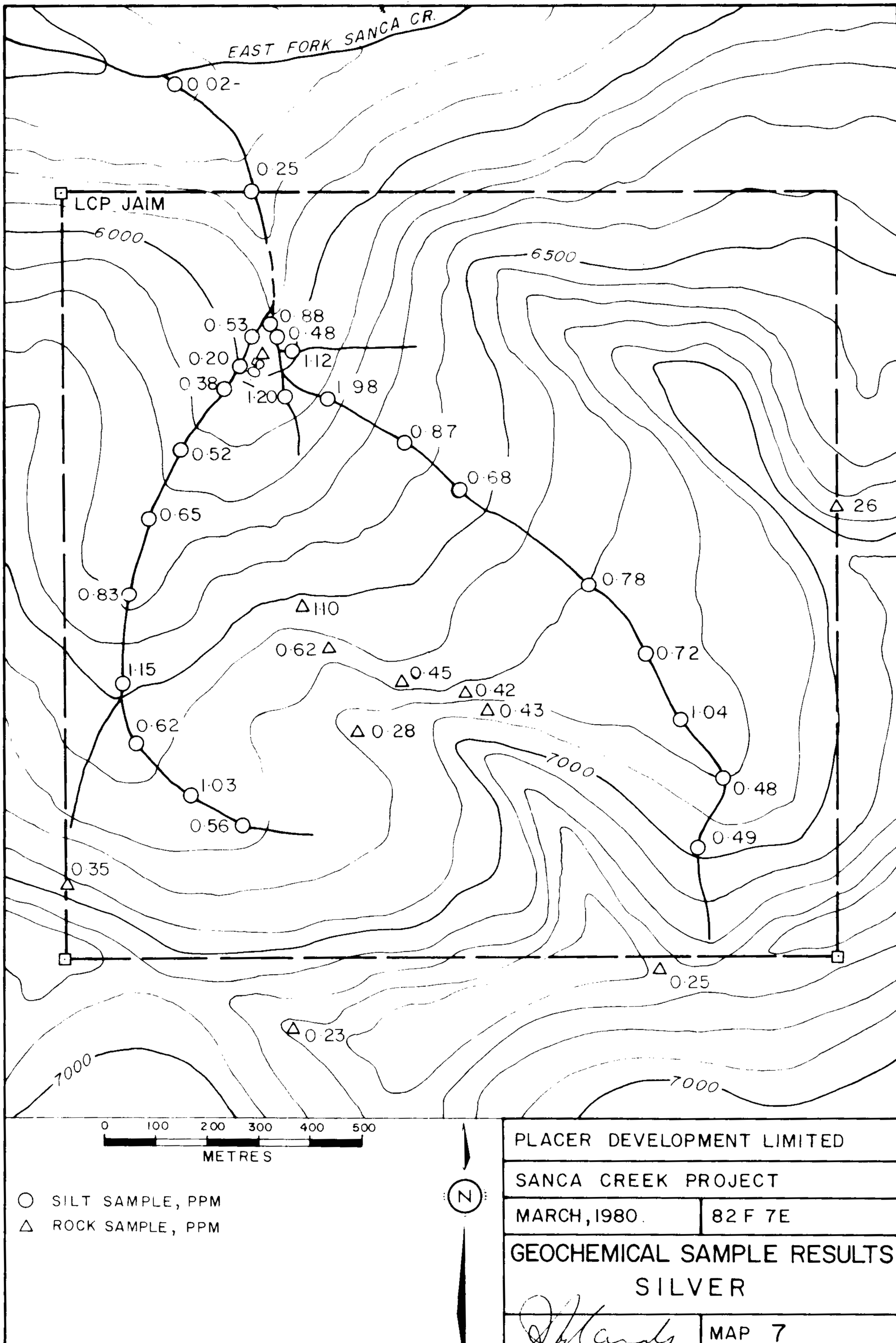
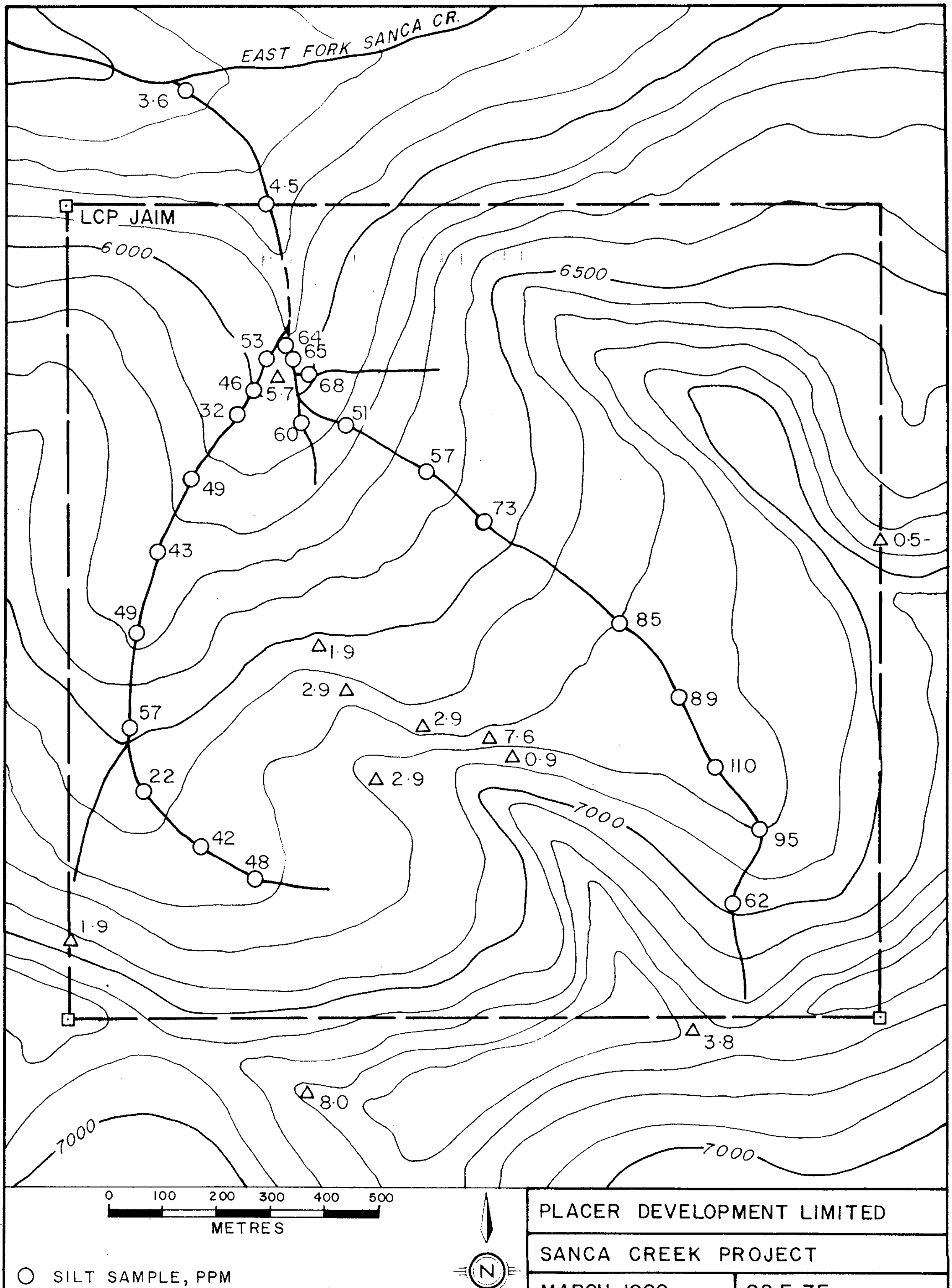
GEOCHEMICAL SAMPLE RESULTS LEAD	
[signature]	MAP 6



EAST FORK SANCA CR.
0·02-
0·25
LCP JAIM
6000
6500
0·88
0·53
0·48
0·20
1·12
0·38
1·20
1·98
0·87
0·52
0·68
0·65
26
0·83
0·78
1·10
0·62
0·72
1·15
0·45
0·42
0·43
1·04
0·62
0·28
7000
0·48
1·03
0·56
0·49
0·35
0·25
0·23
7000
7000
0 100 200 300 400 500
METRES
SILT SAMPLE, PPM
ROCK SAMPLE, PPM
N
PLACER DEVELOPMENT LIMITED
SANCA CREEK PROJECT
MARCH, 1980
82 F 7E
GEOCHEMICAL SAMPLE RESULTS
SILVER
MAP 7



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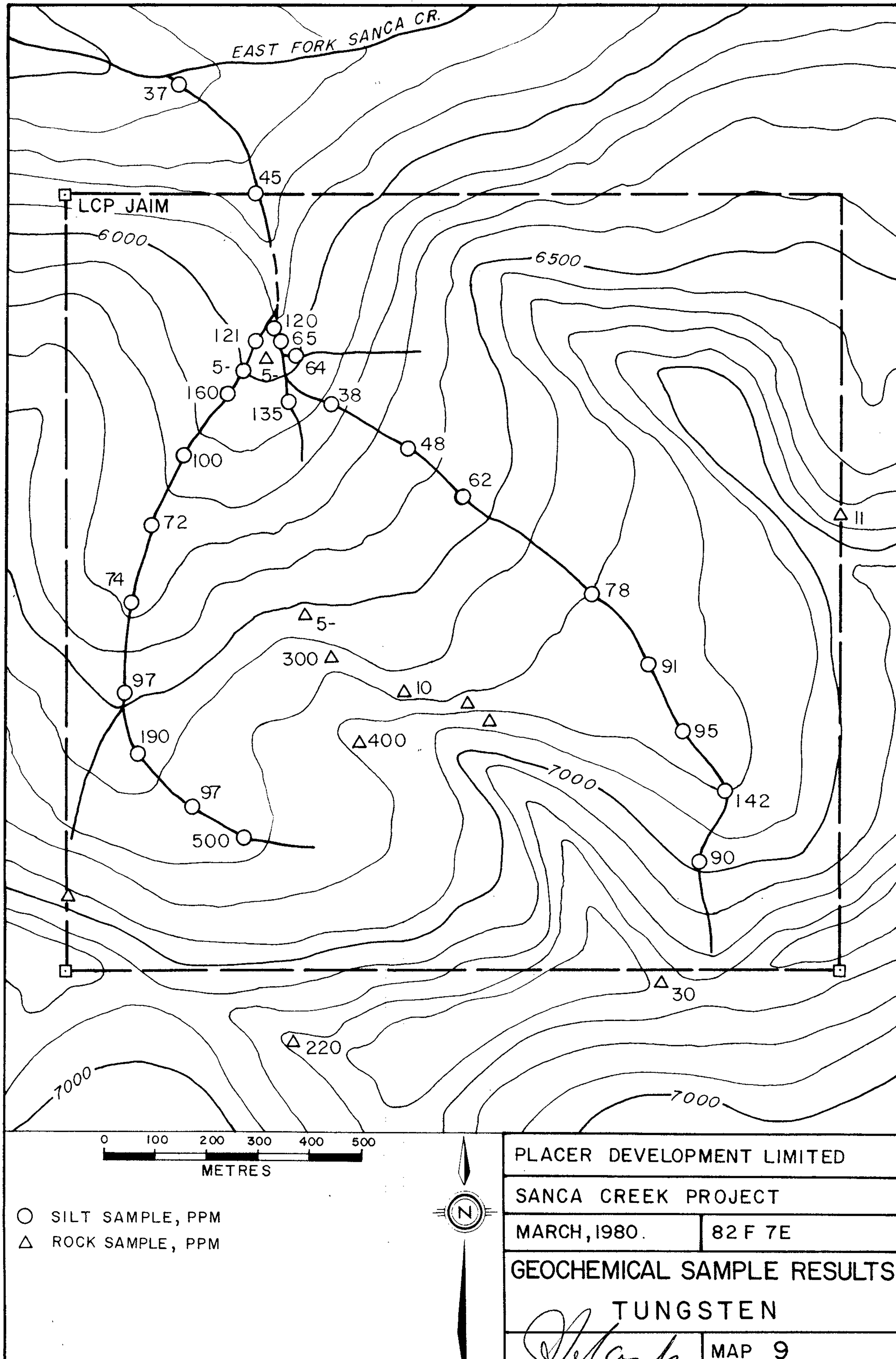
GEOCHEMICAL SAMPLE RESULTS
URANIUM

MAP 8



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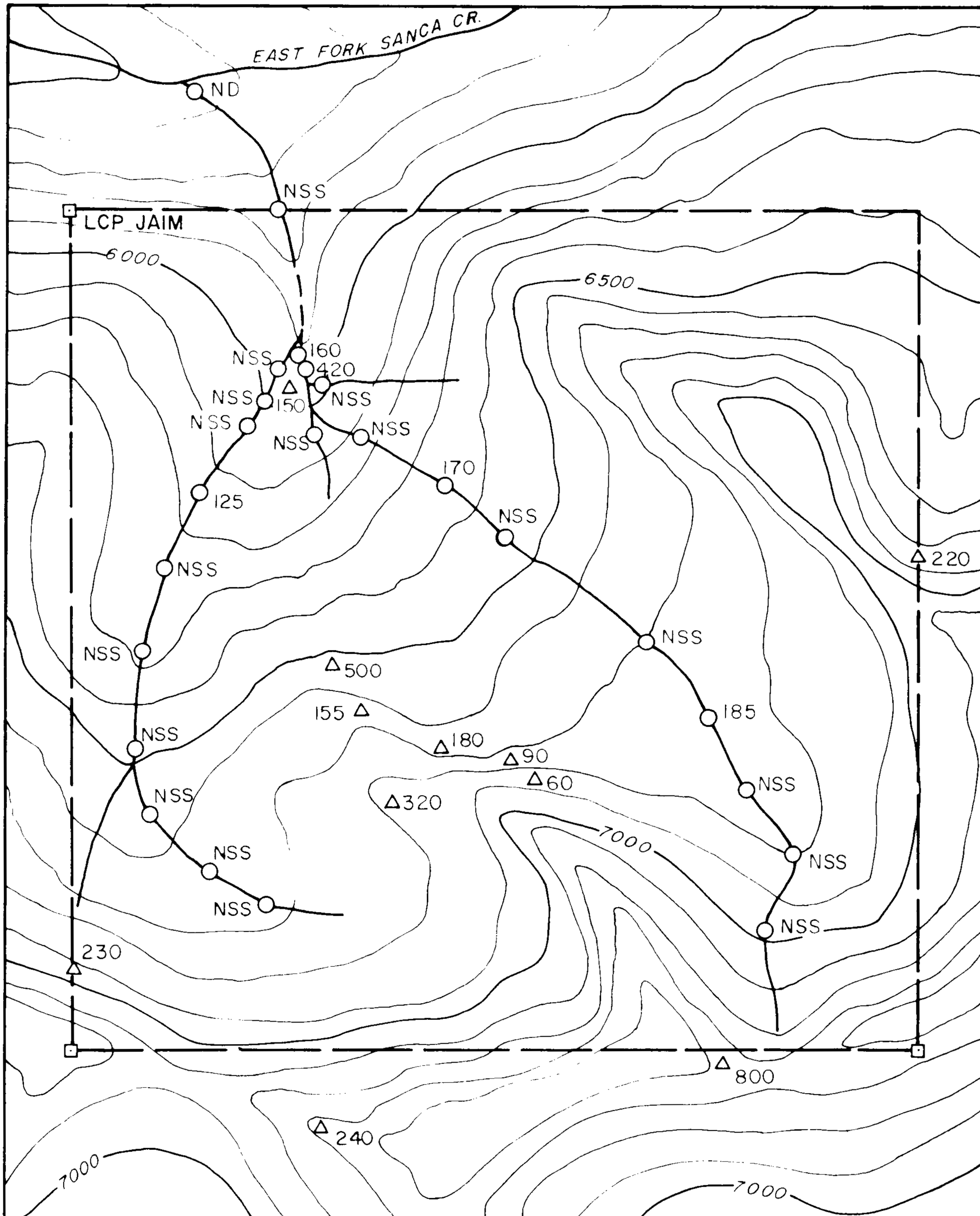
GEOCHEMICAL SAMPLE RESULTS
TUNGSTEN

MAP 9



0 100 200 300 400 500
METRES

○ SILT SAMPLE, PPM
△ ROCK SAMPLE, PPM

N

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SANCA CREEK PROJECT

MARCH, 1980. | 82 F 7E

GEOCHEMICAL SAMPLE RESULTS
FLUORINE

MAP 10