

COMINCO LTD.

EXPLORATION
NTS:92H/9/16

WESTERN DISTRICT
August 10, 1981

ASSESSMENT REPORT
ON A SOIL GEOCHEMICAL, GROUND
MAGNETIC, V.L.F. AND GEOLOGICAL
MAPPING SURVEY OF THE TOBA PROPERTY

(Toba, Toba Three, Toba Four & Toba Six Mineral Claims, 40 Units)

DILLARD CREEK AREA, SIMILKAMEEN M.D., B.C.

(work performed August 4, 1980 to July 2, 1981)

LATITUDE: 49°44'N

LONGITUDE: 120°26'W

REPORT BY:

D.T. MEHNER

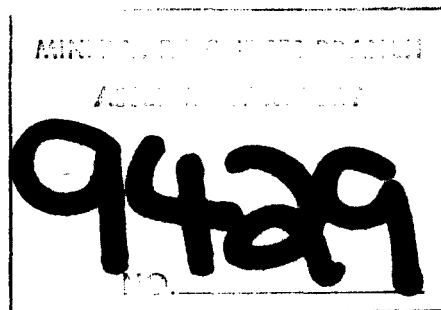


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(TOBA Mineral Claims, 40 Units)

DILLARD CREEK AREA, SIMILKAMEEN M.D., B.C.

SUMMARY

The Toba property is an alkaline porphyry copper prospect located along the eastern edge of the Aspen Grove copper belt of south central B.C. Geological mapping, soil geochemistry, ground magnetometer and V.L.F. surveys were conducted over part of the property in order to evaluate its potential. Results of the work indicate two large copper soil anomalies (1200 m x 600 m and 800 m x 500 m) that coincide with relatively low ground magnetic values in an area underlain by weakly mineralized and altered andesite to basalt flows and diorites.

It is recommended that soil geochemical, ground magnetic and V.L.F. surveys be conducted over the remainder of the property and that the better copper soil anomalies be surveyed with IP.

INTRODUCTION

The Toba property (Toba mineral claims, 40 units) was staked during the period July 1980 to December 1980 to cover an alkaline porphyry copper prospect. Prior to staking a number of reconnaissance soil lines were carried out and 57 soil samples collected. Encouraging results combined with favourable geology and the presence of widespread, finely disseminated sulphides led to the subsequent staking.

Since then 29 soil samples were collected from 1.7 km of grid line by M. Fawcett and D. Mehner on August 4, 1980, plus an additional 18.9 km of grid line were constructed and 189 soil samples were collected by Doug Pauls and Dan Pauls between May 21 and June 28, 1981. Ground magnetic and V.L.F. survey were carried out by D. Mehner and B. Cousens between June 15 and July 3 and the property was geologically mapped at 1:5000 scale by B. Cousens between May 30 and July 2, 1981.

LOCATION AND ACCESS

The Toba property is located approximately 32 km due north of Princeton B.C. and 6 km south east from the southern end of Missezula Lake(Plate 1). The centre of the property is situated at about 120°26' west longitude and 49°44' north latitude.

Access to the property is easily obtained by turning off Highway 5 approximately 48 km north of Princeton, and heading east along the "Dillard Main" gravel logging road to the 28 km mark.

TOPOGRAPHY AND VEGETATION

The property is situated along the top and north facing slopes of two gently sloped hills southeast of Missezula Lake at an elevation of 1450 m to 1700 m. Vegetation coverage is dense with spruce and pine covering the entire property. Alder and willow are common along the creek valleys. Numerous creeks, swamps and ponds provide abundant water sources for drilling.

PROPERTY AND OWNERSHIP

The Toba property is located in the Similkameen Mining Division and is 100% owned by Cominco Ltd. It consists of the following claims.

<u>CLAIM NAME</u>	<u>RECORD NO.</u>	<u>UNITS</u>	<u>DATE RECORDED</u>	<u>DATE DUE</u>
Toba	1096	20	July 30/80	July 30/81
Toba Three	1166	10	Sept.16/80	Sept.16/81
Toba Four	1172	6	Sept.23/80	Sept.23/81
Toba Six	1343	4	Dec. 11/80	Dec. 11/81

PREVIOUS WORK

The ground covered by the Toba claims is an area that has been previously staked by various people over the years, however the only group known to have carried out any work was Noranda Exploration. In 1972 they conducted both soil and biogeochemical surveys along with geological mapping on the Lorry and Sp claims(assessment report 4341) and soil sampling on the Becki claims(assessment report 4342).

GRID PREPARATION

Prior to beginning any of the surveys on the property a reconnaissance style grid with an east-west baseline and north-south picket lines was established. The grid lines were located with the use of compass and topochains. All lines were blazed and flagged with only minimal bush clearing taking place. Stations were established at 50 meter intervals by nailing pre-stamped metal tags with the grid co-ordinates to either a tree or picket. Red and blue flagging was attached to the tags to readily identify station locations.

Lines established in 1980 were only flagged.

GEOLOGY

REGIONAL

The Toba property occurs along the eastern edge of the Aspen Grove copper belt in an area underlain by Upper Triassic Nicola volcanics that Preto(1979) has referred to as Eastern Belt rocks. These are characterized by a lack of intrusive rocks and a predominance of well bedded volcanic sediments, coarse volcanic conglomerates, tuffs, lahar breccias and trachyandesite and trachybasalt flows. Separating the Eastern Belt rocks from those of the Central Belt to the west is the north-south trending Summers Creek fault while to the east, granitic rocks of the Jurassic, Pennask Batholith are found.

PROPERTY

The geology in the immediate vicinity of the Toba claims consists of a volcanic pile made up of well bedded volcanoclastics, mafic to intermediate volcanic flows and coarse andesite volcanic fragmentals of the Nicola Group intruded by coeval, altered and mineralized diorites, monzonites and syenites. These rocks are in turn intruded by Jurassic quartz monzonites of the Pennask Batholith about 500 meters east of the Toba claims. Overlying much of the property particularly between lines 12W and 18W(Plate 2) is a layer of glacial till of variable and locally undeterminable thickness.

Rock units found underlying the Toba claims are:

Coarse Volcanoclastics Unit I, Plate 2

This unit consists of rounded to angular fragments of medium grain diorite, porphyritic andesite and fine grained andesite in a fine grained andesite to pyroxene crystal rich andesite matrix. Fragments range up to 4 cm in size and compose 20% to 75% of the rock unit.

Fine Grained Volcanoclastics Unit II, Plate 2

Unit II is characterized by thinly bedded (1 to 10 cm) andesitic, volcanic arenites and siltstones with possible interbedded andesitic tuffs. Contacts between successive beds tend to be sharp although locally graded bedding is present. The very fine grained units are distinguished by colour with beds alternating between light grey-green to dark green. Beds strike in a predominantly north to northeasterly direction and dip steeply (50°) to the west.

Porphyritic Andesite to Basalt Unit III a & b Plate 2

IIIa Subunit IIIa is a fine grained porphyritic andesite to basalt that is dark green in colour and contains up to 15%, lath shaped hornblende crystals that range in size from 0.5 to 2 mm. The rock may be an altered equivalent of unit V.

IIIb Subunit IIIb is a porphyritic andesite to basalt that is dark grey-green in colour and contains 15% to 60% euhedral pyroxene crystals that range in size from 1 to 4 mm. Phenocrysts often display a trachytic texture, although locally they show complete randomness.

Medium to Fine Grained Diorite Unit IV, Plate 2

Unit IV is a medium to fine grained, equigranular diorite, ranging in grain size from 1 to 4 mm. Euhedral mafic minerals constitute on average, 35% of the rock and consist primarily of green-black pyroxene, lesser amounts of hornblende and locally biotite. Subhedral plagioclase averages about 55% of the rock while the remaining 10% consists largely of interstitial K-spar. Where substantial outcrops of diorite are found they show a gradation from a medium grained, obvious looking diorite to a fine grained rock that resembles andesite or basalt. Often these finer grained rocks show well developed hornfelsed textures that include a sugary, recrystallized appearance and the presence of biotite.

Porphyritic Mafic Syenite Unit V, Plate 2

Unit V is a fine to medium grained porphyritic syenite containing 35-40%, 1-2 mm euhedral hornblende and pyroxene crystals, 10-15%, .5-1 mm plagioclase crystals and about 50% interstitial K-spar. The fine grain size combined with the abundance of mafics makes the rock appear to be a basalt. Overall distribution of the syenite is limited with the unit only identified between lines 22W and 24W.

Porphyritic Monzonite Unit VI, Plate 2

The porphyritic monzonite is a light grey coloured rock containing 55%, 2 mm euhedral plagioclase crystals and 10% euhedral hornblende crystals that attain lengths up to 8 mm set in a fine grained K-spar groundmass. Minor biotite occurring as euhedral "books" up to 4 mm in size occur throughout. As with Unit V, distribution of the porphyritic monzonite appears limited with only two outcrops of the unit identified.

ALTERATION

All rocks mapped on the Toba property have undergone alteration that is likely due to a combination of low grade hydrothermal alteration, regional metamorphism and contact metamorphism.

Epidote is the most common alteration mineral, occurring primarily as a fracture filling in relatively fresh looking volcanic flows and volcanoclastic rocks or locally as a pervasive replacement mineral. Calcite is often associated with the epidote.

Locally, chlorite replaces primary mafic minerals and occurs as fracture filling or veins. Weak to moderate albitization and leaching is often associated with highly iron stained, fine grained volcanoclastic rocks. Secondary K-spar occurs as a very minor alteration. Biotite development is present in the diorites on the east side of the property, but likely is due to contact metamorphism induced by the nearby Pennask Batholith.

MINERALIZATION

Mineralization in the form of disseminated and fracture controlled pyrite, often reaching up to 5% of the rock locally is found throughout most of the property (Plate 2). Pyrite is also associated with epidote-calcite veins, in places making up to 30% of the vein. Chalcopyrite occurs sporadically throughout as trace amounts of disseminated grains with pyrite or as grains in calcite veins.

GEOCHEMISTRY

A soil geochemical survey was conducted over the Toba grid as a means of following up in more detail interesting results that had been obtained from reconnaissance soil lines put in during May and June of 1980.

A total of 29 samples were collected at 50 meter intervals from the north portion of lines 10W and 6W in August of 1980 and then a further 189 samples were collected at 100 meter intervals from the remainder of the grid during the spring of 1981. All samples collected were analyzed by Cominco's laboratory in Vancouver. The samples collected in 1980 were analyzed for Cu-Pb-Zn while the most recent samples were analyzed for Cu-Pb-Zn-Mo. Results are listed in Appendix "B" and samples locations and contoured results are shown on Plates 3 and 4.

All samples were collected from the "B" soil horizon whenever present. In cases where none was obtainable an analysis was made of the available material. All samples were air dried and then sieved through 80 mesh screens. Cu, Pb and Zn analysis were made using nitric acid (20% HNO₃) digestion followed by atomic absorption. Mo was determined by using a nitric acid (HNO₃) perchloric acid (HClO₄) digestion followed by a colorimetric technique. Coefficients of variation are 10-15%.

The results of the soil geochem survey indicates the presence of two substantial copper soil anomalies and a number of small, scattered anomalies. The large copper anomaly that occurs primarily on Toba Three (Plate 3) measures approximately 1200 meters long by about 600 meters wide. This anomaly can be traced directly onto the Prime 2 mineral claim and based on the data filed in assessment report 2354, it would appear that it is the southern extension of the Primer South zone copper soil anomaly. Lack of outcrop in the area underlain by the anomaly hinders interpretation of the anomaly, although scattered outcrops of weakly altered, pyrite bearing diorite are nearby.

The second large copper soil anomaly is centered on line 2W and measures 800 meters by 500 meters. Again outcrop is minimal, however it would appear the underlying rocks are altered diorites containing minor amounts of pyrite. The remaining copper soil anomalies are fairly scattered and small and likely reflect minor copper occurrences in the underlying bedrock and glacial dispersion in the overburden.

The relatively low Mo values (Plate 3, Appendix B) are believed to reflect the presence of weakly alkalic, quartz poor rocks that underly the Toba claims and are known to be characteristically low in Mo.

In the SE corner of the Toba property coincident Pb and Zn soil anomalies occur (Plate 4). Unlike the copper soil anomalies which are partly associated with underlying diorites, the Pb-Zn anomalies occur in an area underlain by porphyritic andesite to basalt flows and bedded volcanoclastics. Although much more work is needed, it is possible the Pb and Zn are marking the peripheral edges of a hydrothermal system which is centered on the largely overburden covered diorite and porphyritic mafic syenite.

GEOPHYSICS

Ground Magnetic Survey

A ground magnetometer survey was conducted over 13.8 km of grid line with readings taken every 25 meters. The values are listed in Appendix "C" and station locations with contours of the results are shown on Plate 5.

The survey was conducted with a Scintrex MP-2 proton precession magnetometer that measures the earth's total magnetic field to the nearest gamma. Diurnal variation was checked for by establishing base stations where picket lines crossed the roads. Readings were taken about every 2 hours, however only minimal changes in values were observed and no corrections were made.

Background for the survey was taken to be 57000 gammas. Values relative to this were plotted on Plate 5 and contoured. The results of the survey indicate a number of scattered magnetic highs that in part correlate with underlying volcanic flows and volcanoclastics. Of greater interest however is the presence of a large magnetic low which is coincident with the Primer South zone copper soil anomaly extension and with possible underlying altered diorite. Similarly, relatively low or background values were obtained for the area covered by the copper soil anomaly centered on line 2W (Plate 3).

The apparent coincidence of magnetic lows with the copper soil anomalies may be the result of the underlying rocks having undergone alteration that is hydrothermal in origin.

V.L.F.

A V.L.F. survey was conducted over the Toba grid using a Geonics EM16 instrument. Readings were taken on all lines at 25 meter intervals using the Seattle Washington transmitting station NLK, and on selected lines using the Cutler Maine transmitter, NAA. Data is plotted in standard profile form on Plates 6 (for station NLK) and Plate 7 (for station NAA) and the NLK data in Frazer filtered form is on Plate 8.

The profiles are plotted so as to give right wave crossovers over V.L.F. conductive features. Such features are noted by a heavy dashed line (for station NLK). The positive value filtered results are contoured at 10% intervals.

In general, the line to line correlation of the V.L.F. features detected is not well defined. Fill in lines to a 100 meter line separation would give a more definitive interpretation.

CONCLUSIONS

Results of the preliminary work conducted on the property confirm the presence of altered and mineralized quartz deficient volcanic flows and intrusives. Soil geochemical surveys have outlined two significantly large copper anomalies that occur largely in areas of little outcrop but are believed to be underlain at least in part by the altered and mineralized intrusives. Results of the ground magnetic survey indicate the two copper soil anomalies are largely coincident with low magnetic values. This may reflect hydrothermal alteration. The V.L.F. survey results suggest possible east-west conductors however closer spaced grid lines are required before a reliable interpretation can be made.

RECOMMENDATIONS

1. Soil geochemical and ground magnetic surveys be conducted over the remainder of the property.
2. A V.L.F. and I.P. survey be conducted over selected portions of the property with emphasis put on those areas underlain by significant copper soil anomalies.

REFERENCES

Heim, R.C. and Knauer, J.D., 1972. Geochemical Survey on the Becki 1-27, 29, 31 and 33-40 Mineral Claims(Similkameen Mining Division, 92H/9W) B.C. Dept. of Mines and Petroleum Resources Assessment Report 4342.

Heim, R.C., Knauer, J.D. and Walker, J.T., 1972. Combined Geochemical and Geophysical Report on the Lorry 1-9, 11, 13, 15, 17-32; Sp 1-20 and Sp 1-7 Fractional Mineral Claims(Similkameen Mining Division, 92H/9W). B.C. Dept. of Mines and Petroleum Resources Assessment Report 4341.

Preto, V.A., 1979. Geology of the Nicola Group between Merritt and Princeton. B.C. Ministry of Energy, Mines and Petroleum Resources Bulletin 69, p.90.

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APPENDIX "A"

STATEMENT OF EXPENDITURE
FOR WORK ON THE TOBA MINERAL CLAIMS

SALARIES

Doug Pauls - 10 days @ \$85/day May 21-26, June 5, 14-16	\$ 850.
Dan Pauls - 12 days @ \$85/day May 21-26, June 5,8,14-16,28	1,020.
Brian Cousens - 20 days @ \$120/day May 30-31, June 1-3,8,12,14-18 23-28, July 1-3	2,400.
Mike Fawcett - 1 day @ \$100/day August 4, 1980	100.
David Mehner - 6 days field @ \$164/day August 4, 1980, May 30, June 15-17 24/81	984.
3 days office, July 10,13,17/81 @ \$140/day	420.

GEOCHEMISTRY

189 soil samples analyzed for Cu,Pb,Zn,Mo @ \$5.20 ea	982.80
29 soil samples analyzed for Cu,Pb,Zn @ \$3.55 ea	102.95

GEOPHYSICS

Magnetometer rental for 15 days @ \$15/day	225.
EM 16 rental for 15 days @ \$15/day	225.

TRANSPORTATION

1 truck plus gas @ \$35/day for 20 days	700.
1 truck plus gas @ \$45/day for 12 days	540.

DOMICILE

49 man days @ \$28/man day	1,372.
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MISCELLANEOUS

Map blow up, shipping, flagging, axes, phone etc.	300.
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\$ 10,221.75

APPENDIX "B"

SOIL GEOCHEMICAL SURVEY RESULTS

TOBA PROPERTY (TULAMEEN)

REPORTING DATE 9 JUN 1981 JOB US1 - 02915

SAMPLE NUMBER	FIELD NUMBER	TYPE		Cu PPM	Pb PPM	Zn PPM	Mo PPM
S81 05006	BL- 10	W	S	88	4	47	<2
S81 05007	BL- 11	W	S	90	<4	43	<2
S81 05008	BL- 12	W	S	91	<4	40	<2
S81 05009	BL- 13	W	S	109	<4	42	2
S81 05010	BL- 14	W	S	156	<4	46	2
S81 05011	BL- 15	W	S	57	4	36	2
S81 05012	BL- 16	W	S	108	5	33	2
S81 05013	BL- 17	W	S	115	<4	32	2
S81 05014	BL- 18	W	S	196	<4	33	2
S81 05015	BL- 19	W	S	96	5	53	2
S81 05016	BL- 20	W	S	71	5	36	2
S81 05017	BL- 21	W	S	87	<4	37	2
S81 05018	BL- 22	W	S	70	5	49	2
S81 05019	BL- 23	W	S	52	4	43	<2
S81 05020	BL- 24	W	S	49	<4	36	<2
S81 05021	10W 1	S	S	64	<4	40	<2
S81 05022	10W 2	S	S	61	<4	39	2
S81 05023	10W 3	S	S	55	<4	32	<2
S81 05024	10W 4	S	S	34	4	38	<2
S81 05025	10W 5	S	S	54	4	38	2
S81 05026	10W 6	S	S	50	<4	51	2
S81 05027	10W 7	S	S	68	4	49	2
S81 05028	12W 1	N	S	76	4	42	2
S81 05029	12W 2	N	S	75	5	43	<2
S81 05030	12W 3	N	S	108	5	47	<2
S81 05031	12W 4	N	S	39	<4	45	<2
S81 05032	12W 5	N	S	45	<4	38	<2
S81 05033	12W 6	N	S	45	<4	39	<2
S81 05034	12W 7	N	S	43	<4	32	<2
S81 05035	12W 8	N	S	71	<4	25	<2
S81 05036	12W 1	S	S	47	<4	30	<2
S81 05037	12W 2	S	S	120	5	31	<2
S81 05038	12W 3	S	S	103	<4	32	<2

SAMPLE NUMBER	FIELD NUMBER	TYPE	Cu PPM	Pb PPM	Zn PPM	Mo PPM
SB1 05039	12W 4 S	S	68	4	36	2
SB1 05040	12W 5 S	S	120	5	40	2
SB1 05041	12W 6 S	S	47	<4	64	<2
SB1 05042	12W 7 S	S	61	<4	47	<2
SB1 05043	12W 8 S	S	57	4	41	<2
SB1 05044	12W 9 S	S	59	<4	34	<2
SB1 05045	12W 10 S	S	131	<4	30	<2
SB1 05046	12W 11 S	S	62	<4	18	2
SB1 05047	12W 12+50S	S	86	<4	40	2
SB1 05048	16W 3 N	S	296	5	32	2
SB1 05049	16W 2 N	S	195	<4	30	2
SB1 05050	16W 1 N	S	195	<4	34	2
SB1 05051	16W 1 S	S	57	<4	34	<2
SB1 05052	16W 2 S	S	143	<4	33	<2
SB1 05053	16W 3 S	S	203	4	29	<2
SB1 05054	16W 4 S	S	165	<4	32	<2
SB1 05055	16W 5 S	S	177	<4	41	<2
SB1 05056	16W 6 S	S	152	<4	30	<2
SB1 05057	16W 7 S	S	39	4	31	<2
SB1 05058	16W 8 S	S	226	<4	47	<2
SB1 05059	16W 9 S	S	90	<4	47	<2
SB1 05060	16W 10 S	S	92	<4	48	<2
SB1 05061	16W 11 S	S	75	<4	38	<2
SB1 05062	16W 12 S	S	85	<4	42	2
SB1 05063	16W 12+50S	S	70	<4	45	<2
SB1 05064	18W 3 N	S	147	<4	29	<2
SB1 05065	18W 2 N	S	198	<4	32	2
SB1 05066	18W 1 N	S	190	<4	40	2
SB1 05067	18W 1 S	S	185	<4	32	<2
SB1 05068	18W 2 S	S	165	<4	29	2
SB1 05069	18W 3 S	S	108	<4	30	<2
SB1 05070	18W 4 S	S	165	<4	42	<2
SB1 05071	18W 5 S	S	70	<4	28	<2
SB1 05072	18W 6 S	S	63	<4	31	<2
SB1 05073	18W 7 S	S	50	<4	39	<2
SB1 05074	18W 8 S	S	57	<4	39	<2
SB1 05075	18W 9 S	S	52	<4	36	2
SB1 05076	18W 10 S	S	105	<4	35	2
SB1 05077	18W 11 S	S	70	<4	35	<2
SB1 05078	18W 12 S	S	92	<4	47	<2

~~TOBA PROPERTY (TULAMEEN)~~

REPORTING DATE 9 JUN 1981 ~~JOB VS1 02918~~

SAMPLE NUMBER	FIELD NUMBER	TYPE	Cu PPM	Pb PPM	Zn PPM	Mo PPM
S81 05079	18W 12+50S	S	75	<4	42	<2
S81 05080	20W 1 N	S	72	<4	29	<2
S81 05081	20W 2 N	S	147	<4	28	2
S81 05082	20W 3 N	S	90	<4	25	<2
S81 05083	20W 1 S	S	188	<4	29	<2
S81 05084	20W 2 S	S	117	<4	38	<2
S81 05085	20W 3 S	S	62	<4	35	<2
S81 05086	20W 4 S	S	76	<4	44	2
S81 05087	20W 5 S	S	52	<4	48	<2
S81 05088	20W 7 S	S	103	<4	52	2
S81 05089	20W 8 S	S	45	<4	52	<2
S81 05090	20W 9 S	S	57	<4	51	<2
S81 05091	20W 10 S	S	48	<4	53	<2
S81 05092	20W 11 S	S	36	<4	53	<2
S81 05093	20W 12 S	S	36	<4	53	<2
S81 05094	20W 12+50S	S	47	<4	52	<2
S81 05095	24W 3 N	S	67	<4	39	<2
S81 05096	24W 2 N	S	54	<4	36	<2
S81 05097	24W 1 N	S	72	<4	42	<2
S81 05098	24W 1 N	S	44	<4	42	<2
S81 05099	24W 2 N	S	40	<4	39	<2
S81 05100	24W 3 N	S	45	<4	38	<2
S81 05101	24W 4 N	S	40	<4	38	<2
S81 05102	24W 5 N	S	51	<4	51	<2
S81 05103	24W 6 N	S	41	<4	43	<2
S81 05104	24W 7 N	S	45	<4	46	<2
S81 05105	24W 8 N	S	50	<4	40	<2
S81 05106	24W 9 N	S	105	4	48	<2
S81 05107	24W 10 N	S	41	<4	64	<2
S81 05108	24W 11 N	S	35	<4	44	<2

TOBA PROPERTY (TULAMEEN)

JOB V81 - 0329S

REPORTING DATE 17 JUN 1981

SAMPLE NUMBER	FIELD NUMBER	TYPE	Cu PPM	Fe PPM	Zn PPM	Mo PPM
S81 06869	BL 0 W	S	100	8	115	<2
S81 06870	BL 1 W	S	70	6	95	<2
S81 06871	BL 2 W	S	159	<4	75	<2
S81 06872	BL 3 W	S	194	<4	41	<2
S81 06873	BL 4 W	S	184	<4	40	<2
S81 06874	BL 4+56 W	S	61	<4	19	<2
S81 06875	BL 6 W	S	56	<4	31	<2
S81 06876	BL 7 W	S	93	<4	35	<2
S81 06877	BL 8 W	S	36	<4	38	<2
S81 06878	BL 9 W	S	59	<4	49	<2
S81 06879	BL 1 E	S	180	<4	70	<2
S81 06880	BL 2 E	S	56	<4	79	<2
S81 06881	BL 3 E	S	52	6	77	<2
S81 06882	BL 4 E	S	61	<4	65	<2
S81 06883	BL 5 E	S	55	7	107	<2
S81 06884	5E 1 N	S	101	224	461	<2
S81 06885	5E 2 N	S	31	<4	44	<2

REPORTING DATE 21 JUN 1961							
SAMPLE NO	TIME	WAVELENGTH	TYPE	Ca PPM	Pb PPM	Zn PPM	Cd PPM
881 09011	09011	SR 2	S	33	14	37	<2
881 09012	09012	SR 3	S	35	14	35	<2
881 09013	09013	SR 4	S	28	17	32	<2
881 09014	09014	SR 5	S	27	14	31	<2
881 09015	09015	SR 6	S	120	14	39	<2
881 09016	09016	SR 7	S	106	14	38	<2
881 09017	09017	SR 8	S	60	14	34	<2
881 09018	09018	SR 9	S	107	7	137	<2
881 09019	09019	SR 10	S	95	8	96	<2
881 09020	09020	SR 11	S	71	8	71	3
881 09021	09021	SR 12	S	17	14	111	<2
881 09022	09022	SR 13	CON	111	14	111	3
881 09023	09023	SR 14	S	97	14	51	<2
881 09024	09024	SR 15	S	110	14	71	<2
881 09025	09025	SR 16	S	140	14	52	<2
881 09026	09026	SR 17	S	168	7	38	<2
881 09027	09027	SR 18	R	171	14	50	2
881 09028	09028	SR 19	R	17	14	1	<2
881 09029	09029	SR 20	S	59	7	77	<2
881 09030	09030	SR 21	S	47	14	77	<2
881 09031	09031	SR 22	S	107	5	101	<2
881 09032	09032	SR 23	S	61	14	205	<2
881 09033	09033	SR 24	S	39	12	118	<2
881 09034	09034	SR 25	S	66	14	78	<2
881 09035	09035	SR 26	S	116	14	70	<2
881 09036	09036	SR 27	N	59	14	54	<2
881 09037	09037	SR 28	N	70	<4	62	<2
881 09038	09038	SR 29	R	70	<4	32	<2
881 09039	09039	SR 30	R	25	<4	17	<2
881 09040	09040	SR 31	N	36	14	155	<2
881 09041	09041	SR 32	S	51	10	211	<2
881 09042	09042	SR 33	S	110	11	1670	<2
881 09043	09043	SR 34	S	30	9	210	<2
881 09044	09044	SR 35	S	32	8	151	<2
881 09045	09045	SR 36	S	115	10	113	<2
881 09046	09046	SR 37	S	94	11	137	<2
881 09047	09047	SR 38	S	33	9	121	<2
881 09048	09048	SR 39	S	62	17	14	<2
881 09049	09049	SR 40	S	46	12	104	<2

05108 - 05108

REPORTING DATE 25 JUN 1981							
JOB V81 - 05108							
SAMPLE NUMBER	FIELD NUMBER	TYPE	Cu PPM	Pb PPM	Zn PPM	Mo PPM	
881 09068	5E 4	S	125	5	104	<2	
881 09069	5E 5	S	74	<4	38	<2	
881 09071	5E 6	S	34	<4	61	<2	
881 09072	7E 1	S	37	12	71	<2	
881 09073	7E 1	S	41	7	83	<2	
881 09074	7E 2	S	51	11	81	<2	
881 09075	7E 3	S	50	<4	94	<2	
881 09076	7E 4	S	40	12	107	<2	
881 09077	7E 5	S	47	7	96	<2	
881 09078	7E 6	S	37	12	93	<2	
881 09079	7E 600 E	S	110	<4	81	<2	
881 09081	7E 1	S	61	11	119	<2	
881 09081	7E 2	S	59	11	103	<2	
881 09082	7E 3	S	57	11	88	<2	
881 09083	7E 4	S	62	<4	58	<2	
881 09084	7E 5	S	71	<4	60	<2	
881 09085	PL 7	S	125	12	397	<2	
881 09086	BL 8	S	37	11	447	<2	
881 09087	BL 9	S	34	11	289	<2	
881 09088	SE 3 N	S	71	11	65	<2	

REPORTING DATE 22 JUL 1981

JOB V81 - 05108

SAMPLE NUMBER	FIELD NUMBER	TYPE	Cu PPM	Pb PPM	Zn PPM	Mo PPM	
881 14814	T 22W 3N	S	72	5	30	<2	
881 14815	T 22W 2N	S	146	<4	31	2	
881 14816	T 22W 1N	S	67	5	38	2	
881 14817	T 22W 1S	S	37	5	35	2	
881 14818	T 22W 2S	S	57	6	53	<2	
881 14819	T 22W 3S	S	39	<4	32	<2	
881 14820	T 22W 4S	S	50	5	38	<2	
881 14821	T 22W 5S	S	40	<4	42	<2	

ANALYTICAL METHODS

Cu Pb Zn Ag 20% HNO3 DIGESTION / AA
 Au AQUA REGIA DIGESTION / SOLVENT EXTRACTION / AA
 Mo HNO3 - HClO4 DIGESTION / COLORIMETRIC

APPENDIX "C"

GROUND MAGNETOMETER SURVEY RESULTS (In Gammas)

Values listed were obtained by subtracting background (57000 Gammas) from the original result.

Line 24W

300N	426	775	-95
275	382	800	1030
250	475	825	827
225	580	850	175
200	786	875	540
175	644	900	-54
150	303	930	269
125	662	950	-633
100	682	975	-802
75	862	1000	-384
50	508	1025	-148
25	144	1050	-446
BL 00	113	1075	-463
25S	61	1100	-252
50	38	1125	-175
75	72	1150	320
100	598	1175	-7
125	598	1200	-220
150	272		
175	83		
200	66		
225	668		
250	310		
275	721		
300	1565		
325	1216		
350	327		
375	768		
400	805		
425	793		
450	990		
475	1403		
500	456		
525	586		
550	-111		
575	140		
600	460		
648	390		
675	-28		
700	390		
725	1362		
750	1028		

Line 20W

300N	85	750	84
275	129	775	322
250	174	800	300
225	90	825	560
200	22	850	-65
175	-90	875	600
150	27	900	422
125	-55	925	566
100	-68	950	604
75	-32	975	137
50	112	1000	38
25	70	1025	-192
BL 00	-42	1050	-262
25S	-69	1075	-206
50	2	1100	876
75	-62	1125	-208
100	-12	1150	-174
125	-297	1175	-126
150	-312	1200	-172
175	-274	1225	-220
200	-313	1250	-182
225	-290		
250	-281		
275	-292		
300	-180		
325	-135		
350	112		
375	224		
400	158		
425	353		
450	-124		
475	-364		
500	-244		
525	14		
550	218		
575	399		
600	147		
625	-109		
650	6		
675	312		
700	755		
725	66		

Line 18W

300N	158	1000	-138	650	16	225	334
275	40	1025	-100	675	-70	200	176
250	337	1050	-146	700	-58	175	592
230	332	1075	-105	715	-116	150	536
200	93	1100	- 99	750	-98	125	420
175	-84	1125	- 75	775	-162	100	256
150	5	1150	-162	800	-200	75	170
125	6	1175	- 12	830	-358	50	122
100	231	1200	- 87	850	-268	25	463
75	122	1225	-207	875	- 1	BL 00	528
50	268	1250	-236	900	-25	255	526
25	190			930	91	50	22
BL 00	110			955	262	75	84
255	466	<u>Line 16W</u>		975	250	100	351
50	242	300N	182	1000	282	125	-66
75	-22	275	381	1025	205	150	38
100	106	250	330	1050	837	175	80
125	200	225	250	1075	454	200	-136
150	374	200	229	1100	472	225	-208
175	673	180	388	1130	554	250	-325
200	501	150	-90	1155	702	275	-355
225	590	125	- 8	1175	912	300	-389
250	699	100	64	1200	958	325	-576
275	670	65	22	1225	960	350	-838
300	469	45	90	1250	710	375	-1096
325	280	25	118			400	-933
350	670	BL 00	116	<u>Line 12W</u>		425	-2393
370	42	255	30	800N	310	475	12849
400	29	50	6	775	444	490	6290
425	324	75	4	750	270	500	9947
450	256	100	-28	730	297	525	3295
475	193	125	-28	724	642	545	1443
500	104	150	58	700	760	570	602
525	-14	175	-14	675	444	600	428
550	50	200	64	650	992	625	230
575	774	230	78	625	463	650	93
600	542	250	46	600	467	675	128
625	216	275	-45	575	450	700	225
650	88	300	-33	550	389	725	214
690	136	325	119	525	134	750	350
700	156	350	-228	500	840	775	354
725	204	375	-91	475	231	800	205
750	215	400	-210	450	159	825	244
770	190	425	-178	425	260	850	252
800	56	450	-194	400	332	875	292
825	109	500	-56	375	190	900	449
850	1	525	-126	350	235	925	484
875	103	550	-78	325	232	950	313
900	14	575	-54	300	160	975	226
925	32	600	-98	275	199	1000	88
950	- 6	625	-34	250	314	1025	182
975	-88					1050	91

12W cont.

1080	74	275	808	6W-BL	185	200	465
1100	134	300	656	25S	30	175	704
1125	196	320	599	50	232	150	275
1150	60	350	1045	75	630	125	137
1170	0	375	718	100	474	100/BL	22
1200	-18	400	326	125	643	25S	578
1225	142	425	396	150	652	50	270
1250	50	450	557	175	496	75	402
1275		475	-148	200	431	100	781
		500	760	225	407	125	578
<u>Line 10W</u>		525	1402	250	381	150	350
850N	164	550	1410	275	376	175	666
825	272	575	794	300	518	200	568
800	135	600	1461	325	302	225	598
775	220	640	1439	350	266	250	608
750	156	660	433	375	48	275	408
725	220	675	304	400	-90	300	640
700	333	700	546	425	-13	325	420
675	564			450	34	350	209
650	532	<u>Line 6W</u>		500	300	375	662
625	287	850N	440	525	500	400	245
600	239	825	622	550	890	425	364
575	294	800	471	575	728	450	330
550	466	775	522	600	1221	475	614
525	293	750	408	625	1148	500	239
500	402	725	388	650	334	525	560
475	239	700	432	675	918	550	472
450	225	675	380	700	458	575	630
425	256	650	369			600	648
400	256	625	173	<u>Line 2W</u>		630	302
375	86	600	208	850N	212		
350	- 2	575	324	825	284		
325	683	550	496	800	478		
300	366	525	358	775	177		
275	355	500	150	750	94		
250	40	475	360	725	36		
225	18	450	402	700	344		
200	763	425	371	675	67		
175	223	400	356	650	287		
150	237	375	268	625	152		
125	430	350	328	600	44		
100	103	325	226	575	98		
75	52	300	248	550	162		
50	114	275	214	525	212		
25	26	250	171	500	150		
BL 00	118	225	334	475	11		
25S	386	200	242	450	132		
50	493	175	152	425	-26		
75	426	150	194	400	343		
100	223	125	148	375	150		
125	158	100	82	350	15		
150	266	75	139	325	212		
175	258	50	28	300	593		
200	616	25	260	275	330		
225	978	BL564W	200	250	336		
250	1527			225	556		

Line 1E

625N		350	210
600		375	344
575		400	307
550		425	412
525	251	450	396
500	-58	475	566
475	-22	500	462
450	104		
425	341		
400	68		
375	26		
350	306		
325	595		
300	344		
275	602		
250	385		
225	294		
200	302		
175	165		
150	6		
125	82		
100	30		
75	368		
50	492		
25	350		
BL 00	242		
25S	255		
50	-162		
75	19		
100	- 4		
125	27		
150	22		
175	80		
200	-26		
225	-23		
250	-116		
275	38		
300	98		
325	164		

NOTE: Data was collected with a Scintrex MP-2 proton precession magnetometer that measures the earth's total magnetic field.

APPENDIX "D"

COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

STATEMENT OF QUALIFICATIONS

I, DAVID T. MEHNER, OF THE CITY OF VERNON BRITISH COLUMBIA, HEREBY CERTIFY:

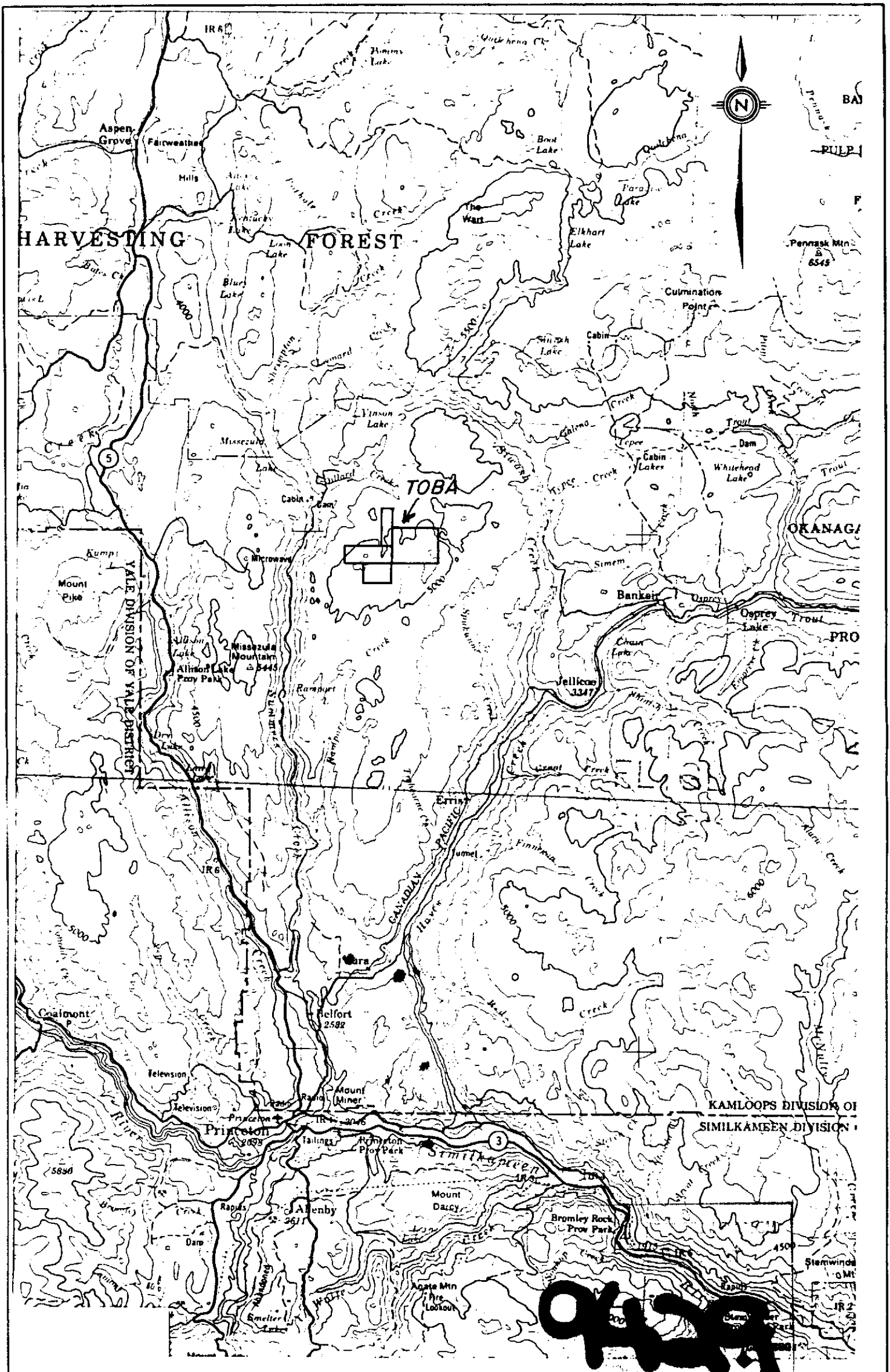
1. That I am a Geologist residing at 1715-41st Ave., Vernon, British Columbia. With a Business Address at 4405-28th Street, Vernon, British Columbia.
2. That I graduated with a B.Sc. Hon. Degree in Geology from the University of Manitoba in 1976.
3. That I have practised geology with Cominco Ltd. from October 1979 to present and as such have a personal knowledge of the facts which I hereinafter depose.

DATED THIS 10th DAY OF AUGUST, 1981 AT VERNON, BRITISH COLUMBIA.

SIGNED



David T. Mehner



Drawn by:		Traced by: DTM	
Revised by	Date	Revised by	Date

TOBA PROPERTY LOCATION MAP

Scale: 1:250,000

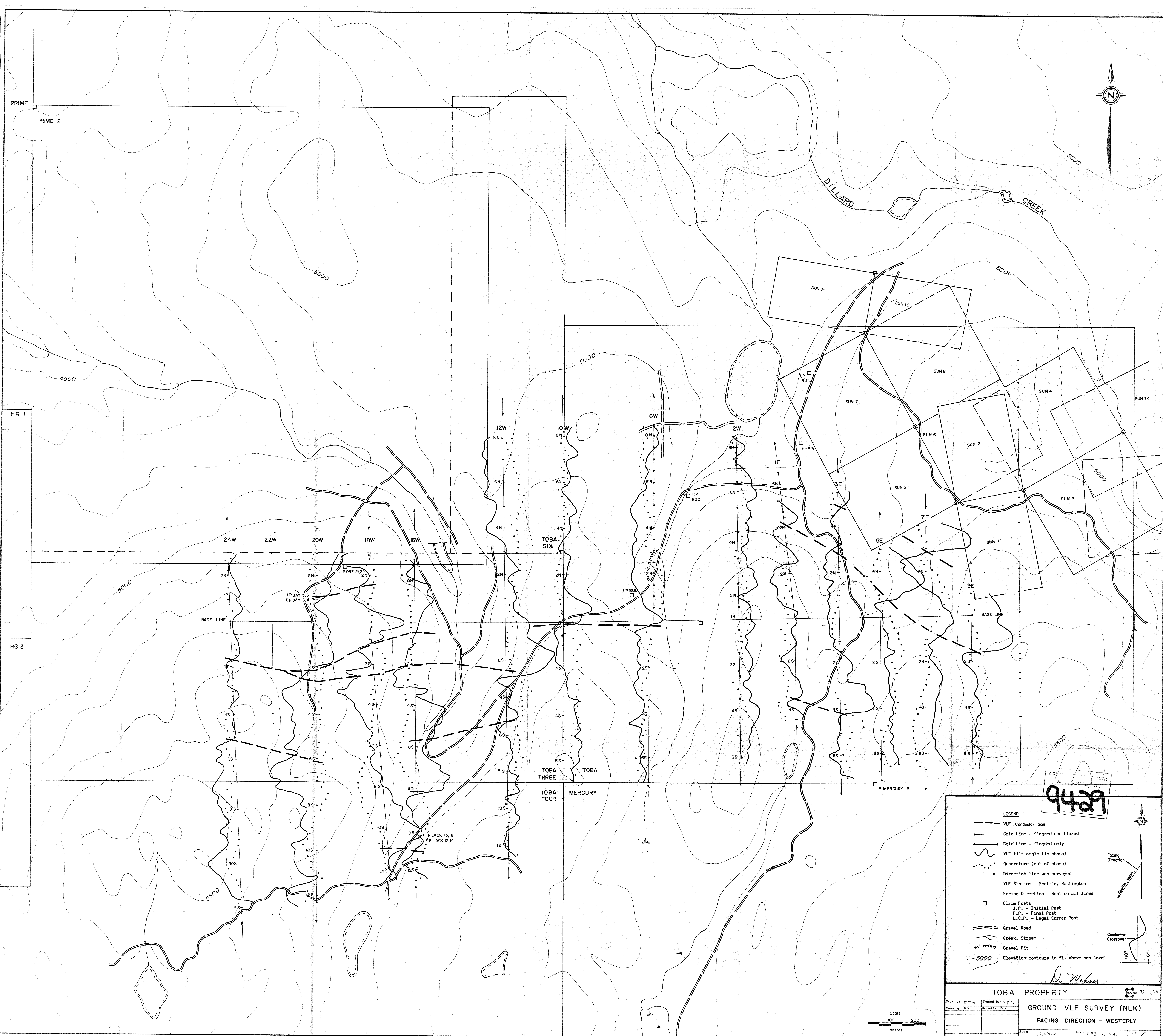
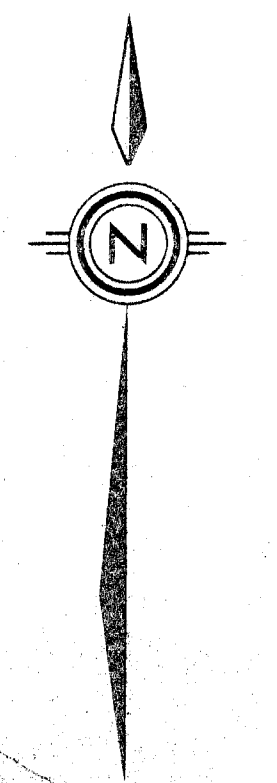
Date: Aug. 18, 1981

Plate: 1

PRIME
PRIME 2

HG 1

HG 3



9429

D. Mehner

TOBA PROPERTY

GROUND VLF SURVEY (NLK)

FACING DIRECTION - WESTERLY

Scale 1:5000 Date FEB. 17, 1981

Drawn by: DTM Revised by: Date	Traced by: NFG Revised by: Date
-----------------------------------	------------------------------------

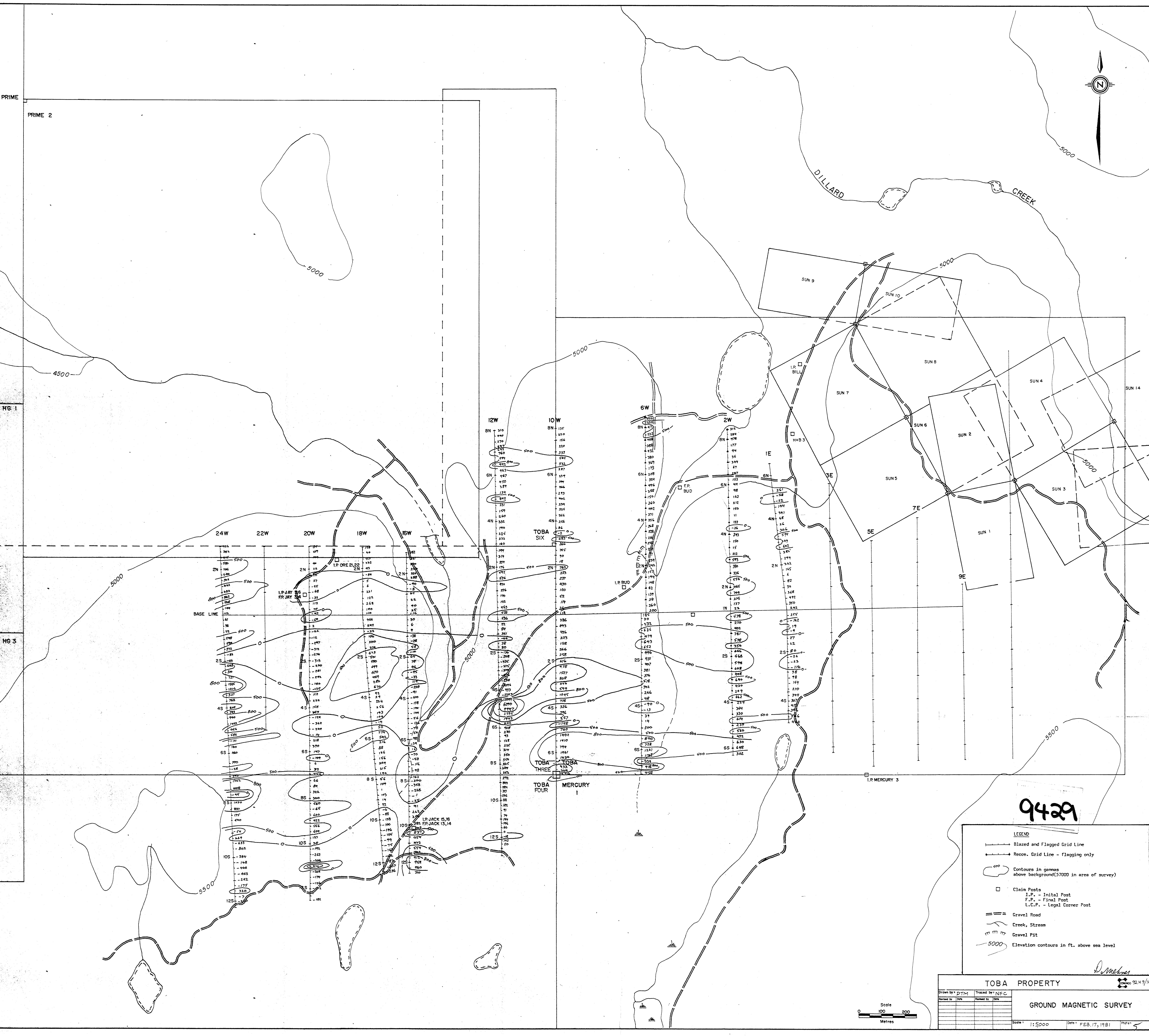
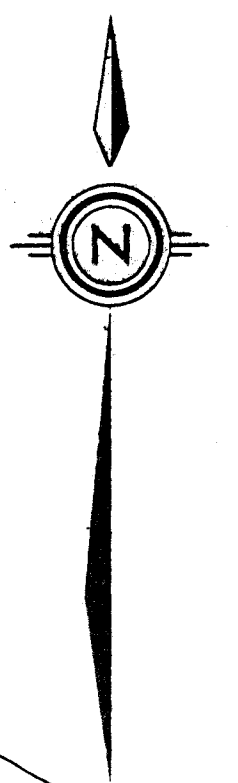
Legend:
 - - - VLF Conductor axis
 ——— Grid Line - flagged and blazed
 - - - Grid Line - flagged only
 ~~~~~ VLF tilt angle (in phase)  
 ..... Quadrature (out of phase)  
 ——— Direction line was surveyed  
 ——— Facing Direction - Seattle, Washington  
 ——— Facing Direction - West on all lines  
 □ Claim Posts  
 □ I.P. - Initial Post  
 □ F.P. - Final Post  
 □ L.C.P. - Legal Corner Post  
 = = = Gravel Road  
 ~~~~~ Creek, Stream  
 () Gravel Pit
 - - - 5000 Elevation contours in ft. above sea level

Scale: 0 100 200 Metres
 Facing Direction: West
 Conductor Crossover: +10° -10°

PRIME
PRIME 2

HG 1

HG 3



9429

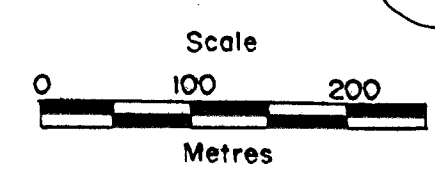
- LEGEND**
- Blazed and Flagged Grid Line
 - Recessed Grid Line - flagging only
 - Contours in gammas above background (57000 in area of survey)
 - Claim Posts
I.P. - Initial Post
F.P. - Final Post
L.C.P. - Legal Corner Post
 - Gravel Road
 - Creek, Stream
 - Gravel Pit
 - Elevation contours in ft. above sea level

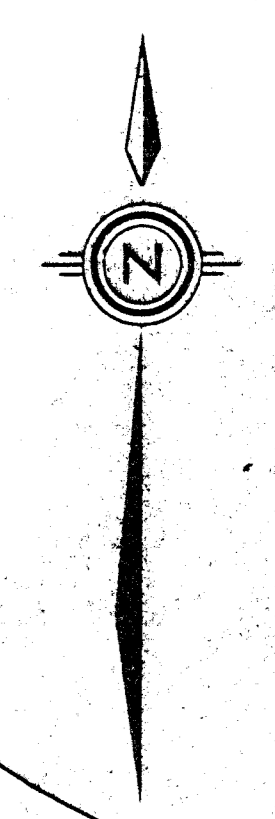
D. Malins
9249/16

TOBA PROPERTY

GROUND MAGNETIC SURVEY

| | |
|-----------------|---------------------|
| Drawn by: DTM | Traced by: NEC |
| Checked by: DTM | Checked by: DTM |
| Scale: 1:5000 | Date: FEB. 17, 1981 |

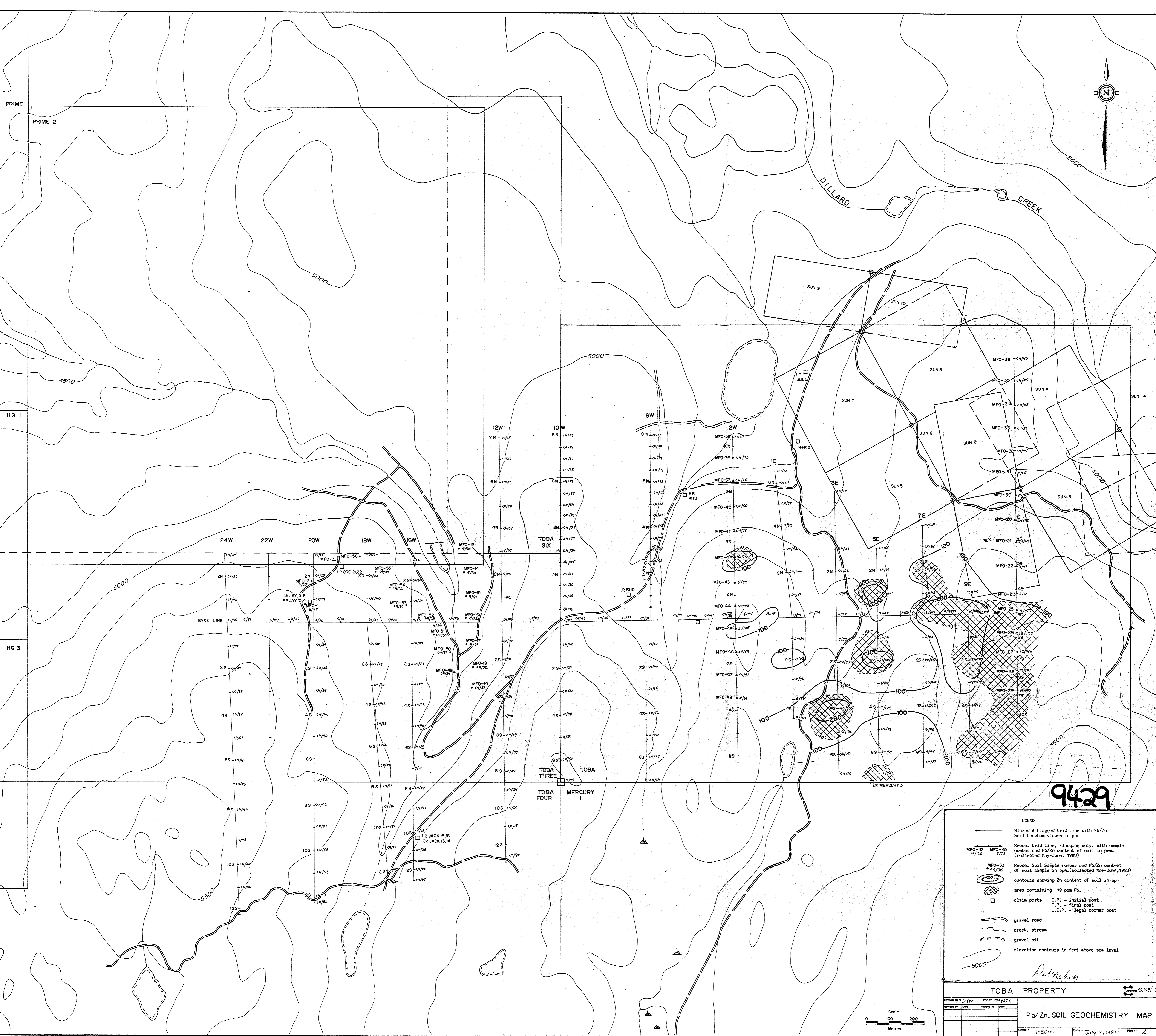




PRIME
PRIME 2

HG 1

HG 3



LEGEND

- Blazed & Flagged Grid line with Pb/Zn Soil Geochem values in ppm
- Rece. Grid Line, Flagging only, with sample number and Pb/Zn content of soil in ppm. (collected May-June, 1980)
- MFO-33 Rece. Soil Sample number and Pb/Zn content of soil sample in ppm. (collected May-June, 1980)
- contours showing Zn content of soil in ppm area containing 10 ppm Pb.
- claim posts I.P. - initial post
F.P. - final post
L.C.P. - legal corner post
- gravel road
- creek, stream
- gravel pit
- elevation contours in feet above sea level

D. McNeely

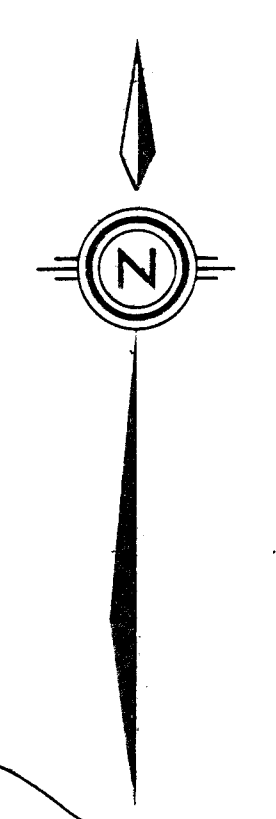
TOBA PROPERTY

Scale 1:5000 Date July 7, 1981

Pb/Zn SOIL GEOCHEMISTRY MAP

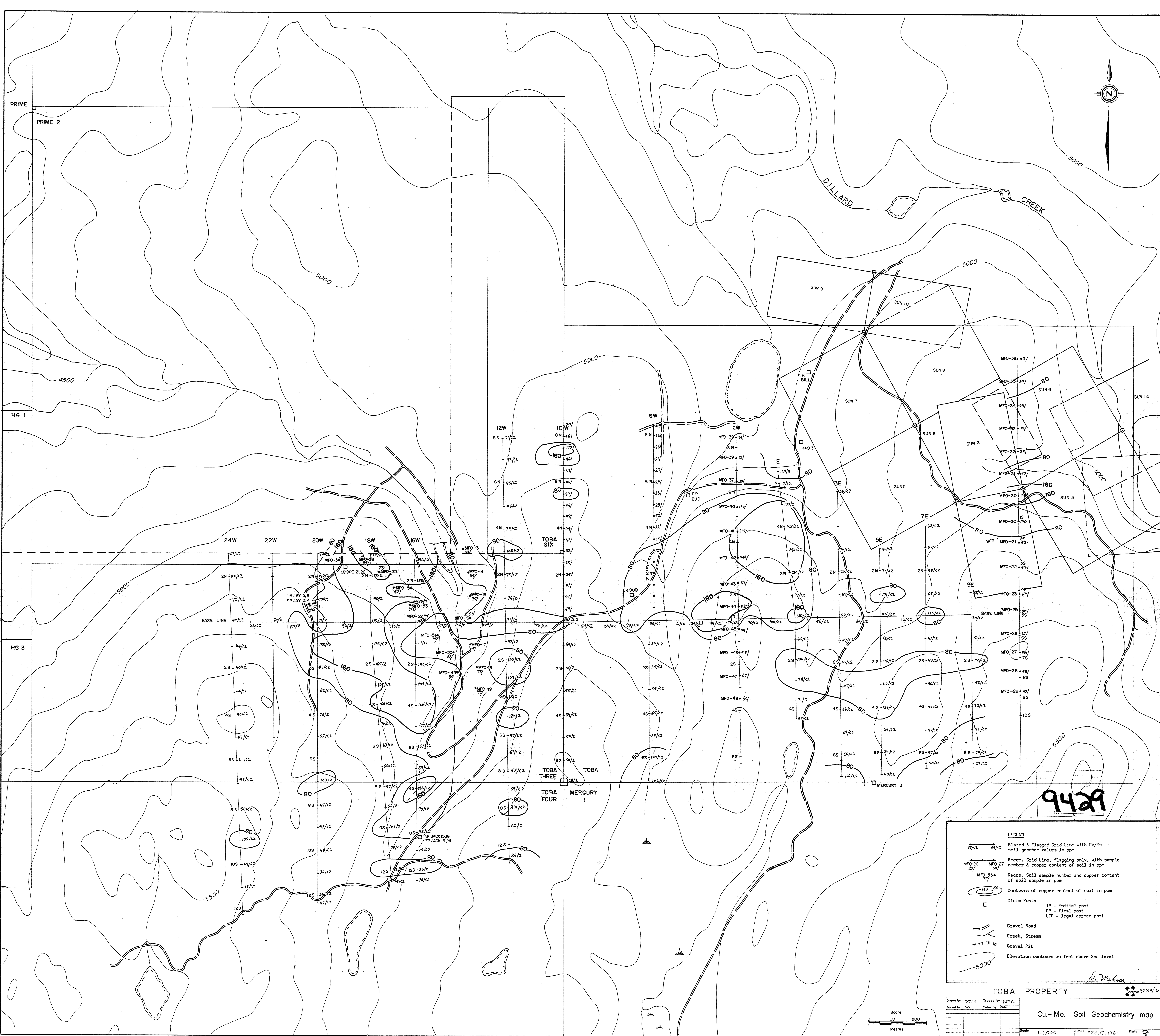
Scale 0 100 200 Metres

PRIME
PRIME 2



HG 1

HG 3



9429

LEGEND

- Blazed & Flagged Grid Line with Cu/Mo soil geochem values in ppm
- Recess. Grid Line, flagging only, with sample number & copper content of soil in ppm
- Recess. Soil sample number and copper content of soil sample in ppm
- Contours of copper content of soil in ppm
- Claim Posts
 - IP - initial post
 - FP - final post
 - LCP - legal corner post
- Gravel Road
- Creek, Stream
- Gravel Pit
- Elevation contours in feet above Sea Level

D. Walker

TOBA PROPERTY

Drawn by: DTM Traced by: NEC
 Checked by: Date: Checked by: Date:

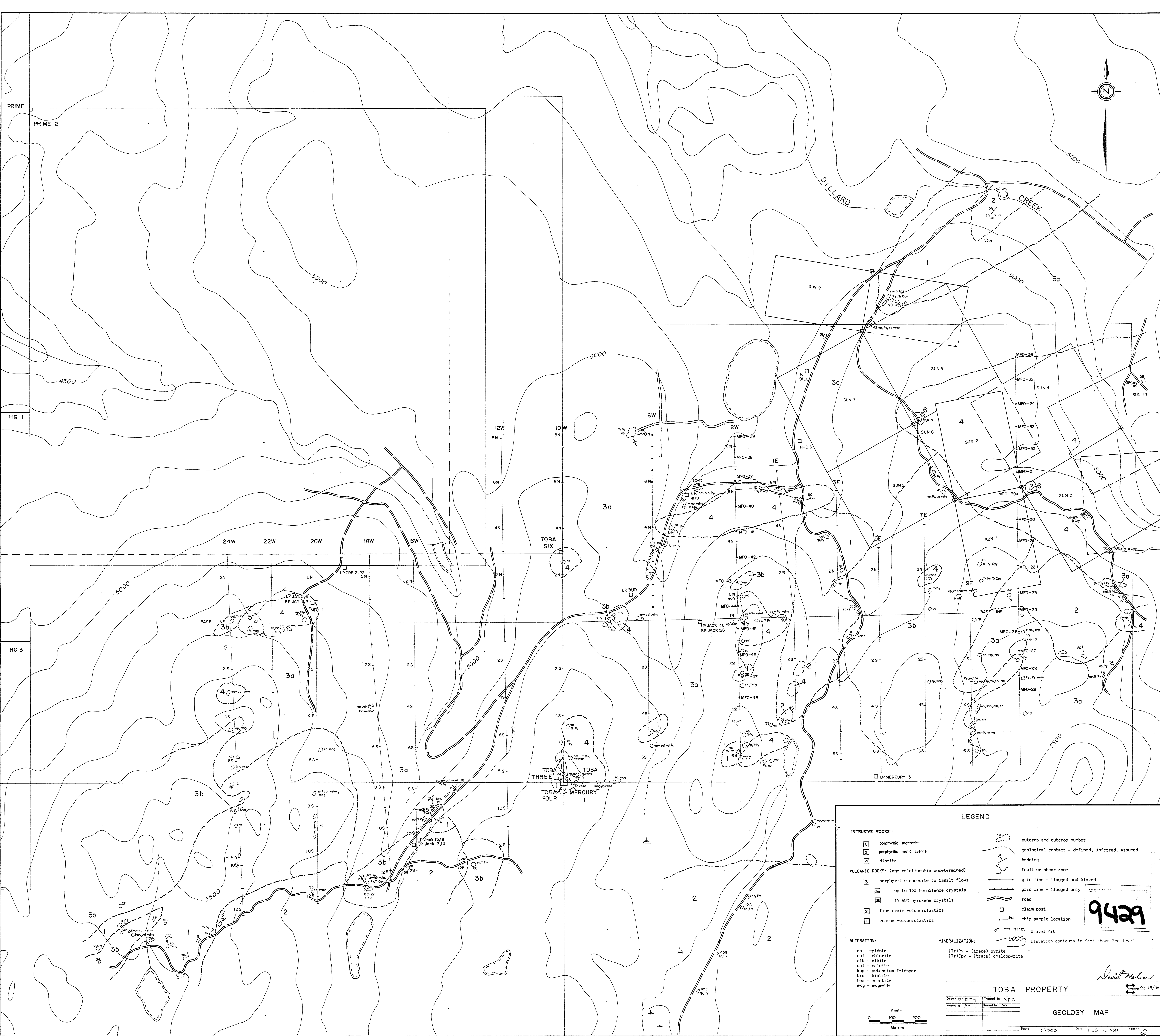
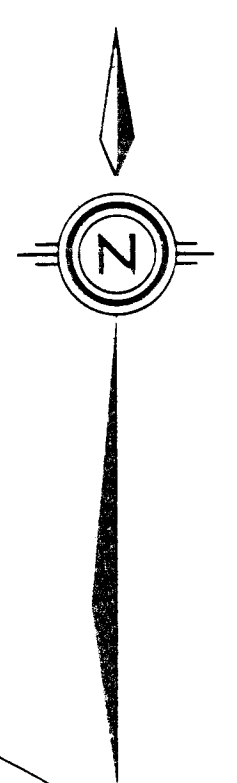
Cu.-Mo. Soil Geochemistry map

Scale: 1:5000 Date: FEB. 17, 1981 Page: 3

PRIME
PRIME 2

HG 1

HG 3



LEGEND

| | | |
|--|---|---|
| INTRUSIVE ROCKS: | <ul style="list-style-type: none"> 5 porphyritic monzonite 3 porphyritic mafic syenite 4 diorite | <ul style="list-style-type: none"> ○ outcrop and outcrop number — geological contact - defined, inferred, assumed — bedding — fault or shear zone — grid line - flagged and blazed — grid line - flagged only — road □ claim post ○ chip sample location ○ Gravel Pit |
| VOLCANIC ROCKS: (age relationship undetermined) | <ul style="list-style-type: none"> 3 porphyritic andesite to basalt flows 3a up to 15% hornblende crystals 3b 15-60% pyroxene crystals 2 fine-grain volcanics 1 coarse volcanics | <ul style="list-style-type: none"> — elevation contours in feet above Sea level |
| ALTERATION: | <ul style="list-style-type: none"> ep - epidote chl - chlorite alb - albite cal - calcite kfs - potassium feldspar bio - biotite hem - hematite mag - magnetite | <ul style="list-style-type: none"> MINERALIZATION: (Tr)Py - (trace) pyrite (Tr)Cpy - (trace) chalcopyrite |

TOBA PROPERTY

Drawn by DTM Traced by JFC

Revised by DTM Checked by JFC

Scale: 1:5000 Date: FEB. 17, 1981 Sheet: 2

9429

David Mahan
92 H/16