52M01SE0038 OP91-424 TODD

GEOPHYSICAL SURVEY

on

CLAIM 903834

WOLF BAY, TODD TOWNSHIP

RED LAKE

NTS 52 M/I

SURVEYED AND SUBMITTED

BY

RENÉ H. SOLTERMANN

PROSPECTOR

R.R. #6 - PETERBOROUGH ONTARIO K9J6X7

JANUARY 27, 1992

52M01SE0038 OP91-424 TODD

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1.0 Summary, Conclusions and Recommendations.

The first of a series of localized and very concentrated VLF-EM surveys was completed by R. H. Soltermann of Peterborough, Ontario, on the south east quarter section of claim 903834, identified as sector 2. This claim is approximately in the center of the group of 13 claims, held by the writer.

This survey consists of 7 north-south traverse lines spaced at 130 feet intervals, with readings taken at 25 feet stations. In addition, 6 trenches were also surveyed individually, with stations every 5 feet on a center line. A total of 257 sets of readings were taken, and some 9,300 feet of grid and reference lines were cut. Some 80 rock samples were collected at or near stations wherever exposed rock was available. Best gold value obtained of 18 samples assayed is 7,000 ppb.

Conclusion

While no significant conductors were earlier believed to exist in this area - the main purpose of the survey was to determine a correlation between known mineralization and minor EM fluctuations in order to plot directional trends. Although it is not clear at this time, whether the anomalies indicated are the result of topographical or geological structures, it is significant that rock samples obtained on the grid lines at corresponding stations contained gold values, or good to intense mineralization, whereas away from these locales only minor sulphides were observed in the samples taken. It is believed that the survey outlines quite closely the attitude of mineral bearing rusty layers and shearing, and several EM crossovers in the massive outcrop in the south - east area indicate the location of conductive pods or concentrations, probably sulphides. The nature has not been established since the samples obtained do not yield the normal density of sulphides usually obtained in conjunction with other crossovers on this property.

Recommendation

A program of exploratory stripping should be done along the anomalous lines obtained from the survey in accessible areas, particularly between and to the east of the trenches; in the vicinity of line 6 (125 feet to 300 feet south); line 8 (300 feet to 450 feet south); and line 10 (375 feet to 600 feet south at the EM crossovers). Rock should be opened by plugger and blasting to obtain fresh samples, as the trenches referred to in this report are mostly in overburden cleared to rock surface. This should be followed with a series of short test D.D holes were warranted.

R.H. Soltermann

Jan. 30/92

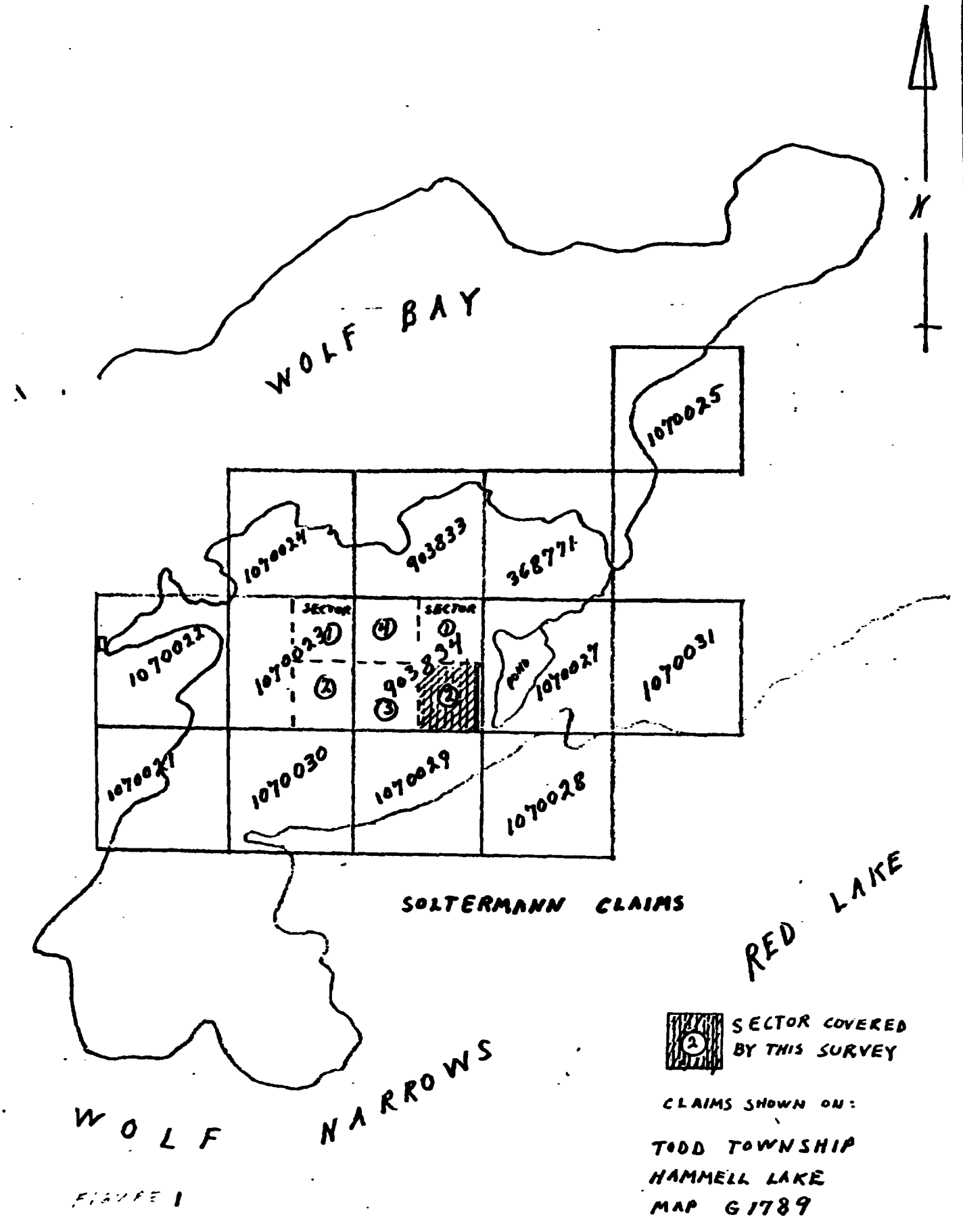

N
WOLF BAY
1070025
1070024
903833
368771
SECTOR
SECTOR
1070022
1070023
903824
1070027
1070031
1070021
1070030
1070029
1070028
SOLTERMANN CLAIMS
RED LAKE
WOLF NARROWS
SECTOR COVERED BY THIS SURVEY
CLAIMS SHOWN ON:
TODD TOWNSHIP
HAMMELL LAKE
MAP G1789

FIGURE 1

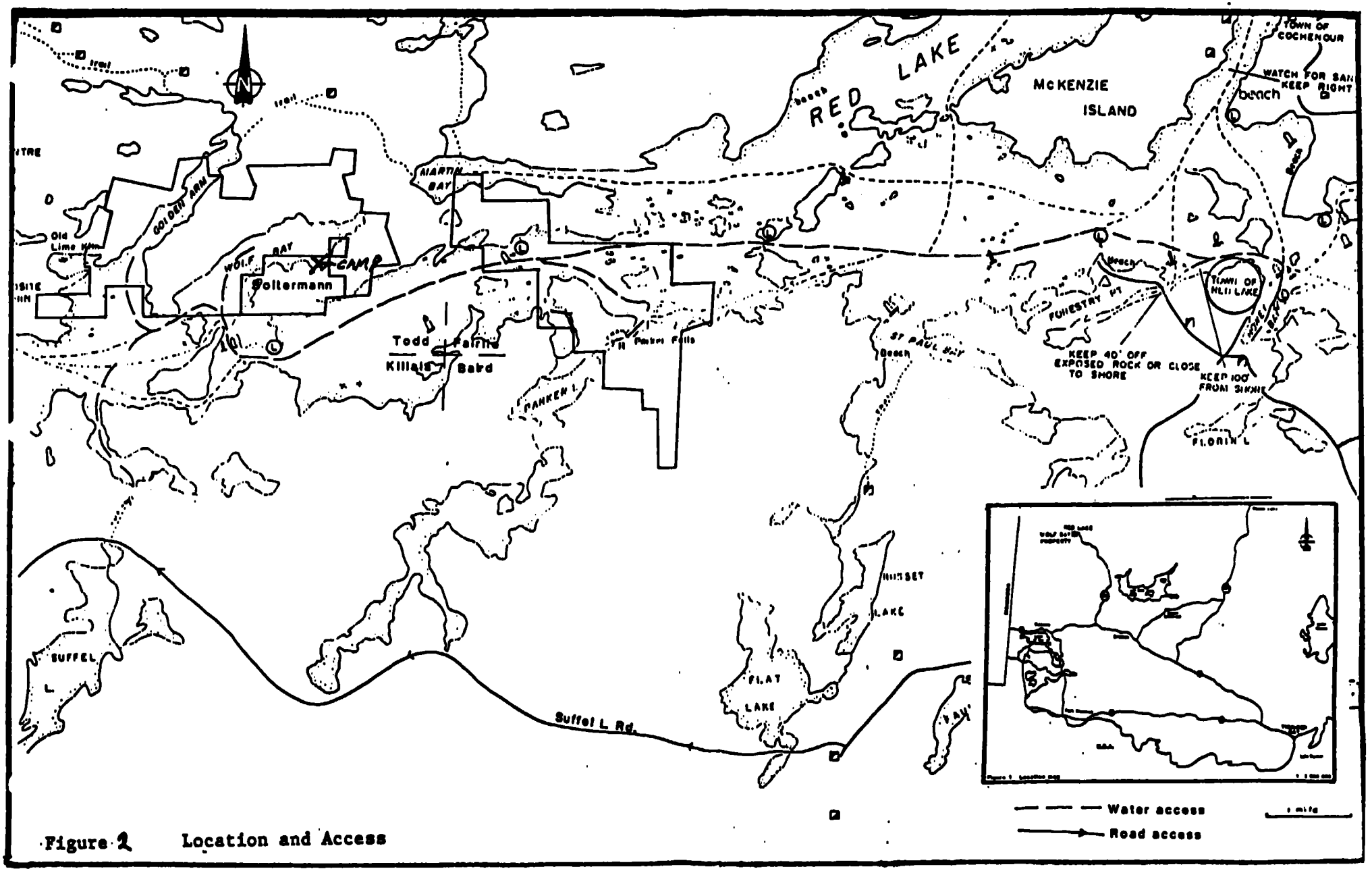


Figure 2 Location and Access

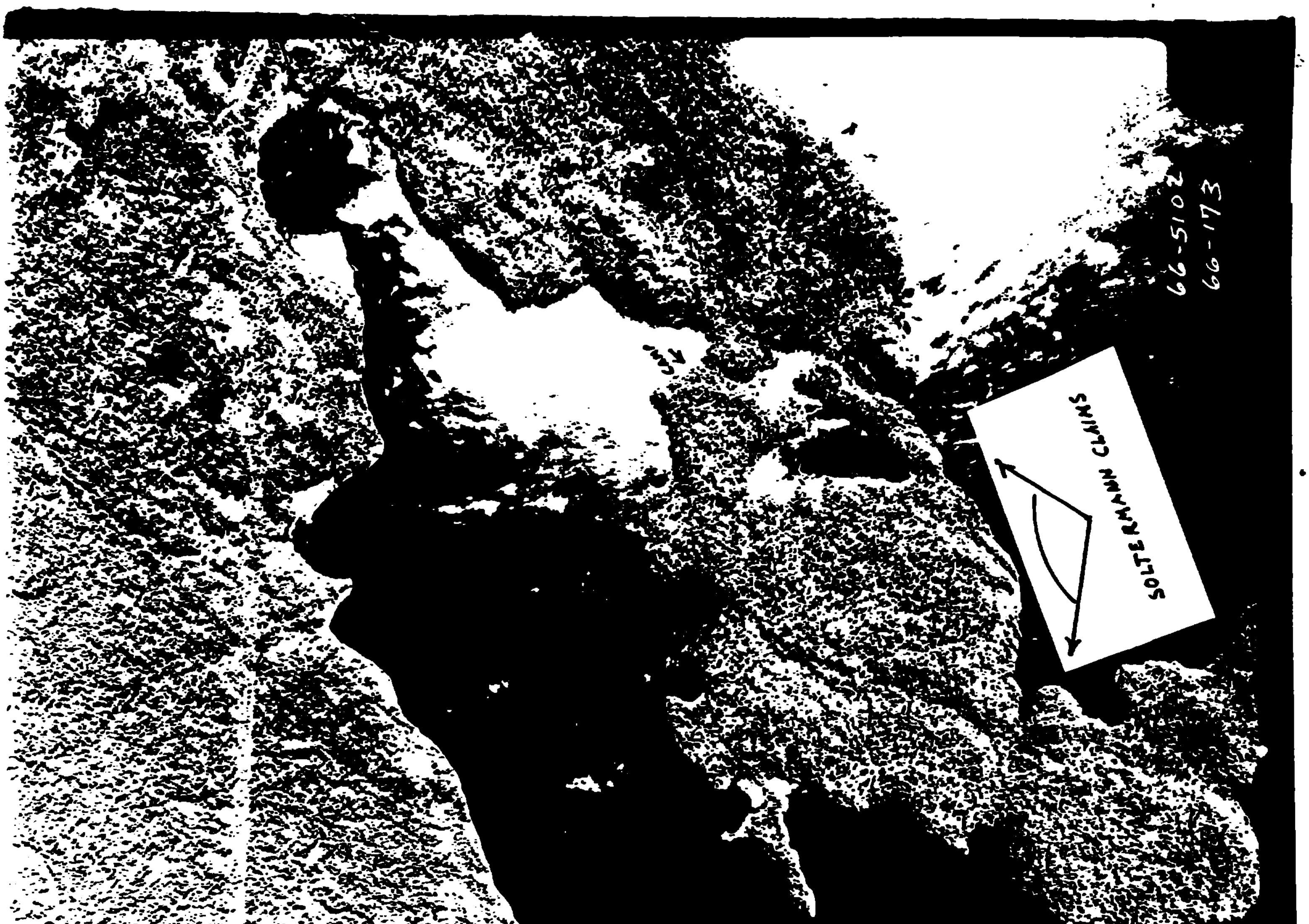


Fig 3

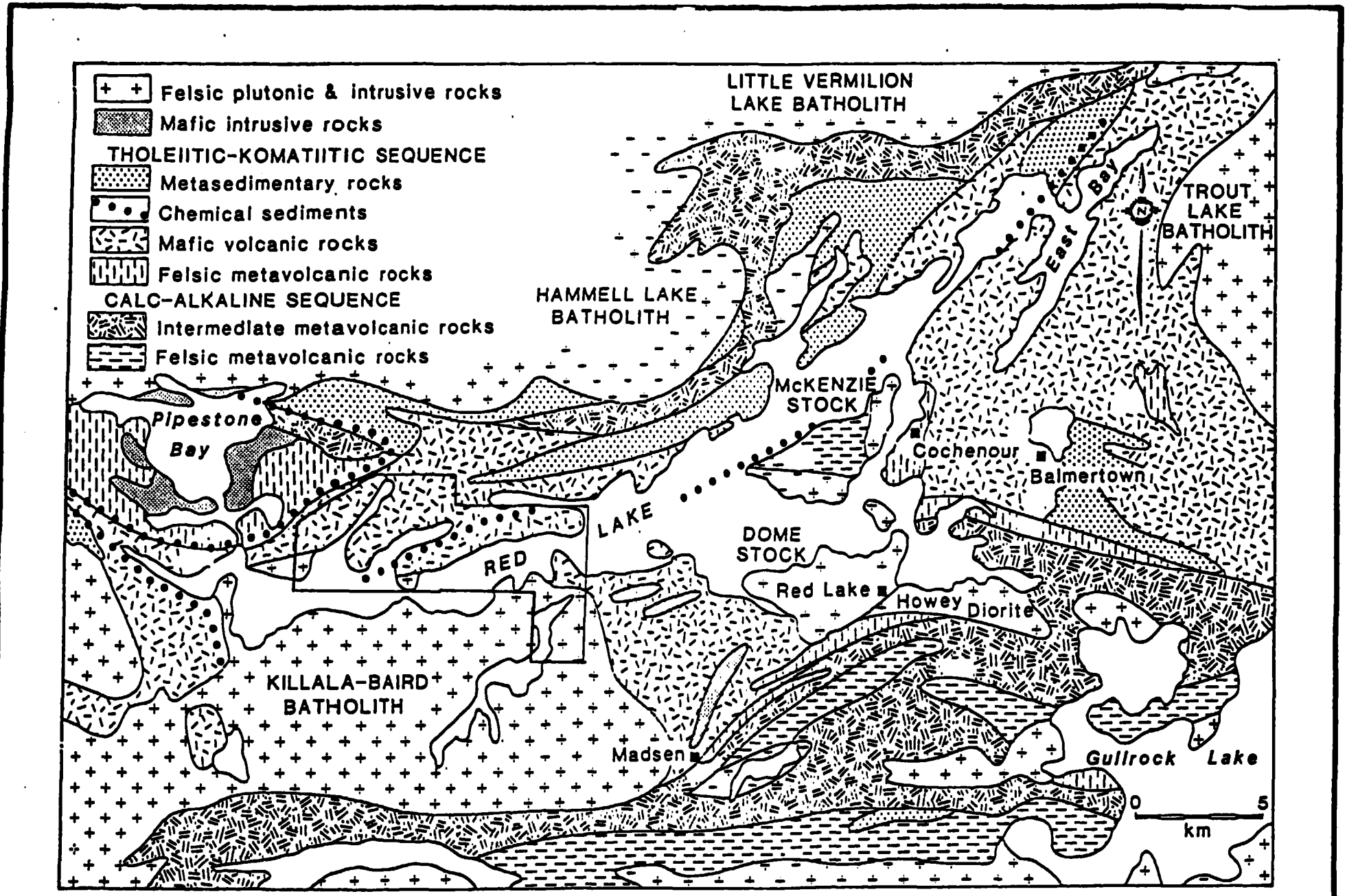


Figure 4 Regional geology.

(modified after Andrews, et. al., 1986)

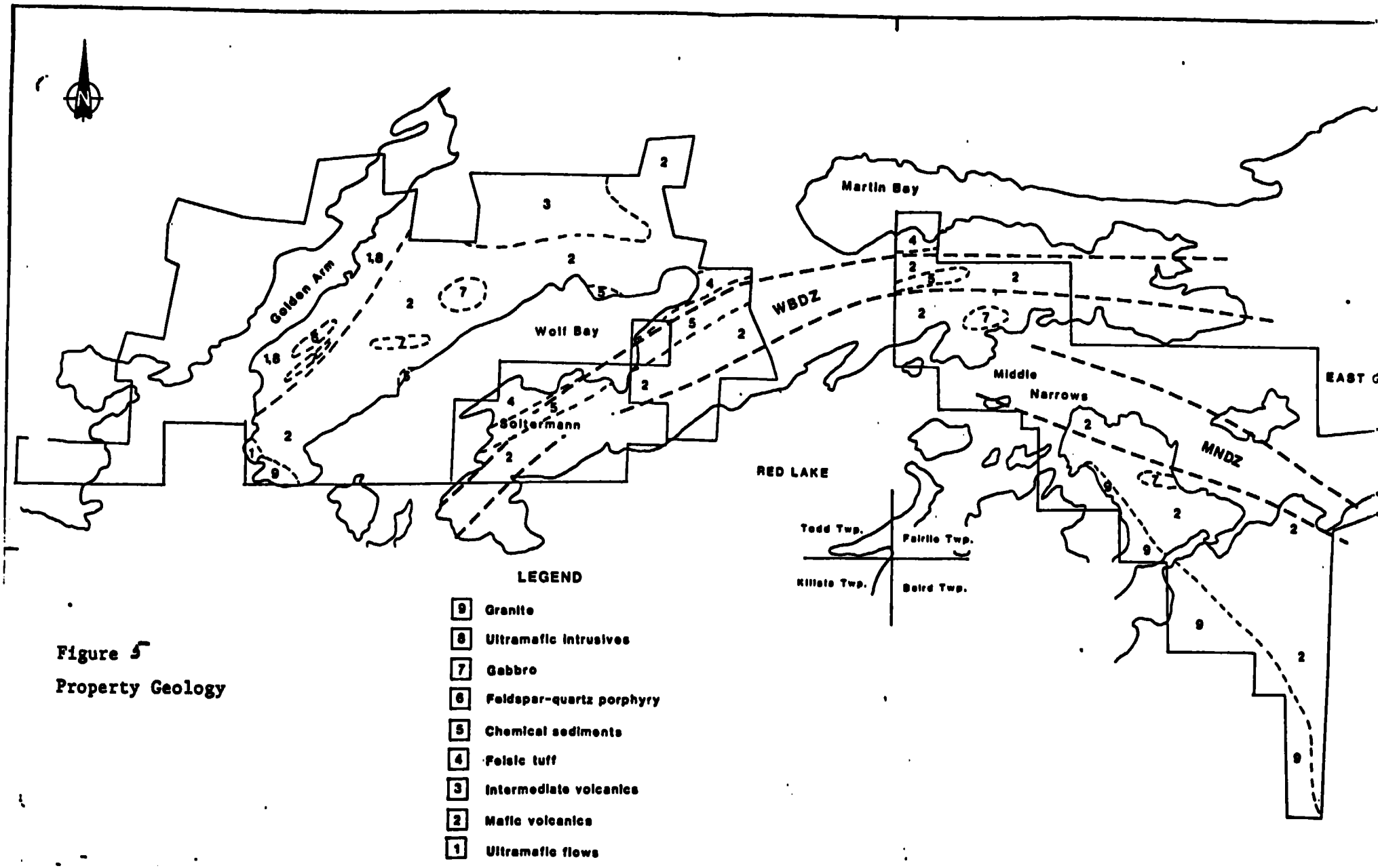


Figure 5

Property Geology

2.0 Introduction

The Soltermann property consists of 12 unpatented mining claims - KRL1070021 - 1070025 inclusive, 1070027 - 1070031 inclusive and 903833 - 903834, and, one leased claim 368771. Figure 1

Earlier surveys in these claims have outlined numerous VLF - EM conductors, particularly in the more northern areas, within the felsic volcanics and iron formations. However, despite the presence of very strong conductors and mineralization being present, very little significant gold values have been obtained in these areas. Best values have always formerly been obtained in areas showing no identifiable VLF - EM conductors, when surveys were made in the normal line spacing and station intervals.

Henceforth select claims are being mapped in four sections each, and independent surveys are proposed for each section, or sector, having traverse lines and picket stations in a much closer pattern than normal.

3.0 Location, Access, Topography

The property is located approximately 16 miles west of the town of Red Lake, on a peninsula between Red Lake and Wolf Bay in Todd Township in Northwestern Ontario NTS block 52 M 1. The camp is located on the Wolf Bay shore, and may be reached by boat or float plane. Access to Red Lake is via Highway 105, going north off Highway 17 at Vermilion Bay. Figure 2

The land is quite rugged, characterized by relatively abrupt changes in relief of up to 100 feet. Cliffs are common along the shoreline as well as within the peninsula, and there is a small lake in the eastern section of the claims. Outcrop comprises some 40 to 50% of the property. Figure 3

Jack Pine and Poplar predominate in areas of outcrop. The intervening lowland areas are mainly spruce, balsam and tag alders with many small swamps and bogs. Overburden varies from 2 to 15 feet thick and is considerably deeper in swamps.

4.1 Regional Geology

The Red Lake greenstone belt is located in the west half of the Uchi Subprovince in the Superior Province of the Canadian Shield. The simplified geology of the belt is shown in Figure 4. All rocks are of Archean age and have been metamorphosed. The prefix meta is not used in this report but should be assumed.

The belt is dominated by volcanic rocks, with subordinate clastic sediments. It is bounded on all sides by large granitic batholiths. The volcanic rocks have been subdivided into major groups; an older tholeiitic-komatiitic sequence and a younger calc-alkaline sequence (Andrews, et. al., 1986). The Soltermann property lies within the tholeiitic-komatiitic sequence.

The older sequence is primarily tholeiitic basalts and basaltic komatiites. Minor interbeds of felsic volcanics, mainly pyroclastics, are present as thin units interspersed throughout the mafic-ultramafic sequence. Thin interflow units of greywacke, argillite, chert, ironstone, and ferruginous marbel comprise the sediments. Graded wacke-mudstones and polymicitic conglomerates are commonly present at the top of the tholeiitic-komatiitic sequence (Andrews, et. al., 1986).

The younger calc-alkaline sequence is primarily rhyolitic to dacitic pyroclastic lithologies and basaltic to andesitic flows. A variety of igneous rocks intrudes the supracrusetals, ranging from serpentinized periodotites to minor felsic dikes. The Dome stock is the largest of the internal intrusions. It is a biotite and hornblende granodiorite and trondjhemite. The bounding batholiths of the belt are composite intermediate to felsic bodies (Andrews, et. al., 1986).

4.2 Property Geology

The southern portion of the property is underlain by mafic volcanics, primarily massive and pillowed flows. North of the volcanics is a broad band of metasediments, primarily a magnetite ironstone conglomerate with subordinate magnetite ironstone and silstone/argillite. A band of felsic volcanics resembling a dike, is present within the sediments and contacts the mafic volcanics. This quartz crystal tuff is composed of 15 to 20% glassy clear to bluish quartz eyes, and has been previously mapped, alternately, as a sandstone, and as a quartz porphyry. A coarse grained gabbro intrudes the mafic volcanics in the southwest portion of the property. The surrounding granitic basement of the Killala - Baird Batholith is present intruding the mafic volcanics along the south shore of the peninsula. The property is underlain by a portion of the north-east trending Wolf Bay Deformation Zone as recently identified and mapped in 1987 by M. Lavigne; and is associated with moderate to intensely altered rock. Figure 5

Very strong pyrite and pyrrhotite mineralization occurs in the sedimentary based iron formation. The felsic volcanics zone contains much less pyrrhotite, but more pyrite, schist, mica, garnet, and some galena, chalco, and arsenopyrite.

Numerous small quartz stringers are present. The mafic volcanics, particularly within, or adjacent to the Wolf Bay Deformation Zone provide the most significant mineralization. Sulphides are predominantly arsenopyrite with lesser pyrite, chalco, sphalerite. Gold values of up to .25 .46 .58 .81 and 1.75 oz/ton have been obtained within the altered mafic volcanics and gabbro, with quartz and carbonate pods and stringers being abundant.

4.3 Geology of Claim 903834 Sector 2

All rocks in this area are massive and of pillowed flows showing varying degrees of alteration. The relatively fresh outcrops range from light to dark green on fresh and weathered surfaces; are moderately soft and range from massive to strongly foliated. The foliated outcrops show a moderate to strong penetrative fabric. They are generally fine-grained, but wide variations exist. The more altered rock is characterized by patches of green and brown alteration, frequently resulting in a banded appearance. The highly altered rock is also harder than its unaltered equivalent. The green tint and increased hardness are due to quartz epidate alteration, and the brown tint to very fine grained biotite. Hornblende and tourmaline are often prevalent in the coarser material.

Mineralization in this area is chiefly arsenopyrite with lesser chalco, sphalerite, galena and minor pyrite.

5.0 Previous Work and Development

Government mapping of the Red Lake area began with E. L. Bruce in 1924. H. C. Horwood mapped the area in 1940 followed by R. Riley in 1971. Mapping by M. Lavigne in 1987 identified the Wolf Bay Deformation Zone (WBDZ).

Overburden trenching, along with some trenching by hand steel, was conducted by Perma Gold Mines Ltd. 1945-50. Geophysical, geological and geochemical surveys were made by Smith & Soltermann in 1969, some 12 short DD holes were drilled, and a considerable amount of trenching and sampling has been done by Soltermannn to date, mostly in the northern portion and in the felsic volcanics. The property was also surveyed by BHP Utah Mines Ltd. in 1989, and two test holes were drilled (Diamond Drill) for a total footage of 1778.

6.0 VLF-EM Survey, 1991

This electromagnetic survey was carried out using a Crone Radem instrument. The Radem receiver measures the very low frequency magnetic field component from transmitter stations normally used for navigation and submarine communications.

The signal from Cutler Maine Station operating at 24.0 KH was used in this survey.

The Radem measures three components of the VLF-magnetic field: the Dip Angle in degrees from the horizontals of the direction of the recultant VLF field; the horizontal component of the field strength; and the quadrature out-of phase measurement. Accuracy of the dipinclinometer is rated at + 1/2

Above measurement were recorded simultaneously, the instrument was recalibrated to a reading of 200 at base camp, at the end of each line traversed the reading were re-checked at the number 1 station to monitor sequeal drift.

7.0 Interpretation

It is difficult to apply meaningful interpretation to readings generally considered so flat - and for that reason, rock samples were collected at each station having even a slight deflection or anomalous reading, where exposed rock was present. Subsequently, the survey has provided some valuable information for the area.

While the anomalous readings generally follow the topographical and geological contours, it should be emphasized that this area, which is composed of highly altered and pillowed volcanic rock, is within the Wolf Bay Deformation zone and is strongly sheared. Furthermore, a very strong iron formation some short distance to the north and adjacent to this area is a disturbing influence.

While both the normal dips and their filtered equivalents are shown, the filtered data is not considered to be very meaningful in this case. It is probably more indicative of overburden containg clays, than of mineralized pods, except for the isolated crossovers appearing on a high outcrop in the south eastern corner of the sector.

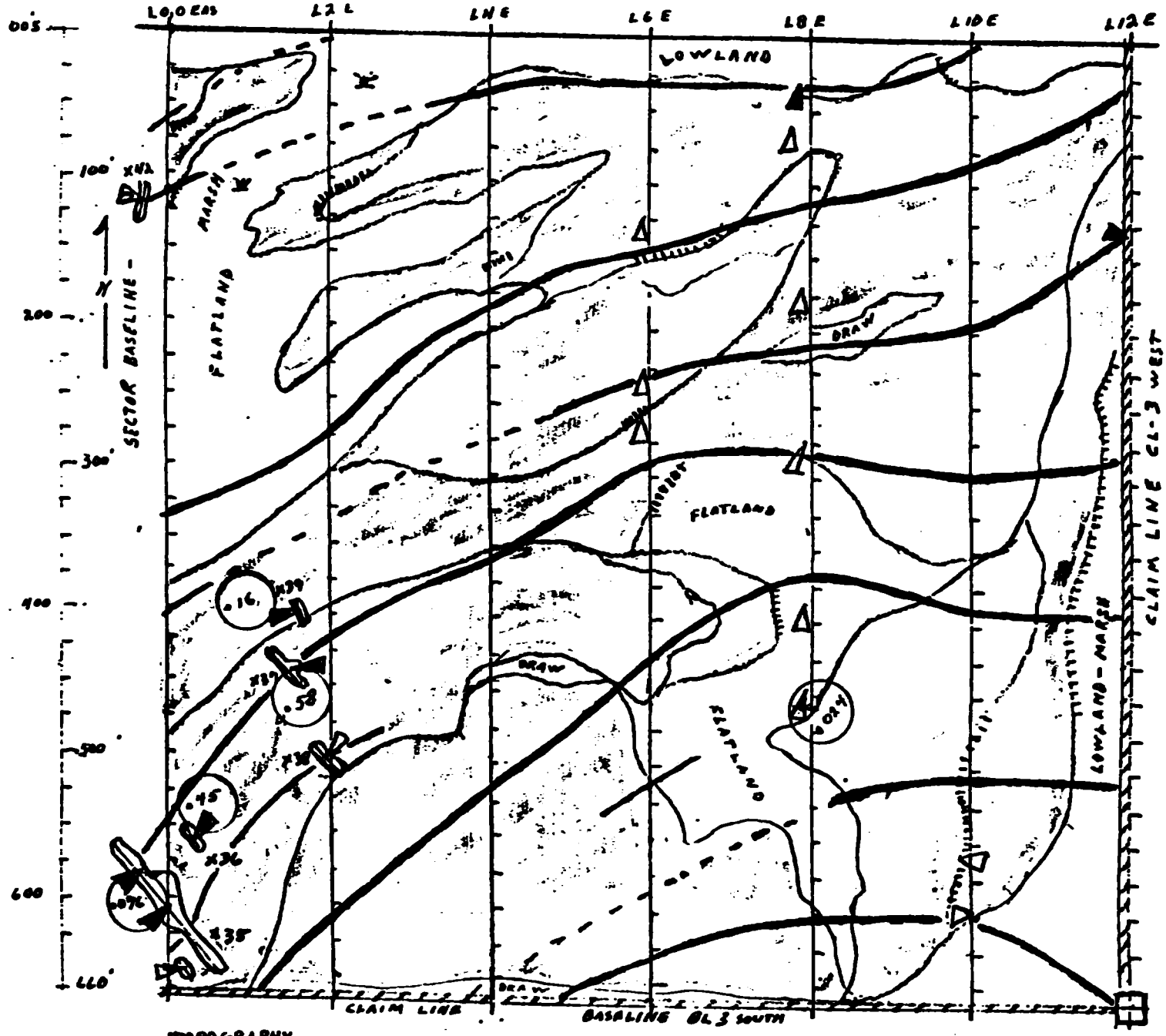
RENÉ H. SOLTERMANN

PROSPECTOR

January 30, 1992

CLAIM 903834-SECTOR 2

MAP- COMPOSITE TOPOGRAPHY, MINERALIZATION, AND EM ANOMALIES



TOPOGRAPHY
- CONTOUR
- CLIFF

MINERALIZATION
- ▲ INTENSE SULPHIDES
- △ MODERATE "
- (0.20) GOLD OZ/TON (OVER 500 PPB)

RADEM VLF-EM SURVEY

ANOMALIES *
- CONTINUOUS
- PROJECTED

NOTE:
FLATLAND INCLUDES DENSELY FORESTED NEAR-LEVEL GROUND

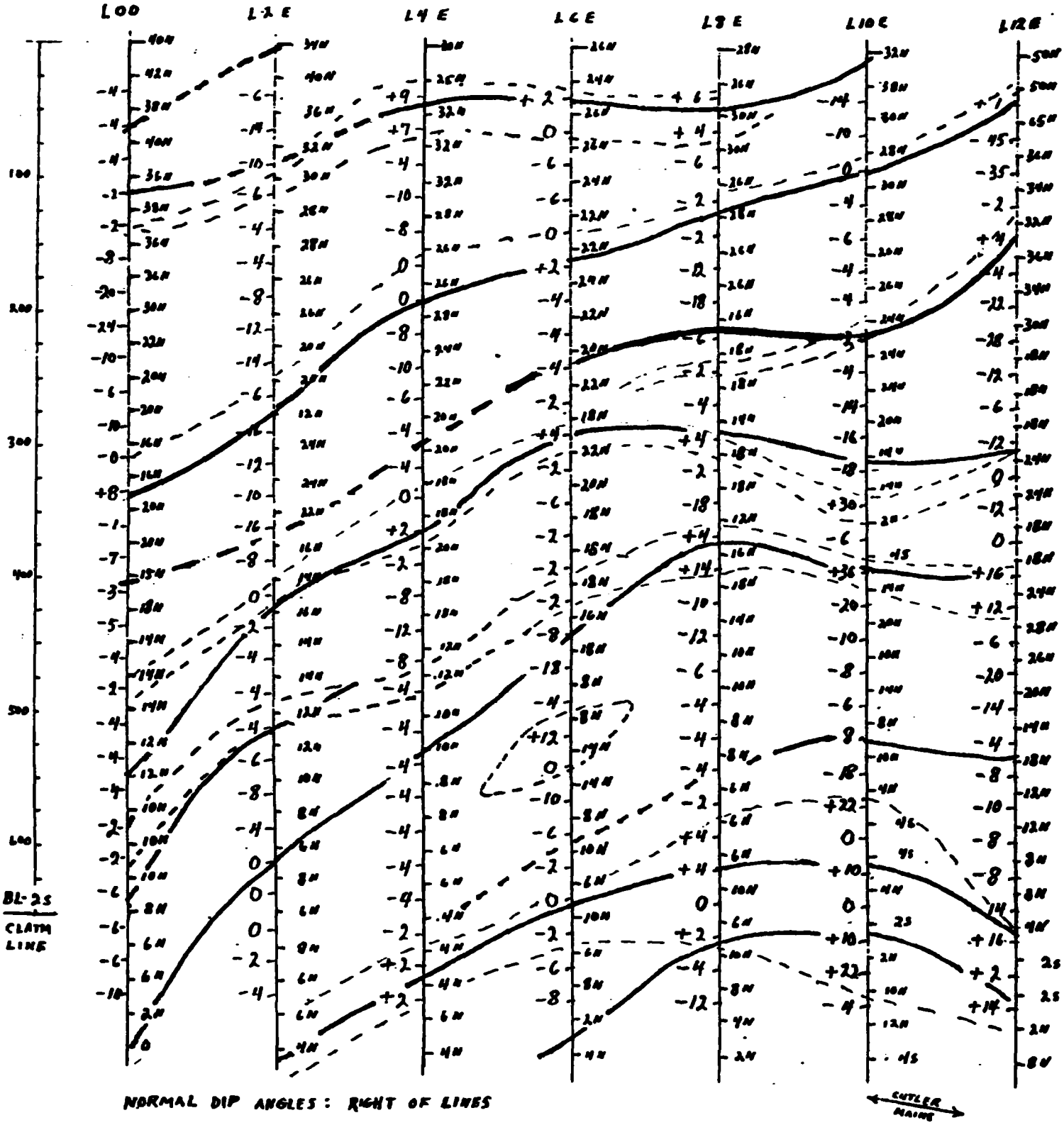
SCALE: 1 INCH = 100 FEET

SURVEYED AND COMPILED BY
RENÉ H. SOLTERMANN
AUG-SEPT. 1991

NOTE
* EM ANOMALIES OUTLINED ON THIS MAP ARE MOSTLY OF VERY LOW ORDER DIP DEFLECTIONS AND MAY NOT REPRESENT METALLIC CONDUCTORS

CLAIM 903834- SECTOR 2

COMPARISON OUTLINE - NORMAL & FILTERED DIPS



NORMAL DIP ANGLES : RIGHT OF LINES

FRASER FILTERED : LEFT SIDE OF LINES

DEGREES 0 20 40

FEET 0 50 100

RADEM VLF-EM SURVEY

— NORMAL DIP

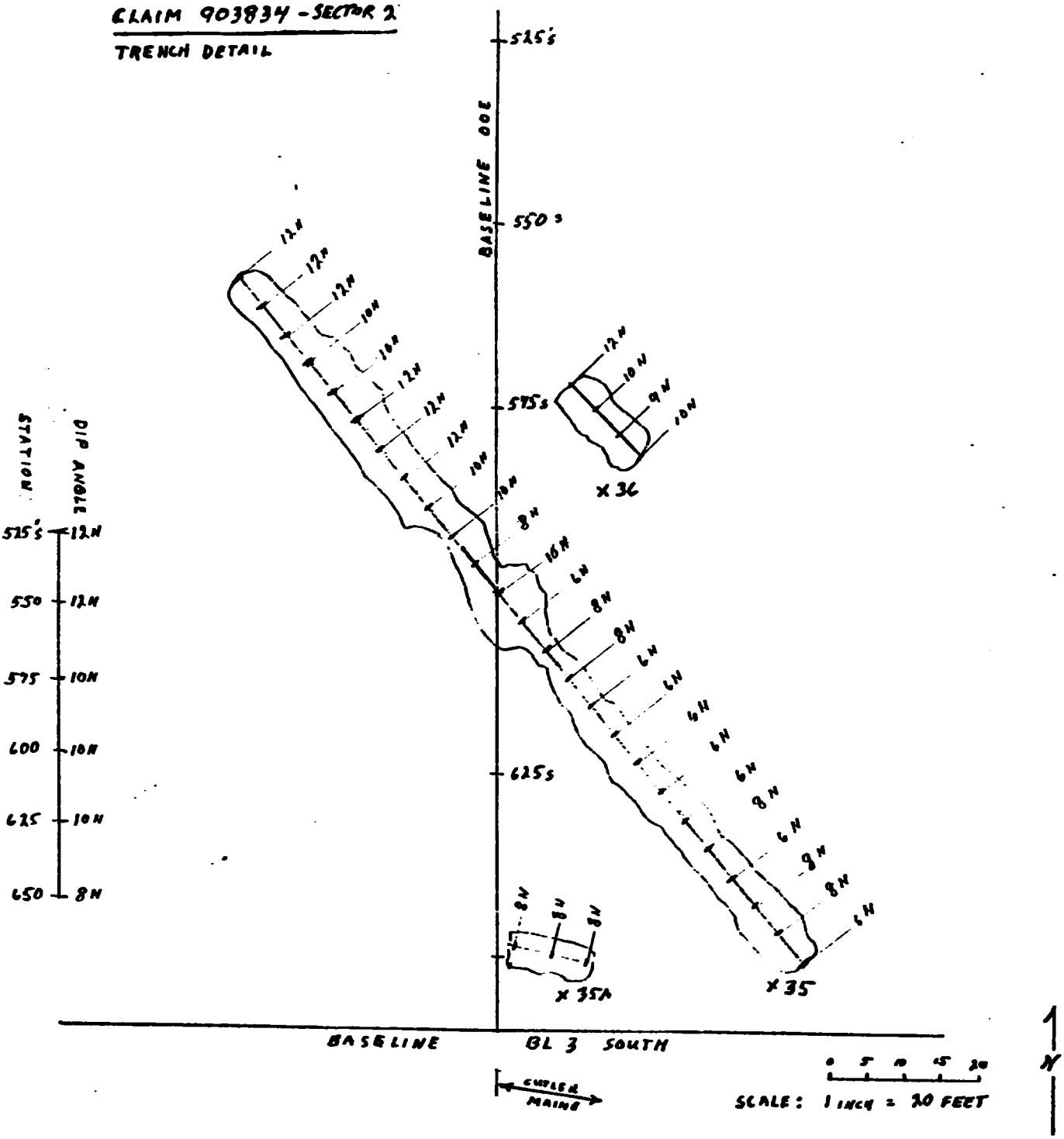
- - - - FILTERED DIP

SURVEY BY:
RENE H. SOLTERMANN
SEPTEMBER 1991

N

CLAIM 903834 - SECTOR 2

TRENCH DETAIL



RADEM VLF-EM SURVEY

DIP ANGLE - CUTLER MAINE. 24.0 KHz

COMPARING TRENCH READINGS

WITH ~~REGIONAL~~ GRID LINE VALUES

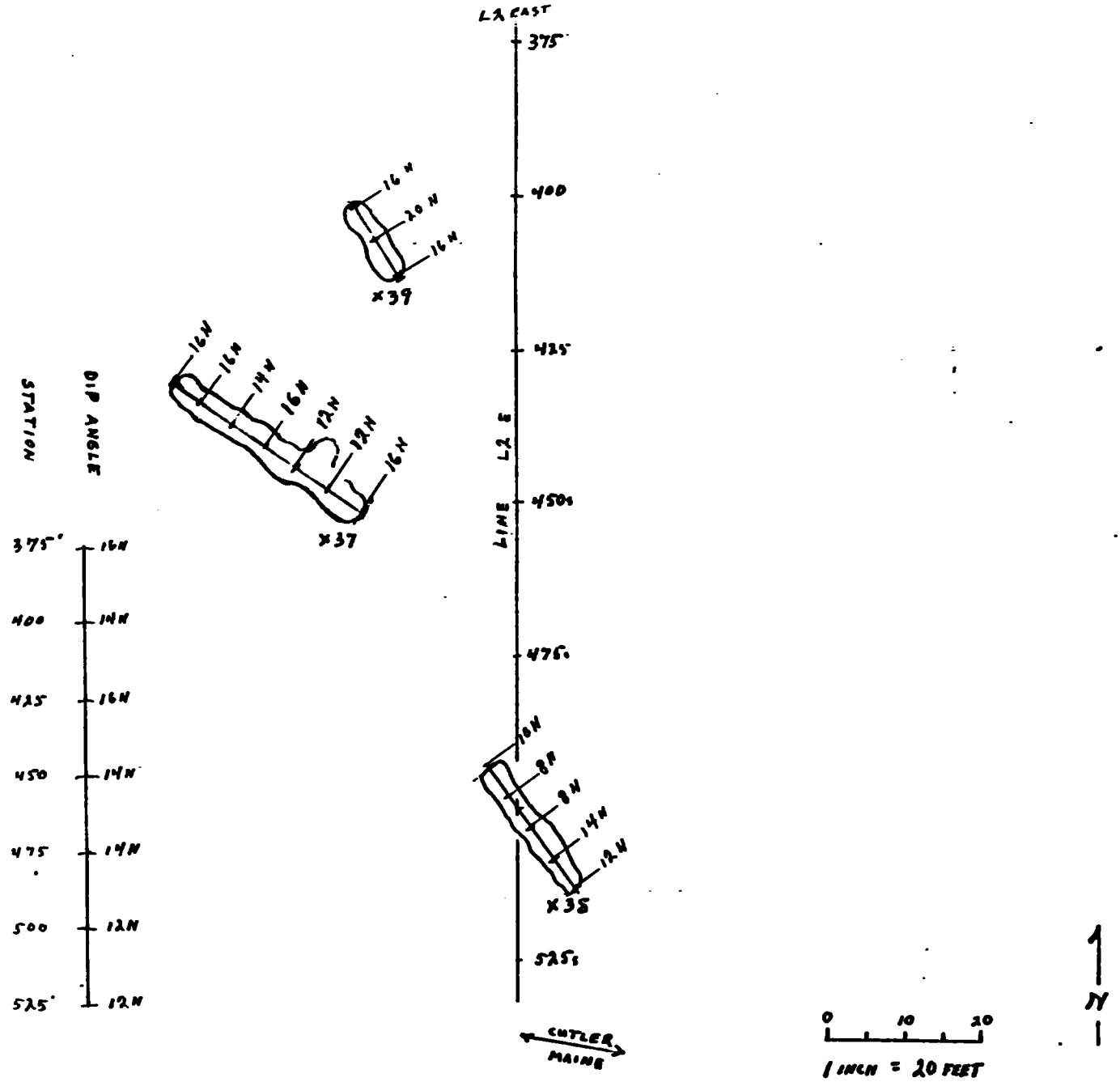
SURVEY BY

RENÉ H. SOLTERMANN

SEPT. 1991

CLAIM 903834- SECTOR 2

TRENCH DETAIL



RADEM VLF-EM SURVEY

DIP ANGLES. CUTLER MAINE 24.0 KHz

COMPARATIVE TRENCH READINGS

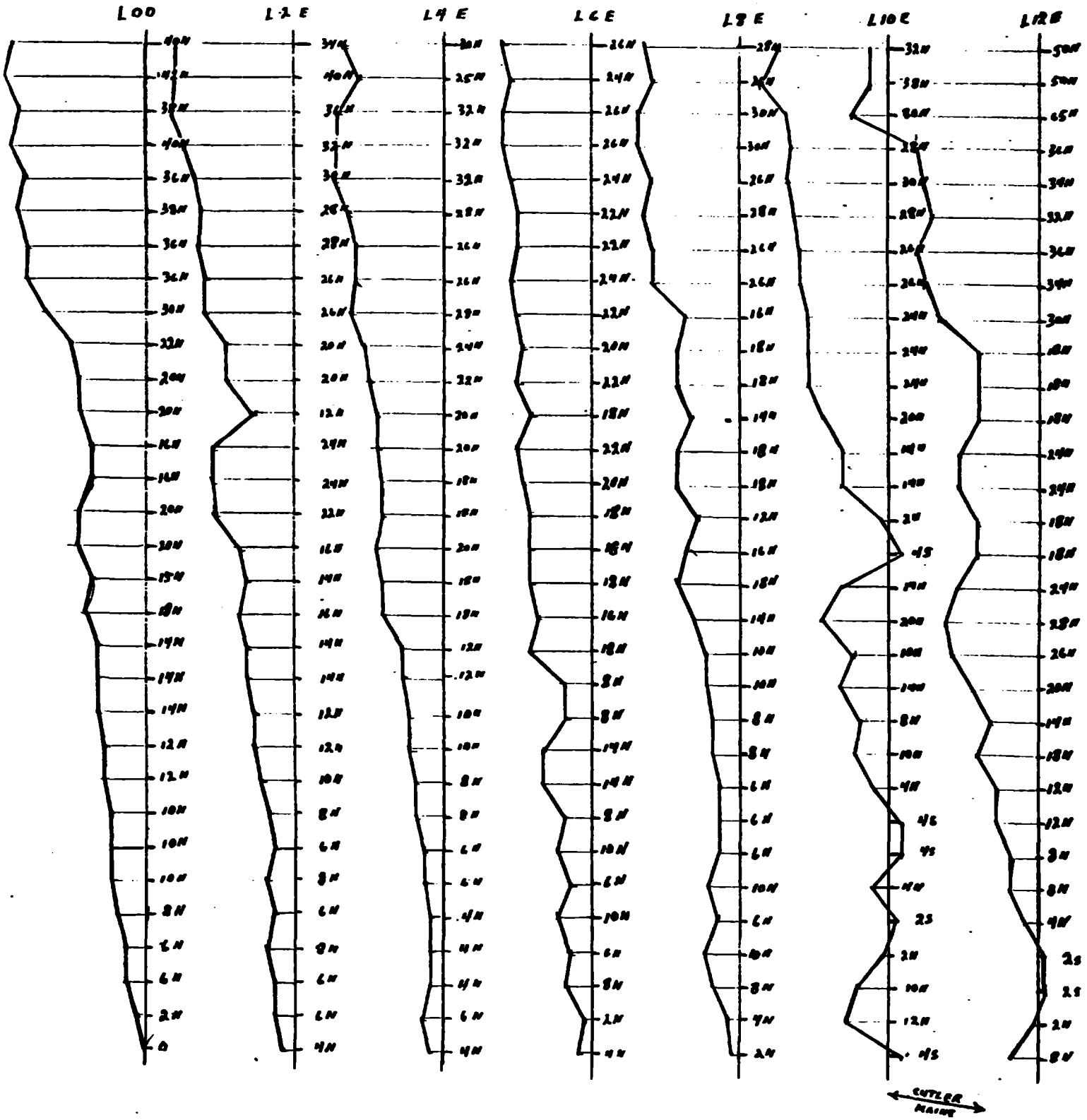
RELATIVE TO ADJACENT GRID LINE VALUES

SURVEY BY

RENÉ H. SOLTERMANN

SEPTEMBER 1991

CLAIM 903834-SECTOR 2



DIP ANGLE PROFILE

DEGREES 0 20 40

FEET 0 50 100

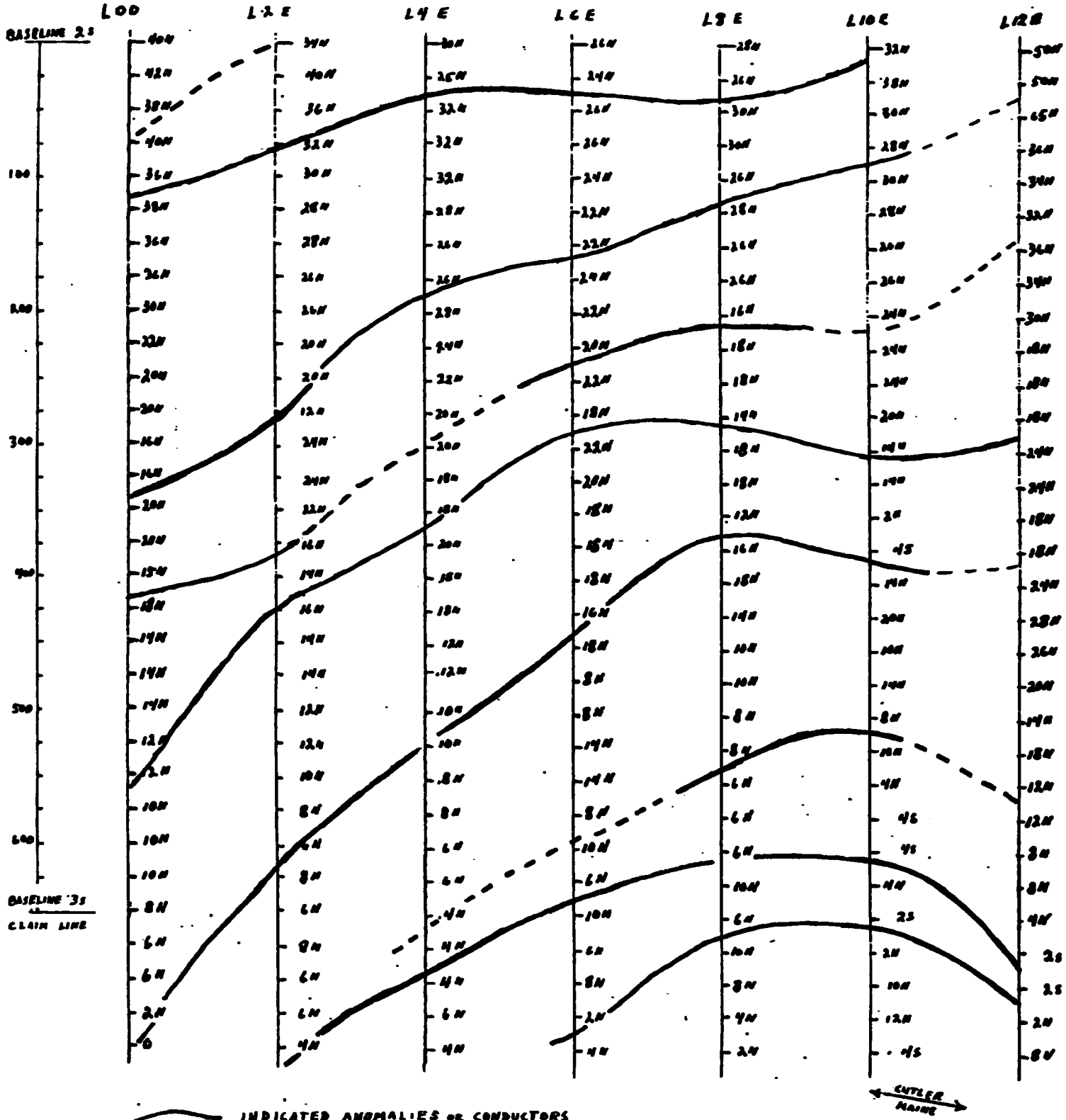
RADEM VLF-EM SURVEY

CUTLER MAINE 24.0 KHz

SURVEY BY:
RENÉ H. SOLTERMANN
SEPTEMBER 1991

N

CLAIM 903834- SECTOR 2



INDICATED ANOMALIES OR CONDUCTORS

PROJECTED ANOMALIES

DEGREES 0 20 40

FEET 0 50 100

RADEM VLF-EM SURVEY

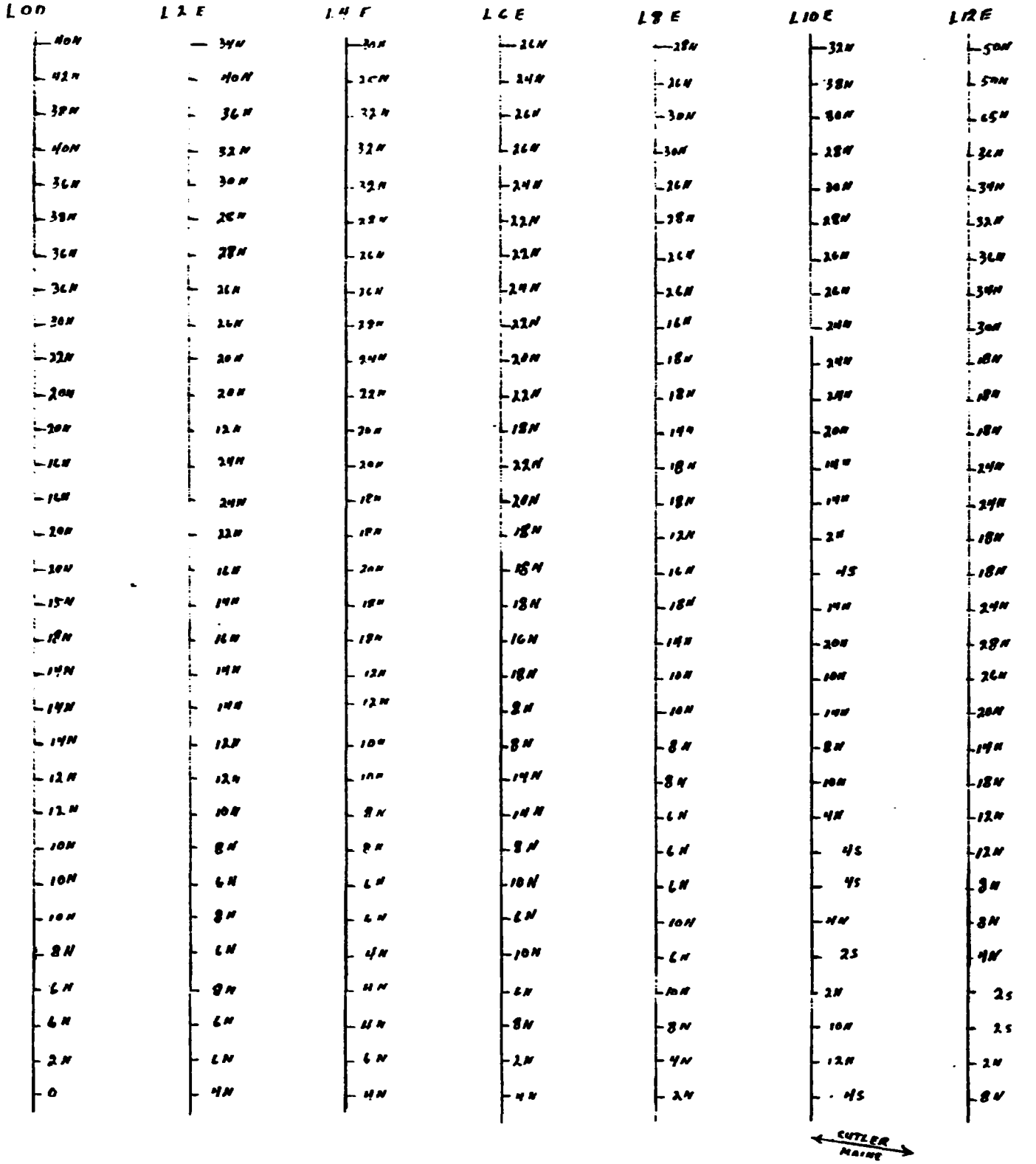
NOTE

THIS SURVEY IS NOT BASED ON TRADITIONAL CROSSOVER READINGS. SLIGHT DEFLECTIONS, 2° AND OVER, ARE CONSIDERED TO BE SIGNIFICANT.

SURVEY BY:
RENE H. SOLTERMANN
SEPTEMBER 1991

N

CLAIM 903834-SECTOR 2

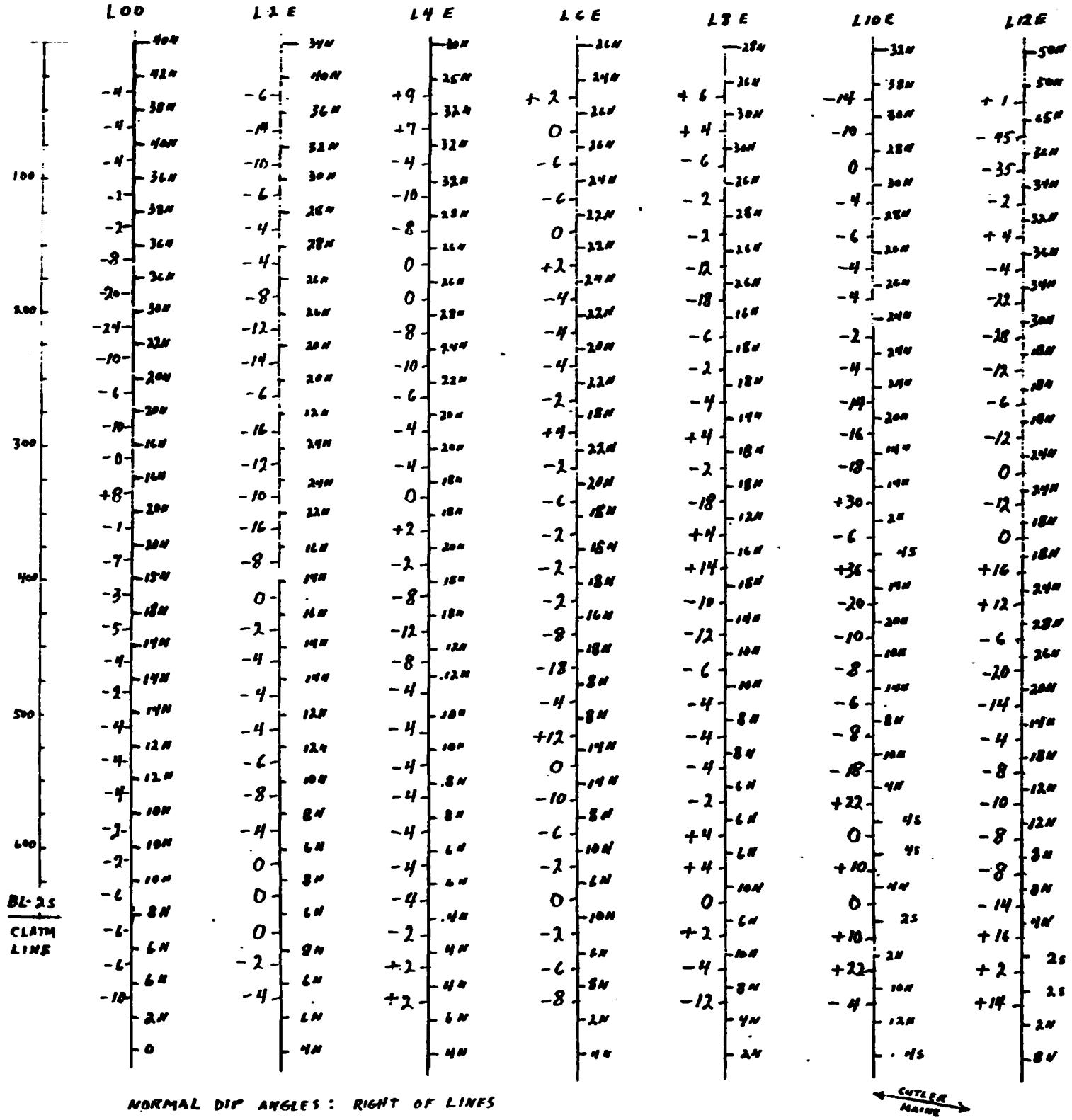


RADEM VLF-EM SURVEY

CUTLER MAINE 24.0 KHz

SURVEY BY:
RENÉ H. SOLTERMANN
SEPTEMBER 1991

CLAIM 903834- SECTOR 2



NORMAL DIP ANGLES : RIGHT OF LINES

FRASER FILTERED : LEFT SIDE OF LINES

DEGREES 0 20 40

FEET 0 50 100

RADEM VLF-EM SURVEY

CUTLER MAINE 24.0 KHz

SURVEY BY:
RENE H. SOLTERMANN
SEPTEMBER 1991

N

CLAIM 903834 - SECTOR 2

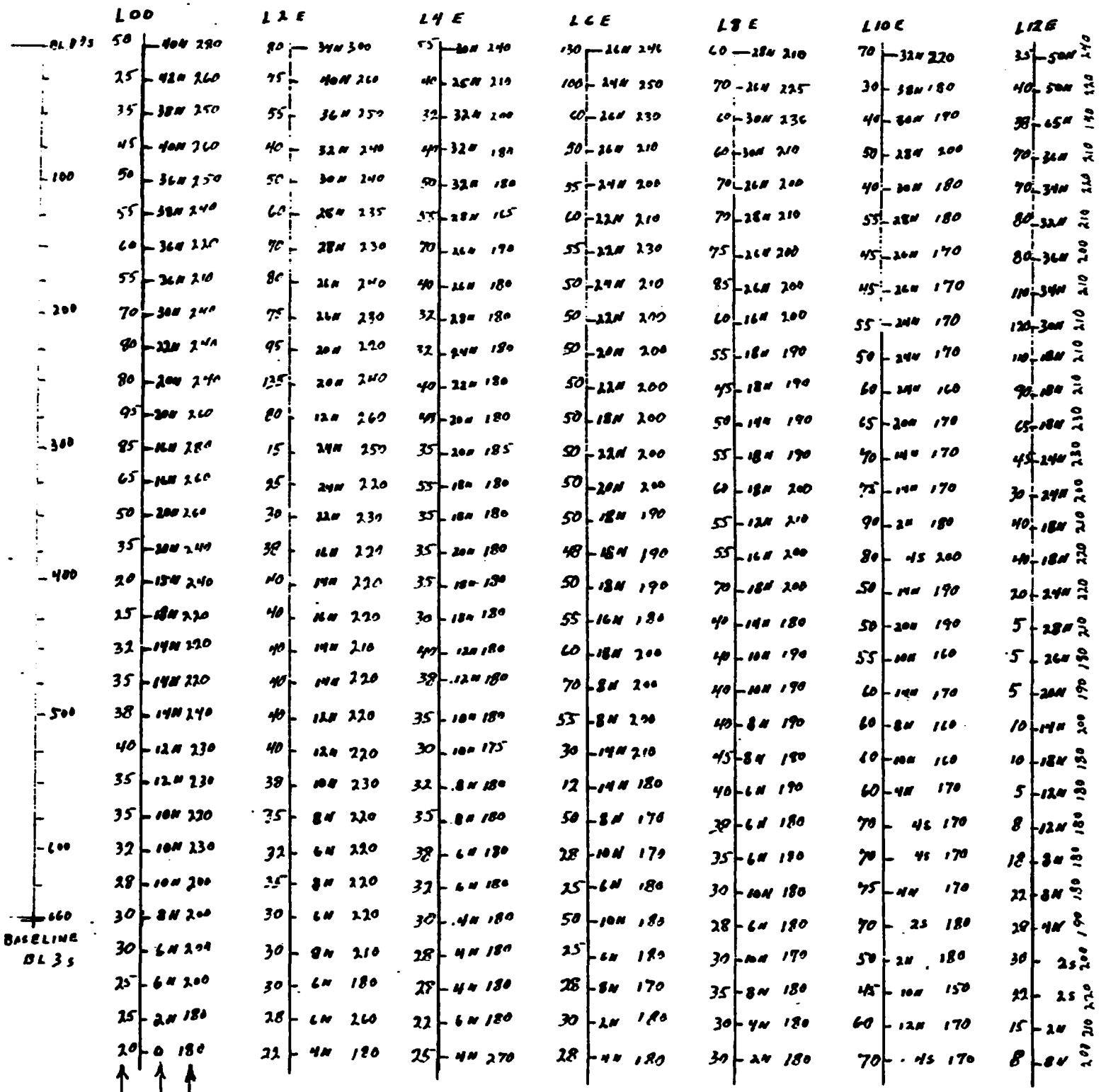


TABLE OF

READINGS RECORDED.

SURVEY BY

RENÉ H. SOLTERMANN

SEPTEMBER 1991

RADEM VLF-EM SURVEY

CUTLER MAINE 24.6 KHz

Bibliography

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1986: The Anatomy of a Gold Bearing Granstone

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Allen, I., Geology of Wolf Bay Property,

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Riley, RA.

1971 Farlie Township And Todd Township

Geology Maps. Ontario Geological Survey Maps 2407,

and 2408

52M01SE0038 OP91-424 TODD

ROCK

SAMPLES COLLECTED

1991

CLAIM 903831 - SECTOR 2

WOLF BAY, TODD TOWNSHIP

RED LAKE

NTS 52 M/1

BY

RENÉ H. SOLTERMANN

PROSPECTOR

RR #6 PETERBOROUGH ONT. K9J 6X7

JANUARY 27 1992

FORMING PART OF VLF-EM SURVEY

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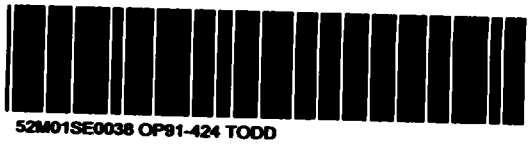


020C

1991 Rock Sampling

Number taken, inspected - 80

assayed (to date) - 18

Type: Grab and short chip (6-12")

Selection:

Samples were collected in a controlled pattern, namely, along, or close to each survey grid line, at exposed outcrops.

The main objective was to determine whether the anomalies outlined by the EM readings are sulphide mineralization, or topographical - geological structures. There exists a very good correlation in both instances. Sulphide occurrence coincides closely with the EM, as does the degree of alteration intensity.

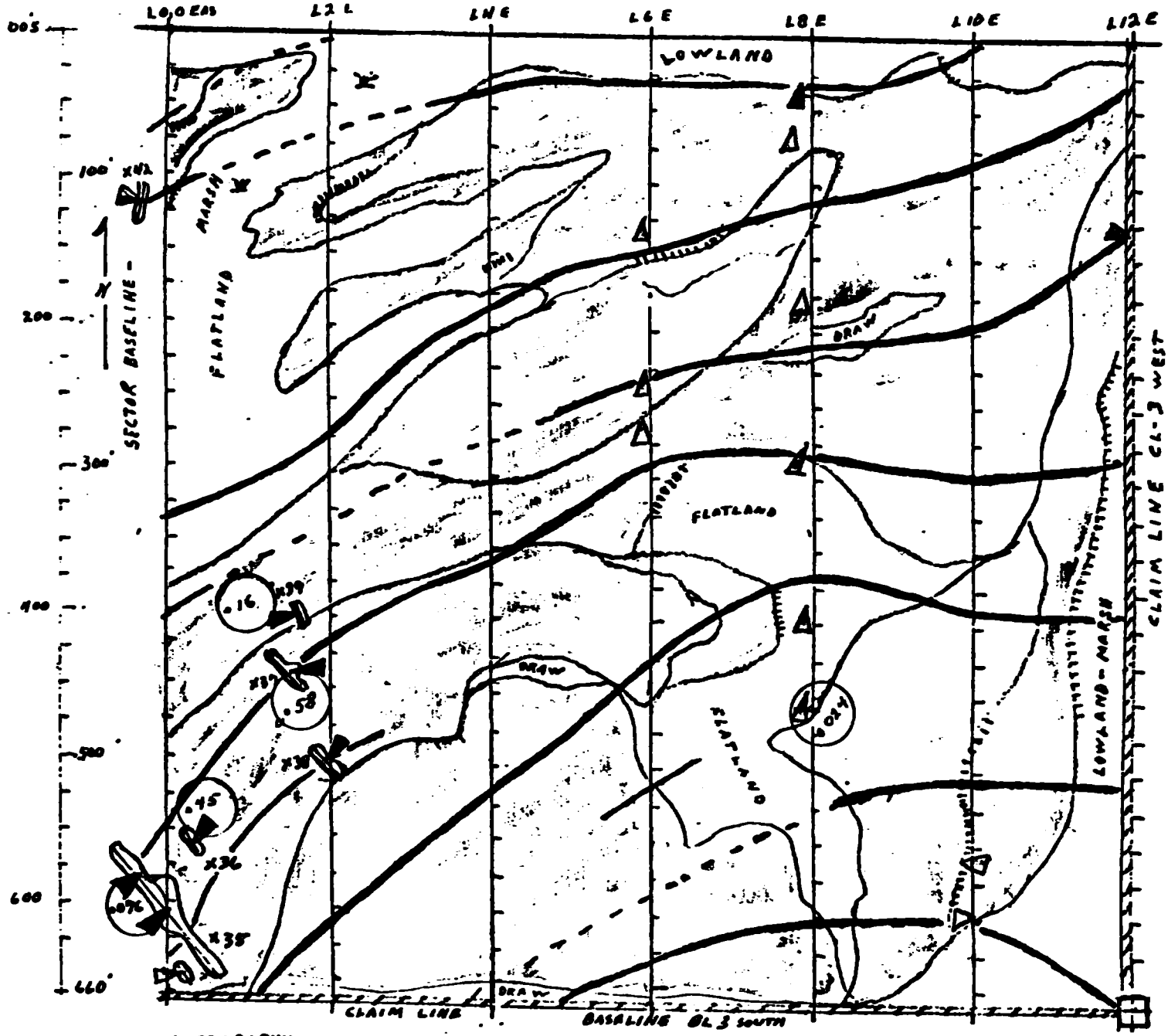
All samples are metavolcanic and contain a good amount of silicates in numerous small pods and stringers. Carbonates exist to a lesser extent. Shearing is prevalent.

Although quartz is abundant, no significant vein has been found.

RENÉ M. SOLTERMANN

Jan. 27/92.

MAP- COMPOSITE TOPOGRAPHY, MINERALIZATION, AND EM ANOMALIES



TOPOGRAPHY

CONTOUR

CLIFF

MINERALIZATION

INTENSE SULPHIDES

MODERATE "

(0.20) GOLD OZ/TON (OVER 500 PPB)

RADEM VLF-EM SURVEY

ANOMALIES *

CONTINUOUS

PROJECTED

NOTE:
FLATLAND INCLUDES DENSELY FORESTED NEAR-LEVEL GROUND

0 50 100

SCALE: 1 INCH = 100 FEET

SURVEYED AND COMPILED BY

RENÉ H. SOLTERMANN

AUG-SEPT. 1991

NOTE

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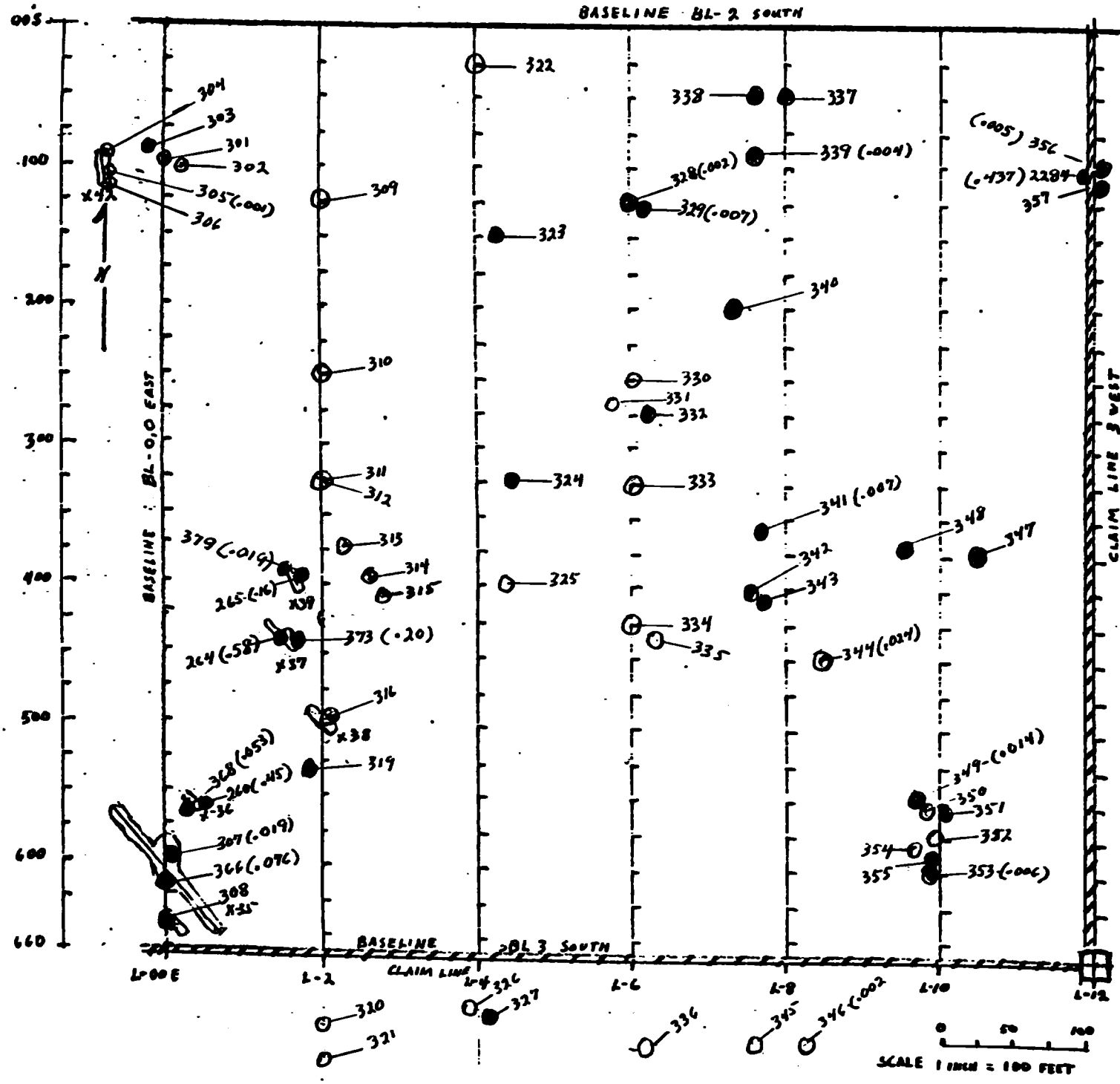


SAMPLE LOCATIONS

AND ASSAY VALUES

NOTE: BEST PREVIOUS VALUES ALSO SHOWN

LEGEND

● MODERATE-INTENSE QUARTZ-EPIDOTE-BIOTITE ALTERATION

○ MAFIC VOLCANICS

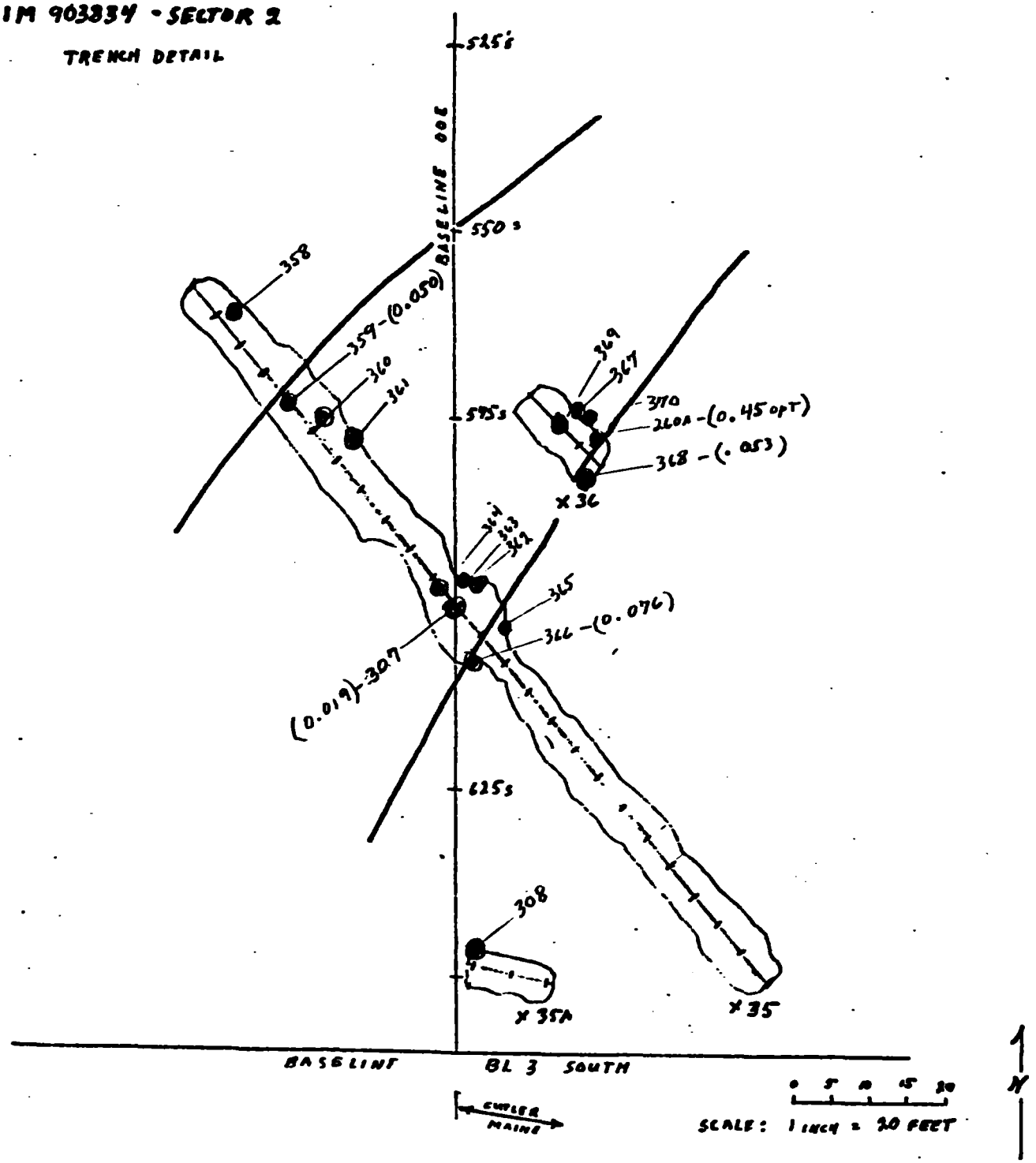
SAMPLED BY

RENÉ H. SOLTERMANN

AUG.-SEPT. 1991

CLAIM 903834 - SECTOR 2

TRENCH DETAIL



SAMPLE LOCATIONS

AND ASSAY VALUES -(OZ/TON Au)

NOTE : BEST PREVIOUS VALUES ALSO SHOWN.

* ANOMALIES SHOWN ARE NOT NECESSARILY METALLIC CONDUCTORS. MOST REPRESENT DEFLECTIONS OF MERELY 2°-4° IN THE SAME DIRECTON.

LEGEND

——— VLF-EM ANOMALY *

O MAFIC METAVOLCANICS

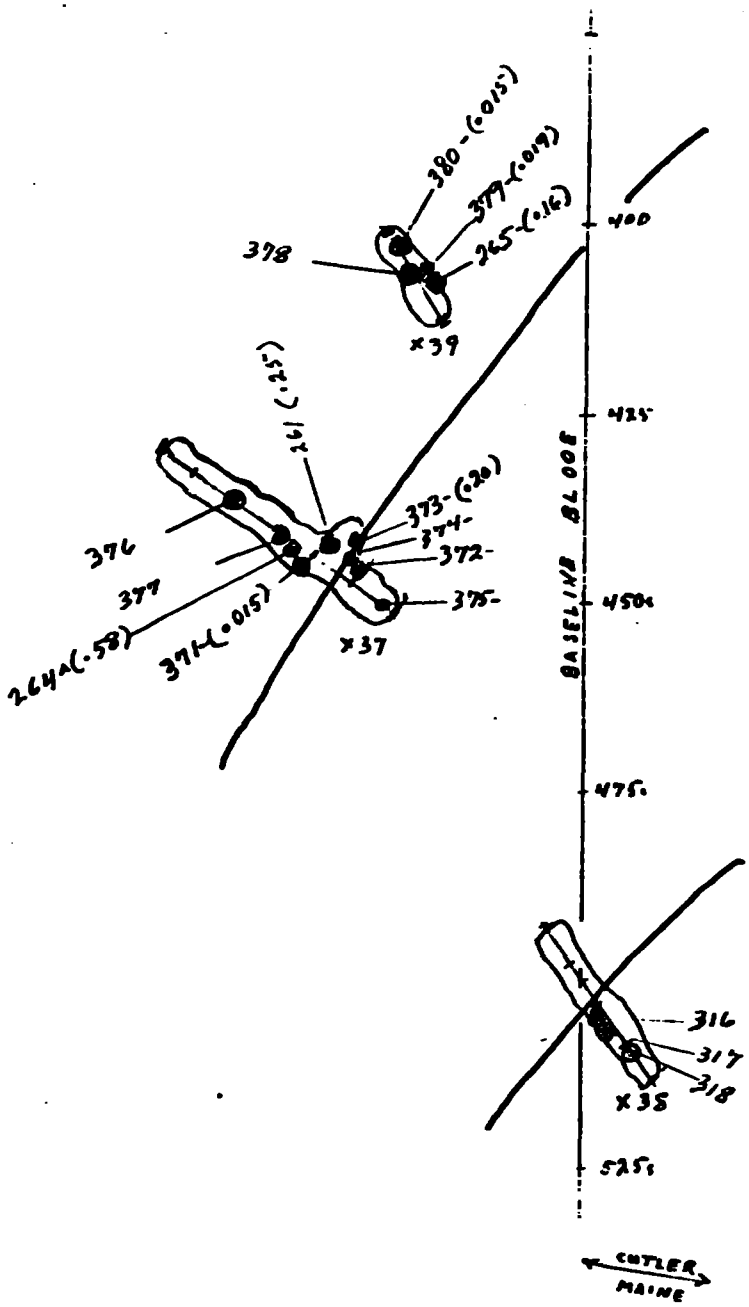
● MOD.-INTENSE QUARTZ-EPIDOTE-BIOTITE ALTERATION.

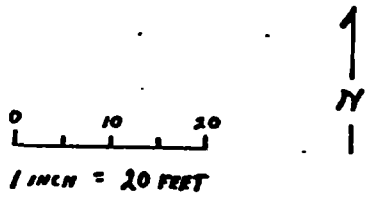
RENE H. SOLTERMANN

JULY-SEPTEMBER 1991

CLAIM 903834 - SECTOR 2

TRENCH DETAIL





SAMPLE LOCATIONS AND ASSAY VALUES (OZ/TON AU)

NOTE: BEST PREVIOUS VALUES ALSO SHOWN

* ANOMALIES SHOWN WERE PLOTTED FROM MINOR DIP ANGLE DEFLECTIONS AND MAY NOT REPRESENT METALLIC CONDUCTORS

LEGEND

—— VLF-EM ANOMALY *

O MAFIC METAVOLCANICS

● MODERATE-INTENSE QUARTZ-EPIDOTE-BIOTITE ALTERATION.

RENÉ H. SOLTERMANN

JULY-SEPTEMBER 1991

Sample Log - 1991 claim no: 903834-sector 2 + northern edge of 1070029. p-1

No:	on or near line station		Location	Rock	Mineral	Assay.
301	L-00E	100's	N. face O/C	Dark grey, purplish brown, moderately altered rock. Fine grain. metavolcanic.	moderate arsens, minor chalco.	
302	L00E	100's	as 301 but 3' east	alteration more intense. Deeper brown, green, but appears to have little quartz.	moderate mineralization. arsens, minor chalco, some sphalerite.	
303	L00E	100's	2' west of line, hilltop. small slot or tr.	a rather coarse textured, highly altered biotite rich rock, Gray-dark brown-green coloured. some quartz + carbonate.	moderate mineralization, arsens, minor chalco, pyrite, sphalerite, graphite	Au - 35 ppb ✓
304	L-00-E	100's	50' W - top (N) of trench x 42	an intensely fragmented crustal rock bonded together mostly by carbonates. Some brown coloring.	minor mineralization. arsens, Hornblende.	
305	L00E	125's	¢ trench x 42	entirely different to above. Similar to #303 - highly altered. greenish, gray to purple brown. Siliceous.	well mineralized, mostly chalco, arsens, some galena.	✓
306	L100E	140's	Bottom tr x 42	Moderate altered grey-brown rock. Not as siliceous as 305.	moderate chalco, py, + minor arsens.	

No:	On or near Line	Station	Location	Rock	Mineral	
307	L-00E	600S	Tr X 35, at stn flag.	Intensely altered metavolcanic. brown, grey, yellow black. icy clear quartz sections.	Intense to massive arsens. (acicular + granular) + some galena	Au-651 ppb
308	L-00E	650S	contact top and (N. of Tr X35A)	medium light greenish gray rock containing icy quartz, and carbonates, joins dark gray brown rock as #307.	Minor arsens, pyrite in light material. more moderate mineralization in dk. brown area.	
309	L-2E	125'S	5'E. on N. cliff face	Gray, greenish brown rock, biotite rich. Carbonates.	sphalerite, minor chalco, pyrite.	
310	L-2E	250'S	on line	Grey-brown moderately altered basalt. Carbonate	minor pyrite.	
311	L2E	325'S	O/C on line	Mod. altered basalt. Grey, brown green. Coarse texture. Carbonate	Minor pyrite, arsens.	
312	L2E	325'S	O/C on line	as 311, composed of carbonate. galena. Large Xtls ranging from white - pink - & green.	minor pyrite, arsens. Hornblende.	
313	L2	375'S	25'E. of O/C face Op. Tr X39	Little alteration. Mostly grey, some brown, green.	Minor chalco, Pyr.	
314	L-2	400'S	35'E, top of O/C.	Moderate alteration, darker brownish grey. Radiating & acicular green, black Xtls.	minor arsens. Sphalerite.	

Nos.	on or near Line	Station	Location	Rock	Mineral	assay
315	L-2	425'S	40' east on reverse hill off Tr x 37-39	very little alteration - slight brownish & greenish, otherwise mod. grey. Coarse texture basalt	Minor arsen.	
316	L-2	500'S	Tr x 38 on hill	nice brownish alteration, some hornblende xtls. basalt.	arsen. sphalerite Ag. chalco.	
317	L-2	500'S	Tr x 38 - 3' E. of line	fine grained, purplish-green altered basalt.	mod. arsen. chalco.	
318	L-2	500S	Tr x 38 - 2' W. of Step	more intense reddish brown alteration, med. grey. & some carbonate veinlets	mod. arsen. chalco.	
319	L-2	535'S	10' W of L2 Small O/C	less intense than 316, more greenish & coarser texture	minor arsen chalco.	
320	L-2	725'S	20' E - O/C face	dark grey, fine grained, showing little alteration	minor disem. grains.	
321	L-2	750'S	O/C face	as 320, but a few isolated sulphide clusters in wallrock.	minor arsen, chalco.	
322	L-4	025'S	O/C, O/C	fine grained green/brownish rock. Highly fragmental, bonded with quartz & carbonate	Essentially barren. Few grains (sulvery)	

No.	on/near line	station	location	Rock	Mineral	p-4 assay.	
323	L-4	150 S	S. cliff face O/L.	moderately altered, med. grained greenish grey. carbonaceous	Minor clusters arsens, chalco.		✓
324	L-4	325 S	15' E O/C cliff	med. grained grey / brown / green hard siliceous rock. Some lath-shaped xtls.	minor clusters, arsens, chalco. sphalerite.		
325	L-4	400 S	20' E.	as above, less alteration. carbonaceous	essentially barren. a few scrawy grains + chalco.		
326	L-4	700 S	25' E	mod. altered, greenish brown med. grained carbonaceous.	No visible sulphides, Some sphalerite.		
327	L-4	700 S	10' W.	well altered, med. grained brown-green grey, good striated black xtls + twinning striated platy lavas. Hard, sharp-edged volcanic rock.	moderate arsens, chalco sphalerite.		✓
328	L-6	125 S	O/L	intensely altered igneous rock consisting of clearly defined particles of olive greens, yellow greens, brown and black coloured material. Highly siliceous of snowy to water clear grains. Numerous seams are mostly glassy, + clear quartz. Small foliated patch	moderate mineralization, hard to define as grains are within the translucent siliceous grains. Likely arsens, chalco.	Au-.63 Ag-.4	✓

Nos.	On/near Line	Station	Location	Rock	Mineral	Assay
329	L-6	125'S	Multi coloured zone on O/C	Highly siliceous rock easily fragmented ranging from buff thru dark red-dish brown, green and blue-green. Med. grained. Contains sfvoine, biotite, hornblende. Granular, glassy, brown silica xtls.	mostly concealed within icy xtls. Numerous microscopic golden & silvery grains.	Au-.245 opt
330	L-6	250S	O/L; O/T Top of cliff	Similar texture & appearance as above but less siliceous, no blue and less brown, but more red. a probable shear zone.	moderate. arsen, chalco, sphalerite.	
331	L-6		N. face cliff base.	fine grained, uniform textured. med. grey purplish rock. Mostly composed of greenish, elongated xtls.	No visible sulphides.	
332	L-6	275'S	O/L old trench?	Intense alteration - mostly purple brownish grey rock. glassy surfaces appear to be tourmaline xtls.	well mineralized - chalco, arsen.	
333	L-6	325'S	O/L	Fine grained & textured rock of moderate alteration. Mostly uniformly purplish grey	minor arsen. chalco.	
334	L-6	425S	O/L	Fine grained rock, uniformly textured and coloured. Mostly med. grey, with slight purplish colour. Very little of the customary green.	No visible sulphides	

No.	On/near Line	Station	Location	Rock	mineral	assay
335	L-6	425 S	over cliff.	Similar to 334, but coarser texture, slightly more brown and contains lime-green material	minor arsens, chalco.	
336	L-6	725 S	10' E. cliff face.	Similar to above. 335.	Minor arsens, chalco.	
337	L 8	050 S	O/L	Intense quartz-epidote-sericite alteration. Fine grained, coarse texture. Greenish grey, then brown.	Moderate mineral zation. Chalco, arsens, hornblende	✓
338	L-8	050 S	25' W. face of cliff	Moderate alteration. Less brownish colour, more green, some larg xtls.	minor arsens. virtually no sulphide.	
339	L-8	75-100 S	30' W behind O/C.	Fragmented meta volcanic, purply grey, fine grain, coarse texture. Fragments mostly quartz, orthoclase, bonded with large crystal carbonates. Sheer?	moderate-arsens chalco. Some hornblende	✓ An 135 ppb
340	L-8	200 S	35' W O/C.	Intense alteration - pink-brown grey rock, siliceous, brown resinous mat'l!	moderate, arsens, chalco, pentlandite?	
341	L-8	375 S	20' W. bottom O/C	Intensely altered. very tough (not brittle) brown, pink, greenish gray, fine grained rock. Contains a few soft black cubic xtls, mostly dense rock, little concentrated silicates, few seams. but is well mineralized with sulphs + gether macroscopic grains.	Disseminated grains. - arsens chalco - Asp ?	An 241 ppb

No.	Line	Om/near Station	Location	Rock	Mineral	
342	L-8	425S	50' upper cliff.	Fine grained intensely altered mete-volcanic rock. Green-grey with pink-brown alteration.	Minor sulphides - chalco - arsens, some Ag	
343	L-8	425S	30'W O/C base	as above. slightly better mineralization. Tough rock.	Moderate chalco.	
344	L-8	450S	25'E-O/C	Fine grained dark grey well weathered rock. Brittle, thin plates. Brownish matrix.	well mineralized. py, chalco, minor arsens.	A- 819 ppb ✓
345	L-8	750S	20'W-O/C face	fine grained dark brownish-grey with concentrated green patches.	Minor arsens.	
346	L-8	750S	20'E-O/C face	med. grained, coarse texture, dark brownish-grey. very tough (not brittle. Large subedate xtls, spotted with numerous brown soft resinous splotches. Greenish colour present.	well mineralized - Chalco, arsens, coppery grains resembling pentlandite.	A- 75 ppb ✓
347	L-10	375S	20'E O/C	moderately altered hard, brittle dark grey with some brown-green areas. Few seams or subedate xtls.	Minor arsens, chalco.	
348	L-10	375S	25'NW O/C	Similar to above 348, but slightly more alteration + more siliceous	Minor arsens. chalco.	

No.	On/near Line	Station	Location	Rock	Mineral		
349	L-10	550's	E. side of tr. top.	Intensely altered. brownish grey, rock, med. grain, brittle. very micaceous. yellow-brown.	v.f. concentrated golden coloured grains.	Au-465 ppb	✓
350	L-10	550's	W. side of tr. ?	Moderate alteration, med. grain. greenish gray, contains long slender black xtls. Minor mica.	Minor microscopic grains sulphide. Arsen.?		✓
351	L-10	550's	cliff face	moderate alteration, fine grained purplish gray, containing resinous red-brown material and carbonate.	Minor disseminated silvery grains.		
352	L-10	575's	cliff face at tr.	mod. alteration, contains some nice black cube hornblende xtls + brown to clear wedge shaped xtls.	Minor disem. sulphide, + possibly Au.		✓
353	L-10	575-600's	SE face cliff	Intense alteration green, pink-brown - slightly lighter gray. Nice hornblende (striated) xtls.	moderate mineralization mostly disseminated arsen. Ag thread.	Au-190 ppb	✓
354	L-10	575-600's	SE face cliff	as above, less alteration + hornblende xtls.	Minor arsen, chalco.		
355	L-10	575-600's	1' SE face cliff.	Intense quartz epidote - biotite alteration. Stringers of long slender - to cubic black xtls - hornblend.	Minor disem. arsen.		

No.	On / near Line	Station	Location	Rock	Mineral	Assay	
356	L-12E	100-125S	cliff ridge	Metavolcanic of intense quartz - epidote - biotite alteration. Has areas of bluish gray, fine grained, ranging to dark green - black coarse texture. Predominently a rusty zone with red - brown - yellow resinous material.	well mineralized - mostly arsen, some chalco, pyrite, sphalerite, Ag.	Au - 183 ppb	✓
357	L-12E	100-125S	3'SE of 356	as above, but less yellow and green material, but contains more shiny leaf + lath xtls, clear.	as above. arsens, chalco, sphalerite. Ag.		✓
358	Trench x 35	7's		moderate quartz epidote biotite alteration, fine grained purple - gray rock with some black cubic xtls, carbonaceous seams.	Mod. arsens, chalco		✓
359	Tr x 35	20's -	E of tr. w end	intense alteration, very hard + highly siliceous. Generally a vitreous lustre, with sparry black and clear fragments. mostly dark brownish gray to black. Little green, unlike most other samples	very strong mineralization. Pyrite clusters arsens masses. Ag. Au.	Au - 1711 ppb	✓
360	Tr. x 35	25's	near protrusion.	intense alteration, not as hard + siliceous as #359. mostly an earthy lustre with dark gray - black brown, med. grain.	moderate. Pyrite. arsens, chalco sphalerite.		

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No.	On/near Line	station	Location	Rock	Mineral	assay
361	Tr. X 35	32's	RH-W. edge of Tr.	Intense alteration - harder than above with more brown-yellow, green material. Coarse texture. Rusty zone. Some glassy areas	Mod. less pyrite, more arsens + chalco than above.	
362	Tr X 35 (L00-)	55's (600's)	3' rusty at S. edge of band.	Intense alteration, brittle, coarse textured, deep red-brown yellow green soft material. Mod. decomposed surface. Leafy translucent and icy quartz xtls.	mod. chalco, arsens sphalerite, molybdenite?	✓
363	Tr X 35	56's	crumbly rusted	as above #362, but severely decomposed. yellow, red-brown black. virtually only stable material remaining are minor epidote, icy feldspar, quartz.	mod. chalco, arsens, pyrite, Ag.	✓
364	Tr X 35	56½'s	crumbly, rusted.	as above but slightly less decomposed, brownish gray-black. Dark red-brown to light yellow soft material	mod. arsens, chalco. sphalerite, mica. Ag.	
365	Tr X 35	58½'s	S. edge rusty zone	mod. altered. brownish gray rock containing little fine sulfides.	mod.-minor arsens, sphalerite.	
366	Tr X 35		W. edge of Tr. rusty zone.	Intense alteration; purplish brown-gray med. grained, coarse texture, contains fragments, splits into near-parallel slabs revealing mod. to massive mineralization, alternating with thin hard leaf-like clear silicates.	Massive arsens, mod. pyrite + chalco. Hornblende. Sphalerite Ag.	✓ Au-2600 ppb

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No.	On/near Line	Station	Location	Rock	Mineral	assay
367	Tr. X 36	Centre	east edge	Mod. altered, coarse textured, slightly green-brown, gray rock. Dull lustre, some carbonate 'pools'	Very minor - few silvery grains.	
368	Tr X 36	West edge	upper layer.	Intense alteration - rich pink-brown, black, gray, yellows; very siliceous, well mineralized; extremely tough to split; coarse texture, vitreous to glassy lustre.	Very well mineralized - mostly sp., good galena, Au 1834 ppb Ag wire, sphalerite, chalco.	✓
369	Tr X 36	centre	rusty core.	Although some of above features are evident, the mass is predominantly decomposed and splits into irregular plates, as opposed to near parallel of #366.	Well mineralized mostly arsen, chalco, some pyrite + galena, + sphalerite	✓
370	Tr X 36	centre	east side of ℄ + east edge of 2438	Brick above rusty zone, well altered, generally purplish gray, with dark brown + red to yellow segments. Hard, coarse textured, highly mineralized.	Fine granular to massive arsen, good galena, some graphite + chalco, Au, Ag, sphalerite	✓
371	Tr X 37	N. half	west side of Tr.	Intense alteration, good biotite-epidote-quartz content, coarse texture, well silicified, icy quartz, etc.	Mod. to massive arsen, chalco, graphite, sphalerite + some galena. Ag, Au.	515 ppb Au ✓
372	Tr X 37		east open	Intense as above coarse textured siliceous, intense alteration, but more layered structure and somewhat more lime green.	Mod. to intense mineralization. Arsen, chalco, graphite, sphalerite, Ag, Au.	

No	On/near Line	Station	Location	Rock	Mineral	assay.
373	Trench X37	Rusty Zone	1 east of main Tr. on S. spur.	Intense alteration, mostly decomposed layered material. Deep red, brown, yellow + blacks abound. very siliceous.	Mod. arsens, pyrite, chalco, some galena Ag.	7000 ppb Au ✓
374	Tr X 37	Rusty	Beside above	as above #373, but more crystal, containing more black coloring, some hornblende + Siliceous, icy quartz. also contains small specimen of porphyry w/light phenocrysts (chlorite) in dk green matrix (Pyroxene). well defined.	Mod. mineralization. Less arsens, more pyrite. Some chalco, graphite, Minor arsens in porphyry.	
375	Tr X 37	5'N	Top end (S) of Tr	Mod. altered, med. grained pink-green-brownish gray rock of dense structure. long slender + cubic xtls of hornblende, biotite, pyroxenes. Hard. Gabbroic. Not perceivably layered as #373	Minor arsens, epidotite	✓
376	Tr 37	10'N	at painted stop	Similar to above but to split in layers easier yet no seams visible. Split surfaces well mineralized.	Mod. pyrite, some chalco + arsens.	
377	Tr 37	20'N	9'N of painted	Mod. alteration, purplish brown. med. grained dense rock. Some carbonate	Minor silvery grains.	
378	Tr 39	Tr E		Mod. altered, coarse texture, brown-purple-gray, hard, mod. silicification. Not in banded or decomposed zone.	Mod. arsens, chalco.,	

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No.	On / near Line	station	Location	Rock	Mineral	Assay
379	Tr. 39	Tr ¢ Rusty.	Beside #378	Intense alteration, layered, + mildly decomposed. Dark red, brown, pink, yellow with abundant elongated + striated black xtls. Some radiating structures. Gabbro?	Mod. to intense. arseno, chalco, silver, Au.	645 ppb Au ✓
380	Tr 39	3' N. of #379		Very intense alteration. Basically as above, rusty appearance, but much less crumbly, with brighter deep reds - yellow, black, brown and highly siliceous. Coarse grained. Gabbro?	Mod to intense. arseno, chalco, silver, galena. + Au.	519 ppb. Au ✓
381	Tr 39	9' N.	Bottom	as above #380, intense quartz - epidote - biotite alteration with coarse texture, brilliant colours, with lustre ranging from resinous to icy quartz. Abundant clear lath shaped calcite xtls. Gabbro?	mod to intense. arseno, chalco pyrite, galena, Ag + Au.	✓

Note: 1. All samples for this season, #301 to 381, are of altered volcanic rock, intrusive and extrusive igneous.

2. Samples were obtained as close as possible to line stations, in order to corroborate VLF survey readings.

3. Descriptions are as seen through x16 stereo microscope.

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. MI-3243-01 DATE: JANUARY 20, 1992

SUBMITTED BY: MR. SOLTERMAN

ATTENTION:

DATE RECEIVED: JANUARY 15, 1992 SAMPLES OF: ROCKS

Sample No.	Au ppb	Au oz/ton
305	35	.001
307	651	.019
328	63	.002
329	245	.007
339	133	.004
341	241	.007
344	819	.024
346	75	.002
353	190	.006
356	183	.005

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. MI-3243-02 DATE: JANUARY 20, 1992

SUBMITTED BY: MR. SOLTERMAN

ATTENTION:

DATE RECEIVED: JANUARY 15, 1992 SAMPLES OF: ROCKS

Sample No.	Au ppb	Au oz/ton
359	1711	.050
349	465	.014
366	2600	.076
368	1834	.053
371	515	.015
373	7000	.20
379	645	.019
380	519	.015

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Certificate of Analysis

Certificate No. MI-3142 /1820 Date: February 8, 1991

Received 5 Samples of Rock Chips

Submitted by R.H. Soltermann

Sample No.	Au oz/ton	Ag oz/ton
260	.45	1.37
261	.14	.23
263	.075	.99
264	.58	.70
265	.16	2.40

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