PHELPS DODGE CORPORATION OF CANADA, LIMITED

PROJECT NO. 106 - CASCA

Whitehorse Mining Division
Yukon Territory

Lat. 62°43'N.
Long. 131°53'W.

N.T.S. 105J12/W

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of $46,814

Resident Geologist or
~~Resident Mining Engineer~~

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

Commissioner of Yukon Territory

BY

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STOKES EXPLORATION MANAGEMENT CO. LTD.

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PROJECT 106 - CASCA
105
NORTHWEST TERRITORIES
YUKON
SELWYN MOUNTAINS
ANVIL RANGE
BIG SALMON RANGE
PELLY MTS.
CAMPBELL RANGE
SIMPSON RANGE
LOGAN MTS.
NAHANNI RANGE
BACKBONE RANGES
CASSIAR MOUNTAINS
ROCKY MOUNTAINS
BONNET PLUME PASS
MT. WILLIAMS
Keno Hill
(SUMMER TRAVEL ONLY)
Mayo Lake
Mayo
Gordon Landing
MT. EDWARDS 6050
7530 MT. JOY
KEELE PK. 9720
7140 DALL MTN.
CHRISTIE PASS
7300 MT. CHRISTIE
GREY HUNTER PK. 7265
PLATEAU MTN. 5980
7138 MT. SELOUS
CANOL TRAVEL (SUMMER ONLY) RD.
MT. HODDER 7184
Faro
6763 MT. NYE
TRUITT PK. 6799
CARMACKS RD.
SNOW CAP MTN.
Ross River
FOX MTN. 7886
TRAFFIC MTN. 6743
MT. SIR JAMES MAC BRIEN
MT. SIDNEY DOBSON
Tantung
DOME PK. 9000
WATSON CAMPBELL CARMACKS RD.
Frances Lake
MT. HUNT
MT. BILLINGS 6909
Lower Laberge
Teslin Crossing
Livingstone Creek
MT. BLACK 7050
PASS PK.
MT. ST. CYR 6774
Quiet Lake
Upper Laberge
Whitehorse
Johnsons Crossing
Simpson Lake
Watson Lake
Upper Liard
Lower Post
Rancheria
Big Creek
Teslin
Teslin Lake
Morley River
Swift River
ALASKA HY.
Tagish
Carcross
MT. SKUKUM
MT. BRYDE 6389
MT. MINTO
MT. SNOWDON 6990
SIMPSON PK. 7130
MT. MONCKTON 3948
Coal River
Liard
Bennett
White Pass
Taku
Atlin
Surprise
Teresa I.
MT. BAGOT
SNOW TOP
Haines
MT. CANNING
MT. POLETICA
MT. NESSELRODE
PARADISE PEAK 7215
Nakina
Cassiar
MT. MC DAME 6600
McDame
PYRAMID MTN. 7030
KAWDY MTN. 6372
NELLES PK. 8100
DEVILS PAW
MT. LESTER JONES
MT. RATH
B.C.
ALASKA
BRITISH
INTERNATIONAL HWY
Fairbanks
Big Delta
Dawson
Pelly Crossing
Whitehorse
Anchorage
Gakona
Valdez
Homer
Seward
Kodiak
Juneau
Haines
Sitka
Atlin
Livengood
Circle
MT. McKINLEY 20,320
Burwash Ldg.
Prince of Wales I.
CANADA
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A. CONCLUSIONS AND RECOMMENDATIONS

Events have largely overtaken the most obvious recommendations resulting from work on Casca Property, namely the drilling of Zone A, property expansion and regional reconnaissance. Furthermore, much of the course of future action will depend on the results of the drilling which is in progress at time of writing, and of additional geochemical work to be done on the samples. The list which follows is, therefore, comprised of suggestions regarding secondary matters which have not yet been acted upon.

(1) Geophysical work and detailed mapping suggest that in the northern part of Zone A (massive sulphides), one or more important bands of sulphides run farther northeast than those on the trend which was sampled and marked for drilling. These should be given a high priority for investigation.

(2) Mapping and geochemical work should be carried out on the newly acquired properties.

(3) Soil and silt samples from the project should be run for As, Zn, Pb and possibly Ag and W.

(4) I.P. surveying of all anomalous areas is an obvious step.

(5) Work should be done on the magnetic and EM results to determine usefulness of airborne surveys for regional work. Investigation of the form of mineralization on the two older properties (drilled by Kennco and Atlas) in this area and around Thunderhead pluton will help in deciding whether regional geophysical work is likely to be useful for mineralization in this area.

B. LOCATION

The CASCA PROPERTY is located in east-central Yukon (62°43'N, 131°53'W.) about 65 miles north of Ross River townsite. It lies between the Riddell and South MacMillan Rivers, circa eight miles east of their junction.

C. TOPOGRAPHY

The original property lies on the flanks of a 5276 foot summit which will be referred to as Klingit Peak, and on an elevated plateau area west and south of this mountain. Much of the plateau features a bumpty terrain where small, knolly hills are interspersed with lakes and swamps. The vegetation pattern is about equally divided between forest, burn and open regions including marsh and sub-alpine brush. Timberline is at circa 4500' elevation. Most of the territory adjacent to these original claims lies at a lower altitude, which is dominated by scrubby forest lands with copious swamp.

D. LOGISTICS

Major valleys of South MacMillan and Riddell River flank the property. A winter road follows the latter from the Canol Road at Dragon Lake and passes a short distance from the southwest corner of the property. During this project all material were carried from Ross River by floatplane to Wing Lake in the Riddell Valley south of the claims, and brought in by helicopter.

E. PDR CLAIM GROUP

Upon commencement of the work described in this report, the property consisted of 56 claims. This, however, was in two groups in which an eight claim "Wing Group" had been largely overstaked by the larger 48 claim PDR Group. In August, the property was extended into the northeast and northwest quadrants as the result of geochemical anomalies peripheral to the claims, and in September the property was greatly extended to north and east, largely to protect the copper deposits found on the August extension and include regions of anomalous geochemistry discovered by a regional silt program. The final property as of October, 1971 consists of 166 claims.

F. AREA EXPLORATION HISTORY

Mineralization on the property was first recorded in 1968 by Atlas Explorations as a result of their Hess Project of regional geochemistry. They appear to have been mainly interested in lead-silver mineralization, but also examined several of the massive skarn-sulphide outcrops described in this report, judging by observed chipping. Although Atlas seems to have prospected widely, they established no control system in the form of cut or flagged lines, and appear to have taken few soil samples.

The property staked by Atlas lapsed in 1970 and the present Wing claims were then staked by G. Wing acting for Casca Enterprises. These were placed to cover both a small area of copper mineralization within intrusive rock (now Zone C) and the plateau west of Klingit Peak, where Atlas had observed small lead veins and blasted one small pod of copper-zinc mineralization. The PDR claim group, consisting of 46 claims, was staked in November, 1970 and placed covering Wing claims and an aeromagnetic anomaly to the south.

Five old campsites were discovered on the property, and several others were seen during regional reconnaissance. The history of this area may not be as simple as that recorded.

G. SEMCO WORK

A four man SEMCO crew, consisting of two geologists and two soil samplers, spent 11 weeks working on and around the Casca property. For part of this time the crew was augmented by two more men as a result of an expanded program and the approach of fall weather. Property work was carried out with reference to grid lines cut in a north-south direction four hundred feet apart and picketed at one hundred foot intervals.

Basic (contract) work included mapping of lithology, alteration and mineralization at a scale of 200 ft/inch; soil sampling at 100 foot intervals on the picket lines and a magnetometer survey at the same grid interval.

Subsidiary work carried out by the SEMCO crew included:

(1) Test pits to determine geochemical profiles in various terrains.

(2) Soil sampling on 100' x 200' grids over several regions of special interest.

(3) Secondary magnetometer grids at various spacing over areas where pyrrhotite appeared associated with copper.

(4) Etching and staining of rocks to determine alteration and variation in igneous species.

(5) E.M. surveying to verify nature of mineral showings on the property.

Following discovery of an extensive zone of sulphides with significant chalcopyrite, the SEMCO crew undertook the following additional procedures:

(1) Mapping of the sulphide zone at a scale of 100 ft/inch.

(2) Trenching, drilling and blasting for sampling of outcrops.

(3) E.M. surveying of the sulphide zone.

(4) A 100' x 100' soil sampling grid over the sulphide zone.

(5) Magnetometer traverses at 25' spacing across the zone.

H. MINERALIZATION

Mineralization in the northern portion of Casca property is widespread and of diverse character. These occurrences of interest have been covered by closely spaced geochemical sample grids which are listed on the main 200 ft/inch geology map, and discussion of mineralization will be by reference to these grids or zones.

ZONE A - KLINGIT Peak Massive Sulphides

These are bodies of massive or densely disseminated sulphides (arsenopyrite, pyrrhotite, pyrite) with variable chalcopyrite, which replace limey cherts and minor quartzites adjacent to the western rim of the Klingit Pluton. They are by far the most hopeful form of mineralization found so far on Casca Property. The metallic minerals occur in bands, wisps and irregular lenses, usually within a tough green skarn. This rock appears to have formed from calcareous cherts (and locally quartzite) by the addition of iron to produce irondiopside and chlorite. Its metal content is extremely variable in most cases and continuity of the zones could not be proved due to poor outcrop. Work with EM, however, shows reasonably good conductivity along several lines. There is no good zoning, although some tendency was noted for copper-arsenic assemblages to be near the pluton, with the major pyrrhotite bands farther away. Lead veins were observed in this group only at considerable distance from the intrusive.

(1) Mapping

Mapping on the PDY claims was carried out using cut picket line control with lines turned off the base line at 400 foot intervals and tied into tie lines which run parallel to the base line.

The picket lines were run N-S and chained at 100 foot intervals and the original grid encompassed 14,400 feet of base line, 28,800 feet of tie line and 302,200 feet of cross lines for a total of 65.4 miles of cut line.

Later, after the additional claims were staked, the cut lines were extended across some of these added claims for an additional 38 miles of line control.

All mapping, soil sampling and claim posts have been tied into the cut grid of lines.

The EM survey registers an anomaly from the ore zone extending beyond 64N. This area has little outcrop and has been mapped on the 200 ft/inch scale only, as the picket line grid was not extended farther in time.

(2) Sampling

Plugger drilling and blasting were carried out on 14 outcrops for the purpose of sampling. General descriptions of the individual sulphides sampled are given in Table 6.

In general, the results of sampling were confusing and somewhat disappointing. Silver, gold and tungsten values were generally negligible and copper seemed to bear little relation to visual estimates.

(3) Electromagnetic Survey

Several substantial anomalies were obtained on electromagnetic survey lines at 200 foot spacing. This suggests reasonably good continuity for the sulphides. In the southern section of the zone, anomalies were sharp; two could be traced across several hundred feet. This is in agreement with the thin, veinlike bodies of quite rich sulphide observed in that region. The broad northern zone, where skarn and sulphide tend to be more intergrown, gave noisy or non-existent nulls and only scattered phase angle anomalies. The loud null was observed at the 100 foot wide "sample K" outcrop of massive sulphide and skarn, so that there is little doubt that it signifies this assemblage. Anomalies of one sort or the other appear to extend out as far as 70N, but there was considerable trouble with steep terrain out in that area.

(4) Magnetic Survey

The magnetic survey carried out over the southern portion of the sulphide zone (south of 40N) failed to show the existence of either the massive sulphides or the Klingit pluton. Because of the several thin veins of massive pyrrhotite, however, it was hoped that a continuous aeromagnetic profile from low altitudes might detect such a deposit in regional reconnaissance. To examine this, closely spaced readings were taken along the picket lines over the northern zones. (Map A8). These proved that not only was the response of the zone quite variable, but that the pyrrhotite itself appeared to vary greatly in its magnetic properties. There were some very sharp anomalies, especially in the eastern limb of the zone, and rough upward continuation suggests these would show well in a low aerial survey, but the flight lines would have to be closely spaced, and the assumption that other deposits in the region would be associated in this fashion with massive pyrrhotite is questionable.

ZONE B

This is a westward extension of ZONE A, which exhibits several small showings, including one blasted by Atlas Explorations. For the most part, these are similar to ZONE A showings except that they appear smaller, are in a wider variety of rock and show more lead and zinc mineralization. They are likely peripheral, and do not appear particularly interesting. On the other hand, much of this area has poor outcrop and so an extensive geochemical and EM grid was placed over the region. The EM gave no anomalies. Geochemical results are given on Maps NE-2, NE-5, NW-2, NW-5.

ZONE C

It was for this showing that the property was optioned, and on which geochemical test pits were run for soil parameters. It is located immediately south of Klingit Peak and consists of chalcopyrite in a somewhat syenitic phase of a dyke from the Klingit pluton. Mineralization in the intrusive is closely related to strong, tight jointing. This occurs both on the fractures and by replacement of nearby pyrrhotite and pyrite, without any other obvious alteration. It is unfortunate that the area of mineralization is small, although it may be more extensive than outcrop indicates. This occurrence is accompanied by small areas of copper mineralization in the adjacent cherts. These include disseminated sulphides, massive lenses, massive sulphide bands at contacts of the syenite and one granular quartz dyke rich in Cu and As. None of these appear large enough in outcrop to warrant interest, but close scale geochemistry, magnetometer work and an EM survey were made over the region as a check, and these were accompanied by detailed mapping. EM results were negative, magnetometer data (Map C-8) gives only local fluctuations due to small pyrrhotite veins, and geochemical data is given on Maps C-2, C-5.

Three other locations were noted in which chalcopyrite occurred in fractures in the Klingit granodiorite. All others were near the pluton margin and all were small. The zone of carbonate alteration mapped within the pluton has a vivid gossan, but geochemistry there has been negative.

ZONE D

This is a westward extension of ZONE C along a prominent creek and lineament. Several small mineralized zones were observed in this region, including massive pyrrhotite veins do not appear to be extensive, judging by both magnetic and electromagnetic grids, and appear to be accompanied by small skarn zones in most cases. Electromagnetic surveying was carried out over most of the grid, but no anomalies were observed.

ZONE E

This zone features several small veins of massive galena with some sphalerite and minor copper. Local hand trenching has been done by Atlas Explorations who had found most of the deposits observed. None were anywhere greater than a few inches wide and did not appear to be of great length either. The region is very swampy, however, and outcrop poor. This mineralization is likely peripheral to the major dyke system which cuts through the western property. Neither the observed veins nor anything else showed up in electromagnetic surveying.

ZONE F

This was established as the result of an abrupt rise in copper content of silts in a fairly major stream, as determined by field lab testing. Till here is deep and outcrop confined to the creek bed but minor chalcopyrite was observed in granular quartz veins stockworking cherts. As with Zone E, this is adjacent to the western dyke complex.

ZONE G

This is a small group of extra soil samples established as the result of a high copper content in silts of a small stream. No outcrop was found.

I. ALTERATION

Alteration on Casca property is surprisingly slight and selective, even in the immediate vicinity of mineralization. Carbonate alteration occurs locally in all major rock types, and is certainly the most common variety. Judging by its association with limonite and with rusty weathering, the carbonate is likely partially siderite. The origin of this alteration is not known; possibly it is connected with arrival of the rather carbonate rich quartz-porphyry felsites. On the other hand, it may have been derived from the metasediments during intrusion of the Klingit pluton, but a sizeable area of the pluton itself has been affected. A few calcite veins were observed, but the alteration is dominantly a permeation and seldom obvious in hand specimen.

Potassium does not appear to have been a mobile constituent in this region, although quartz veining was widespread. This quartz appears to have been derived from metasediments and with the exception of a few large veins of milky quartz (and the granular quartz dykes mentioned previously), its veining is usually on thin, tight, erratic lines. Many of the argillites and limestone bands are siliceous, but there is no reason to believe that this is an alteration.

Disseminated pyrrhotite and pyrite occurs in several of the rock species and occasionally mark fractures but in neither hand specimen nor stained surface is this generally accompanied by alteration. In some cases quartz or calcite stringers appear to be related to sulphides.

In those locations where chalcopyrite and arsenopyrite occur on fractures or are disseminated in igneous rock, there is again a surprising lack of accompanying alteration. The massive sulphide deposits were formed dominantly by replacement, but there seems to have been little accompanying metasomatism beyond addition of iron and the metallic sulphide constituents.

J. GEOLOGY

(1) LITHOLOGY

A wide variety of intrusive and metasedimentary rocks are found on the property. The various lithologies tend to grade into one another, so that divisions for the purpose of mapping are subjective in nature. In the case of the metasedimentary series, not only do all the major rock types intergrade but the various members are commonly interbedded on a scale much too small to permit mapping.

According to regional mapping by the Geological Survey, the property contains two major formations -- one a Proterozoic sequence which is composed dominantly of grit, quartzite and dark slate; and the second (unconformably overlying) sequence of Ordivician and Silurian age featuring coloured chert and shale with conglomerate, quartzite and limestone. If these are indeed distinct units, they could in no way be separated on this property and it seems doubtful that any such division exists in a lithological sense. A major chert-limestone sequence in the south western part of the property may represent the younger unit, but both cherts and limestones of similar appearance are intimately associated with all other rock units throughout the area mapped. It is of interest that the Geological Survey entirely missed all of the intrusive units in this area including the rather obvious Klingit pluton.

(2) SEDIMENTARY AND METAMORPHIC ROCKS

(a) Quartzite, grits, etc.

Coarse, siliceous metasediments constitute the most common lithological division of rocks cropping out on the Casca property. These include grits, clastic breccias and arkoses of various sorts. They commonly grade through metasiltstone to chert or argillite and less frequently to dirty limestones.

The quartz constituent of this series is typically white or light grey and sometimes black. The source of coarse black quartz was not observed locally or on regional reconnaissance. Many of the members of this group contain substantial clastic feldspars, including K-feldspar. As a rule, K-feldspar could not be determined except through staining and is not mapped. In arkosic grits, there are main pieces of large K-feldspars which were not likely transported a great distance and could not have been derived from any unit observed in this region. A terrain including coarse, acid igneous rocks almost certainly preceded the Proterozoic sedimentary sequence.

Quartzite matrices were generally siliceous or argillitic and occasionally contained carbonates. They are often weathered to a rich brown, suggesting ankerite. In other cases, the brown staining is too pervasive to be explained by surface weathering, and hydrothermal action is suspected.

While typical boudinaging of quartzite bands was observed in some sequences, the quartzite proves surprisingly mobile elsewhere. Recrystallization and injection textures are common and dykes or granular intrusive quartz cross-cut other sequences. This tends to confuse the structure and make field separations of quartzites from some of the aphanitic phases of intrusive a risky business. Where etched, these granular quartz dykes proved to be almost pure quartz, locally displaying low-temperature crystal form and in three cases were associated with copper mineralization.

(b) Cherts and Skarns

The cherts tend to be a heterogeneous group, varying from white through brown, grey, green and black in colour; and banded with limey, argillitic or coarse-grained members. Partial fusion and crumpling or brecciation has increased their inhomogeneity. Etching reveals that while they seldom contain potassic minerals, fine clay or plagioclase is common in most cases.

Calcareous cherts are widespread and a few areas of tremolite skarn were observed. The most common skarns, however, occur when iron has been added to limey cherts, with the development of iron diopside and chlorite to form a tough, heavy material of glassy-green appearance. This rock is the host for most of the massive sulphide found on Casca property.

(c) Argillites and Shales

These rocks typically range from black to dark brown or grey, with distinct maroon and graphitic variations. They are often limey or siliceous or both. Their cleavage appears to be largely tectonic and tends to cross the bedding where this is obvious. They are only locally mineralized and do not appear to be of economic significance.

(d) Limestones

A dark massive limestone, at least 50 - 100 feet thick, encroaches on the western portion of the property. It is a prominent cliff-former and quite possibly unconformably overlies the units common farther east. It may be equivalent to the Ordovician-Silurian sequence defined by the Geological Survey and fossil coral was observed in one location.

Smaller limestone bands are commonly met through the rest of the property. These tend to be dirty and interbedded with cherts and argillites.

(e) Metavolcanic Rocks

The Geological Survey maps a major region of Tertiary volcanic rocks immediately south of the property, but this does not exist. One fairly sizeable greenstone area was found on the property and a few small, scattered dykes. They proved nondescript and were not associated with mineralization.

(3) INTRUSIVE ROCKS

(a) Klingit Granodiorite

A large, reasonably circular stock of granodiorite lies on the northeast flank of Klingit Peak. Although quite homogeneous and massive in hand specimen, there is considerable variation in mineral composition, with a common range of 3 - 20% for K-feldspars, 5 - 25% for biotite and 10 - 30% for quartz within the body of the stock. Around the edges and in peripheral dykes there are a variety of aplitic phases which often run substantially higher in potash and are locally syenitic. In some places, biotite has clearly formed at the expense of older hornblende.

(b) Western Dyke Complex

Intrusive rocks underlie a substantial portion of the western claim group and region south thereof. Despite the size of this body, the rock everywhere has a reasonably large percentage of aphanitic groundmass, which is potassic to varying degree.

Some combination of quartz (usually high temp.), biotite and plagioclase phenocrysts are always observed and usually pyrrhotite crystals are present. The pyrrhotite explains why these rocks have a prominent magnetic expression while the Klingit pluton does not. Minor occurrences of Cu, Pb and Zn were observed in or around these dykes but nothing impressive was discovered. In general, the rocks are equivalent to granodiorite but relationship to the Klingit body is not known.

(c) Syenite

A fairly major body of syenite rock is located in the southeastern quadrant of the property and a few dykes were found well to the north. This is a plagioclase porphyry with a dark, potassic groundmass. It appears to grade into a Klingit intrusive style of dyke at the copper showing south of Klingit Mountain (Zone C), and the two rocks may be phases of the same intrusive event.

(d) Gabbro

A fairly large body of gabbro (plagioclase-amphibolite) rock lies just southwest of the property and substantial amounts were found in the southwestern claims. Strangely, these did not give magnetic anomalies. Small amounts of serpentine and "altered diorite" were also observed and may be related to the gabbro, as may certain greenstone dykes.

(e) Quartz-porphyry Felsite Dykes

A few very nondescript felsite bodies with high temperature quartz crystals were found on the property. These tend to be associated with carbonate alteration and despite their featureless white appearance often weather a dark brown. Their potash content is low.

(f) Altered Dyke Groups

Several small intrusions of a very feldspathic dyke rock were observed. These are low in potassiu, have variable quartz, and chlorite is usually their only mafic. Carbonate alteration is common. In some cases at least this rock originated by direct alteration of the granodiorite dyke complex, through stripping of potash and addition of carbonates.

(4) STRUCTURE

Mineralization on the Casca property appears to be related to structure only through control of strata susceptible to replacement by sulphides.

The regional structure is dominated by folds of various scales trending east to east southeast. Judging by slatey cleavage, the axial planes are somewhat variable but typically near the vertical. This trend is approximately similar in both Proterozoic and Paleozoic sequences, their interface suggesting a slight tilt to the west.

The above fairly simple pattern, however, has been drastically disturbed on the property by intrusion. The Klingit pluton appears to have domed strata upwards, and bedding in its vicinity tends to slope everywhere away from the stock (mapping northeast of the pluton is admittedly sketchy). Farther out, the dips are variable, but for a considerable distance the trend of the geology is obviously influenced by this intrusion.

In the case of the western dyke complex, the sphere of influence is smaller and there is a greater tendency toward brecciation. Cleavage and strata in the immediate vicinity are typically steeply dipping or vertical and aligned with the north-south elongation of the main dyke.

(5) NOTES ON REGIONAL RECONNAISSANCE

Detailed geological mapping was not carried out during the brief regional reconnaissance which completed the 1971 field work. Emphasis was placed on geochemistry, as the terrain proved to be snow covered where high and with little outcrop elsewhere. Geological reconnaissance was concentrated on finding intrusions.

In so far as regional observations of metasediments are concerned, they proved largely similar to those of the property. Argillitic rocks however, tended to be of a lower grade of metamorphism and more highly coloured, the difference perhaps resulting from intrusives on the property.

K. GEOCHEMISTRY

(1) SOIL GEOCHEMISTRY

A set of coded parameters is given for each soil sample and this is explained in Table 1.

The following classifications have been recorded for terrain as it affects soil samples:

(a) Swamp (S) These are swamps or bog forests of a more or less level nature. Soils are wholly organic in origin. It seems likely that their metal content has been largely determined by ground water seeping through and any anomalies observed may hence result through trapping of ions from a distant source.

(b) Marsh (M) This denotes regions of saturated, largely organic ground set at a distinct angle of repose. The degree of access of soil here to local ion sources is not known.

(c) Forest slopes (F) These slopes tend to have reasonably mature soil profiles and presumably reflect bedrock where till is not too deep.

(d) Bluff terrain (B) Steep, often rocky, areas in which soil movement has likely been significant.

(e) Alpine or subalpine (A) Open or brushy sloping regions of generally poor soil profile but likely reasonably accurate geochemical representation.

Considerable depths of till were observed in stream cuts on the property and some major areas are in the process of sliding by solifluction or show signs of having flowed. Where soil was observed to contain lithic fragments, symbols were recorded to indicate whether these were distinctly rounded (till) or angular (regolith).

A layer of volcanic ash, typically two inches thick, forms an upper soil horizon through most of the property. In the few places where it was necessary to sample this, it is recorded by the symbol "A". Permafrost (symbol F) was also met in a few slopes.

Samples were taken from various levels of three test pits in a zone of copper mineralization south of Klingit Peak. One of these was in swampy ground, one in an area of dispersive drainage (ridge) and the third in collective drainage (gully). The results as obtained by field tests for copper, are given in Table 2. The swamp turned out to have a surprisingly good geochemical profile and as might be expected, the dispersive drainage area had been leached to a lower level than the others. As a result of these tests an attempt was made to take soil samples at depths of at least 8 inches and deeper in areas of dispersive drainage (which are common in the knobby terrain of this property).

Because of the high percentage of organic soils and swampy terrain, ground water transport of ions will be important in interpretation of soil geochemistry. The three ions being tested (Zn, Pb, Cu) are all subject to precipitation by organic matter and copper is especially influenced by pH. On this property the acidifying influence of swampland and neutralizing effect of limestone and of potash derived from the vast areas of burn are likely to make soil pH erratic. (Soils from burned areas are so indicated in the notes). In general, copper anomalies in swampy ground may reflect neutralization of groundwater rather than any local ion source.

(2) SILT GEOCHEMISTRY AND RELATED PROBLEMS

Four major parameters were found to influence silt geochemistry. These are swamps (or lakes), uncollected drainage, till and acidity. Throughout much of the region, drainage was too sluggish to move silt, so that swamp or lakes provided traps for inorganic material. Often only organic detritus was available for this reason and metallic contents of these samples will reflect ion exchange conditions with respect to the water. The problems of acidity have been discussed under soils and since molybdenum is not an indicator in this region, acidity is likely critical. Organic samples (as judged by lab technician) are compared to other samples from the same set of regional traverses in Table 3 and the general conclusion is that much of the variation in sample results may be related to percentage organic content. For the widespread areas of poor drainage an ion is highly unlikely to be detected at any major distance from its source. Almost all of the anomalous regional results were obtained from areas of abrupt relief.

Table 4 shows the rapid decay of anomalies from streams flowing through swamps westward from the Zone A deposits.

Within the regions of subdued topography, drainage is often poorly collected, flowing instead through the ground water table and swampy forests. This does not transport silt and repeated sampling of the major streams is not as satisfactory as using a well developed tributary system. Hence, only those ion sources immediately adjacent to major drainages are likely to show up.

Finally, there is the problem of glacial till. Most water courses have a fine-sediment content derived locally from the till over which it flows. This is deposited in swamps. This cycle is typically repeated at short intervals along streams, with only organic material available immediately below the swamps themselves. The process, if facilitated by rapid solifluction common in the tills here ("drunken forests" etc.), produces dissection of till bands between swamps to expose eroding banks of silt.

A set of coded parameters is given with each silt sample, and this is explained in Table 5.

In conclusion, only the mountainous areas are likely to yield silts capable of revealing ion sources at distances greater than a quarter mile. This may be the explanation for the almost total lack of geochemical anomalies in low-lying areas.

L. GEOPHYSICAL WORK

(1) ELECTROMAGNETIC SURVEY

As most showings on Casca property were in the form of massive or densely disseminated sulphides, extensive use was made of electromagnetic surveying. A Sharpe SE-200 unit was employed, with a coil spacing of two hundred feet and a station interval of 100 feet using the parallel line ("Broadside") method. The configuration with transmitter lying in the same vertical plan as the receiver, was chosen to minimize terrain difficulties.

In the Sharpe SE-200,receiver and transmitter are not interchangable, so that there are no terrain corrections. On this property, the receiver was seldom in view of the transmitter, which resulted in inaccuracies in guessing direction of transmitter alignment. Errors of even greater magnitude were induced in steep terrain where off-horizontal alignment of the receiver coil proved very critical despite the vertical-symmetry configuration chosen for transmission. Areas of abrupt bluffs are noted in the results. (Map A-9).

Significant E.M. results were obtained in the Klingit Peak massive sulphide zone and are discussed under mineralization, Zone A. Zones B, C and D were also run but the results were negative within the limits of reproducibility ± 3 - 4 divisions.

(2) MAGNETIC SURVEY

A magnetometer survey was carried out over the original claim group and those extensions on which picket lines had been established by mid-September, 1971. Readings were made by means of a McPhar fluxgate magnetometer at station intervals of 100 feet along the picket lines (400 feet apart). A grid of diurnally adjusted results is submitted without contouring, as requested. (Maps NE-8, NW-8, SE-8, SW-8).

The magnetometer survey was originally specified because of minor magnetite associated with mineralized dykes in Zone C. Magnetite was not found to be widespread, but pyrrhotite certainly is, appearing both in massive and disseminated forms. The western dyke complex and certain other zones of pyrrhotization show up fairly well. Massive sulphide veins, however, tend to have only very local anomalies which were seldom observed in regional work. Neither the Klingit pluton nor the southern portion of the massive sulphide zone showed up in the grid survey. The northern part was surveyed at close spacing, with erratic results (both concentration and magnetic intensity of pyrrhotite appears to vary greatly). These are given on Map A-8 discussed under mineralization, Zone A.

TABLE C - 1

SOIL PARAMETER CODE - CASCA PROPERTY

2 SW Λ /G B^+/ 10 8 Δ/ S B

Distribution Agents

- Slope steepness: O (flat) to 3
- Direction of slope
- Pattern
  - Λ - dispersive drainage
  - V - collective drainage
  - S - slope or sidehill
  - ✱ - flat

Terrain Classification (see text)

- S - swamp
- M - marsh
- F - forest
- B - bluff
- A - alpine

"B" at end denotes burned area

Δ - if angular rock fragments encountered (bedrock)

C - if rounded fragments encountered (till)

Sample Data

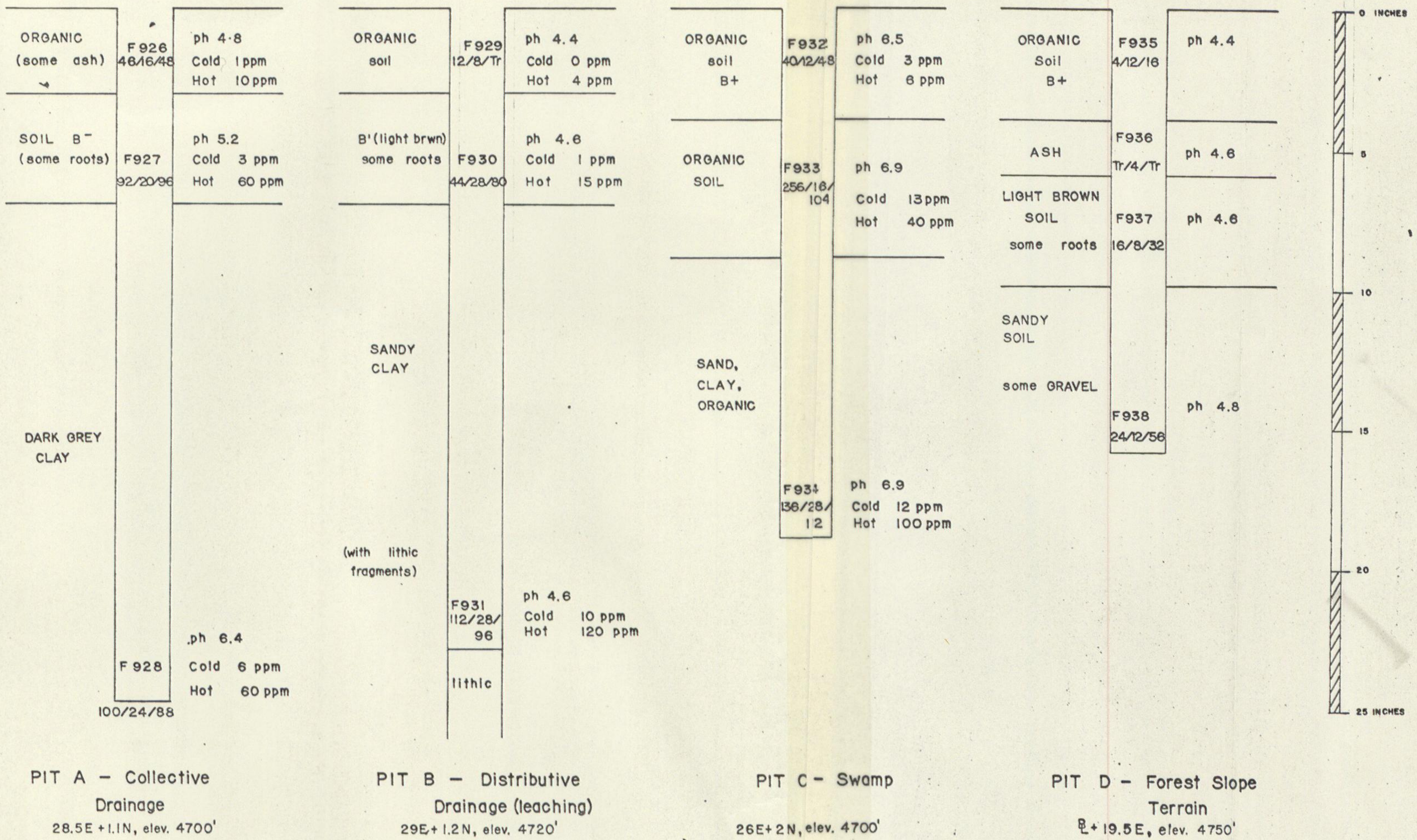
- depth below organic layer (in inches)
- depth below surface (in inches)
- material sampled.
  - B^- - light brown soil
  - B^+ - dark brown or black
  - G - grey soil
  - Ø - orange tinged soil
  - A - ash

Soil Profile

- G - well developed
- P - poorly developed
- X - disturbed (talus, etc.)
- Ø - organic (swamp, etc.)
- F - frozen ground

TABLE C 2

Soil Profile - Casca Property

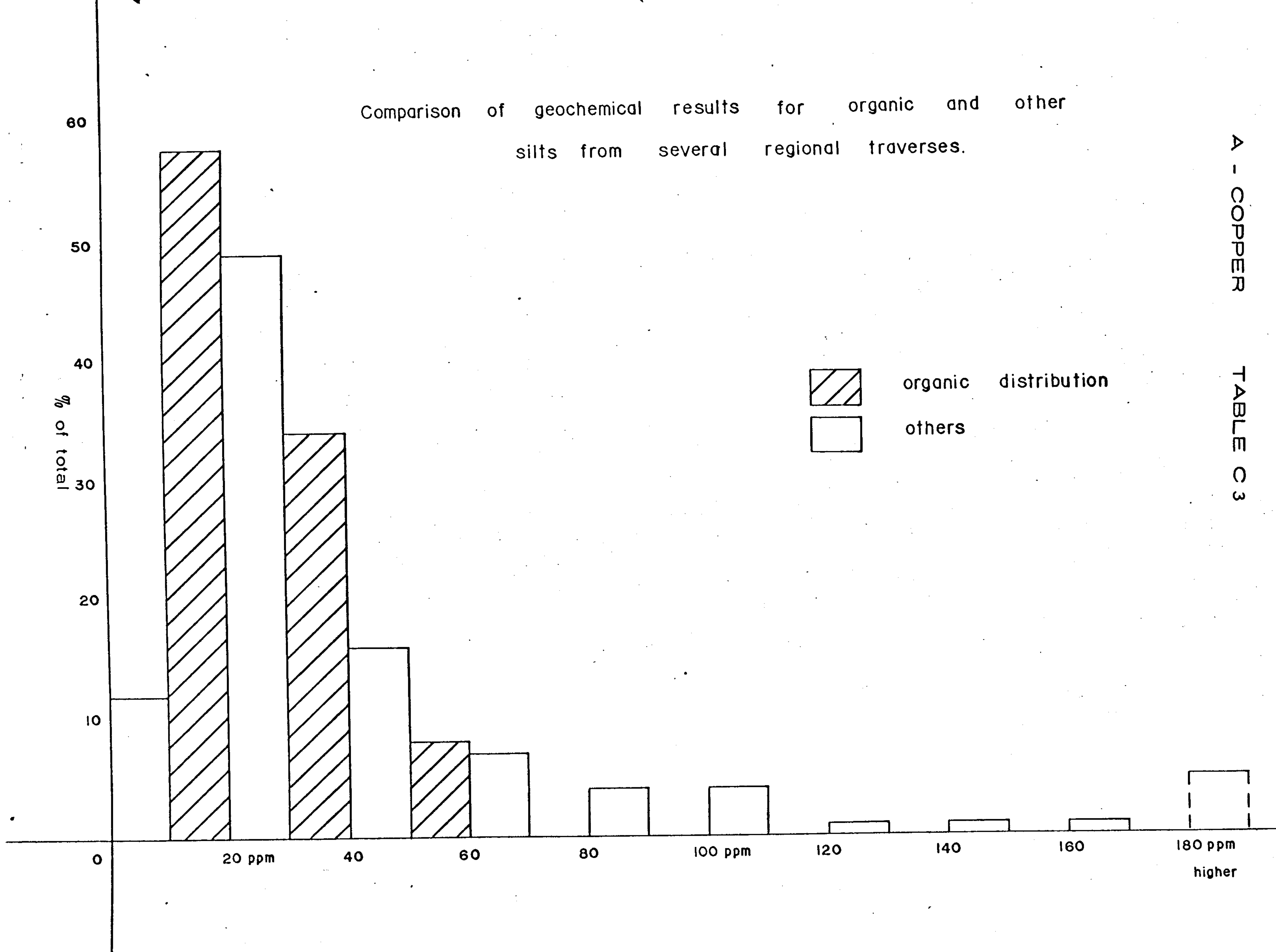


LEGEND

F935.	Soil Sample Number
4/8/12	Soil Values (Cu/Pb/Zn) from Laboratory
Tr	Trace

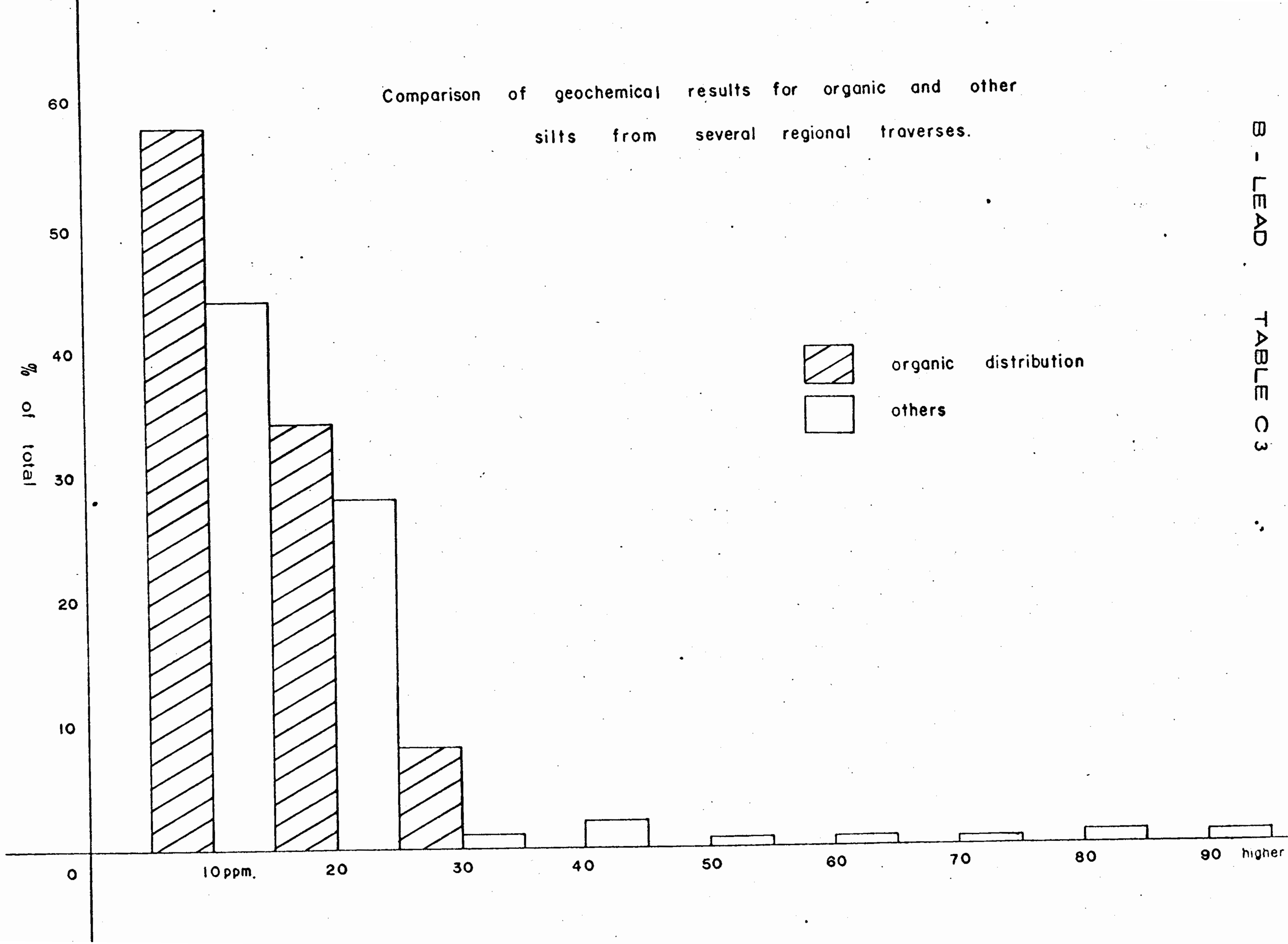
Hot and Cold copper field lab. results are indicated to the right of each profile.

A - COPPER TABLE C3



B - LEAD TABLE C3

Comparison of geochemical results for organic and other silts from several regional traverses.



C - ZINC TABLE C 3

Comparison of geochemical results for organic and other silts from several regional traverses.

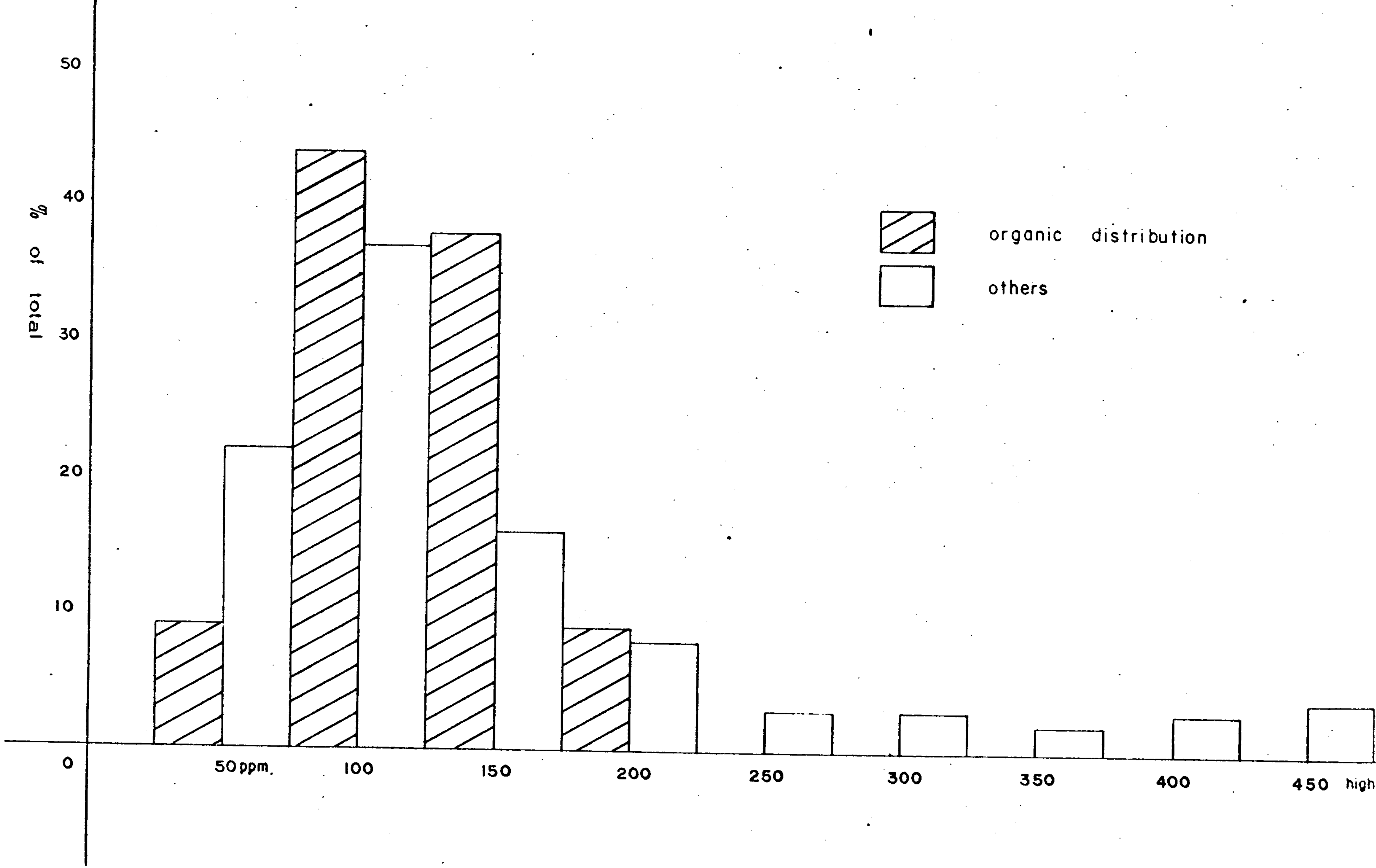


TABLE C 4 CASCA PROPERTY A ZONE

Anomaly Decay Downstream from Northern Massive Sulphide Zone

"Threshold anomaly" values defined as Cu - 50 ppm, Pb - 45 ppm, Zn - 200 ppm from regional work.

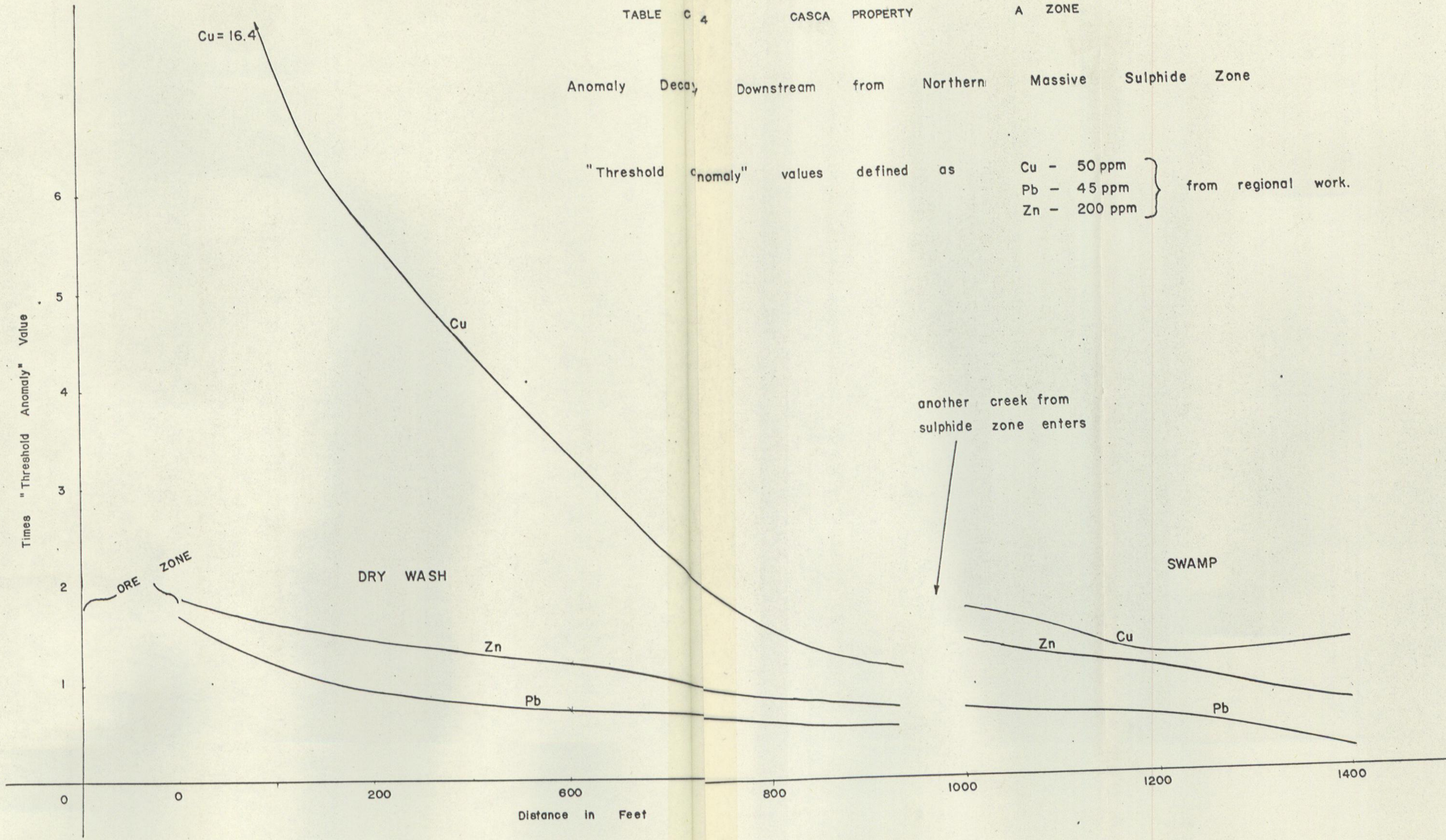


TABLE C - 5

SILT PARAMETER CODE - CASCA PROPERTY

Stream Potential

→ Velocity : O (stagnant) to 3 (very rapid)

→ Size: "O" (dry) to +++ (major stream)

→ Stream direction (for identification)

2 ++ NE/ × / ϕ^- ✓

Access to bedrock

✓ - likely
× - unlikely
? - no clue

Sample Data

take from :-
✓ - active streambed
B - bank or dry wash
↓ - beneath streambed

Sample was:-

ϕ^+ - organic refuse
ϕ^- - organic "silt"
✓ - silt
S - sandy
G - gravelly

TABLE C - 6

DATA ON THE SAMPLED OUTCROPS OF THE MASSIVE SULPHIDE ZONE

R - replacement
M - massive
- on fractures

$+$ - substantial (1% $+$ for chalcopyrite))
$\circ$ - moderate concentrations) for richest portions observed.
$-$ - minor amounts)

Note: All outcrops extremely variable in mineral content. Minor Pb, Zn common.

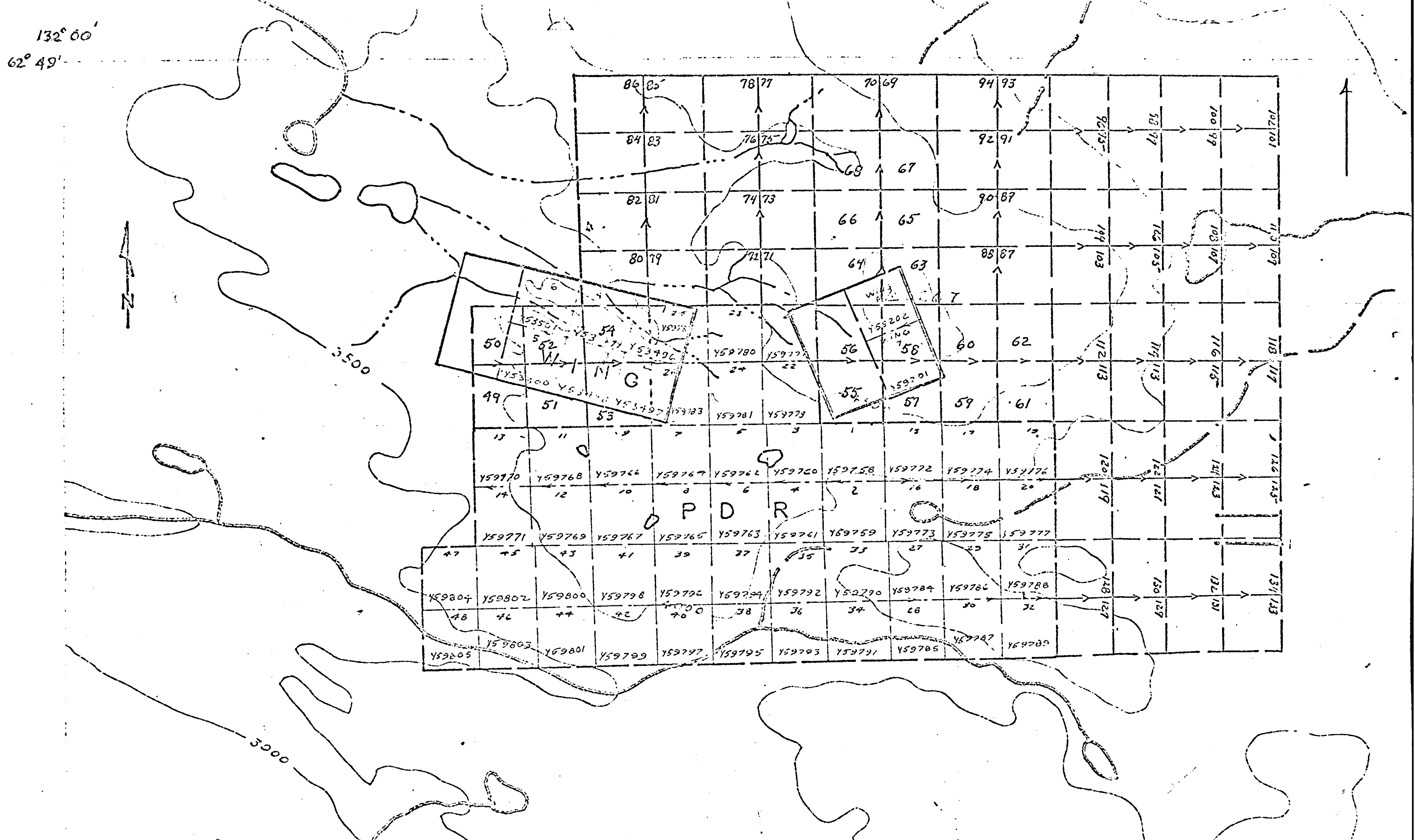
Outcrop	Location	Chalcopyrite	Pyrrhotite	Pyrite	Arseno-pyrite	Others	Lithology	Structure	Comments
A-main	22^{70}N 39^{40}E	R^{+}, m^{+}	R^{+}	R°	m^{+}, R^{+}		quartzite, diopside skarn	not clear	very rich, but size not known
A-NE extension	26N 36E	R^{+}, m^{+}	R^{+}, m^{+}	R^{+}, m^{+}			chert, diopside skarn	bedding 140/70SW	not sampled - near contact with small stock
B	23N 33^{50}E	R°, $\#^{\circ}$		$R^{-}\#^{-}$	$\#^{\circ}$ m^{+}, R^{+}	minor galena	chert, diopside skarn	bedding 145/75SW shear 140/90	some veining by sulphides
C	23^{85}N 36E	R°, $\#^{-}$		R°	R^{+}.		diopside skarn, cherty sediments		circa 50' from an intrusive
D	27N 43^{20}E	$\#^{\circ}$, R^{+}	$\#^{\circ}$, R^{+}		R^{+}		quartzite, diopside skarn	banded	near main pluton margin

TABLE C-6 ---2.

Outcrop	Location	Chalcopyrite	Pyrrhotite	Pyrite	Arseno-pyrite	Others	Lithology	Structure	Comments
E	30^{25}E 26^{25}N to 27N 30E	R^-		R°	R°		chert, diopside skarn	155/75SW shearing	
F	31^{75}N 31^{25}E	R°, m°	R°, m^+				chert, diopside skarn	145-165/65NW	
G	34^{40}N 42E	R^+ $\#^+$	R°, $\#^\circ$		R°, $\#^\circ$	mala-chite	skarn	not clear	southern end of northern sulphide zone.
H	40^{50}N 35E	$\#^-$, R°	R^+	$\#^-$	R^+		chert and diopside skarn	bedding 150/60SW	
I	41^{70}N 37^{40}E	R^-	R^-		R°		quartzite chert diopside skarn	discontin-uous sulphide lenses	included only to complete sampling moss-section
J	42^{30}N 38E	R^+	R^+	R^+	R^+		diopside skarn, chert		large outcrop
K	43N 39E	R^+	R^+	R°	R°		diopside skarn chert, qtz	skarns and cherts interbanded	large group of outcrops.
L	46N 37^{20}E	R^+, vugs	R^+		R°		diopside skarn chert	patchy	northernmost O.C. in main sulphide zone.

TABLE C-6 ----3.

Outcrop	Location	Chalcopyrite	Pyrrhotite	Pyrite	Arseno-pyrite	Others	Lithology	Structure	Comments
M-1	51 25N 29E	R−, #− vugs	#°, R+	R+			quartzite chert diopside skarn		"M" series farthest from pluton
M-2	52 50N 29E	#°, vugs		R+ vugs		calcite vein-ing & galena	quartzite	fractures at 25/90	
M-3	52N 28 25E	R°, m°, #°	#°, m°	R°, m°			grit, chert, diopside skarn	bedding 140/50NE	
N	39 70N 40 50E	R°, #−	R°	R°, #−	R+		chert diopside skarn	zoned	



132° 00'
62° 49'
N
3500
3000
W I N G
P D R
Y59780
Y59783 Y59781 Y59779
Y59770 Y59768 Y59766 Y59764 Y59762 Y59760 Y59758 Y59772 Y59774 Y59776
Y59771 Y59769 Y59767 Y59765 Y59763 Y59761 Y59759 Y59773 Y59775 Y59777
Y59804 Y59802 Y59800 Y59798 Y59796 Y59794 Y59792 Y59790 Y59784 Y59786 Y59788
Y59805 Y59803 Y59801 Y59799 Y59797 Y59795 Y59793 Y59791 Y59785 Y59787 Y59789

CERTIFICATION

I, RONALD B. STOKES, do hereby certify that:

1. I am a practicing Professional Mining Engineer with office at Suite 213 - 678 Howe Street, Vancouver 1, British Columbia and resident of Vancouver.

2. I am a graduate of the Camborne School of Mines, Cornwall, England, 1952 in Mining Engineering.

3. I have practised Mining Engineering and Mining Exploration for nineteen years, sixteen of which were based in British Columbia.

4. I am a Member, in good standing, of the Association of Professional Engineers of the Province of British Columbia.

5. I am a Member of the Canadian Institute of Mining Metallurgy and Associate Member of the Institution of Mining & Metallurgy, England, and the Australasian Institute of Mining & Metallurgy.

6. I am president of Stokes Exploration Management Co. Ltd. (SEMCO) which carried out the program of exploration.

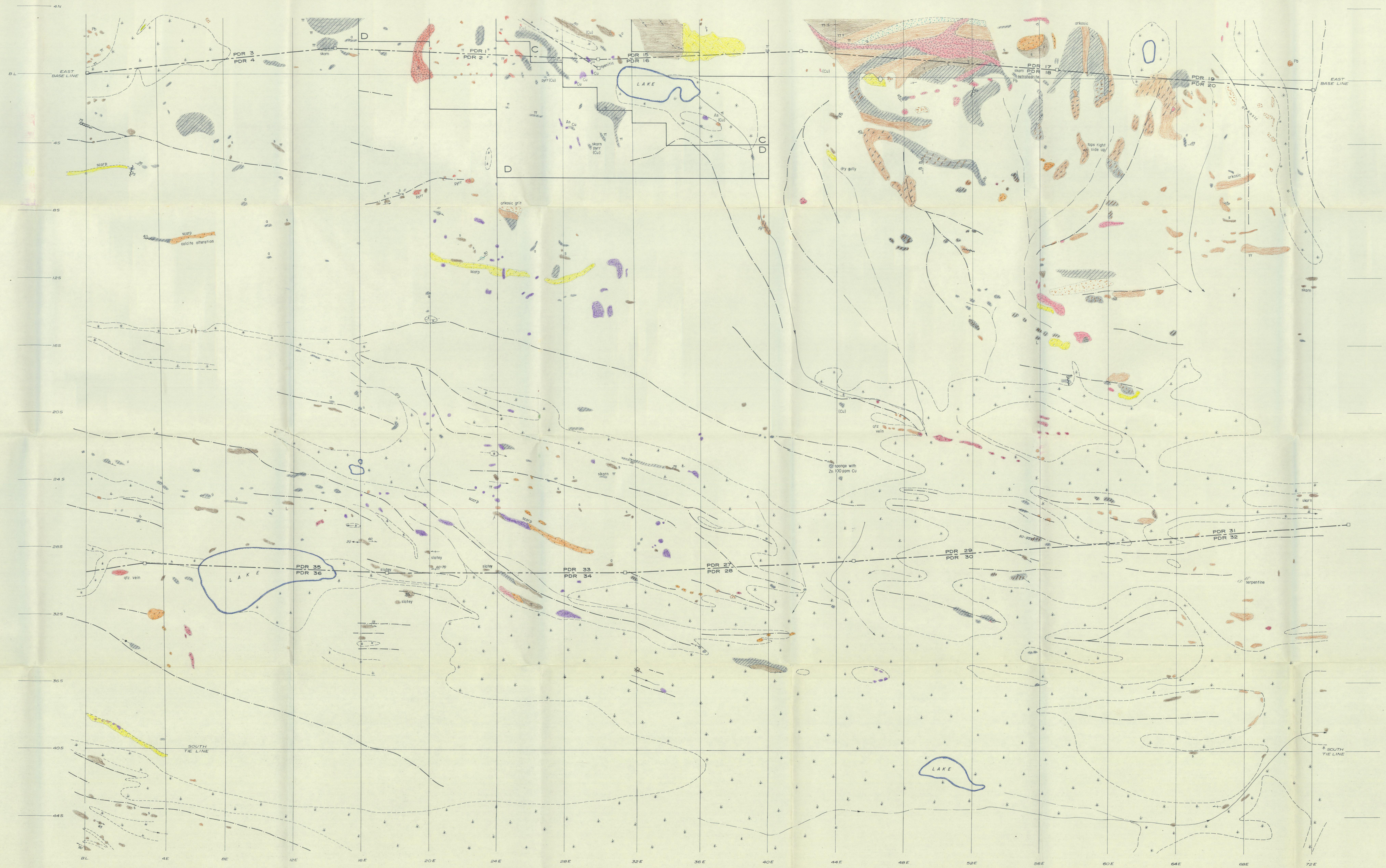
   This report is based on study and interpretation of data assembled by a SEMCO team and work carried out under my supervision. The work was carried out directly by R.R.Culbert, Ph.D.,P.Eng.

7. We have no direct, indirect or anticipated interest in the Casca, Kusawa or Watson properties.

R B Stokes

R. B. STOKES, P.ENG.

LEGEND
GEOLOGY
Alluvium, mudslide-landslide debris
CRETACEOUS-TERTIARY ?
Quartz dyke massive
Gabbro
Low potassium porphyry including altered versions of KLINGIT intrusive
Quartz porphyry felsites
KLINGIT intrusive (Granodiorite mainly) and major dyke system
Syenite phase
Dyke complex – approximately Granodiorite composition
PROTEROZOIC-PALAEOZOIC ?
Meta volcanics, aphanitic greenstone dykes
DOMINANT
MINOR
Reddish, grey, black argillites, slatey argillites and shales
Brownish, white, black metaquartzites and arkosic metaquartzites, siltstone
Quartz grits, arkosic grits
Laminated to thin-bedded, (rarely thick beds) grey to black limestone usually intercalated with cherts
Banded grey, white and black chert
Grey limestone, massive units 150' - 200' thick
SYMBOLS
Ridge
Stream (flowing, intermittent, dry)
Lake, swamp
Outcrop (all boundaries approximate)
Bedding, slatey or fracture cleavage, jointing or fracture
Fault (defined, approximate, assumed)
Geological boundary (defined, approximate, assumed)
Brecciated zones
A Detailed grid area
claim post
π Pyrite, pyrrhotite (disseminated)
// Laminated or banded
Pb Galena
Zn Sphalerite
Cu (Cu) Chalcopyrite, minor chalcopyrite
pyrr Pyrrhotite
As Arsenopyrite
a Argillitic
s Siliceous
c Conglomerate
gr Graphitic
L Limey
Ⓐ Sample sites
Claim lines
Blazed claim lines
Flagged lines
Cut lines and tie lines
STOKES EXPLORATION MANAGEMENT CO. LTD.
CASCA YUKON
GEOLOGICAL MAP
NORTHEAST QUADRANT
PROJECT CASCA
PROJECT No. 154
DATE OCT., 1971
SCALE 1" = 200 FT



LEGEND

GEOLOGY

Alluvium, mudslide-landslide debris

CRETACEOUS-TERTIARY ?

- Quartz dyke massive
- Gabbro
- Low potassium porphyry including altered versions of KLINGIT intrusive
- Quartz porphyry felsites
- KLINGIT intrusive (Granodiorite mainly) and major dyke system
- Syenite phase
- Dyke complex – approximately Granodiorite composition

PROTEROZOIC-PALAEOZOIC ?

DOMINANT | MINOR

- Meta volcanics, aphanitic greenstone dykes
- Reddish, grey, black argillites, slatey argillites and shales
- Brownish, white, black metaquartzites and arkosic metaquartzites, siltstone
- Quartz grits, arkosic grits
- Laminated to thin-bedded, (rarely thick beds) grey to black limestone usually intercalated with cherts
- Banded grey, white and black chert
- Grey limestone, massive units 150' - 200' thick

SYMBOLS

- Ridge
- Stream (flowing, intermittent, dry)
- Lake, swamp
- Outcrop (all boundaries approximate)
- 60 60 60 Bedding, slatey or fracture cleavage, jointing or fracture
- Fault (defined, approximate, assumed)
- Geological boundary (defined, approximate, assumed)
- Brecciated zones
- A Detailed grid area
- claim post
- π Pyrite, pyrrhotite (disseminated)
- // Laminated or banded
- Pb Galena
- Zn Sphalerite
- Cu (Cu) Chalcopyrite, minor chalcopyrite
- pyrr Pyrrhotite
- As Arsenopyrite
- a Argillitic
- s Siliceous
- c Conglomerate
- gr Graphitic
- L Limey
- Ⓐ Sample sites
- Claim lines
- Cut lines and tie lines

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CASCA YUKON

GEOLOGICAL MAP

SOUTHEAST QUADRANT

PROJECT	PROJECT No.	DATE	SCALE
CASCA	154	OCT., 1971	1" = 200 FT

LEGEND

GEOLOGY

CRETACEOUS-TERTIARY ?

- Alluvium, mudslide-landslide debris
- Quartz dyke massive
- Gabbro
- Low potassium porphyry including altered versions of KLINGIT intrusive
- Quartz porphyry felsites
- KLINGIT intrusive (Granodiorite mainly) and major dyke system
- Syenite phase
- Dyke complex – approximately Granodiorite composition

PROTEROZOIC-PALAEOZOIC ?

- Meta volcanics, aphanitic greenstone dykes
- DOMINANT / MINOR: Reddish, grey, black argillites, slatey argillites and shales
- Brownish, white, black metaquartzites and arkosic metaquartzites, siltstone
- Quartz grits, arkosic grits
- Laminated to thin-bedded, (rarely thick beds) grey to black limestone usually intercalated with cherts
- Banded grey, white and black chert
- Grey limestone, massive units 150' - 200' thick

SYMBOLS

- Ridge
- Stream (flowing, intermittent, dry)
- Lake, swamp
- Outcrop (all boundaries approximate)
- 60 60 60: Bedding, slatey or fracture cleavage, jointing or fracture
- Fault (defined, approximate, assumed)
- Geological boundary (defined, approximate, assumed)
- Brecciated zones
- A: Detailed grid area
- □: claim post
- π: Pyrite, pyrrhotite (disseminated)
- //: Laminated or banded
- Pb: Galena
- Zn: Sphalerite
- Cu (Cu): Chalcopyrite, minor chalcopyrite
- pyrr: Pyrrhotite
- As: Arsenopyrite
- a: Argillitic
- s: Siliceous
- c: Conglomerate
- gr: Graphitic
- L: Limey
- Ⓐ: Sample sites
- Claim lines
- Cut lines and tie lines

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CASCA YUKON

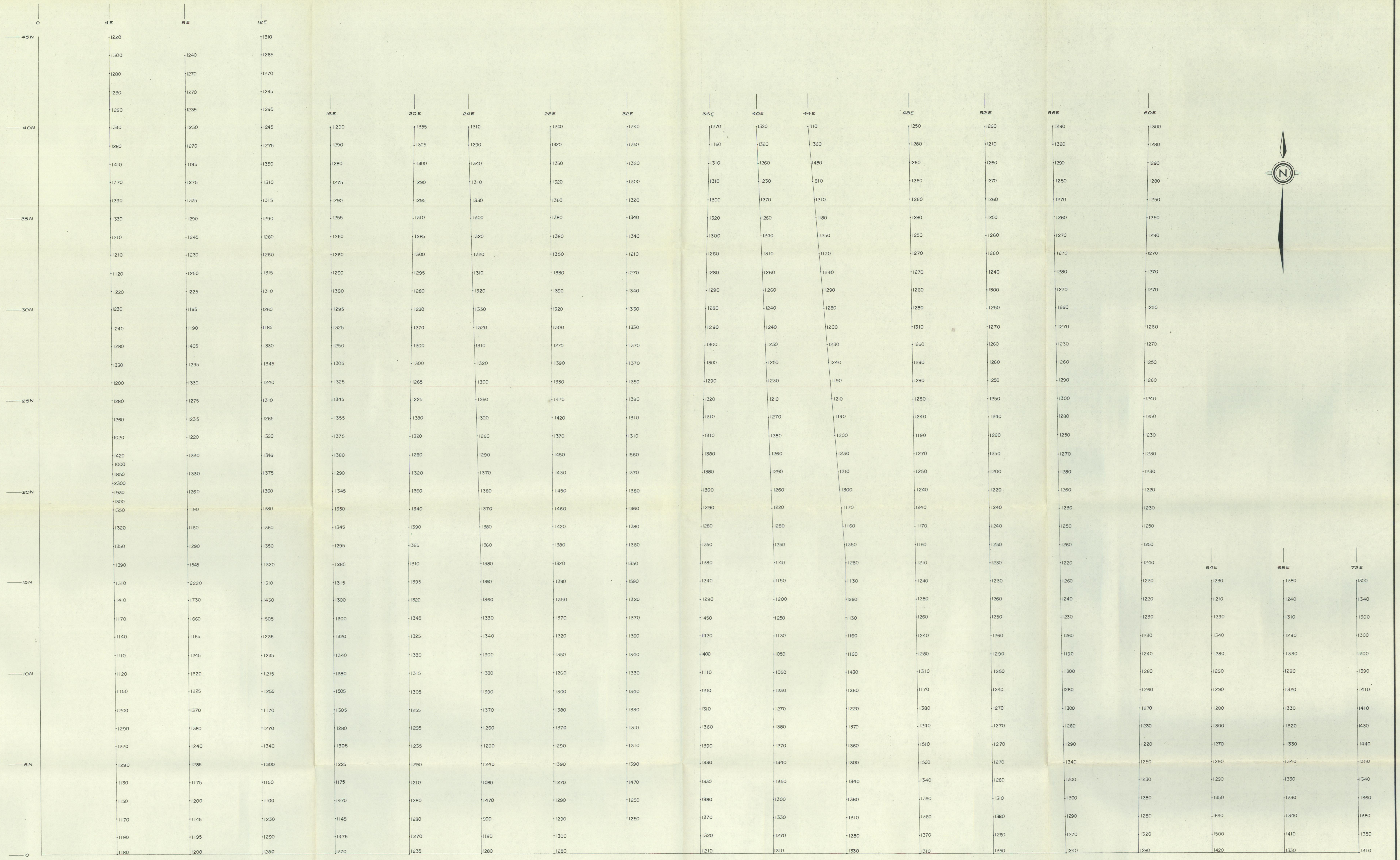
GEOLOGICAL MAP

SOUTHWEST QUADRANT

PROJECT	PROJECT No.	DATE	SCALE
CASCA	154	OCT., 1971	1" = 200 FT

LEGEND
GEOLOGY
Alluvium, mudslide-landslide debris
CRETACEOUS-TERTIARY ?
Quartz dyke massive
Gabbro
Low potassium porphyry including altered versions of KLINGIT intrusive
Quartz porphyry felsites
KLINGIT intrusive (Granodiorite mainly) and major dyke system
Syenite phase
Dyke complex – approximately Granodiorite composition
PROTEROZOIC-PALAEOZOIC ?
Meta volcanics, aphanitic greenstone dykes
DOMINANT
MINOR
Reddish, grey, black argillites, slatey argillites and shales
Brownish, white, black metaquartzites and arkosic metaquartzites, siltstone
Quartz grits, arkosic grits
Laminated to thin-bedded, (rarely thick beds) grey to black limestone usually intercalated with cherts
Banded grey, white and black chert
Grey limestone, massive units 150' - 200' thick
SYMBOLS
Ridge
Stream (flowing, intermittent, dry)
Lake, swamp
Outcrop (all boundaries approximate)
60
Bedding, slatey or fracture cleavage, jointing or fracture
Fault (defined, approximate, assumed)
Geological boundary (defined, approximate, assumed)
Brecciated zones
A
Detailed grid area
claim post
π Pyrite, pyrrhotite (disseminated)
// Laminated or banded
Pb Galena
Zn Sphalerite
Cu (Cu) Chalcopyrite, minor chalcopyrite
pyrr Pyrrhotite
As Arsenopyrite
a Argillitic
s Siliceous
c Conglomerate
gr Graphitic
L Limey
Sample sites
Claim lines
Cut lines and tie lines
N
LAKE
NORTH TIE LINE
WEST BASE LINE
B.L.
40N
36N
32N
28N
24N
20N
16N
12N
8N
4N
72W
68W
64W
60W
56W
52W
48W
44W
40W
36W
32W
28W
24W
20W
16W
12W
8W
4W
PDR 25
PDR 26
PDR 23
PDR 24
WING 6
WING 5
WING 4
WING 3
WING 1
WING 2
A
B
D
E
F
G
STOKES EXPLORATION MANAGEMENT CO. LTD.
CASCA YUKON
GEOLOGICAL MAP
NORTHWEST QUADRANT
PROJECT
CASCA
PROJECT No.
154
DATE
OCT., 1971
SCALE
1" = 200 FT


N
no outcrop
scattered quartzite outcrops
Drill Camp
Helipad
open slope
intermittent quartzite outcrops
Quartzite Creek debris
sponge
intrusive overburden
quartzite overburden
LEGEND
GEOLOGY
Talus, felsenmeer
KLINGIT intrusives, dominantly biotite, granodiorite
DOMINANT MINOR
Reddish, grey, black argillite, slatey argillite, shale
Brownish, white, black metaquartzites, siltstone
Quartz grit, arkosic grit
Laminated to thin-bedded limestone with chert
Banded grey and white chert
Skarn
Massive sulphides
SYMBOLS
Ridge
Stream (flowing, intermittent)
Lake or pond, swamp
Outcrop (all boundaries approximate)
Geological boundary (defined, approximate, assumed)
Shear zone
Bedding, slatey or fracture cleavage, jointing or fracture
Lineament
Cut grid line
Flagged grid line
Adjusted grid lines
Blazed claim line
Limey
MINERALIZATION SYMBOLS
Cu+ Cu, (Cu) Chalcopyrite (abundant, moderate, trace)
Zn Sphalerite
Pb Galena
As Arsenopyrite
py Pyrite
pyrr Pyrrhotite
Disseminated pyrite or pyrrhotite
Mineralization on fracture planes
Assay sample site
Trench
STOKES EXPLORATION MANAGEMENT CO. LTD.
CASCA YUKON
GEOLOGICAL MAP
ZONE 'A' MASSIVE SULPHIDES
PROJECT CASCA
PROJECT No. 154
DATE NOV., 1971
SCALE 1" = 100 FT



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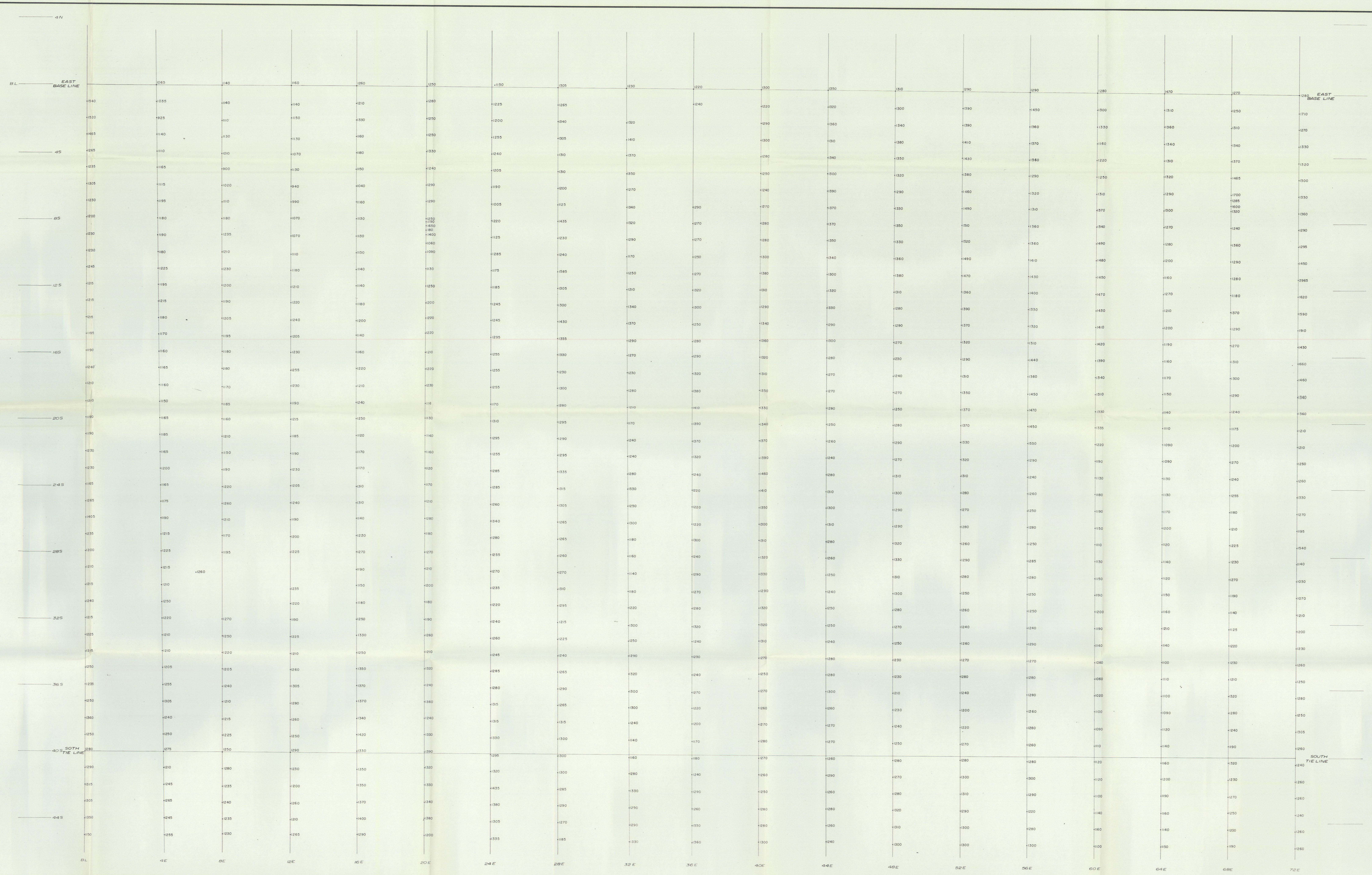
MAGNETOMETER SURVEY RESULTS

NORTHEAST QUADRANT

PROJECT:	PROJ. No.:	DATE	SCALE
CASCA	154	OCTOBER 1971	1" = 200 FT.



STOKES EXPLORATION MANAGEMENT CO. LTD.

CASCA YUKON

MAGNETOMETER SURVEY

SOUTHEAST QUADRANT

PROJECT	PROJECT No.	DATE	SCALE
CASCA	154	NOV. 1971	1" = 200 FT

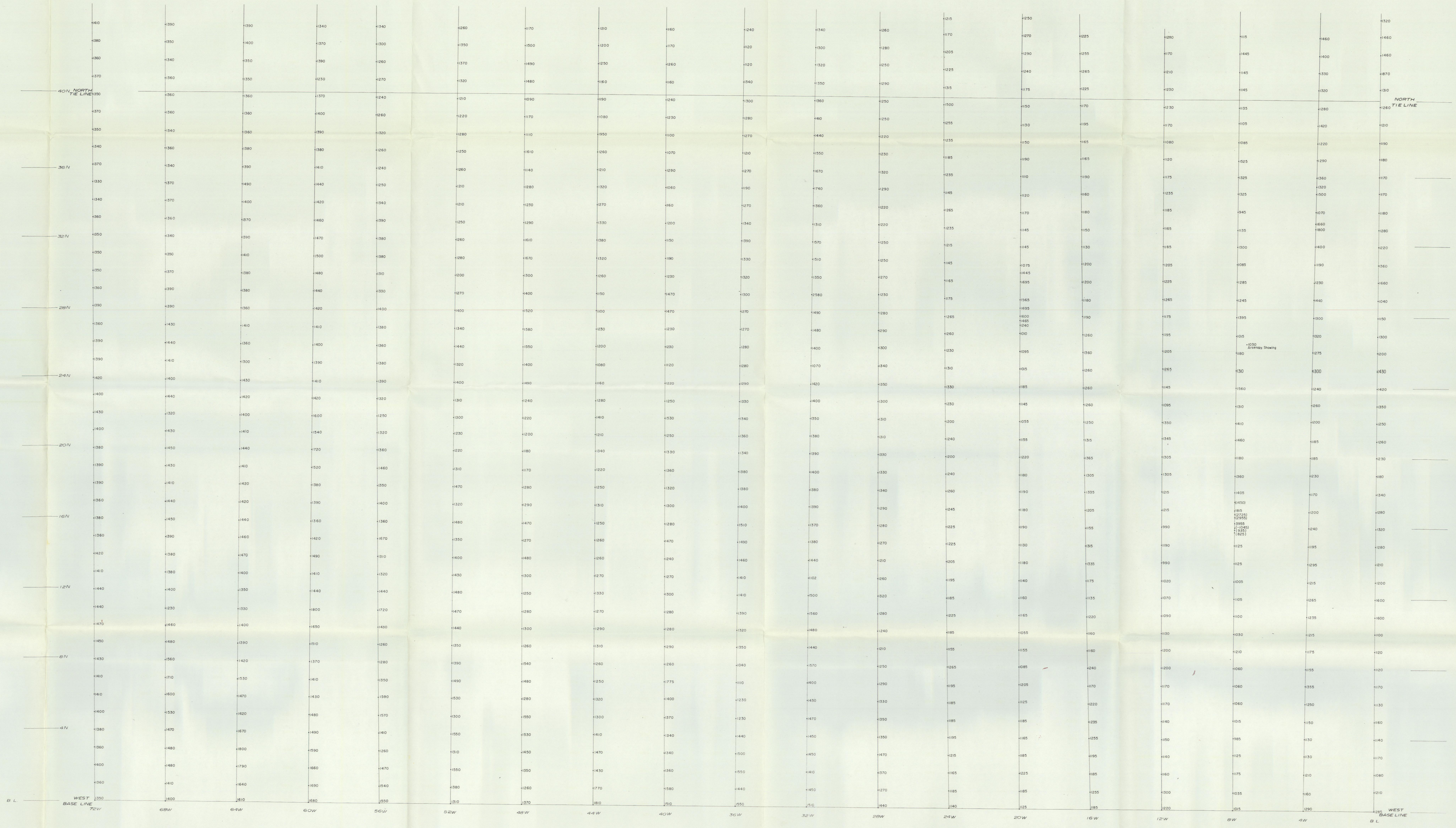
Note: Data for adjustment of SW grid not available at time of plotting.

STOKES EXPLORATION MANAGEMENT CO. LTD.

MAGNETOMETER SURVEY RESULTS

SOUTHWEST QUADRANT

PROJECT:	PROJ. No.:	DATE	SCALE
CASCA	154	OCTOBER 1971	1" = 200 FT.



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CASCA YUKON

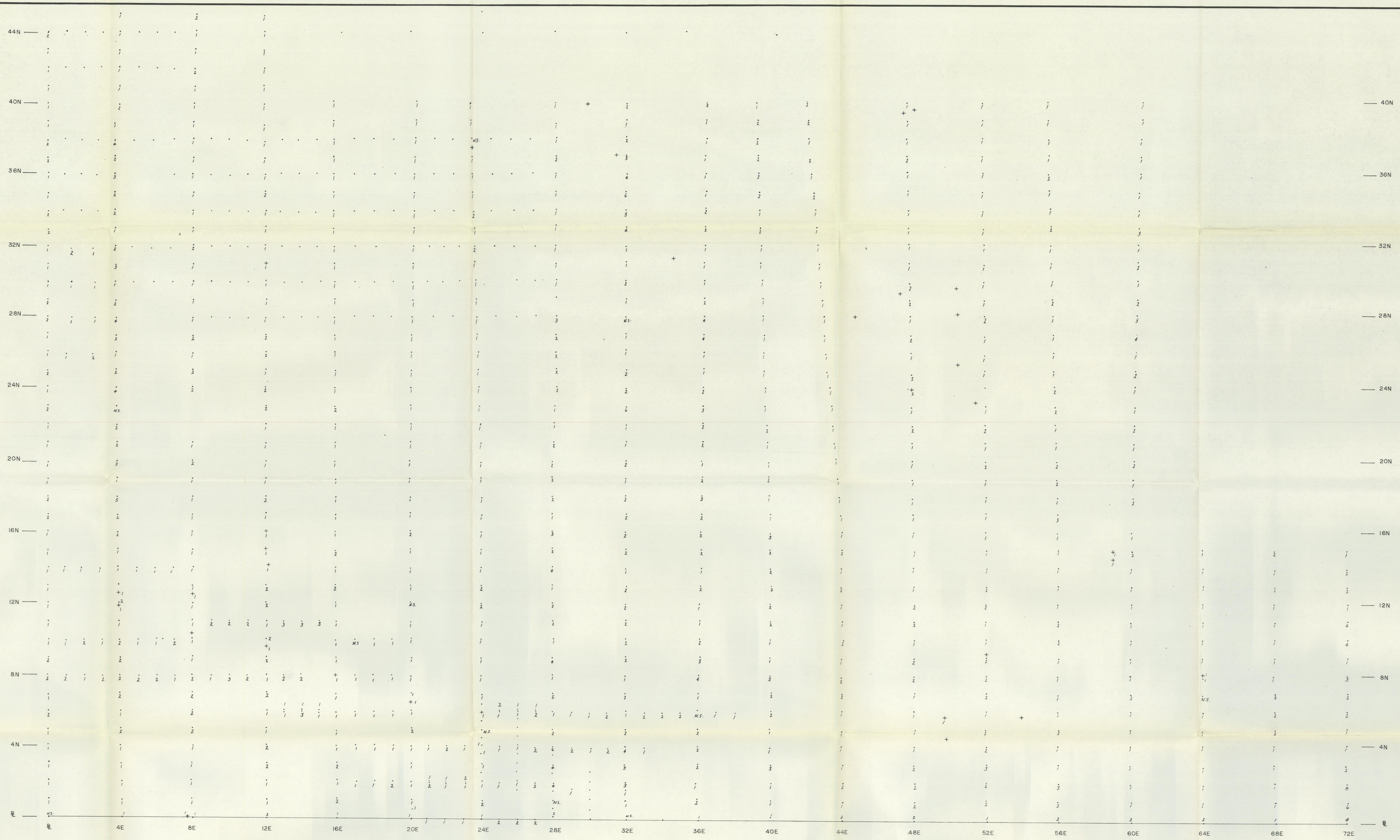
MAGNETOMETER SURVEY

NORTHWEST QUADRANT

PROJECT	PROJECT No.	DATE	SCALE
CASCA	154	NOV., 1971	1" = 200 FT


LEGEND
Cut lines
Flagged lines
Blazed claim line
STOKES EXPLORATION MANAGEMENT CO. LTD.
CASCA YUKON
MAGNETOMETER SURVEY
ZONE 'A' MASSIVE SULPHIDES
PROJECT
CASCA
PROJECT No.
154
DATE
NOV., 1971
SCALE
1" = 100 FT


44N
40N
36N
32N
28N
24N
20N
16N
12N
8N
4N
BL
4E
8E
12E
16E
20E
24E
28E
32E
36E
40E
44E
48E
52E
56E
60E
64E
68E
72E
• SOIL SAMPLE
+ SILT SAMPLE
STOKES EXPLORATION MANAGEMENT CO. LTD.
GEOCHEMICAL MAP
COPPER
NORTHEAST QUADRANT
PROJECT
CASCA
PROJ. No.
154
DATE
SEPT. 1971
SCALE
1" = 200 FT.



· SOIL SAMPLE
+ SILT SAMPLE

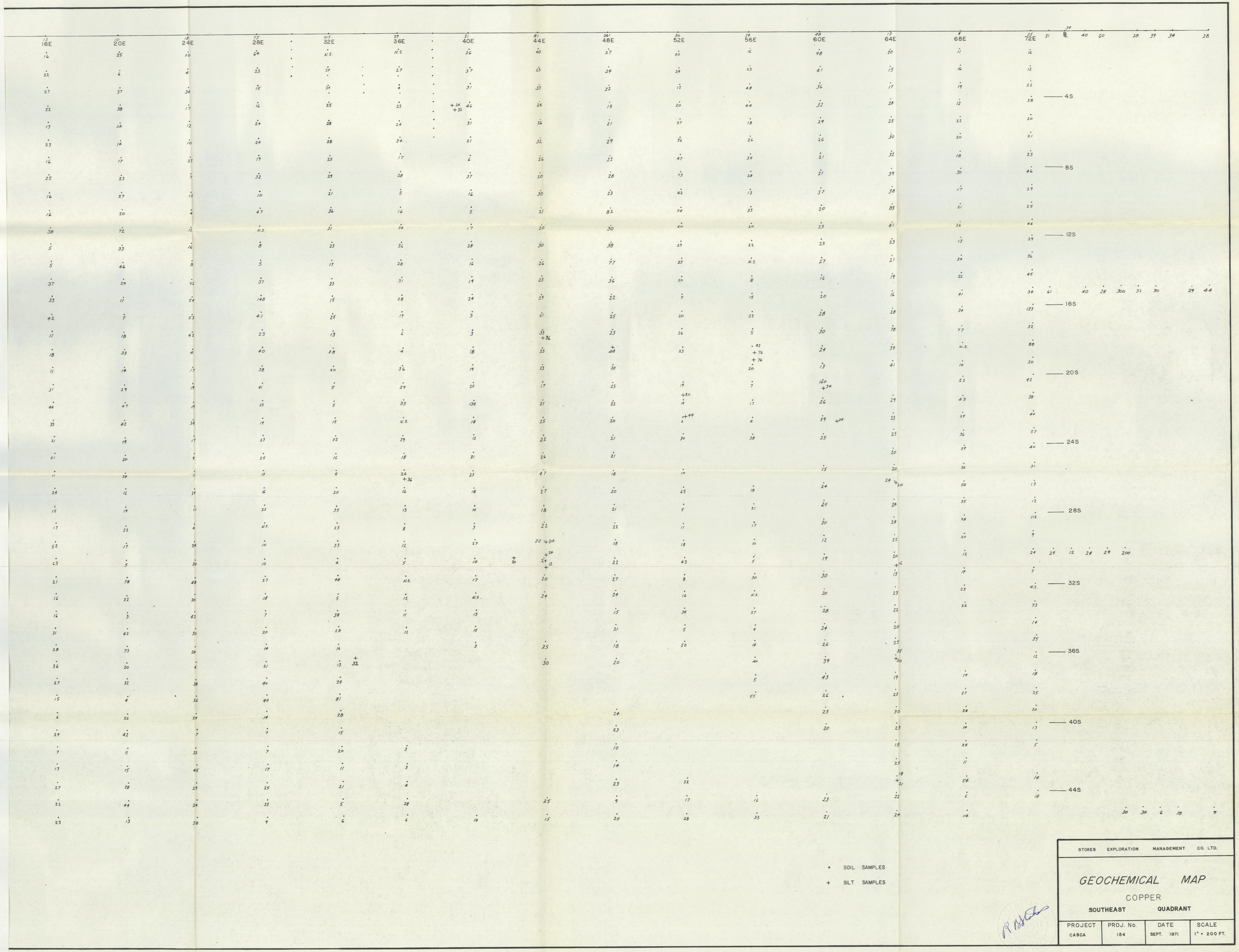
STOKES EXPLORATION MANAGEMENT CO. LTD.

GEOCHEMICAL MAP

MOLYBDENUM

NORTHEAST QUADRANT

PROJECT	PROJ. No.	DATE	SCALE
CASCA	154	SEPT. 1971	1" = 200 FT.


16E
20E
24E
28E
32E
36E
40E
44E
48E
52E
56E
60E
64E
68E
72E
4S
8S
12S
16S
20S
24S
28S
32S
36S
40S
44S
SOIL SAMPLES
SILT SAMPLES
STOKES EXPLORATION MANAGEMENT CO. LTD.
GEOCHEMICAL MAP
COPPER
SOUTHEAST QUADRANT
PROJECT CASCA
PROJ. No. 154
DATE SEPT. 1971
SCALE 1" = 200 FT.


STOKES EXPLORATION MANAGEMENT CO. LTD.
GEOCHEMICAL MAP
MOLYBDENUM
SOUTHEAST QUADRANT
PROJECT
CASCA
PROJ. No.
154
DATE
SEPT. 1971
SCALE
1" = 200 FT.
· SOIL SAMPLES
+ SILT SAMPLES
4E
8E
12E
16E
20E
24E
28E
32E
36E
40E
44E
48E
52E
56E
60E
64E
68E
72E
4S
8S
12S
16S
20S
24S
28S
32S
36S
40S
44S


STOKES EXPLORATION MANAGEMENT CO. LTD.
GEOCHEMICAL MAP
COPPER
SOUTHWEST QUADRANT
PROJECT CASCA
PROJECT NO. 154
DATE SEPT. 1971
SCALE 1" = 200 FT.
· SOIL SAMPLES
+ SILT SAMPLES
72W 68W 64W 60W 56W 52W 48W 44W 40W 36W 32W 28W 24W 20W 16W 12W 8W 4W
84W 80W 76W
4S 8S 12S 16S 20S 24S 28S 32S 36S 40S 44S


STOKES EXPLORATION MANAGEMENT CO. LTD.
GEOCHEMICAL MAP
MOLYBDENUM
SOUTHWEST QUADRANT
PROJECT CASCA
PROJECT NO. 154
DATE SEPT. 1971
SCALE 1" = 200 FT
SOIL SAMPLES
SILT SAMPLES
72W 68W 64W 60W 56W 52W 48W 44W 40W 36W 32W 28W 24W 20W 16W 12W 8W 4W ℄
84W 80W 76W
℄ 4S 8S 12S 16S 20S 24S 28S 32S 36S 40S 44S

STOKES EXPLORATION MANAGEMENT CO. LTD.

GEOCHEMICAL MAP
COPPER
NORTHWEST QUADRANT

PROJECT	PROJ. No.	DATE	SCALE
CASCA	154	SEPT. 1971	1" = 200 FT.


44N
40N
36N
32N
28N
24N
20N
16N
12N
8N
4N
72W
68W
64W
60W
56W
52W
48W
44W
40W
36W
32W
28W
24W
20W
16W
12W
8W
4W
· SOIL SAMPLES
+ SILT SAMPLES
STOKES EXPLORATION MANAGEMENT CO. LTD.
GEOCHEMICAL MAP
MOLYBDENUM
NORTHWEST QUADRANT
PROJECT CASCA
PROJ. No. 154
DATE SEPT. 1971
SCALE 1" = 200 FT.


LEGEND
Cut lines
Flagged lines
Blazed claim line
STOKES EXPLORATION MANAGEMENT CO. LTD.
CASCA YUKON
GEOCHEMICAL MAP
COPPER
ZONE 'A' MASSIVE SULPHIDES
PROJECT
CASCA
PROJECT No.
154
DATE
NOV., 1971
SCALE
1" = 100 FT

<u>LEGEND</u>

- Cut lines
- Flagged lines
- Blazed claim line

STOKES EXPLORATION MANAGEMENT CO. LTD.

CASCA YUKON

GEOCHEMICAL MAP

MOLYBDENUM

ZONE 'A' MASSIVE SULPHIDES

PROJECT	PROJECT No.	DATE	SCALE
CASCA	154	NOV., 1971	1" = 100 FT