

# DYNASTY EXPLORATIONS LIMITED

(N. P. L.)

328 MARINE BUILDING  
355 BURRARD STREET  
VANCOUVER 1, B. C.

Chief Mining Recorder,  
Federal Building,  
Whitehorse, Y.T.

Dear Sir;

Submitted to you for the purposes of assessment work is the following report, 'Geochemical Survey, Dea and Dy (SE) Group'. The total costs incurred for this geochemical survey are to be applied as a portion of the assessment work required to hold the following claims:

Full claims to hold for one (1) year,

Dy 1 - 6	Dea 11 - 20
Dy 8	Dea 32 - 43
Dy 12 - 30	Dea 52 - 55
Dy 48 - 49	
Dy 71	
Dy 72	

Full claims to hold for two (2) years,

Dea 44 - 51

Additional assessment work for the above claims will be obtained from Geophysical and geologic surveys.

Respectfully submitted,

  
John S. Brock

**GEOCHEMICAL SOIL SAMPLING SURVEY**

**DEA & DY (SE) CLAIM GROUPS**

**Location: 133° 02' W. long.  
62° 12' N. lat.**

**Reference: Claim Sheet 105 K3**

**WHITEHORSE MINING DIVISION**

**SWIM LAKE AREA**

**YUKON TERRITORY**

**by: John S. Brock  
March 1965**

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## INTRODUCTION

### General

From August 23 to September 11, 1964, Dynasty Explorations Limited, carried out a soil sampling survey over a portion of its DEA claim group and some of its DY (SE) claims. The limits of survey coverage are outlined on the enclosed claim map (see key map). Soil surveys were used in order to obtain samples that were then analysed for zinc and copper trace element content. Geochemical anomalies obtained by the compilation of these results were used as a guide to possible base metal deposits in the area. Such data was viewed in conjunction with geologic and geophysical information in order to determine favorable areas for further exploration.

### Location and Access

The DEA and DY (SE) mineral claims are situated east of Blind Creek on a divide between Swim Lake and the Pelly River, in the Whitehorse Mining District, Yukon Territory (claim sheet 105 K3).

Direct access from Dynasty's Swim Lake Base camp to the southern limit of the DEA claim group may be made by wheeled vehicles. Access roads have been constructed from the southeast end of Swim Lake (base camp) as well as from the central south shore of Swim Lake to the areas of major geochemical and geophysical anomalies on the claim groups. A helicopter pad has been constructed near the northeast shore of the lake situated in the central portion of the DEA group.

## TOPOGRAPHY AND VEGETATION

### Topography

The claims lie in an area of gentle relief except for the north, west and south boundaries which slope steeply into Swim Lake, Blind Creek and the Pelly River Valley respectively. Elevations range from 3,000 to 4,000 feet above sea level. Most slopes in the central area of the claims range from 5 to 10 degrees, slopes into the Pelly River Valley and Blind Creek may steepen to as much as 45 degrees.

The direction of glaciation is east to west, large accumulations of glacial till are evident in the southern parts of the DEA claim group. Steep banks of till, formed by erosion, are as much as 100 feet in relief.

Major topographic depressions are usually characterized by lakes. Drainage in most cases is well developed and occupies well formed channels.

### Vegetation

Much of the area has been burned over in which case, willows, buck brush, and heavy growths of slide alder predominate. Some sections of the property retain small stands of spruce. Areas of flat relief are usually characterized by swamp and muskeg.

## GEOLOGY

From a private report to Dynasty Explorations Limited by John F. Fairley.

### DY Southeast Area (Northwest Magnetic Anomaly)

Small amounts of Pyrrhotite and Pyrite mineralization in a coarse foliated, very fine grained, shale-quartzite formation occur three hundred feet north of a high mafic quartz diorite. A prominent low narrow (one-hundred-foot) ridge continues northwest for about one mile and marks the intrusive which likely has an attitude of approximately 130/80N. Drag-folded siliceous chlorite schist containing some pyrite and graphite underlies the shale. Two hundred feet farther north, high mafic, medium-grained greenstone gabbro is devoid of any mineralization.....

.... Further examination would be warranted here, although little possibility of economic mineralization exists, as the host rocks differ considerably from those of other occurrences. The ground magnetic anomaly is obtained over the greenstone-gabbro formation.

### DEA Claim Group

.... In the vicinity of the central west end of the DEA group a unique situation exists with black cherty quartzite and shale occurring lower than normal in the greenstone section (Unit 8, Roddick and Green, 1961). This could be accounted for by a series of steep southwest-dipping normal faults lowering the quartzite and shale series to the south. (Note that these do not show up.)

In the area of the DEA west magnetic anomaly greenstone of an apparent intrusive origin is found south of the quartzite and shale series. Also associated with the intrusive greenstone is coarse-grained gabbro and brecciated quartz containing magnetite mineralization.

Reference should be made to the geologic map of the area as presented in Fairley's report.

## OVERBURDEN CONDITIONS

Glacial till is most evident over the south and western portions of the DEA claim group. Sections of over 100 feet thickness have been measured where local erosion has caused exposure to depth. Accumulations of glacial till occur irregularly over most sections of the DEA and DY (SE) claims but with varying depths of unknown limits. It is suspected that depths of glacial till in most areas do not exceed four to five feet with the exception of known localities. The glacial till consists mostly of clay to coarse sand sized material containing frequent rounded pebble to boulder sized granitic erratics and platy fragments of schist.

### OVERBURDEN CONDITIONS (Continued)

No geochemical test pits were dug on the survey area. It is conceivable that much of the soil could be transported and re-deposited within localized areas due to glacial action. Normally, in areas of no glacial overburden, the soil profiles consisted of the principal horizons, A, B, and C.<sup>1</sup> A typical section would usually consist of a few inches of organic debris, underlain by the A-1 horizon (organic, dark brown, humus rich), followed by several inches of volcanic ash. Below the ash horizon, horizons of A-2, B, and C were usually present. Recognition of the subdivisions of each soil horizon was not always possible and subsequently was not done. Underdeveloped soil horizons were often encountered as well as immature and truncated soil profiles. Where possible, the B horizon near the C horizon contact was sampled. In areas of poor drainage, G soils were usually found and sampled.

The survey area was not studied thoroughly with respect to soil types and horizon formations. Many areas were made up of accumulations of glacial till in which soil horizons had been formed with similar characteristics to those found in the residual overburden. These were sampled but at the time of survey identified as residual or parental soil types. Only in obvious cases were large accumulations of glacial overburden noted.

### SURVEY TECHNIQUES

#### Soil Sampling

The soil sampling survey was carried out in conjunction with the magnetometer survey. Two soil samplers were employed, one to dig the sample with a prospector's grub-hoe, the other to bag the sample in a polyethylene sample bag and to label it in accordance with the station at which the sample was taken. The magnetometer operator noted the soil horizon from which the sample was taken as well as any prevalent topographic features. Samples were taken at 200-foot stations established by pace and compass methods. Cross lines were spaced at 400-foot intervals as established by chained and picket base lines.

Due to the inconsistency of specific soil horizons as well as variable depths to favorable horizons, samples were taken from an average depth of approximately one and one half feet. Soils of the upper B horizon were usually encountered except in areas of much glacial till and overburden. Soils of large organic content were not sampled; in areas of immature soils the C horizon was sampled; G type soils were taken from areas of poor drainage.

Three test pits were dug by hand in order to try to determine the cause of several sharp magnetic peaks. The pits were soil sampled on the basis of the nature of the material encountered.

<sup>1</sup>Ref. Appendix 1 for discussion of soil types.

### Method of Analysis

All samples were tested for copper and zinc by the geochemical laboratory at the Department of Geology, University of British Columbia. Copper and zinc were extracted from the soil by hot sulphuric acid. The sulphuric acid extracts all copper and zinc present except for that held in silicate structures. Copper was extracted from the acid solution by biquinoline in amyl alcohol, zinc by dithizone in carbon tetrachloride. All results were presented in parts per million of the total weight of the portion of the sample analyzed. A detailed description of the analytical procedure used is given in Appendix 2.

## RESULTS

### Presentation of Results

The results as measured in parts per million are plotted with respect to the station at which they were taken on map 6c. The zinc and copper content are contoured separately to better outline anomalous areas (maps 6d and 6e). Zinc content is contoured using a 200 parts per million contour interval up to 1000 parts per million from a threshold value of 100 parts per million. Copper content is contoured using a 10 parts per million contour interval from a threshold value of 20 parts per million. The outline of the magnetic anomaly (ground survey) has been plotted as are the areas of swamp, heavy layers of organic rich soils and major drainage trends on maps 6d and 6e. All maps are on the scale of 1 inch to 500 feet.

### Distribution and Interpretation of Anomalies

**Zinc:** The threshold value of 100 parts per million was chosen only on the basis of visual inspection of laboratory results. All values below 100 parts per million are considered as background.

The geochemical zinc anomaly of greatest interest is coincident in location with the area of greatest magnetic disturbance. The zinc anomaly and ground magnetics anomaly do not possess any similar directional trends. A 'high' of 720 parts per million zinc was obtained over the areas of highest magnetic relief. The most southerly geochemical anomaly reaches a high of 3410 parts per million zinc. This anomaly follows a drainage trend situated in a topographic depression and is flanked to the west by a steep bluff of glacial overburden. The anomalous values of zinc in this area may be due to: accumulation of migratory ions from glacial till to the west and/or drainage influence from causative structures in proximity with the magnetic anomaly to the northeast. To the north is another zinc anomaly of greater areal extent but lower values of anomalous zinc content. This anomaly also reflects local drainage trends and topographic depressions but could originate in the area of the magnetic 'high' to the west.

Local spot 'high' zinc anomalies have not been accounted for although it is thought that many may occur due to float contained within glacial debris. It appears that zinc ions tend to accumulate at the bases of glacial bluffs. This is evident on the north side of the creek south of the most eastern anomaly on the DEA claim group. Glacial bluffs also border the western side of the southern geochemical anomaly.

Distribution and Interpretation of Anomalies (Continued)

On the northern end of the DY (SE) claim group an anomaly of low relief (370 parts per million zinc) but large areal extent was obtained. The area is composed of steeply dipping slopes to the north, on the lower reaches and bases of which much drainage and accumulation of silts was observed. The anomaly here appears to be due entirely to migration of zinc ions.

Copper: Anomalous copper content is considered as samples over 20 parts per million. There are no definite associations between copper and zinc anomalies. The copper anomalies in most cases are based on single values. The area of greatest interest is situated in proximity to the southern zinc and magnetic anomalies.

CONCLUSIONS

Not enough information was obtained concerning soil types in the area surveyed and their influences on geochemical values. Some control was kept as to location and approximate depth of glacial overburden in extreme cases, but the influences of small and shallow covers of glacial till as to geochemical results are not known. It was found that geochemical anomalies tend to form at the base of thick sections of glacial till. This may be due to basal runoff of ground waters percolating through the overburden section as well as migration of ions from an anomalous body that has been masked by the overburden.

All of the major zinc anomalies are controlled by drainage and topography. There is very little spatial relationship between the magnetic anomalies and those of a geochemical nature. Follow-up of the geochemical anomalies must include a study of local topographic features that would tend to control the dispersion of zinc and copper ions on surface.

Geochemical anomalies of the southwest portion of the claim group should be investigated further by extending the survey downslope towards the Pelly River. This would provide more data as to the extent of control provided by topography on the major anomalies.

Approved  
Law E. H. H.

**REFERENCES**

**GEOLOGY: From a private report to Dynasty Explorations by  
John F. Fairley, 1964.**

**GEOCHEMISTRY IN MINERAL EXPLORATIONS  
Hawkes and Webb, Pub. 1961, Harper and Row.**

**GEOCHEMICAL SOIL SAMPLING SURVEY ON THE DY (NW) CLAIM GROUP  
A Private report to Dynasty Explorations by  
John S. Brock, 1964.**

## **APPENDIX**

## APPENDIX 1

### CLASSIFICATION OF SOIL TYPES

from: **GEOCHEMISTRY IN MINERAL EXPLORATION**, H.E. Hawkes  
and J.S. Webb; Harper and Row (1962). pp. 92-95

#### Soil Profile Development

Soil profiles vary in makeup within wide limits according to their generic and geographic environment. Most profiles however, comprise three principal horizons. From the surface downward these are identified by the letters A, B, and C. The A and B horizons constitute the solum, or 'true soil', while the C horizon is the parent material from which the solum has been derived by soil forming processes.

The entire sequence need not always be represented. For instance immature soils frequently lack a B horizon, or erosion may lead to truncated profiles sometimes to the extent of exposing the C horizon. When studied in detail, each of the principal horizons may be further subdivided ....recognition of these subdivisions apart from the A<sub>1</sub> and A<sub>2</sub>, is usually unnecessary in geochemical prospecting. The distribution of metals may vary markedly with major changes down the profile, however, and it is therefore important to distinguish the master horizons and to recognize immature and truncated profiles when these are encountered.

The A horizon develops primarily as the result of partial losses in original material by leaching and mechanical removal resulting from the percolation of rain water downward through the soil. The principal constituents likely to be removed are soluble bases, clays and colloidal sesquioxides and/or silica. Resistant primary minerals, rock undergoing decomposition and flocculated colloids tend to remain... The accumulation and bacteriological decay of plant debris are responsible for the two main subdivisions of the A horizon into a dark upper layer containing humus, the A<sub>1</sub> horizon, and an underlying light-colored horizon of maximum alluviation, designated A<sub>2</sub>.... Both A<sub>1</sub> and A<sub>2</sub> can generally be discerned in mature profiles developed under moist climates, although the A<sub>2</sub> may be absent in dry regions or in young soils.

Under moist conditions and free drainage, the more soluble constituents leached from the A horizon will descend to the water table and eventually pass into the surface drainage. Some suspended matter may follow the same course. More usually however, sesquioxides and clays alluviated from the A horizon are soon redeposited in the zone of accumulation, constituting the B horizon. As a result the B horizon characteristically tends to be enriched in clay relative to the A horizon and to assume a red or yellow-brown color in those profiles where alluviation also involves iron sesquioxides. Under appropriate conditions, the B horizon may also gain organic matter at the expense of the A horizon. In many soils however, organic matter is likely to be completely broken down in the A horizon to carbon dioxide and water. In some profiles the B horizon may also gain material by precipitation of soluble matter derived from underlying horizons by ground water circulation.

## APPENDIX 1 (Continued)

The C horizon consists of more or less weathered rock and serves as the parent material of the overlying A and B horizons. It is important to appreciate that the parent material may be rock in situ, transported alluvial or glacial overburden, or even soil of a past pedological cycle. As a rule inorganic decomposition extends deeper than soil formation, and the C horizon can often be divided into zones of weathering that decrease in zones of intensity with depth. Organic material is at a minimum in the C horizon, which usually contains less clay and is lighter in color than the B horizon. Relic rock structures and textures are also more commonly preserved than in the overlying horizons.

....Some horizons show intensely grayed layers such as horizon G of hydromorphic soils, G may appear directly beneath A....the common distinguishing features of the G horizon are: a grayish to black surface horizon grading sharply into a pale, bluish gray subsoil often with rusty streaks, mottling or concretions.

## APPENDIX 2

### LABORATORY ANALYSIS OF SOIL SAMPLES

All samples were tested for copper and zinc by the geochemical laboratory at the Department of Geology, University of British Columbia.

The laboratory procedures are as follows:

#### Preparation of Soil Solution:

1. Place about 5-6 gms. of soil received from the field in a No. 1 porcelain crucible. Ignite at low red heat, 600°C, for 2 hours. This denatures the organic material in the soil. (Peat or peaty material should be treated as plant material.)
2. Weigh 2 gms. of the cooled ignited soil into a 25 x 300 mm. test tube.
3. Add 30 mls. 1 N H<sub>2</sub>SO<sub>4</sub> and "reflux" at boiling temperature for 30 mins.
4. Add distilled water to a 40 ml. mark on the test tube. Mix thoroughly and leave, preferably overnight, to allow the particles to settle.

Copper Determination: Monovalent copper is extracted from a moderately acid solution, selectively, by a solution of biquinoline in amyl alcohol, under the form of a pink-coloured complex at pH 4.5 to 5.5 in the presence of hydroxylamine hydrochloride and ascorbic acid.

1. Transfer a 5 ml. aliquot of soil solution to a 18 x 150 mm. test tube.
2. Add 5-10 mgms. ascorbic acid.
3. Add 5 mls. buffer solution.
4. Swirl and tap test tube to mix reagents.
5. Add 1 ml. biquinoline solution. Close tube with a plastic stopper. Turn upside down and shake about 20 secs. or 100 strokes.
6. Put tubes right side up and compare visually with a series of standards of varying known Cu concentrations: 0, 0.2, 0.4, 0.8, 1.0, 2.0, 3.0, 4.0, 6.0, 10, 15, 20 gammas.

#### Calculations:

Reading in gammas =  $\frac{\text{total volume of solution}}{\text{size of aliquot}}$  = total gammas in sample

$\frac{\text{Total gammas}}{\text{Weight sample in grams}}$  = p.p.m.

## APPENDIX 2 (Continued)

**Zinc Determination:** Zinc reacts with a carbon tetrachloride solution of dithizone at a pH of around 5.5 to 6.0. Other common metals do not react in the presence of thiosulphate.

1. Transfer 1 ml. of soil solution to a 50 m. glass shaking cylinder.
2. Add 5-10 mgms. ascorbic acid.
3. Add 5 ml. acetate buffer.
4. Add 1 ml. 50% sodium thiosulphate solution (to complex the copper).
5. Mix and check pH - Congo red paper should remain red.
6. Titrate with standardized carbon tetrachloride dithizone solution, to grey end point.

### Calculations:

No. ml. Dz\* x standardization of Dz in gammas/ml. x  $\frac{\text{total vol. soil sol'n.}}{\text{vol. of aliquot}}$  = total gammas

$\frac{\text{Total gammas per sample}}{\text{Weight of sample in grams.}}$  = P.P.M.

### Reagents

**Biquinoline:** 0.02% in n-amyl or iso-amyl alcohol. Warm gently to help dissolving. The solution, which keeps for months, should be colorless.

**Copper Buffer:** 150 gms. sodium acetate (anhydrous) or 250 sodium acetate crystals, 10 gms. hydroxylamine hydrochloride. 500 mls. distilled water.

**Zinc Standard:** 4 gammas per ml. made just before using by diluting 100 gammas per ml. solution.

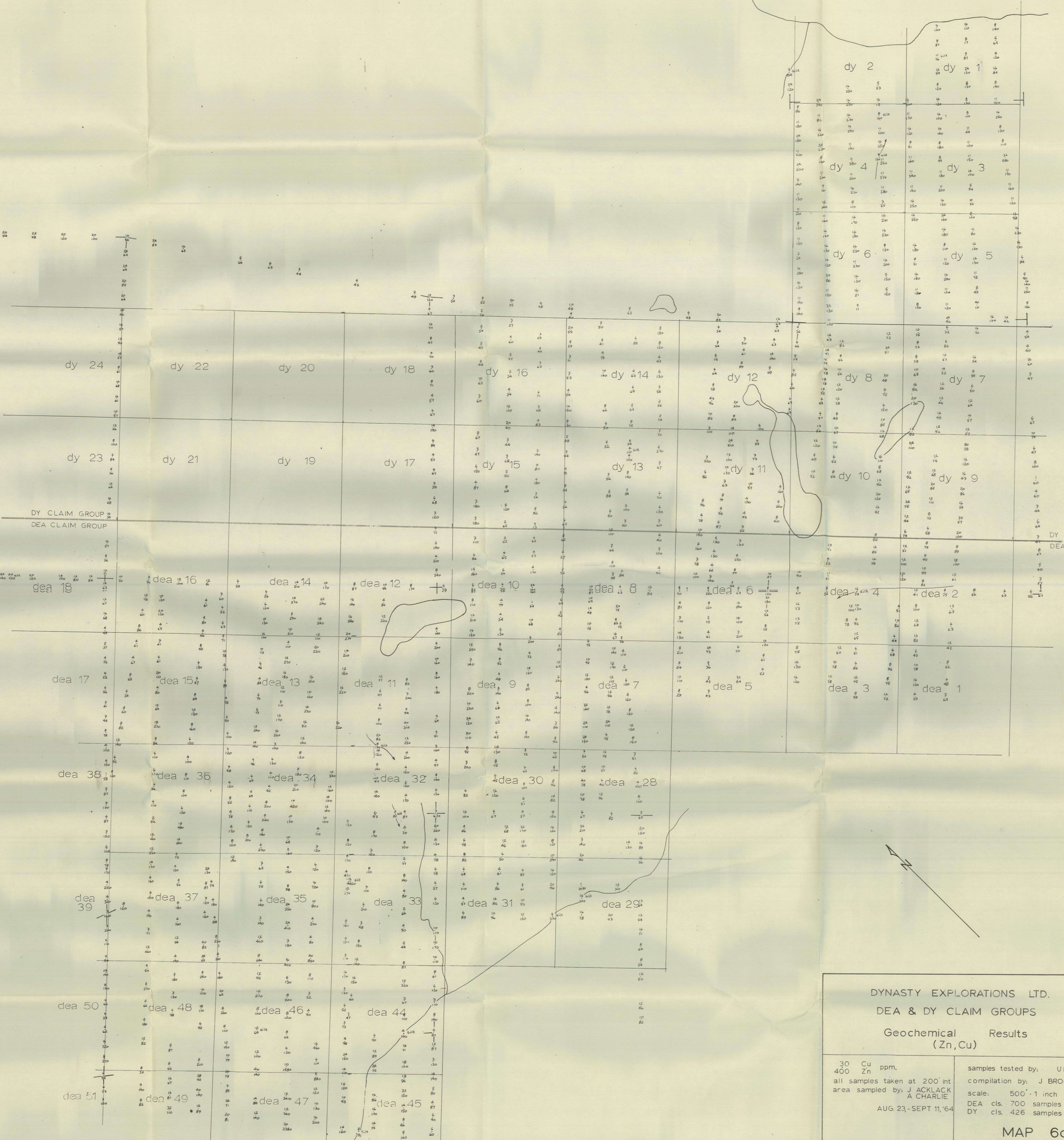
**Copper Standard:** 4 gammas per ml. solution made just before using by diluting 100 gammas per ml. solution.

**Acetate buffer for Zinc:** 250 gms. hydrated sodium acetate, 30 mls. pure acetic acid per liter distilled water.

**Dithizone:** Carbon tetrachloride solution of diphenylthiocarbazone, 60 mgms. per liter.

\*Dithizone solution



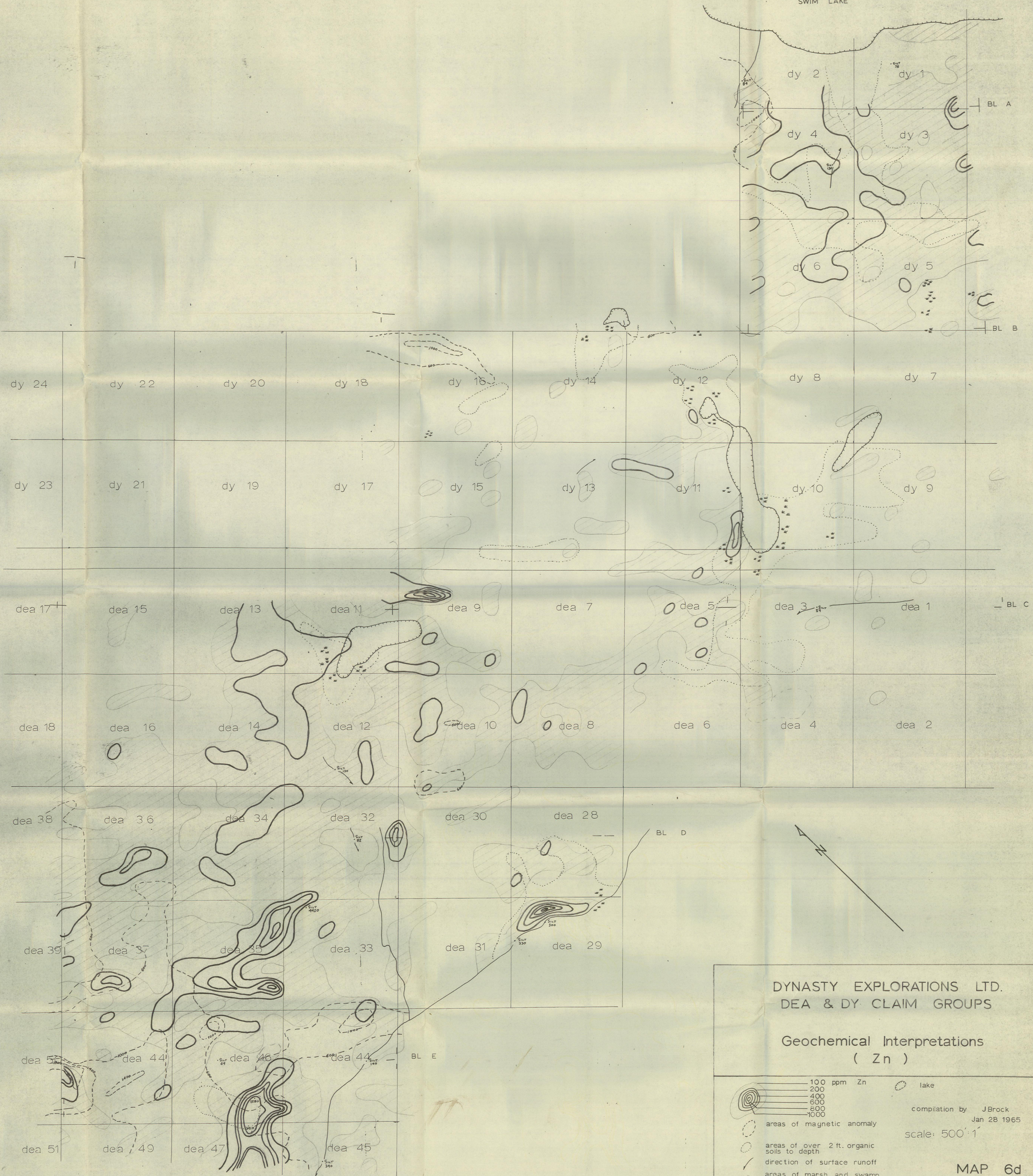


DYNASTY EXPLORATIONS LTD.  
 DEA & DY CLAIM GROUPS  
 Geochemical Results  
 (Zn, Cu)

30 Cu ppm. 400 Zn	samples tested by: UBC
all samples taken at 200' int area sampled by: J ACKLACK A CHARLIE	compilation by: J BROCK
AUG 23-SEPT 11, 64	scale: 500' - 1 inch DEA cls. 700 samples DY cls. 426 samples

MAP 6c

SWIM LAKE



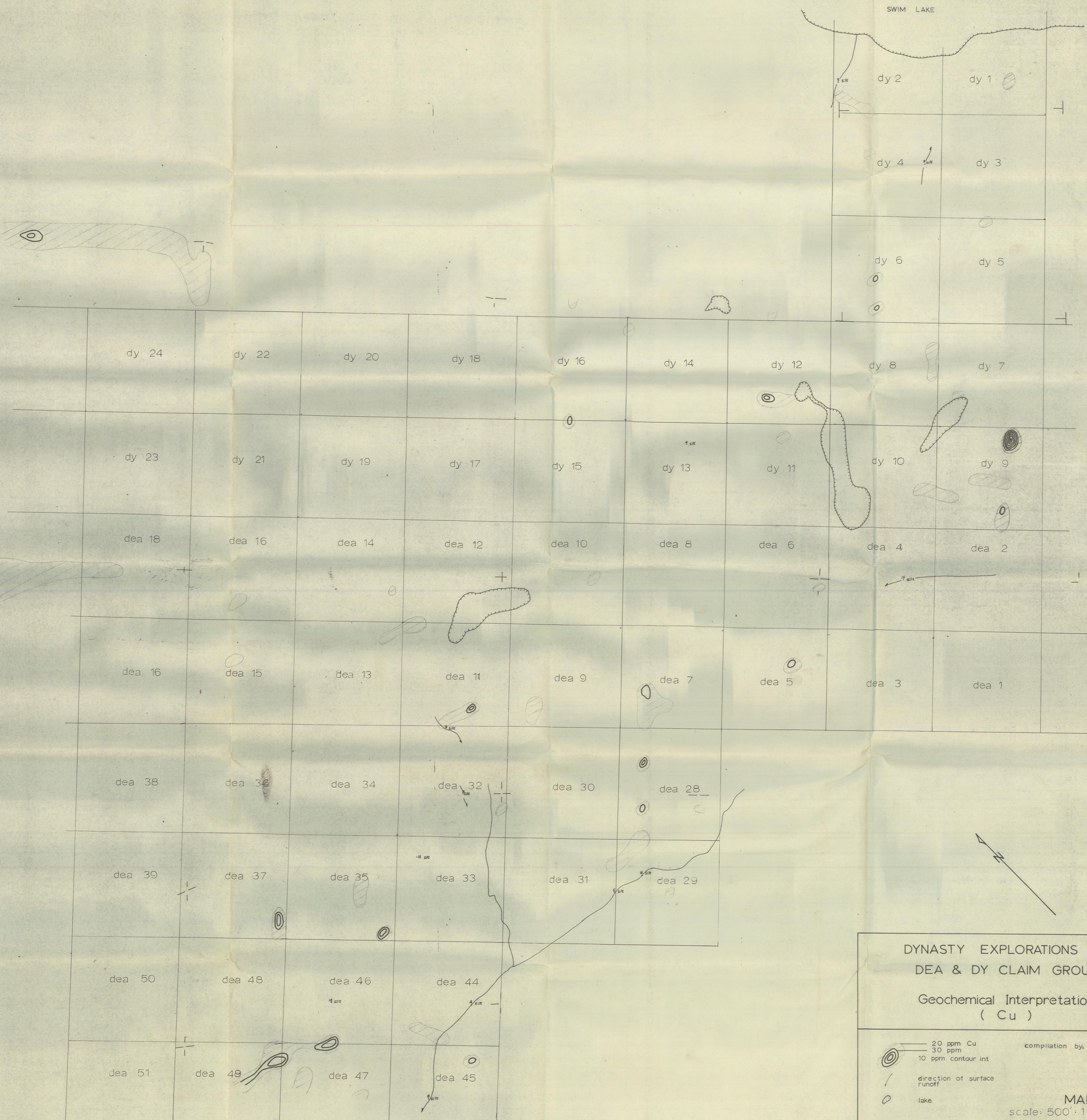
DYNASTY EXPLORATIONS LTD.  
DEA & DY CLAIM GROUPS

Geochemical Interpretations  
( Zn )

	100 ppm Zn		lake
	200		
	400		
	600		
	800		
	1000		
	areas of magnetic anomaly		
	areas of over 2 ft. organic soils to depth		
	direction of surface runoff		
	areas of marsh and swamp		

compilation by J Brock  
 Jan 28 1965  
 scale: 500' 1"

SWIM LAKE



DYNASTY EXPLORATIONS LTD.  
 DEA & DY CLAIM GROUPS  
 Geochemical Interpretations  
 ( Cu )

20 ppm Cu  
 30 ppm Cu  
 10 ppm contour int  
 direction of surface runoff  
 lake

compilation by: J Brock  
 Feb 1, 1965

**MAP 6e**  
 scale: 500' = 1"