



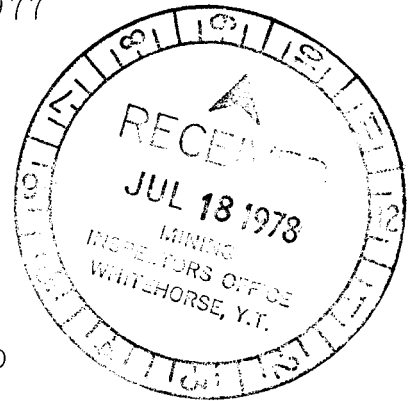
GEOCHEMICAL REPORT ON  
THE SANDY 1-7 CLAIMS

106-C-3 Lat.  $64^{\circ}07'$  Long.  $133^{\circ}12'$

FIELD WORK SEPT. 6 to OCT. 2, 1977

FOR

NORTHGATE EXPLORATION LIMITED



(Claims held under option from  
Bow River Resources)

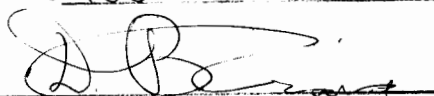
BY

C. Byrne  
Toronto  
May 30, 1978

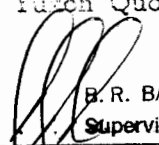
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
This report has been examined by the Geological Evaluation Unit and is recommended to the Board of Mines to be considered as representative of the Territory.

\$1400-00

  
Resident Mining Engineer

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

  
B. R. BAXTER  
Supervising Mining Recorder

 Commissioner of Yukon Territory

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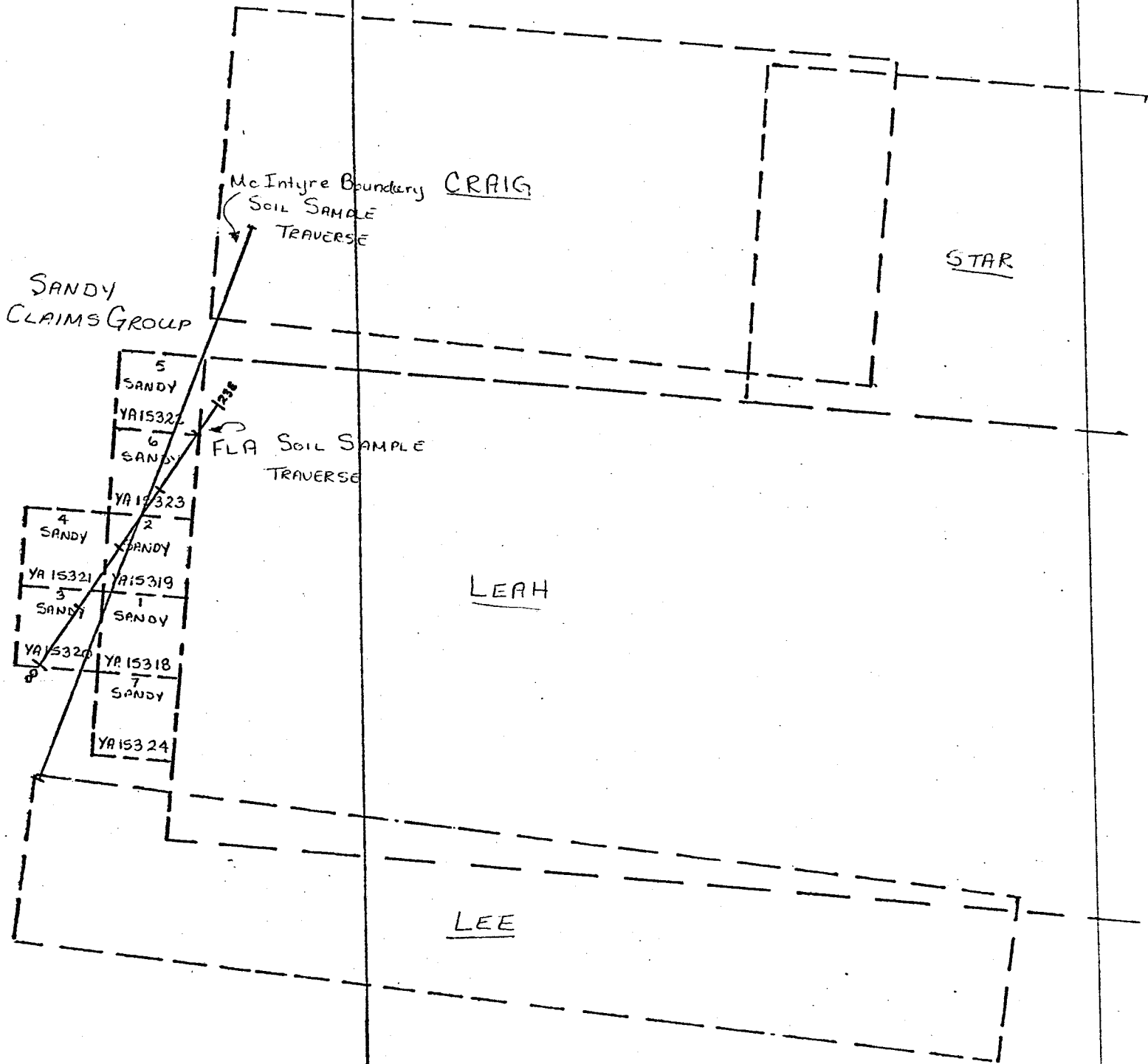
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~~3. Exploration Expenditures~~

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NORTHGATE EXPLORATION LTD.  
 Ortell Lake - Yukon Territory

SANDY CLAIM GROUP

Location of Geochemical Sampling  
 Scale: 1' = 1/2 mi.

Figure #2

from Portion of Claim Sheet NTS 106-C/3

## INTRODUCTION

This report has been prepared to file for credit of assessment work under the requirements of the Quartz Mining Act on the SANDY 1-7 Claims (YA15318 to 15324 inclusive) in the Mayo Mining District.

## SUMMARY & CONCLUSIONS

The SANDY property consists of 7 claims staked in July 1977 to fill in between two large blocks of claims referred to as the CRAIG and LEAH claims which had been staked in the fall of the previous year. The CRAIG claims had been staked by McIntyre Mines Ltd. to cover favourable ground along the strike of a thrust fault and along which lead-zinc-silver mineralization had been found.

The adjacent LEAH claims were staked by a consortium of four companies including Bow River Resources. It was later realized that some open ground existed between the LEAH and CRAIG claims and the SANDY claims were subsequently staked to cover that ground.

In the summer of 1977 Bow River participated with Envoy Resources Ltd., Hecate Gold Company and Highhawk Mines Ltd. in a geochemical, geological and prospecting program which systematically covered the LEAH and SANDY claims. During August 1977, Northgate Exploration optioned the LEAH and SANDY claims and continued a detailed geochemical, geological and prospecting program. As part of this program, soil samples were collected on the SANDY claims along a line parallel to the GRAIG-SANDY boundary and across the trace of a cross cutting fault.

Results from this geochemical sampling on the SANDY claims failed to indicate any major anomalies.

Because the work on the SANDY claims was carried out as part of a much larger program conducted by Northgate Exploration Limited on the adjacent LEAH group the exploration expenditure attributable to the SANDY claims has been calculated as a proportion based on the total number of soil samples collected during September 1977.

## LOCATION & ACCESS

The SANDY 1-7 claims are located 160 km. east-northeast of Mayo and are shown on claim sheets 106-C-3, a portion of which is shown as Figure 2.

The exploration was carried out from a base camp situated at Ortell Lake, the nearest lake suitable for servicing by light aircraft from Mayo.

## GEOLOGY

The geology has been adequately reported in a previous report by J.W. McLeod dated October 11, 1977, submitted for and accepted as assessment credit on the LEAH and SANDY claims.

Additional prospecting on the SANDY claims did not locate any base metal mineralization but a cross cutting fault was recognized striking about 035°. This fault was thought to represent a favourable structural trap for mineralization and samples were taken across the fault.

Rocks in the claim group include part of the Hadrynian sedimentary sequence ("Grit Unit") and consist of interbedded red-grey shales, limestone, dolomite and sandstones. Dips are moderate (average 50°) to the south.

## GEOCHEMISTRY

The following soil sampling is attributable to the SANDY claims:

### 1. McIntyre Boundary

Samples were collected at 25 metre intervals along a line about 100 metres east or and parallel to the common CRAIG-SANDY boundary.

Total number of samples collected along the traverse was 141 and the number collected within the SANDY claims was 77. Samples were assayed for Cu, Pb, Zn and AG and the results are shown on maps 1,2,3 and 4.

### 2. FLA Grid

A total of 94 samples were collected at 50 metre intervals along cross lines 100 metres apart along the line of the fault. Of these 54 were collected from the SANDY claims. The results are shown on Maps 5,6,7 & 8.

## RESULTS

The results of the soil sampling on the SANDY claims failed to indicate any zone which might be considered sufficiently anomalous to be of real interest.

Assay values ranged as follows:

Cu - Range from 5 to 235 ppm  
Pb - Range from 10 to 63 ppm  
Zn - Range from 10 to 500 ppm  
Ag - Range from 0.1 to 2.2 ppm

None of the results are considered sufficiently anomalous to warrant any detailed follow-up.

EXPENDITURES SUMMARY

All field work was done between September 6th and October 2nd, 1977.

Samples were sent to Northgate's laboratory in Ireland for assay and all drafting work etc. was done in the Toronto office.

Total expenditure on the LEAH and SANDY claims is \$75,802.69. The total number of soil samples collected were 1,296 of which 131 were taken from the SANDY claims. Attributing all costs to the soil sampling program, the proportional expenditure on the SANDY claims is \$7,662.15.



C. Byrne  
May 30, 1978

APPENDIX I

ANALYTICAL PROCEDURES



# Irish Base Metals Limited

a wholly owned subsidiary of Northgate Exploration Limited.

To: Westfield Minerals Ltd.,  
P.O. Box 27,  
Toronto Dominion Centre,  
Toronto,  
Canada M5K 1A1.

January 20, 1978

From: Irish Base Metals Ltd.,  
Geochemical Services Dept.,  
Piggott Street,  
Loughrea,  
Co. Galway.

Subject: Analytical procedure used to determine Cu, Pb, Zn & Ag in geochemical soil samples from the Yukon. (Results reported - 25.11.'77.)

1. Sample Preparation:

Samples were received from the customer in soil sample paper bags on 14.11.'77. They were dried in a ventilated oven for three days at approx. 70° C. The dried samples were broken up and sieved through an 80-mesh nylon sieve. The plus 80-mesh fraction was rejected and the minus 80-mesh fraction was transferred into a new bag and retained for analysis.

2. Digestion Methods:

The normal methods used for Cu, Pb, Zn & Ag is digestion in Aqua Regia (3 HCl : 1 HNO<sub>3</sub>), the final HCl strength being 20% to keep the Ag in solution.

With the samples in question, the initial reaction was too vigorous, causing loss of sample by foaming. The normal method was somewhat altered to take account of this and is summarized below:-

- a) 0.2g sample was weighed into 150ml test-tube, calibrated at 10ml.
- b) 1ml of HCl was added to each sample and heated to near dryness on a sand bath (i.e. until the vigorous reaction had stopped).

cont.-

Directors: P.J. Hughes (Chairman), W. Casper (German); A. De Jaer (Belgian); D.R. Derry (Canadian); M. Gilroy; W.F. James (Canadian); J.K. McCausland (Canadian); J.V. McParland; E. Odendall (French); M.K. Pickard (Canadian); G.T. Smith (Canadian); G.H. White (British); H.S. White (Canadian); G.M. Wilson (Canadian);

Substitute Directors: B.S. Buffam (Canadian); P. Harrington; W. Horster (German); M.V. O'Brien.

Registered Office: 162 Clontarf Rd. Dublin 3, Ireland. Registration No. 17703

- c) 2ml of Aqua Regia (as above) was then added and heated until the nitrogen fumes were expelled.
- d) The digested samples were then diluted to 10ml with de-ionised water, shaken and allowed to settle before analysis.

A number of the samples were digested using two other digestion techniques:-

- (i) NPC: (3% Potassium Chlorate dissolved in conc.  $\text{HNO}_3$ ). Cu, Pb & Zn values showed good agreement but Ag values were lower - probably due to precipitation.
- (ii) Mine Assay Method for Ag: The sample was taken to dryness in Aqua Regia. The residue was dissolved in 50% HCl and made up to a final volume of 100ml with distilled water - the final HCl concentration being 25%. The results showed excellent agreement with the normal geochemical method.

(Methods "i" and "ii" were carried out, independently, at Tynagh Mine, under the supervision of M.J. O'Neill, B.Sc., Chief Chemist.)

3. Method of Analysis:

Cu, Pb & Ag were determined on an I.L. 251 Atomic Absorption Spectrophotometer using an air acetylene flame (stoichiometric) - the machine being calibrated with aqueous standards and set to read directly as p.p.m. present in the sample. Zn results were analysed in a similar manner using a Varian Techtron M 1000.

Each batch of 50 samples included an acid blank and a soil sample standard.

The Ag results were determined using a background correction channel to compensate for non-atomic absorption.

4. The analyses were supervised and determined by J. McHugh and his laboratory staff.

Signed: J. McHugh

Date: 20/1/1978

Directors: P.J. Hughes (Chairman), W. Casper (German); A. De Jaer (Belgian); D.R. Derry (Canadian); M. Gilroy, W.F. James (Canadian); J.K. McCausland (Canadian); J.V. McParland, E. Odendall (French); M.K. Pickard (Canadian); G.T. Smith (Canadian); G.H. White (British); H.S. White (Canadian); G.M. Wilson (Canadian);

Substitute Directors: B.S. Buffam (Canadian); P. Harrington; W. Horster (German); M.V. O'Brien.

APPENDIX II

ANALYSES

Area MB Yukon  
 PI & Code 702 - 003  
 Map No. \_\_\_\_\_  
 Date \_\_\_\_\_  
 Weather \_\_\_\_\_  
 Sampler \_\_\_\_\_

Date 18-11-77  
 Method \_\_\_\_\_  
 Analyst \_\_\_\_\_  
 Rack No \_\_\_\_\_

No 8513

Sample No. or Co-ordinates	Depth	Colour	Peat	Sample Type	PPM							
					Sample Comments	Ag	Cu	Pb	Zn	Repeats		
										Cu	Pb	Zn
0+00N					0.2	46	40	100				
25N					0.3	40	41	90				
50N					0.2	36	36	90				
75N					0.2	12	24	50				
1+00N					0.1	14	19	70				
25N					0.2	37	25	50				
50N					0.3	98	28	70				
75N					0.1	71	38	100				
2+00N					0.2	91	15	30				
25N					0.2	44	15	30				
50N					0.2	68	21	60				
75N					0.3	63	21	80				
3+00N					0.3	79	22	70				
25N					0.5	29	20	50				
50N					0.4	34	17	60				
75N					0.3	19	19	70				
4+00N					0.3	19	26	90				
25N					0.4	28	26	90				
50N					0.1	14	22	60				
75N					0.4	18	19	70				
5+00N					0.3	40	14	60				
25N					0.3	28	26	90				
50N					0.7	39	19	80				
75N					0.2	15	22	150				

Laboratory Standard No. \_\_\_\_\_

Area MB Yukon  
 PI & Code 702-003  
 Map No. \_\_\_\_\_  
 Date \_\_\_\_\_  
 Weather \_\_\_\_\_  
 Sampler \_\_\_\_\_

Date 18-11-77  
 Method \_\_\_\_\_  
 Analyst \_\_\_\_\_  
 Rack No \_\_\_\_\_

No 8514

Sample No. or Co-ordinates	Depth	Colour	Peat	Sample Type	PPM							
					Sample Comments	Ag	Cu	Pb	Zn	Repeats		
										Cu	Pb	Zn
6+00N					0.3	9	20	80				
25N					0.2	7	23	140				
50N					0.3	26	29	60				
75N					0.2	21	28	70				
7+00N					0.3	102	20	60				
25N					0.3	89	19	50				
50N					0.2	168	21	60				
75N					0.2	103	18	60				
8+00N					0.3	106	17	70				
25N					0.3	130	17	80				
50N					0.7	67	26	80				
75N					0.3	22	25	50				
9+00N					0.4	34	21	90				
25N					0.5	10	21	40				
50N					0.4	18	25	90				
75N					0.5	19	25	50				
10+00N					0.3	19	22	20				
25N					0.2	32	27	50				
50N					0.4	18	25	50				
75N					0.2	13	19	60				
11+00N					0.5	21	22	50				
25N					0.3	17	30	100				
50N					0.4	21	26	80				
75N					0.4	24	28	40				
Laboratory Standard No. 2A					0.8	130	478	270				



Area MB Yukon  
 PI & Code 702-003  
 Map No. \_\_\_\_\_  
 Date \_\_\_\_\_  
 Weather \_\_\_\_\_  
 Sampler \_\_\_\_\_

Date 18-11-77  
 Method \_\_\_\_\_  
 Analyst \_\_\_\_\_  
 Rack No \_\_\_\_\_

No 8517

Sample No. or Co-ordinates	Depth	Colour	Peat	Sample Type	PPM							
					Sample Comments	Ag	Cu	Pb	Zn	Repeats		
										Cu	Pb	Zn
18toon					0.4	33	34	90				
25N					0.5	22	17	60				
50N					0.8	21	18	90				
75N					0.5	35	18	80				
19toon					0.3	30	21	90				
25N					0.4	41	22	100				
50N					0.5	18	16	90				
75N					0.4	39	20	110				
20toon					0.8	39	22	110				
25N					0.8	37	14	150				
50N					1.2	49	19	160				
75N					1.2	44	16	140				
21toon					0.6	29	19	150				
25N					0.5	36	22	190				
50N					0.7	47	19	420				
75N					0.4	21	16	500				
22toon					1.4	31	18	160				
25N					1.6	45	19	290				
50N					0.7	16	16	110				
75N					0.4	16	14	60				
23toon					0.5	33	19	140				
25N					0.3	27	15	80				
50N					1.1	24	16	90				
75N					0.9	22	12	100				
laboratory Standard No. 37					0.2	29	118	210				

Area MB Yukon  
 PI & Code 702-003  
 Map No. \_\_\_\_\_  
 Date \_\_\_\_\_  
 Weather \_\_\_\_\_  
 Sampler \_\_\_\_\_

Date 18-11-77  
 Method \_\_\_\_\_  
 Analyst \_\_\_\_\_  
 Rack No \_\_\_\_\_

**No 8518**

Sample No. or Co-ordinates	Depth	Colour	Peat	Sample Type	PPM							
					Sample Comments	Ag	Cu	Pb	Zn	Repeats		
										Cu	Pb	Zn
24+00N					0.6	29	18	110				
25N					0.5	30	16	100				
50N					0.2	26	29	120				
75N					0.5	48	42	200				
25+00N					0.2	21	13	70				
25N					0.3	32	26	140				
50N					0.2	32	21	160				
75N					0.4	34	23	160				
26+00N					0.3	26	17	150				
25N					0.6	29	16	100				
50N					0.8	25	19	130				
75N					0.7	33	21	110				
27+00N					0.4	32	21	100				
25N					0.2	25	23	120				
50N					0.3	19	12	30				
75N					0.3	34	16	60				
28+00N					0.4	23	12	50				
25N					0.3	16	18	60				
50N					0.2	10	33	50				
75N					0.3	11	21	90				
29+00N					0.2	10	22	230				
25N					0.3	5	13	40				
50N					0.3	7	21	60				
75N					0.5	19	26	80				

Laboratory Standard No. \_\_\_\_\_

Area MB Yukon  
 PI & Code 702-003  
 Map No. \_\_\_\_\_  
 Date \_\_\_\_\_  
 Weather \_\_\_\_\_  
 Sampler \_\_\_\_\_

Date 18-11-77  
 Method \_\_\_\_\_  
 Analyst \_\_\_\_\_  
 Rack No \_\_\_\_\_

**No 8519**

Sample No. or Co-ordinates	Depth	Colour	Peat	Sample Type	PPM							
					Sample Comments	Ag	Cu	Pb	Zn	Repeats		
										Cu	Pb	Zn
30+00N					0.6	11	22	130				
25N					0.4	10	19	60				
50N					0.4	10	17	80				
75N					0.4	11	18	60				
31+00N					0.9	37	18	50				
25N					0.3	17	20	60				
50N					0.1	9	17	100				
75N					0.6	21	21	150				
32+00N					0.6	23	16	100				
25N					0.5	24	19	70				
50N					0.2	33	27	170				
75N					1.0	36	22	140				
33+00N					0.4	23	19	170				
25N					1.2	27	22	130				
50N					0.3	25	29	150				
75N					0.4	26	19	140				
34+00N					0.4	17	16	90				
25N					0.3	17	15	60				
50N					0.3	23	15	100				
75N					0.7	40	24	100				
35+00N					0.8	18	17	170				
Laboratory Standard No. 1A					0.2	9	64	180				

Area FLA Yukon  
 PI & Code 702-003  
 Map No. \_\_\_\_\_  
 Date \_\_\_\_\_  
 Weather \_\_\_\_\_  
 Sampler \_\_\_\_\_

Date 18-11-77  
 Method \_\_\_\_\_  
 Analyst \_\_\_\_\_  
 Rack No \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**No 8520**

Sample No. or Co-ordinates	Depth	Colour	Peat	Sample Type	PPM							
					Sample Comments	Ag	Cu	Pb	Zn	Repeats		
										Cu	Pb	Zn
5100E 1100S					0.5	25	24	140				
0150S					0.7	31	22	60				
BL					1.0	26	18	130				
0150W					0.7	26	24	110				
1100W					1.6	37	11	40				
6100E 1100S					0.5	44	18	70				
0150S					0.5	34	13	60				
BL					0.5	31	20	170				
0150W					0.7	43	22	100				
1100W					2.0	35	18	90				
7100E 1100S					0.3	17	19	70				
0150S					0.3	27	14	70				
BL					0.3	25	11	100				
0150W					2.2	94	18	430				
1100W					1.3	37	15	150				
8100E 1100S					0.4	24	12	30				
0150S					0.3	21	13	40				
BL					0.2	11	11	60				
0150W					0.5	31	20	120				
1100W					0.5	49	16	100				
9100E 1100S					0.4	45	27	60				
0150S					0.6	25	16	60				
BL					0.4	40	11	10				
0150W					0.3	22	34	130				
Laboratory Standard No.												

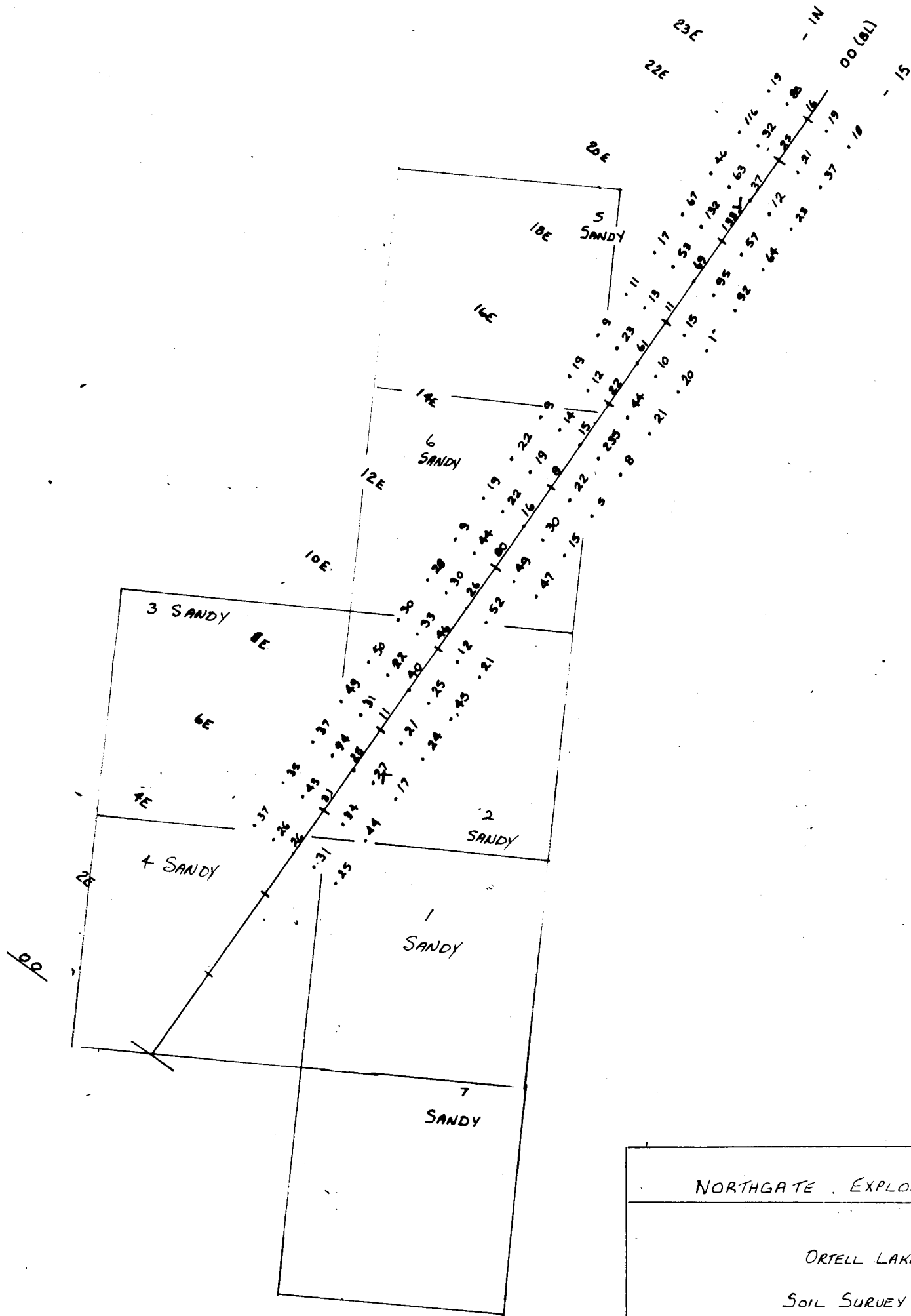
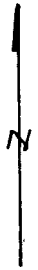
Area FLA Yukon  
 PI & Code 702-003  
 Map No. \_\_\_\_\_  
 Date \_\_\_\_\_  
 Weather \_\_\_\_\_  
 Sampler \_\_\_\_\_

Date 18-11-77  
 Method \_\_\_\_\_  
 Analyst \_\_\_\_\_  
 Rack No \_\_\_\_\_

No 8521

Sample No. or Co-ordinates	Depth	Colour	Peat	Sample Type	PPM							
					Sample Comments	Ag	Cu	Pb	Zn	Repeats		
										Cu	Pb	Zn
9100E 1100W						0.7	50	17	70			
10100E 1100S						0.4	21	10	40			
	0.50S					0.6	12	10	20			
	BL					0.6	46	18	80			
	0.150W					0.5	33	13	50			
	1100W					0.5	30	19	80			
11100E 1100S				NO SAMPLE TAKEN								
	0.150S					0.3	52	30	100			
	BL					0.6	26	28	40			
	0.150W					0.9	30	22	80			
	1100W					0.6	28	29	90			
12100E 1100S						0.6	47	26	90			
	0.150S					0.9	49	19	100			
	BL					1.2	80	20	140			
	0.150W					1.6	44	14	90			
	1100W					0.2	9	16	30			
13100E 1100S						0.6	15	14	40			
	0.150S					0.5	30	52	130			
	BL					0.4	16	26	60			
	0.150W					0.3	22	29	90			
	1100W					0.2	19	13	30			
14100E 1100S						0.5	5	17	30			
	0.150S					0.4	22	22	50			
	BL					0.4	8	15	30			
Laboratory Standard No. 2A						0.7	132	481	270			





NORTHGATE EXPLORATION LTD.

ORTELL LAKE AREA  
SOIL SURVEY Cu (PPM)

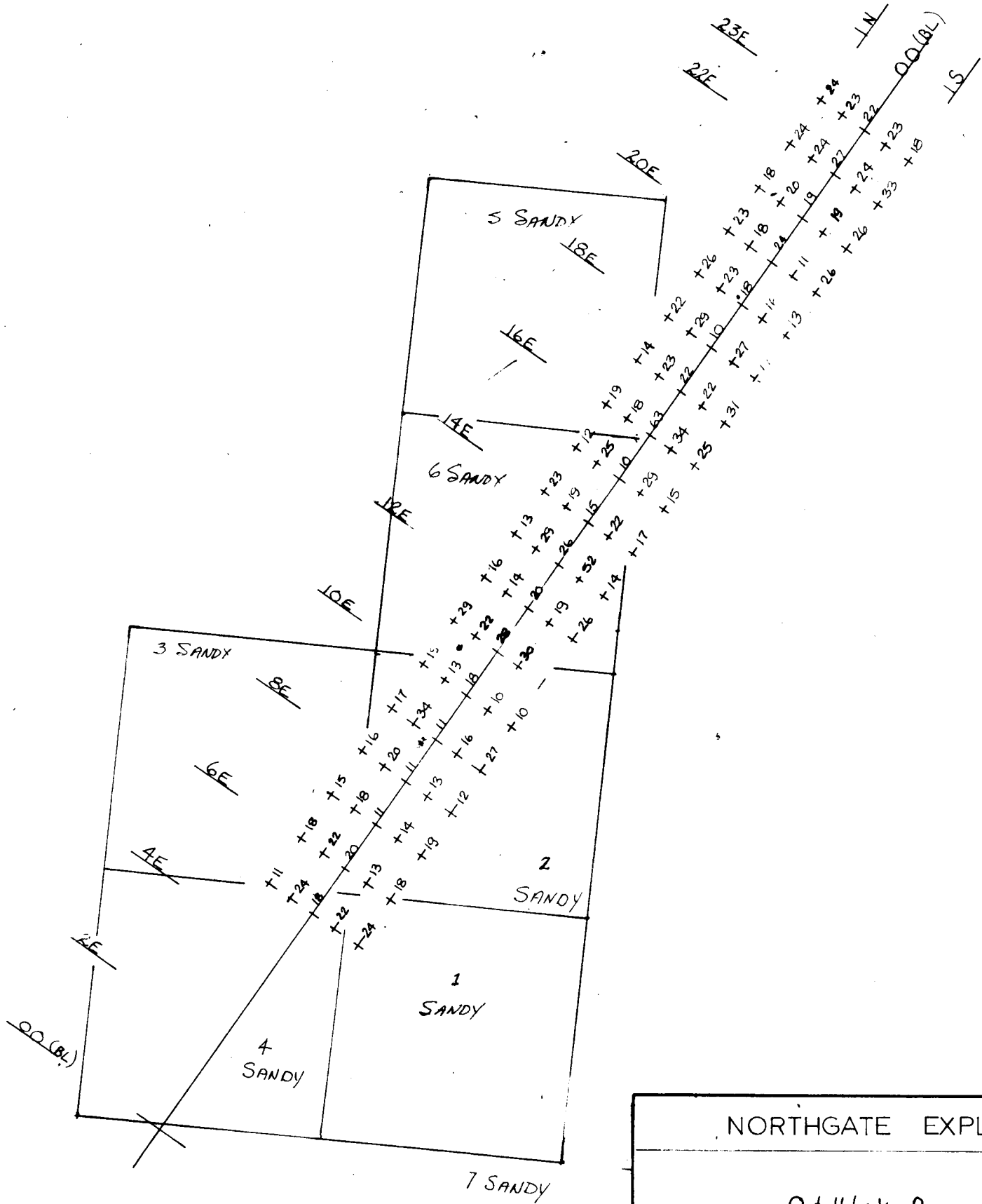
FLA LINES

Map #2

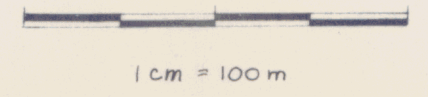
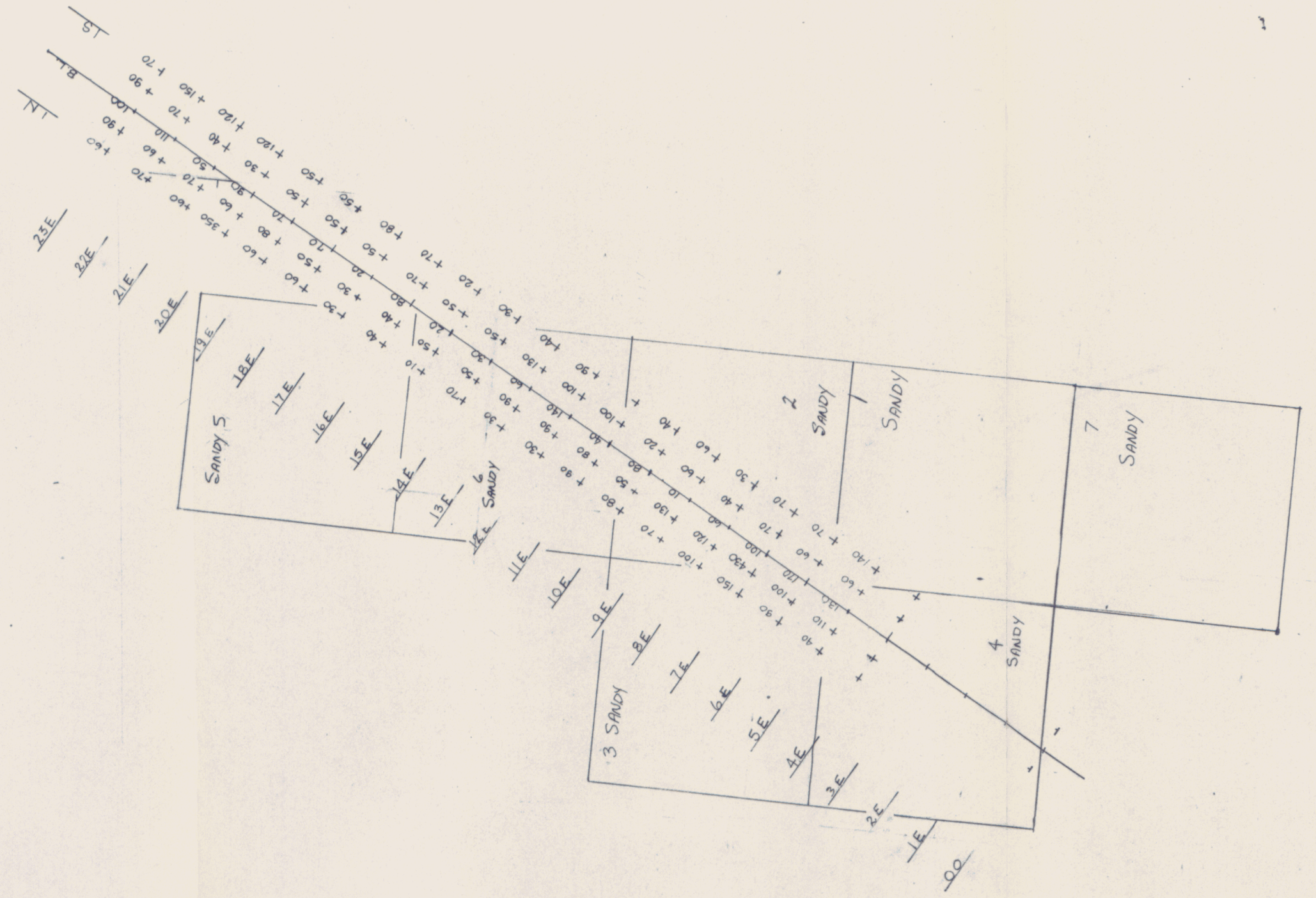
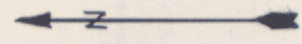
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NORTHGATE

NTS 106/C/243



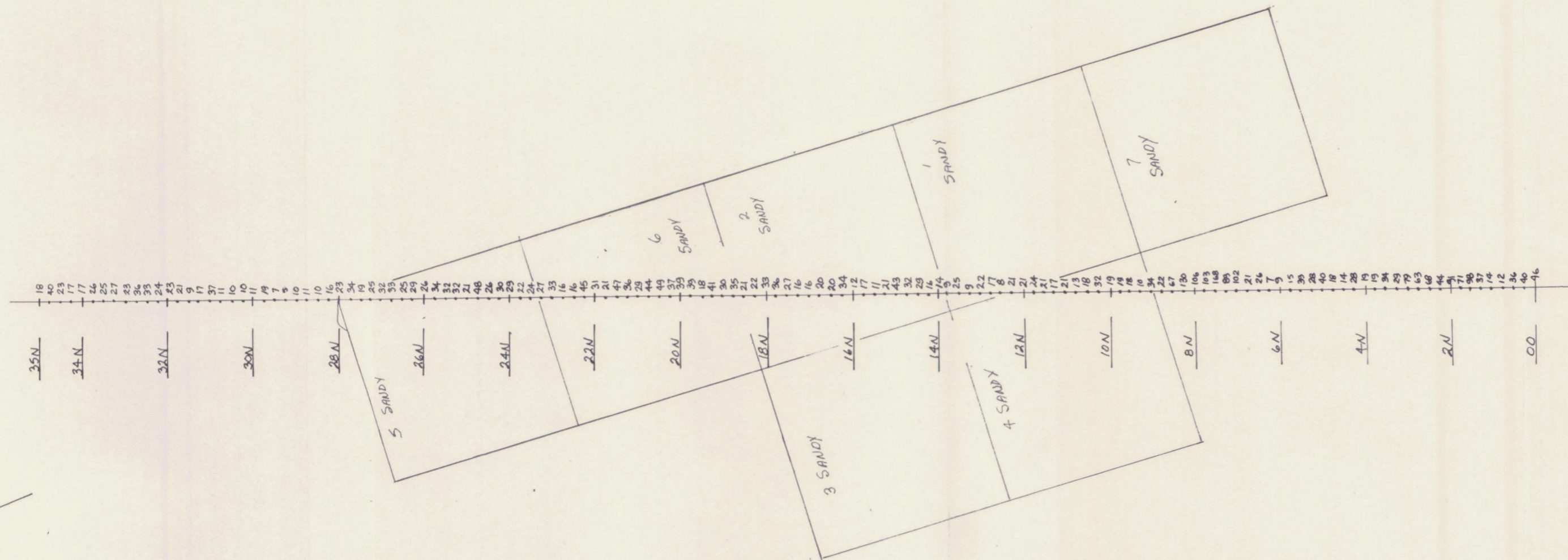
NORTHGATE EXPLORATION		
Ortell Lake Area		
SOIL SURVEY Pb (P.P.M)		
F.L.A. LINES		
Map #3		
Scale 1:10000	NORTHGATE	NTS. 106/1/2+3



WESTFIELD MINERALS LTD.		
Ortell Lake Area SOIL SURVEY Zn (P.P.M)		
F.L.A. Lines		
NTS 106/c/2+3		
Scale: 1:10,000	By: NORTHGATE	DWG Map NO. #4

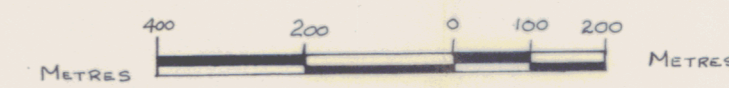


NORTHGATE EXPLORATION		
Ortell Lake Area		
Soil Survey Ag (P.P.M)		
MainTure Boundary		
Scale 1:10000	By: NORTHGATE	Map #5 NTS. 106/C/243

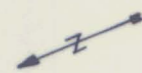


NORTHGATE EXPLORATION LTD.  
Orteli Lake Area  
SOIL SURVEY Cu (P.P.M)  
McINTYRE BOUNDARY  
Map #6

SCALE 1:10,000    By NORTHGATE    NTS 106/C/243



NORTHGATE EXPLORATION LTD.  
 Ortell Lake Area  
 SOIL SURVEY Pb. (PPM)  
 McINTYRE BOUNDARY  
 Map #7  
 Scale 1:10000 By: NORTHGATE NTS 1061C 243



1cm = 100m

WESTFIELD MINERALS LTD.

Ortell Lake Area  
SOIL SURVEY Zn (P.P.M)

MCINTYRE BOUNDARY

NTS. 106/c/243

SCALE: 1:10000

By NORTHGATE

DWG Map  
NO. #8