

REPORT ON  
1995 SOIL GEOCHEMICAL SURVEY  
OF THE  
PUB CLAIMS  
DAWSON MINING DISTRICT  
NTS 116C/2

Lat.: 64° 07' N. Long.: 140° 52' W.

BY

Uwe Schmidt, P.Geo.

FOR

ATNA RESOURCES LTD.

April 26, 1996

Work performed on August 4, 1995

093463



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## 1. INTRODUCTION

The recent discovery of the ABM polymetallic massive sulphide deposit by Cominco Ltd. in Finlayson Lake area of south-central Yukon has renewed an interest in volcanogenic massive sulphide (VMS) deposits within Yukon-Tanana Terrane. The fault-displaced extension of Yukon-Tanana which hosts this deposit, lies west of Dawson City, southwest of the Tintina Fault Zone. It is this geological setting which attracted Atna Resources to the area and led to an option agreement with YGC Resources covering five mineral properties, including the Pub claims.

On August 4, 1995, a three man field crew examined the Pub claims and soil sampled the claims along 3 grid lines. This work was intended to satisfy assessment requirements for the claims while also providing an opportunity to examine the property.

Work was carried out by Northwest Geological Consulting Ltd. employees. A total of 58 soil samples were collected along 2.75 km of line. The writer was contracted by Atna Resources to carry out field management and supply field crews. Field crew consisted of the writer and field assistants Ron Beauchamp and Regan Moran. Overall program supervision was provided by Peter DeLancey, P.Eng., president of Atna Resources Ltd.

## 2. PROPERTY, LOCATION AND ACCESS

The Pub property consists of 6 quartz mineral claims, covering an area of 125 hectares, located approximately 70 km west of Dawson City, Yukon. The claims are registered in the Dawson Mining District in the name of YGC Resources Ltd.

The property lies 2 km north, and within walking distance of the "Top of the World Highway". The coordinates of the approximate centre of the property are latitude 64° 07' 30" N and longitude 140° 52' W, located within NTS map areas 116C/2.

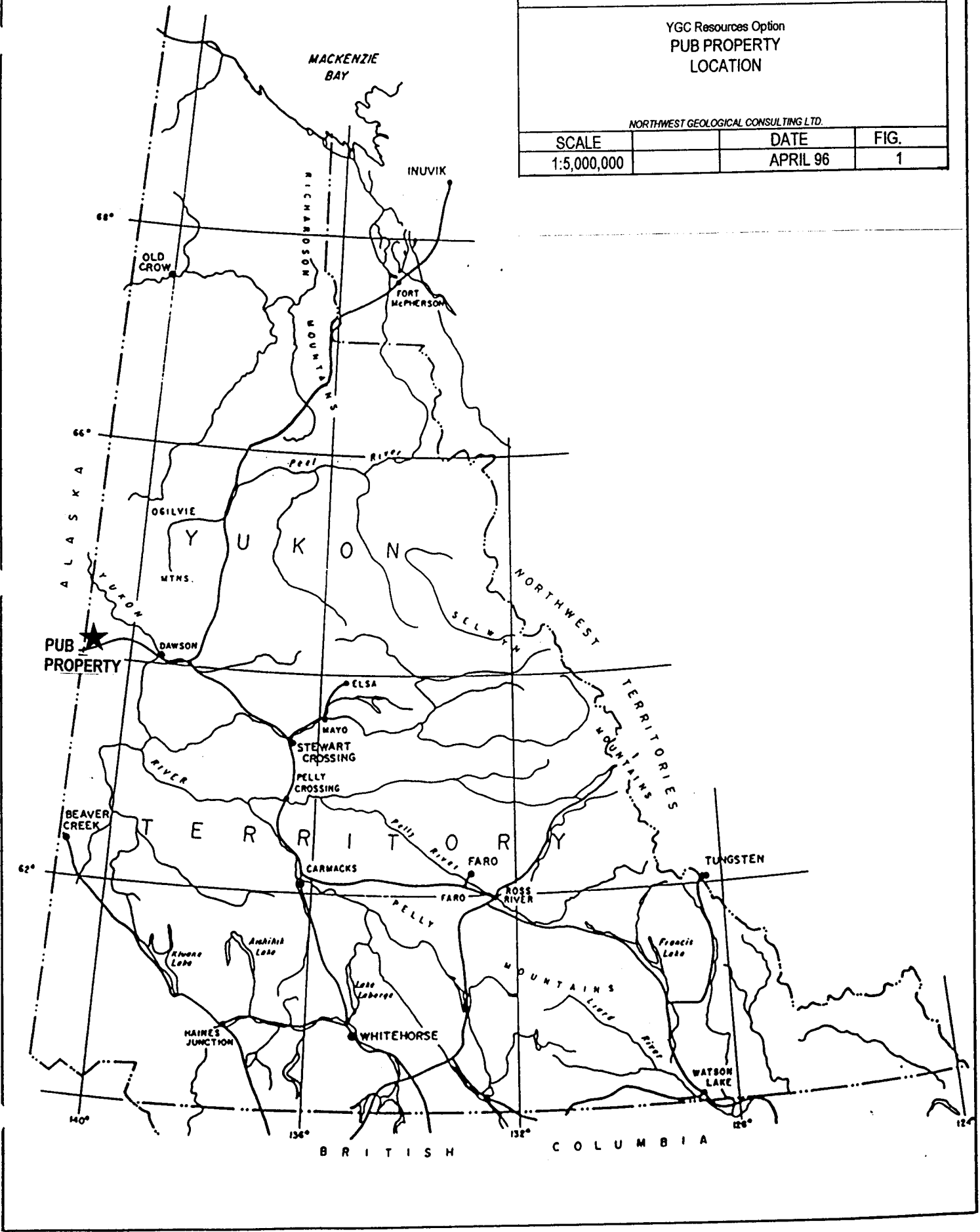
<b>Name</b>	<b>Grant Numbers</b>	<b>Lapse Date</b>
Pub 1-4	YB30605-YB30608	Mar. 4, 1996
Pub 21-22	YB41426-YB41427	Mar. 4, 1996

ATNA RESOURCES LTD.

YGC Resources Option  
PUB PROPERTY  
LOCATION

NORTHWEST GEOLOGICAL CONSULTING LTD.

SCALE	DATE	FIG.
1:5,000,000	APRIL 96	1



### 3. PHYSIOGRAPHY

The property lies within the Klondike Plateau, a minor, unglaciated, subdivision of the Yukon Plateau. Ridge crests generally lie at elevations ranging from 1000 to 1400 metres and probably represent an old uplifted erosion surface (Green, 1972). Major streams and rivers have gentle gradients but tributary streams occupy narrow, V-shaped valleys with steep gradients and well developed dendritic patterns. The claims are located within the headwaters of a tributary of Moose Creek. Bedrock exposure in the area is limited to road cuts, creek valleys and sporadic outcrops along the ridge tops. Overburden thickness varies over the property but thicknesses encountered during sampling are estimated to be less than 1 metre.

Elevations, on the claims range from approximately 670 to 1130 metres. The area examined and sampled in 1995 is open and covered by typical alpine vegetation, including mosses and isolated patches of "buckbrush" (dwarf birch). At lower elevations, the claims are covered by spruce and alpine fir.

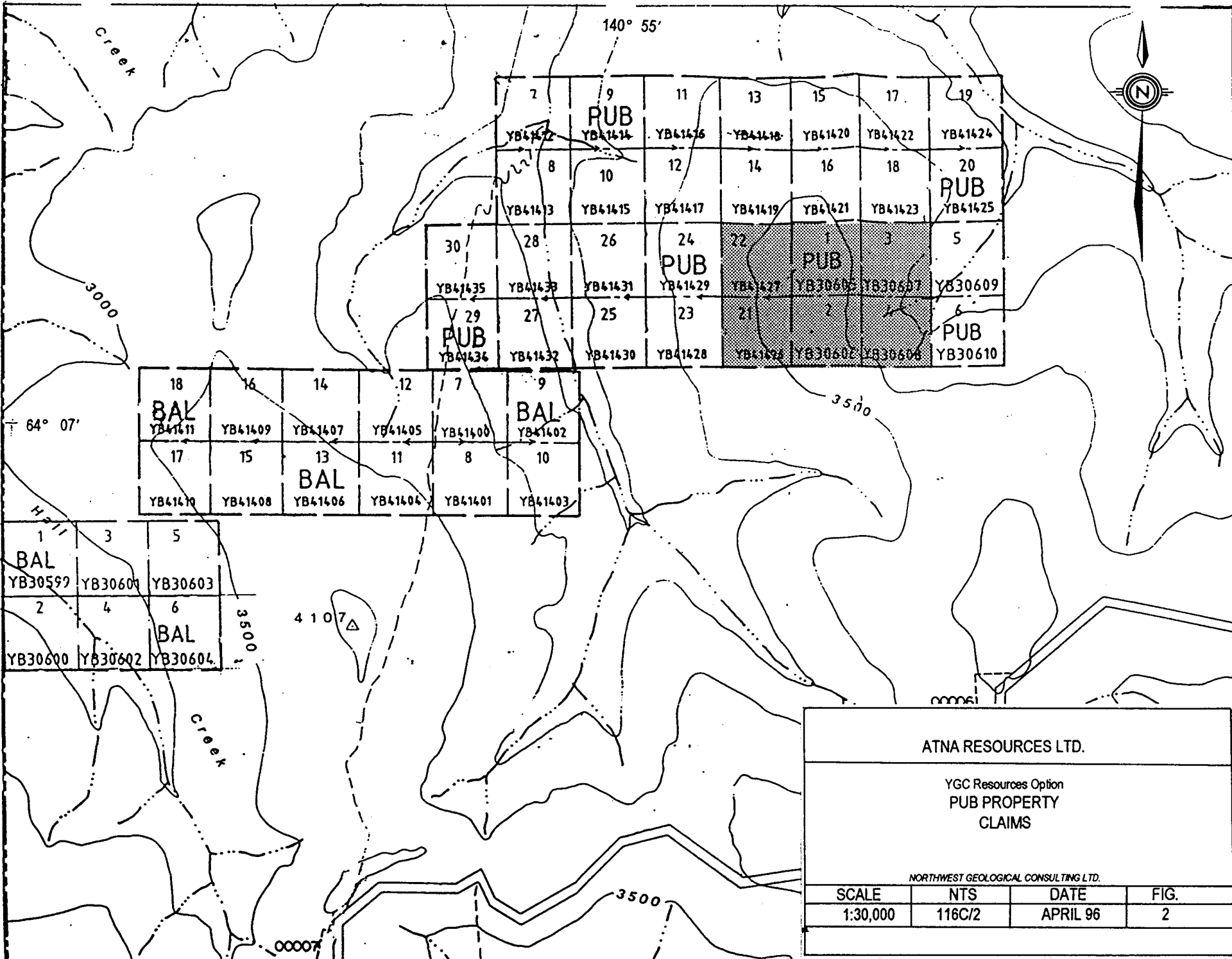
### 4. HISTORY

The property was first explored by Moose Creek Exploration Ltd. in 1977 and 1978 (Carne, 1992). The Pub 1-6 claims were staked by YGC Resources Ltd. in June, 1990. This was followed in 1992 by an expansion of the property, grid soil sampling, mapping, prospecting, and a Max-Min I-9 geophysical orientation survey. The 1992 program was funded by Kennecott Canada Inc. under an option agreement with YGC Resources.

Work by Atna Resources Ltd. in 1995 is limited to a one day property examination which included three soil sampling lines.

### 5. REGIONAL GEOLOGY

A large area of the western to southeastern Yukon is underlain by the Yukon-Tanana Terrane (YTT). This geologically complex terrane consists of polydeformed metamorphic



ATNA RESOURCES LTD.			
YGC Resources Option PUB PROPERTY CLAIMS			
<small>NORTHWEST GEOLOGICAL CONSULTING LTD.</small>			
SCALE	NTS	DATE	FIG.
1:30,000	116C/2	APRIL 96	2

rocks derived from a variety of igneous and sedimentary protoliths thought to have originated outboard of North American autochthonous strata, and ranges in age from Precambrian to Recent. Yukon-Tanana Terrane is host to a variety of economically important classes of mineral deposits. Recently, exploration has focussed on stratabound massive sulphide deposits that occur in subdivisions of this terrane in two areas of the Yukon. A number of stratabound base metal occurrences are known west and south of Dawson City. A second group of similar but economically more important mineral occurrences is known in YTT of Finlayson Lake area. The geology is similar to Dawson area but is now geographically removed by 450 km of right-lateral displacement along the Tintina Fault.

Mortensen (1992) divided the YTT into 3 structural assemblages: 1) Nisling assemblage, a lower structural package of quartzite and marble of possible Proterozoic and/or Cambrian age; 2) Nasina assemblage, a middle structural package of Late Devonian to middle Mississippian carbonaceous metasedimentary, mafic and felsic metavolcanic rocks; 3) an upper structural package of mid-Permian felsic metavolcanic (Klondike Schist) and metaplutonic rocks.

## 6. PROPERTY GEOLOGY

The claims and surrounding area are underlain by a northerly-dipping, 2,000 metre thick sequence of metavolcanic rocks belonging to Mortensen's upper structural assemblage (Klondike Schist). They consist primarily of pyritic quartz-muscovite schist, quartz and/or feldspar augen schist and chloritic schist with minor graphitic quartz-muscovite schist intervals (Carne, 1992).

## 7. GEOCHEMISTRY

Grid soil sampling was limited to three north-south soil lines, having a combined length of 2.75 km and a total of 58 samples.

Previous lines in this area had a line spacing of 300 metres. The 1995 lines were also run at a 300 metre spacing and 50 metre sample interval but were run between the old lines to

reduce the overall line spacing to 150 metres.

Sample lines are marked with orange flagging tape and were established by slope-corrected compass and "hip-chain" surveys. Grid stations are identified by blue and orange flagging tape with grid coordinates marked on "Tivek" tags. The grid coordinates were also used to identify the soil sample. Samples of B horizon soils were collected using sampling shovels or mattocks. Soils typically consist of clay rich-colluvium covered by a variable thickness of organic material. Sample depths ranged from 20 to 40 cm. Permafrost development is variable and did not hinder sampling.

Samples were analyzed by Acme Analytical Laboratories Ltd. of Vancouver, employing a standard 30 element Inductively Coupled Argon Plasma (ICP) package with gold analyzed by acid leach/AA from a 10 g sample. Certificates of analyses are appended to this report (Appendix A).

The interpreted soil sample analyses for Cu, Pb and Zn are plotted at 1: 5000 scale on Figures 3 to 5. These plots include only data from 1995.

#### STATISTICAL METHOD

Analytical data analyzed statistically using Proplot, a computer program designed to optimally fit multiple normal distributions to exploration geochemical data on probability plots (Stanley 1987).

A statistical analysis of Cu, Pb and Zn analytical data was carried out with the aid of histograms and cumulative probability plots generated by Proplot. Because of the low number of samples taken on the Pub claims, the analytical data were combined with analyses from the nearby Bal claims. During data analyses the data set was reduced by eliminating analyses which are at the analytical detection limit. Sub-population boundaries were visually estimated and modified until theoretical mixed population curves closely matched the real data points. Anomaly thresholds for each sub-population were then calculated by the Proplot program. Threshold values assigned to six symbol classes were determined by selecting the mean value and the mean plus two standard deviations of each sub-population. Summary statistics, histograms, and probability plots produced by Proplot,

are appended to this report (Appendix B).

Trial plots were generated within Autocad and final thresholds were selected by a visual assessment of anomaly definition and contrast with background values. The final plots classify the analytical data for each element into ranges of increasing value which are assigned symbols of increasing size. In most cases, log probability plots were used to determine thresholds. The lowest population thresholds are often ignored on symbol plots because they represent background concentrations.

## DISCUSSION OF RESULTS

### Copper (Fig.3)

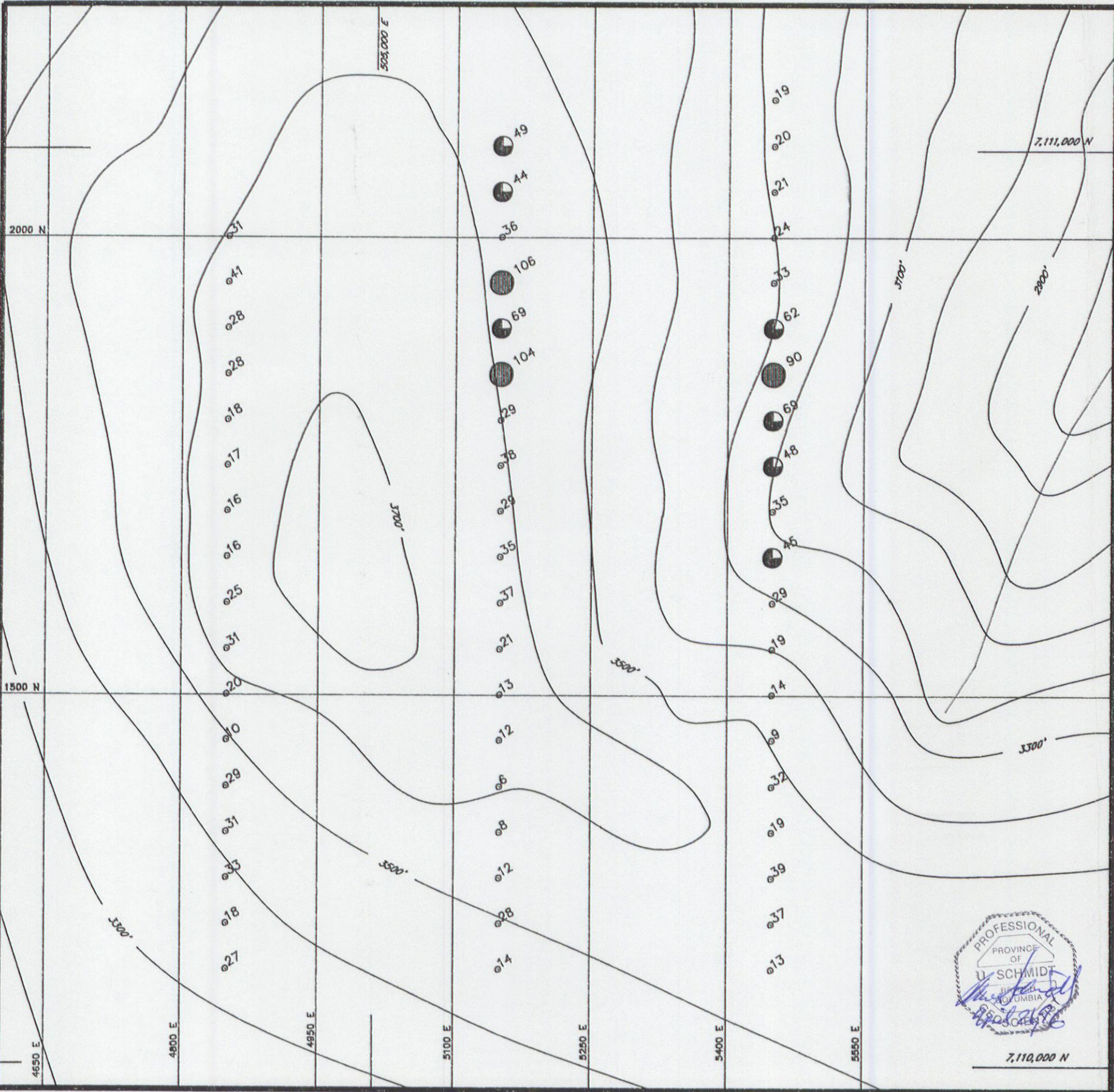
Copper concentrations in 58 soil analyses range from 6 to 106 ppm. The data were sub-divided into 2 lognormal populations, with population boundaries selected at 85% of the data. An anomalous threshold of 41 ppm was selected, representing the mean minus two standard deviations of population 2. Symbol boundaries were chosen at 42, and 79 ppm Cu. The highest threshold corresponds to the mean of population 2.

Scaled symbol plots of the data at 1:5000 scale (Fig.3) outline two clusters of anomalous concentrations along two grid lines. The anomalous analyses occur in the northeast corner of the grid and outline a northwest trending area of interest, covering an area of at least 250 by 300 metres.

### Lead (Fig. 4)

Lead analyses range from 6 to 197 ppm. The data were sub-divided into 2 lognormal populations with population boundaries selected at 75% of the data. A concentration of 47 ppm Pb was chosen as the anomalous threshold and corresponds to the mean minus two standard deviations of population 2. Scaled symbols were assigned thresholds of 47 and 109 ppm Pb. The higher threshold represents the mean of population 2.

Anomalous lead concentrations are broadly coincident with Cu. Additional anomalous lead sample sites occur on the westernmost line.



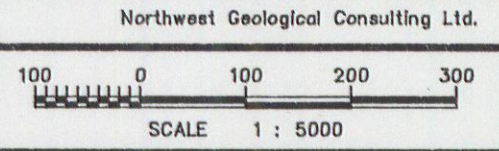
Cu Analyses in ppm

○	<1 -	41
◐	42 -	78
◑	79 -	151
◒	152 >>>>>>	

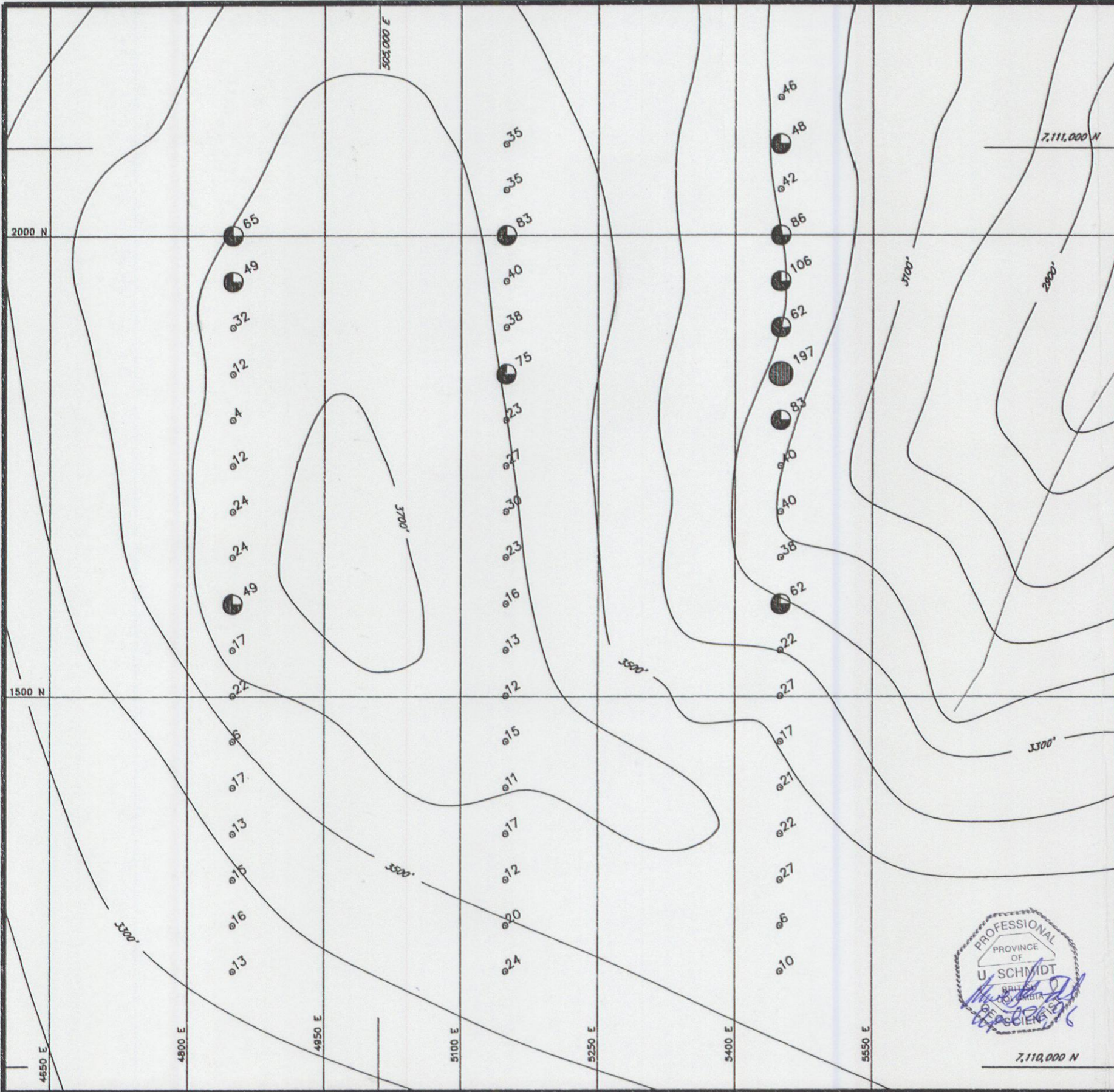
**ATNA RESOURCES LTD.**

**Pub Property  
Cu Geochemistry**

Work By	U.Schmidt
Date Drafted	04-23-96
Drafted By	
Date Revised	04-23-96
Revised By	
N.T.S.	116 C/2
File Name	PUBCUFIN



7,110,000 N



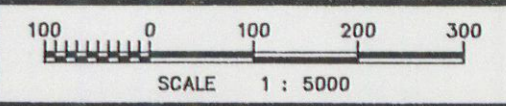
Pb Analyses in ppm

- <1 - 46
- ◐ 47 - 108
- ◑ 109 - 254
- ◓ 255 >>>>>>

ATNA RESOURCES LTD.

Pub Property  
Pb Geochemistry

Work By	U.Schmidt
Date Drafted	04-23-96
Drafted By	
Date Revised	04-23-96
Revised By	
N.T.S.	118 C/2
File Name	PUBPBFN



7,110,000 N

### Zinc (Fig. 5)

The zinc analytical data were divided into two populations. A population boundary was selected at 90% of the data. An anomaly threshold of 96 was selected, which represents the mean of population 1. Scaled anomaly symbols were assigned thresholds of 201, 278 and 383 ppm. These values correspond to the mean minus 2 standard deviations of population 2, the mean of population 2 and the mean plus two standard deviations of population 2, respectively.

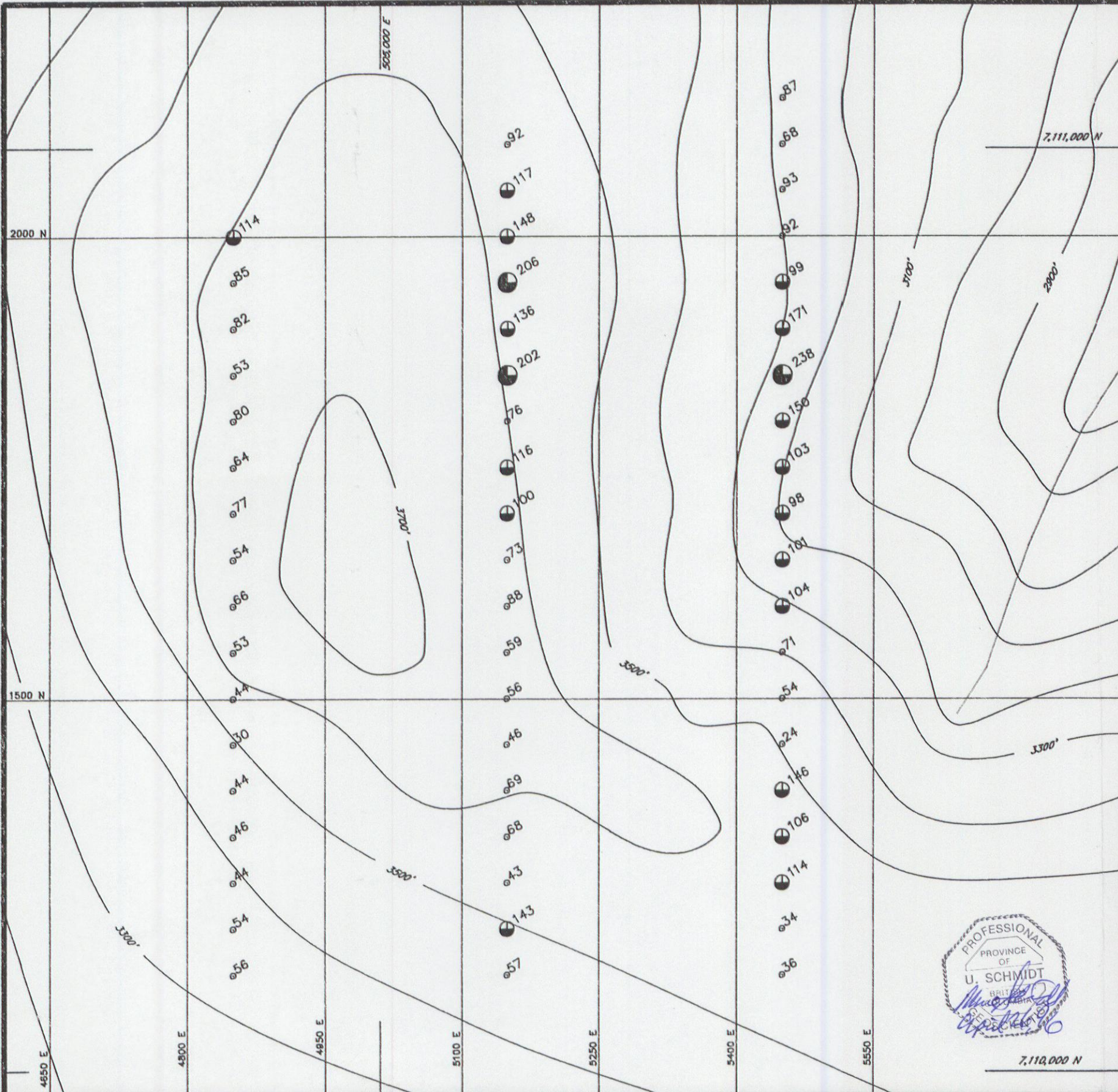
Scaled symbol plots of zinc concentrations are roughly coincident with the lead and copper anomalies.

## 8. CONCLUSIONS

The 1995 grid soil sampling has outlined coincident geochemical copper, lead and zinc soil anomalies at the north end of three soil sample lines. No explanation for these anomalies was observed during a brief examination in 1995. A further evaluation of these anomalies is justified in view of the geological setting and recent discoveries in a similar setting in south-central Yukon.

## 9. RECOMMENDATIONS

The 1995 soil survey results confirm earlier survey results and indicate that a reexamination of the combined Pub-Bal area is justified. This area should be further explored by additional soil sampling, aimed at reducing the existing line spacing. Soil anomalies should be examined by prospecting and hand trenching. Backhoe trenching should be considered for areas where hand trenching is ineffective.



Zn Analyses in ppm

○	<1 -	96
◐	97 -	201
◑	202 -	278
◒	279 -	383
◓	384 >>>>>	

ATNA RESOURCES LTD.

Pub Property  
Zn Geochemistry

Work By	U.Schmidt
Date Drafted	04-23-96
Drafted By	
Date Revised	04-23-96
Revised By	
N.T.S.	116 C/2
File Name	PUBZNFN

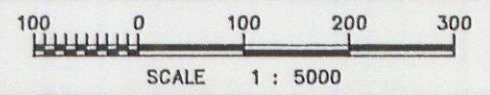


Figure  
**5**



7,112,000 N

## 10. BIBLIOGRAPHY AND REFERENCES

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Stanley, C.R., (1987): Probplot; The Association of Exploration Geochemists, Special Volume No. 14

11. STATEMENT OF EXPENDITURE

**I. Field Expenses**

1) Labour

U.Schmidt (Project Geologist) Aug. 4, 1995

1 day @\$350/day . . . . . \$350.00

R.Beauchamp (Field Assistant) Aug. 4, 1995

1 day @ \$200/day . . . . . \$200.00

R. Moran (Field Assistant) Aug.4, 1995

1 day @ \$175/day . . . . . \$175.00

**\$725.00**

2) Consumables and Supplies . . . . . \$171.92

3) Camp and Equipment Rental . . . . . \$78.50

4) Transportation

Truck Rental Aug.4, 1995 (1 day @ \$55/day) . . . . . \$55.00

5) Geochemical Analysis

58 soils, 33 element ICP analysis . . . . . \$522.00

**II. OFFICE**

Data compilation, Interpretation, Data Plotting, Report Writing

U. Schmidt April 23, 26, 1996

2 days @\$350/day . . . . . \$700.00

\$2,252.42

GST \$157.67

**TOTAL \$2,410.09**

## Appendix A

### CERTIFICATES OF ANALYSIS



SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Tl	Hg
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm
P 48+50E 21+00N	2	26	27	131	.3	13	9	532	3.23	12	<5	<2	3	13	.9	<2	5	28	.09	.058	21	16	.35	78	.02	3	.96	<.01	.05	2	<5	1
P 48+50E 20+50N	1	46	84	155	.5	12	3	274	2.77	2	<5	<2	<2	24	<.2	<2	2	42	.07	.054	38	24	1.00	110	.03	<3	1.48	.01	.07	<2	<5	1
P 48+50E 20+00N	2	31	65	114	.3	7	3	207	2.84	9	<5	<2	2	39	<.2	<2	4	30	.06	.053	46	13	.62	154	.04	<3	1.24	.02	.12	<2	<5	<1
P 48+50E 19+50N	2	41	49	85	.7	9	2	186	2.70	11	<5	<2	2	26	.4	<2	<2	36	.08	.050	43	19	.57	150	.05	<3	1.41	.01	.08	<2	<5	1
P 48+50E 19+00N	1	28	32	82	.3	10	3	249	2.85	8	5	<2	2	26	.2	<2	<2	35	.10	.048	35	19	.65	148	.06	<3	1.56	.01	.15	<2	<5	<1
P 48+50E 18+50N	2	28	12	53	<.3	9	3	199	1.88	<2	<5	<2	<2	13	.3	<2	<2	22	.06	.036	14	15	.25	73	.04	<3	.88	.01	.09	<2	<5	<1
P 48+50E 18+00N	<1	18	4	80	<.3	1	2	327	3.15	3	<5	<2	6	30	.3	<2	<2	23	.18	.080	29	6	.90	326	.12	3	1.43	.01	.51	<2	<5	<1
P 48+50E 17+50N	1	17	12	64	<.3	11	4	217	2.34	3	<5	<2	4	18	<.2	<2	<2	29	.06	.031	37	14	.29	133	.06	<3	1.01	.01	.12	<2	<5	1
P 48+50E 17+00N	1	16	24	77	<.3	13	6	277	2.49	8	6	<2	2	13	.3	<2	2	35	.12	.050	22	20	.42	165	.05	<3	1.29	.01	.11	<2	<5	<1
P 48+50E 16+50N	2	16	24	54	<.3	11	4	212	2.95	7	<5	<2	10	12	<.2	<2	<2	45	.08	.029	26	22	.27	380	.04	3	1.31	<.01	.09	<2	<5	<1
P 48+50E 16+00N	1	25	49	66	<.3	13	7	482	2.10	2	<5	<2	8	11	.7	<2	<2	30	.11	.022	45	18	.23	305	.03	<3	1.02	.01	.07	<2	<5	<1
P 48+50E 15+50N	1	31	17	53	<.3	18	7	453	2.69	11	<5	<2	7	12	.4	<2	<2	43	.13	.024	30	22	.33	254	.05	<3	1.50	.01	.06	<2	<5	<1
P 48+50E 15+00N	1	20	22	44	<.3	12	6	474	3.72	15	<5	<2	5	13	.6	2	2	76	.12	.036	20	29	.34	183	.06	<3	1.81	<.01	.07	<2	<5	1
P 48+50E 14+50N	<1	10	6	30	<.3	4	3	179	1.89	2	<5	<2	<2	13	<.2	<2	<2	48	.12	.034	7	12	.13	83	.07	<3	.65	.02	.04	<2	<5	<1
P 48+50E 14+00N	1	29	17	44	<.3	21	6	274	2.60	10	<5	<2	6	13	.2	<2	<2	47	.14	.015	25	28	.37	291	.05	<3	1.65	.01	.07	<2	<5	1
P 48+50E 13+50N	1	31	13	46	<.3	13	7	412	2.28	7	<5	<2	8	18	<.2	<2	<2	44	.20	.015	36	23	.36	388	.05	<3	1.59	.02	.07	<2	<5	1
P 48+50E 13+00N	1	33	15	44	<.3	12	6	331	2.11	9	<5	<2	13	11	.5	<2	<2	36	.10	.008	36	21	.30	312	.03	<3	1.49	.01	.07	<2	<5	1
P 48+50E 12+50N	1	18	16	54	<.3	14	6	318	2.70	12	6	<2	6	14	.6	2	<2	62	.12	.012	15	28	.39	214	.07	<3	1.93	.01	.07	<2	<5	<1
RE P 48+50E 12+50N	1	18	18	55	<.3	14	6	319	2.69	13	<5	<2	6	14	.2	<2	<2	62	.12	.011	16	30	.39	212	.06	<3	1.93	.01	.07	<2	<5	1
P 48+50E 12+00N	1	27	13	56	<.3	17	7	335	2.33	12	6	<2	8	14	<.2	2	<2	42	.17	.022	23	25	.40	219	.05	3	1.39	.01	.07	<2	<5	<1
P 51+50E 21+00N	2	49	35	92	.3	19	5	300	2.97	10	6	<2	2	18	.3	<2	<2	59	.15	.049	26	49	1.24	101	.05	<3	2.08	.01	.06	<2	<5	<1
P 51+50E 20+50N	6	44	35	117	.3	30	4	398	3.16	4	<5	<2	4	21	.6	<2	2	44	.14	.064	26	67	1.94	107	.04	<3	2.14	.01	.10	<2	<5	<1
P 51+50E 20+00N	2	36	83	148	<.3	22	3	496	3.65	11	<5	<2	3	17	<.2	<2	<2	85	.10	.034	22	84	1.91	68	.07	<3	2.13	.01	.06	<2	<5	1
P 51+50E 19+50N	2	106	40	206	.3	18	5	859	4.53	5	<5	<2	4	27	.2	<2	<2	88	.08	.053	28	58	2.39	97	.06	<3	2.83	.02	.14	<2	<5	<1
P 51+50E 19+00N	2	69	38	136	.3	14	5	657	3.65	8	7	<2	4	22	<.2	<2	<2	47	.10	.075	35	63	2.09	105	.05	<3	2.37	.01	.12	<2	<5	1
P 51+50E 18+50N	2	104	75	202	.3	17	2	674	3.44	6	<5	<2	4	21	.5	<2	<2	40	.04	.060	40	71	2.32	147	.03	<3	2.27	.01	.19	<2	<5	1
P 51+50E 18+00N	1	29	23	76	<.3	12	3	376	2.67	5	<5	<2	<2	15	<.2	<2	<2	46	.10	.036	22	42	1.06	74	.05	3	1.65	<.01	.07	<2	<5	<1
P 51+50E 17+50N	1	38	27	116	<.3	14	6	494	3.49	12	<5	<2	2	22	.4	<2	<2	48	.10	.054	28	49	1.48	95	.04	<3	2.09	<.01	.07	<2	<5	1
P 51+50E 17+00N	1	29	30	100	.5	14	4	237	3.06	7	<5	<2	3	25	<.2	<2	<2	44	.16	.056	28	23	.65	159	.07	<3	1.66	.01	.15	<2	<5	<1
P 51+50E 16+50N	2	35	23	73	<.3	10	4	298	3.21	3	<5	<2	6	41	.3	<2	<2	29	.08	.039	46	14	.61	146	.06	<3	1.43	.03	.25	<2	<5	1
P 51+50E 16+00N	1	37	16	88	<.3	18	8	478	3.84	10	<5	<2	11	29	.3	<2	<2	41	.13	.051	54	20	.69	216	.08	<3	1.85	.02	.28	<2	<5	1
P 51+50E 15+50N	2	21	13	59	<.3	13	8	463	3.35	15	<5	<2	6	22	.3	<2	<2	44	.18	.047	28	20	.64	201	.11	<3	1.73	.01	.30	<2	<5	1
P 51+50E 15+00N	2	13	12	56	<.3	6	5	354	3.51	7	<5	<2	5	17	<.2	2	<2	40	.09	.029	22	13	.48	125	.09	<3	1.43	.01	.22	<2	<5	1
P 51+50E 14+50N	3	12	15	46	<.3	6	4	152	2.61	7	<5	<2	7	28	<.2	<2	<2	33	.04	.024	45	13	.25	116	.05	<3	1.16	.01	.15	<2	<5	1
P 51+50E 14+00N	2	6	11	69	<.3	<1	5	568	3.23	5	<5	<2	16	41	<.2	<2	<2	12	.28	.102	65	2	.89	387	.10	<3	1.24	.01	.84	<2	<5	<1
STANDARD C	17	54	35	131	6.7	70	30	1090	3.74	41	23	6	34	48	17.4	18	15	63	.48	.091	41	58	.89	167	.07	25	1.71	.06	.14	9	<5	2

Sample type: SOIL. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

BA

SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Tl	Hg
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	%	%	%	%	ppm	ppm	ppm
P 51+50E 13+50N	6	8	17	68	<.3	2	3	347	3.48	4	<5	<2	14	40	.2	<2	<2	9	.02	.036	50	4	.76	269	.08	<3	1.20	.01	.76	3	<5	<1
P 51+50E 13+00N	1	12	12	43	<.3	10	5	218	2.72	8	6	<2	6	13	.2	<2	<2	52	.08	.014	21	21	.26	154	.07	<3	1.52	.01	.08	2	<5	1
P 51+50E 12+50N	1	28	20	143	<.3	10	6	356	2.53	2	<5	<2	13	20	.4	<2	<2	9	.01	.020	30	5	.13	214	.01	<3	.73	<.01	.15	<2	<5	<1
P 51+50E 12+00N	2	14	24	57	<.3	13	5	226	4.00	10	10	<2	15	7	.5	<2	<2	55	.06	.025	16	21	.30	52	.06	<3	1.41	<.01	.10	2	<5	<1
P 54+50E 21+50N	2	19	46	87	<.3	17	4	259	2.95	12	7	<2	4	18	.5	<2	4	36	.10	.034	26	30	1.05	85	.04	<3	1.60	.01	.07	3	<5	1
P 54+50E 21+00N	1	20	48	68	<.3	13	3	208	3.01	7	<5	<2	2	16	<.2	<2	2	37	.11	.036	27	33	.93	79	.04	<3	1.53	<.01	.06	3	<5	<1
P 54+50E 20+50N	2	21	42	93	<.3	13	3	296	3.56	3	<5	<2	11	21	.6	<2	<2	25	.08	.038	36	22	1.44	107	.04	<3	1.60	.02	.15	4	<5	<1
P 54+50E 20+00N	3	24	86	92	.4	15	3	277	3.45	5	<5	<2	4	29	.4	<2	<2	34	.09	.052	45	41	1.23	118	.02	3	1.61	.01	.09	4	<5	1
RE P 54+50E 20+00N	3	25	90	91	.3	13	3	277	3.45	6	<5	<2	4	30	.8	<2	4	34	.10	.050	45	41	1.22	118	.03	<3	1.62	.01	.09	5	<5	<1
P 54+50E 19+50N	2	33	106	99	.4	14	4	263	3.99	14	5	<2	2	26	.4	<2	6	35	.08	.052	41	46	1.21	102	.02	<3	1.75	.01	.06	5	<5	1
P 54+50E 19+00N	1	62	62	171	<.3	22	7	557	3.34	3	<5	<2	5	25	.8	2	<2	42	.15	.059	24	54	1.70	84	.04	<3	1.88	.01	.09	4	<5	<1
P 54+50E 18+50N	2	90	197	238	.5	28	7	685	3.84	4	<5	<2	4	22	.5	<2	<2	70	.12	.043	22	92	2.06	109	.06	<3	2.55	.01	.09	5	<5	<1
P 54+50E 18+00N	1	69	83	150	<.3	19	4	531	3.16	9	<5	<2	<2	24	1.0	<2	<2	56	.15	.049	26	67	1.62	124	.06	<3	2.12	.01	.10	4	<5	1
P 54+50E 17+50N	1	48	40	103	<.3	13	3	355	2.38	<2	<5	<2	<2	25	.7	<2	<2	33	.11	.061	28	31	1.21	120	.03	<3	1.55	.01	.08	4	<5	<1
P 54+50E 17+00N	2	35	40	98	<.3	11	3	337	2.41	3	<5	<2	<2	27	.8	<2	<2	35	.09	.055	32	34	1.26	93	.03	<3	1.61	.01	.08	4	<5	1
P 54+50E 16+50N	4	45	38	101	<.3	7	3	212	2.31	8	<5	<2	7	41	.4	<2	<2	26	.06	.044	39	8	.56	146	.06	<3	1.08	.02	.24	2	<5	<1
P 54+50E 16+00N	2	29	62	104	<.3	7	3	176	2.16	2	<5	<2	2	22	.8	<2	<2	23	.06	.036	26	8	.24	163	.03	3	1.09	.01	.14	<2	<5	<1
P 54+50E 15+50N	2	19	22	71	<.3	10	17	1339	2.03	5	<5	<2	<2	21	1.4	<2	<2	21	.13	.043	27	11	.25	194	.02	<3	.89	.01	.12	<2	<5	<1
P 54+50E 15+00N	2	14	27	54	<.3	6	4	506	2.03	2	<5	<2	14	11	.3	<2	<2	26	.08	.019	34	12	.15	86	.02	<3	.98	<.01	.09	<2	<5	<1
P 54+50E 14+50N	1	9	17	24	<.3	6	1	106	1.02	<2	<5	<2	3	6	.4	<2	<2	20	.05	.019	28	9	.10	57	.02	<3	.59	.02	.05	<2	<5	<1
P 54+50E 14+00N	1	32	21	146	<.3	14	8	726	3.20	2	<5	<2	5	20	1.0	<2	<2	27	.79	.129	37	18	.36	169	.01	<3	.91	<.01	.05	2	<5	<1
P 54+50E 13+50N	1	19	22	106	<.3	8	7	660	3.13	<2	<5	<2	4	19	.6	<2	<2	26	.80	.129	22	12	.23	189	.01	<3	.69	<.01	.04	<2	<5	<1
P 54+50E 13+00N	1	39	27	114	<.3	13	12	1035	4.02	4	<5	<2	2	28	.8	<2	<2	42	.83	.139	39	20	.70	146	.04	<3	1.77	.02	.09	2	<5	1
P 54+50E 12+50N	1	37	6	34	<.3	8	6	807	1.64	4	<5	<2	<2	49	.5	<2	<2	23	2.27	.073	15	14	.31	93	.03	<3	.83	.02	.04	2	<5	<1
P 54+50E 12+00N	1	13	10	36	<.3	17	7	458	2.35	7	<5	<2	2	10	.7	<2	<2	24	.31	.047	28	14	.44	70	.02	<3	.86	.01	.04	2	<5	1
STANDARD C	18	56	42	127	6.7	68	30	1078	3.79	39	22	7	35	48	18.3	18	20	65	.50	.090	42	59	.91	169	.08	26	1.79	.06	.15	12	<5	2

Sample type: SOIL. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

## Appendix B

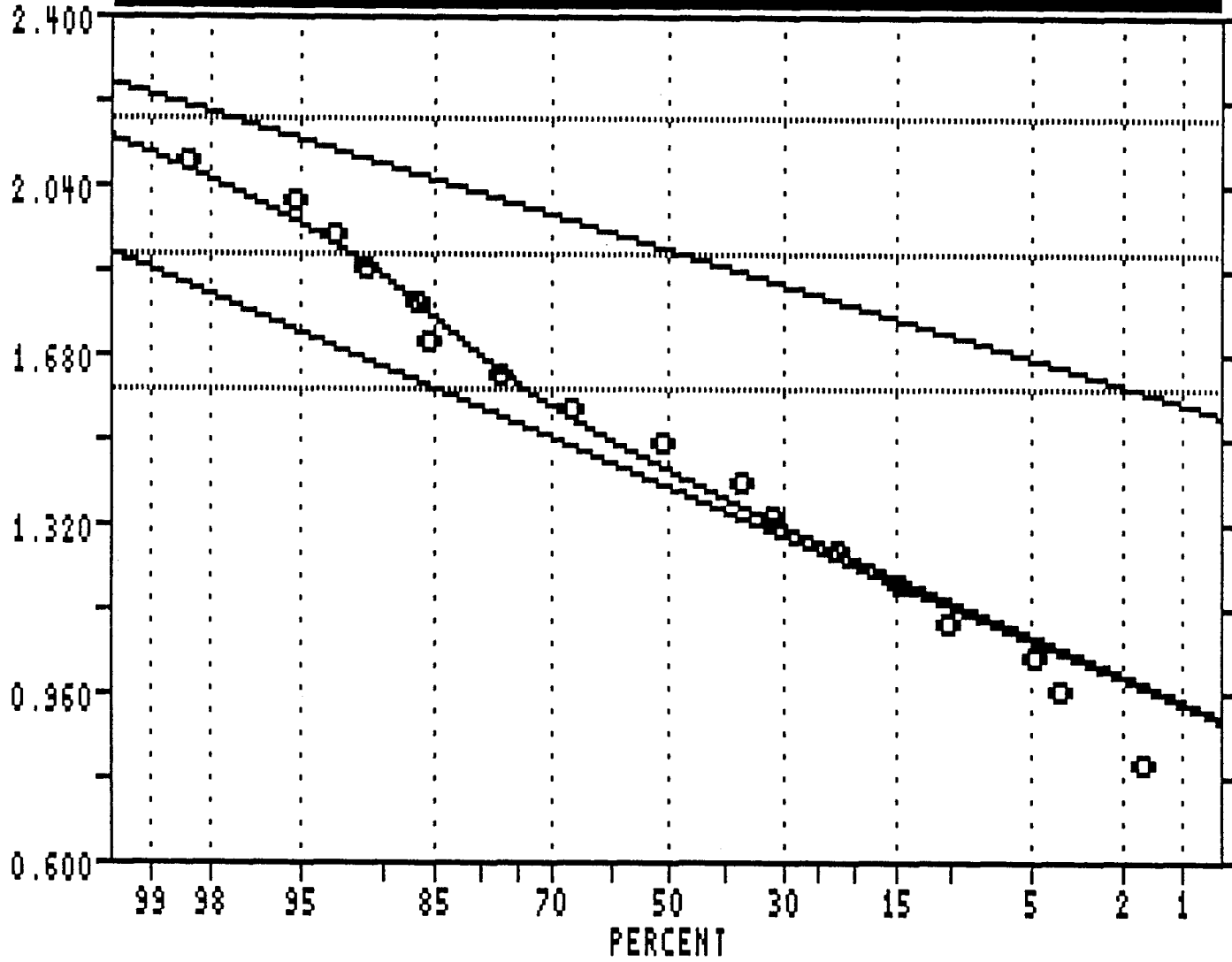
### STATISTICS

## COPPER STATISTICS



PUB BAL SOIL GEOCHEMISTRY

PROBABILITY PLOT



LOGARITHMIC VALUES

=====

VARIABLE = Cu  
 UNIT = ppm  
 N = 93  
 N CI = 20

POPULATIONS

=====

Pop.	Mean	Std.Dev.	%
1	1.3911	0.1982	85.0
2	1.8933	0.1428	15.0

THRESHOLDS

=====

2.1789      1.8933  
 1.6076

USERS VISUAL  
 PARAMETER ESTIMATES



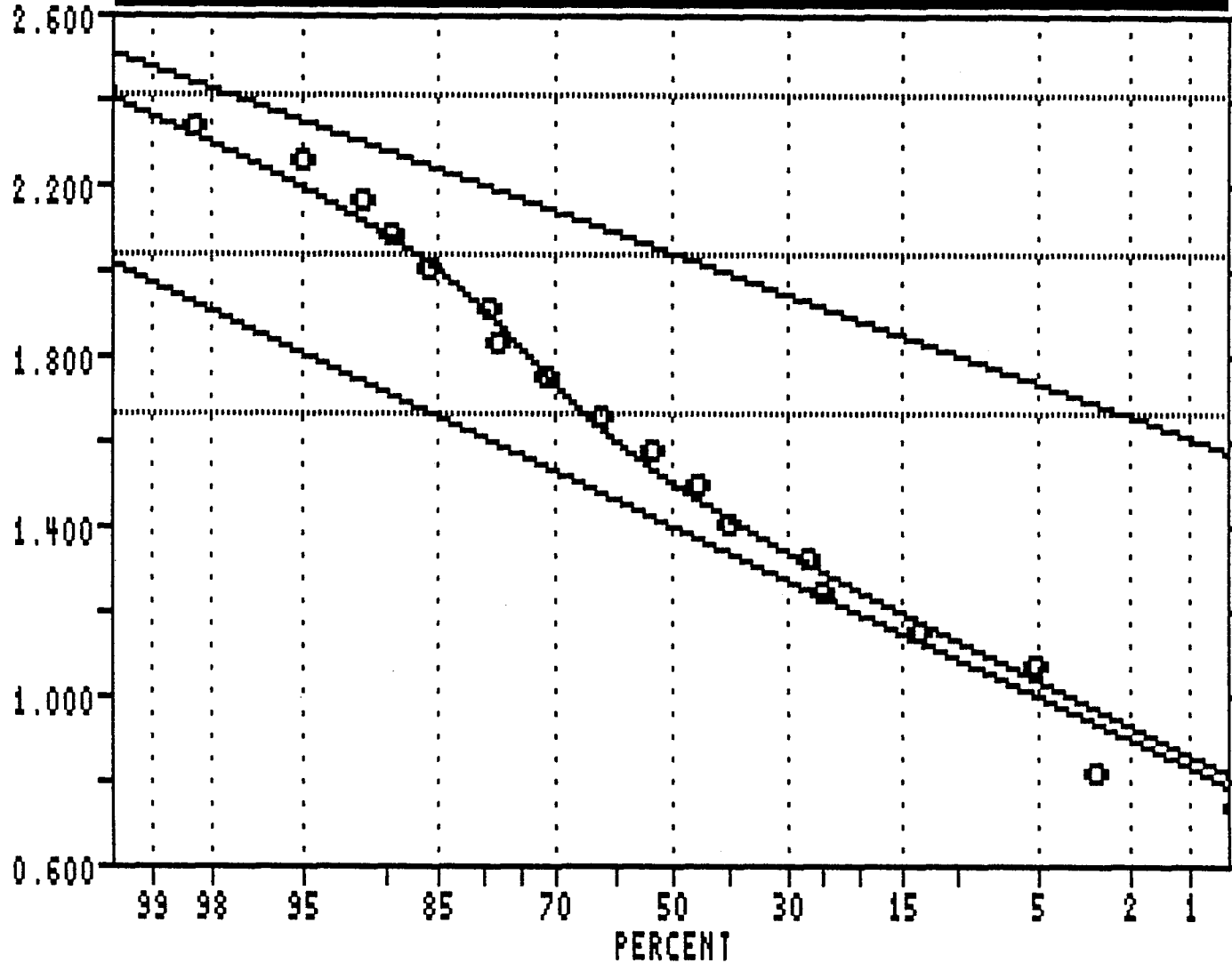


## LEAD STATISTICS



PUB BAL SOIL GEOCHEMISTRY

PROBABILITY PLOT



LOGARITHMIC VALUES

=====

VARIABLE = Pb

UNIT = ppH

N = 87

N CI = 20

POPULATIONS

=====

Pop.	Mean	Std.Dev.	%
1	1.3994	0.2455	75.0
2	2.0353	0.1848	25.0

THRESHOLDS

=====

2.4049      2.0353  
1.6657

USERS VISUAL  
PARAMETER ESTIMATES



PUB BAL SOIL GEOCHEMISTRY

#####  
 SUMMARY STATISTICS and HISTOGRAM LOGARITHMIC VALUES

Variable = Pb Unit = ppm N = 93  
 Mean = 1.6078 Min = 0.6021 1st Quartile = 1.3169  
 Std. Dev. = 0.4318 Max = 2.6117 Median = 1.5798  
 CV % = 26.8575 Skewness = 0.3563 3rd Quartile = 1.8383  
 Anti-Log Mean = 40.533 Anti-Log Std. Dev. : (-) 14.997  
 (+) 109.554

```

=====
%   cum %   antilog   cls int   (# of bins = 20 - bin size = 0.1058)
-----
0.00 0.53    3.541     0.5492
1.08 1.60     4.518     0.6549 *
0.00 1.60     5.764     0.7607
2.15 3.72     7.353     0.8665 **
0.00 3.72     9.381     0.9723
2.15 5.85    11.968    1.0780 **
10.75 16.49   15.269    1.1838 *****
7.53 23.94   19.479    1.2896 *****
11.83 35.64   24.851    1.3953 *****
7.53 43.09   31.704    1.5011 *****
10.75 53.72   40.447    1.6069 *****
12.90 66.49   51.602    1.7127 *****
6.45 72.87   65.832    1.8184 *****
4.30 77.13   83.986    1.9242 ****
5.38 82.45   107.147   2.0300 ****
4.30 86.70   136.694   2.1358 ****
1.08 87.77   174.390   2.2415 *
5.38 93.09   222.482   2.3473 *****
2.15 95.21   283.835   2.4531 **
1.08 96.28   362.107   2.5588 *
3.23 99.47   461.965   2.6646 ***
-----
0           1           2           3           4
    
```

#####

## ZINC STATISTICS

PUB BAL SOIL GEOCHEMISTRY

#####

PARAMETER SUMMARY STATISTICS FOR PROBABILITY PLOT ANALYSIS

Data File Name = A:PUBBAL.DAT

Variable = Zn Unit = ppm N = 92  
N CI = 20

Transform = Logarithmic Number of Populations = 2

# of Missing Observations = 0.

0 Observations Were Below the Minimum Value of 4.0000  
1 Observations Were Above the Maximum Value of 400.0000

=====

Users Visual Parameter Estimates

Population	Mean	Std Dev	Percentage
-----	-----	-----	-----
1	96.366	- 57.754	90.00
		+ 160.793	
2	277.634	- 236.482	10.00
		+ 325.946	

=====

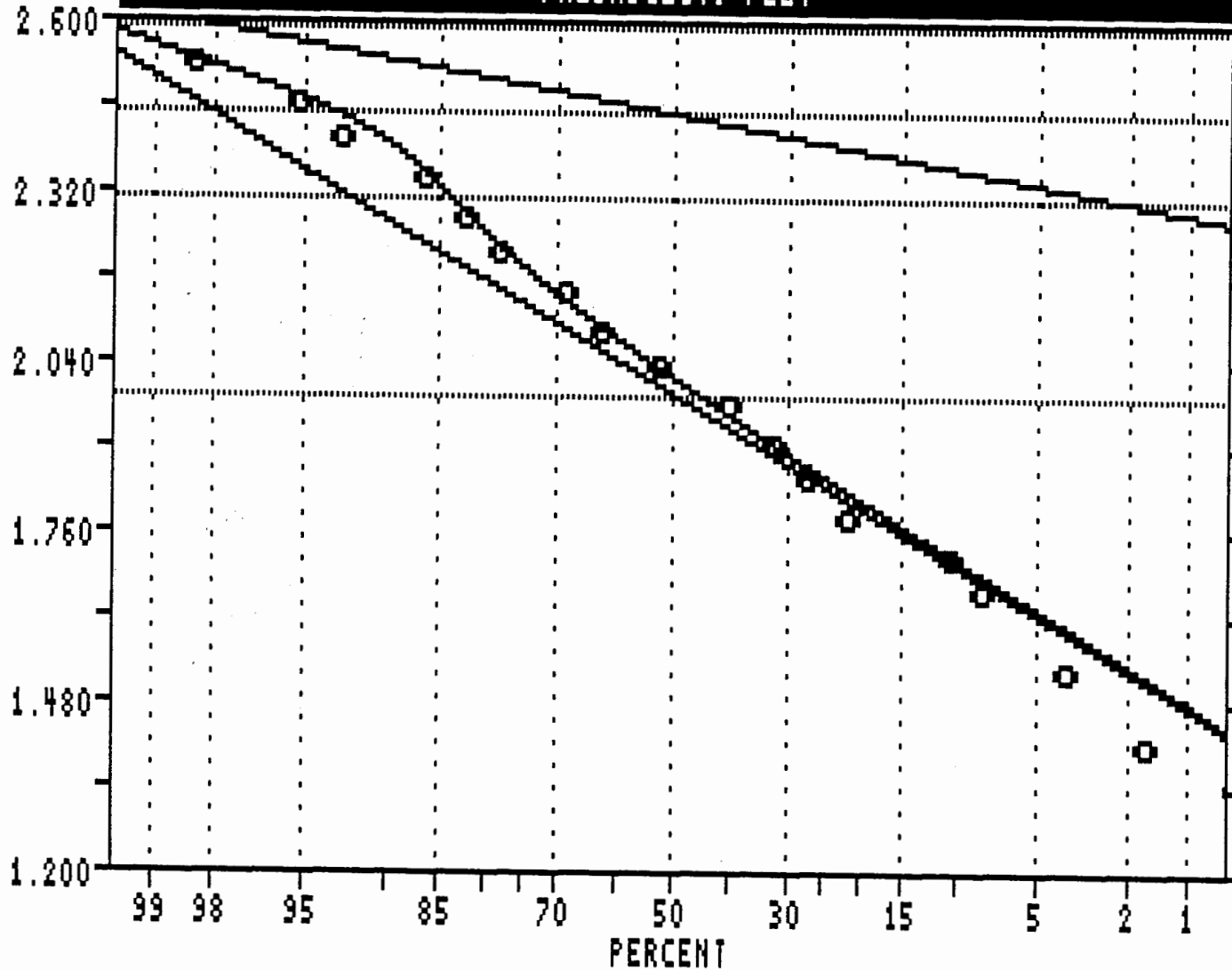
User Defined Thresholds.

Thresholds  
-----  
382.648  
277.651  
201.419  
96.361

#####

PUB BAL SOIL GEOCHEMISTRY

PROBABILITY PLOT



LOGARITHMIC VALUES

=====

VARIABLE = Zn  
 UNIT = ppm  
 N = 92  
 N CI = 20

POPULATIONS

=====

Pop.	Mean	Std. Dev.	%
1	1.9839	0.2223	90.0
2	2.4435	0.0697	10.0

THRESHOLDS

=====

2.5828	2.4435
2.3041	1.9839

USERS VISUAL  
 PARAMETER ESTIMATES





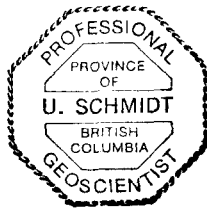
## Appendix C

### STATEMENT OF QUALIFICATIONS

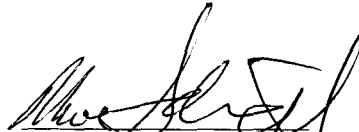
## STATEMENT OF QUALIFICATIONS

I, Uwe Schmidt, of 656 Foresthill Place, Port Moody, B.C. do hereby declare:

- (1) I am a consulting geologist and controlling shareholder of Northwest Geological Consulting Ltd.
- (2) I am a 1971 graduate of the University of British Columbia with a B.Sc. degree in Geology.
- (3) I am a member of The Association of Professional Engineers and Geoscientists of British Columbia and a Fellow of the Geological Association of Canada.
- (4) I have practised my profession continuously since graduation.
- (5) This report is based on work carried out by me or by workers under my supervision.



April 26, 1996  
Vancouver, B.C.



Uwe Schmidt, P. Geo.