



Northern Gold NL

ACN: 009 620 937
Lot 128 Finlay Rd, ADELAIDE RIVER, N.T. 0846
Phone: 08 89767023 Fax: 08 89767025

EL 8170

1997 RELINQUISHMENT REPORT

**Mount Masson (14/3-II) and Union Reef (14/6-I)
1:50,000 scale map sheets**

**Title Holders:- Territory Goldfields N.L.
Managed by:- Northern Gold N.L.**

OPEN FILE

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September 1997

Author:- N. Socic

NTDME

Northern Gold N.L., Adelaide River

Northern Gold N.L., Perth Office

SUMMARY

EL 8170 is located approximately 190 kilometres south - east of Darwin and 50 kilometres north north - west of Pine Creek on the Mount Masson (14/3-II) and Union Reef (14/6-I) 1:50,000 map sheets.

The licence area is made up of units of the South Alligator and Mount Partridge Groups. These include the Wildman Siltstone, Koolpin Formation, Gerowie Tuff and Mount Bonnie Formation. The Zamu Dolerite intrudes this sequence. All units have undergone tight to isoclinal folding about north north - west to south south - east axes which are sub-horizontal and plunge mainly to the north.

Detailed mineral exploration has been undertaken by many title holders including Australian Geophysical Pty. Ltd, Central Pacific Minerals N.L., Comalco Limited, Geopeko, Dominion Mining Limited and Billiton Australia, for gold and base metals.

EL 8170, originally consisting of 42 graticular blocks, 135 square kilometres in area, was granted to Northern Territory Gold Mines N.L. on the 16th of July 1993 for a period of six years. Territory Goldfields N.L., which is managed by Northern Gold N.L., acquired the tenement in early 1995. Due to compulsory relinquishment, the tenement was reduced to 21 blocks, 67 square kilometres in area, in November 1995. In July 1997, the tenement was reduced to 6 blocks, approximately 19 square kilometres in area. The blocks retained and relinquished are listed below.

Map	Retain	Relinquish
Mount Masson (14/3-II)	68/26	56/26
1:50,000	69/26	57/26, 57/27
	70/26	58/26, 58/27
		59/26, 59/27
		60/26, 60/27
		61/26, 61/27
		62/26, 62/27
		63/26, 63/27
Union Reef (14/6-I)	41/26, 41/27	
1:50,000	42/27	

During the 1995/96 year of tenure, Northern Gold N.L. completed a soil sampling program and digital data interpretations over the northern blocks of EL 8170.

Northern Gold N.L. completed a work program based on digital data acquisition and manipulation. Landsat Imagery, SPOT Imagery and AGSO mapping were obtained and used in conjunction with aerial mapping to determine the best method of exploration to be used on the licence. GIS and satellite imagery were used to log soil types and to interpret the structural geology of the region.

The soil sampling program consisted of eleven 800 metre long by 200 metre spaced lines. Samples were collected at 20 metre intervals and composited to 40 metres. A total of 312 samples (Sample Nos. 142001 - 142312), including duplicates were collected and sieved to -6 millimetre fraction. All samples were submitted to Assaycorp, in Pine Creek, for 50 gram quartz flush, low level fire assay technique and analysed for Au, As, Pb, Cu and Zn.

A peak response of 5 ppb Au (Sample No, 142124, 8524574N : 798912.8E) was returned from the program. Results obtained were generally low and, subsequently, the 15 northern blocks of the tenement were relinquished.

The expenditure over the relinquished blocks totaled \$19,530.

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1.0 INTRODUCTION

EL 8170 is located approximately 190 kilometres south - east of Darwin and 50 kilometres north north - west of Pine Creek on the Mount Masson (14/3-II) 1:50,000 scale and Union Reef (14/6-I) 1:50,000 scale map sheets. During the 1996/97 year of tenure, the tenement consisted of 21 blocks, 67 square kilometres in area, lying between latitudes 13°15' south and 13°32' south and longitudes 131°45 east and 131°47' east (Figure 1). In July 1997, the tenement was reduced to 6 blocks, approximately 19 square kilometres in area, lying between latitudes 13°27' south and 13°32' south and longitudes 131°45 east and 131°47' east (Figure 2). EL 8170 is situated within Perpetual Pastoral Lease No. 1111, Ban Ban Springs, held by Ban Ban Station Pty. Ltd.

Access is via the Stuart Highway, and along an unsealed road adjacent to the old railway line to Burrundie Siding then north via unsealed roads and pastoral tracks.

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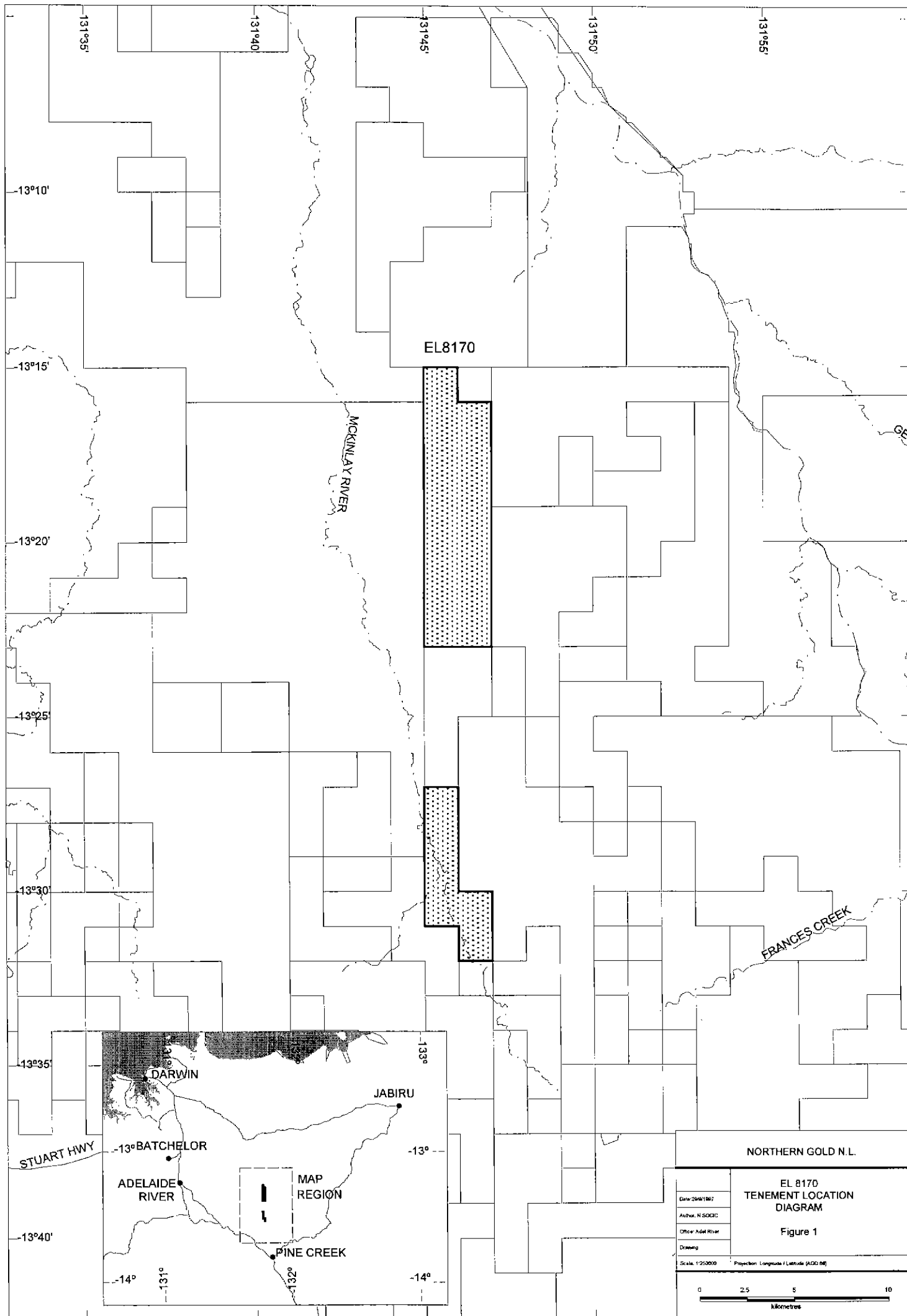
Map	Retain	Relinquish
Mount Masson (14/3-II)	68/26	56/26
1:50,000	69/26	57/26, 57/27
	70/26	58/26, 58/27
		59/26, 59/27
		60/26, 60/27
		61/26, 61/27
		62/26, 62/27
		63/26, 63/27
Union Reef (14/6-I)	41/26, 41/27	
1:50,000	42/27	

During the 1995/96 year of tenure, Northern Gold N.L. completed a soil sampling program and digital data interpretations over the northern blocks of EL 8170.

Northern Gold N.L. completed a work program based on digital data acquisition and manipulation. Landsat Imagery, SPOT Imagery and AGSO mapping were obtained and used in conjunction with aerial mapping to determine the best method of exploration to be used on the licence. GIS and satellite imagery were used to log soil types and to interpret the structural geology of the region.

The soil sampling program consisted of eleven 800 metre long by 200 metre spaced lines. Samples were collected at 20 metre intervals and composited to 40 metres. A total of 312 samples (Sample Nos. 142001 - 142312), including duplicates were collected and sieved to -6 millimetre fraction. All samples were submitted to Assaycorp, in Pine Creek, for 50 gram quartz flush, low level fire assay technique and analysed for Au, As, Pb, Cu and Zn.

The expenditure over the relinquished blocks totaled \$19,530.



NORTHERN GOLD N.L.

EL 8170
TENEMENT LOCATION
DIAGRAM

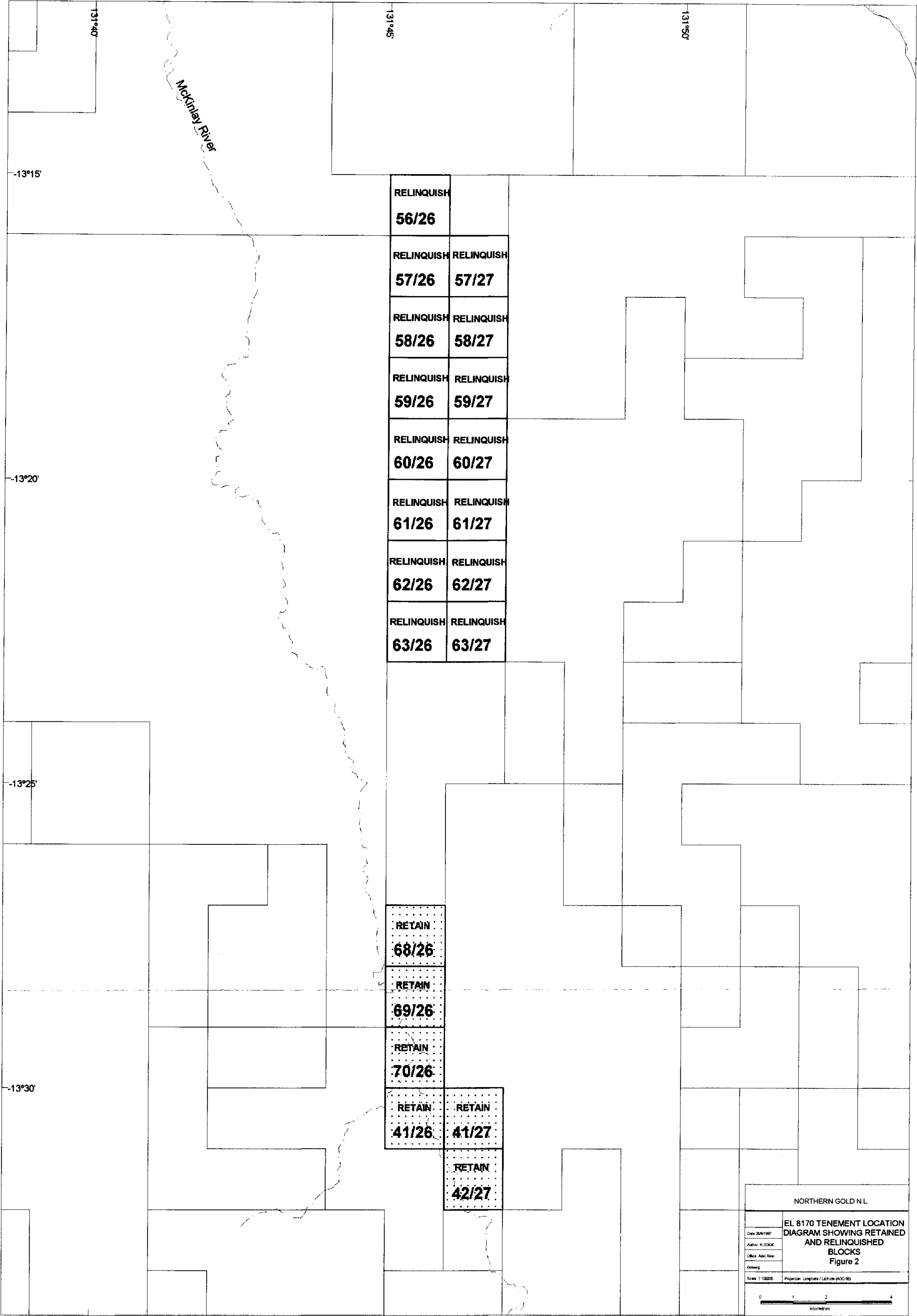
Figure 1

Date: 29/01/07
Author: N. SOGIC
Office: Adelaide
Drawing

Scale: 1:25000

Projection: Longitude / Latitude (AGD 84)





2.0 GEOLOGY

2.1 Regional Geology

EL 8170 is situated within the Pine Creek Geosyncline, a tightly to isoclinally folded sequence of mainly pelitic and psammitic Lower Proterozoic sediments with interlayered tuff units. All the lithologies in the area have been metamorphosed to low, and in places, medium grade, metamorphic assemblages. For the purpose of this report, the prefix meta- is implied, but omitted from the rock names and descriptions.

The sequence has been intruded by pre-orogenic dolerite sills of the Zamu Dolerite and a large number of late syn-orogenic to post-orogenic Proterozoic granitoids. Largely undeformed Middle and Late Proterozoic, Palaeozoic and Mesozoic strata, as well as Cainozoic sediments and laterites, overly the Pine Creek Geosyncline.

2.2 Local Geology

The licence area is made up of units of the South Alligator and Mount Partridge Groups. These include the Wildman Siltstone, Koolpin Formation, Gerowie Tuff and Mount Bonnie Formation. The Zamu Dolerite intrudes this sequence.

All units have undergone tight to isoclinal folding about north north - west to south south - east axes which are sub-horizontal and plunge mainly to the north.

Both bedding and cross faulting have deformed the units (Figure 3).

LEGEND

-  fault
-  syncline
-  anticline
-  trend of plunge on fold
-  Pgp
Prices Springs Granite
-  Pd
Zamu Dolerite
-  Psk
Koolpin Formation
-  Pgk
McKinlay Granite
-  Pnm
Masson Formation
-  Pfb
Burrell Creek Formation
-  Ppw
Wildman Siltstone
-  Ppm
Mundogie Sandstone
-  Pgcr
Frances Creek Leucogranite
-  Cz
Cainozoic
-  Phk1
Kombolgie Formation
-  Pgci
Minglo Granite
-  Qa
Quaternary
-  Pso
Mount Bonnie Formation
-  Psg
Gerowie Tuff

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EL 8170

LOCAL GEOLOGY

Figure 3

Date 28/01/97

Author M SOCAC

Office April River

Drawing

Scale 1:10000

Projection AMG Zone 52 (AGD 86)

0 1 2 4
kilometres

3.0 PREVIOUS WORK

The Mount Wells Tin Mine to the west of the southern portion of the licence area was discovered in 1879 and worked intermittently until 1929, with a recorded production of approximately 100,000t grading 1% Sn. The Mount Wells Battery was established in 1961 to aid mining in the Pine Creek district. The battery was upgraded and sold in 1981 to Jingellic Minerals NL. Ownership of the mine and facilities passed to Territory Resources in 1983 (Fawcett, 1995).

The Rosemary Tin Mine is situated in the central part of the licence. Six core holes were drilled by the Northern Territory Geological Survey which downgraded its potential (Fawcett, 1995).

The multi-client high resolution, airborne geophysical survey flown by Aerodata in 1988 (with additions in 1991 and 1992) unfortunately covers only the southern portion of the licence area.

Detailed mineral exploration has been undertaken by many title holders. The highlights of previous exploration are summarised below, and given in Fawcett, 1995,;

ATP 2226 "Mary River Joint Venture" - Australian Geophysical Pty Limited Kenneth McMahon and Partners Pty Limited (1969).

- Extensive radiometric surveying plus follow-up stream-sediment and soil geochemistry.
- Widespread, low-order Pb soil anomaly on MD grid.
- Narrow anomalous Pb zones associated with Adam Creek Fault.

EL351 - Central Pacific Minerals N.L., Pietsch (1973)

- Soil and rock geochemistry for Sn mostly to the south of Jessops Tin Mine

EL947 - Comalco Limited Chaku (1975)

- Stream-sediment sampling of McKinlay River and tributaries for Au (pan concentrates).
- No anomalous samples in streams draining present licence area.

EL 1296, 1592 - Occidental Minerals Corporation of Australia, Swinger (1979)

- High-resolution airborne magnetic and radiomagnetic survey for uranium at contact between Palaeoproterozoic and Mesoproterozoic rocks in Mount Douglas area.
- Follow-up stream-sediment geochemistry produced Pb and As anomalies associated with the Koolpin Formation, none of which was deemed significant.
- Most exploration to near north and west of present licence area.

EL 3121 - Aquitaine Minerals Pty. Ltd. and International Nickel Australasia Limited, D'Auvergne (1982).

- Unsuccessful follow-up of stream-sediment geochemistry of Occidental Minerals Corporation of Australia over same areas.

EL 4759 - Kable Resources Pty. Ltd. and Dominion Mining Limited, Burn (1988).

- Extensive costeaning to north-northwest and south-southeast of old Watts Creek alluvial diggings by Kable plus follow-up mapping, sampling and reverse circulation drilling by Dominion of low-grade, stockwork - type Au mineralisation.
- Southern Stockwork Zone (SSZ), Watts Creek North and Watts Creek South prospects.

EL 4944 - BP Australia Gold Pty Ltd., Walker (1989)

- Follow-up to earlier BLEG sampling by Kennecott Explorations (Australia) Ltd.
- Four prospects, Hill 5, Hill 156, Central Anomaly and L82185 Anomaly delineated.
- Hill 5 prospect received detailed mapping plus gridding, costeaning and induced polarisation survey followed by reverse circulation drilling (5" holes with best intercept being 6m at 6 ppm Au).
- Elevated As values associated with Hill 5 and Hill 156 prospects.
- Surface samples of quartz or quartz-haematite veins with values to 0.4 ppm Au.

EL 5139 (Douglas Creek East) Dominion Mining Limited, Curnow and Tyson (1990).

- BLEG, silt and pan-concentrate stream-sediment plus rock geochemistry.
- No significantly anomalous values.
- Initially part of Golden Dyke Joint Venture with Peko Wallsend Operations Limited.
- Most emphasis on Middle Koolpin Formation.

EL 5140 (Douglas Creek West) - Dominion Mining Limited, Burn (1989).

- As for EL 5139
- BLEG stream-sediment values to 6.5 ppb Au.

EL 5512 - Geopeko, Sowerby (1990)

- BLEG stream-sediment anomaly associated with faulted anticline of Koolpin Formation.
- Followup to earlier work by Electrotyc Zinc Company of Australasia Ltd and Norgold Ltd.
- BLEG values to 22.0 ppb, soil values to 106 ppb, rock values to 0.33 ppm.

EL 5534 - Union Reefs Gold N.L., Mulroney (1991)

- Mapping and rock sampling for Au.
- Several weakly anomalous samples.

EL 5548 - Eastern Gold NL, Vakel (1989)

- Anomalous As and Zn but no anomalous Au rock geochemistry.
- Two quartz-vein systems evaluated.

EL 6095 (Mount Douglas) - Geopeko, Sowerby (1990)

- BLEG stream-sediment geochemistry with background levels only.

EL 6143 - Trescabe Pty. Ltd; Geopeko, Sowerby (1990).

- Extensive soil sampling to south and east of Rosemary Tin Mine.
- Exploration led to the mining of the small Touhys North and South Au deposits in ironstones developed above fine-grained, sulphidic metasediments.

EL 6184 - Wyrala Pty Ltd, Mining Management Services Pty Ltd (1990).

- Rock sampling in Mount Harris Tinfield.
- Moderate As anomalies associated with gossanous, quartz-veined siltstone.

EL 6185 (Watts), 6186 (Masson) - Riomin Australia Gold Limited, Penney (1990).

- Earlier work by BP Australia Gold Pty Limited also relates.
- BLEG and silt stream-sediment geochemistry plus follow-up rock-geochemistry.
- Several values greater than 3 ppb Au plus one rock value of 1.6 ppm (latter from fine-grained metasediment containing pyrite and arsenopyrite) in EL 9185.
- BLEG values less than 2 ppb Au in EL 6186; also one rock value of 0.12 ppm Au.

EL 6444 (Frances Creek) - Billiton Australia, Machay (1991).

- BLEG stream-sediment geochemistry with values less than 5 ppb Au.
- One rock sample with 0.17% Zn.

Territory Goldfields carried out research of all available geological and exploration - related data. Acquisition and digitising of colour aerial photography for the McKinlay River project area was also completed (Fawcett, 1995).

4.0 EXPLORATION COMPLETED

The exploration completed by Northern Gold N.L. over the relinquished blocks of EL 8170 included GIS and remote sensing studies, a soil sampling program and a statistical analysis of the soil sampling results.

4.1 GIS and Remote Sensing Studies

Northern Gold N.L. completed a work program based on digital data acquisition and manipulation. Landsat Imagery, SPOT Imagery and AGSO mapping were obtained and used in conjunction with aerial mapping to determine the best method of exploration to be used on the licence.

GIS and satellite imagery were used to log soil types, indicating that the region comprises mainly lateritised lower saprolite.

Satellite imagery was also used to interpret the structural geology of the region (Figure 4).

The satellite image is incomplete due to difficulties encountered plotting satellite BIT maps.

4.2 Soil Sampling Program

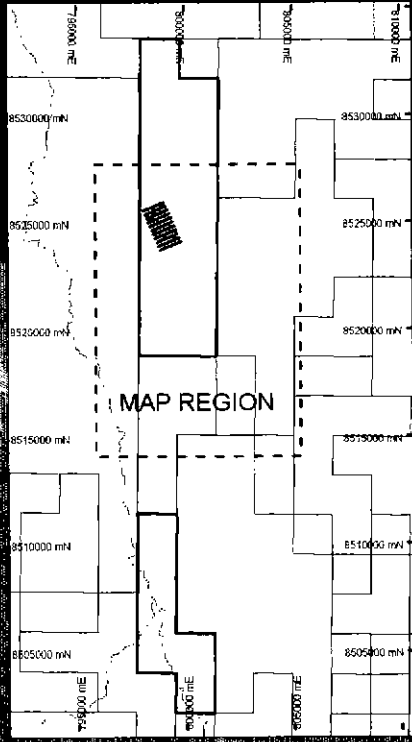
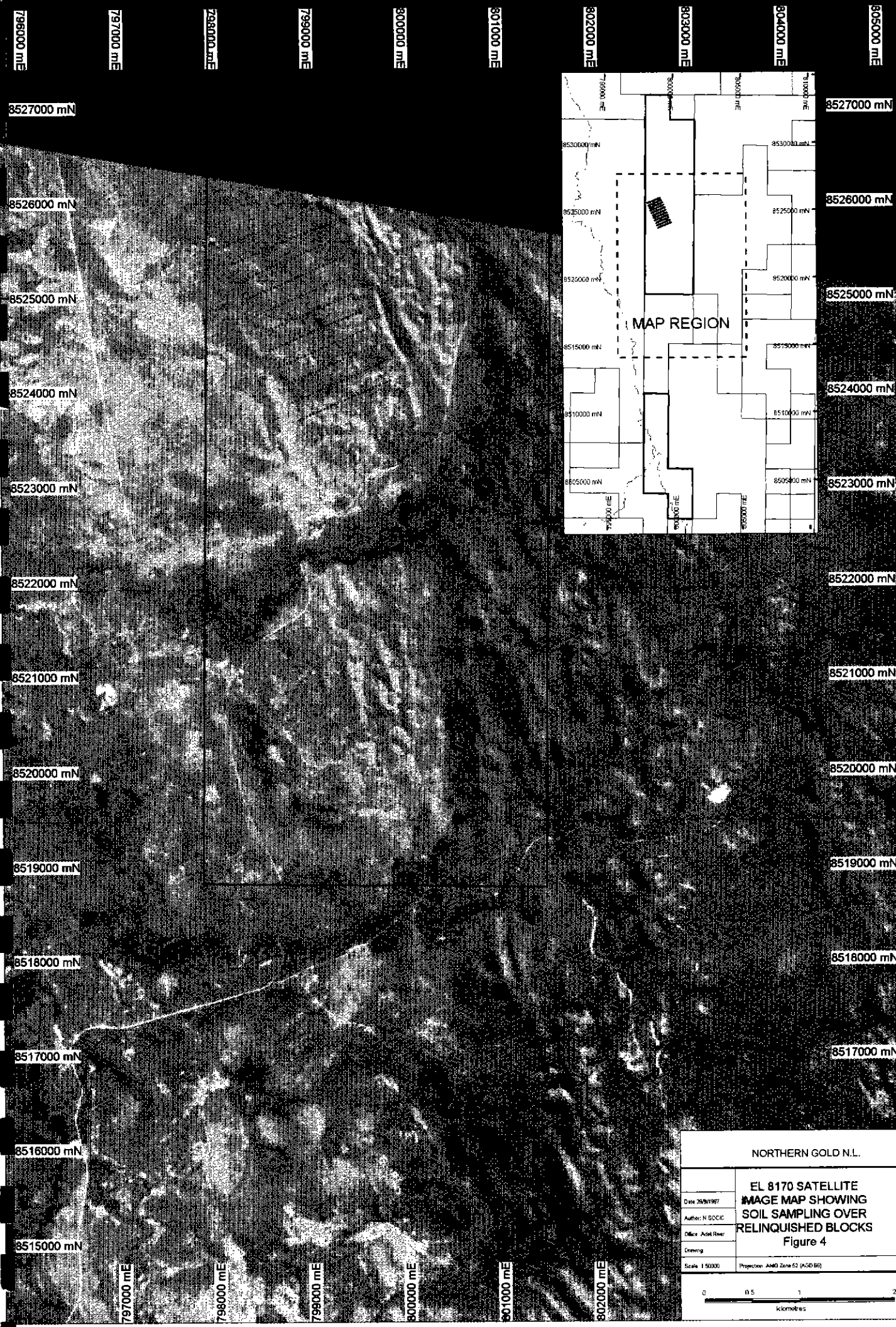
During the 1995/96 year of tenure, Northern Gold N.L. completed a soil sampling program over EL 8170. The soil sampling program consisted of eleven 800 metre long by 200 metre spaced lines. Samples were collected at 20 metre intervals and composited to 40 metres. A total of 312 samples (Sample Nos. 142001 - 142312), including duplicates were collected and sieved to -6 millimetre fraction. All samples were submitted to Assaycorp, in Pine Creek, for 50 gram quartz flush, low level fire assay technique and analysed for Au, As, Pb, Cu and Zn.

The soil sampling program sample locations are shown in plan on Figure 5 and given in Appendix 1.

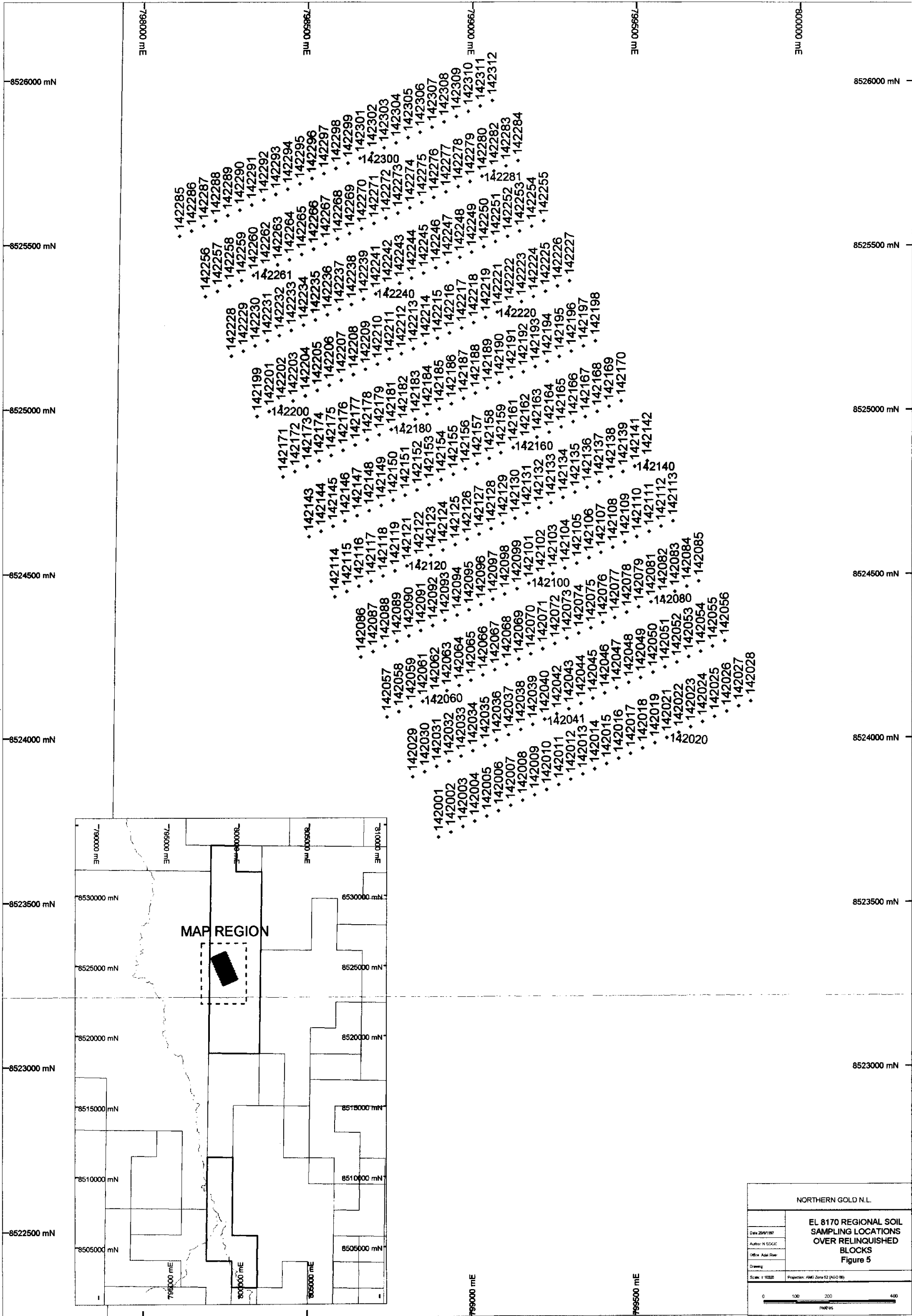
4.2.1 Soil Sampling Program Results

The results from the soil sampling program were generally disappointing with the highest value returned being 5 ppb Au (Sample No. 142124, 8524574N : 798912.8E). The results for all other elements analysed were poor.

The assay results for Au, As, Cu, Pb, and Zn are given in Appendix 1.



NORTHERN GOLD N.L.	
EL 8170 SATELLITE IMAGE MAP SHOWING SOIL SAMPLING OVER RELINQUISHED BLOCKS Figure 4	
Date 28/9/1987	
Author N. SOIC	
Office Asst River	
Drawing	
Scale 1:50000	Projection: AMG Zone 52 (AGD 86)
0 0.5 1 2 kilometres	



4.2.2 Statistical Analysis of the Soil Sampling Program Results

Summary statistics for each element analysed in the soil sampling program are as follows:-

Table 1 Summary Statistics of the Soil Sampling Program Results

	<u>Au</u>	<u>Cu</u>	<u>Zn</u>	<u>As</u>	<u>Pb</u>
Samples	124	310	312	312	312
Minimum	1.000	3.000	4.000	0.005	2.000
Maximum	5.000	52.000	76.000	78.000	107.000
Class Int.	0.200	5.000	2.000	3.000	5.000
Median	1.000	21.000	20.000	18.000	16.000
Mean	1.218	21.965	21.327	18.897	20.093
Variance	0.318	64.235	107.681	166.779	264.072
Std. Dev.	0.564	8.015	10.377	12.914	16.250
95th Percentile	1.480	34.000	36.500	44.000	44.000
99th Percentile	3.500	43.000	50.000	65.000	65.500

Both histograms and log probability plots were calculated for Au, Cu, As, Pb and Zn.

The histograms for each of the elements, indicate that the populations are log normal. However at least two populations can be defined for all the elements analysed.

This is supported by the log probability plots. The data plot as two separate populations, indicating anomalous zones, deviating at a point of inflection. It is inferred that the lower population represents the natural background for each element for the Pine Creek Geosyncline.

Deviations from the line in the upper 1% of the Au, Cu, As and Zn and in the lower 1% of the Cu, 2% of the Zn and 3% of the As and Pb probability plots, may be the result of problems with accurately plotting data or may represent a deviation from the interpreted population.

Histograms and log probability plots for Au, Cu, As, Pb, and Zn are given in Appendix 2.

4.3 Conclusion

The soil sampling program returned disappointing results for all elements analysed, with the highest gold value returned being 5 ppb Au (Sample No. 142124, 8524574N : 798912.8E).

Based on a review of all data, the 15 northern blocks of EL 8170 were relinquished.

5.0 EXPENDITURE OVER RELINQUISHED BLOCKS

The expenditure over the relinquished blocks of EL 8170 from the grant date to the relinquishment date totaled \$19,530. Details of this expenditure are listed below as Table 2.

Table 2 EL 8170 Expenditure over Relinquished Blocks

<u>COSTS</u>	<u>AMOUNT</u>
Report Compilation	400
Data Review	250
Tenement Management	515
Accomm., Field, Travel Expenses	240
Assays	4,305
Casual Wages	2,910
Motor Vehicle Charges and Fuel	2,690
AGSO Mapping	400
Satellite Imagery & Manipulation	1,475
GIS Manipulation	755
Salaries and Wages	3,040
Subtotal	16,980
Administration @ 15%	2,550
TOTAL	<u>\$19,530</u>

6.0 REFERENCES

- FAWCETT, C., (1995). EL 8170 McKinlay River East, Annual Report 16.07.94 to 15.07.95. Unpublished report by Territory Goldfields N.L. to the NTDME.
- HOSKING, A.J., (1994). Northern Territory Gold Mines N.L., Exploration Licence 8170 McKinlay River East, First Annual Report For Year Ending 15/7/94. Unpublished company report to the NTDME.
- SOCIC, N., (1996). EL 8170 McKinlay River East, Annual Report 16.07.95 to 15.07.96. Unpublished report by Northern Gold NL to the NTDME.

APPENDIX 1

Soil Sampling Program Sample Locations and Assay Results

SAMPLE	AMGE	AMGN	AuAv ppb	Au1 ppb	Au2 ppb	Cu ppm	Pb ppm	As ppm	Zn ppm
142001	798900	8523700	1	1		26	10	15	12
142002	798936.6	8523716	1	1		19	19	27	22
142003	798973.2	8523732	1	1		24	27	35	27
142004	799009.7	8523747	1	1		33	30	78	33
142005	799046.3	8523763	L	<0.005		19	31	33	17
142006	799082.9	8523779	L	<0.005	<0.005	21	27	32	11
142007	799119.5	8523795	L	<0.005		26	25	40	22
142008	799156	8523811	1	1		28	15	26	19
142009	799192.6	8523827	L	<0.005		28	14	17	20
142010	799229.2	8523842	1	1		34	11	8	27
142011	799265.7	8523858	L	<0.005		19	10	5	16
142012	799302.3	8523874	1	1		30	12	7	23
142013	799338.9	8523890	2	2		21	6	3	21
142014	799375.5	8523906	L	<0.005		18	6	2	13
142015	799412	8523921	L	<0.005		19	7	2	11
142016	799448.6	8523937	2	2		21	7	4	30
142017	799485.2	8523953	L	<0.005		16	11	7	24
142018	799521.8	8523969	L	<0.005		19	12	9	17
142019	799558.3	8523985	L	<0.005		14	21	0.005	14
142020	799594.9	8524001	1	1		30	24	24	29
142021	799594.9	8524001	1	1		26	16	13	22
142022	799631.5	8524016	L		<0.005	29	17	12	21
142023	799668.1	8524032	1	1		24	39	21	21
142024	799704.6	8524048	1	1		16	50	15	32
142025	799741.2	8524064	1	2	1	18	47	24	31
142026	799777.8	8524080	2	2		20	36	28	29
142027	799814.4	8524095	1	1		23	47	37	43
142028	799850.9	8524111	L	<0.005		16	39	44	31
142029	798820.9	8523883	L	<0.005		21	22	22	18
142030	798857.5	8523899	2	2		13	13	3	12
142031	798894.1	8523915	1	1		15	7	2	10
142032	798930.6	8523930	2	2		15	8	3	13
142033	798967.2	8523946	1	1		13	6	0.005	9
142034	799003.8	8523962	2	2		22	14	6	19
142035	799040.4	8523978	2	2		18	15	16	26
142036	799076.9	8523994	2	2		22	3	2	15
142037	799113.5	8524009	L	<0.005		18	6	8	10
142038	799150.1	8524025	1	1		25	22	8	21
142039	799186.7	8524041	1	2	1	32	28	19	21
142040	799223.2	8524057	L	<0.005		19	10	4	10
142041	799223.2	8524057	L	<0.005		16	10	1	11
142042	799259.8	8524073	L	<0.005		23	15	11	16
142043	799296.4	8524089	L	<0.005		21	4	10	17
142044	799333	8524104	1	1		31	5	16	18
142045	799369.5	8524120	L	<0.005		27	5	5	21
142046	799406.1	8524136	1	1	1	26	6	13	23
142047	799442.7	8524152	L	<0.005		36	12	25	27
142048	799479.2	8524168	L	<0.005		17	9	2	13
142049	799515.8	8524183	L	<0.005		14	15	3	19
142050	799552.4	8524199	L	<0.005		16	17	9	15
142051	799589	8524215	L	<0.005		19	30	13	19
142052	799625.5	8524231	L	<0.005		25	76	21	42

SAMPLE	AMGE	AMGN	AuAv ppb	Au1 ppb	Au2 ppb	Cu ppm	Pb ppm	As ppm	Zn ppm
142053	799662.1	8524247	L	<0.005		18	59	25	32
142054	799698.7	8524263	L	<0.005		15	72	30	39
142055	799735.3	8524278	1	<0.005	1	20	52	29	31
142056	799771.8	8524294	L	<0.005		19	73	38	37
142057	798741.8	8524066	L	<0.005		13	4	2	9
142058	798778.4	8524082	1	1	1	21	8	8	13
142059	798815	8524097	1	1		16	3	2	9
142060	798851.5	8524113	L	<0.005		17	3	8	10
142061	798851.5	8524113	L	<0.005		12	4	8	9
142062	798888.1	8524129	1	1		16	7	17	11
142063	798924.7	8524145	L	<0.005		18	10	14	15
142064	798961.3	8524161	1	1		14	14	18	16
142065	798997.8	8524176	1	1		18	15	24	15
142066	799034.4	8524192	1	2	1	29	16	20	38
142067	799071	8524208	1	1		18	25	22	17
142068	799107.6	8524224	L	<0.005		30	30	23	29
142069	799144.1	8524240	1	1		27	20	19	40
142070	799180.7	8524256	L	<0.005		28	21	17	37
142071	799217.3	8524271	1	1		22	14	20	35
142072	799253.9	8524287	1	1		36	20	23	34
142073	799290.4	8524303	1	1		27	11	14	23
142074	799327	8524319	1	1	1	25	13	17	21
142075	799363.6	8524335	L	<0.005		22	10	16	20
142076	799400.2	8524350	L	<0.005		19	19	19	20
142077	799436.7	8524366	L	<0.005		20	29	26	27
142078	799473.3	8524382	L	<0.005		17	13	14	26
142079	799509.9	8524398	L	<0.005		14	25	11	21
142080	799546.5	8524414	1	1		31	68	26	73
142081	799546.5	8524414	L	<0.005		30	65	30	76
142082	799583	8524430	L	<0.005		25	59	23	37
142083	799619.6	8524445	L	<0.005		31	104	43	42
142084	799656.2	8524461	2	3	2	19	107	35	43
142085	799692.8	8524477	L	<0.005		17	68	21	46
142086	798662.7	8524249	L	<0.005	<0.005	20	8	8	17
142087	798699.3	8524264	1	1		33	8	9	15
142088	798735.9	8524280	1	1		29	10	6	21
142089	798772.4	8524296	L	1	<0.005	27	31	17	38
142090	798809	8524312	1	1		33	37	39	35
142091	798845.6	8524328	L	<0.005		38	38	29	33
142092	798882.2	8524344	L	<0.005		23	16	11	17
142093	798918.7	8524359	L	<0.005		32	10	16	16
142094	798955.3	8524375	2	2		26	13	9	13
142095	798991.9	8524391	L	<0.005		14	9	3	12
142096	799028.5	8524407	L	<0.005		30	22	25	30
142097	799065	8524423	L	<0.005		27	19	15	36
142098	799101.6	8524438	L	<0.005		32	24	21	39
142099	799138.2	8524454	L	<0.005		28	15	15	33
142100	799174.8	8524470	1	1	1	33	19	29	48
142101	799174.8	8524470	2	2		31	18	26	53
142102	799211.3	8524486	2	2		22	21	32	42
142103	799247.9	8524502	L	<0.005		25	18	4	21
142104	799284.5	8524518	L	<0.005		15	17	4	12

SAMPLE	AMGE	AMGN	AuAv ppb	Au1 ppb	Au2 ppb	Cu ppm	Pb ppm	As ppm	Zn ppm
142105	799321.1	8524533	L	<0.005		21	14	6	15
142106	799357.6	8524549	1	1		20	11	4	13
142107	799394.2	8524565	1	1	1	21	17	8	20
142108	799430.8	8524581	L	<0.005		20	32	12	28
142109	799467.4	8524597	1	1		25	40	46	38
142110	799503.9	8524612	L	<0.005	<0.005	25	44	21	35
142111	799540.5	8524628	1	1		19	71	21	30
142112	799577.1	8524644	1	1		20	75	21	28
142113	799613.7	8524660	L	<0.005		16	73	22	35
142114	798583.6	8524431	L	<0.005		24	22	23	21
142115	798620.2	8524447	L	<0.005		21	19	21	25
142116	798656.8	8524463	1	1		18	5	6	7
142117	798693.4	8524479	1	1		12	9	3	8
142118	798729.9	8524495	1	1		15	11	2	11
142119	798766.5	8524511	L	<0.005		13	9	1	11
142120	798803.1	8524526	L	<0.005		11	7	2	7
142121	798803.1	8524526	2	1	2	12	5	3	9
142122	798839.7	8524542	L	<0.005		14	9	3	9
142123	798876.2	8524558	L	<0.005		20	18	16	20
142124	798912.8	8524574	5	3	5	52	25	24	22
142125	798949.4	8524590	L	<0.005		23	19	18	26
142126	798985.9	8524605	L	<0.005		26	32	24	33
142127	799022.5	8524621	1	1		25	15	17	27
142128	799059.1	8524637	L	<0.005		19	8	12	34
142129	799095.7	8524653	L	<0.005		20	15	23	42
142130	799132.2	8524669	L	<0.005	<0.005	14	16	3	16
142131	799168.8	8524685	L	<0.005		17	22	6	23
142132	799205.4	8524700	L	<0.005		20	31	16	27
142133	799242	8524716	1	1		22	41	23	23
142134	799278.5	8524732	1	1		18	24	11	19
142135	799315.1	8524748	L	<0.005		19	22	22	21
142136	799351.7	8524764	L	<0.005		28	32	35	35
142137	799388.3	8524780	L	<0.005		23	28	29	28
142138	799424.8	8524795	1	1		16	25	18	13
142139	799461.4	8524811	1	<0.005	1	21	48	46	19
142140	799498	8524827	1	1		22	84	44	23
142141	799498	8524827	L	1	<0.005	19	74	43	22
142142	799534.6	8524843	L	<0.005		19	55	24	26
142143	798504.5	8524614	L	<0.005		20	9	16	10
142144	798541.1	8524630	1	1		15	6	3	10
142145	798577.7	8524646	1	1		20	10	3	13
142146	798614.3	8524662	L	<0.005		22	10	18	12
142147	798650.8	8524678	L	1	<0.005	19	7	8	11
142148	798687.4	8524693	L	<0.005		14	8	5	11
142149	798724	8524709	1	1		13	19	9	11
142150	798760.6	8524725	L	<0.005		13	13	4	13
142151	798797.1	8524741	L	<0.005		21	19	16	15
142152	798833.7	8524757	L	<0.005		23	15	22	16
142153	798870.3	8524773	L	<0.005		24	13	12	18
142154	798906.9	8524788	L	<0.005		29	28	29	23
142155	798943.4	8524804	L	<0.005		20	26	30	29
142156	798980	8524820	L	<0.005		17	20	13	26

SAMPLE	AMGE	AMGN	AuAv ppb	Au1 ppb	Au2 ppb	Cu ppm	Pb ppm	As ppm	Zn ppm
142157	799016.6	8524836	1	1		16	17	2	13
142158	799053.2	8524852	L	<0.005		12	11	4	11
142159	799089.7	8524867	L	<0.005		15	15	21	10
142160	799126.3	8524883	L	<0.005		14	17	25	11
142161	799126.3	8524883	L	<0.005	<0.005	13	14	21	11
142162	799162.9	8524899	L	<0.005		16	18	32	11
142163	799199.5	8524915	L	<0.005		14	15	13	13
142164	799236	8524931	L	<0.005		18	19	30	11
142165	799272.6	8524947	1	1		17	26	53	15
142166	799309.2	8524962	L	<0.005	<0.005	21	23	32	19
142167	799345.7	8524978	L	<0.005		24	29	37	19
142168	799382.3	8524994	L	<0.005		30	22	72	19
142169	799418.9	8525010	1	1		31	20	70	13
142170	799455.5	8525026	L	<0.005		22	29	34	19
142171	798425.4	8524797	L	<0.005		17	9	10	10
142172	798462	8524813	1	1		20	15	18	13
142173	798498.6	8524829	L	<0.005	<0.005	25	13	16	13
142174	798535.2	8524845	L	<0.005		27	11	15	14
142175	798571.7	8524861	1	1		16	12	9	16
142176	798608.3	8524876	1	1		15	11	6	17
142177	798644.9	8524892	1	1		17	17	10	15
142178	798681.5	8524908	L	<0.005		49	21	18	38
142179	798718	8524924	L	<0.005		28	25	13	20
142180	798754.6	8524940	L	<0.005		43	16	14	23
142181	798754.6	8524940	1	1		41	17	18	23
142182	798791.2	8524955	L	1	<0.005	21	18	8	18
142183	798827.8	8524971	L	<0.005		25	25	19	20
142184	798864.3	8524987	1	1		20	19	13	33
142185	798900.9	8525003	L	<0.005		21	16	13	20
142186	798937.5	8525019	L	<0.005		22	17	15	19
142187	798974.1	8525035	L	<0.005		24	25	43	20
142188	799010.6	8525050	L	<0.005		22	27	41	21
142189	799047.2	8525066	L	<0.005	<0.005	28	22	26	20
142190	799083.8	8525082	L	<0.005		19	18	25	15
142191	799120.4	8525098	L	<0.005		25	26	53	15
142192	799156.9	8525114	L	<0.005		27	30	52	21
142193	799193.5	8525129	L	<0.005		30	39	50	27
142194	799230.1	8525145	L	<0.005		39	37	57	34
142195	799266.7	8525161	L	<0.005		39	30	50	33
142196	799303.2	8525177	L	<0.005		48	22	30	24
142197	799339.8	8525193	L	<0.005		22	35	20	20
142198	799376.4	8525209	L	<0.005		19	43	38	19
142199	798346.4	8524980	L	<0.005		27	18	21	20
142200	798382.9	8524996	L	<0.005		21	16	16	20
142201	798382.9	8524996	L	<0.005	<0.005	24	15	20	22
142202	798419.5	8525012	L	<0.005		24	13	14	22
142203	798456.1	8525028	L	<0.005		20	9	9	20
142204	798492.6	8525043	L	<0.005		15	6	7	12
142205	798529.2	8525059	L	<0.005		23	9	7	14
142206	798565.8	8525075	1	1		15	14	7	9
142207	798602.4	8525091	L	<0.005		31	19	15	20
142208	798638.9	8525107	1	1		34	32	24	21

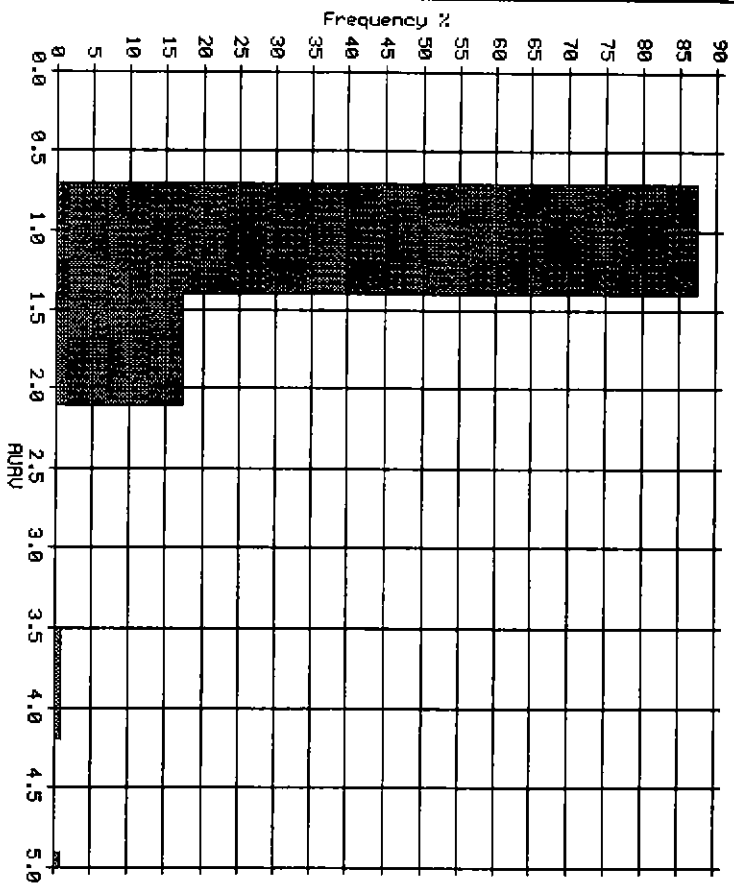
SAMPLE	AMGE	AMGN	AuAv ppb	Au1 ppb	Au2 ppb	Cu ppm	Pb ppm	As ppm	Zn ppm
142209	798675.5	8525122	L	<0.005		26	28	20	17
142210	798712.1	8525138	L	<0.005		26	24	21	21
142211	798748.7	8525154	L	<0.005		29	23	26	31
142212	798785.2	8525170	L	<0.005		45	14	16	47
142213	798821.8	8525186	L	<0.005		17	10	8	19
142214	798858.4	8525202	L	<0.005		17	13	9	14
142215	798895	8525217	L	<0.005		25	16	19	21
142216	798931.5	8525233		1	1	35	12	21	24
142217	798968.1	8525249	L	<0.005		46	18	39	52
142218	799004.7	8525265	L	<0.005		37	16	26	52
142219	799041.3	8525281		1	1	38	13	27	37
142220	799077.8	8525296	L	<0.005		20	18	23	22
142221	799077.8	8525296		1	1	15	20	28	22
142222	799114.4	8525312	L	<0.005		15	16	26	13
142223	799151	8525328		1	1	20	22	56	26
142224	799187.6	8525344	L	<0.005		22	24	42	31
142225	799224.1	8525360		1	1	33	36	37	28
142226	799260.7	8525376	L	<0.005		24	58	35	22
142227	799297.3	8525391	L	<0.005		20	40	27	21
142228	798267.3	8525163		1	1	25	15	11	28
142229	798303.8	8525179	L	<0.005		27	19	18	45
142230	798340.4	8525195		1	<0.005	1	25	15	20
142231	798377	8525210	L	<0.005		25	10	22	19
142232	798413.6	8525226		1	1	23	8	24	12
142233	798450.1	8525242		1	1	22	8	11	10
142234	798486.7	8525258		1	1	15	12	5	10
142235	798523.3	8525274	L	<0.005		39	19	23	24
142236	798559.9	8525290		1	1	34	24	17	24
142237	798596.4	8525305		1	1	37	41	33	35
142238	798633	8525321	L	<0.005		26	14	7	14
142239	798669.6	8525337		1	1	22	15	2	14
142240	798706.2	8525353		1	1	1	27	17	11
142241	798706.2	8525353		1	1		26	17	9
142242	798742.7	8525369	L	<0.005		29	13	20	10
142243	798779.3	8525384	L	<0.005		22	11	18	13
142244	798815.9	8525400		1	1	33	16	22	19
142245	798852.4	8525416		1	1	33	11	15	24
142246	798889	8525432		2	2	46	14	17	29
142247	798925.6	8525448		2	2	39	19	35	26
142248	798962.2	8525464		1	1	30	12	22	16
142249	798998.7	8525479		1	1	22	16	18	12
142250	799035.3	8525495		2	1	2	21	22	31
142251	799071.9	8525511		2	2		37	34	29
142252	799108.5	8525527		1	1		34	25	24
142253	799145	8525543		2	2		37	24	25
142254	799181.6	8525558		1	1		25	53	23
142255	799218.2	8525574		1	1		16	21	18
142256	798188.2	8525346	L	<0.005		19	9	14	25
142257	798224.7	8525362	L	<0.005		20	6	20	15
142258	798261.3	8525377		1	1		11	4	4
142259	798297.9	8525393		1	1	1	21	12	5
142260	798334.5	8525409		4	4	4	16	12	16

SAMPLE	AMGE	AMGN	AuAv ppb	Au1 ppb	Au2 ppb	Cu ppm	Pb ppm	As ppm	Zn ppm
142261	798334.5	8525409	L	<0.005		13	11	14	12
142262	798371	8525425	1	1		13	12	13	13
142263	798407.6	8525441	L	<0.005	<0.005	13	13	5	11
142264	798444.2	8525457	1	1		12	9	5	11
142265	798480.8	8525472	1	1		22	15	18	19
142266	798517.3	8525488	L	<0.005		22	16	25	23
142267	798553.9	8525504	L	<0.005		27	16	26	25
142268	798590.5	8525520	2	2		22	15	29	22
142269	798627.1	8525536	1	2	1	22	12	29	21
142270	798663.6	8525551	L	<0.005		19	8	22	12
142271	798700.2	8525567	L	<0.005		8	5	6	9
142272	798736.8	8525583	L	<0.005		8	3	5	7
142273	798773.4	8525599	L	<0.005		9	6	13	8
142274	798809.9	8525615	L	<0.005		13	6	18	12
142275	798846.5	8525631	L	<0.005		13	6	13	12
142276	798883.1	8525646	L	<0.005		13	8	22	15
142277	798919.7	8525662	L	<0.005		17	17	47	22
142278	798956.2	8525678	L	<0.005		24	16	38	29
142279	798992.8	8525694	1	<0.005	1	17	13	25	30
142280	799029.4	8525710	L	<0.005		21	8	11	25
142281	799029.4	8525710	L	<0.005		13	11	13	21
142282	799065.9	8525725	L	<0.005		L	10	7	19
142283	799102.5	8525741	L	<0.005		L	7	6	21
142284	799139.1	8525757	L	<0.005		6	8	11	12
142285	798109.1	8525529	L	<0.005		4	8	2	6
142286	798145.6	8525545	L	<0.005		6	5	2	4
142287	798182.2	8525560	L	<0.005		13	6	14	10
142288	798218.8	8525576	L	<0.005		6	11	16	16
142289	798255.4	8525592	1	<0.005	1	19	16	24	21
142290	798291.9	8525608	L	<0.005		15	13	20	15
142291	798328.5	8525624	L	<0.005		21	10	19	15
142292	798365.1	8525639	L	<0.005		20	11	16	16
142293	798401.7	8525655	L	<0.005		25	7	13	20
142294	798438.2	8525671	L	<0.005		19	11	10	24
142295	798474.8	8525687	L	<0.005		24	11	23	30
142296	798511.4	8525703	1	2	1	23	13	28	22
142297	798548	8525719	1	1		20	17	36	20
142298	798584.5	8525734	L	<0.005		18	11	23	17
142299	798621.1	8525750	L	<0.005		9	7	5	6
142300	798657.7	8525766	L	<0.005	<0.005	4	4	2	5
142301	798657.7	8525766	L	<0.005		9	2	2	6
142302	798694.3	8525782	L	<0.005		19	11	21	14
142303	798730.8	8525798	1	<0.005	1	18	11	22	19
142304	798767.4	8525813	L	<0.005		27	12	30	28
142305	798804	8525829	L	<0.005		24	11	24	22
142306	798840.6	8525845	1	1		18	12	17	33
142307	798877.1	8525861	L	<0.005		18	13	15	15
142308	798913.7	8525877	1	1		10	16	23	21
142309	798950.3	8525893	L	1	<0.005	9	9	12	20
142310	798986.9	8525908	1	1		3	9	10	21
142311	799023.4	8525924	2	2		8	7	9	18
142312	799060	8525940	1	1		10	15	19	18

APPENDIX 2

Summary Statistics Histograms and Log Probability Plots for the Soil Sampling Program Results

Histogram



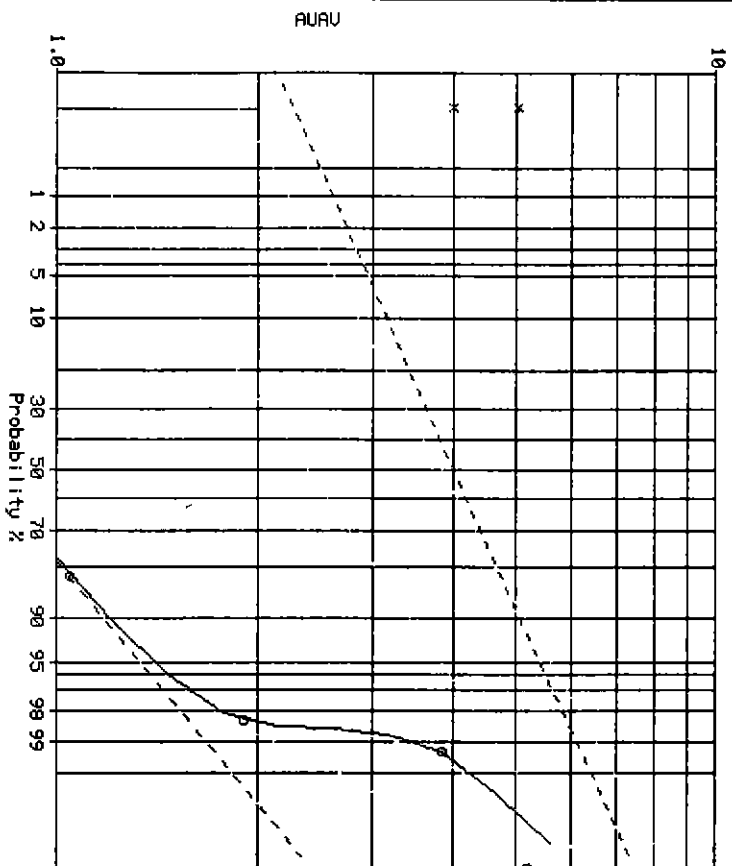
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File 8170s196
Variable RUVU

NORMAL STATISTICS
Samples 124
Minimum 1.000
Maximum 5.000
Class Int 0.700
Median 1.000
Mean 1.218
Variance 0.3181
Std Dev 0.5640

LOGARITHMIC STATISTICS
Samples 124
Class Int 0.100
Mean 1.146
Mean of logs 0.136
Variance 0.0962
Std Dev 0.3101

SICHEL STATISTICS
Sichel's Mean 1.203
Sichel's U 0.095
Sichel's Gamma 1.050

Log Probability Plot



DATA File 8179s196
Variable AURU

NORMAL STATISTICS

Samples 124
Minimum 1.000
Maximum 5.000
Class Int 0.200
Median 1.000
Mean 1.218
Variance 0.3181
Std Dev 0.5640

LOGARITHMIC STATISTICS

Samples 124
Class Int 0.100
Mean 1.146
Mean of logs 0.136
Variance 0.0962
Std Dev 0.3101

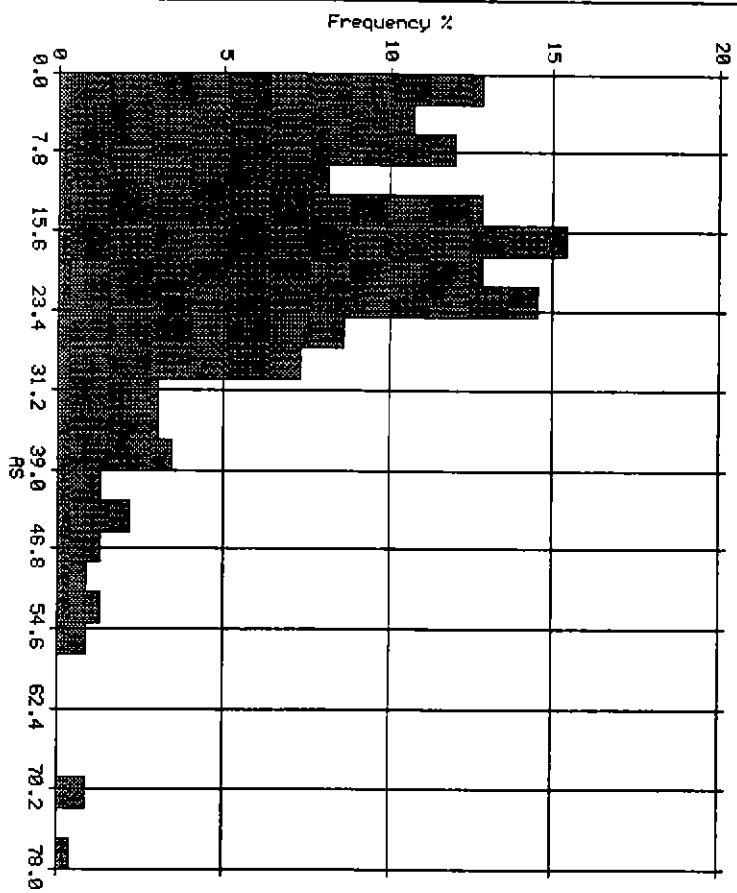
SICHEL STATISTICS

Sichel's Mean 1.283
Sichel's U 0.093
Sichel's Gamma 1.050

Upper Population 1.32%
Mean 3.984 (Ln 1.382)
S Dev 0.183

Lower Population 98.68%
Mean 0.766 (Ln -0.267)
S Dev 0.337

Histogram



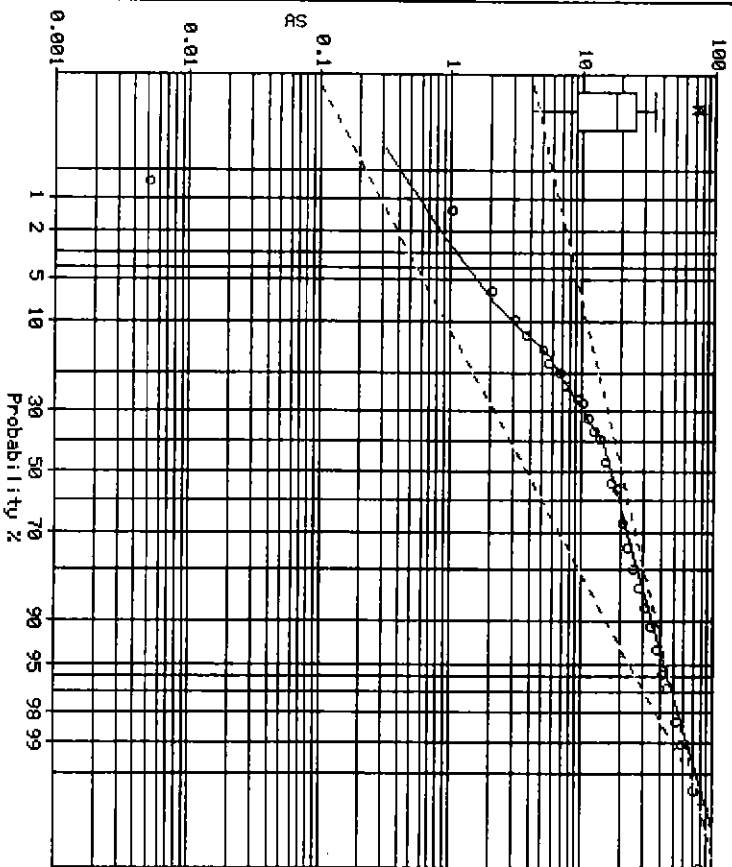
DATA
File 81705196
Variable RS

NORMAL STATISTICS
Samples 312
Minimum 0.005
Maximum 78.000
Class Int 3.000
Median 18.000
Mean 18.897
Variance 166.7792
Std Dev 12.9143

LOGARITHMIC STATISTICS
Samples 312
Class Int 0.300
Mean 13.672
Mean of logs 2.615
Variance 1.1078
Std Dev 1.0525

SICHEL STATISTICS
Sichel's Mean 23.705
Sichel's U 1.104
Sichel's Gamma 1.734

Log Probability Plot



DATA
File 81705196
Variable RS

NORMAL STATISTICS

Samples 312
Minimum 0.005
Maximum 79.000
Class Int 3.000
Median 18.000
Mean 18.897
Variance 166.7792
Std Dev 12.9143

LOGARITHMIC STATISTICS

Samples 312
Class Int 0.100
Mean 13.672
Mean of logs 2.615
Variance 1.1078
Std Dev 1.0525

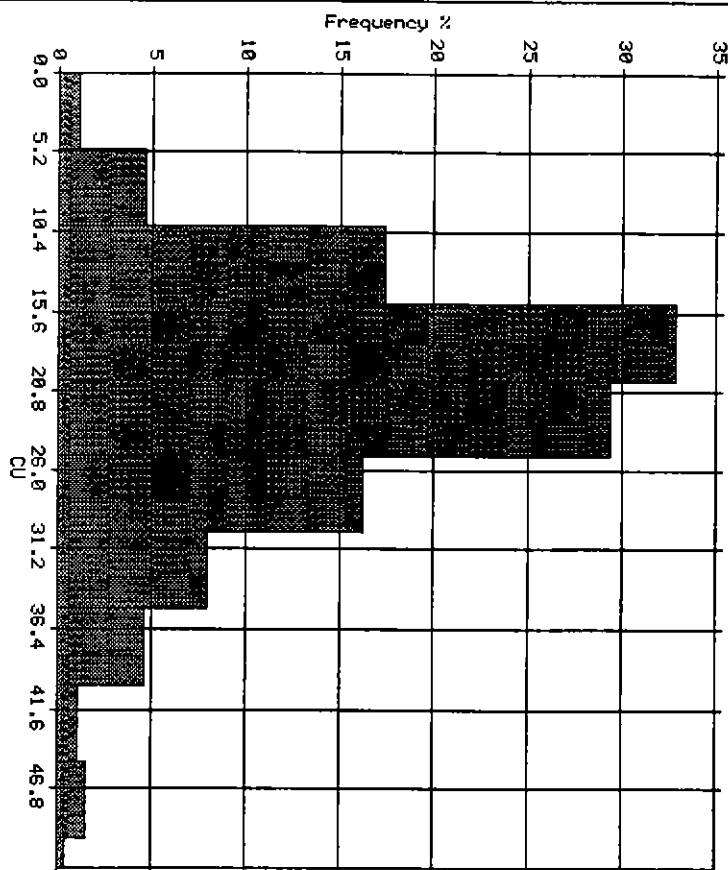
SICHEL STATISTICS

Sichel's Mean 23.705
Sichel's U 1.104
Sichel's Gamma 1.734

Upper Population 75.52%
Mean 20.148 (Ln 3.003)
S Dev 0.478

Lower Population 24.48%
Mean 3.821 (Ln 1.340)
S Dev 1.103

Histogram



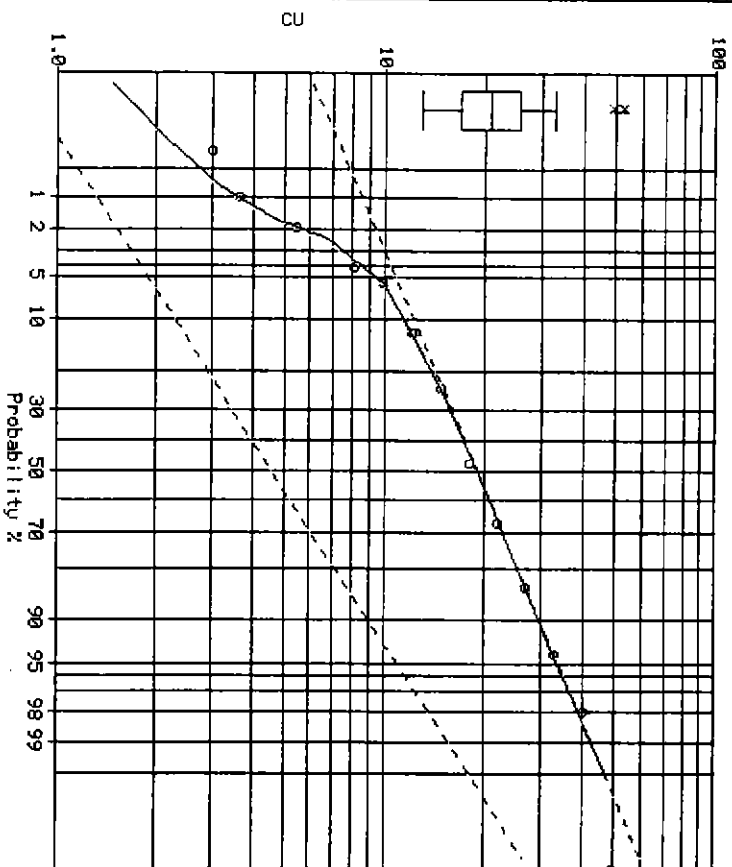
DATA 81705196
File
Variable CU

NORMAL STATISTICS
Samples 310
Minimum 3.000
Maximum 52.000
Class Int 5.000
Median 21.000
Mean 21.985
Variance 64.2350
Std Dev 8.0147

LOGARITHMIC STATISTICS
Samples 310
Class Int 0.300
Mean 20.448
Mean of logs 3.018
Variance 0.1596
Std Dev 0.3995

SICHEL STATISTICS
Sichel's Mean 22.084
Sichel's U 0.159
Sichel's Gamma 1.080

Log Probability Plot



DATA
File 8170s196
Variable CU

NORMAL STATISTICS

Samples 310
Minimum 3.000
Maximum 52.000
Class Int 5.000
Median 21.000
Mean 21.965
Variance 64.2350
Std Dev 8.0147

LOGARITHMIC STATISTICS

Samples 310
Class Int 0.200
Mean 20.448
Mean of logs 3.018
Variance 0.1596
Std Dev 0.3995

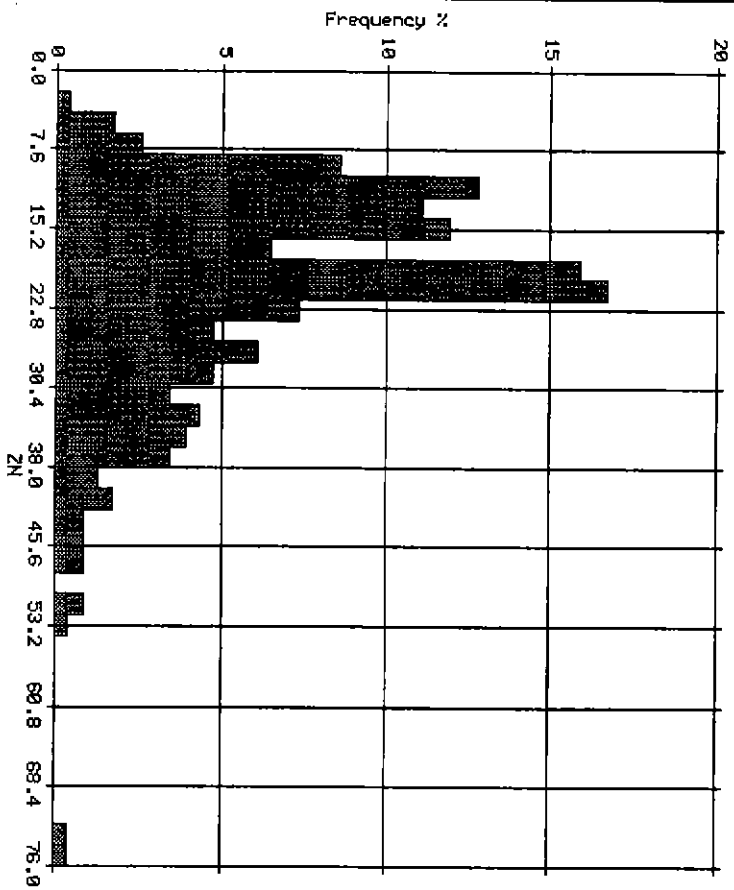
SICHEL STATISTICS

Sichel's Mean 22.084
Sichel's $\hat{\mu}$ 0.159
Sichel's Gamma 1.080

Upper Population 96.98%
Mean 19.159 (Ln 2.953)
S Dev 0.345

Lower Population 3.00%
Mean 4.569 (Ln 1.519)
S Dev 0.531

Histogram



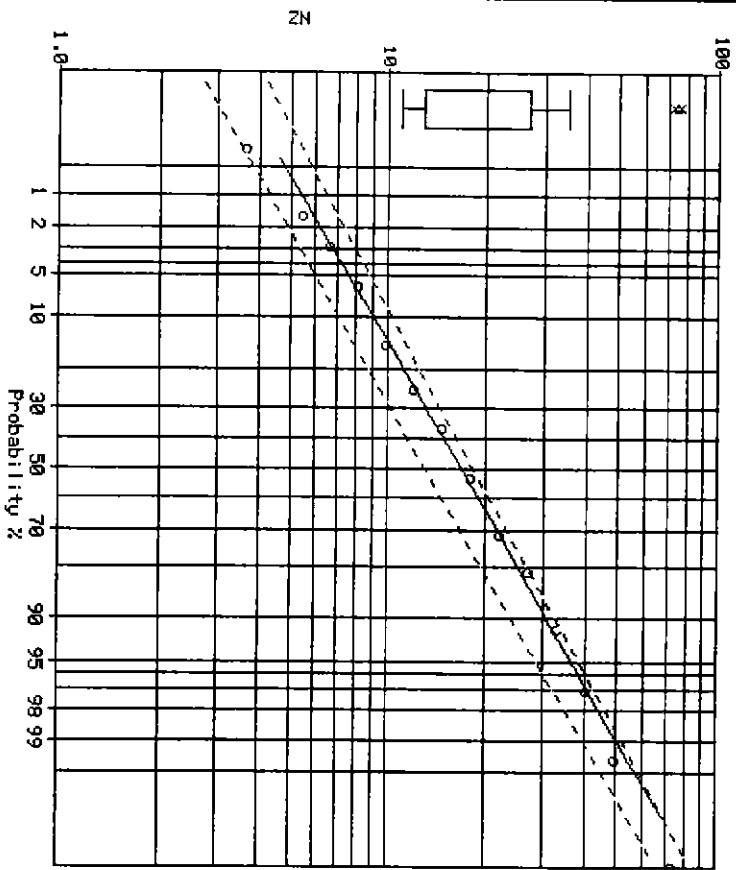
DATA File 0170s196
Variable ZN

NORMAL STATISTICS
Samples 312
Minimum 4.000
Maximum 76.000
Class Int 2.000
Median 20.000
Mean 21.327
Variance 107.6806
Std Dev 10.3769

LOGARITHMIC STATISTICS
Samples 312
Class Int 0.300
Mean 19.116
Mean of logs 2.951
Variance 0.2240
Std Dev 0.4733

SICHEL STATISTICS
Sichel's Mean 21.294
Sichel's V 0.223
Sichel's Gamma 1.114

Log Probability Plot



DATA
File 81705196
Variable ZN

NORMAL STATISTICS

Samples 312
Minimum 4.000
Maximum 76.000
Class Int 2.000
Median 20.000
Mean 21.327
Variance 107.6806
Std Dev 10.3769

LOGRITHMIC STATISTICS

Samples 312
Class Int 0.200
Mean 19.116
Mean of logs 2.951
Variance 0.2240
Std Dev 0.4733

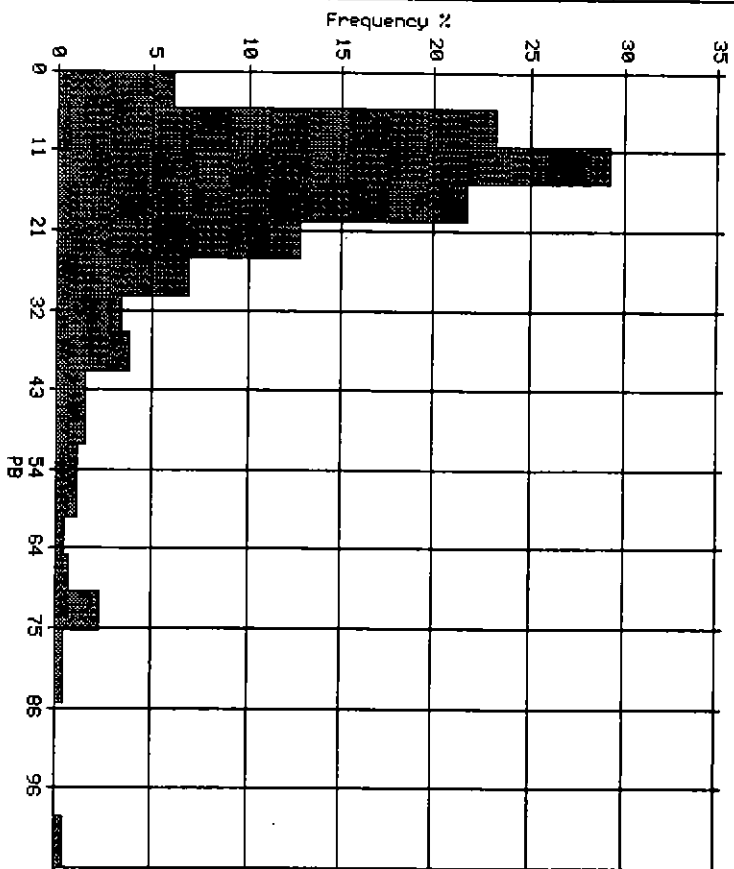
SICHEL STATISTICS

Sichel's Mean 21.294
Sichel's U 0.223
Sichel's Gamma 1.114

Upper Population 75.52%
Mean 18.313 (Ln 2.908)
S Dev 0.447

Lower Population 24.48%
Mean 13.064 (Ln 2.570)
S Dev 0.476

Histogram



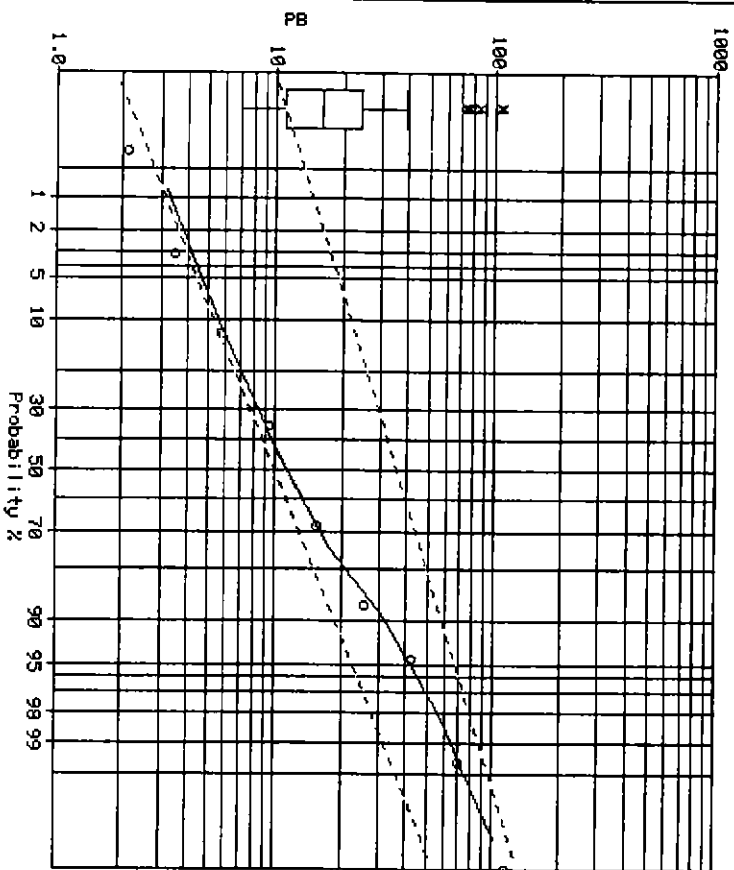
DATA
File 81705196
Variable PB

NORMAL STATISTICS
Samples 312
Minimum 2.000
Maximum 107.000
Class Int 5.000
Median 16.000
Mean 20.093
Variance 264.0717
Std Dev 16.2503

LOGARITHMIC STATISTICS
Samples 312
Class Int 0.300
Mean 15.808
Mean of logs 2.761
Variance 0.4618
Std Dev 0.6796

SICHEL STATISTICS
Sichel's Mean 19.858
Sichel's U 0.460
Sichel's Gamma 1.255

Log Probability Plot



DATA
File 8170s196
Variable pg

NORMAL STATISTICS
Samples 312
Minimum 2.000
Maximum 107.000
Class Int 5.000
Median 16.000
Mean 20.093
Variance 264.0717
Std Dev 16.2503

LOGARITHMIC STATISTICS
Samples 312
Class Int 0.500
Mean 15.888
Mean of logs 2.761
Variance 0.4618
Std Dev 0.6796

SICHEL STATISTICS
Sichel's Mean 19.858
Sichel's U 0.460
Sichel's Gamma 1.256

Upper Population 15.18%
Mean 35.884 (Ln 3.580)
S Dev 0.382
Lower Population 84.82%
Mean 10.027 (Ln 2.305)
S Dev 0.496