

Purechem Limited.
February 8, 2000

February 8, 2000



42B02NW2001 2.20399 WARREN

010

Mr. Don Hains
Purechem Limited.
517 Wellington Street W, Suite 405
Toronto, Ontario, M5V 1G1

Dear Mr. Hains:

**RE: STATISTICAL ANALYSIS OF AREA B, WARREN TOWNSHIP
ANORTHOSITE PROJECT**

Watts, Griffis and McOuat Limited ("WGM") was retained by Purechem Limited ("Purechem") to carry out a preliminary statistical analysis of percussion drilling samples from one test area of its anorthosite deposit located in Warren Township, Ontario. We understand that Purechem wishes to use the results of this study to better quantify the chemical characteristics of the deposit in order to determine if the potentially mined product would meet the chemical specifications required by the glass industry.

The following letter report outlines the assumptions that WGM has made, the data used in our analysis and our conclusions and recommendations.

Data Used in Statistical Analysis

Raw geochemical data was provided to WGM by Purechem in the form of a series of excel spreadsheets. WGM was not present during the drilling, sample preparation or analysis of any of the samples and therefore is not in a position to ensure their validity or accuracy.

Chemical analysis of the samples was done by ICP lithium metaborate fusion. Some duplicate ICP and XRF analyses were also completed for certain samples. Variability of the duplicate analysis was within industry standards. A more detailed review of possible bias variations as a result of analytical methods should be undertaken prior to production, as chemical specifications of the final product fall in a narrow range.

In completing our statistical analysis, WGM has used only the percussion drilling results from drillholes 1 to 11. These holes outline what has been termed "Area B" in this report and this area is believed to represent the potential initial production. We reviewed the chemical results of other drilling completed in the anorthosite body to assist in some of our conclusions.

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Two cross sections showing the drill holes and analytical results can be found in Appendix 1. A complete list of the ICP result for holes 1 to 11 appears in Appendix 2.

In order to ensure an un-biased statistical analysis, additional samples contained within Area B such as surface grab samples were not used as these samples, a) are of a much smaller "size of support" relative to the drilling, and b) tend to be taken in order to measure small unique geological features and therefore often display a conditional bias.

Preliminary Statistics and Observations

Table 1 summarizes the statistical analysis of the major compounds from the 50 raw samples taken from drillholes 1 to 11. In all but three cases, samples are 3.03 m in length.

TABLE 1
STATISTICS ON TOTAL OF APPROXIMATELY 3.03 M DRILLHOLE SAMPLES (HOLES 1 TO 11)

Statistics	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	TiO ₂	MnO	P ₂ O ₅
Number of Samples	50	50	50	50	50	50	50	50	50	50
Maximum Sample Value	49.88	32.84	10.54	16.10	5.15	3.15	1.11	2.72	0.180	0.52
Minimum Sample Value	39.55	18.31	0.70	13.59	0.21	2.21	0.02	0.03	0.010	0.06
Sample Mean	48.43	30.38	1.47	15.21	0.65	2.46	0.11	0.15	0.019	0.11
Sample Log Mean	3.88	3.41	0.15	2.72	N/A	0.90	N/A	N/A	N/A	N/A
Standard Deviation	1.91	2.55	1.86	0.49	0.99	0.16	0.20	0.50	0.030	0.08
Variance	3.64	6.52	3.46	0.24	0.98	0.03	0.04	0.25	0.001	0.01
Log Variance	0.00	0.01	0.26	0.00	0.52	0.00	0.63	0.68	0.392	0.14
Coefficient of Variance	0.04	0.08	1.26	0.03	1.52	0.07	1.87	3.25	1.54	0.75

A further analysis of the data identified two samples at the bottom of hole DH5 that are clearly anomalous with respect to the other samples within Area B but also to the drilling results from other areas on the anorthosite body. These two samples (# 15969, 15970) appear to represent a different geological domain or possibly the outer edge of the anorthosite body. As these two samples are located in the outer edge of the sampling in Area B and similar results are not present in the larger data set, WGM believes that this unique material can be excluded during mining and therefore, we have removed these samples from any further statistical analysis.

Table 2 summarizes the statistical analysis of the major compounds for the raw drilling samples from holes 1 to 11 with the removal of the two samples from DH5.

Table 2 indicates that the majority of the sample variability for many of the major compounds was a direct result of the inclusion of the two anomalous samples in DH5. In WGM's opinion, these results would more accurately represent the statistical analysis of the material to be mined and sold.

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TABLE 2
STATISTICS ON 3.03 M DRILLHOLE SAMPLES (HOLES 1 TO 11)
(WITH TWO ANOMALOUS SAMPLES FROM DDH-5 REMOVED)

Statistics	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	TiO ₂	MnO	P ₂ O ₅
Number of Samples	48	48	48	48	48	48	48	48	48	48
Maximum Sample Value	49.88	32.84	2.45	16.10	2.40	2.70	0.22	0.11	0.030	0.12
Minimum Sample Value	47.02	29.45	0.70	14.26	0.21	2.21	0.02	0.03	0.010	0.06
Sample Mean	48.79	30.88	1.10	15.28	0.47	2.44	0.07	0.05	0.014	0.10
Sample Log Mean	3.89	3.43	0.06	15.27	0.38	2.43	N/A	N/A	N/A	N/A
Standard Deviation	0.73	0.78	0.36	0.39	0.46	0.11	0.04	0.02	0.006	0.02
Variance	0.54	0.61	0.13	0.15	0.21	0.01	0.00	0.00	0.000	0.00
Log Variance	0.00	0.00	0.06	0.00	0.28	0.00	0.32	0.08	0.145	0.03
Coefficient of Variance	0.01	0.03	0.32	0.03	0.98	0.04	0.62	0.32	0.46	0.16

Spatial Correlation of Samples

Due to the limited number of samples, a spatial correlation analysis of the sampling could not be completed using standard variograph methods. As a result an analysis of the spatial distribution of the major compounds was limited to a more intuitive review of the data.

This review indicated that there is little spatial correlation between samples once the two samples from DH-5 have been removed. As a result, the variability between samples is randomly distributed and the best estimate of the chemical characteristics of mineable material within Area B could be obtained by a weighted average of the drilling samples.

In the case of variability relative to sample depth some scatter plots were created. These did show a weak increase in SiO₂ and a weak decrease in Al₂O₃ with depth (Figures 1 and 2). It is WGM's opinion that these very weak trends would have an insignificant impact on the composition of a final product, as blending of the samples from all sample depths would occur during mining.

The other major compounds display no correlation with sample depth.

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Chemical Variability of Samples

One concern that was expressed by Purechem was that of the standard deviation value for many of the significant compounds in the sample data set and its effect on the chemistry on the final product.

It should be considered that the variability of individual samples (in this case percussion holes with a sample lengths of 3.03 m) will be greater than that of a much larger mining unit (in this case approximately 10,000 tonnes) without a resulting change to the overall mean grade. This decrease in variability, expressed as a standard deviation or coefficient of variance (“CV”) with increasing sample size is termed the volume-variance effect or more commonly the “size of support”.

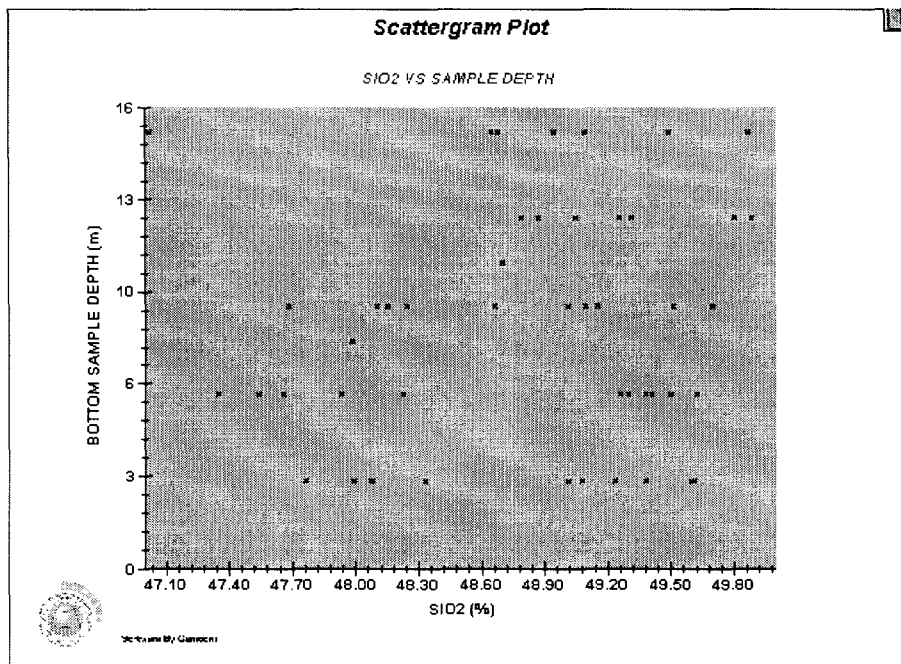


Figure 1. SiO₂ vs Sample Depth

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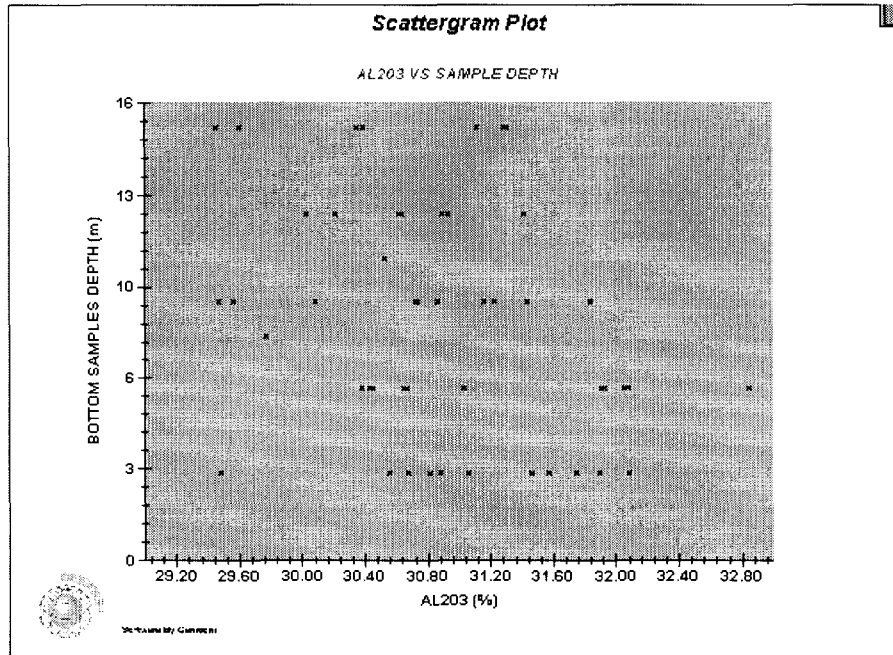


Figure 2. Al₂O₃ vs Sample Depth

To demonstrate this, the raw samples from Hole 1 to 11 were composited so that the chemistry of each hole is represented as one sample. The summary statistics for the composite samples is outlined in Table 3.

Increasing the sample size by approximately 3 to 4 times results in a significant decrease in the summary Standard Deviation and CV for each compound with only very minor change to the mean value for each compound. Further decreases in variability will result as the deposit is mined in 10,000 tonne unit with little change to the mean of such mining blocks.

TABLE 3
STATISTICS ON DRILLHOLE COMPOSITE SAMPLES (HOLES 1 TO 11)
(WITH TWO ANOMALOUS SAMPLES FROM DDH-5 REMOVED)

Statistics	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	TiO ₂	MnO	P ₂ O ₅
Number of Samples	11	11	11	11	11	11	11	11	11	11
Maximum Sample Value	49.50	31.94	1.52	14.79	0.95	2.52	0.04	0.08	0.020	0.11
Minimum Sample Value	47.70	30.23	0.81	15.69	0.27	2.33	0.13	0.04	0.010	0.08
Sample Mean	48.69	30.98	1.11	15.26	0.48	2.43	0.07	0.05	0.014	0.10
Sample Log Mean	3.89	3.43	0.08	2.73	N/A	0.89	N/A	N/A	N/A	N/A
Standard Deviation	0.50	0.52	0.23	0.27	0.26	0.06	0.03	0.01	0.003	0.01
Variance	0.32	0.27	0.05	0.07	0.07	0.00	0.00	0.00	0.000	0.00
Log Variance	0.00	0.00	0.03	0.00	0.22	0.00	0.14	0.05	0.048	0.00
Coefficient of Variance	0.01	0.02	0.21	0.02	0.53	0.02	0.38	0.23	0.229	0.09

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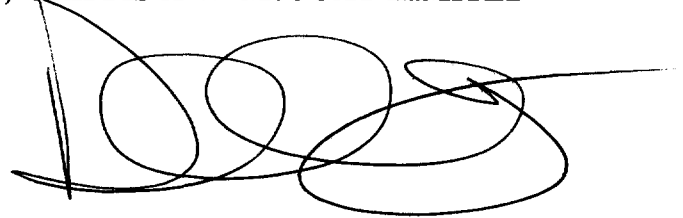
Conclusions

Based on our preliminary statistical analysis, WGM concludes the following:

- Two samples from the bottom of hole DH-5 are clearly anomalous relative to the rest of the sample population and therefore were not considered in the statistical analysis as they will not be included in the final product.
- Given the random distribution of variability between samples, a order of magnitude estimate of the overall mean grade of a final product could be obtained from the mean chemical analysis of the samples in Area B.
- From the available data, the mean compound values outlined in Table 3 should provide the most reasonable estimate of the chemical composition of the potentially mineable material in Area B. This estimate assumes that these drillholes are un-biased in terms of drillhole location what parts of Area B. WGM cannot confirm this un-bias at this time.
- A more detailed review of possible bias variation as a result of analytical methods should be undertaken prior to production.
- The variability of each compound within the standard mining unit will be less that that of the smaller samples within that mining unit as a result of the size of support effect.

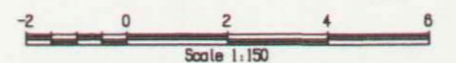
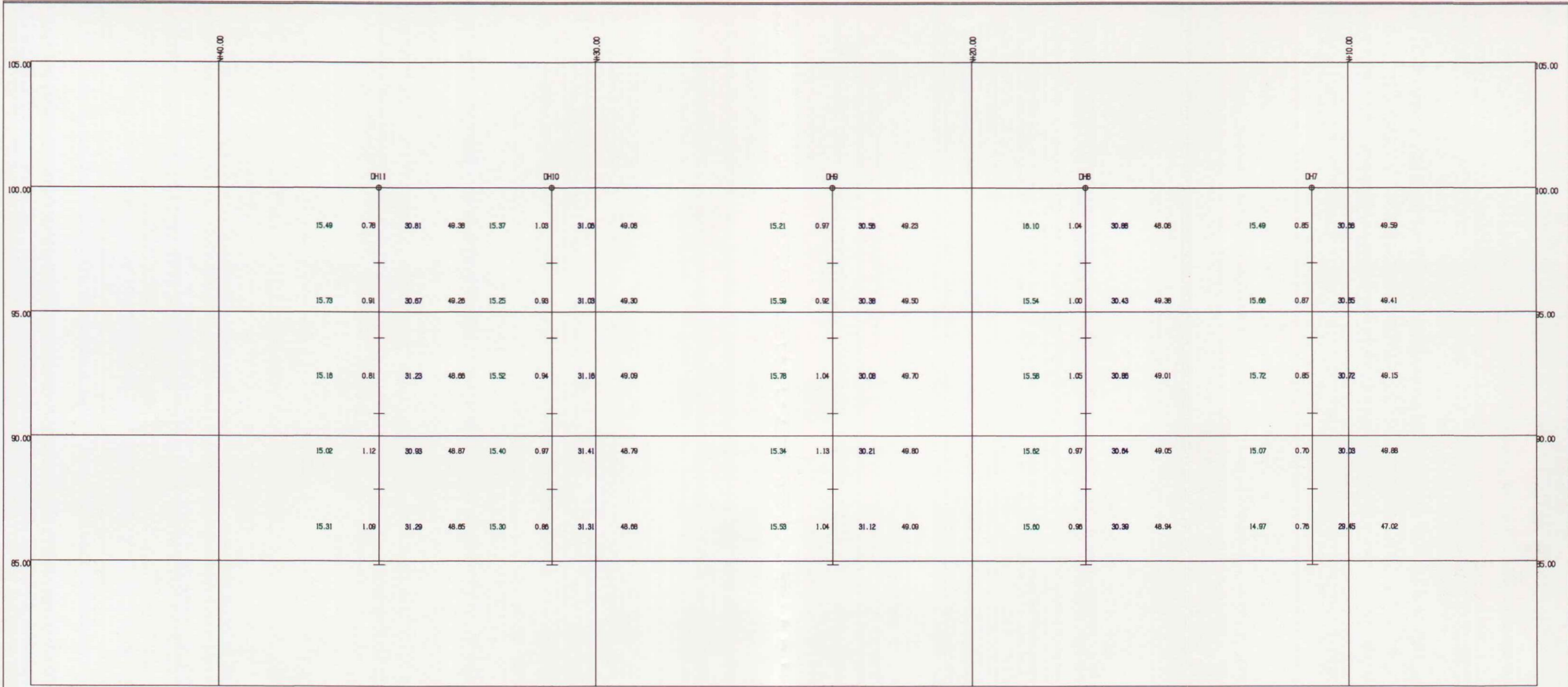
Very best regards,

WATTS, GRIFFIS AND McOUAT LIMITED

A handwritten signature in black ink, appearing to read 'Dan Redmond', written over the company name.

Per: Dan Redmond
Geologist

APPENDIX 1
CROSS SECTIONS A AND B, AREA B



LEGEND

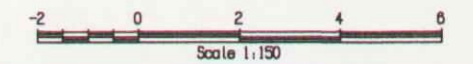
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■	ASSAYS , SiO2 (LEFT)	0.0000 - 100.0000
■	ASSAYS , FE2O3 (RIGHT)	0.0000 - 100.0000
■	ASSAYS , CaO (RIGHT)	0.0000 - 100.0000
■	ASSAYS , AL2O3 (RIGHT)	0.0000 - 100.0000

Watts, Griffis & McQuat Limited
 Toronto Office
 Suite 400
 8 King Street East
 Toronto, ON M5C 1B5

UNITS : METRES DATE: 00/02/05 TIME: 15:25:28

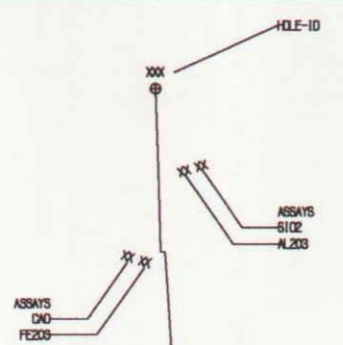
CROSS SECTION A
WARREN ANORTHOSITE PROJECT
MAJOR GEOCHEM ELEMENTS

Software by Gencom Software International



LEGEND

- ASSAYS , AL2O3 (LEFT)
- 0.0000 - 1000.0000
- ASSAYS , SiO2 (LEFT)
- 0.0000 - 100.0000
- ASSAYS , FE2O3 (RIGHT)
- 0.0000 - 100.0000
- ASSAYS , CaO (RIGHT)
- 0.0000 - 100.0000
- ASSAYS , MnO (RIGHT)
- 0.0000 - 100.0000



Watts, Griffis & McQuat Limited
 Toronto Office
 Suite 400
 8 King Street East
 Toronto, ON M5C 1B5

CROSS SECTION B
 WARREN ANORTHOSITE PROJECT
 MAJOR GEOCHEM ELEMENTS

UNITS : METRES DATE: 00/02/05 TIME: 15:24:24

**APPENDIX 2
ICP RESULTS FROM DRILLING IN AREA B**



Nordberg Group • A Member of Røssum Corporation

FAX 414-591-7942

Nordberg Inc.
P.O. Box 383
Milwaukee, WI 53201
USA
Phone: +1-414-769-4697
Fax: +1-414-769-4405

FACSIMILE COVER LETTER

Date: 2/23/2000

To: Don Hains

Attention: Purdchem Limited

From: Travis OSA

Number of pages (including cover letter) 6

If any pages are not received, please call: +1-414-769-4697

Ball mill grindability test.

Travis



42B02NW2001 2.20399 WARREN 020



REPORT
ON
BALL MILL
GRINDABILITY
TEST

Nordberg, Inc.
Mineral Research & Test Center

Bond Ball Mill Grindability Test Report

**** Subject to Review ****

Date: 02/21/00 Time: 03:44 PM
Customer: LAKEFIELD RESEARCH Material: ANORTHOSITE
Test Code: 60608 356
Remarks: 200 MESH

Mesh of Grind: 200 mesh
Specific Gravity: 2.63
100% passing point of intended product: 75 microns
80% passing point of feed: 1611 microns
80% passing point of product: 68 microns
Average grams/revolution: 0.753 grams
% Circulating load: 223 %
Bond Work Index : 21.59 kWh/t*

* = short tons per hour

Prepared By: ROB BEAUVAIS & LOREN MCKILLIP

Nordberg, Inc. Mineral Research & Test Center

Preliminary Screen Analysis
** Subject to Review **

Test Date: 02/21/00 Time: 03:36 PM

Customer: LAKEFIELD RESEARCH
Test Code: 60608 356
Sample: LAB BALL MILL
SCREEN UNDERSIZE
Remarks: 200 MESH

Material: ANORTHOSIT
Percent Moisture: DRY
Density (lb/ft³): 97.8

Screen Opening	Tyler mesh	US mesh	Sample Weight	Weight Percent	Percent Retained	Percent Passing
4.00						
3.00						
2.00						
1.50						
1.05						
0.74						
0.53						
0.37						
0.263	3					
0.185	4	4				
0.131	6	6				
0.093	8	8				
0.065	10	12				
0.045	14	16				
0.0328	20	20				
0.0232	28	30				
0.0164	35	40				
0.0116	48	50				
0.0082	65	70				
0.0058	100	100				
0.0041	150	150				
0.0029	200	200	0.0			100.0
0.0021	270	270	71.0	68.9	68.9	31.1
0.0017	325	325	5.0	4.9	73.8	26.2
0.0015	400	400	0.0			26.2
PAN			27.0	26.2	26.2	0.0
TOTAL			103.0	100.0		

80% Passing Point : 0.0027 inches
68 microns

FEB 2 2000

Lakefield Research

Canada
Argentina
Brazil
Chile
Peru
South Africa

March 2, 2000

Purechem Limited – Hains Technology Associates
517 Wellington St. West, Suite 405,
Toronto, Ontario
Canada M5V 1G1

Attention: Don Hains

Re: Project 8901-238 FEB5008.R00 – Whole Rock Analyses

Dear Don:

Please find attached the certificates of analysis for whole rock analyses on several products relating to your anorthosite project.

These include:

- Anorthosite +200 mesh Para Non-Mag (product following magnetic separation and prior to final grinding)
- Anorthosite NMag -200 mesh (final ground product which you returned to me for analysis), and
- one feed sample and eight test products sent to me by Ronald Gehauf of Inprosys.

I hope that your project is progressing well, and I look forward to hearing about it at the PDA. Best regards,



Nichola McKay, M.Sc.
Sr. Mineralogist

LAKEFIELD RESEARCH LIMITED

Lakefield Research Limited
P.O. Box 4300, 185 Concession Street, Lakefield, ON, K0L 2H0 Canada
Tel: (705) 652-2019 Fax: (705) 652-3123 e-mail: mail@lakefield.com
www.lakefield.com

KEFIELD RESEARCH LIMITED

ag 4300, 185 Concession St., Lakefield, Ontario, K0L 2H0
705-652-2038 - FAX : 705-652-6441

ological Services LRL Canada

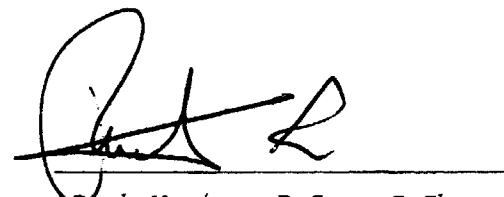
: JV/NMcKay

Lakefield, February 4, 2000

Date Rec. : February 2, 2000
LR. Ref. : FEB3000.R00
Reference : N/A
Project : 8901-238

CERTIFICATE OF ANALYSIS

Sample ID	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	V2O5 %	LOI %	SUM %
+200m Para Non-Mag heck --	48.0	33.4	0.45	< 0.05	16.4	2.40	0.03	0.02	< 0.01	< 0.01	< 0.01	< 0.01	0.69	101.4
+200m Para Non-Mag	47.7	33.2	0.41	< 0.05	16.0	2.32	0.03	0.01	0.01	< 0.01	< 0.01	< 0.01	0.69	100.4



Roch Marion, B.Sc., C.Chem.
Assistant Manager, Analytical Services

KEFIELD RESEARCH LIMITED

Unit 4300, 185 Concession St., Lakefield, Ontario, K0L 2H0
705-652-2038 - FAX : 705-652-6441

Analytical Services LRL Canada

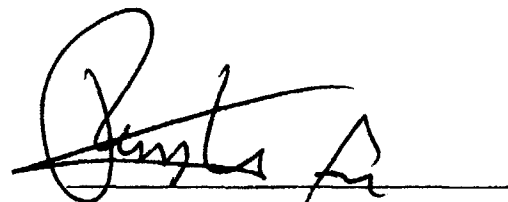
Lakefield, February 16, 2000

Requested by: Jeff

Date Rec. : February 11, 2000
LR. Ref. : FEB3008.R00
Reference : Whole Rock Analysis
Project : 8901-238

CERTIFICATE OF ANALYSIS

No.	Sample ID	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	V2O5	LOI	SUM
		%	%	%	%	%	%	%	%	%	%	%	%	%	%
1	Anorthosite NMAG -200mesh	47.9	33.1	0.32	< 0.05	16.1	2.32	0.03	< 0.01	0.01	< 0.01	< 0.01	< 0.01	0.30	100.1



Roch Marion, B.Sc., C.Chem.
Assistant Manager, Analytical Services

KEFIELD RESEARCH LIMITED

Box 4300, 185 Concession St., Lakefield, Ontario, K0L 2H0

TEL: 705-652-2038

FAX: 705-652-6441

Environmental Services LRL Canada

Lakefield, March 1, 2000

Analyst: Nicki McKay

Date Rec. : February 29, 2000

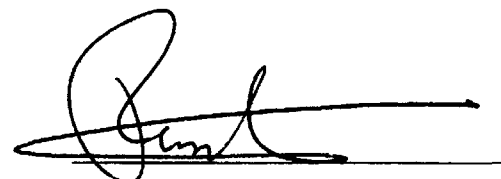
LR. Ref. : FEB3015.R00

Reference : N/A

Project : 2000431

CERTIFICATE OF ANALYSIS

No.	Sample ID	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	V2O5 %	LOI %	SUM %
1	Head Feed	48.2	31.2	1.30	0.38	15.3	2.46	0.07	0.06	0.01	0.02	0.01	< 0.01	1.07	100.1
2	1-NMag 2	48.5	31.7	1.04	0.23	15.3	2.58	0.06	0.05	< 0.01	0.04	< 0.01	< 0.01	0.89	100.4
3	1-NMag 3	48.8	31.5	0.63	0.15	15.5	2.58	0.06	0.04	0.01	0.01	0.01	< 0.01	1.05	100.3
4	1-NMag 4	48.7	31.3	0.55	0.09	15.4	2.57	0.06	0.03	0.01	0.04	< 0.01	< 0.01	0.94	99.7
5	1-NMag 5	48.8	31.7	0.66	0.14	15.3	2.54	0.07	0.04	0.01	0.01	< 0.01	< 0.01	0.83	100.1
6	2-NMag 2	48.6	31.4	1.26	0.23	15.5	2.49	0.06	0.05	0.01	0.01	< 0.01	< 0.01	1.03	100.6
7	2-NMag 3	48.6	31.6	0.66	0.20	15.5	2.53	0.07	0.04	0.01	0.03	0.02	< 0.01	0.98	100.2
8	2-NMag 4	48.9	31.7	0.65	0.11	15.4	2.55	0.07	0.03	0.01	0.02	< 0.01	< 0.01	0.87	100.3
9	2-NMag 5	49.1	31.6	0.46	0.09	15.4	2.60	0.06	0.03	0.01	0.02	0.01	< 0.01	0.82	100.2
--	Check --														
10	2-NMag 5	49.1	31.6	0.55	0.12	15.4	2.60	0.06	0.05	0.01	0.03	< 0.01	< 0.01	0.83	100.4



Russ Calow, B.Sc., C.Chem.
Manager, Analytical Services

Accredited by the Standards Council of Canada in partnership with CAEAL to the ISO/IEC Guide 25 standard for specific registered tests.

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior written approval.

REP No. FEB3015.R00
 Customer Mineralogical Services LRL Canada
 Attention Don Hains
 Reference N/A
 Project 2000431
 Samples Routine Pulp
 Chemist Roch Marion, B.Sc., C.Chem.

Title
 Date 29.02.00

Type	Sample ID	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	V2O5 %	LOI %	SUM %
	Head Feed	48.2	31.2	1.3	0.38	15.3	2.48	0.07	0.06	0.01	0.02	0.01	< 0.01	1.07	100.1
	1-NMag 2	48.5	31.7	1.04	0.23	15.3	2.58	0.06	0.05	< 0.01	0.04	< 0.01	< 0.01	0.89	100.4
	1-NMag 3	48.8	31.5	0.63	0.15	15.5	2.58	0.06	0.04	0.01	0.01	0.01	< 0.01	1.05	100.3
	1-NMag 4	48.7	31.3	0.55	0.09	15.4	2.57	0.06	0.03	0.01	0.04	< 0.01	< 0.01	0.94	99.7
	1-NMag 5	48.8	31.7	0.43	0.14	15.3	2.54	0.07	0.04	0.01	0.01	< 0.01	< 0.01	0.83	100.1
	2-NMag 2	48.6	31.4	1.26	0.23	15.5	2.49	0.06	0.05	0.01	0.01	< 0.01	< 0.01	1.03	100.6
	2-NMag 3	48.6	31.6	0.66	0.2	15.5	2.53	0.07	0.04	0.01	0.03	0.02	< 0.01	0.98	100.2
	2-NMag 4	48.9	31.7	0.65	0.11	15.4	2.55	0.07	0.03	0.01	0.02	< 0.01	< 0.01	0.87	100.3
	2-NMag 5	49.1	31.6	0.46	0.09	15.4	2.6	0.06	0.03	0.01	0.02	0.01	< 0.01	0.82	100.2
- Check -															
DUP	2-NMag 5	49.1	31.6	0.45	0.12	15.4	2.6	0.06	0.05	0.01	0.03	< 0.01	< 0.01	0.83	100.4

Company

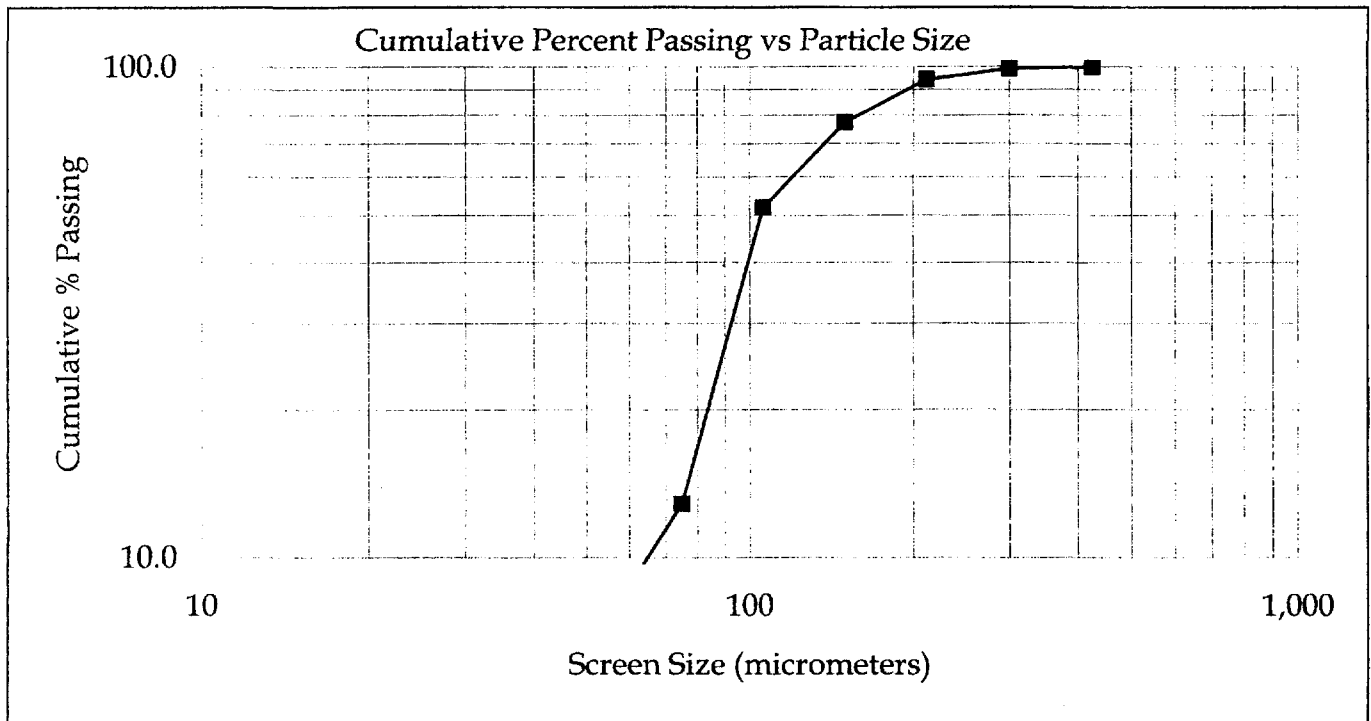
Lakefield Research
Size Distribution Analysis

8901-238

Sample: Anorthosite Ferro Mag

Test No.:

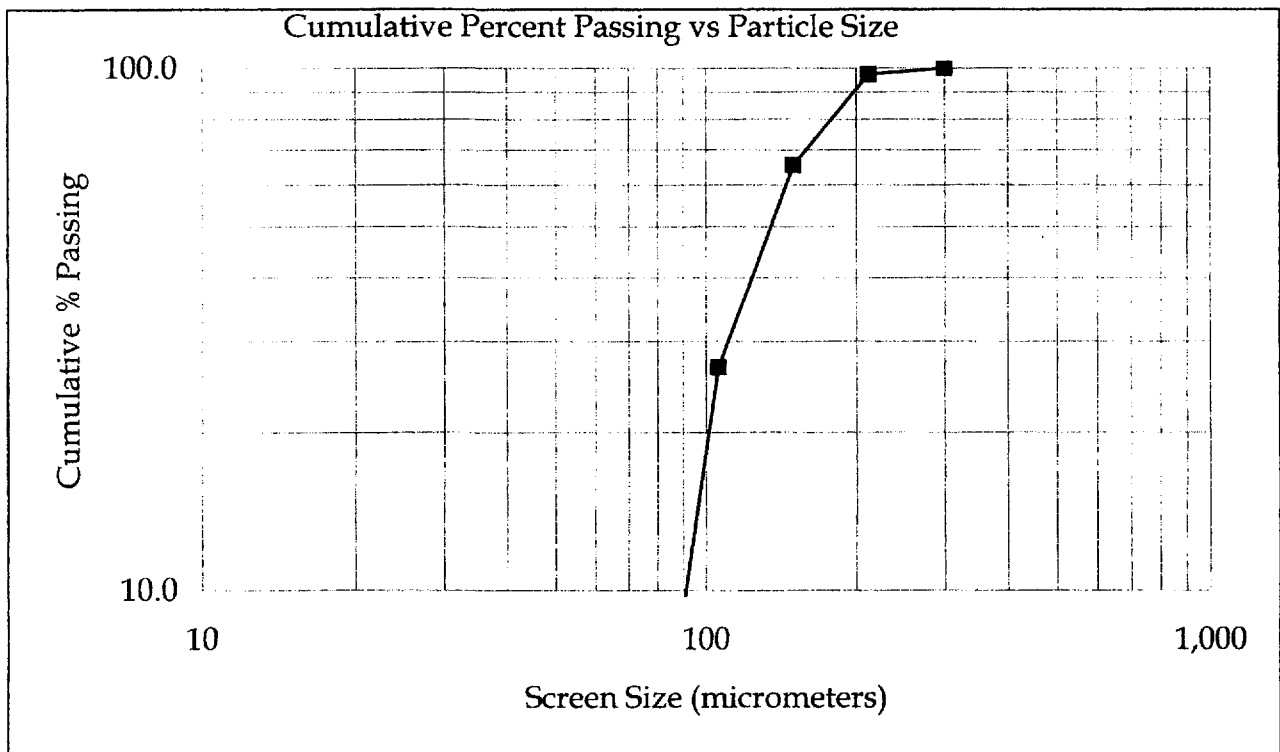
Mesh	Size		Weight grams	% Retained		% Passing Cumulative
		μm		Individual	Cumulative	
35		425	0.2	0.2	0.2	99.8
48		300	1.1	0.9	1.1	98.9
65		212	5.6	4.7	5.8	94.2
100		150	20.1	16.9	22.7	77.3
150		106	30.3	25.5	48.2	51.8
200		75	46.4	39.0	87.1	12.9
270		53	6.9	5.8	92.9	7.1
400		38	1.6	1.3	94.3	5.7
Pan		-38	6.8	5.7	100.0	0.0
Total		-	119.0	100.0	-	-
K80		160				



Sample: Anorthosite Para Mag

Test No.:

Mesh	Size	Weight grams	% Retained		% Passing Cumulative
	µm		Individual	Cumulative	
48	300	0.0	0.0	0.0	100.0
65	212	5.1	2.7	2.7	97.3
100	150	59.5	31.9	34.6	65.4
150	106	72.1	38.6	73.3	26.7
200	75	44.7	24.0	97.2	2.8-
270	53	3.4	1.8	99.0	1.0
400	38	0.2	0.1	99.1	0.9
Pan	-38	1.6	0.9	100.0	0.0
Total	-	186.6	100.0	-	-
K80	179				



2 20309



INPROSYS → FAX



International Process Systems, Inc.
15925 West 7th Avenue, Golden, CO 80401, USA
Tel: (303) 279-6000, Fax: (303) 279-6020

TO: Mr. Don Hains
CO: Purechem Limited
FR: Ronald Gehauf
RE: Fractionation Test Results

Page 1 of 2
Date March 7, 2000
Fax# 416-591-7942
Ref# 00-1191

Dear Don,

I plotted the Fe₂O₃ analyses you sent on the accompanying Grade-Recovery chart. I have found some numbers that do not appear to be consistent. We normally see a diminishing reduction of the iron content as the Non-Magnetic mass recovery decreases. While the overall trend is as expected, you can see that several points do not follow. Most notably, in Test 1, the NMag 5 product is higher than the NMag 4 product.

In Test 2, the NMag 2 and NMag 4 products show little reduction from the previous stage while the mass reduction is significant. I would also expect the iron level of the final product from Test 1 to be lower than that from Test 2 because of the lower feed rate in Test 1.

The magnet configuration, belt thickness and roll speeds are adjusted here to provide diagnostic information about the response of your material. The combination used for Stages 4 and 5 provide the highest strength/highest yield for the tests.

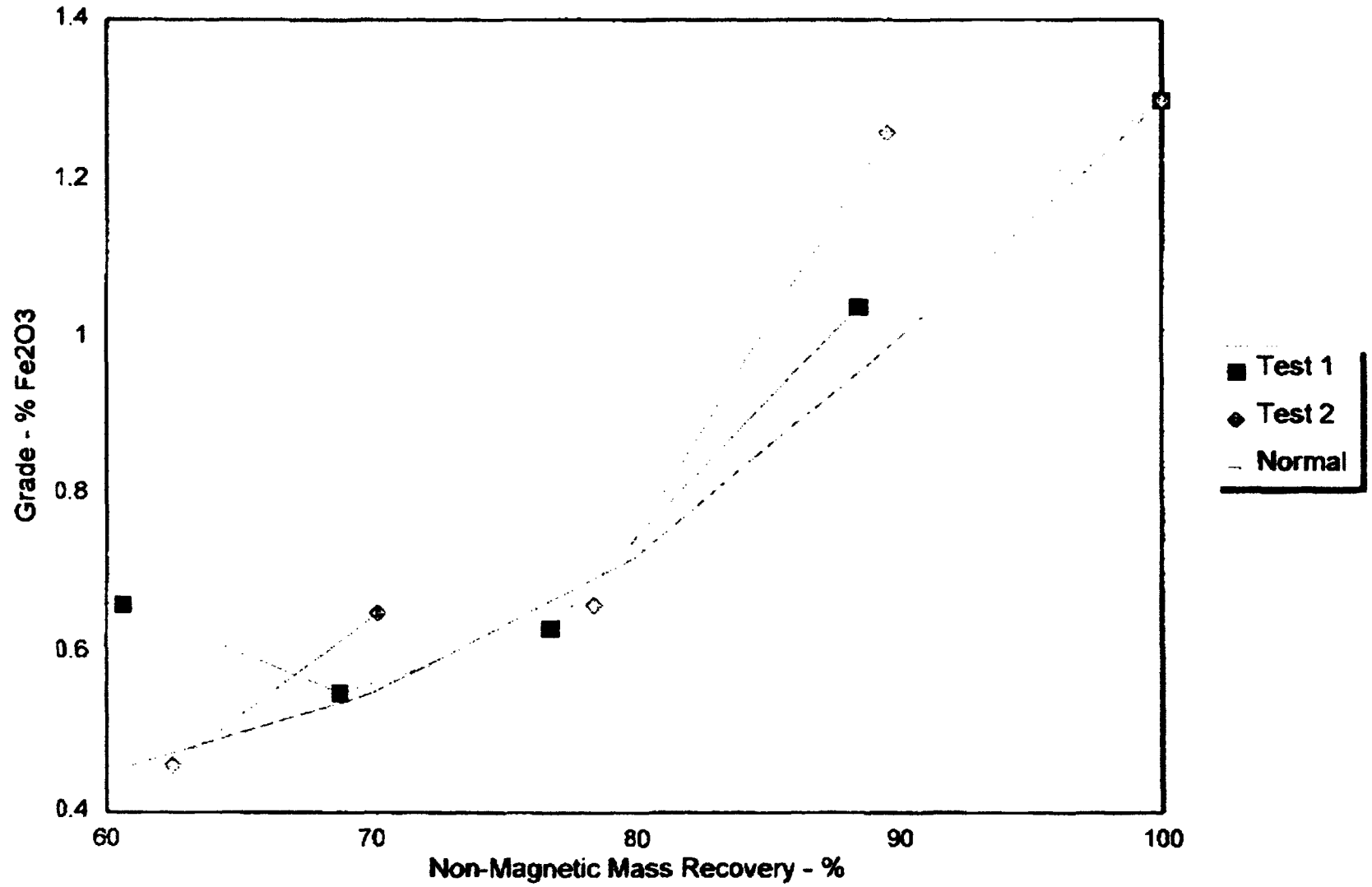
Your suggestion of a finer grind seems appropriate if the problem is mineral liberation. However, you will find that there will be more losses of the extremely fine particles. I would be happy to conduct some additional tests if you provide the finer sample. We could then compare the Grade-Recovery curves based on grind as well.

Best regards,

Ronald Gehauf
Technical Services Manager

Purechem

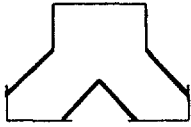
Grade Fe₂O₃ vs. Non-Mag Recovery



REP No. FEB3015.R00
 Customer Mineralogical Services LRL Canada
 Attention Don Hains
 Reference N/A
 Project 2000431
 Samples Routine Pulp
 Chemist Russ Calow, B.Sc., C.Chem.

Title
 Date 29.02.00

Type	Sample ID	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	V2O5 %	LOI %	SUM %
	Head Feed	48.2	31.2	1.3	0.38	15.3	2.46	0.07	0.06	0.01	0.02	0.01	< 0.01	1.07	100.1
	1-NMag 2	48.5	31.7	1.04	0.23	15.3	2.58	0.06	0.05	< 0.01	0.04	< 0.01	< 0.01	0.89	100.4
	1-NMag 3	48.8	31.5	0.83	0.15	15.5	2.58	0.06	0.04	0.01	0.01	0.01	< 0.01	1.05	100.3
	1-NMag 4	48.7	31.3	0.55	0.09	15.4	2.57	0.06	0.03	0.01	0.04	< 0.01	< 0.01	0.94	99.7
	1-NMag 5	48.8	31.7	0.66	0.14	15.3	2.54	0.07	0.04	0.01	0.01	< 0.01	< 0.01	0.83	100.1
	2-NMag 2	48.6	31.4	1.26	0.23	15.5	2.49	0.06	0.05	0.01	0.01	< 0.01	< 0.01	1.03	100.6
	2-NMag 3	48.6	31.6	0.66	0.2	15.5	2.53	0.07	0.04	0.01	0.03	0.02	< 0.01	0.98	100.2
	2-NMag 4	48.9	31.7	0.65	0.11	15.4	2.55	0.07	0.03	0.01	0.02	< 0.01	< 0.01	0.87	100.3
	2-NMag 5	49.1	31.6	0.48	0.09	15.4	2.6	0.06	0.03	0.01	0.02	0.01	< 0.01	0.82	100.2
-- Check --															
DUP	2-NMag 5	49.1	31.6	0.55	0.12	15.4	2.6	0.06	0.05	0.01	0.03	< 0.01	< 0.01	0.83	100.4



INPROSYS

INTERNATIONAL PROCESS SYSTEMS, INC.



15925 West 7th Avenue, Golden, CO 80401
Tel: (303) 279-6000, Fax: (303) 279-6020
E-Mail: sales@inprosys.com

February 17, 2000

Mr. Don Hains
Purechem Limited
517 Wellington Street West
Suite 405
Toronto, ON M5V 1G1
Canada
Tel: 416-971-9783

Dear Mr. Hains,

We received a sample of your anorthosite for magnetic separation testing using our High-Force[®] magnetic separator. The sample may be identified as INPROSYS No. 00-019.

Introduction

The High-Force[®] magnetic separator was developed to take advantage of the most recent advances in rare-earth magnet technology and many years of industrial experience. The design objectives were to optimize the magnetic force taking into consideration the needs for each individual application, reduce or eliminate the problem with short belt life and incorporate a more efficient dust control system.

The standard High-Force[®] rolls are either the highest strength 300 mm (12 in.) or 100 mm (4 in.) diameter magnetic roll. The rolls have various ratios between the magnet disk and the steel disk thicknesses which determine the roll strength and optimum performance relative to the particle size. Medium-strength rolls of 100 mm (4 in.) diameter are also available. They are intended primarily for removal of (scalping) or concentrating strongly magnetic and ferromagnetic materials.

Scope

Fractionation tests were conducted so that Grade-Recovery curves could be constructed at different machine capacities. The total throughput was expected to be 6.5 tph. Tests were conducted to also determine the machine capacity.

Procedure

Using a riffle splitter, the entire material was split into two equal and representative portions. One half was again split into two portions and repeated until a suitable size and number of samples was obtained. Each sample was placed into a new plastic bag and sealed for storage until it was needed for testing.

In conducting these tests, the material was fed onto the belt with a vibrating feeder. The belt carried the material across the magnetic roll, producing Mag 1 and Non-Mag 1 products. The Non-Mag 1 product was again fed onto the belt producing Mag 2 and Non-Mag 2 products, etc. The feed rate of pass 2, etc., was adjusted to simulate a cascading production machine. As the roll speed was reduced, the less magnetically responsive minerals were recovered in the magnetic product. The feed rates are reported as metric tonnes per hour per meter (tph/m) of processing magnetic roll. Our standard machines are 1.0 and 1.5 meter wide but we also manufacture 0.5 meter wide machines.

With fine material and certain minerals, static charges cause the particles to agglomerate and stick to the belt. This interferes with the movement of magnetic particles to the collection sites and causes non-magnetic material to report in the magnetic product. An ion generator (ionizer) was used to place a layer of ions on the belt surface and filter through the material as it fed onto the belt. This helped to dissipate the static charges and allowed better separation of the fine particles.

Discussion

Initial investigations indicated that half or more of the material would respond as magnetic material. Since an ultra-clean product is not required and there is an economic cut-off in recovery, fractionation tests were conducted. A fractionation tests involves reprocessing the non-magnetic product in a series ^{of} passes where the net magnetic field strength is increased on each pass.

Two tests were conducted at 2.2 and 3.3 tph/m. These tests are equivalent to processing the intended capacity with two 1.5 meter or 1.0 meter machines respectively. A sample of each NMag 2, NMag 3, etc. product was split out so that the products could be analyzed directly. The removal of this material from the total was compensated for in the material balances.

Conclusions

Five passes were made with each feed rate. A total of almost 40 mass percent was separated as magnetic product. Generally, the ionizer has little effect when the roll speeds are over 200 rpm. However, this material appears to have a very high static charge associated with it. The ionizer appeared to reduce the amount of fine material reporting to the magnetic products.

These tests are only preliminary. The machine settings have not been optimized. Based on the analytical results of these products, we can determine in which direction to proceed. All of the

test products are being forwarded to Ms. Nicki McKay at Lakefield for analysis. Please inform us of the results of their analyses. The material balances for these tests are attached to this report. The remainder of your sample will be retained for approximately one year in the event additional tests are warranted.

If you have any questions, feel free to contact me.

Best regards,

A handwritten signature in cursive script, appearing to read "Ronald Gehauf".

Ronald Gehauf
Technical Services Manager

INTERNATIONAL PROCESS SYSTEMS, INC.

MAGNETIC SEPARATION TEST PRODUCT BALANCE

ID NO. : 00-019 CUSTOMER : Purechem Ltd.
TEST DATE : February 16, 2000 OPERATOR : R. Gehauf
MATERIAL : Anorthosite SEP. ID. : LP 10-30
FEED PREP : Split NOTES : Ionizer ON

TEST NO. config/belt	PRODUCT	FEED RATE TPH/M	ROLL SPD. RPM	MASS DIST. % WT	CUM WT%	GRADE %
1	FEED	2.2	300	100.00		
4:4	MAGS 1			2.38	2.38	
0.5 mm	NMAGS 1		300			
3:1	MAGS 2			9.16	11.55	
0.25 mm	NMAGS 2		290			
3:1	MAGS 3			11.70	23.24	
0.13 mm	NMAGS 3		280			
	MAGS 4			7.94	31.19	
	NMAGS 4		260			
	MAGS 5			8.17	39.36	
	NMAGS 5			60.64	100.00	
2	FEED	3.3	300	100.00		
4:4	MAGS 1			2.34	2.34	
0.5 mm	NMAGS 1		300			
3:1	MAGS 2			8.08	10.42	
0.25 mm	NMAGS 2		290			
3:1	MAGS 3			11.16	21.59	
0.13 mm	NMAGS 3		280			
	MAGS 4			8.16	29.74	
	NMAGS 4		260			
	MAGS 5			7.74	37.48	
	NMAGS 5			62.52	100.00	



INPROSYS

INTERNATIONAL PROCESS SYSTEMS, INC.



15925 West 7th Avenue, Golden, CO 80401
Tel: (303) 279-6000, Fax: (303) 279-6020
E-mail: sales@inprosys.com

February 17, 2000

Ms. Nicki McKay
Lakefield Research Limited
Box 4300, 185 Concession Street
Lakefield, ON K0L 2H0
Canada
Tel: 705-652-2000

Dear Ms. McKay,

Mr. Don Hains of Purechem asked that I forward the enclosed samples to you for XRF fusion analysis. The samples are products from magnetic separation tests I conducted on his anorthosite project (LR 9903081). Our identification number is 00-019.

Please find enclosed the following nine samples for analysis:

00-019	Head Feed	
	1-NMag 2	2-NMag-2
	1-NMag 3	2-NMag 3
	1-NMag 4	2-NMag 4
	1-NMag 5	2-NMag 5

Enclosed are the following ten magnetic products for reference. Please contact Mr. Hains to see if he wishes to analyze these.

00-019	1-Mag 1	2-Mag 1
	1-Mag 2	2-Mag 2
	1-Mag 3	2-Mag 3
	1-Mag 4	2-Mag 4
	1-Mag 5	2-Mag 5

Please forward the attached report to Frédérique Vincent. If you have any questions, please feel free to contact me or Mr. Hains.

Best regards,

Ronald Gehauf
Technical Services Manager

Lakefield Research
Mineralogical Services



**Petrographic Examination of
a Coarse-Grained Anorthosite**

submitted by

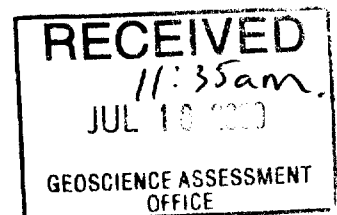
~~Pro Chem~~
PURE CHEM

2.20399

Project Managed by: Nichola McKay, M.Sc., Sr. Mineralogist

Report Date: December 23, 1999

Project No.: 8901-238 / NOV5010.R99



Note

This report refers to the samples as received. The practice of this Company in issuing reports of this nature is to require the recipient not to publish the report or any part thereof without the written consent of Lakefield Research Limited.

Neither Lakefield Research Limited, nor its subcontractors, consultants, agents, officers, or employees shall be held responsible for any loss or damage resulting directly or indirectly from any default, negligence, error or omission. The liability of Lakefield Research Limited, if any, shall be limited in total to the invoiced value of this project.

Petrographic Examination of a Coarse-Grained Anorthosite

Summary Report

Introduction

One rock sample, identified as “Anorthosite”, was submitted for mineralogical characterization and customized dry crushing-grinding and magnetic separation. The sample was delivered and the testing requested by Mr. Don Hains of Hains Technology Associates, on behalf of Pro Chem. The objectives of the testing were 1) identification of mineral assemblage, particularly the deportment of iron; and 2) preparation of a relatively pure feldspar concentrate (<0.5% Fe₂O₃) dry ground to passing 270 mesh (53 μm).

Procedures

The rock was washed to remove small amounts of soil from the outer surface. Mineral scale was removed from a prominent fracture plane using a rock saw.

One polished thin section was prepared from a representative site on the rock sample. The section was examined using transmitted and reflected light microscopy. A portion of the sample was pulverized and subjected to whole rock analysis by XRF.

The remainder of the sample was jaw crushed and then dry ground in a ball mill (steel ball charge) to nominal passing 65 mesh (200 μm). The ground material was screened at 200 mesh; the plus 200 mesh (75μm) material was subjected to a two-stage dry magnetic separation using the INPROSYS belt magnetic separator. A primary ferromagnetic separation (5000 gauss magnet) and a secondary paramagnetic separation (14,000 gauss magnet) were performed. The final non-magnetic fraction was analyzed to determine iron content, and then dry ground using a pebble mill (ceramic charge) to nominal passing 270 mesh (53 μm). Dry brightness and size analysis was performed on the final ground product.

Results

Details of the petrographic analysis are presented in Appendix 1. **The Anorthosite** sample was characterized by a coarse-grained, holocrystalline intergrowth of calcic plagioclase feldspar. Minor amounts of amphibole, pyroxene, chlorite and calcite were present as interstitial grains up to 1 mm in diameter. Trace amounts of sericitic alteration of plagioclase were noted along fracture planes. Delicate acicular inclusions of pyroxene and amphibole, as well as minute inclusions of rutile (<2 µm) within the plagioclase grains were the only deleterious minerals identified. A mineral balance, based on petrographic and whole rock analyses is presented in Table 1:

Table 1: Mineral Balance


Mineral SQ-XRD	Anorthosite	
	% Dist.	
Bytownite	95.5	
Mg Hornblende	2.0	
Calcite	1.1	
Mica	0.5	
Augite	0.5	
Quartz	0.2	
Chlorite	<0.2	
Fe oxyhydroxides	<0.2	
Rutile	<0.2	
Total	100.0	
Oxide (XRF)	WRA Calc.%	WRA %
TiO ₂	0.06	0.05
Fe ₂ O ₃		1.05
Fe ^T	0.36	0.74
Al ₂ O ₃	30.93	32.5
CaO	15.60	16.3
MgO	0.39	0.27
Na ₂ O	2.48	2.36
K ₂ O	0.21	0.05
P ₂ O ₅	0.00	0.01
MnO	0.00	0.01
SiO ₂	48.46	47.0
Cr ₂ O ₃	0.00	0.02
LOI	0.68	0.53
Total	99.16	100.13

Details of the magnetic separation are presented in Appendix 2. Whole rock analyses (feed and ground non-magnetic fraction), size classification (after primary and secondary grinding) and dry brightness of the final product are presented in Appendix 3. The final ground product (non magnetic fraction) reported an iron content of 0.41% Fe₂O₃ and dry brightness of 76.5%. Weight distribution of the test products is presented in Table 2.

Table 2: Weight Distribution of Anorthosite Test Products

Size Fraction	g	wt. %
Product:		
-270 mesh non mag	2386	43.0
Reject:		
Grind oversize	105	1.9
Ferro mag	239	4.3
Para mag	728	13.1
-200 mesh reject	2088	37.6
Total	5546	100.0
Starting Wt.	6108	

Lakefield Research Limited
December 23, 1999



Nichola McKay, M.Sc.
Senior Mineralogist



Bob Irwin
Business Manager, Mineralogical Services

Technical Support: Jesse Payne/Steve Bunce (Lapidary Preparation), Lisa Ryan (X-Ray Diffraction Analysis)

Appendix 1

Petrographic Analysis

Anorthosite	
Chemistry	47.0% SiO ₂ 32.5% Al ₂ O ₃ 16.3% CaO 2.36% Na ₂ O 1.05% Fe ₂ O ₃
Microscopy	<p style="text-align: right;">PTS 6108</p> <p>Wt. %</p> <p>95-98 Plagioclase Feldspar (bytownite). Coarse-grained (0.5 - 3 mm), equidimensional intergrowth. Well developed albite and pericline twinning. Clean with only trace amounts of sericitic alteration. Contains trace amounts of delicate, acicular pyroxene and amphibole inclusions. Also contains trace amounts of rutile inclusions.</p> <p>1-2 Amphibole (hornblende). Disseminated, anhedral, interstitial grains up to 1 mm. May contain trace amounts of Fe oxyhydroxide inclusions. Also as delicate, acicular inclusions in plagioclase - 20-500 µm in length x 10 µm in width.</p> <p>1-2 Calcite. Anhedral interstitial grains up to 500 µm.</p> <p>0.5 Pyroxene (augite). Anhedral interstitial grains up to 800 µm, commonly associated with the amphibole. Also as delicate acicular inclusions in plagioclase - 20-500 µm in length x 10 µm in width.</p> <p>0.5 Mica (sericite). Alteration of feldspar focused along fracture planes.</p> <p><0.5 Chlorite. Radiating, flake-like crystals associated with interstitial amphibole.</p> <p><0.5 Quartz. Rare inclusions in amphibole, typically <30 µm.</p> <p><0.5 Fe Oxyhydroxides. Rare pod-like replacements associated with interstitial amphibole. Typically <30 µm.</p> <p><0.5 Rutile. Disseminated inclusions in plagioclase, typically <2 µm.</p>
Comments	<p>A coarse-grained, holocrystalline, equidimensional intergrowth of calcic plagioclase feldspar. Light grey in colour.</p> <p>Amphibole and pyroxene are predominantly present as interstitial grains.</p> <p>Fe is predominantly hosted by amphibole, with lesser amounts as pyroxene and chlorite, and trace amounts as Fe oxyhydroxides.</p> <p>Delicate, acicular inclusions of amphibole and pyroxene, and minute inclusions of rutile in the plagioclase grains will provide the only deleterious mineral constituents.</p>
Classification	Anorthosite

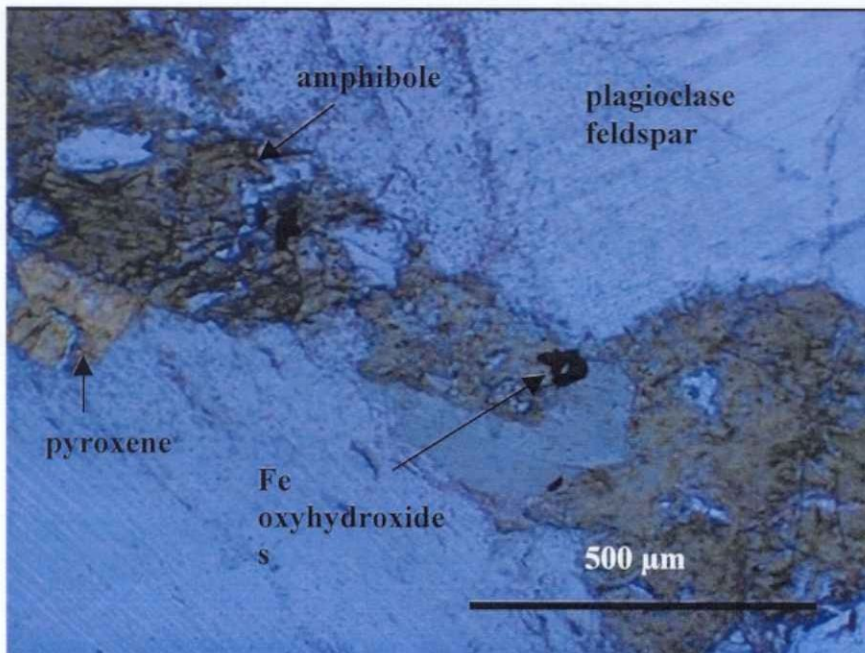


Photo 1: Anorthosite.

Coarse-grained intergrowths of plagioclase feldspar (bytownite-anorthite composition).

Green amphibole is present as interstitial grains up to 500 μm in length. Rare Fe oxyhydroxides were noted associated with the hornblende.

PTS 6108. PL. 50x.

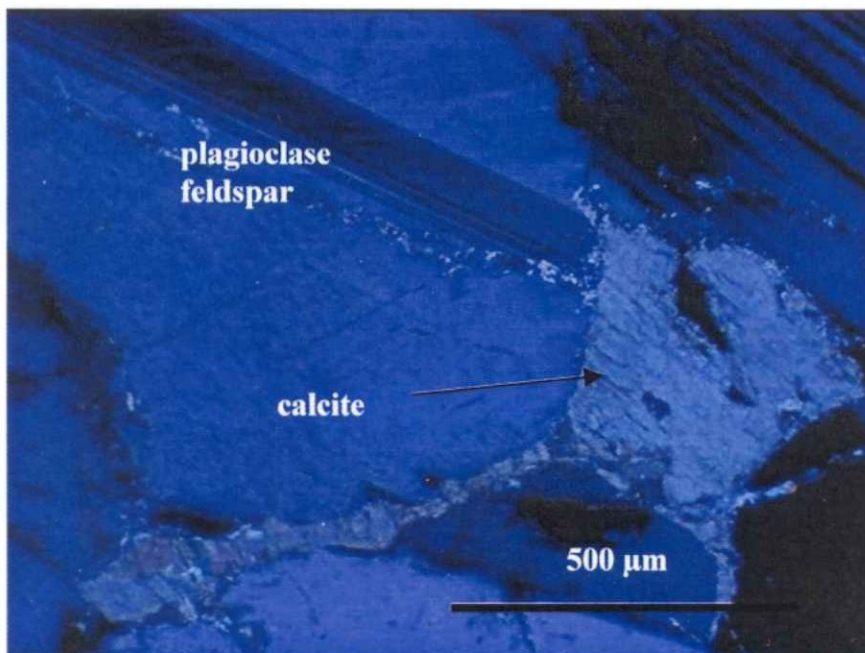


Photo 2: Anorthosite.

Trace amounts of calcite are present as interstitial grains.

PTS 6108. XP. 50x

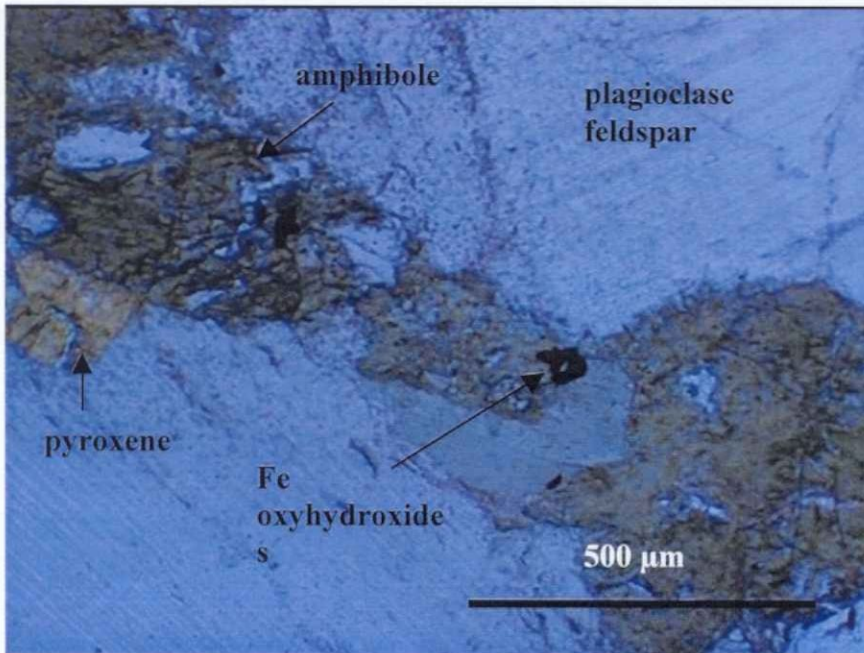


Photo 1: Anorthosite.

Coarse-grained intergrowths of plagioclase feldspar (bytownite-anorthite composition).

Green amphibole is present as interstitial grains up to 500 μm in length. Rare Fe oxyhydroxides were noted associated with the hornblende.

PTS 6108. PL. 50x.

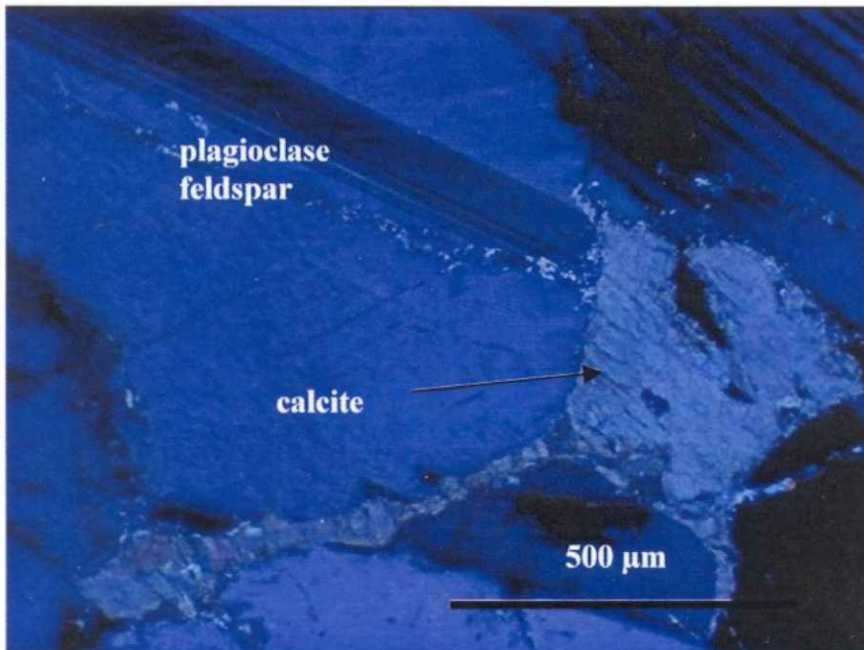


Photo 2: Anorthosite.

Trace amounts of calcite are present as interstitial grains.

PTS 6108. XP. 50x

Appendix 2

Details of Magnetic Separation

**Test 1: Magnetic Separation of -65/+200 mesh
Anorthosite**

Test Conditions - INPROSYS Magnetic Separator

Stage	Gauss	Belt Speed	Feed Rate % of max.	Passes	Temp.
Ferromagnetic Separation	5000	325 rpm	4.5	2	Ambient
Paramagnetic Separation	14000	300 rpm	3.5	2	Ambient

Weight Distribution of Products:

Size Fraction	g	wt. %
Ferro Mag	239	7.1
Para Mag	728	21.7
Para Non Mag	2386	71.2
Total	3353	100.0

Appendix 3

**Chemical Analysis,
Size Classification and Dry Brightness**

LAKEFIELD RESEARCH LIMITED

P.O. Box 4300, 185 Concession St., Lakefield, Ontario, KOL 2H0

Phone : 705-652-2038 - FAX : 705-652-6441

Mineralogical Services LRL Canada

Attn : Jeff

Lakefield, November 17, 1999

Date Rec. : November 15, 1999

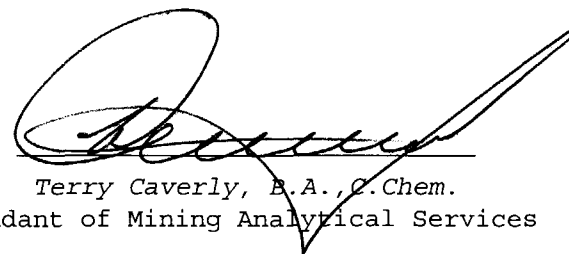
LR. Ref. : **NOV3012.R99**

Reference : N/A

Project : 9903081

CERTIFICATE OF ANALYSIS

No.	Sample ID	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	V2O5 %	LOI %	SUM %
1	Anorthositc	47.0	32.5	1.05	0.27	16.3	2.36	0.05	0.05	< 0.01	< 0.01	0.02	< 0.01	0.53	100.1



Terry Caverly, B.A., C.Chem.
Superintendent of Mining Analytical Services

A MEMBER OF IAETL CANADA

Accredited by the Standards Council of Canada in partnership with CAEAL to the ISO/IEC Guide 25 standard for specific registered tests.

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior written approval.

LAKEFIELD RESEARCH LIMITED

P.O. Box 4300, 185 Concession St., Lakefield, Ontario, K0L 2H0

Phone : 705-652-2038 - FAX : 705-652-6441

Mineralogical Services LRL Canada

Attn : JV/

Lakefield, December 21, 1999

Date Rec. : December 20, 1999

LR. Ref. : DEC3014.R99

Reference : N/A

Project : 9903081

CERTIFICATE OF ANALYSIS

No.	Sample ID	SiO ₂ %	Al ₂ O ₃ %	Fe ₂ O ₃ %	MgO %	CaO %	Na ₂ O %	K ₂ O %	TiO ₂ %	P ₂ O ₅ %	MnO %	Cr ₂ O ₃ %	V ₂ O ₅ %	LOI %	SUM %
1	+200m	47.3	33.0	0.68	0.09	16.4	2.33	0.03	0.03	< 0.01	0.02	< 0.01	< 0.01	0.76	100.6



Roch Marion, B.Sc., C.Chem.
Assistant Manager, Analytical Services

A MEMBER OF IAETL CANADA

Accredited by the Standards Council of Canada in partnership with CAEAL to the ISO/IEC Guide 25 standard for specific registered tests.

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior written approval.

LAKEFIELD RESEARCH LIMITED

P.O. Box 4300, 185 Concession St., Lakefield, Ontario, K0L 2H0

Phone : 705-652-2038 - FAX : 705-652-6441

Mineralogical Services LRL Canada

Attn : JV/NMcKay

Lakefield, December 22, 1999

Date Rec. : December 21, 1999

LR. Ref. : DEC3015.R99

Reference : N/A

Project : 9903081

CERTIFICATE OF ANALYSIS

No.	Sample ID	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	V2O5 %	LOI %	SUM %
1	+200m Para Non-Mag	47.8	33.4	0.41	< 0.05	16.4	2.41	0.03	0.02	< 0.01	< 0.01	< 0.01	< 0.01	1.18	101.7



Roch Marion, B.Sc., C.Chem.
Assistant Manager, Analytical Services

A MEMBER OF IAETL CANADA

Accredited by the Standards Council of Canada in partnership with CAEAL to the ISO/IEC Guide 25 standard for specific registered tests.

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior written approval.

Company

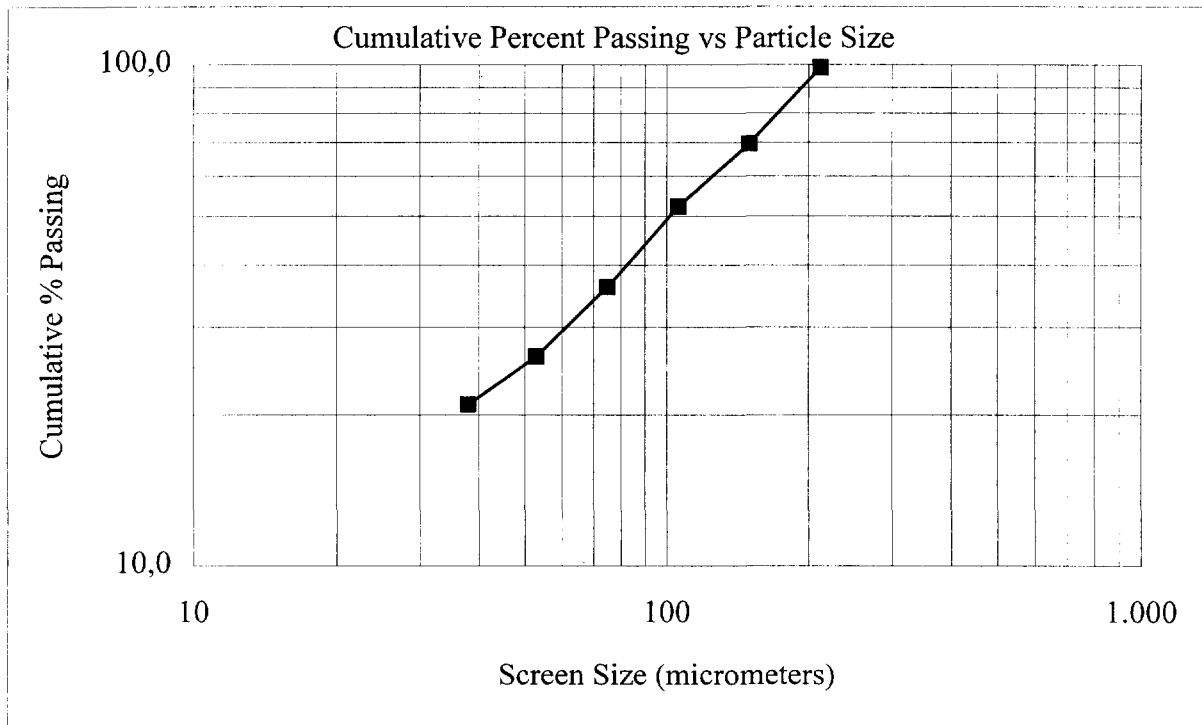
Lakefield Research
Size Distribution Analysis

LR-9903081

Sample: Anorthosite

Test No.: Minus 65m

Mesh	Size	Weight grams	% Retained		% Passing Cumulative
	μm		Individual	Cumulative	
65	212	6,6	1,5	1,5	98,5
100	150	127,6	28,9	30,4	69,6
150	106	76,4	17,3	47,8	52,2
200	75	71,3	16,2	63,9	36,1
270	53	43,5	9,9	73,8	26,2
400	38	22,9	5,2	79,0	21,0
Pan	-38	92,6	21,0	100,0	0,0
Total	-	440,9	100,0	-	-
K80	173				



Company

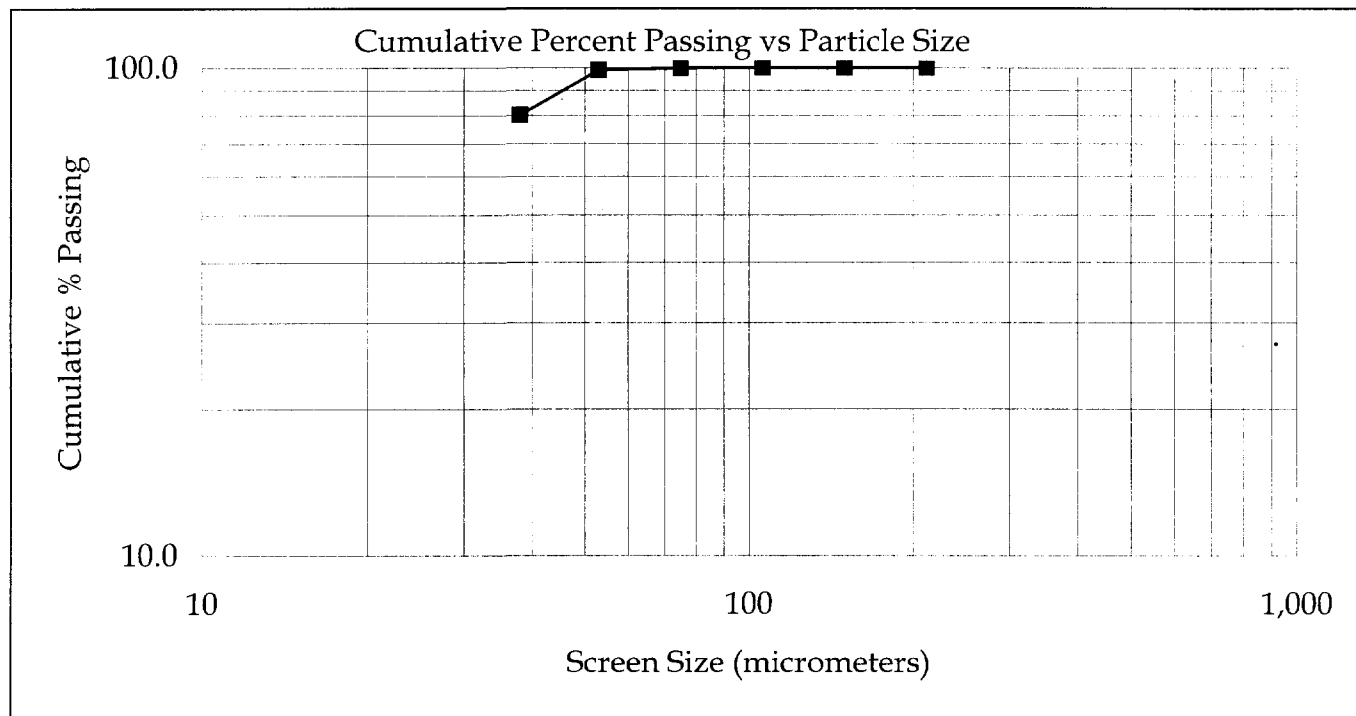
Lakefield Research
Size Distribution Analysis

LR-9903081

Sample: Anorthosite N-Mag

Test No.: Minus 270m

Mesh	Size	Weight grams	% Retained		% Passing Cumulative
	µm		Individual	Cumulative	
65	212	0.0	0.0	0.0	100.0
100	150	0.0	0.0	0.0	100.0
150	106	0.0	0.0	0.0	100.0
200	75	0.1	0.1	0.1	99.9
270	53	1.1	0.9	1.0	99.0
400	38	22.9	18.9	19.9	80.1
Pan	-38	97.1	80.1	100.0	0.0
Total	-	121.2	100.0	-	-
K80	#DIV/0!				



PRODUCT SPECIFICATION ANALYSIS REPORT

DATE: 23-Dec-99
PROJECT: 9903081
SAMPLE: Anorthosite N-Mag
TEST: minus 270m
CODE: Pulverized

PHOTOVOLT REFLECTANCE METER READING

AMBER FILTER: 60.9
BLUE FILTER: 54.4
GREEN FILTER: 59.6

PHOTOVOLT PRODUCT ANALYSIS

% DRY BRIGHTNESS : 76.5



Ministry of
Northern Development
and Mines

Declaration of Assessment Work Performed on Mining Land

Mining Act, Subsection 65(2) and 66(3), R.S.O. 1990

Transaction Number (office use) W0060.00308 Assessment Files Research Imaging
--

Perso
Mining
Quest
933 F



42B02NW2001 2.20399 WARREN 900

Sections 65(2) and 66(3) of the Mining Act. Under section 8 of the
assessment work and correspond with the mining land holder.
or, Ministry of Northern Development and Mines, 6th Floor,

Instructions: - For work performed on Crown Lands before recording a claim, use form 0240.
- Please type or print in ink.

2.20399

1. Recorded holder(s) (Attach a list if necessary)

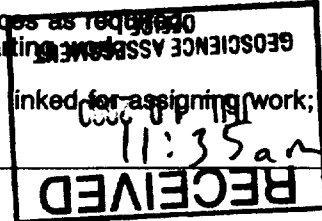
Name PURECHEM LIMITED	Client Number 300653
Address 5 LOWER SHERBOURNE ST., SUITE 204	Telephone Number (416) 971-9783
TORONTO, ONT. M5A 2R3	Fax Number (416) 595-0918
Name	Client Number
Address	Telephone Number
	Fax Number

2. Type of work performed: Check (✓) and report on only ONE of the following groups for this declaration.

Geotechnical: prospecting, surveys, assays and work under section 18 (regs) Physical: drilling, stripping, trenching and associated assays Rehabilitation

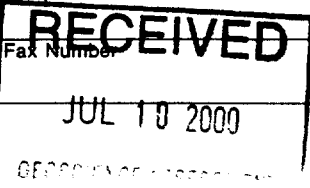
Work Type	Office Use
	Commodity
	Total \$ Value of Work Claimed \$ 9,447
Date Work Performed From 31 / 10 / 1999 To 1 / 06 / 00	NTS Reference
Global Positioning System Data (if available)	Mining Division Porcupine
Township/Area WARREN TWP	Resident Geologist District Jimmins
M or G-Plan Number G-1228	

Please remember to: - obtain a work permit from the Ministry of Natural Resources as required;
- provide proper notice to surface rights holders before starting work;
- complete and attach a Statement of Costs, form 0212;
- provide a map showing contiguous mining lands that are linked for assessing work;
- include two copies of your technical report.



3. Person or companies who prepared the technical report (Attach a list if necessary)

Name LAKEFIELD RESEARCH	Telephone Number (705) 652-2000
Address 185 CONCESSION ST., LAKEFIELD, ONT	Fax Number (705) 652-8133
Name WATTS, GRIFFIS + McOWAT	Telephone Number (416) 364-6244
Address 8 KING ST. E., SUITE 400, TORONTO	Fax Number (416) 864-1675
Name	Telephone Number
Address	Fax Number



4. Certification by Recorded Holder or Agent

I, DONALD H. HAINS (Print Name), do hereby certify that I have personal knowledge of the facts set forth in this Declaration of Assessment Work having caused the work to be performed or witnessed the same during or after its completion and, to the best of my knowledge, the annexed report is true.

Signature of Recorded Holder or Agent <i>[Signature]</i>	Date JUNE 21 2000
Agent's Address 5 LOWER SHERBOURNE ST., STE 204	Telephone Number (416) 971-9783
TORONTO, ONT M5A 2R3	Fax Number (416) 595-0918

5. Work to be recorded and distributed. Work can only be assigned to claims that are contiguous (adjacent), the mining land where work was performed, at the time work was performed. A map showing the contiguous link must accompany this form. W0060.00308

Mining Claim Number. Or if work was done on other eligible mining land, show in this column the location number indicated on the claim map.	Number of Claim Units. For other mining land, list hectares.	Value of work performed on this claim or other mining land.	Value of work applied to this claim.	Value of work assigned to other mining claims.	Bank. Value of work to be distributed at a future date.
eg TB 7827	16 ha	\$26,825	N/A	\$24,000	\$2,825
eg 1234567	12	0	\$24,000	0	0
eg 1234568	2	\$8,892	\$4,000	0	\$4,892
1 1197441	16	\$4723	\$4723	-	-
2 1197442	16	\$4724	\$4724	-	-
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
Column Totals		\$9447	\$9447	-	-

I, DONALD H. HAINS (Print Full Name), do hereby certify that the above work credits are eligible under subsection 7 (1) of the Assessment Work Regulation 6/96 for assignment to contiguous claims or for application to the claim where the work was done.

Signature of Recorded Holder or Agent Authorized in Writing: Donald Hains Date: JUNE 21/00

6. Instructions for cutting back credits that are not approved.

Some of the credits claimed in this declaration may be cut back. Please check (✓) in the boxes below to show how you wish to prioritize the deletion of credits:

- 1. Credits are to be cut back from the Bank first, followed by option 2 or 3 or 4 as indicated.
- 2. Credits are to be cut back starting with the claims listed last, working backwards; or
- 3. Credits are to be cut back equally over all claims listed in this declaration; or
- 4. Credits are to be cut back as prioritized on the attached appendix or as follows (describe):

20599

Note: If you have not indicated how your credits are to be deleted, credits will be cut back from the Bank first, followed by option number 2 if necessary.

For Office Use Only

Received Stamp	Deemed Approved Date	Date Notification Sent
	Date Approved	Total Value of Credit Approved
Approved for Recording by Mining Recorder (Signature)		



Ministry of
Northern Development
and Mines

Ministère du
Développement du Nord
et des mines

**Statement of Costs
for Assessment Credit**

**État des coûts aux fins
du crédit d'évaluation**

Mining Act/Loi sur les mines

Transaction No./N° de transaction

W0060-00308

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la Loi sur les mines et serviront à tenir à jour un registre des concessions minières. Adresser toute question sur la collecte de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4^e étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

1. Direct Costs/Coûts directs

Type	Description	Amount Montant	Totals Total global
Wages Salaires	Labour Main-d'oeuvre	197.50	
	Field Supervision Supervision sur le terrain	802.50	1000.00
Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert- conseil	Type ANALYTICAL - LAKEFIELD	2627.58	
	METALLURGICAL - LAKEFIELD	2530.00	
	GEOSTATISTICAL - WATTS, GRIFFIS, MULLAT	1816.33	6974.21
Supplies Used Fournitures utilisées	Type TRAILER KIT	21.50	
	MAP REPRODUCTION, SAMPLE FREIGHT	413.41	
			435.21
Equipment Rental Location de matériel	Type BACK-HOE	274.25	
	TRAILER	217.22	
	TOTALIN SAMPLE MATERIAL		511.47
Total Direct Costs Total des coûts directs			8920.89

2. Indirect Costs/Coûts indirects

** Note: When claiming Rehabilitation work Indirect costs are not allowable as assessment work.
Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Type	Description	Amount Montant	Totals Total global
Transportation Transport	Type		
	FUEL - CAR	267.16	
			267.16
Food and Lodging Nourriture et hébergement	FOLEY, CHAPPEAU, DRIANIN 3 NIGHTS / 4 DAYS	259.53	259.53
Mobilization and Demobilization Mobilisation et démobilisation			
Sub Total of Indirect Costs Total partiel des coûts indirects			526.69
Amount Allowable (not greater than 20% of Direct Costs) Montant admissible (n'excédant pas 20 % des coûts directs)			526.69
Total Value of Assessment Credit (Total of Direct and Allowable indirect costs)		Valeur totale du crédit d'évaluation (Total des coûts directs et indirects admissibles)	9447.58

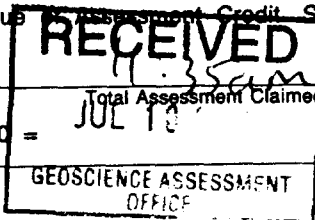
Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Note: Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

Filing Discounts

- Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
- Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

Total Value of Assessment Credit	x 0.50 =	Total Assessment Claimed
----------------------------------	----------	--------------------------



Remises pour dépôt

- Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.
- Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

Valeur totale du crédit d'évaluation	x 0,50 =	Evaluation totale demandée
--------------------------------------	----------	----------------------------

Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as SECRETARY, TSCOM INC. I am authorized
(Recorded Holder, Agent, Position in Company)

to make this certification

Attestation de l'état des coûts

J'atteste par la présente :
que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de _____ je suis autorisé
(titulaire enregistré, représentant, poste occupé dans la compagnie)

à faire cette attestation.

Signature	Date
-----------	------

Geoscience Assessment Office
933 Ramsey Lake Road
6th Floor
Sudbury, Ontario
P3E 6B5

Telephone: (888) 415-9845
Fax: (877) 670-1555

August 30, 2000

PURECHEM LIMITED
517 WELLINGTON STREET, WEST
SUITE 405
TORONTO, ONTARIO
M5Y-1G1

Visit our website at:
www.gov.on.ca/MNDM/MINES/LANDS/mlsmnpg.htm

Dear Sir or Madam:

Submission Number: 2.20399

Status

Subject: Transaction Number(s): W0060.00308 Approval

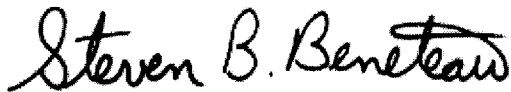
We have reviewed your Assessment Work submission with the above noted Transaction Number(s). The attached summary page(s) indicate the results of the review. **WE RECOMMEND YOU READ THIS SUMMARY FOR THE DETAILS PERTAINING TO YOUR ASSESSMENT WORK.**

If the status for a transaction is a 45 Day Notice, the summary will outline the reasons for the notice, and any steps you can take to remedy deficiencies. The 90-day deemed approval provision, subsection 6(7) of the Assessment Work Regulation, will no longer be in effect for assessment work which has received a 45 Day Notice. Allowable changes to your credit distribution can be made by contacting the Geoscience Assessment Office within this 45 Day period, otherwise assessment credit will be cut back and distributed as outlined in Section #6 of the Declaration of Assessment work form.

Please note any revisions must be submitted in **DUPLICATE** to the Geoscience Assessment Office, by the response date on the summary.

If you have any questions regarding this correspondence, please contact **BRUCE GATES** by e-mail at bruce.gates@ndm.gov.on.ca or by telephone at (705) 670-5856.

Yours sincerely,



ORIGINAL SIGNED BY
Steve B. Beneteau
Acting Supervisor, Geoscience Assessment Office
Mining Lands Section

Work Report Assessment Results

Submission Number: 2.20399

Date Correspondence Sent: August 30, 2000

Assessor: BRUCE GATES

Transaction Number	First Claim Number	Township(s) / Area(s)	Status	Approval Date
W0060.00308	1197441	WARREN	Approval	August 30, 2000

Section:

17 Assays BENEFC

18 Other MICRO

Correspondence to:

Resident Geologist
South Porcupine, ON

Recorded Holder(s) and/or Agent(s):

Donald H. Hains
TORONTO, ON

Assessment Files Library
Sudbury, ON

PURECHEM LIMITED
TORONTO, ONTARIO

REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

- M.R.O. - MINING RIGHTS ONLY
- S.R.O. - SURFACE RIGHTS ONLY
- M.+S. - MINING AND SURFACE RIGHTS

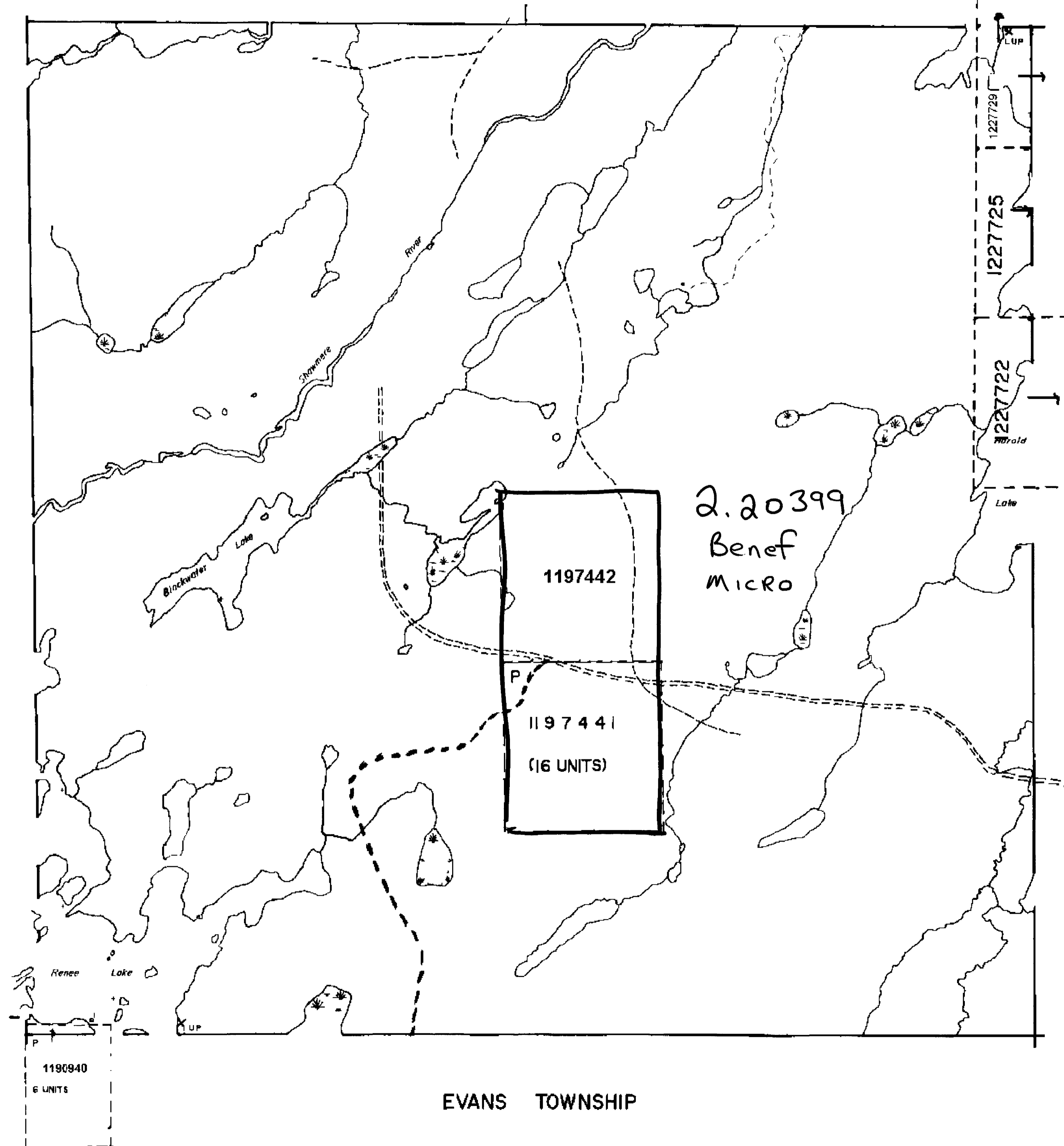
Description Order No. Date Disposition File

LINCOLN TOWNSHIP

LEMOINE TOWNSHIP

PAUL TOWNSHIP

CARTY TOWNSHIP



1190940
6 UNITS

EVANS TOWNSHIP

LEGEND

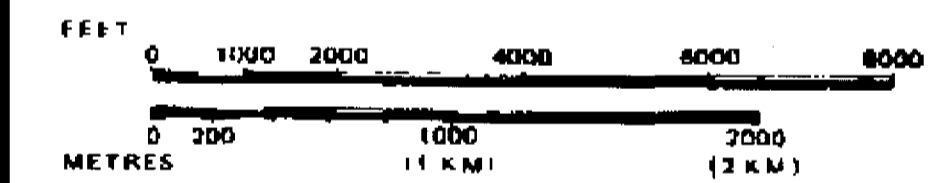
- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES
- TOWNSHIPS, BASE LINES, ETC.
- LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES
- LOT LINES
- PARCEL BOUNDARY
- MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES
- TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT SURFACE & MINING RIGHTS	●
" , SURFACE RIGHTS ONLY	○
" , MINING RIGHTS ONLY	◐
LEASE, SURFACE & MINING RIGHTS	■
" , SURFACE RIGHTS ONLY	◼
" , MINING RIGHTS ONLY	◻
LICENCE OF OCCUPATION	▼
ORDER-IN-COUNCIL	OC
RESERVATION	⊙
CANCELLED	⊖
SAND & GRAVEL	⊕
LAND USE PERMITS FOR COMMERCIAL TOURISM, OUTPOST CAMPS	✓

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 8, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1.

SCALE 1 INCH = 40 CHAINS



--- PROPOSED ROAD 1992/93

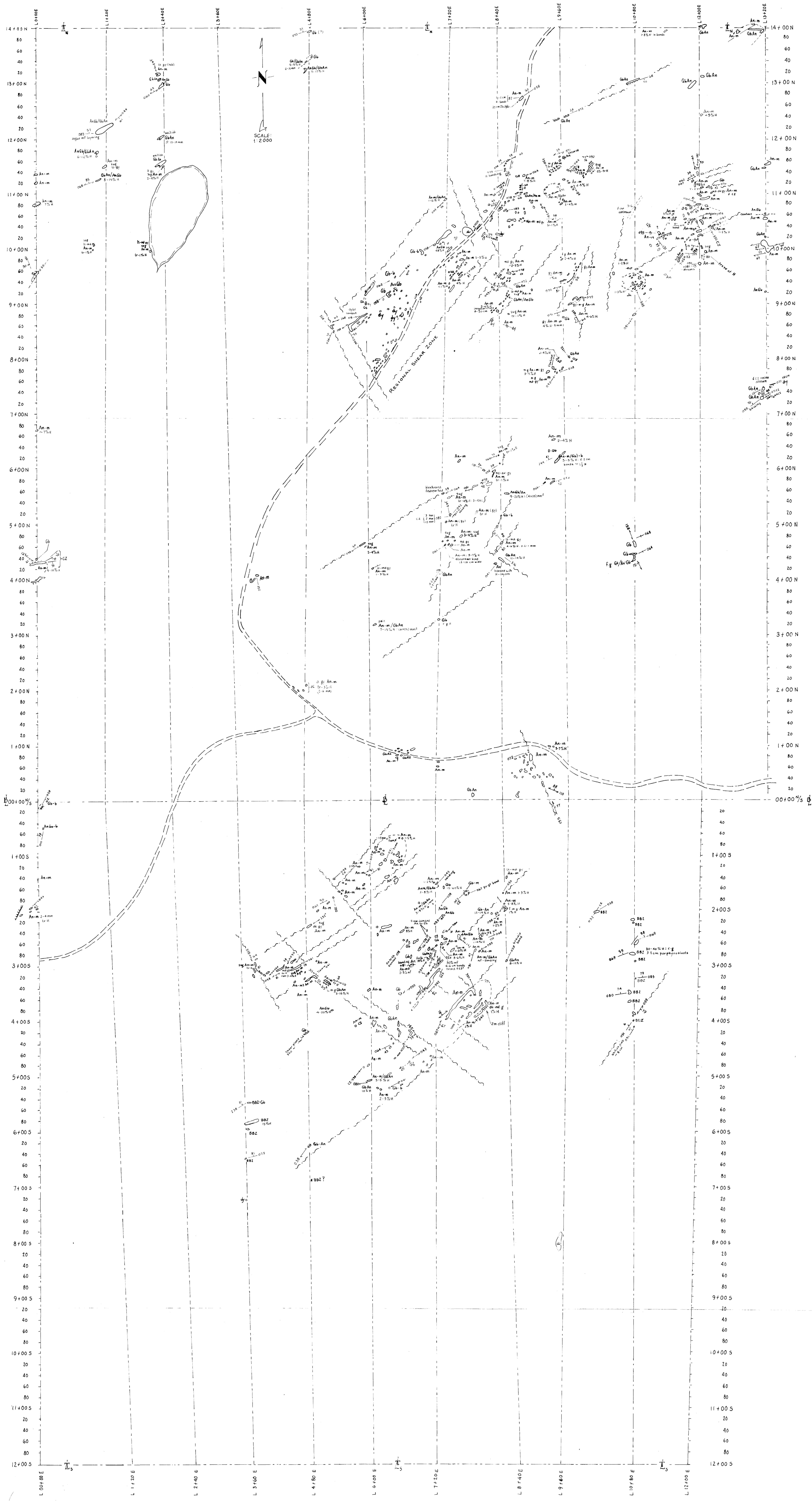
TOWNSHIP
WARREN
M N R ADMINISTRATIVE DISTRICT
CHAPLEAU
MINING DIVISION
PORCUPINE
LAND TITLES / REGISTRY DIVISION
SUDBURY

Ministry of Natural Resources Ontario Ministry of Northern Development and Mines

Date JUNI 1990
ACTIVATED 80-JUL-88

Number
G-1228





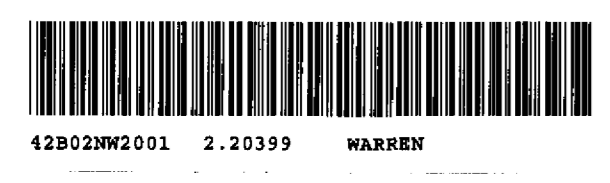
LEGEND

An-m	Massive anorthosite	sug	sugary texture		Outcrop: solid line; observed surface line: dashed
GbAn	Gabbroic anorthosite	carb	carbonate mineral		Primary layering, banding (oblique, vertical)
An Gb	Anorthositic gabbro	F, m, c, g	fine, medium, coarse grained		Structural, lithological element (oblique, vertical)
Gb	Gabbro	H, md, dk, gy	light, medium, dark grey, Feldspar only		
Gb-b	Banded gabbro	H	hornblende		Fault: (observed, oblique) (inferred, vertical)
O-Db	Olivine diabase	px	pyroxene		
Db	Diabase	bi	biotite		Grid line (system of outcrop lines)
Lph	Lomprophyre	mf	mafic minerals		Road
Aph	Aphanitic-siliceous phase (opaque, white)	gt	garnet		Swamp
dy	Dyke	ca	clinzoisite-scapelite		
BBZ	Banded Boundary Zone				Scarp (hetchures and downslope side)

RECEIVED
AUG 29 2000
GEOLOGICAL SURVEY OF CANADA
GEOLOGICAL SERVICES DIVISION

FIGURE 6-1

GEOLOGICAL MAP
WARREN TOWNSHIP ANORTHOSITE PROJECT
by
H.V. GEOLOGICAL SERVICES
for
PURECHEM, LIMITED
Geology by: Hendrik Veldhuyzen: Sept-Oct, 1994.



LEGEND

An-m	Massive anorthosite > 90% feldspar	sug	sugery texture		Outcrop: solid line: observed broken line: inferred
GbAn	Gabbroic anorthosite 80-90% feldspar	carb	carbonate mineral		Primary layering, banding (oblique, vertical)
AnGb	Anorthositic gabbro 80-80% feldspar	F, m, c, g	fine, medium, coarse grained (feldspar only)		Structural, lithological element (oblique, vertical)
Gb	Gabbro < 60% feldspar	lt, md, dk, gy	light, medium, dark grey (feldspar only)		Structural, lithological element (oblique, vertical)
Gb-b	Banded gabbro	H	hornblende		Fault: (observed, oblique) (inferred, vertical)
O-Ob	Olivine diabase	Px	pyroxene		Grid line (system of cut survey lines)
Ob	Diabase	bi	biotite		Road
Lph	Lamprophyre	mf	mafic minerals		Road
Aph	Aphanitic siliceous phase (opaque, white)	gt	garnet		Swamp
dy	Dyke	cz	clinzoisite-scapolite		Scarp (hatchures on downslope side)
BBZ	Banded Boundary Zone				

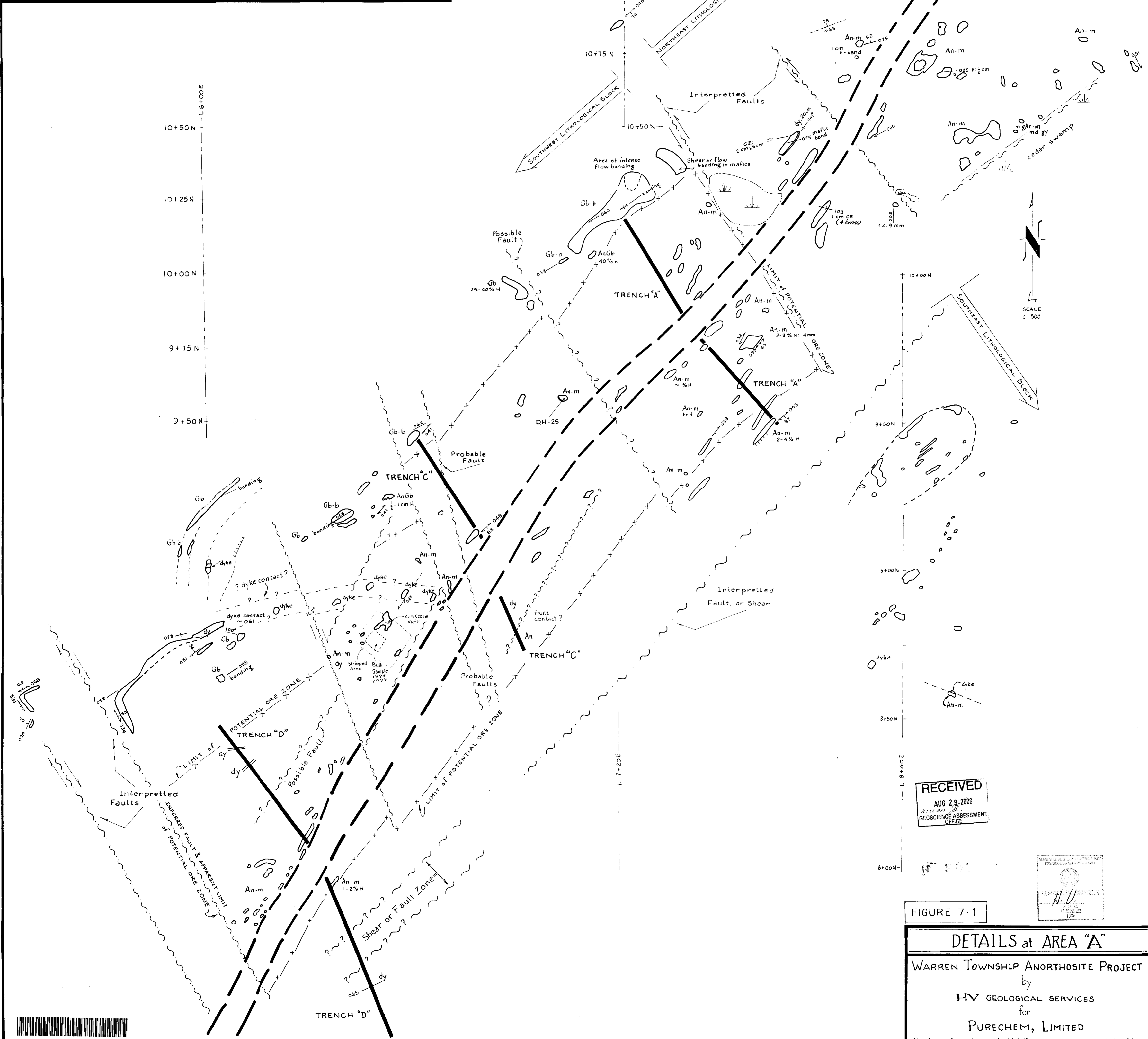


FIGURE 7-1
DETAILS at AREA "A"
 WARREN TOWNSHIP ANORTHOISITE PROJECT
 by
 HV GEOLOGICAL SERVICES
 for
 PURECHEM, LIMITED
 Geology by: Hendrik Veldhuyzen Sept-Oct, 1994.

SCALE: 1:100
1 cm = 1 m

Drill-hole sections projected onto plane trending N40°E 040°

TRENCH "D"

BULK SAMPLE LOCATION

TRENCH "C"

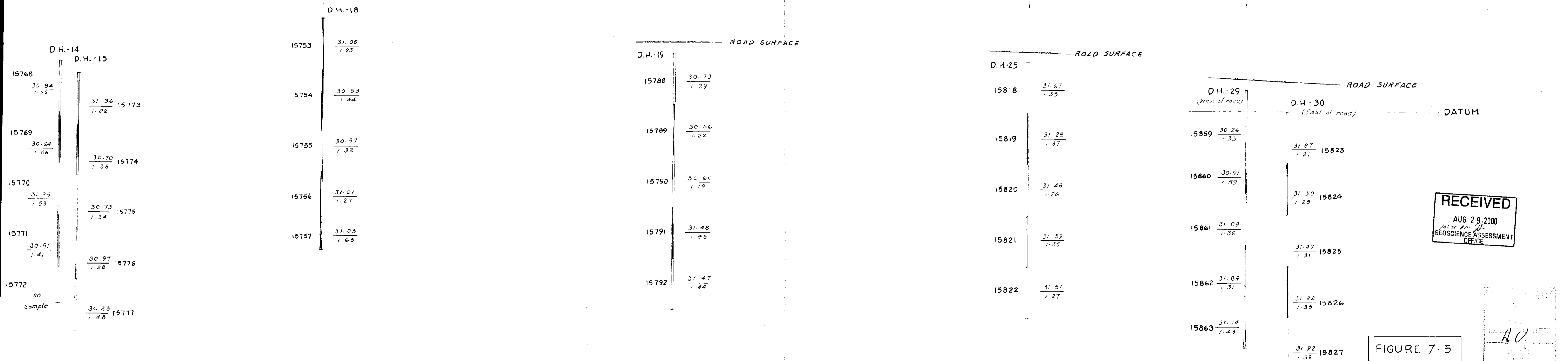
TRENCH "A"

47m

66m

67m

37m



LEGEND	
D.H.-xx	Drill Hole
15xxx	Sample number for drill section
xx.xx	Percent Al ₂ O ₃
u.uu	Percent Fe ₂ O ₃



42802NW2001 2.20399 WARREN 230

RECEIVED
AUG 29 2000
10:00 AM
GEOSCIENCE ASSESSMENT OFFICE

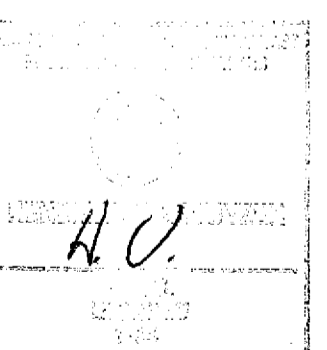


FIGURE 7.5

LONGITUDINAL SECTION: AREA "A"
with ASSAY RESULTS

WARREN TOWNSHIP ANORTHOSITE PROJECT
by
H.V. GEOLOGICAL SERVICES
for
PURECHEM, LIMITED
Geology by: Hendrik Veldhuyzen Sept-Oct, 1994.

2.20399



RECEIVED
AUG 29 2000
GEOLOGICAL ASSESSMENT
OFFICE

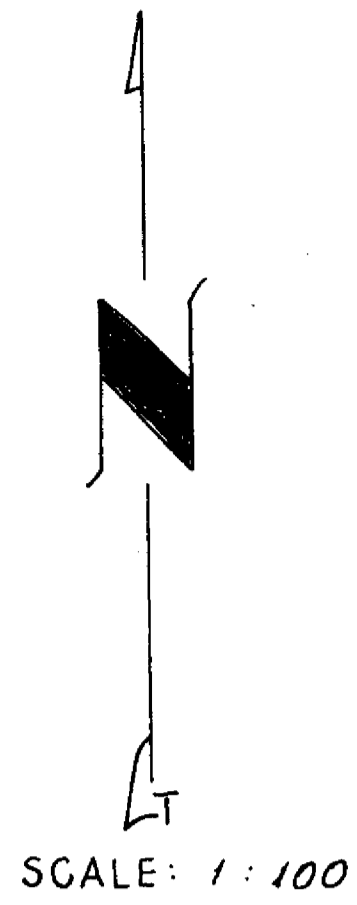
FIGURE 8-1

DETAILS at AREA "B"
WARREN TOWNSHIP ANORTHOISITE PROJECT
by
H/V GEOLOGICAL SERVICES
for
PURECHEM, LIMITED
Geology by: Hendrik Veldhuyzen Sept-Oct, 1994.

LEGEND

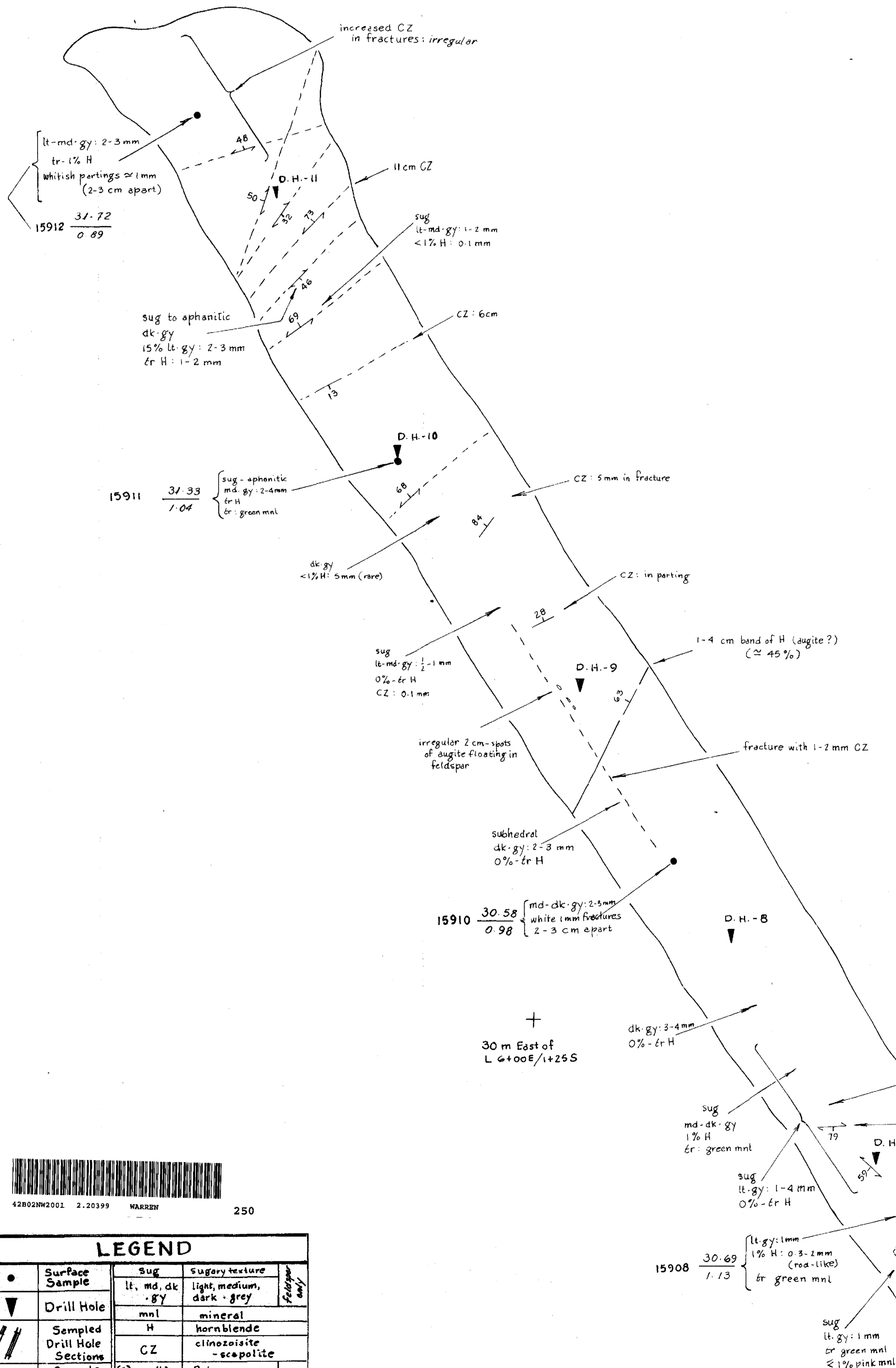
An-m	Massive anorthosite >90% feldspar	sug	sugary texture		Outcrop: solid line: observed broken line: inferred
GbAn	Gabbroic enorthosite 80-90% feldspar	carb	carbonate mineral		Primary layering, bending (oblique, vertical)
AnGb	Anorthositic gabbro 60-80% feldspar	f, m, c, g	fine, medium, coarse grain (feldspar only)		Structural, lithological element (oblique, vertical)
Gb	Gabbro <60% feldspar	lt, md, dk, gy	light, medium, dark, grey (feldspar only)		Fault: {(observed, oblique)} {(inferred, vertical)}
Gb-b	Banded gabbro	H	hornblende		Grid line (system of cut survey lines)
O-Db	Olivine diabase	px	pyroxene		Road
Db	Diabase	bi	biotite		Swamp
Lph	Lamprophyre	mf	mafic minerals		Scarp (hatchures on downslope side)
Aph	Aphanitic siliceous phase (opaque, white)	gt	garnet		
dy	Dyke	cz	clinzoisite-scepolite		
BBZ	Banded Boundary Zone				

240
GSD/MS/001 2-2000

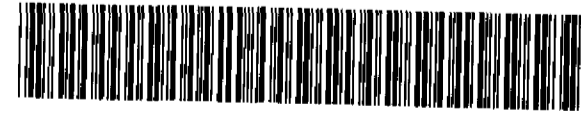
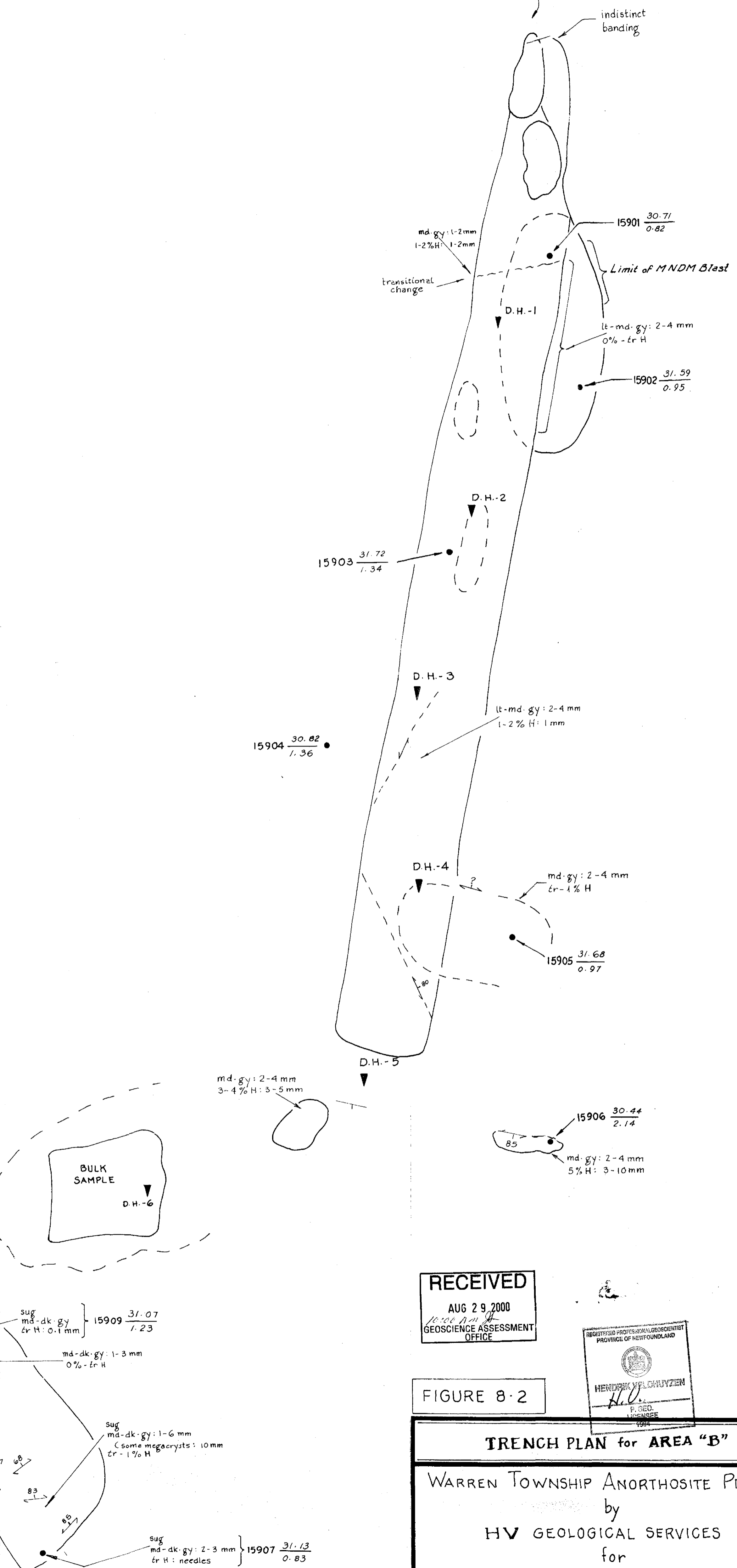


TRENCH "F"

Slope Continuous



TRENCH "E"



LEGEND

●	Surface Sample	sug	Sugary texture	Fracture only
▼	Drill Hole	lt, md, dk .gy	light, medium, dark . grey	
	Sampled Drill Hole Sections	mnl	mineral	Fracture only
XXXXX	Sample Number	H	hornblende	
XX.XX	% Al ₂ O ₃	CZ	clinzoisite	Fracture only
U.UU	% Fe ₂ O ₃	(a) / (b)	Primary banding, layering	
		(a) / (b)	Structural, lithological element	(a) vertical, (b) vertical

RECEIVED
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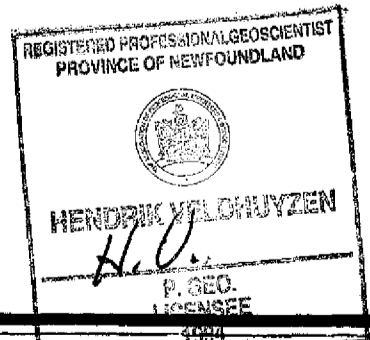
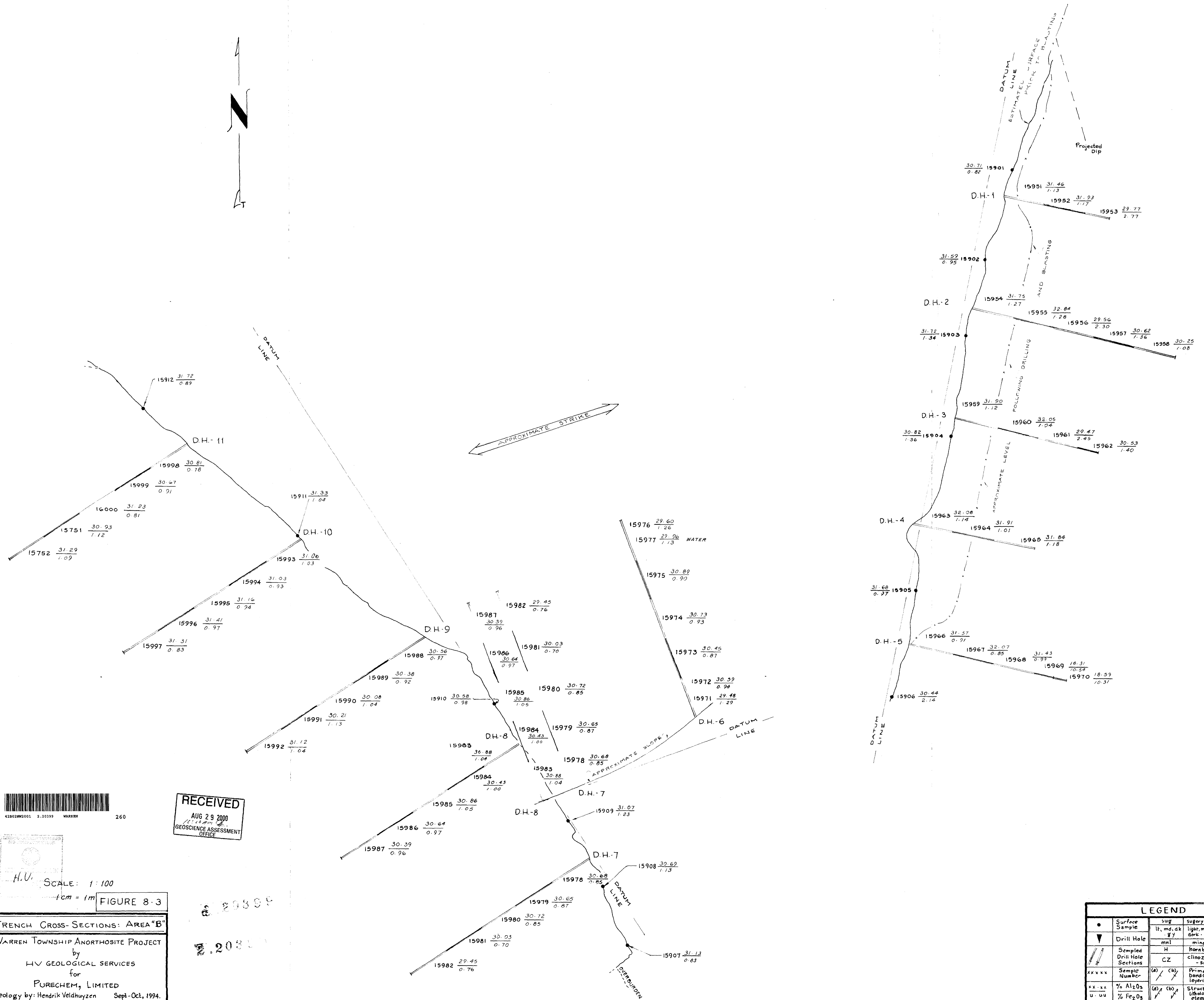


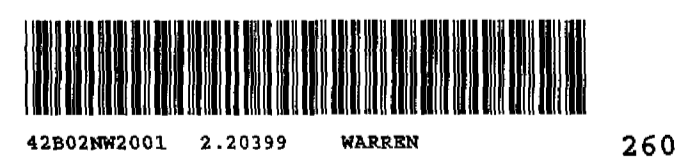
FIGURE 8-2

TRENCH PLAN for AREA "B"

WARREN TOWNSHIP ANORTHOSITE PROJECT
by
HV GEOLOGICAL SERVICES
for
PURECHEM, LIMITED
Geology by: Hendrik Veldhuyzen Sept-Oct, 1994.



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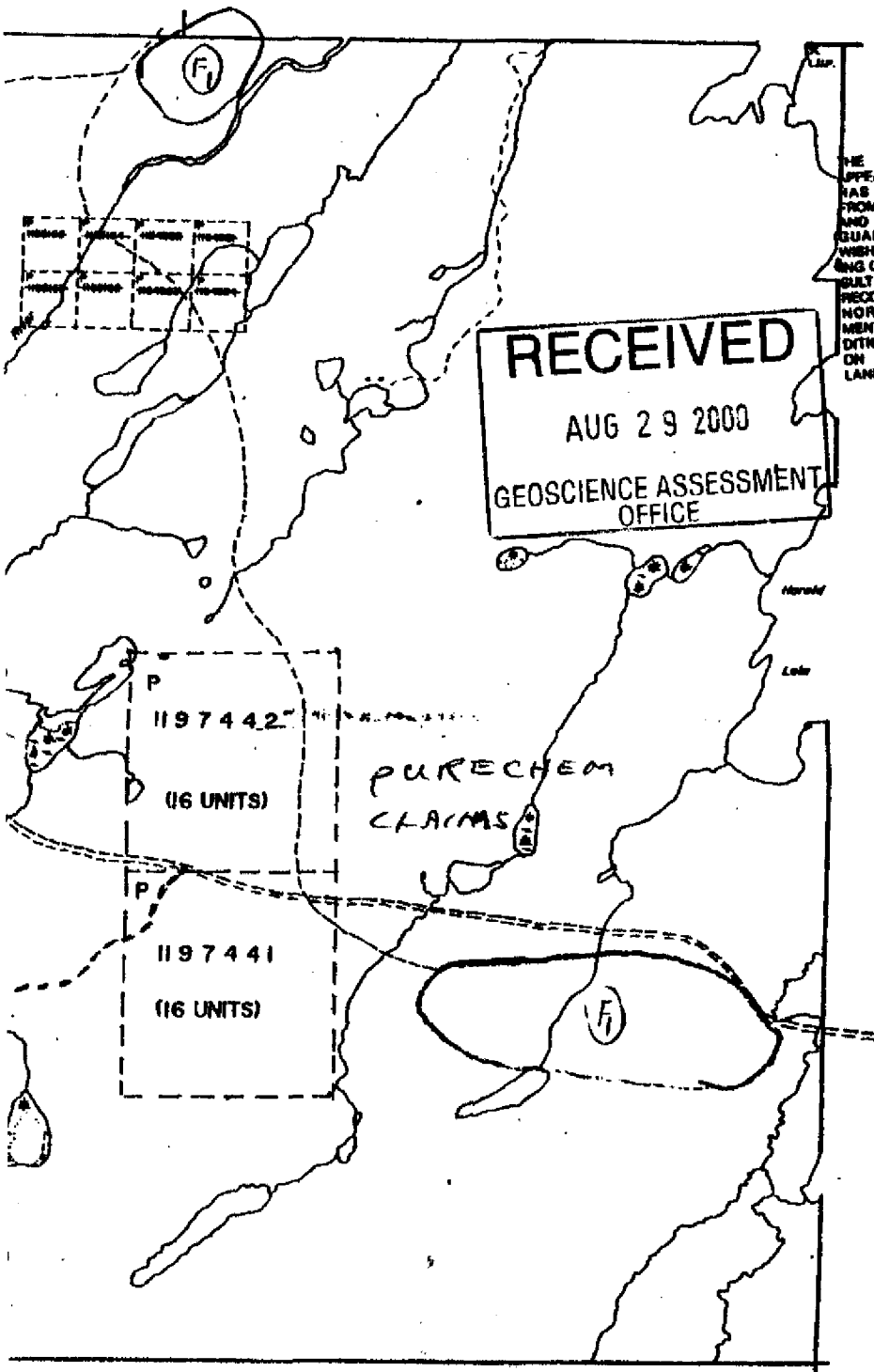


H.V. SCALE: 1:100
 1cm = 1m
FIGURE 8-3

TRENCH CROSS-SECTIONS: AREA "B"
 WARREN TOWNSHIP ANORTHOISITE PROJECT
 by
 H.V. GEOLOGICAL SERVICES
 for
 PURECHEM, LIMITED
 Geology by: Hendrik Veldhuyzen Sept-Oct, 1994.

LEGEND				
●	Surface Sample	lug	sugery texture	
▼	Drill Hole	ll, md, dk	light, medium, dark grey	Sample Only
▬	Sampled Drill Hole Sections	mnl	mineral	
▬		H	hornblende	
▬		CZ	clinzoisite - scapolite	
xxxx	Sample Number	(a) (b)	Primary banding layering	Section
xx-xx	% Al ₂ O ₃	(a) (b)	Structural, lithological element	Section
u-uu	% Fe ₂ O ₃	(a) (b)		Section

LEMOINE TOWNSHIP



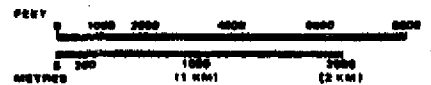
LEGEND

HIGHWAY AND ROUTE No.	
OTHER ROADS	
TRAILS	
SURVEYED LINES:	
TOWNSHIPS, BASE LINES, ETC.	
LOTS, MINING CLAIMS, PARCELS, ETC.	
UNSURVEYED LINES:	
LOT LINES	
PARCEL BOUNDARY	
MINING CLAIMS ETC.	
RAILWAY AND RIGHT OF WAY	
UTILITY LINES	
NON-PERENNIAL STREAM	
FLOODING OR FLOODING RIGHTS	
SUBDIVISION ON COMPOSITE PLAN	
RESERVATIONS	
ORIGINAL SHORELINE	
MARSH OR MURKED	
MINES	
TRAVERSE MONUMENT	

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	
SURFACE RIGHTS ONLY	
MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
SURFACE RIGHTS ONLY	
MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
ORDER-IN-COUNCIL	
RESERVATION	
CANCELLED	
SAND & GRAVEL	

SCALE: 1 INCH = 40 CHAINS



PROPOSED ROAD 1992/93

TOWNSHIP

WARREN

M.N.R. ADMINISTRATIVE DISTRICT

CHAPLEAU

MINING DIVISION

PORCUPINE

LAND TITLES / REGISTRY DIVISION

SUDBURY



Ministry of Natural Resources

Ministry of Northern Development and Mines

Date JUNE 1990

Number

G-1228

EVANS TOWNSHIP



42B02NW2001 2.20399 WARREN