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A REGIONAL INTERPRETATION OF THE TOODOGGONE PROJECT OMINECA-LIARD MINING DIVISIONS BRITISH COLUMBIA

Forgeron, Gleeson, Smith & Associates Ltd.

A REGIONAL INTERPRETATION OF THE TOODOGGONE PROJECT OMINECA-LIARD MINING DIVISIONS BRITISH COLUMBIA

for

Cordilleran Engineering Ltd.,
1418 - 355 Burrard St.,
Vancouver, 1, B.C.

By:

Date: October 9, 1970.
Project: 70 VF5-3

F. D. Forgeron, Ph. D.

Forgeron, Gleeson, Smith & Associates Ltd.,
350 - 885 Dunsmuir St.,
Vancouver, 1, B.C.

MEMORANDUM

DATE: October 23, 1970

TO: Québec Cartier Mining Company
Port Cartier, Quebec

ATTENTION: Mr. L. J. Patterson, President

COPY TO: United States Steel Corporation
International Raw Materials Investigations Dept.
525 William Penn Place
Pittsburgh, Pennsylvania 15230
U.S.A.

ATTENTION: Mr. H. Hosmer, Chief Geologist and
Mr. R. Strong

FROM: A. F. Reeve
Cordilleran Engineering Limited

RE: MINERAL INVESTIGATIONS
BRITISH COLUMBIA 1970

Enclosed is a summary geochemical report on the Toodoggone project (1967-68-69), by F. D. Forgeron geochemist. It is based upon a computerized re-analysis of reconnaissance stream sediment sampling and followup work.

The computer produced three types of contour maps showing the distribution of copper and zinc content in stream sediments. Forgeron's report is based upon examination of this mechanical analysis and records of work undertaken on mineral claims in the area. The report does not account for a considerable amount of prospecting which was directed toward geochemical targets but not followed by property acquisition and detailed exploration work. Also not accounted for are a number of geochemical and geological assumptions upon which the project was originally based.

.... 2/

The following comments are referenced to the text of the report.

A. Page 3 paragraph (a)

The southwest part of the map sheet was not sampled because it is occupied by a basin of sedimentary rocks which post dates base metals mineralization in the region.

B. Page 3 paragraph (b)

The area southeast of the Finlay River was covered by water sampling based upon a recommendation by W. F. Bondar (1967). It was his opinion that stream sediment sampling would not be effective on account of extensive aluvium and glacial fill in the drainage system. This comment may be applied to paragraph (c) as well. (See sketch enclosed)

C. Page 10 & 11 SE of Finlay River

The general prospecting potential in this area has been recognized for some time however, a lack of more specific guides has discouraged followup work.

D. Page 13 Riga Group

The geology of this area is considered outstanding; however, the mineralization zone has been drilled and cut off on 4 sides by outcrop and IP observations. There are no other hard targets apparent at this time that justify further substantial expenditure.

E. Page 14 & 15 Pillar Group

The apparent lack of cut off of anomalies in this area is accounted for by soil - outcrop interface.

F. Page 16 First paragraph last statement

The anomalous area SE of the Riga group (30B) is occupied by claims owned by Kennco Explorations.

G. Page 17 Spartan Group

Anomalous areas adjacent to the Spartan group are covered with claims owned by Cominco and Kennco.

H. Page 17 Anomalies 24A, 33A and 40A

These have been prospected in detail. Additional work is planned for 1971, (JK Claim Group).

I. Page 17 Anomalies 29A, 31A and 43A

Followup prospecting of outcrops indicated minor vein type copper mineralization.

J. Page 17 Anomalies 29A, 31A and 43A

Outcrop in these areas was thoroughly prospected and produced the locations of a few minor copper occurrences.

K. Page 18 Anomalies 32A, 44A, 45A and 46A

These are covered by claims owned by Kennco and previously by Canex and Asbestos Corporation.

L. Page 18 point 1

All anomalous drainage basins have been subject to varying degrees of ground prospecting; except area SE of Finlay River and between Spinel Lake and Thudaka River.

M. Page 21 TK Group bottom of page

Anomalous areas adjacent to the TK claims were thoroughly prospected.

N. Page 22 Anomaly 14A

Since the geochemical response is strong and extensive, further work is justified to evaluate the source.

O. Page 22 and 23 Anomalies 5A, 3A, 7A and 12A

Refer to comment L.

P. Page 23 3rd paragraph

Followup work has been extensive; in consideration of the prospecting, airborne geophysics, and property work that has been done. However, some improvement in technique and sequence of methods is worth considering.

Q. Page 25 last paragraph

A considerable amount of the type of primary followup suggested here has been done already, however, some intensification might be justified in a few selected areas.

R. Page 26 top line

Re rock units 1 and 2 - see comment B.

S. Page 27 point 1

See comment B.

T. Page 29 top

See comments regarding Riga, Spartan, and Pillar groups (D, E, and G)

U. Page 29 item 6

Analysis of stream sediment samples for a broader suite of elements would be useful.

V. Page 31 item 5

See comment B.

CONCLUDING COMMENTS

In general the computer analysis, which was run on a trial basis, provided a clear picture of geochemical trends and anomalies in a rapid unbiased manner so that professional field based interpretations could be made with a minimum of clerical and mechanical background work.

Interpretation of the computer drawn maps by Forgeron was undertaken with a minimum of background material and should therefore be treated in part as a general model of the type of interpretation that can be derived from mechanically processed information.

The Toodoggone project did not produce any base metal deposits of economic interest inspite of having favourable geological and geochemical specifications. A second purpose of the re-analysis was to determine how the techniques used might be improved and augmented to increase the possibility of success on this and future regional investigations.

In this regard some useful suggestions are indicated by the report as follows:

1. Analysis of stream sediment samples should include a broader suite of metallic elements during the reconnaissance phase.

2. Geochemical sampling problems caused by subregional physiographic environments should be clearly resolved before a comprehensive interpretation is attempted. (ie. Proterozoic Belt SE of the Finlay River.)

3. Classification or zoning of mineral deposits by element associations is of some value if considered in conjunction with field based geological information.

4. Primary followup investigations of geochemical anomalies are of critical importance in this type of regional work. As a standard proceedure on the Toodoggone project this consisted of prospecting outcrops scree slopes and stream beds, and intensification of stream sampling. There are two principle hazards in this approach.

a) prospecting is difficult to control from a quality standpoint.

b) it is possible for the best prospector to miss a buried deposit particularly if it is below the alpine region.

For these reasons a data review and additional field examination of some of the stronger anomalies is justified.

5. It is our opinion that the results of detailed property investigations truly represent the potential of the local areas toward which this work was directed.

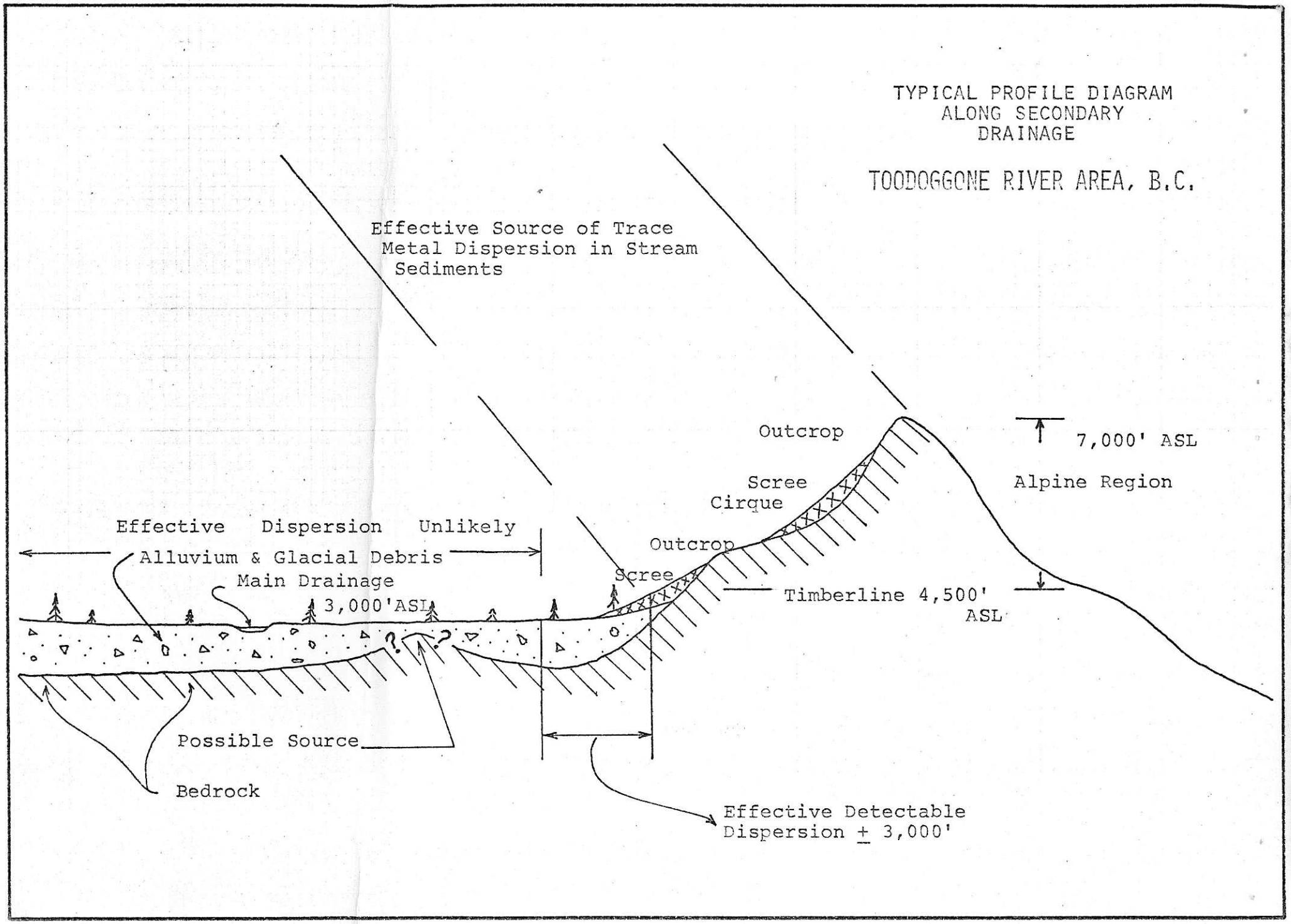
6. The cost of this re-analysis including computer work and report writing was about $5,000. In the writer's view this is a reasonable cost for evaluating regional geochemical data of this magnitude which costs $100,000 - $150,000 to collect.

A. F. Reeve
CORDILLERAN ENGINEERING LIMITED

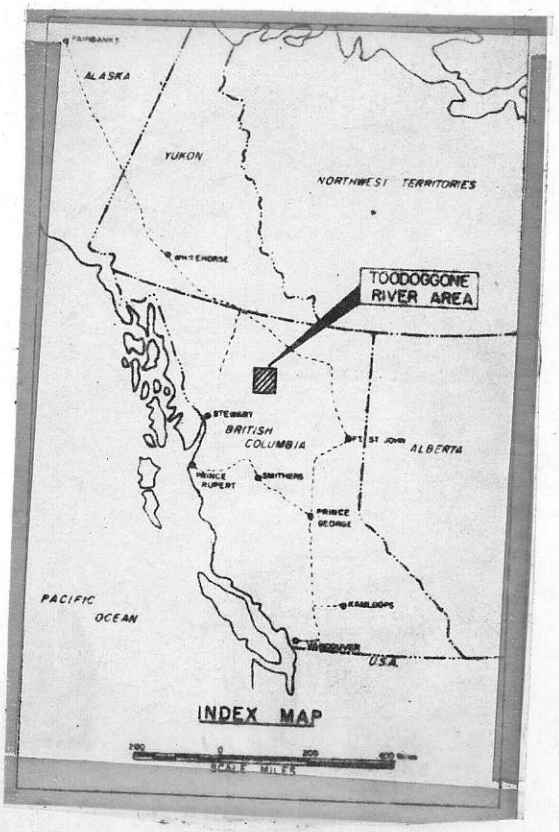
AFR:ifs

TYPICAL PROFILE DIAGRAM
ALONG SECONDARY
DRAINAGE

TOODOGGONE RIVER AREA, B.C.



INTERPRETATION



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INTRODUCTION

General

This report describes and interprets a computerized statistical analysis and mapping program of a regional geochemical survey. The region consists of one 4 mile map sheet (Toodoggone, N.T.S. 94E) of which approximately 70% has been covered by regional stream sediment sampling.

The regional sampling program was carried out in 1967 with supplementary sampling in 1968. The anomalies found in the 1967 program were subjected to follow-up in 1968. In 1969, further detailed geochemical and geophysical surveys combined with prospecting, mapping and drilling were carried out.

The target metals in the regional reconnaissance were copper and zinc. Both these metals displayed a large contrast in concentration range. It was felt that the range in concentration of these metals had not been sufficiently explained by the discoveries to date; this conclusion has prompted a further interpretation of the regional program results.

The Computer Program

Computerization is a desirable mechanical tool in the interpretation of regional geochemical surveys because

by their nature, regional surveys involve large masses of data which are difficult to manipulate manually. The Toodoggone program involved water sampling and stream sediment sampling. For purposes of continuity, only the stream sediment data were utilized, the water sampling being of too limited areal extent to have significant overall implications.

The computer program was designed to give a preliminary picture of the regional geochemistry in terms of parameters of the actual metal concentration distributions, the regional distributions in the stream sediments and the distribution of residual (or anomalous) metal. For purposes of convenient illustration, the scale of 1 inch = 4 miles was chosen.

The program was contracted to CASE (Appendix I). A brief description of the program mechanics is given on pages 1 - 3 of Appendix I and will not be given further elaboration.

The computerization gave the following output:

1. Histograms of Cu, Zn (Appendix I)
2. Statistical parameters of the metal distribution (Appendix I)
3. Correlation Coefficients (Appendix I)
4. Deviation from the mean Histogram (Appendix I)

5. Cumulative deviation Histogram (Appendix I)

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10. Contoured rolling mean - 1:250,000 (Maps 3,6)

11. Contoured positive residuals - 1:250,000 (Maps 4,7)

On Map I are located the sample positions which have analytical data. All other positions have been rejected by the computer. Inspection of the distribution of sample locations reveals several notable gaps within the map sheet.

a) The southwest corner of the map sheet has not been sampled and no computer interpretation has been attempted in this direction.

not as favorable area geologically

b) The area southeast of the Finlay River has whole drainage systems without samples. Further sampling to fill in the areas not sampled would probably significantly alter the computer mapping as it exists.

re: page 2.

c) The lower reaches of the Obo and Thudaka Rivers have a low sample density with some drainages not sampled. Further sampling

could change the computer mapping as in b).

The overall sample density is less than 0.5 samples per square mile. The sample density is variable throughout the region. Areas with a sample density of less than 0.5 cannot be considered as adequately covered. An optimum sample density is 0.75 to 1 samples per square mile.

Maps 2 and 5 are contoured raw data. Copper is contoured at 10, 20, 30, 40, 50, 60, 80, 100 and 120 ppm intervals. Zinc is contoured at 20, 60, 100, 140, 200 and 250 ppm intervals. Variable contour intervals were used to prevent excessive crowding of the rather high frequency data. The raw data contours give useful interpretative data when the regional background is relatively uniform; in the present case the background is variable and the raw data contours serve largely to illustrate the regional trends and contrast in the metal values.

Maps 3 and 6 are rolling means of the copper and zinc, respectively. These plots give the average content of the metals in ppm of the stream sediments; the metal contents are correlatable to the content in the underlying rocks. The maps give a measure of the "chemistry

of the geology"; an overlay of these maps on the geology illustrates favourable rock types.

Maps 4 and 7 are contour plots of the copper and zinc, respectively, in excess of the regional averages computed in the rolling mean. These areas are the anomalies upon which interpretation is based.

The statistics recorded in Appendix I indicate polymodal distributions of both copper and zinc with a relatively low correlation between the two metals. Copper and zinc are major and/or minor components of a large variety of deposits and the information at hand suggests that more than one type of deposit occur in the region.

The cumulative deviation can be a useful measure of metal associations i. e. lead-zinc-silver in vein deposits, copper-molybdenum in porphyry deposits, molybdenum-tungsten in skarns, etc. In the present program these cumulative deviations have limited value because of the low correlation between copper and zinc.

The ratings given in tabular form give a firsthand illustration of the anomalous nature on a sample to sample basis. Here again the significance of this measure is limited on a two element analysis and is included because it was part of the program as originally written.

The location and metal value data dump is a record

of the input. The eastings and northings permit a virtually unlimited expansion of the region from the present center.

REGIONAL ASPECTS OF COPPER AND ZINC POTENTIAL

The regional distribution of copper and zinc is shown on Maps 3 and 6, respectively. Inspection of the maps reveals significantly different regional trends except for the Toodoggone River - Jock Creek area where both copper and zinc are high. Overlaying of both regional copper and zinc on regional Geology (Map 1) reveals the following features:

a) Virtually all groups of copper deposits lie within areas of high regional copper.

b) Copper deposits generally lie in the intrusive rocks or in the metavolcanics-metasediments near the intrusive contacts.

c) Zinc is high in the Toodoggone River-Jock Creek intrusive-metavolcanic-metasedimentary complex but otherwise high regional zinc tends to occur some distance from the intrusives.

d) The older Proterozoic rocks (Units 1 and 2) give a low regional copper content except in the Brandon Peak area where these rocks have been intruded by the sialic igneous rocks.

e) The older Proterozoic rocks are moderate to high in zinc on a regional basis.

From the above observations, several conclusions appear warranted.

1. The copper and zinc potential of the Toodoggone River-Jock Creek area requires further investigation but several types of deposits probably occur. A critical aspect of the nature of mineralization may be connected with the state of metamorphism of the rocks in this area. Further comments will be made later in the report in this connection.

2. The degree of coherence between high regional copper and the distribution of intrusives suggests a good potential for porphyry type deposits of copper, molybdenum or both in or near the intrusives.

3. The distribution of high regional zinc in the older rocks (Units 1 and 2) suggests a good potential for large stratabound deposits or deposits related to regional

tectonism as opposed to contact metamorphic types.

4. More pertinent regional interpretative aspects must await results of the investigation of other metal associations of the various possible deposits. In this regard, the distribution of molybdenum on a regional basis will help evaluate the porphyry potential. Uranium is also an extremely useful indicator of porphyry deposits as most deposits have a uranium halo around them. Zinc may occur as large stratabound deposits and will probably carry significant amounts of silver except for skarn deposits which may be monomineralic. Useful indicators of strataform zinc deposits will probably be lead and silver. Vein type deposits of either copper or zinc will probably carry significant contents of, on the one hand, lead or zinc, or alternatively, nickel (chalcopyrite-pyrrhotite veins in basic rocks or intermediate to basic volcanic rocks).

INTERPRETATION OF RESIDUAL COPPER AND ZINC

General

The Residual copper and zinc distributions are plotted on Maps 4 and 7. These maps give the distribution of copper and zinc in excess of the regional average. The areas outlined are the anomalies, the regional background having been filtered out. Each anomaly is numbered and given a color classification based on the magnitude of contrast. The computer drawn anomalies in some instances are based on insufficient data, thereby casting some doubt on the validity in terms of areal extent and magnitude. These anomalies are designated by a B suffix after the anomaly number. Anomalies composed of sufficient samples to assure validity are suffixed by A.

The region is divided into four areas based on regional geology and the distribution of copper and zinc. These areas are: the area southeast of the Finlay River; the Toodoggone River-Jock Creek area; the northwest intrusive belt; and the belt of older metamorphic rocks in the northeast corner of the map sheet.

Southeast of the Finlay River

This area is underlain dominantly by Lower Paleozoic to Proterozoic regionally metamorphosed rocks. In the

southwest portion of this area the intrusive-metavolcanic belt occurs. There are several existing properties in the southwest portion under current investigation. Cordilleran Engineering Ltd. has added one new property to the existing number.

In general, the zinc appears to be moderate to high in background, suggesting a favorable area for zinc deposits. The copper is moderate to low with several significant contrast anomalies. The high probability of a completely different picture with the incorporation of more detailed regional data prevents further interpretation at this time.

The Toodoggone River-Jock Creek Area

Geology: This area has been designated by Mr. A. F. Reeve, Cordilleran Engineering Ltd., as the Toodoggone Metallogenic Belt. This designation is based on the coexistence of several geological-geochemical phenomena.

1. The area is a complex of fractured metavolcanic and small intrusive stocks.

2. The general physical appearance of the area is one of extensive gossans, suggestive of widespread sulphide mineralization.

3. Several sulphide deposits were known to occur prior to the regional survey.

4. The regional geochemical results outline the area with a high copper and zinc background accompanied by high contrast geochemical anomalies.

Mr. A. F. Reeve (personal communication) interprets this metallogenic belt as a saddle or downwarped portion of the intrusive belt. The surface expression presently exposed is therefore the roof of the intrusive.

The exploration activities from 1968 to 1970 were largely directed towards examination of this belt. Airborne magnetometer and E. M. surveys were carried out; four properties were staked and exposed to examination in some detail. The properties in question are plotted on Maps 4 and 7, and are named the Riga group, the Pillar group, the Spartan group, and the Garnet group. A summary of the exploration carried out on each of these claim groups is given below as the basis for further interpretation of the regional geochemistry.

Riga Group: The Riga claim group contains previously known mineralization which was substantiated by regional geochemistry. The follow-up work on this group consisted of I. P. surveys, magnetometer surveys, soil surveys, detailed geological mapping, and diamond drilling. The results of each exploration phase must be considered incomplete due to the following:

a) Approximately 25% of the claim group was covered by soil surveys.

b) Magnetometer surveys were carried out over approximately 50% of the area, approximately half of this coverage had coincident soil sampling.

c) The detailed geology does not have coincident soil survey results probably because of inaccessibility and lack of good soil profiles at high altitudes.

d) The diamond drilling was spotted on the basis of local mineralization and a weak I.P. anomaly. This drilling was carried out in only one area and cannot be considered representative in terms of either geochemistry, magnetics, or detailed geology. It is of

interest however to note that assays for molybdenum were far in excess of background contents and approached ore grade in small sections. The general grade of alteration is biotite-epidote with some reported hydrous alteration (kaolinite) in the intrusive. Mineralization in the intrusive occurs as disseminations and in the metavolcanics as fracture fillings. Hydrous alteration is a common association of porphyry deposits and this area probably has considerable potential for this type deposit.

The Pillar Group: The Pillar group was defined by anomalous copper, molybdenum and zinc in stream sediments. Soil sampling, magnetometer surveys, detailed geological mapping, trenching and diamond drilling was subsequently carried out. Sparse copper mineralization in the form of chalcopyrite and malachite was found in fractures in the intrusive rocks. Also, sparse mineralization was observed in pyritic fractured andesite. Diamond drill holes were put in the volcanic rocks and did not reach the intrusives. A small section of 0.1 to 0.2% copper

was intersected. It is of interest to note that the largest soil anomaly (near line 30) was not cut off, nor was a large magnetic anomaly in the same area.

The Spartan Group: The Spartan group was well outlined by copper and molybdenum on the 1967 regional survey. The soil survey carried out in 1968 indicated the presence of moderate to high sporadic anomalies, one of which corresponded well with a surface showing which was subsequently drilled. A magnetometer survey was also conducted over the Spartan group and several magnetic highs were outlined and attributed to magnetite in the intrusive rocks. The diamond drilling did not turn up significant ore grade mineralization. However, values of 10 to 50 times background were accounted in the core and in rock chips.

The Garnet Claim Group: This group of claims were staked in 1968 on the basis of stream sediment anomalies found in 1967. The source of the anomaly was traced to widespread but sporadic and low-grade chalcopyrite and bornite mineralization. Some galena and cobalt bloom were also observed in float. No additional exploration other than prospecting and geological mapping was carried out.

Regional Geochemistry: A total of 14 copper anomalies (33A to 46A) are outlined on Map 4, and 11 zinc anomalies (22A to 32A) on Map 7. The Riga claim group partially covers copper anomaly 34A. The anomaly is indicated to extend to the south and to the east of the area covered by the claims. Zinc anomalies 22A and 23A are also related to the Riga group. The existence of hydrous alteration as well as epidote and biotite in the area of the Riga claims is good indication for a porphyry type and/or a fracture filling deposit. The work done to date does not appear to have been sufficient to fully evaluate the area and more detailed exploration to the west and south are recommended. 30B

The Pillar group is covered by copper anomalies 35A and 36A and by zinc anomaly 25A. The extent and distribution of the regional anomalies suggest that on a regional basis the Pillar claims have covered the anomalies and that the mineralization found on follow-up surveys could well constitute the source of these anomalies.

The Spartan group is represented by copper anomalies 38A, 39A, and zinc anomaly 26A. Inspection of both copper and zinc anomalies in the area of the Spartan group (Map 4 and Map 7, respectively) suggests that the anomaly is much

more extensive than the area covered by the claims. Exploration over the Spartan group to date has been rather restricted and must be considered of a preliminary nature. Detailed drainage and talus fines sampling are recommended throughout the anomalous area and final judgement on the value of this anomaly must await these more detailed surveys.

The Garnet group is located over copper anomaly 42A. This group of claims is virtually surrounded by zinc anomalies (29A, 30A and 31A). The apparent zonation of the copper and zinc anomalies may reflect a complex mineralogical assemblage of hitherto unknown origin. Preliminary investigation of the economic mineral potential of this area should take the form of additional analytical work on a preliminary basis such as silver, molybdenum and possibly nickel.

In addition to the above described anomalies, three other large areas within the Toodoggone Metallogenic Belt are anomalous and have not been subjected to follow-up exploration. Zinc anomaly 24A is a large, highly anomalous area with smaller but coincident copper anomalies (33A and 40A). A second distinctly anomalous area which has not been subjected to follow-up is represented by zinc anomalies 29A and 31A, and copper anomaly 43A. A third area is that

JK etc.

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covered by zinc anomaly 32A and copper anomalies 44A, 45 ~~34A~~ and 46A. In addition to the above areas, several other small anomalies occur which may be investigated after higher priority anomalies have been evaluated.

The above comments suggest that the Toodoggone Metallogenic Belt has not been subjected to sufficiently intense exploration to fully evaluate the economic potential . The following concluding comments are considered applicable to the present state of knowledge of the Toodoggone Metallogenic Belt.

1. Less than 50% of the copper anomalies have been subjected to detailed follow-up. Less than 20% of the zinc anomalies have been subjected to detailed follow-up.
2. Copper and zinc show a relatively poor correlation, suggesting a variety of types of deposits.
3. The Drysborough Peak area (Riga Group) is the only area in which significant hydrous alteration has been reported. This area is suggested to be the only one with a good potential for porphyry deposits at present. Other anomalies

investigated appear to have less alteration characteristic of porphyry deposits.

4. A possibility to be considered in future exploration is the degree of metamorphism of the Toodoggone Metallogenic Belt. It is possible that metamorphism may have dispersed rather than concentrated mineralization of the porphyry type.

5. The potential of the area for zinc deposits has not been sufficiently explored to pass judgement at present. The general nature of metamorphism however, suggests that vein or skarn type deposits will be common.

6. Investigation of other metals and metal associations will provide additional facts necessary to make final decisions on the economic potential of the Toodoggone Metallogenic Belt.

The Northwest Intrusive Complex

Geology: The Northwest Intrusive Complex consists of an extensive sialic batholith with inlying older metavolcanics and metasediments as roof pendants; basic rocks intrude the sialic batholith in several areas. Regional fault structures trending northwest-southeast dissect the area. Several copper and copper-molybdenum showings occur within this belt and from field descriptions these deposits fall largely within the classification of porphyry type deposits. The distribution of deposits within the intrusives suggests a favorable area for porphyry type copper-molybdenum deposits.

Two claim groups were staked in this area - the Opal Group and the T. K. Group. Follow-up surveys on these groups consisted of re-sampling and prospecting. The Opal Group was staked on the basis of anomalous molybdenum in stream sediments. Follow-up sampling confirmed the anomaly. However, no molybdenum source was found and the claim group was subsequently dropped. On the T. K. Group, widespread copper and copper-molybdenum mineralization was found but was of very low grade. The mineralization occurred in small quartz veins and along fractures in a relatively fresh gneissic granite. The T. K. Group has also been dropped.

Regional Geochemistry: Eighteen copper anomalies occur within the intrusive complex and seven zinc anomalies (Maps 4 and 7 respectively). The zinc anomalies, in general, are relatively low contrast and limited in size, probably reflecting zinc sulphides as a minor component of mineralization.

The copper anomalies can be divided into three groups: (1) those occurring in the intrusive rocks, (2) those occurring in or near intrusive contacts with metavolcanics, and (3) those occurring entirely in the metamorphic rocks.

The intrusive anomalies, Nos. 8, 10 and 14, are high contrast and extensive in area. Anomaly No. 8, also anomalous in zinc, has several associated copper occurrences and occurs largely in the basic intrusive rocks. This anomaly may in part reflect higher background values which have not been adequately filtered by the computer. However, this geological environment is favorable for porphyry type mineralization along the fringes and possibly for copper-nickel mineralization within the basic intrusive. Anomaly No. 10 has been investigated within the T. K. Group of claims; the mineralization found on the T.K. Group could answer the anomalies, however the anomalies are more extensive than the claim group,

thereby justifying further investigation.

Copper anomaly 14A is a large, high contrast anomaly occurring in what is considered to be a favorable geological environment. There are four reported copper showings in the area; metavolcanics and metasediments are present nearby and are cut off by faults; and a small basic intrusion occurs near the intrusive - metavolcanic contact. The copper occurrences were examined by Cordilleran Engineering Ltd. personnel who report chalcopyrite in quartz veins within granodiorite. Inspection of the distribution of anomalous values indicates that the showings examined probably do not explain all the anomalous copper in stream sediments and that this area should be subjected to more detailed investigation.

In addition to the above described large anomalies, several other intrusive type anomalies occur which should be further investigated on a second priority basis. These anomalies are

(1) Copper anomaly 5A; zinc anomaly 3A - a molybdenum occurrence is reported in the area of this anomaly.

(2) Copper anomaly 7A - a copper showing is reported in the area.

(3) Copper anomaly 12A, zinc anomaly 5A.

The contact type deposits include copper anomalies 3A, 9A, 11A and 15A. Anomaly 9A has a copper showing in its drainage basin which may explain this anomaly, in part. The contact anomalies are in general somewhat smaller than the intrusive types and of somewhat lower contrast, possibly reflecting small contact metamorphic deposits.

In addition to the intrusive and contact anomalies, two other anomalies occur in the metamorphic rocks. These are copper anomaly 4A, zinc anomaly 1A which has a reported copper occurrence consisting of sporadic chalcopyrite in quartz stringers; copper anomaly 17A, zinc anomaly 7A, a relatively weak anomaly occurring in regionally metamorphosed rocks of Unit 7 (Map 1).

The follow-up surveys have been of too limited extent to evaluate the economic potential of the area. A preliminary analytical phase of molybdenum, silver and possibly uranium investigation will further delimit the exploration directives prior to field follow-up surveys.

Northeast Toodoggone Map Sheet

Geology: The northeast corner of the Toodoggone map sheet is underlain largely by northwest-southeast

trending metamorphic rocks of Lower Paleozoic and Proterozoic age. The rocks are composed largely of micaceous-chloritic schists, gneisses and minor limestone. The southeastern portion of this district is intruded by Cretaceous-Jurassic intrusives which extend to the southeast of the map sheet. Rock Unit 1 (Map 1) has been sampled in some detail, particularly at high elevations, resulting in the discovery of several new copper, copper-molybdenum occurrences. Unit 2 (Map 1), particularly in the area south of Spinel Lake, has an extremely low sample density and there are no reported mineral occurrences north of the Finlay River. However, south of the Finlay River in Unit 2 are three sulphide occurrences (copper, lead, zinc, silver) which occur as fracture fillings and were recommended for further investigation by the Cordilleran Engineering personnel who examined them.

The follow-up work in the northeast corner of the Toodoggone map sheet consisted almost entirely of prospecting the geochemical anomalies. This prospecting, according to Mr. A. F. Reeve, was incomplete due to rugged terrain.

Regional Geochemistry: Copper anomalies 19A to 33A and zinc anomalies 8A to 14A are plotted on Maps 4 and 7 respectively. Inspection of Maps 4 and 7 reveals that

the most definitive copper occurs in the southeast portion of the area near the intrusive; the higher zinc anomalies occur further to the north immediately east of Spinel Lake. The copper anomalies led to the discovery of several copper and copper-molybdenum occurrences on follow-up prospecting. These anomalies, particularly anomalies 21 and 22, show considerable promise as a potential source for porphyry type copper-molybdenum mineralization. The zinc anomalies to the east of Spinel Lake have not been prospected in any great detail and there are no reported mineral occurrences in this area. Possible zinc deposits that occur in this environment are vein type, skarn type, or large strataform deposits formed by regional metamorphism.

The work done to date in this area must be considered reconnaissance in nature. The next phase of investigation should be the testing of the various metal associations i. e. copper-molybdenum, lead-zinc-silver, etc.

Follow-up of the existing copper and zinc anomalies in the field is strongly recommended and should consist of detailed drainage surveys, talus fines sampling and prospecting. Contingent upon successful results of the follow-up surveys over the existing anomalies, more regional

drainage sampling should be carried out over Rock Units 1 and 2. Also, the intrusive and intrusive contact area would appear to warrant an extension of the sampling if follow-up surveys continue to turn up copper and/or copper-molybdenum deposits.

CONCLUSIONS

A reinterpretation of The Toodoggone Project utilizing computerization and a review of all the existing geological and geochemical data lead to the following conclusions.

1. Sample density is less than 0.5 which on a regional basis is insufficient to adequately describe the economic potential of the area. The area southeast of the Finlay River has insufficient data to draw but the most general conclusions.
2. The regional backgrounds for copper and zinc are variable and except for the Toodoggone Metallogenic Belt, do not correlate well. The lack of correlation between copper and zinc suggests a variety of types of deposits. Distinguishing types of deposits requires additional analytical data.
3. Copper in stream sediments is quantitatively related to the intrusive rocks throughout; zinc, except for the

Toodoggone Metallogenic Belt, does not show a quantitative relationship with the intrusives but rather is higher in the older metamorphic rocks.

4. The regional distribution of the metals, considered in terms of the lithology and structure, suggests 3 metallogenic belts with characteristic types of deposits:

   a) The Toodoggone Metallogenic Belt characterized by vein, fracture filling and skarn type deposits with few porphyry type deposits. The deposits may be large in number and small in size.

   b) The northwest intrusive complex which is favourable for porphyry deposits

   c) The older metamorphic rocks which are favourable for zinc deposits.

5. 46 copper anomalies and 32 zinc anomalies are outlined by the computer drawn residuals. 5 of the copper anomalies and two of the zinc anomalies have been followed up in detail. At

RECOMMENDATIONS

PHASE I - Research

1) Molybdenum and silver are to be analyzed and data manipulated as for copper and zinc.
2) A reclassification of deposits is to be made and each classification to be tested by investigation of other associated metals.
3) A detailed follow-up field program is to be laid out with the emphasis on geochemistry.

PHASE II - Field Investigation

1) All high contrast anomalies should be visited by a consulting geochemist to lay out follow-up investigations.
2) Field operations are to be carried out by geologist with extensive geochemical experience.
3) Selected B category anomalies are to be resampled to bring sample density to A category status.
4) After drainage anomalies have been cut-off, (preliminary follow-up), detailed investigation of anomalies is to be carried out by soil sam-

pling, talus fines sampling, rock chip sampling, biogeochemical sampling, prospecting or other applicable techniques. The object of detailed follow-up is to provide targets for geophysical surveys, trenching, diamond drilling or other final decision development.

5) Contingent upon the findings of the preliminary and detailed follow-up surveys, a limited regional program should be considered to increase the sample density in favourable areas such as southeast of the Finlay River.

APPENDIX I

CASE

COMPUTER APPLICATIONS AND SYSTEMS ENGINEERING

2100 EGLINTON AVENUE WEST, TORONTO 10, ONTARIO, CANADA

TELEPHONE 783-2442

TOODOGGONE RIVER AREA

REGIONAL GEOCHEMISTRY

COMPUTERIZED MAPPING

AND

STATISTICAL ANALYSIS

Luciano Martin

September 1970

CASE COMPUTER APPLICATIONS AND SYSTEMS ENGINEERING

2100 EGLINTON AVENUE WEST, TORONTO 10, ONTARIO, CANADA

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TOODOGGONE RIVER AREA

REGIONAL GEOCHEMISTRY

COMPUTERIZED MAPPING
AND
STATISTICAL ANALYSIS

MATERIAL RECEIVED.

1. Map of sample locations, scale 2 miles to the inch.
2. Planimetric map, scale 4 miles to the inch.
3. Laboratory analysis sheets with Copper and Zinc values for approximately 2320 samples.

WORK PERFORMED.

A. The sample locations were digitized and punched from map 1 with a resolution of 1000 counts per inch or 500 counts per mile. The lower left corner of the map was assigned co-ordinates (500000, 500000) to allow for extensions. Approximately 2100 positions were digitized.

B. The analytical values were punched four samples per card. These are tabulated in the enclosed report. (Approximately 2300 samples).

C. The results of A and B were merged. Samples with both positions and values were matched and punched two per card as shown in the enclosed tabulation. Approximately 1720 samples were matched.

...2

D. All analytical values of B, matched and unmatched were treated statistically and the samples were rated. This is described in more detail below.

E. The output of B was treated with our computerized analysis and graphics programs. Al mapping was done at a scale of four miles to the inch.

(a) The positions were first plotted to show the distribution of the matched samples.

(b) Interpolation was performed at 0.2 inch interval and the measured values were contoured.

(c) Moving average regionals were computed at the same grid points as in (b). A square window with 12 miles sides centered at the computation point was used; values falling within the window were weighted according to their distance from the centre to produce the weighted moving average. The results were contoured.

(d) Residual values were computed from (b) and (c). Positive values were contoured.

S T A T I S T I C S

STATISTICS

TOODOGGONE RIVER AREA

REGIONAL GEOCHEMISTRY

STATISTICAL ANALYSIS AND RATINGS

The analysis was performed on all samples with assay values, including those with no matching co-ordinates.
The report includes first the frequency distribution histograms of the measured data.

The Statistical Summary Tables show first the Arithmetic and Geometric Means, the Variance and Standard Deviation computed using all samples. To minimize the disproportionate effect of anomalous sample these quantities were recomputed eliminating samples with values greater than 1.5 Standard Deviations above the Arithmetic Mean for each element. The lower part of the Summary Table shows the Means, Variance and Standard Deviations for the samples below the cut-off value; these are the parameters used in the Ratings described below.

The table of Correlation Coefficients is self explanatory.

All samples were rated with a symbol denoting the deviation for each element from the geometric mean; the table includes the measured value, the deviation in units of standard deviation, and the cumulative value of the deviation for the two elements. The complete Ratings tabulation is preceeded by histograms showing the deviations for each element and the cumulative deviations.

A summary table showing the percentage of elements falling in each of the five rating classifications is also included.

CASE

TOODOGGONE REGIONAL GEOCHEMISTRY

CU HISTOGRAM AND CUMULATIVE FREQUENCY PERCENTAGES

INTERV	FREQ.	CUM.FR	
	2.72		*****
5.0		2.72	
	6.04		**********
10.0		8.76	
	9.45		**********
15.0		18.21	
	8.76		**********
20.0		26.97	
	8.33		**********
25.0		35.30	
	8.37		**********
30.0		43.68	
	6.65		**********
35.0		50.32	
	5.83		**********
40.0		56.15	
	5.05		**********
45.0		61.20	
	3.32		******
50.0		64.52	
	3.54		*******
55.0		68.06	
	2.33		****
60.0		70.39	
	2.76		*****
65.0		73.15	
	2.33		****
70.0		75.49	
	2.63		*****
75.0		78.12	
	1.73		***
80.0		79.84	
	1.38		**
85.0		81.23	
	1.29		**
90.0		82.52	
	0.69		*
95.0		83.21	
	1.12		**
100.0		84.33	
	0.73		*
105.0		85.07	
	1.25		**
110.0		86.32	
	0.91		*
115.0		87.22	
	0.69		*
120.0		87.92	
	1.08		**
125.0		88.99	
	0.39		
130.0		89.38	
	10.62		**********
9999.0		100.00	

NUMBER OF SAMPLES = 2317

TOODOGGONE REGIONAL GEOCHEMISTRY

ZN HISTOGRAM AND CUMULATIVE FREQUENCY PERCENTAGES

INTERV	FREQ.	CUM.FR	
	0.04		
5.0		0.04	
	0.99		*
10.0		1.04	
	2.93		*****
15.0		3.97	
	3.37		******
20.0		7.34	
	3.75		*******
25.0		11.09	
	3.19		******
30.0		14.29	
	5.05		**********
35.0		19.34	
	5.09		**********
40.0		24.43	
	8.93		**********
45.0		33.36	
	4.10		********
50.0		37.46	
	5.18		**********
55.0		42.64	
	4.32		********
60.0		46.96	
	5.65		**********
65.0		52.61	
	4.79		*********
70.0		57.40	
	5.27		**********
75.0		62.67	
	4.36		********
80.0		67.03	
	3.37		******
85.0		70.39	
	2.33		****
90.0		72.72	
	3.02		******
95.0		75.74	
	2.63		*****
100.0		78.38	
	2.42		****
105.0		80.79	
	1.38		**
110.0		82.18	
	1.25		**
115.0		83.43	
	1.21		**
120.0		84.64	
	0.95		*
125.0		85.58	
	0.69		*
130.0		86.28	
	13.72		**********
9999.0		100.00	

5.

NUMBER OF SAMPLES = 2317

TOODOGGONE REGIONAL GEOCHEMISTRY

STASTISTICAL SUMMARY OF ALL SAMPLES

MET	AR. MEAN	GEO. MEAN	VARIANCE	STD. DEV
CU	66.35	35.29	16734.05	129.36
ZN	102.65	62.09	48890.14	221.11

NUMBER OF SAMPLES = 2317

STATISTICAL SUMMARY OF NON ANOMALOUS SAMPLES

MET	AR. MEAN	GEO. MEAN	VARIANCE	STD. DEV
CU	49.17	32.31	2266.50	47.61
ZN	74.33	57.40	3603.49	60.03

CUT-OFF AT 1.50 ST. DEV ABOVE AR. MEAN

MET	CUT-OFF	SMPLS. B.C-O	TOTAL SMPLS
CU	260.39	2242	2317
ZN	434.31	2250	2317

TOODOGGONE REGIONAL GEOCHEMISTRY

CORRELATION COEFFICIENTS

	CU	ZN
CU	1.00	0.19
ZN	0.19	1.00

TOODOGGONE REGIONAL GEOCHEMISTRY

CU DEVIATION FROM GEOM MEAN IN UNITS OF ST.DEV.

DEV/S	FREQ %	
-100.0	0.0	
-1.0	0.0	
-0.9	0.0	
-0.8	0.0	
-0.7	1.81	***
-0.6	5.39	**********
-0.5	8.76	**********
-0.4	7.90	**********
-0.3	8.72	**********
-0.2	8.46	**********
-0.1	7.60	**********
-0.0	5.70	**********
0.1	4.53	*********
0.2	4.36	********
0.3	3.28	******
0.4	2.55	*****
0.5	2.29	****
0.6	2.37	****
0.7	2.93	*****
0.8	2.03	****
0.9	1.17	**
1.0	1.38	**
1.1	1.29	**
1.2	0.69	*
1.3	0.95	*
1.4	0.78	*
1.5	1.21	**
1.6	0.82	*
1.7	0.86	*
1.8	0.99	*
1.9	0.52	*
2.0	0.30	
2.1	0.60	*
2.2	0.35	
2.3	0.69	*
2.4	0.35	
2.5	0.43	
2.6	0.43	
2.7	0.43	
2.8	0.26	
2.9	0.17	
3.0	0.09	
3.1	0.30	
3.2	0.09	
3.3	0.39	
3.4	0.47	
3.5	0.30	
3.6	0.13	
3.7	0.22	
3.8	0.13	
3.9	0.09	
4.0	0.13	
100.0	4.32	********

NUMBER OF SAMPLES = 2317

TOODOGGONE REGIONAL GEOCHEMISTRY

ZN DEVIATION FROM GEOM MEAN IN UNITS OF ST.DEV.

DEV/S	FREQ %	
-100.0	0.0	
-1.0	0.04	
-0.9	0.99	*
-0.8	4.10	********
-0.7	4.53	**********
-0.6	3.71	*******
-0.5	4.92	**********
-0.4	6.13	**********
-0.3	10.44	**********
-0.2	4.83	**********
-0.1	5.14	**********
-0.0	6.73	**********
0.1	5.83	**********
0.2	6.86	**********
0.3	4.53	**********
0.4	3.11	******
0.5	3.37	******
0.6	3.11	******
0.7	2.89	*****
0.8	1.73	***
0.9	1.29	**
1.0	1.25	**
1.1	0.73	*
1.2	0.60	*
1.3	0.78	*
1.4	0.91	*
1.5	0.95	*
1.6	0.39	
1.7	0.65	*
1.8	0.35	
1.9	0.26	
2.0	0.30	
2.1	0.43	
2.2	0.17	
2.3	0.35	
2.4	0.17	
2.5	0.17	
2.6	0.26	
2.7	0.39	
2.8	0.39	
2.9	0.09	
3.0	0.22	
3.1	0.04	
3.2	0.22	
3.3	0.26	
3.4	0.30	
3.5	0.09	
3.6	0.13	
3.7	0.17	
3.8	0.13	
3.9	0.04	
4.0	0.17	
100.0	4.36	********

NUMBER OF SAMPLES = 2317

TOODOGGONE REGIONAL GEOCHEMISTRY

CUMULATIVE DEVIATION FROM GEOM MEAN IN UNITS OF ST.DEV.

C.DV/S	FREQ %	
-100.0	0.0	
-1.0	0.04	
-0.9	0.99	*
-0.8	4.10	********
-0.7	6.34	**********
-0.6	9.11	**********
-0.5	13.68	**********
-0.4	14.03	**********
-0.3	19.16	**********
-0.2	13.29	**********
-0.1	12.73	**********
-0.0	12.43	**********
0.1	10.36	**********
0.2	11.22	**********
0.3	7.81	**********
0.4	5.65	**********
0.5	5.65	**********
0.6	5.48	**********
0.7	5.83	**********
0.8	3.75	*******
0.9	2.46	****
1.0	2.63	*****
1.1	2.03	****
1.2	1.29	**
1.3	1.73	***
1.4	1.68	***
1.5	2.16	****
1.6	1.21	**
1.7	1.51	***
1.8	1.34	**
1.9	0.78	*
2.0	0.60	*
2.1	1.04	**
2.2	0.52	*
2.3	1.04	**
2.4	0.52	*
2.5	0.60	*
2.6	0.69	*
2.7	0.82	*
2.8	0.65	*
2.9	0.26	
3.0	0.30	
3.1	0.35	
3.2	0.30	
3.3	0.65	*
3.4	0.78	*
3.5	0.39	
3.6	0.26	
3.7	0.39	
3.8	0.26	
3.9	0.13	
4.0	0.30	
100.0	8.68	********** 10.

NUMBER OF SAMPLES = 2317

RATINGS

RATINGS

TOODOGGONE REGIONAL GEOCHEMISTRY

SUMMARY OF RATINGS AS PERCENTAGES OF TOTAL

	=	-		+	*
CU	0.0	0.0	79.84	9.50	10.66
ZN	0.0	0.0	84.29	6.86	8.85

NUMBER OF SAMPLES = 2317

SYMBOLS USED IN ANOMALY RATINGS

= MORE THAN 2 ST.DEV BELOW MEAN
- MORE THAN 1 ST.DEV BELOW MEAN
WITHIN 1 ST.DEV OF MEAN
+ MORE THAN 1 ST.DEV ABOVE MEAN
* MORE THAN 2 ST.DEV ABOVE MEAN

DEVIATIONS ARE FROM GEOMETRIC MEAN

TOODOGGONE REGIONAL GEOCHEMISTRY

SYMBOLS USED IN ANOMALY RATINGS

= MORE THAN 2 ST.DEV BELOW MEAN
- MORE THAN 1 ST.DEV BELOW MEAN
WITHIN 1 ST.DEV OF MEAN
+ MORE THAN 1 ST.DEV ABOVE MEAN
* MORE THAN 2 ST.DEV ABOVE MEAN

DEVIATIONS ARE FROM GEOMETRIC MEAN

SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
A8001	+		80.	1.0	1.0	71.	0.2	1.2
A8002			40.	0.2	0.2	78.	0.3	0.5
A8003			43.	0.2	0.2	91.	0.6	0.8
A8004			39.	0.1	0.1	55.	-0.0	0.1
A8005			45.	0.3	0.3	91.	0.6	0.8
A8006			30.	-0.0	-0.0	77.	0.3	0.3
A8007			46.	0.3	0.3	79.	0.4	0.6
A8008		+	70.	0.8	0.8	150.	1.5	2.3
A8010			35.	0.1	0.1	83.	0.4	0.5
A8011	*	+	410.	7.9	7.9	152.	1.6	9.5
A8012	*		190.	3.3	3.3	98.	0.7	4.0
A8013	+	*	125.	1.9	1.9	220.	2.7	4.7
A8014	*		165.	2.8	2.8	80.	0.4	3.2
A8015			38.	0.1	0.1	74.	0.3	0.4
A8016			30.	-0.0	-0.0	81.	0.4	0.3
A8017	*		175.	3.0	3.0	110.	0.9	3.9
A8018	*		235.	4.3	4.3	99.	0.7	5.0
A8019	*		155.	2.6	2.6	69.	0.2	2.8
A8020	*		225.	4.0	4.0	100.	0.7	4.8
A8021			18.	-0.3	-0.3	35.	-0.4	-0.7
A8022			70.	0.8	0.8	54.	-0.1	0.7
A8023	*		195.	3.4	3.4	111.	0.9	4.3
A8024			75.	0.9	0.9	91.	0.6	1.5
A8025	+		106.	1.5	1.5	80.	0.4	1.9
A8026	*		162.	2.7	2.7	107.	0.8	3.6
A8027			37.	0.1	0.1	75.	0.3	0.4
A8028			75.	0.9	0.9	70.	0.2	1.1
A8029			45.	0.3	0.3	96.	0.6	0.9
A8030	+		120.	1.8	1.8	48.	-0.2	1.7
A8031	*		280.	5.2	5.2	115.	1.0	6.2
A8032	*		180.	3.1	3.1	102.	0.7	3.8
A8033	*		135.	2.2	2.2	100.	0.7	2.9
A8034			50.	0.4	0.4	40.	-0.3	0.1
A8035	*		140.	2.3	2.3	40.	-0.3	2.0
A8036			66.	0.7	0.7	40.	-0.3	0.4
A8037	*		168.	2.9	2.9	40.	-0.3	2.6
A8038	+		115.	1.7	1.7	40.	-0.3	1.4
A8039	+		95.	1.3	1.3	40.	-0.3	1.0
A8040			36.	0.1	0.1	44.	-0.2	-0.1
A8041			65.	0.7	0.7	43.	-0.2	0.4

TOODOGGONE REGIONAL GEOCHEMISTRY

SYMBOLS USED IN ANOMALY RATINGS

= MORE THAN 2 ST.DEV BELOW MEAN
- MORE THAN 1 ST.DEV BELOW MEAN
WITHIN 1 ST.DEV OF MEAN
+ MORE THAN 1 ST.DEV ABOVE MEAN
* MORE THAN 2 ST.DEV ABOVE MEAN

DEVIATIONS ARE FROM GEOMETRIC MEAN

SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
A8042	*		146.	2.4	2.4	55.	-0.0	2.3
A8043			68.	0.7	0.7	34.	-0.4	0.4
A8044			68.	0.7	0.7	44.	-0.2	0.5
A8045	*		325.	6.1	6.1	52.	-0.1	6.1
A8046	*		250.	4.6	4.6	74.	0.3	4.8
A8047			1.	-0.7	-0.7	24.	-0.6	-1.2
A8048			4.	-0.6	-0.6	45.	-0.2	-0.8
A8049			25.	-0.2	-0.2	26.	-0.5	-0.7
A8050			70.	0.8	0.8	94.	0.6	1.4
A8051			9.	-0.5	-0.5	36.	-0.4	-0.8
A8052	*		180.	3.1	3.1	65.	0.1	3.2
A8053	+		100.	1.4	1.4	60.	0.0	1.5
A8054	+		95.	1.3	1.3	79.	0.4	1.7
A8055	+		114.	1.7	1.7	94.	0.6	2.3
A8056			59.	0.6	0.6	35.	-0.4	0.2
A8057	+		97.	1.4	1.4	44.	-0.2	1.1
A8058	+		124.	1.9	1.9	43.	-0.2	1.7
A8059	+		94.	1.3	1.3	53.	-0.1	1.2
A8060	+		125.	1.9	1.9	49.	-0.1	1.8
A8061			55.	0.5	0.5	56.	-0.0	0.5
A8062	*		475.	9.3	9.3	21.	-0.6	8.7
A8063	*		320.	6.0	6.0	72.	0.2	6.3
A8064	*		160.	2.7	2.7	60.	0.0	2.7
A8065	*		260.	4.8	4.8	41.	-0.3	4.5
A8066	+		96.	1.3	1.3	41.	-0.3	1.1
A8067	+		122.	1.9	1.9	40.	-0.3	1.6
A8068	*		260.	4.8	4.8	49.	-0.1	4.6
A8069	*		202.	3.6	3.6	73.	0.3	3.8
A8070	*		203.	3.6	3.6	61.	0.1	3.6
A8071	*		169.	2.9	2.9	61.	0.1	2.9
A8072	*		200.	3.5	3.5	100.	0.7	4.2
A8073	*	+	164.	2.8	2.8	142.	1.4	4.2
A8074	*	+	152.	2.5	2.5	125.	1.1	3.6
A8075	*	+	182.	3.1	3.1	166.	1.8	5.0
A8076	+		85.	1.1	1.1	105.	0.8	1.9
A8167	+		94.	1.3	1.3	40.	-0.3	1.0
A8168	+		88.	1.2	1.2	40.	-0.3	0.9
A8169	+		82.	1.0	1.0	40.	-0.3	0.8
A8170			77.	0.9	0.9	40.	-0.3	0.6
A8171			61.	0.6	0.6	40.	-0.3	0.3

TODDOGGONE REGIONAL GEOCHEMISTRY

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DEVIATIONS ARE FROM GEOMETRIC MEAN

SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
A8172			77.	0.9	0.9	40.	-0.3	0.6
A8173	*		279.	5.2	5.2	40.	-0.3	4.9
A8174			56.	0.5	0.5	40.	-0.3	0.2
A8175			78.	1.0	1.0	40.	-0.3	0.7
A8176	*		157.	2.6	2.6	40.	-0.3	2.3
A8177	*		140.	2.3	2.3	40.	-0.3	2.0
A8178	+		125.	1.9	1.9	40.	-0.3	1.7
A8179			39.	0.1	0.1	40.	-0.3	-0.1
A8180			51.	0.4	0.4	40.	-0.3	0.1
A8181	+		83.	1.1	1.1	40.	-0.3	0.8
A8182	+		104.	1.5	1.5	40.	-0.3	1.2
A8183			40.	0.2	0.2	40.	-0.3	-0.1
D001		+	46.	0.3	0.3	153.	1.6	1.9
D002		+	28.	-0.1	-0.1	146.	1.5	1.4
D003		+	28.	-0.1	-0.1	148.	1.5	1.4
D004		+	28.	-0.1	-0.1	162.	1.7	1.7
D005		*	32.	0.0	0.0	185.	2.1	2.1
D006		*	27.	-0.1	-0.1	188.	2.2	2.1
D007		*	35.	0.1	0.1	203.	2.4	2.5
D008		+	26.	-0.1	-0.1	172.	1.9	1.8
D009		*	24.	-0.2	-0.2	207.	2.5	2.3
D010		*	30.	-0.0	-0.0	206.	2.5	2.4
D011		*	39.	0.1	0.1	200.	2.4	2.5
D012		*	53.	0.4	0.4	287.	3.8	4.3
D013		*	34.	0.0	0.0	231.	2.9	2.9
D015		+	44.	0.2	0.2	147.	1.5	1.7
D016		+	41.	0.2	0.2	141.	1.4	1.6
D018		+	37.	0.1	0.1	136.	1.3	1.4
D019		+	41.	0.2	0.2	142.	1.4	1.6
D020	*		148.	2.4	2.4	82.	0.4	2.8
D021	*		590.	11.7	11.7	80.	0.4	12.1
D022	+		115.	1.7	1.7	77.	0.3	2.1
D023			46.	0.3	0.3	97.	0.7	0.9
D024		+	70.	0.8	0.8	130.	1.2	2.0
D025			12.	-0.4	-0.4	41.	-0.3	-0.7
D026	*	+	720.	14.4	14.4	128.	1.2	15.6
D027	+		95.	1.3	1.3	100.	0.7	2.0
D028			73.	0.9	0.9	105.	0.8	1.6
D029			38.	0.1	0.1	85.	0.5	0.6
D029			67.	0.7	0.7	98.	0.7	1.4

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
D030		*	28.	-0.1	-0.1	475.	7.0	6.9
D031		+	23.	-0.2	-0.2	153.	1.6	1.4
D032		+	22.	-0.2	-0.2	153.	1.6	1.4
D033		*	45.	0.3	0.3	400.	5.7	6.0
D034		*	40.	0.2	0.2	380.	5.4	5.5
D035			29.	-0.1	-0.1	105.	0.8	0.7
D036		*	55.	0.5	0.5	960.	15.0	15.5
D037		+	29.	-0.1	-0.1	140.	1.4	1.3
D038		*	35.	0.1	0.1	212.	2.6	2.6
D039		*	48.	0.3	0.3	320.	4.4	4.7
D040		*	33.	0.0	0.0	230.	2.9	2.9
D041			63.	0.6	0.6	66.	0.1	0.8
D042	*	+	170.	2.9	2.9	119.	1.0	3.9
D043	*		135.	2.2	2.2	105.	0.8	3.0
D044	*	+	240.	4.4	4.4	143.	1.4	5.8
D045			29.	-0.1	-0.1	43.	-0.2	-0.2
D046			23.	-0.2	-0.2	32.	-0.4	-0.6
D047			28.	-0.1	-0.1	30.	-0.5	-0.5
D048			17.	-0.3	-0.3	30.	-0.5	-0.8
D049			24.	-0.2	-0.2	38.	-0.3	-0.5
D050			14.	-0.4	-0.4	35.	-0.4	-0.8
D051			17.	-0.3	-0.3	33.	-0.4	-0.7
D052			37.	0.1	0.1	42.	-0.3	-0.2
D053			35.	0.1	0.1	59.	0.0	0.1
D054			20.	-0.3	-0.3	41.	-0.3	-0.5
D055			17.	-0.3	-0.3	36.	-0.4	-0.7
D056			34.	0.0	0.0	115.	1.0	1.0
D056			24.	-0.2	-0.2	38.	-0.3	-0.5
D057			32.	-0.0	-0.0	75.	0.3	0.3
D057			20.	-0.3	-0.3	52.	-0.1	-0.3
D058			37.	0.1	0.1	65.	0.1	0.2
D059	*	*	560.	11.1	11.1	250.	3.2	14.3
D060			38.	0.1	0.1	111.	0.9	1.0
D061			35.	0.1	0.1	106.	0.8	0.9
D062			50.	0.4	0.4	116.	1.0	1.3
D063		+	43.	0.2	0.2	125.	1.1	1.4
D064		+	32.	-0.0	-0.0	120.	1.0	1.0
D065		*	42.	0.2	0.2	515.	7.6	7.8
D066		*	66.	0.7	0.7	275.	3.6	4.3
D067		*	34.	0.0	0.0	275.	3.6	3.7

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
D068			33.	0.0	0.0	75.	0.3	0.3
D069			29.	-0.1	-0.1	75.	0.3	0.2
D070			35.	0.1	0.1	75.	0.3	0.3
D071			19.	-0.3	-0.3	74.	0.3	-0.0
D072		+	42.	0.2	0.2	165.	1.8	2.0
D073	+	*	80.	1.0	1.0	232.	2.9	3.9
D074	*	*	860.	17.4	17.4	360.	5.0	22.4
D075		*	28.	-0.1	-0.1	183.	2.1	2.0
D076		+	48.	0.3	0.3	165.	1.8	2.1
D077			28.	-0.1	-0.1	103.	0.8	0.7
D078		+	58.	0.5	0.5	123.	1.1	1.6
D079		+	37.	0.1	0.1	136.	1.3	1.4
D080			20.	-0.3	-0.3	76.	0.3	0.1
D081		*	50.	0.4	0.4	300.	4.0	4.4
D082			19.	-0.3	-0.3	47.	-0.2	-0.5
D083			68.	0.7	0.7	80.	0.4	1.1
D084			16.	-0.3	-0.3	68.	0.2	-0.2
D085	*	*	141.	2.3	2.3	360.	5.0	7.3
D086		+	62.	0.6	0.6	158.	1.7	2.3
D087			44.	0.2	0.2	96.	0.6	0.9
D088	+	*	116.	1.8	1.8	280.	3.7	5.5
D089			9.	-0.5	-0.5	50.	-0.1	-0.6
D090		+	41.	0.2	0.2	135.	1.3	1.5
D091		+	51.	0.4	0.4	135.	1.3	1.7
D092	*	*	135.	2.2	2.2	211.	2.6	4.7
D093			69.	0.8	0.8	106.	0.8	1.6
D094		+	67.	0.7	0.7	146.	1.5	2.2
D095			27.	-0.1	-0.1	58.	0.0	-0.1
D096			19.	-0.3	-0.3	65.	0.1	-0.2
D097			28.	-0.1	-0.1	105.	0.8	0.7
D098	*	*	161.	2.7	2.7	1140.	18.0	20.7
D099		*	31.	-0.0	-0.0	260.	3.4	3.3
D100		*	43.	0.2	0.2	595.	9.0	9.2
D101		*	40.	0.2	0.2	200.	2.4	2.5
D102		*	32.	-0.0	-0.0	450.	6.5	6.5
D103		*	75.	0.9	0.9	1160.	18.4	19.3
D104		*	68.	0.7	0.7	295.	4.0	4.7
D105	*	*	208.	3.7	3.7	1570.	25.2	28.9
D106			25.	-0.2	-0.2	95.	0.6	0.5
D107			79.	1.0	1.0	76.	0.3	1.3

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
D108		*	64.	0.7	0.7	325.	4.5	5.1
D109		*	63.	0.6	0.6	310.	4.2	4.9
D110	+	*	83.	1.1	1.1	1070.	16.9	17.9
D111	+	*	96.	1.3	1.3	1040.	16.4	17.7
D112		*	63.	0.6	0.6	380.	5.4	6.0
D113	+	*	106.	1.5	1.5	380.	5.4	6.9
D114			19.	-0.3	-0.3	26.	-0.5	-0.8
D115			32.	-0.0	-0.0	41.	-0.3	-0.3
D116	*		140.	2.3	2.3	42.	-0.3	2.0
D117			35.	0.1	0.1	36.	-0.4	-0.3
D118			41.	0.2	0.2	32.	-0.4	-0.2
D119			40.	0.2	0.2	46.	-0.2	-0.0
D120			50.	0.4	0.4	36.	-0.4	0.0
D121			60.	0.6	0.6	50.	-0.1	0.5
D122	*	+	165.	2.8	2.8	123.	1.1	3.9
D123			40.	0.2	0.2	50.	-0.1	0.0
D124	+		115.	1.7	1.7	88.	0.5	2.2
D125			68.	0.7	0.7	100.	0.7	1.5
D126			69.	0.8	0.8	40.	-0.3	0.5
D127			62.	0.6	0.6	112.	0.9	1.5
D128	+		86.	1.1	1.1	88.	0.5	1.6
D129	+	+	108.	1.6	1.6	177.	2.0	3.6
D130			76.	0.9	0.9	95.	0.6	1.5
D131	*		132.	2.1	2.1	100.	0.7	2.8
D132	+	+	120.	1.8	1.8	120.	1.0	2.9
D133			17.	-0.3	-0.3	54.	-0.1	-0.4
D134			30.	-0.0	-0.0	60.	0.0	-0.0
D135			42.	0.2	0.2	67.	0.2	0.4
D136			30.	-0.0	-0.0	72.	0.2	0.2
D137			28.	-0.1	-0.1	62.	0.1	-0.0
D138			29.	-0.1	-0.1	64.	0.1	0.0
D139			63.	0.6	0.6	18.	-0.7	-0.0
D140	+		90.	1.2	1.2	30.	-0.5	0.8
D141			44.	0.2	0.2	20.	-0.6	-0.4
D142	*		303.	5.7	5.7	101.	0.7	6.4
D143	*		298.	5.6	5.6	105.	0.8	6.4
D144	*		298.	5.6	5.6	104.	0.8	6.4
D145	*		197.	3.5	3.5	74.	0.3	3.7
D146			2.	-0.6	-0.6	27.	-0.5	-1.1
D147			67.	0.7	0.7	34.	-0.4	0.3

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
D148			37.	0.1	0.1	17.	-0.7	-0.6
D149			25.	-0.2	-0.2	18.	-0.7	-0.8
D150		*	65.	0.7	0.7	710.	10.9	11.6
D150		+	54.	0.5	0.5	146.	1.5	1.9
D151		*	46.	0.3	0.3	510.	7.5	7.8
D152		*	73.	0.9	0.9	230.	2.9	3.7
D153	+	*	123.	1.9	1.9	272.	3.6	5.5
D154	+	*	81.	1.0	1.0	228.	2.8	3.9
D155		*	78.	1.0	1.0	450.	6.5	7.5
D157		+	33.	0.0	0.0	119.	1.0	1.0
D158		*	30.	-0.0	-0.0	235.	3.0	2.9
D159		*	13.	-0.4	-0.4	202.	2.4	2.0
D161		+	23.	-0.2	-0.2	175.	2.0	1.8
D162			8.	-0.5	-0.5	59.	0.0	-0.5
D163			56.	0.5	0.5	77.	0.3	0.8
D164			40.	0.2	0.2	59.	0.0	0.2
D165			10.	-0.5	-0.5	38.	-0.3	-0.8
D166			75.	0.9	0.9	78.	0.3	1.2
D167			13.	-0.4	-0.4	99.	0.7	0.3
D168			14.	-0.4	-0.4	58.	0.0	-0.4
D169			26.	-0.1	-0.1	76.	0.3	0.2
D170			16.	-0.3	-0.3	51.	-0.1	-0.4
D171			39.	0.1	0.1	69.	0.2	0.3
D172			7.	-0.5	-0.5	69.	0.2	-0.3
D173			20.	-0.3	-0.3	88.	0.5	0.3
D174			13.	-0.4	-0.4	68.	0.2	-0.2
D175			23.	-0.2	-0.2	59.	0.0	-0.2
D176			13.	-0.4	-0.4	74.	0.3	-0.1
D177	+	+	126.	2.0	2.0	136.	1.3	3.3
D178	*	+	215.	3.8	3.8	160.	1.7	5.5
D179	*	+	174.	3.0	3.0	134.	1.3	4.3
D180	*	+	132.	2.1	2.1	150.	1.5	3.6
D181	+	+	120.	1.8	1.8	138.	1.3	3.2
D182	+	+	82.	1.0	1.0	128.	1.2	2.2
D183	+	+	120.	1.8	1.8	129.	1.2	3.0
D184	*	+	166.	2.8	2.8	170.	1.9	4.7
D185		+	72.	0.8	0.8	138.	1.3	2.2
D186			22.	-0.2	-0.2	79.	0.4	0.1
D187			29.	-0.1	-0.1	111.	0.9	0.8
D188		+	45.	0.3	0.3	144.	1.4	1.7

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
D189		*	66.	0.7	0.7	370.	5.2	5.9
D190		*	70.	0.8	0.8	380.	5.4	6.2
D191		*	26.	-0.1	-0.1	300.	4.0	3.9
D192		*	28.	-0.1	-0.1	245.	3.1	3.0
D193	+	*	113.	1.7	1.7	320.	4.4	6.1
D194		*	60.	0.6	0.6	265.	3.5	4.0
D195		*	58.	0.5	0.5	230.	2.9	3.4
D196		*	54.	0.5	0.5	185.	2.1	2.6
D197		*	45.	0.3	0.3	200.	2.4	2.6
D198		+	53.	0.4	0.4	155.	1.6	2.1
D199			2.	-0.6	-0.6	22.	-0.6	-1.2
M001			44.	0.2	0.2	116.	1.0	1.2
M002	*		160.	2.7	2.7	55.	-0.0	2.6
M003	+		107.	1.6	1.6	95.	0.6	2.2
M004	*		135.	2.2	2.2	89.	0.5	2.7
M005	*	*	370.	7.1	7.1	240.	3.0	10.1
M006			56.	0.5	0.5	77.	0.3	0.8
M007			35.	0.1	0.1	39.	-0.3	-0.2
M008			6.	-0.6	-0.6	70.	0.2	-0.3
M009			8.	-0.5	-0.5	59.	0.0	-0.5
M010			10.	-0.5	-0.5	48.	-0.2	-0.6
M011			3.	-0.6	-0.6	40.	-0.3	-0.9
M012			9.	-0.5	-0.5	57.	-0.0	-0.5
M013			39.	0.1	0.1	45.	-0.2	-0.1
M014	+		93.	1.3	1.3	78.	0.3	1.6
M015	+		81.	1.0	1.0	95.	0.6	1.6
M016		+	63.	0.6	0.6	119.	1.0	1.7
M017			67.	0.7	0.7	90.	0.5	1.3
M018			60.	0.6	0.6	92.	0.6	1.2
M019	+	+	115.	1.7	1.7	120.	1.0	2.8
M020	*		290.	5.4	5.4	37.	-0.3	5.1
M021			67.	0.7	0.7	73.	0.3	1.0
M022			53.	0.4	0.4	75.	0.3	0.7
M023			45.	0.3	0.3	65.	0.1	0.4
M024		+	31.	-0.0	-0.0	137.	1.3	1.3
M025	*	+	153.	2.5	2.5	122.	1.1	3.6
M026			36.	0.1	0.1	63.	0.1	0.2
M027			15.	-0.4	-0.4	83.	0.4	0.1
M028			18.	-0.3	-0.3	46.	-0.2	-0.5
M029			25.	-0.2	-0.2	60.	0.0	-0.1

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DEVIATIONS ARE FROM GEOMETRIC MEAN

SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
M030	+		100.	1.4	1.4	97.	0.7	2.1
M031			49.	0.4	0.4	72.	0.2	0.6
M032	*		146.	2.4	2.4	79.	0.4	2.7
M034			59.	0.6	0.6	50.	-0.1	0.4
M035			70.	0.8	0.8	100.	0.7	1.5
M036			69.	0.8	0.8	90.	0.5	1.3
M037			51.	0.4	0.4	67.	0.2	0.6
M038			25.	-0.2	-0.2	55.	-0.0	-0.2
M039			70.	0.8	0.8	29.	-0.5	0.3
M040			5.	-0.6	-0.6	32.	-0.4	-1.0
M041			27.	-0.1	-0.1	45.	-0.2	-0.3
M042			25.	-0.2	-0.2	40.	-0.3	-0.4
M043			58.	0.5	0.5	32.	-0.4	0.1
M044	+		99.	1.4	1.4	61.	0.1	1.5
M045			59.	0.6	0.6	63.	0.1	0.7
M046			20.	-0.3	-0.3	47.	-0.2	-0.4
M047			47.	0.3	0.3	45.	-0.2	0.1
M048	*		153.	2.5	2.5	55.	-0.0	2.5
M049			25.	-0.2	-0.2	30.	-0.5	-0.6
M050			71.	0.8	0.8	50.	-0.1	0.7
M051			39.	0.1	0.1	50.	-0.1	0.0
M052			56.	0.5	0.5	84.	0.4	0.9
M053			31.	-0.0	-0.0	65.	0.1	0.1
M054			64.	0.7	0.7	75.	0.3	1.0
M055			23.	-0.2	-0.2	70.	0.2	0.0
M056	+		109.	1.6	1.6	74.	0.3	1.9
M057			35.	0.1	0.1	59.	0.0	0.1
M058			51.	0.4	0.4	74.	0.3	0.7
M059	+		83.	1.1	1.1	80.	0.4	1.4
M060			62.	0.6	0.6	25.	-0.5	0.1
M061			68.	0.7	0.7	29.	-0.5	0.3
M062			78.	1.0	1.0	25.	-0.5	0.4
M065			27.	-0.1	-0.1	42.	-0.3	-0.4
M066			21.	-0.2	-0.2	31.	-0.4	-0.7
M067			33.	0.0	0.0	38.	-0.3	-0.3
M068	+		100.	1.4	1.4	47.	-0.2	1.2
M069			24.	-0.2	-0.2	35.	-0.4	-0.5
M070			23.	-0.2	-0.2	65.	0.1	-0.1
M071			35.	0.1	0.1	51.	-0.1	-0.0
M072			29.	-0.1	-0.1	50.	-0.1	-0.2

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
M073			31.	-0.0	-0.0	52.	-0.1	-0.1
M074			15.	-0.4	-0.4	70.	0.2	-0.2
M075	+	+	101.	1.4	1.4	120.	1.0	2.5
M076	*	+	145.	2.4	2.4	127.	1.2	3.5
M077	+		105.	1.5	1.5	30.	-0.5	1.1
M078	+		91.	1.2	1.2	63.	0.1	1.3
M079			72.	0.8	0.8	51.	-0.1	0.7
M101			6.	-0.6	-0.6	29.	-0.5	-1.0
M102			14.	-0.4	-0.4	57.	-0.0	-0.4
M103			10.	-0.5	-0.5	52.	-0.1	-0.6
M104			13.	-0.4	-0.4	66.	0.1	-0.3
M105			13.	-0.4	-0.4	60.	0.0	-0.4
M106			15.	-0.4	-0.4	71.	0.2	-0.1
M107			5.	-0.6	-0.6	35.	-0.4	-0.9
M108			14.	-0.4	-0.4	59.	0.0	-0.4
M109			17.	-0.3	-0.3	66.	0.1	-0.2
M110			9.	-0.5	-0.5	46.	-0.2	-0.7
M111			5.	-0.6	-0.6	31.	-0.4	-1.0
M112			6.	-0.6	-0.6	39.	-0.3	-0.9
M113			3.	-0.6	-0.6	45.	-0.2	-0.8
M114			6.	-0.6	-0.6	66.	0.1	-0.4
M115			2.	-0.6	-0.6	40.	-0.3	-0.9
M116			2.	-0.6	-0.6	41.	-0.3	-0.9
M117			4.	-0.6	-0.6	46.	-0.2	-0.8
M118			5.	-0.6	-0.6	45.	-0.2	-0.8
M119			10.	-0.5	-0.5	66.	0.1	-0.3
M120			65.	0.7	0.7	41.	-0.3	0.4
M121			11.	-0.4	-0.4	68.	0.2	-0.3
M122			60.	0.6	0.6	20.	-0.6	-0.0
M123			3.	-0.6	-0.6	41.	-0.3	-0.9
M124			56.	0.5	0.5	37.	-0.3	0.2
M125			19.	-0.3	-0.3	80.	0.4	0.1
M126			27.	-0.1	-0.1	29.	-0.5	-0.6
M127			5.	-0.6	-0.6	32.	-0.4	-1.0
M128			25.	-0.2	-0.2	89.	0.5	0.4
M129			1.	-0.7	-0.7	17.	-0.7	-1.3
M130			30.	-0.0	-0.0	88.	0.5	0.5
M131			2.	-0.6	-0.6	14.	-0.7	-1.4
M132			5.	-0.6	-0.6	34.	-0.4	-1.0
M133			16.	-0.3	-0.3	90.	0.5	0.2

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
M134			16.	-0.3	-0.3	90.	0.5	0.2
M135			20.	-0.3	-0.3	98.	0.7	0.4
M136			9.	-0.5	-0.5	64.	0.1	-0.4
M137			10.	-0.5	-0.5	61.	0.1	-0.4
M138			3.	-0.6	-0.6	28.	-0.5	-1.1
M141			4.	-0.6	-0.6	40.	-0.3	-0.9
M142			30.	-0.0	-0.0	72.	0.2	0.2
M143			4.	-0.6	-0.6	45.	-0.2	-0.8
M144			16.	-0.3	-0.3	101.	0.7	0.4
M145			9.	-0.5	-0.5	38.	-0.3	-0.8
M146			14.	-0.4	-0.4	50.	-0.1	-0.5
M147			10.	-0.5	-0.5	38.	-0.3	-0.8
M148			11.	-0.4	-0.4	53.	-0.1	-0.5
M149			8.	-0.5	-0.5	44.	-0.2	-0.7
M150			24.	-0.2	-0.2	76.	0.3	0.1
M151			39.	0.1	0.1	71.	0.2	0.4
M152			19.	-0.3	-0.3	70.	0.2	-0.1
M153			28.	-0.1	-0.1	75.	0.3	0.2
M154			57.	0.5	0.5	71.	0.2	0.7
M155			72.	0.8	0.8	56.	-0.0	0.8
M156			31.	-0.0	-0.0	46.	-0.2	-0.2
M157			53.	0.4	0.4	53.	-0.1	0.4
M158		+	40.	0.2	0.2	150.	1.5	1.7
M159			30.	-0.0	-0.0	95.	0.6	0.6
M160			9.	-0.5	-0.5	65.	0.1	-0.4
M161			13.	-0.4	-0.4	94.	0.6	0.2
M162			16.	-0.3	-0.3	71.	0.2	-0.1
M163			30.	-0.0	-0.0	55.	-0.0	-0.1
M164			19.	-0.3	-0.3	50.	-0.1	-0.4
M165			10.	-0.5	-0.5	36.	-0.4	-0.8
M166			24.	-0.2	-0.2	54.	-0.1	-0.2
M167			39.	0.1	0.1	66.	0.1	0.3
M168			31.	-0.0	-0.0	86.	0.5	0.4
M169	+	+	105.	1.5	1.5	146.	1.5	3.0
M170			5.	-0.6	-0.6	9.	-0.8	-1.4
M171			25.	-0.2	-0.2	32.	-0.4	-0.6
M172			31.	-0.0	-0.0	46.	-0.2	-0.2
M173			44.	0.2	0.2	66.	0.1	0.4
M174			79.	1.0	1.0	66.	0.1	1.1
M175			65.	0.7	0.7	59.	0.0	0.7

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	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
M176			16.	-0.3	-0.3	53.	-0.1	-0.4
M177			38.	0.1	0.1	60.	0.0	0.2
M178			41.	0.2	0.2	41.	-0.3	-0.1
M179			49.	0.4	0.4	97.	0.7	1.0
M180			20.	-0.3	-0.3	64.	0.1	-0.1
M181			30.	-0.0	-0.0	98.	0.7	0.6
M182			30.	-0.0	-0.0	86.	0.5	0.4
M183	*		146.	2.4	2.4	39.	-0.3	2.1
M184	+		92.	1.3	1.3	100.	0.7	2.0
M185		+	70.	0.8	0.8	166.	1.8	2.6
M186			59.	0.6	0.6	100.	0.7	1.3
M187			33.	0.0	0.0	81.	0.4	0.4
M188			20.	-0.3	-0.3	59.	0.0	-0.2
M189			43.	0.2	0.2	52.	-0.1	0.1
M190			41.	0.2	0.2	52.	-0.1	0.1
M191			65.	0.7	0.7	89.	0.5	1.2
M192			25.	-0.2	-0.2	70.	0.2	0.1
M193			25.	-0.2	-0.2	87.	0.5	0.3
M194			19.	-0.3	-0.3	64.	0.1	-0.2
M195			19.	-0.3	-0.3	69.	0.2	-0.1
M196			24.	-0.2	-0.2	69.	0.2	0.0
M197			19.	-0.3	-0.3	63.	0.1	-0.2
M201			37.	0.1	0.1	37.	-0.3	-0.2
M202			20.	-0.3	-0.3	63.	0.1	-0.2
M203			43.	0.2	0.2	75.	0.3	0.5
M204			9.	-0.5	-0.5	50.	-0.1	-0.6
M205			19.	-0.3	-0.3	43.	-0.2	-0.5
M206			19.	-0.3	-0.3	64.	0.1	-0.2
M207		+	50.	0.4	0.4	120.	1.0	1.4
M208			9.	-0.5	-0.5	32.	-0.4	-0.9
M209	*		255.	4.7	4.7	75.	0.3	5.0
M210	*		580.	11.5	11.5	115.	1.0	12.5
M212	*		128.	2.0	2.0	43.	-0.2	1.8
M214	*	*	195.	3.4	3.4	275.	3.6	7.0
M215		+	61.	0.6	0.6	128.	1.2	1.8
M216			31.	-0.0	-0.0	62.	0.1	0.0
M217			43.	0.2	0.2	85.	0.5	0.7
M218			36.	0.1	0.1	85.	0.5	0.5
M219	+		105.	1.5	1.5	72.	0.2	1.8
M220			60.	0.6	0.6	97.	0.7	1.2

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
M221	*		133.	2.1	2.1	110.	0.9	3.0
M222	*	*	210.	3.7	3.7	242.	3.1	6.8
M223	*	*	525.	10.3	10.3	530.	7.9	18.2
M224	*	*	360.	6.9	6.9	530.	7.9	14.8
M225	*	*	450.	8.8	8.8	640.	9.7	18.5
M501	*		640.	12.8	12.8	20.	-0.6	12.1
M502	*		560.	11.1	11.1	6.	-0.9	10.2
M504	*		260.	4.8	4.8	2.	-0.9	3.9
M505	+		114.	1.7	1.7	40.	-0.3	1.4
M506	+		116.	1.8	1.8	36.	-0.4	1.4
M507	*		145.	2.4	2.4	48.	-0.2	2.2
M508	+		102.	1.5	1.5	48.	-0.2	1.3
M509	+		102.	1.5	1.5	43.	-0.2	1.2
M510	*		245.	4.5	4.5	59.	0.0	4.5
M511			56.	0.5	0.5	36.	-0.4	0.1
M512			65.	0.7	0.7	44.	-0.2	0.5
M513	+		117.	1.8	1.8	100.	0.7	2.5
M514			73.	0.9	0.9	36.	-0.4	0.5
M515			31.	-0.0	-0.0	80.	0.4	0.3
M516			19.	-0.3	-0.3	38.	-0.3	-0.6
M517			36.	0.1	0.1	34.	-0.4	-0.3
M518			14.	-0.4	-0.4	32.	-0.4	-0.8
M519			39.	0.1	0.1	44.	-0.2	-0.1
M520			22.	-0.2	-0.2	37.	-0.3	-0.6
M521			20.	-0.3	-0.3	36.	-0.4	-0.6
M522			4.	-0.6	-0.6	15.	-0.7	-1.3
M523			24.	-0.2	-0.2	40.	-0.3	-0.5
M524			10.	-0.5	-0.5	32.	-0.4	-0.9
M525			51.	0.4	0.4	37.	-0.3	0.1
M526	+		118.	1.8	1.8	65.	0.1	1.9
M527			6.	-0.6	-0.6	25.	-0.5	-1.1
M528			33.	0.0	0.0	43.	-0.2	-0.2
M529			51.	0.4	0.4	38.	-0.3	0.1
M530	+		95.	1.3	1.3	57.	-0.0	1.3
M531			61.	0.6	0.6	83.	0.4	1.0
M532			6.	-0.6	-0.6	12.	-0.8	-1.3
M533			53.	0.4	0.4	32.	-0.4	0.0
M534			9.	-0.5	-0.5	33.	-0.4	-0.9
M535			6.	-0.6	-0.6	16.	-0.7	-1.2
M536			27.	-0.1	-0.1	20.	-0.6	-0.7

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
M537			9.	-0.5	-0.5	21.	-0.6	-1.1
M538			14.	-0.4	-0.4	18.	-0.7	-1.0
M539			12.	-0.4	-0.4	14.	-0.7	-1.1
M540			11.	-0.4	-0.4	23.	-0.6	-1.0
M541			4.	-0.6	-0.6	10.	-0.8	-1.4
M542			40.	0.2	0.2	20.	-0.6	-0.5
M543		+	17.	-0.3	-0.3	132.	1.2	0.9
M544			19.	-0.3	-0.3	75.	0.3	0.0
M545			17.	-0.3	-0.3	60.	0.0	-0.3
M546	+	+	120.	1.8	1.8	125.	1.1	3.0
M547			19.	-0.3	-0.3	69.	0.2	-0.1
M548			14.	-0.4	-0.4	59.	0.0	-0.4
M549			18.	-0.3	-0.3	91.	0.6	0.3
M550			14.	-0.4	-0.4	109.	0.9	0.5
M551			19.	-0.3	-0.3	66.	0.1	-0.1
M552			9.	-0.5	-0.5	44.	-0.2	-0.7
M553			11.	-0.4	-0.4	54.	-0.1	-0.5
M554		*	37.	0.1	0.1	290.	3.9	4.0
M555			34.	0.0	0.0	101.	0.7	0.8
M556			60.	0.6	0.6	100.	0.7	1.3
M557	+	+	84.	1.1	1.1	142.	1.4	2.5
M558			19.	-0.3	-0.3	100.	0.7	0.4
M559			25.	-0.2	-0.2	45.	-0.2	-0.4
M560			16.	-0.3	-0.3	50.	-0.1	-0.5
M561		+	18.	-0.3	-0.3	120.	1.0	0.7
M562			14.	-0.4	-0.4	78.	0.3	-0.0
M563		+	26.	-0.1	-0.1	145.	1.5	1.3
M564			13.	-0.4	-0.4	68.	0.2	-0.2
M565			10.	-0.5	-0.5	60.	0.0	-0.4
M566			11.	-0.4	-0.4	65.	0.1	-0.3
M567			35.	0.1	0.1	70.	0.2	0.3
M568			39.	0.1	0.1	69.	0.2	0.3
M569			31.	-0.0	-0.0	81.	0.4	0.4
M570			50.	0.4	0.4	94.	0.6	1.0
M571			29.	-0.1	-0.1	69.	0.2	0.1
M572			27.	-0.1	-0.1	75.	0.3	0.2
M573			29.	-0.1	-0.1	75.	0.3	0.2
M574			32.	-0.0	-0.0	91.	0.6	0.6
M575			62.	0.6	0.6	92.	0.6	1.2
M576			37.	0.1	0.1	54.	-0.1	0.0

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	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
M577			39.	0.1	0.1	91.	0.6	0.7
M578			44.	0.2	0.2	81.	0.4	0.6
M579			44.	0.2	0.2	75.	0.3	0.5
M580			35.	0.1	0.1	77.	0.3	0.4
M581			24.	-0.2	-0.2	76.	0.3	0.1
M582			40.	0.2	0.2	84.	0.4	0.6
M583			20.	-0.3	-0.3	51.	-0.1	-0.4
M584		+	36.	0.1	0.1	120.	1.0	1.1
M585			26.	-0.1	-0.1	94.	0.6	0.5
M586			26.	-0.1	-0.1	77.	0.3	0.2
M587			26.	-0.1	-0.1	70.	0.2	0.1
M588			14.	-0.4	-0.4	59.	0.0	-0.4
M589			19.	-0.3	-0.3	59.	0.0	-0.3
M590			30.	-0.0	-0.0	64.	0.1	0.1
M591			21.	-0.2	-0.2	59.	0.0	-0.2
M592			19.	-0.3	-0.3	72.	0.2	-0.0
M593			15.	-0.4	-0.4	53.	-0.1	-0.4
M594			15.	-0.4	-0.4	54.	-0.1	-0.4
M595			16.	-0.3	-0.3	44.	-0.2	-0.6
M596			28.	-0.1	-0.1	54.	-0.1	-0.1
M597			20.	-0.3	-0.3	54.	-0.1	-0.3
M598			15.	-0.4	-0.4	59.	0.0	-0.3
M599			17.	-0.3	-0.3	45.	-0.2	-0.5
M600			20.	-0.3	-0.3	48.	-0.2	-0.4
M601			14.	-0.4	-0.4	53.	-0.1	-0.5
M602			51.	0.4	0.4	72.	0.2	0.6
M603			19.	-0.3	-0.3	44.	-0.2	-0.5
M604			19.	-0.3	-0.3	66.	0.1	-0.1
M605			35.	0.1	0.1	64.	0.1	0.2
M606			18.	-0.3	-0.3	86.	0.5	0.2
M607			25.	-0.2	-0.2	87.	0.5	0.3
M608		+	32.	-0.0	-0.0	122.	1.1	1.1
M609			23.	-0.2	-0.2	98.	0.7	0.5
M610			20.	-0.3	-0.3	117.	1.0	0.7
M611		+	61.	0.6	0.6	157.	1.7	2.3
M612			20.	-0.3	-0.3	103.	0.8	0.5
M613			33.	0.0	0.0	105.	0.8	0.8
M614			11.	-0.4	-0.4	52.	-0.1	-0.5
M615			22.	-0.2	-0.2	88.	0.5	0.3
M616			26.	-0.1	-0.1	90.	0.5	0.4

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
M617			12.	-0.4	-0.4	49.	-0.1	-0.6
M618			45.	0.3	0.3	77.	0.3	0.6
M619			39.	0.1	0.1	72.	0.2	0.4
M620	*	*	149.	2.5	2.5	258.	3.3	5.8
M621	+		83.	1.1	1.1	75.	0.3	1.4
M622	*	+	202.	3.6	3.6	152.	1.6	5.1
M623	+		85.	1.1	1.1	90.	0.5	1.6
M624	+		106.	1.5	1.5	95.	0.6	2.2
M625	+		86.	1.1	1.1	85.	0.5	1.6
M626		*	29.	-0.1	-0.1	270.	3.5	3.5
M627			40.	0.2	0.2	91.	0.6	0.7
M628	*	*	850.	17.2	17.2	550.	8.2	25.4
M630			50.	0.4	0.4	12.	-0.8	-0.4
M631			73.	0.9	0.9	12.	-0.8	0.1
M632			35.	0.1	0.1	72.	0.2	0.3
M704			10.	-0.5	-0.5	98.	0.7	0.2
M705	*	*	210.	3.7	3.7	241.	3.1	6.8
M706			50.	0.4	0.4	40.	-0.3	0.1
M707			47.	0.3	0.3	40.	-0.3	0.0
M708			38.	0.1	0.1	40.	-0.3	-0.2
M709			22.	-0.2	-0.2	40.	-0.3	-0.5
M710			36.	0.1	0.1	40.	-0.3	-0.2
M711			24.	-0.2	-0.2	40.	-0.3	-0.5
M712			27.	-0.1	-0.1	40.	-0.3	-0.4
M713			15.	-0.4	-0.4	45.	-0.2	-0.6
M714			26.	-0.1	-0.1	58.	0.0	-0.1
M715			33.	0.0	0.0	64.	0.1	0.1
M716			10.	-0.5	-0.5	44.	-0.2	-0.7
M717		+	54.	0.5	0.5	126.	1.1	1.6
M718			41.	0.2	0.2	64.	0.1	0.3
M719			34.	0.0	0.0	82.	0.4	0.4
M720			11.	-0.4	-0.4	64.	0.1	-0.3
M721			14.	-0.4	-0.4	63.	0.1	-0.3
M722			29.	-0.1	-0.1	100.	0.7	0.6
M723	+		108.	1.6	1.6	69.	0.2	1.8
M724			14.	-0.4	-0.4	64.	0.1	-0.3
M725			1.	-0.7	-0.7	26.	-0.5	-1.2
M726			30.	-0.0	-0.0	99.	0.7	0.6
M727			21.	-0.2	-0.2	90.	0.5	0.3
M728			15.	-0.4	-0.4	61.	0.1	-0.3

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
M729			29.	-0.1	-0.1	74.	0.3	0.2
M730			4.	-0.6	-0.6	46.	-0.2	-0.8
M731			9.	-0.5	-0.5	65.	0.1	-0.4
M732			49.	0.4	0.4	50.	-0.1	0.2
M733			19.	-0.3	-0.3	35.	-0.4	-0.7
M734			7.	-0.5	-0.5	15.	-0.7	-1.2
M735			35.	0.1	0.1	30.	-0.5	-0.4
M736			25.	-0.2	-0.2	35.	-0.4	-0.5
M737			7.	-0.5	-0.5	70.	0.2	-0.3
M738			74.	0.9	0.9	92.	0.6	1.5
M739			41.	0.2	0.2	30.	-0.5	-0.3
M740			14.	-0.4	-0.4	45.	-0.2	-0.6
M741			6.	-0.6	-0.6	24.	-0.6	-1.1
M742	+		94.	1.3	1.3	42.	-0.3	1.0
M743			45.	0.3	0.3	37.	-0.3	-0.1
M744			20.	-0.3	-0.3	34.	-0.4	-0.6
S8001			50.	0.4	0.4	71.	0.2	0.6
S8002		+	60.	0.6	0.6	140.	1.4	2.0
S8003		+	30.	-0.0	-0.0	140.	1.4	1.3
S8004		+	50.	0.4	0.4	120.	1.0	1.4
S8005	+	*	85.	1.1	1.1	320.	4.4	5.5
S8006		+	35.	0.1	0.1	153.	1.6	1.6
S8007			30.	-0.0	-0.0	70.	0.2	0.2
S8008	+		87.	1.1	1.1	69.	0.2	1.3
S8009		*	53.	0.4	0.4	260.	3.4	3.8
S8010			31.	-0.0	-0.0	107.	0.8	0.8
S8011	+	+	86.	1.1	1.1	140.	1.4	2.5
S8012			26.	-0.1	-0.1	111.	0.9	0.8
S8013			27.	-0.1	-0.1	103.	0.8	0.6
S8014			40.	0.2	0.2	65.	0.1	0.3
S8015			25.	-0.2	-0.2	70.	0.2	0.1
S8016			30.	-0.0	-0.0	70.	0.2	0.2
S8017		+	40.	0.2	0.2	146.	1.5	1.6
S8018			38.	0.1	0.1	45.	-0.2	-0.1
S8019			45.	0.3	0.3	70.	0.2	0.5
S8020			25.	-0.2	-0.2	50.	-0.1	-0.3
S8021			30.	-0.0	-0.0	89.	0.5	0.5
S8022			25.	-0.2	-0.2	40.	-0.3	-0.4
S8023			40.	0.2	0.2	48.	-0.2	0.0
S8024			50.	0.4	0.4	40.	-0.3	0.1

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
S8025			25.	-0.2	-0.2	40.	-0.3	-0.4
S8026			36.	0.1	0.1	40.	-0.3	-0.2
S8027			25.	-0.2	-0.2	40.	-0.3	-0.4
S8028			30.	-0.0	-0.0	40.	-0.3	-0.3
S8029			25.	-0.2	-0.2	40.	-0.3	-0.4
S8030			36.	0.1	0.1	40.	-0.3	-0.2
S8031			33.	0.0	0.0	40.	-0.3	-0.3
S8032			45.	0.3	0.3	40.	-0.3	-0.0
S8033	+		86.	1.1	1.1	40.	-0.3	0.8
S8034			40.	0.2	0.2	40.	-0.3	-0.1
S8035			60.	0.6	0.6	40.	-0.3	0.3
S8036	*		134.	2.1	2.1	40.	-0.3	1.8
S8037	+		102.	1.5	1.5	40.	-0.3	1.2
S8038			16.	-0.3	-0.3	40.	-0.3	-0.6
S8039			70.	0.8	0.8	40.	-0.3	0.5
S8040			50.	0.4	0.4	30.	-0.5	-0.1
S8041			62.	0.6	0.6	32.	-0.4	0.2
S8042			36.	0.1	0.1	32.	-0.4	-0.3
S8043			18.	-0.3	-0.3	29.	-0.5	-0.8
S8043			40.	0.2	0.2	35.	-0.4	-0.2
S8044			16.	-0.3	-0.3	31.	-0.4	-0.8
S8045			9.	-0.5	-0.5	20.	-0.6	-1.1
S8046			16.	-0.3	-0.3	20.	-0.6	-1.0
S8047			20.	-0.3	-0.3	39.	-0.3	-0.6
S8048			10.	-0.5	-0.5	21.	-0.6	-1.1
S8049			6.	-0.6	-0.6	24.	-0.6	-1.1
S8050			20.	-0.3	-0.3	26.	-0.5	-0.8
S8051			6.	-0.6	-0.6	45.	-0.2	-0.8
S8052			10.	-0.5	-0.5	60.	0.0	-0.4
S8053			10.	-0.5	-0.5	55.	-0.0	-0.5
S8054			10.	-0.5	-0.5	59.	0.0	-0.4
S8055			10.	-0.5	-0.5	50.	-0.1	-0.6
S8056			10.	-0.5	-0.5	110.	0.9	0.4
S8057			4.	-0.6	-0.6	81.	0.4	-0.2
S8058			10.	-0.5	-0.5	72.	0.2	-0.2
S8059			10.	-0.5	-0.5	54.	-0.1	-0.5
S8060			10.	-0.5	-0.5	70.	0.2	-0.3
S8061			10.	-0.5	-0.5	45.	-0.2	-0.7
S8062		*	10.	-0.5	-0.5	280.	3.7	3.2
S8063			10.	-0.5	-0.5	67.	0.2	-0.3

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
S8064			8.	-0.5	-0.5	16.	-0.7	-1.2
S8065			15.	-0.4	-0.4	34.	-0.4	-0.8
S8066		*	45.	0.3	0.3	700.	10.7	11.0
S8067		*	44.	0.2	0.2	720.	11.0	11.3
S8068		*	59.	0.6	0.6	700.	10.7	11.3
S8069		*	50.	0.4	0.4	265.	3.5	3.8
S8070		*	45.	0.3	0.3	200.	2.4	2.6
S8071		*	71.	0.8	0.8	4100.	67.3	68.2
S8072			21.	-0.2	-0.2	61.	0.1	-0.2
S8073		*	52.	0.4	0.4	3500.	57.3	57.8
S8074			1.	-0.7	-0.7	44.	-0.2	-0.9
S8075			10.	-0.5	-0.5	58.	0.0	-0.5
S8076			5.	-0.6	-0.6	50.	-0.1	-0.7
S8077	+		89.	1.2	1.2	110.	0.9	2.1
S8078			10.	-0.5	-0.5	17.	-0.7	-1.1
S8079			4.	-0.6	-0.6	17.	-0.7	-1.3
S8080			5.	-0.6	-0.6	20.	-0.6	-1.2
S8081			2.	-0.6	-0.6	15.	-0.7	-1.3
S8082			2.	-0.6	-0.6	11.	-0.8	-1.4
S8083	+		108.	1.6	1.6	80.	0.4	2.0
S8084			19.	-0.3	-0.3	20.	-0.6	-0.9
S8085			32.	-0.0	-0.0	30.	-0.5	-0.5
S8086			19.	-0.3	-0.3	30.	-0.5	-0.7
S8087			24.	-0.2	-0.2	76.	0.3	0.1
S8088		+	50.	0.4	0.4	125.	1.1	1.5
S8089			39.	0.1	0.1	44.	-0.2	-0.1
S8090			49.	0.4	0.4	92.	0.6	0.9
S8091			44.	0.2	0.2	84.	0.4	0.7
S8092			59.	0.6	0.6	76.	0.3	0.9
S8093			7.	-0.5	-0.5	67.	0.2	-0.4
S8094			10.	-0.5	-0.5	102.	0.7	0.3
S8095			36.	0.1	0.1	115.	1.0	1.0
S8096			30.	-0.0	-0.0	60.	0.0	-0.0
S8097		+	30.	-0.0	-0.0	130.	1.2	1.2
S8098			34.	0.0	0.0	84.	0.4	0.5
S8099			29.	-0.1	-0.1	66.	0.1	0.1
S8100			29.	-0.1	-0.1	95.	0.6	0.6
S8101			20.	-0.3	-0.3	85.	0.5	0.2
S8102			33.	0.0	0.0	15.	-0.7	-0.7
S8103			25.	-0.2	-0.2	20.	-0.6	-0.8

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	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
S8104			25.	-0.2	-0.2	25.	-0.5	-0.7
S8105			19.	-0.3	-0.3	13.	-0.7	-1.0
S8106			25.	-0.2	-0.2	12.	-0.8	-0.9
S8107			25.	-0.2	-0.2	15.	-0.7	-0.9
S8108			18.	-0.3	-0.3	24.	-0.6	-0.9
S8109	+		114.	1.7	1.7	80.	0.4	2.1
S8110			11.	-0.4	-0.4	43.	-0.2	-0.7
S8111			12.	-0.4	-0.4	46.	-0.2	-0.6
S8112			5.	-0.6	-0.6	20.	-0.6	-1.2
S8113			5.	-0.6	-0.6	20.	-0.6	-1.2
S8114			27.	-0.1	-0.1	70.	0.2	0.1
S8115			6.	-0.6	-0.6	20.	-0.6	-1.2
S8116			26.	-0.1	-0.1	30.	-0.5	-0.6
S8117			56.	0.5	0.5	45.	-0.2	0.3
S8118			20.	-0.3	-0.3	24.	-0.6	-0.8
S8119			52.	0.4	0.4	42.	-0.3	0.2
S8120			45.	0.3	0.3	35.	-0.4	-0.1
S8121			70.	0.8	0.8	50.	-0.1	0.7
S8122			22.	-0.2	-0.2	37.	-0.3	-0.6
S8123			64.	0.7	0.7	31.	-0.4	0.2
S8124			30.	-0.0	-0.0	33.	-0.4	-0.5
S8125			55.	0.5	0.5	31.	-0.4	0.0
S8126			20.	-0.3	-0.3	25.	-0.5	-0.8
S8127			20.	-0.3	-0.3	18.	-0.7	-0.9
S8128			16.	-0.3	-0.3	20.	-0.6	-1.0
S8129			41.	0.2	0.2	22.	-0.6	-0.4
S8130			15.	-0.4	-0.4	14.	-0.7	-1.1
K014			16.	-0.3	-0.3	31.	-0.4	-0.8
K015			19.	-0.3	-0.3	32.	-0.4	-0.7
K016			20.	-0.3	-0.3	100.	0.7	0.5
K017			17.	-0.3	-0.3	22.	-0.6	-0.9
K018			6.	-0.6	-0.6	36.	-0.4	-0.9
K019			13.	-0.4	-0.4	25.	-0.5	-0.9
K020			34.	0.0	0.0	53.	-0.1	-0.0
K021			30.	-0.0	-0.0	75.	0.3	0.2
K022			22.	-0.2	-0.2	55.	-0.0	-0.3
K023			24.	-0.2	-0.2	60.	0.0	-0.1
K024			15.	-0.4	-0.4	48.	-0.2	-0.5
K025			20.	-0.3	-0.3	70.	0.2	-0.0
K026			6.	-0.6	-0.6	19.	-0.6	-1.2

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
K027			23.	-0.2	-0.2	59.	0.0	-0.2
K028			14.	-0.4	-0.4	59.	0.0	-0.4
K030			10.	-0.5	-0.5	108.	0.8	0.4
K031			11.	-0.4	-0.4	91.	0.6	0.1
K032		+	14.	-0.4	-0.4	132.	1.2	0.9
K033			9.	-0.5	-0.5	61.	0.1	-0.4
K034			19.	-0.3	-0.3	102.	0.7	0.5
K035			18.	-0.3	-0.3	70.	0.2	-0.1
K036			18.	-0.3	-0.3	66.	0.1	-0.2
K037			15.	-0.4	-0.4	75.	0.3	-0.1
K038			14.	-0.4	-0.4	115.	1.0	0.6
K039			11.	-0.4	-0.4	54.	-0.1	-0.5
K040			9.	-0.5	-0.5	68.	0.2	-0.3
K041			10.	-0.5	-0.5	49.	-0.1	-0.6
K042			20.	-0.3	-0.3	77.	0.3	0.1
K043			10.	-0.5	-0.5	54.	-0.1	-0.5
K044			11.	-0.4	-0.4	75.	0.3	-0.2
K045			14.	-0.4	-0.4	63.	0.1	-0.3
K046			19.	-0.3	-0.3	82.	0.4	0.1
K047			10.	-0.5	-0.5	51.	-0.1	-0.6
K048			10.	-0.5	-0.5	110.	0.9	0.4
K049		*	9.	-0.5	-0.5	230.	2.9	2.4
K050		*	13.	-0.4	-0.4	325.	4.5	4.1
K051		*	76.	0.9	0.9	345.	4.8	5.7
K052		*	64.	0.7	0.7	455.	6.6	7.3
K053			70.	0.8	0.8	96.	0.6	1.4
K054			26.	-0.1	-0.1	52.	-0.1	-0.2
K055		+	61.	0.6	0.6	150.	1.5	2.1
K056	+	*	104.	1.5	1.5	325.	4.5	6.0
K057	*	*	160.	2.7	2.7	460.	6.7	9.4
K058		+	6.	-0.6	-0.6	143.	1.4	0.9
K059		+	10.	-0.5	-0.5	126.	1.1	0.7
K060			10.	-0.5	-0.5	97.	0.7	0.2
K061			5.	-0.6	-0.6	75.	0.3	-0.3
K062			10.	-0.5	-0.5	75.	0.3	-0.2
K063			8.	-0.5	-0.5	98.	0.7	0.2
K064			7.	-0.5	-0.5	86.	0.5	-0.1
K065			7.	-0.5	-0.5	91.	0.6	0.0
K066			38.	0.1	0.1	75.	0.3	0.4
K067			26.	-0.1	-0.1	98.	0.7	0.5

TOODOGGONE REGIONAL GEOCHEMISTRY

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DEVIATIONS ARE FROM GEOMETRIC MEAN

SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
K068			36.	0.1	0.1	107.	0.8	0.9
K069			22.	-0.2	-0.2	95.	0.6	0.4
K070			34.	0.0	0.0	98.	0.7	0.7
K071		+	32.	-0.0	-0.0	127.	1.2	1.2
K072	*	*	165.	2.8	2.8	1100.	17.4	20.2
K073	*	*	148.	2.4	2.4	890.	13.9	16.3
K074	*	*	820.	16.5	16.5	1300.	20.7	37.2
K075	+	*	97.	1.4	1.4	2500.	40.7	42.0
K076	*	*	154.	2.6	2.6	800.	12.4	14.9
K077	+	*	110.	1.6	1.6	500.	7.4	9.0
K078		*	47.	0.3	0.3	450.	6.5	6.8
K079			13.	-0.4	-0.4	88.	0.5	0.1
K080	*	*	750.	15.1	15.1	800.	12.4	27.4
K081	*	*	1350.	27.7	27.7	210.	2.5	30.2
K082	*	+	3200.	66.5	66.5	118.	1.0	67.5
K083			3.	-0.6	-0.6	39.	-0.3	-0.9
K084		+	16.	-0.3	-0.3	145.	1.5	1.1
K085			19.	-0.3	-0.3	100.	0.7	0.4
K086		*	59.	0.6	0.6	1150.	18.2	18.8
L001		*	44.	0.2	0.2	185.	2.1	2.4
L002		*	21.	-0.2	-0.2	180.	2.0	1.8
L003			18.	-0.3	-0.3	95.	0.6	0.3
L004			19.	-0.3	-0.3	96.	0.6	0.4
L005			32.	-0.0	-0.0	60.	0.0	0.0
L006			8.	-0.5	-0.5	20.	-0.6	-1.1
L007			16.	-0.3	-0.3	34.	-0.4	-0.7
L008			7.	-0.5	-0.5	22.	-0.6	-1.1
L009			11.	-0.4	-0.4	25.	-0.5	-1.0
L010			13.	-0.4	-0.4	31.	-0.4	-0.8
L011	*		143.	2.3	2.3	44.	-0.2	2.1
L012			6.	-0.6	-0.6	20.	-0.6	-1.2
L013			5.	-0.6	-0.6	16.	-0.7	-1.3
L014			7.	-0.5	-0.5	20.	-0.6	-1.2
L016			4.	-0.6	-0.6	35.	-0.4	-1.0
L017			19.	-0.3	-0.3	45.	-0.2	-0.5
L018			24.	-0.2	-0.2	59.	0.0	-0.1
L019			9.	-0.5	-0.5	40.	-0.3	-0.8
L020			9.	-0.5	-0.5	26.	-0.5	-1.0
L021			8.	-0.5	-0.5	43.	-0.2	-0.8
L022			12.	-0.4	-0.4	44.	-0.2	-0.6

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
L023			67.	0.7	0.7	78.	0.3	1.1
L024			37.	0.1	0.1	66.	0.1	0.2
L025			49.	0.4	0.4	85.	0.5	0.8
L026			39.	0.1	0.1	73.	0.3	0.4
L027			51.	0.4	0.4	100.	0.7	1.1
L028			61.	0.6	0.6	67.	0.2	0.8
L029			41.	0.2	0.2	84.	0.4	0.6
L030			35.	0.1	0.1	110.	0.9	0.9
L031			32.	-0.0	-0.0	74.	0.3	0.3
L032		+	40.	0.2	0.2	121.	1.1	1.2
L033			30.	-0.0	-0.0	76.	0.3	0.3
L034			30.	-0.0	-0.0	69.	0.2	0.1
L035			9.	-0.5	-0.5	56.	-0.0	-0.5
L036			32.	-0.0	-0.0	115.	1.0	1.0
L037			41.	0.2	0.2	99.	0.7	0.9
L038			2.	-0.6	-0.6	39.	-0.3	-0.9
L039			4.	-0.6	-0.6	31.	-0.4	-1.0
L040			63.	0.6	0.6	60.	0.0	0.7
L041			22.	-0.2	-0.2	26.	-0.5	-0.7
L042			26.	-0.1	-0.1	41.	-0.3	-0.4
L043			37.	0.1	0.1	57.	-0.0	0.1
L044			32.	-0.0	-0.0	50.	-0.1	-0.1
L045			34.	0.0	0.0	31.	-0.4	-0.4
L046			40.	0.2	0.2	30.	-0.5	-0.3
L047			20.	-0.3	-0.3	47.	-0.2	-0.4
L048			22.	-0.2	-0.2	25.	-0.5	-0.8
L049			25.	-0.2	-0.2	36.	-0.4	-0.5
L050			19.	-0.3	-0.3	34.	-0.4	-0.7
L052			30.	-0.0	-0.0	42.	-0.3	-0.3
L053			27.	-0.1	-0.1	35.	-0.4	-0.5
L054			29.	-0.1	-0.1	34.	-0.4	-0.5
L059			12.	-0.4	-0.4	11.	-0.8	-1.2
L060			25.	-0.2	-0.2	25.	-0.5	-0.7
L061			20.	-0.3	-0.3	48.	-0.2	-0.4
L062			8.	-0.5	-0.5	14.	-0.7	-1.2
L063			14.	-0.4	-0.4	33.	-0.4	-0.8
L064			12.	-0.4	-0.4	48.	-0.2	-0.6
L065			14.	-0.4	-0.4	42.	-0.3	-0.6
L066			8.	-0.5	-0.5	18.	-0.7	-1.2
L067			19.	-0.3	-0.3	25.	-0.5	-0.8

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
L068			5.	-0.6	-0.6	13.	-0.7	-1.3
L069			19.	-0.3	-0.3	30.	-0.5	-0.7
L070			16.	-0.3	-0.3	35.	-0.4	-0.7
L071			9.	-0.5	-0.5	30.	-0.5	-0.9
L072			69.	0.8	0.8	50.	-0.1	0.6
L073			27.	-0.1	-0.1	23.	-0.6	-0.7
L074			35.	0.1	0.1	29.	-0.5	-0.4
L075			75.	0.9	0.9	37.	-0.3	0.6
L076			52.	0.4	0.4	35.	-0.4	0.0
L077			70.	0.8	0.8	62.	0.1	0.9
L078	*		144.	2.3	2.3	62.	0.1	2.4
L079	*		155.	2.6	2.6	58.	0.0	2.6
L080			71.	0.8	0.8	33.	-0.4	0.4
L081			59.	0.6	0.6	53.	-0.1	0.5
L082	*		145.	2.4	2.4	50.	-0.1	2.2
L083			11.	-0.4	-0.4	36.	-0.4	-0.8
L084			21.	-0.2	-0.2	36.	-0.4	-0.6
L085			3.	-0.6	-0.6	42.	-0.3	-0.9
L086			45.	0.3	0.3	30.	-0.5	-0.2
L087			60.	0.6	0.6	80.	0.4	1.0
L088			31.	-0.0	-0.0	35.	-0.4	-0.4
L089			6.	-0.6	-0.6	15.	-0.7	-1.3
L090	+		94.	1.3	1.3	35.	-0.4	0.9
L991			43.	0.2	0.2	25.	-0.5	-0.3
L091			36.	0.1	0.1	20.	-0.6	-0.5
L992			44.	0.2	0.2	52.	-0.1	0.2
L092			40.	0.2	0.2	21.	-0.6	-0.4
L093			44.	0.2	0.2	20.	-0.6	-0.4
L094			2.	-0.6	-0.6	39.	-0.3	-0.9
L095			8.	-0.5	-0.5	50.	-0.1	-0.6
L098			2.	-0.6	-0.6	31.	-0.4	-1.1
L099			8.	-0.5	-0.5	63.	0.1	-0.4
L100			35.	0.1	0.1	37.	-0.3	-0.3
L101			39.	0.1	0.1	59.	0.0	0.2
L102			34.	0.0	0.0	59.	0.0	0.1
L103			38.	0.1	0.1	31.	-0.4	-0.3
L104			1.	-0.7	-0.7	14.	-0.7	-1.4
L105			2.	-0.6	-0.6	11.	-0.8	-1.4
L106			7.	-0.5	-0.5	22.	-0.6	-1.1
L107			5.	-0.6	-0.6	25.	-0.5	-1.1

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
L108			8.	-0.5	-0.5	22.	-0.6	-1.1
L109			6.	-0.6	-0.6	20.	-0.6	-1.2
L110		+	41.	0.2	0.2	155.	1.6	1.8
L111			24.	-0.2	-0.2	90.	0.5	0.4
L112		+	31.	-0.0	-0.0	123.	1.1	1.1
L113			17.	-0.3	-0.3	50.	-0.1	-0.4
L114			11.	-0.4	-0.4	39.	-0.3	-0.8
L115			8.	-0.5	-0.5	30.	-0.5	-1.0
L116			13.	-0.4	-0.4	64.	0.1	-0.3
L117			25.	-0.2	-0.2	76.	0.3	0.2
L118		+	33.	0.0	0.0	148.	1.5	1.5
L119			22.	-0.2	-0.2	63.	0.1	-0.1
L120			22.	-0.2	-0.2	41.	-0.3	-0.5
L121			25.	-0.2	-0.2	51.	-0.1	-0.3
L122			26.	-0.1	-0.1	72.	0.2	0.1
L123			34.	0.0	0.0	89.	0.5	0.6
L124			28.	-0.1	-0.1	87.	0.5	0.4
L125			32.	-0.0	-0.0	86.	0.5	0.5
L126			27.	-0.1	-0.1	98.	0.7	0.6
L127		+	22.	-0.2	-0.2	140.	1.4	1.2
L128			38.	0.1	0.1	76.	0.3	0.4
L129			47.	0.3	0.3	73.	0.3	0.6
L130			70.	0.8	0.8	84.	0.4	1.2
L131			66.	0.7	0.7	65.	0.1	0.8
L132			70.	0.8	0.8	78.	0.3	1.1
L133	*		161.	2.7	2.7	76.	0.3	3.0
L134			47.	0.3	0.3	68.	0.2	0.5
L135			40.	0.2	0.2	77.	0.3	0.5
L136			53.	0.4	0.4	56.	-0.0	0.4
L137			30.	-0.0	-0.0	40.	-0.3	-0.3
L138			45.	0.3	0.3	62.	0.1	0.3
L139			38.	0.1	0.1	65.	0.1	0.2
L140			35.	0.1	0.1	80.	0.4	0.4
L141			13.	-0.4	-0.4	59.	0.0	-0.4
L142			13.	-0.4	-0.4	38.	-0.3	-0.7
L143			29.	-0.1	-0.1	76.	0.3	0.2
L144			19.	-0.3	-0.3	48.	-0.2	-0.4
L145			26.	-0.1	-0.1	68.	0.2	0.0
L146			22.	-0.2	-0.2	63.	0.1	-0.1
L147			9.	-0.5	-0.5	36.	-0.4	-0.8

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
L148			13.	-0.4	-0.4	34.	-0.4	-0.8
L149			19.	-0.3	-0.3	47.	-0.2	-0.5
L150		*	31.	-0.0	-0.0	500.	7.4	7.3
L151		*	57.	0.5	0.5	775.	12.0	12.5
L152		*	51.	0.4	0.4	220.	2.7	3.1
L153		*	28.	-0.1	-0.1	262.	3.4	3.3
L155		*	33.	0.0	0.0	222.	2.7	2.8
L156	+	*	100.	1.4	1.4	725.	11.1	12.5
L156		*	26.	-0.1	-0.1	239.	3.0	2.9
L158	+	*	123.	1.9	1.9	650.	9.9	11.8
L159		+	70.	0.8	0.8	163.	1.8	2.6
L160		*	71.	0.8	0.8	257.	3.3	4.1
L161	+	*	84.	1.1	1.1	975.	15.3	16.4
L162	+	*	119.	1.8	1.8	850.	13.2	15.0
L163	+	*	98.	1.4	1.4	875.	13.6	15.0
L164	+	*	109.	1.6	1.6	1475.	23.6	25.2
L165		*	75.	0.9	0.9	1300.	20.7	21.6
L166			57.	0.5	0.5	66.	0.1	0.7
L167	+	*	85.	1.1	1.1	400.	5.7	6.8
L169	+	*	101.	1.4	1.4	950.	14.9	16.3
L501	*		300.	5.6	5.6	25.	-0.5	5.1
L502	*		207.	3.7	3.7	54.	-0.1	3.6
L503	*		183.	3.2	3.2	29.	-0.5	2.7
L504	*		950.	19.3	19.3	63.	0.1	19.4
L505			12.	-0.4	-0.4	26.	-0.5	-0.9
L506			13.	-0.4	-0.4	18.	-0.7	-1.1
L507	*		670.	13.4	13.4	59.	0.0	13.4
L508			63.	0.6	0.6	30.	-0.5	0.2
L509	*		210.	3.7	3.7	26.	-0.5	3.2
L510			24.	-0.2	-0.2	15.	-0.7	-0.9
L511			13.	-0.4	-0.4	36.	-0.4	-0.8
L512			28.	-0.1	-0.1	60.	0.0	-0.0
L513			50.	0.4	0.4	89.	0.5	0.9
L514			44.	0.2	0.2	86.	0.5	0.7
L515			56.	0.5	0.5	70.	0.2	0.7
L516			41.	0.2	0.2	74.	0.3	0.5
L517			16.	-0.3	-0.3	71.	0.2	-0.1
L518			60.	0.6	0.6	70.	0.2	0.8
L519			27.	-0.1	-0.1	69.	0.2	0.1
L520			50.	0.4	0.4	75.	0.3	0.7

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
L521			40.	0.2	0.2	55.	-0.0	0.1
L522			40.	0.2	0.2	82.	0.4	0.6
L523			28.	-0.1	-0.1	40.	-0.3	-0.4
L524			42.	0.2	0.2	60.	0.0	0.2
L525	+		113.	1.7	1.7	85.	0.5	2.2
L526			58.	0.5	0.5	63.	0.1	0.6
L527			5.	-0.6	-0.6	44.	-0.2	-0.8
L528			6.	-0.6	-0.6	60.	0.0	-0.5
L529			1.	-0.7	-0.7	42.	-0.3	-0.9
L530			5.	-0.6	-0.6	61.	0.1	-0.5
L531			2.	-0.6	-0.6	25.	-0.5	-1.2
L532			73.	0.9	0.9	64.	0.1	1.0
L533			7.	-0.5	-0.5	32.	-0.4	-1.0
L534			8.	-0.5	-0.5	30.	-0.5	-1.0
L535			16.	-0.3	-0.3	35.	-0.4	-0.7
L536			7.	-0.5	-0.5	36.	-0.4	-0.9
L537			5.	-0.6	-0.6	23.	-0.6	-1.1
L538		+	76.	0.9	0.9	127.	1.2	2.1
L539	+	+	109.	1.6	1.6	135.	1.3	2.9
L540			22.	-0.2	-0.2	49.	-0.1	-0.4
L541		+	40.	0.2	0.2	160.	1.7	1.9
L542	+		95.	1.3	1.3	87.	0.5	1.8
L543			11.	-0.4	-0.4	40.	-0.3	-0.7
L544			25.	-0.2	-0.2	66.	0.1	-0.0
L545			30.	-0.0	-0.0	40.	-0.3	-0.3
L546	+		85.	1.1	1.1	42.	-0.3	0.9
L547			59.	0.6	0.6	55.	-0.0	0.5
L548			59.	0.6	0.6	34.	-0.4	0.2
L549	+		81.	1.0	1.0	76.	0.3	1.3
L550			41.	0.2	0.2	33.	-0.4	-0.2
L551			29.	-0.1	-0.1	29.	-0.5	-0.5
L552			27.	-0.1	-0.1	45.	-0.2	-0.3
L553			49.	0.4	0.4	33.	-0.4	-0.1
L554			49.	0.4	0.4	33.	-0.4	-0.1
L555			39.	0.1	0.1	35.	-0.4	-0.2
L556			65.	0.7	0.7	34.	-0.4	0.3
L557	+		84.	1.1	1.1	35.	-0.4	0.7
L558			73.	0.9	0.9	46.	-0.2	0.7
L559			53.	0.4	0.4	28.	-0.5	-0.1
L560			30.	-0.0	-0.0	46.	-0.2	-0.2

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
L561			15.	-0.4	-0.4	13.	-0.7	-1.1
L562			78.	1.0	1.0	63.	0.1	1.1
L563			62.	0.6	0.6	41.	-0.3	0.4
L564			52.	0.4	0.4	60.	0.0	0.5
L565	*		1080.	22.0	22.0	83.	0.4	22.4
L566			60.	0.6	0.6	50.	-0.1	0.5
L567			61.	0.6	0.6	28.	-0.5	0.1
L568			12.	-0.4	-0.4	15.	-0.7	-1.1
L569			8.	-0.5	-0.5	76.	0.3	-0.2
L570			23.	-0.2	-0.2	60.	0.0	-0.2
L571	+		87.	1.1	1.1	90.	0.5	1.7
L572			51.	0.4	0.4	57.	-0.0	0.4
L573			71.	0.8	0.8	55.	-0.0	0.8
L574			37.	0.1	0.1	50.	-0.1	-0.0
L575			19.	-0.3	-0.3	47.	-0.2	-0.5
L576			22.	-0.2	-0.2	86.	0.5	0.3
L577			28.	-0.1	-0.1	48.	-0.2	-0.2
L578			20.	-0.3	-0.3	30.	-0.5	-0.7
L579			30.	-0.0	-0.0	23.	-0.6	-0.6
L580			5.	-0.6	-0.6	71.	0.2	-0.3
L581			5.	-0.6	-0.6	35.	-0.4	-0.9
L582		+	6.	-0.6	-0.6	135.	1.3	0.7
L583			3.	-0.6	-0.6	39.	-0.3	-0.9
L584			2.	-0.6	-0.6	17.	-0.7	-1.3
L585			2.	-0.6	-0.6	31.	-0.4	-1.1
L586			36.	0.1	0.1	27.	-0.5	-0.4
L587			3.	-0.6	-0.6	45.	-0.2	-0.8
L588			2.	-0.6	-0.6	26.	-0.5	-1.2
L589			5.	-0.6	-0.6	59.	0.0	-0.5
L590			2.	-0.6	-0.6	50.	-0.1	-0.8
L592			20.	-0.3	-0.3	86.	0.5	0.2
L593			9.	-0.5	-0.5	46.	-0.2	-0.7
L594			5.	-0.6	-0.6	21.	-0.6	-1.2
L595			23.	-0.2	-0.2	66.	0.1	-0.1
L596			66.	0.7	0.7	70.	0.2	0.9
L597	+		93.	1.3	1.3	67.	0.2	1.4
L598			60.	0.6	0.6	50.	-0.1	0.5
L601			5.	-0.6	-0.6	23.	-0.6	-1.1
L602			5.	-0.6	-0.6	34.	-0.4	-1.0
L603			20.	-0.3	-0.3	116.	1.0	0.7

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
L604			25.	-0.2	-0.2	79.	0.4	0.2
L605			6.	-0.6	-0.6	46.	-0.2	-0.7
L606			25.	-0.2	-0.2	76.	0.3	0.2
L607			22.	-0.2	-0.2	75.	0.3	0.1
L608			21.	-0.2	-0.2	75.	0.3	0.1
L609		+	18.	-0.3	-0.3	137.	1.3	1.0
L610		+	23.	-0.2	-0.2	153.	1.6	1.4
L611			13.	-0.4	-0.4	77.	0.3	-0.1
L612			14.	-0.4	-0.4	63.	0.1	-0.3
L613			24.	-0.2	-0.2	70.	0.2	0.0
L614			15.	-0.4	-0.4	63.	0.1	-0.3
L615			22.	-0.2	-0.2	70.	0.2	-0.0
L622			12.	-0.4	-0.4	70.	0.2	-0.2
L625			14.	-0.4	-0.4	50.	-0.1	-0.5
L626			16.	-0.3	-0.3	64.	0.1	-0.2
L627			19.	-0.3	-0.3	65.	0.1	-0.2
L628			27.	-0.1	-0.1	49.	-0.1	-0.3
L630			75.	0.9	0.9	63.	0.1	1.0
L631	+		110.	1.6	1.6	104.	0.8	2.4
L632			28.	-0.1	-0.1	90.	0.5	0.5
L633			16.	-0.3	-0.3	34.	-0.4	-0.7
L634			29.	-0.1	-0.1	53.	-0.1	-0.1
L635			25.	-0.2	-0.2	92.	0.6	0.4
L636			24.	-0.2	-0.2	39.	-0.3	-0.5
L637			20.	-0.3	-0.3	94.	0.6	0.4
L638			30.	-0.0	-0.0	78.	0.3	0.3
L639			20.	-0.3	-0.3	74.	0.3	0.0
L640			65.	0.7	0.7	96.	0.6	1.3
L641			22.	-0.2	-0.2	84.	0.4	0.2
L642			27.	-0.1	-0.1	85.	0.5	0.3
L643			25.	-0.2	-0.2	100.	0.7	0.6
L644			26.	-0.1	-0.1	89.	0.5	0.4
L655			8.	-0.5	-0.5	29.	-0.5	-1.0
L656			19.	-0.3	-0.3	56.	-0.0	-0.3
L657			25.	-0.2	-0.2	90.	0.5	0.4
L658			19.	-0.3	-0.3	113.	0.9	0.6
L659			26.	-0.1	-0.1	76.	0.3	0.2
L660			18.	-0.3	-0.3	64.	0.1	-0.2
L661			12.	-0.4	-0.4	44.	-0.2	-0.6
L662			8.	-0.5	-0.5	26.	-0.5	-1.0

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
L663			14.	-0.4	-0.4	57.	-0.0	-0.4
L664			19.	-0.3	-0.3	76.	0.3	0.0
L665			8.	-0.5	-0.5	52.	-0.1	-0.6
L666			14.	-0.4	-0.4	76.	0.3	-0.1
L667			15.	-0.4	-0.4	60.	0.0	-0.3
L668			15.	-0.4	-0.4	52.	-0.1	-0.5
L669			21.	-0.2	-0.2	67.	0.2	-0.1
L670			52.	0.4	0.4	70.	0.2	0.6
L671	+		100.	1.4	1.4	63.	0.1	1.5
L672			30.	-0.0	-0.0	55.	-0.0	-0.1
L673			30.	-0.0	-0.0	75.	0.3	0.2
L674			45.	0.3	0.3	58.	0.0	0.3
L675		+	27.	-0.1	-0.1	118.	1.0	0.9
L676			13.	-0.4	-0.4	68.	0.2	-0.2
L677			24.	-0.2	-0.2	98.	0.7	0.5
L678			32.	-0.0	-0.0	80.	0.4	0.4
L679			25.	-0.2	-0.2	71.	0.2	0.1
L680			29.	-0.1	-0.1	70.	0.2	0.1
L681			11.	-0.4	-0.4	45.	-0.2	-0.7
L682			32.	-0.0	-0.0	58.	0.0	0.0
L683			29.	-0.1	-0.1	56.	-0.0	-0.1
L684			64.	0.7	0.7	70.	0.2	0.9
L685			37.	0.1	0.1	59.	0.0	0.1
L686			24.	-0.2	-0.2	65.	0.1	-0.0
L701			14.	-0.4	-0.4	61.	0.1	-0.3
L702			12.	-0.4	-0.4	80.	0.4	-0.0
L703			21.	-0.2	-0.2	82.	0.4	0.2
H8018			8.	-0.5	-0.5	80.	0.4	-0.1
H8019			11.	-0.4	-0.4	60.	0.0	-0.4
H8020			16.	-0.3	-0.3	60.	0.0	-0.3
H8021			15.	-0.4	-0.4	78.	0.3	-0.0
H8022			53.	0.4	0.4	83.	0.4	0.9
H8023		*	45.	0.3	0.3	197.	2.3	2.6
H8024			12.	-0.4	-0.4	42.	-0.3	-0.7
H8025			50.	0.4	0.4	71.	0.2	0.6
H8026	*	+	250.	4.6	4.6	152.	1.6	6.1
H8027	+		105.	1.5	1.5	100.	0.7	2.2
H8028			72.	0.8	0.8	71.	0.2	1.1
H8029	*		190.	3.3	3.3	111.	0.9	4.2
H8030			75.	0.9	0.9	90.	0.5	1.4

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
H8031			70.	0.8	0.8	79.	0.4	1.2
H8032	+		96.	1.3	1.3	80.	0.4	1.7
H8033			40.	0.2	0.2	20.	-0.6	-0.5
H8034			20.	-0.3	-0.3	27.	-0.5	-0.8
H8035			23.	-0.2	-0.2	38.	-0.3	-0.5
H8036			22.	-0.2	-0.2	40.	-0.3	-0.5
H8037	*	+	194.	3.4	3.4	160.	1.7	5.1
H8038		+	26.	-0.1	-0.1	151.	1.6	1.4
H8039	+		115.	1.7	1.7	85.	0.5	2.2
H8040	*	*	320.	6.0	6.0	219.	2.7	8.7
H8041	*	*	290.	5.4	5.4	218.	2.7	8.1
H8042	*	*	325.	6.1	6.1	192.	2.2	8.4
H8043	*		290.	5.4	5.4	115.	1.0	6.4
H8044	*	+	132.	2.1	2.1	156.	1.6	3.7
H8045	*	+	154.	2.6	2.6	166.	1.8	4.4
H8046			47.	0.3	0.3	84.	0.4	0.8
H8047			31.	-0.0	-0.0	20.	-0.6	-0.7
H8048			40.	0.2	0.2	79.	0.4	0.5
H8049			60.	0.6	0.6	60.	0.0	0.6
H8050	*		235.	4.3	4.3	62.	0.1	4.3
H8051			60.	0.6	0.6	40.	-0.3	0.3
H8052			50.	0.4	0.4	40.	-0.3	0.1
H8053	*		750.	15.1	15.1	40.	-0.3	14.8
H8054	*		850.	17.2	17.2	40.	-0.3	16.9
H8055	*		450.	8.8	8.8	40.	-0.3	8.5
H8056	+		113.	1.7	1.7	40.	-0.3	1.4
H8057	+		114.	1.7	1.7	40.	-0.3	1.4
H8058	*		180.	3.1	3.1	40.	-0.3	2.8
H8059	*		160.	2.7	2.7	40.	-0.3	2.4
H8061	+		84.	1.1	1.1	56.	-0.0	1.1
H8062			36.	0.1	0.1	52.	-0.1	-0.0
H8063			22.	-0.2	-0.2	39.	-0.3	-0.5
H8064			68.	0.7	0.7	45.	-0.2	0.5
H8065			70.	0.8	0.8	91.	0.6	1.4
H8066	+		81.	1.0	1.0	49.	-0.1	0.9
H8067	*		144.	2.3	2.3	65.	0.1	2.5
H8068	+		120.	1.8	1.8	70.	0.2	2.1
H8069			74.	0.9	0.9	36.	-0.4	0.5
H8070	*		195.	3.4	3.4	22.	-0.6	2.8
H8071	+		120.	1.8	1.8	27.	-0.5	1.3

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	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
H8072	*		185.	3.2	3.2	40.	-0.3	2.9
H8073	*		230.	4.2	4.2	42.	-0.3	3.9
H8074	+		125.	1.9	1.9	50.	-0.1	1.8
H8075	*		195.	3.4	3.4	30.	-0.5	3.0
H8076	*		140.	2.3	2.3	38.	-0.3	1.9
H8077	*		155.	2.6	2.6	37.	-0.3	2.2
H8078			20.	-0.3	-0.3	30.	-0.5	-0.7
H8079	*		720.	14.4	14.4	40.	-0.3	14.2
H8080	+		95.	1.3	1.3	31.	-0.4	0.9
H8081	*		400.	7.7	7.7	33.	-0.4	7.3
H8082			32.	-0.0	-0.0	22.	-0.6	-0.6
H8083	+		88.	1.2	1.2	40.	-0.3	0.9
H8084			45.	0.3	0.3	22.	-0.6	-0.3
H8085			78.	1.0	1.0	35.	-0.4	0.6
H8089			53.	0.4	0.4	25.	-0.5	-0.1
H8090			29.	-0.1	-0.1	16.	-0.7	-0.8
H8091			24.	-0.2	-0.2	13.	-0.7	-0.9
H8092			59.	0.6	0.6	27.	-0.5	0.1
H8093			26.	-0.1	-0.1	16.	-0.7	-0.8
H8094	+		112.	1.7	1.7	44.	-0.2	1.5
H8095			29.	-0.1	-0.1	16.	-0.7	-0.8
H8096			24.	-0.2	-0.2	17.	-0.7	-0.8
H8097			25.	-0.2	-0.2	20.	-0.6	-0.8
H8098			20.	-0.3	-0.3	15.	-0.7	-1.0
K8014			48.	0.3	0.3	80.	0.4	0.7
K8015			37.	0.1	0.1	76.	0.3	0.4
K8016			41.	0.2	0.2	84.	0.4	0.6
K8017			15.	-0.4	-0.4	40.	-0.3	-0.7
K8018			15.	-0.4	-0.4	36.	-0.4	-0.7
K8019			15.	-0.4	-0.4	39.	-0.3	-0.7
K8020			20.	-0.3	-0.3	56.	-0.0	-0.3
K8021			20.	-0.3	-0.3	55.	-0.0	-0.3
K8022			21.	-0.2	-0.2	68.	0.2	-0.1
K8023			20.	-0.3	-0.3	61.	0.1	-0.2
K8024			40.	0.2	0.2	100.	0.7	0.9
K8025		*	71.	0.8	0.8	185.	2.1	2.9
K8026		*	75.	0.9	0.9	198.	2.3	3.2
K8027		*	68.	0.7	0.7	181.	2.1	2.8
K8028	+	*	110.	1.6	1.6	340.	4.7	6.3
K8029			36.	0.1	0.1	93.	0.6	0.7

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	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
K8030			40.	0.2	0.2	112.	0.9	1.1
K8031	*		400.	7.7	7.7	105.	0.8	8.5
K8032	*		195.	3.4	3.4	92.	0.6	4.0
K8033	*		220.	3.9	3.9	110.	0.9	4.8
K8034	*		145.	2.4	2.4	70.	0.2	2.6
K8035	*		145.	2.4	2.4	69.	0.2	2.6
K8036	*		161.	2.7	2.7	90.	0.5	3.2
K8037	+		85.	1.1	1.1	48.	-0.2	1.0
K8038	+		120.	1.8	1.8	54.	-0.1	1.8
K8039	*		150.	2.5	2.5	83.	0.4	2.9
K8040	+		105.	1.5	1.5	73.	0.3	1.8
K8041	+		120.	1.8	1.8	95.	0.6	2.5
K8042			10.	-0.5	-0.5	40.	-0.3	-0.8
K8043			50.	0.4	0.4	40.	-0.3	0.1
K8044			40.	0.2	0.2	40.	-0.3	-0.1
K8045			15.	-0.4	-0.4	40.	-0.3	-0.7
K8046			73.	0.9	0.9	40.	-0.3	0.6
K8047			74.	0.9	0.9	40.	-0.3	0.6
K8048			64.	0.7	0.7	40.	-0.3	0.4
K8049			40.	0.2	0.2	40.	-0.3	-0.1
K8050	+		88.	1.2	1.2	40.	-0.3	0.9
K8051			65.	0.7	0.7	40.	-0.3	0.4
K8052			40.	0.2	0.2	40.	-0.3	-0.1
K8053			35.	0.1	0.1	40.	-0.3	-0.2
K8054	+		86.	1.1	1.1	40.	-0.3	0.8
K8055			25.	-0.2	-0.2	48.	-0.2	-0.3
K8056			10.	-0.5	-0.5	32.	-0.4	-0.9
K8057			45.	0.3	0.3	66.	0.1	0.4
K8058			9.	-0.5	-0.5	36.	-0.4	-0.8
K8059			10.	-0.5	-0.5	68.	0.2	-0.3
K8060			12.	-0.4	-0.4	35.	-0.4	-0.8
K8061			23.	-0.2	-0.2	70.	0.2	0.0
K8062			15.	-0.4	-0.4	72.	0.2	-0.1
K8063			30.	-0.0	-0.0	60.	0.0	-0.0
K8064			15.	-0.4	-0.4	65.	0.1	-0.2
K8065			22.	-0.2	-0.2	60.	0.0	-0.2
K8066			20.	-0.3	-0.3	91.	0.6	0.3
K8067			10.	-0.5	-0.5	40.	-0.3	-0.8
K8068			20.	-0.3	-0.3	39.	-0.3	-0.6
K8069			20.	-0.3	-0.3	54.	-0.1	-0.3

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
K8070			8.	-0.5	-0.5	42.	-0.3	-0.8
K8071			26.	-0.1	-0.1	84.	0.4	0.3
K8072			45.	0.3	0.3	42.	-0.3	0.0
K8073	+		106.	1.5	1.5	81.	0.4	1.9
K8074			29.	-0.1	-0.1	110.	0.9	0.8
K8075			4.	-0.6	-0.6	18.	-0.7	-1.3
K8076			3.	-0.6	-0.6	16.	-0.7	-1.3
K8077			15.	-0.4	-0.4	21.	-0.6	-1.0
K8078			5.	-0.6	-0.6	24.	-0.6	-1.1
K8079			10.	-0.5	-0.5	12.	-0.8	-1.2
K8080			51.	0.4	0.4	52.	-0.1	0.3
K8081			61.	0.6	0.6	36.	-0.4	0.2
K8082			35.	0.1	0.1	36.	-0.4	-0.3
K8083			46.	0.3	0.3	40.	-0.3	-0.0
K8084			35.	0.1	0.1	34.	-0.4	-0.3
K8085			60.	0.6	0.6	60.	0.0	0.6
K8086			34.	0.0	0.0	34.	-0.4	-0.4
K8087			40.	0.2	0.2	36.	-0.4	-0.2
K8088			31.	-0.0	-0.0	39.	-0.3	-0.3
K8089			39.	0.1	0.1	40.	-0.3	-0.1
K8090			42.	0.2	0.2	44.	-0.2	-0.0
K8091			23.	-0.2	-0.2	33.	-0.4	-0.6
K8092			20.	-0.3	-0.3	36.	-0.4	-0.6
K8093			25.	-0.2	-0.2	33.	-0.4	-0.6
K8094			36.	0.1	0.1	70.	0.2	0.3
K8095			18.	-0.3	-0.3	33.	-0.4	-0.7
K8096	+		88.	1.2	1.2	59.	0.0	1.2
K8097			59.	0.6	0.6	62.	0.1	0.6
K8098			27.	-0.1	-0.1	40.	-0.3	-0.4
K8099			36.	0.1	0.1	31.	-0.4	-0.4
K8100			19.	-0.3	-0.3	35.	-0.4	-0.7
K8101			4.	-0.6	-0.6	70.	0.2	-0.4
K8102			4.	-0.6	-0.6	73.	0.3	-0.3
K8103			1.	-0.7	-0.7	44.	-0.2	-0.9
K8104			1.	-0.7	-0.7	40.	-0.3	-0.9
K8105			1.	-0.7	-0.7	33.	-0.4	-1.1
K8106			1.	-0.7	-0.7	29.	-0.5	-1.1
K8107			1.	-0.7	-0.7	62.	0.1	-0.6
K8108			10.	-0.5	-0.5	56.	-0.0	-0.5
K8109			2.	-0.6	-0.6	85.	0.5	-0.2

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
K8110			28.	-0.1	-0.1	59.	0.0	-0.1
K8111			27.	-0.1	-0.1	53.	-0.1	-0.2
K8112			37.	0.1	0.1	69.	0.2	0.3
K8113			17.	-0.3	-0.3	52.	-0.1	-0.4
K8114			1.	-0.7	-0.7	50.	-0.1	-0.8
K8115			22.	-0.2	-0.2	46.	-0.2	-0.4
K8116			30.	-0.0	-0.0	65.	0.1	0.1
K8117			30.	-0.0	-0.0	65.	0.1	0.1
K8118			12.	-0.4	-0.4	44.	-0.2	-0.6
K8119			20.	-0.3	-0.3	54.	-0.1	-0.3
K8120			19.	-0.3	-0.3	49.	-0.1	-0.4
K8121			4.	-0.6	-0.6	37.	-0.3	-0.9
K8122			39.	0.1	0.1	36.	-0.4	-0.2
K8123			16.	-0.3	-0.3	31.	-0.4	-0.8
K8124			15.	-0.4	-0.4	25.	-0.5	-0.9
K8125			25.	-0.2	-0.2	35.	-0.4	-0.5
K8126			22.	-0.2	-0.2	34.	-0.4	-0.6
K8127			22.	-0.2	-0.2	30.	-0.5	-0.7
K8128			22.	-0.2	-0.2	30.	-0.5	-0.7
K8129			30.	-0.0	-0.0	38.	-0.3	-0.4
K8130			14.	-0.4	-0.4	24.	-0.6	-0.9
K8131			34.	0.0	0.0	32.	-0.4	-0.4
K8132			31.	-0.0	-0.0	26.	-0.5	-0.6
K8133			36.	0.1	0.1	40.	-0.3	-0.2
K8134			8.	-0.5	-0.5	13.	-0.7	-1.3
K8135			50.	0.4	0.4	39.	-0.3	0.1
K8136			55.	0.5	0.5	34.	-0.4	0.1
K8137			70.	0.8	0.8	39.	-0.3	0.5
K8138			46.	0.3	0.3	30.	-0.5	-0.2
K8139			19.	-0.3	-0.3	18.	-0.7	-0.9
K8140			40.	0.2	0.2	67.	0.2	0.3
K8141	+		80.	1.0	1.0	33.	-0.4	0.6
K8142			8.	-0.5	-0.5	12.	-0.8	-1.3
K8143			10.	-0.5	-0.5	10.	-0.8	-1.3
K8144			25.	-0.2	-0.2	20.	-0.6	-0.8
K8145			24.	-0.2	-0.2	17.	-0.7	-0.8
K8146			16.	-0.3	-0.3	8.	-0.8	-1.2
K8147			32.	-0.0	-0.0	30.	-0.5	-0.5
K8148			24.	-0.2	-0.2	12.	-0.8	-0.9
K8149			77.	0.9	0.9	19.	-0.6	0.3

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
K8150			32.	-0.0	-0.0	10.	-0.8	-0.8
K8151			37.	0.1	0.1	110.	0.9	1.0
K8152			26.	-0.1	-0.1	16.	-0.7	-0.8
K8153			19.	-0.3	-0.3	6.	-0.9	-1.1
K8154			37.	0.1	0.1	11.	-0.8	-0.7
K8155			44.	0.2	0.2	15.	-0.7	-0.5
K8156	*		225.	4.0	4.0	41.	-0.3	3.8
K8157			39.	0.1	0.1	15.	-0.7	-0.6
K8158			21.	-0.2	-0.2	5.	-0.9	-1.1
K8159			19.	-0.3	-0.3	10.	-0.8	-1.1
K8160			21.	-0.2	-0.2	10.	-0.8	-1.0
K8161			27.	-0.1	-0.1	15.	-0.7	-0.8
K8162			28.	-0.1	-0.1	11.	-0.8	-0.9
K8163			29.	-0.1	-0.1	8.	-0.8	-0.9
K8164			29.	-0.1	-0.1	10.	-0.8	-0.9
K8165			41.	0.2	0.2	17.	-0.7	-0.5
K8166			52.	0.4	0.4	55.	-0.0	0.4
K8167			45.	0.3	0.3	12.	-0.8	-0.5
K8168	+		91.	1.2	1.2	18.	-0.7	0.6
K8169			69.	0.8	0.8	28.	-0.5	0.3
K8170			26.	-0.1	-0.1	13.	-0.7	-0.9
K8171			10.	-0.5	-0.5	10.	-0.8	-1.3
K8172			11.	-0.4	-0.4	10.	-0.8	-1.2
K8173	+		83.	1.1	1.1	15.	-0.7	0.4
K8174	+		100.	1.4	1.4	22.	-0.6	0.8
K8175	+		87.	1.1	1.1	25.	-0.5	0.6
K8176			59.	0.6	0.6	25.	-0.5	0.0
K8177			51.	0.4	0.4	31.	-0.4	-0.0
K8178			24.	-0.2	-0.2	26.	-0.5	-0.7
K8179			45.	0.3	0.3	20.	-0.6	-0.4
K8180			25.	-0.2	-0.2	13.	-0.7	-0.9
K8181			35.	0.1	0.1	11.	-0.8	-0.7
K8182			36.	0.1	0.1	15.	-0.7	-0.6
K8183			37.	0.1	0.1	21.	-0.6	-0.5
K8184			25.	-0.2	-0.2	10.	-0.8	-0.9
K8185	+		122.	1.9	1.9	35.	-0.4	1.5
K8186			60.	0.6	0.6	85.	0.5	1.0
K8187			24.	-0.2	-0.2	15.	-0.7	-0.9
K8188			56.	0.5	0.5	24.	-0.6	-0.1
K8189			21.	-0.2	-0.2	15.	-0.7	-0.9

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
K8190			21.	-0.2	-0.2	17.	-0.7	-0.9
K8191			11.	-0.4	-0.4	15.	-0.7	-1.2
K8192			22.	-0.2	-0.2	20.	-0.6	-0.8
K8193			10.	-0.5	-0.5	5.	-0.9	-1.3
K8194			19.	-0.3	-0.3	24.	-0.6	-0.8
K8195			6.	-0.6	-0.6	10.	-0.8	-1.3
K8196			10.	-0.5	-0.5	13.	-0.7	-1.2
K8197			14.	-0.4	-0.4	20.	-0.6	-1.0
K8198			20.	-0.3	-0.3	12.	-0.8	-1.0
K8199			15.	-0.4	-0.4	8.	-0.8	-1.2
K8200			14.	-0.4	-0.4	10.	-0.8	-1.2
K8201			40.	0.2	0.2	110.	0.9	1.0
K8202			18.	-0.3	-0.3	60.	0.0	-0.3
K8203			9.	-0.5	-0.5	18.	-0.7	-1.1
K8204			57.	0.5	0.5	30.	-0.5	0.1
K8205			24.	-0.2	-0.2	20.	-0.6	-0.8
K8206			14.	-0.4	-0.4	11.	-0.8	-1.2
K8207			15.	-0.4	-0.4	12.	-0.8	-1.1
K8208			14.	-0.4	-0.4	12.	-0.8	-1.1
K8209			15.	-0.4	-0.4	10.	-0.8	-1.2
K8210			21.	-0.2	-0.2	10.	-0.8	-1.0
K8211			17.	-0.3	-0.3	20.	-0.6	-0.9
K8212			18.	-0.3	-0.3	18.	-0.7	-1.0
K8213			26.	-0.1	-0.1	30.	-0.5	-0.6
K8214			14.	-0.4	-0.4	10.	-0.8	-1.2
K8215			10.	-0.5	-0.5	10.	-0.8	-1.3
K8216			10.	-0.5	-0.5	7.	-0.8	-1.3
K8217			10.	-0.5	-0.5	8.	-0.8	-1.3
K8218			22.	-0.2	-0.2	20.	-0.6	-0.8
K8219			20.	-0.3	-0.3	13.	-0.7	-1.0
K8220			12.	-0.4	-0.4	17.	-0.7	-1.1
K8221			21.	-0.2	-0.2	25.	-0.5	-0.8
K8222			15.	-0.4	-0.4	17.	-0.7	-1.0
K8223			25.	-0.2	-0.2	20.	-0.6	-0.8
K8224			11.	-0.4	-0.4	10.	-0.8	-1.2
K8225			11.	-0.4	-0.4	17.	-0.7	-1.1
K8226			11.	-0.4	-0.4	10.	-0.8	-1.2
K8227			17.	-0.3	-0.3	17.	-0.7	-1.0
K8228			12.	-0.4	-0.4	8.	-0.8	-1.2
K8229			11.	-0.4	-0.4	5.	-0.9	-1.3

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	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
K8230			11.	-0.4	-0.4	10.	-0.8	-1.2
K8231			20.	-0.3	-0.3	12.	-0.8	-1.0
K8232			10.	-0.5	-0.5	8.	-0.8	-1.3
K8233			18.	-0.3	-0.3	11.	-0.8	-1.1
K8234			36.	0.1	0.1	17.	-0.7	-0.6
K8235			13.	-0.4	-0.4	8.	-0.8	-1.2
K8236			10.	-0.5	-0.5	7.	-0.8	-1.3
K8237			25.	-0.2	-0.2	20.	-0.6	-0.8
K8238			34.	0.0	0.0	31.	-0.4	-0.4
K8239			25.	-0.2	-0.2	20.	-0.6	-0.8
K8240			17.	-0.3	-0.3	16.	-0.7	-1.0
K8241			17.	-0.3	-0.3	25.	-0.5	-0.9
K8242			18.	-0.3	-0.3	20.	-0.6	-0.9
K8243			19.	-0.3	-0.3	17.	-0.7	-1.0
K8244			21.	-0.2	-0.2	15.	-0.7	-0.9
K8245			13.	-0.4	-0.4	15.	-0.7	-1.1
K8246			30.	-0.0	-0.0	20.	-0.6	-0.7
K8247			15.	-0.4	-0.4	33.	-0.4	-0.8
K8248			9.	-0.5	-0.5	30.	-0.5	-0.9
K8249			4.	-0.6	-0.6	8.	-0.8	-1.4
K8250			6.	-0.6	-0.6	11.	-0.8	-1.3
K8251			15.	-0.4	-0.4	20.	-0.6	-1.0
K8252			6.	-0.6	-0.6	15.	-0.7	-1.3
K8253			4.	-0.6	-0.6	10.	-0.8	-1.4
K8254			20.	-0.3	-0.3	60.	0.0	-0.2
K8255			15.	-0.4	-0.4	55.	-0.0	-0.4
K8256			29.	-0.1	-0.1	90.	0.5	0.5
K8257			53.	0.4	0.4	21.	-0.6	-0.2
K8258			20.	-0.3	-0.3	25.	-0.5	-0.8
K8259			20.	-0.3	-0.3	12.	-0.8	-1.0
K8260			39.	0.1	0.1	17.	-0.7	-0.5
K8261			20.	-0.3	-0.3	12.	-0.8	-1.0
K8262			23.	-0.2	-0.2	15.	-0.7	-0.9
K8263			44.	0.2	0.2	20.	-0.6	-0.4
K8264	+		105.	1.5	1.5	115.	1.0	2.5
K8265			49.	0.4	0.4	24.	-0.6	-0.2
K8266			16.	-0.3	-0.3	15.	-0.7	-1.0
K8267			29.	-0.1	-0.1	20.	-0.6	-0.7
K8268			17.	-0.3	-0.3	15.	-0.7	-1.0
K8269			21.	-0.2	-0.2	17.	-0.7	-0.9

TOODOGGONE REGIONAL GEOCHEMISTRY

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
K8270			27.	-0.1	-0.1	17.	-0.7	-0.8
K8271			30.	-0.0	-0.0	10.	-0.8	-0.8
K8272			27.	-0.1	-0.1	16.	-0.7	-0.8
K8273			31.	-0.0	-0.0	24.	-0.6	-0.6
K8274			16.	-0.3	-0.3	10.	-0.8	-1.1
K8275			10.	-0.5	-0.5	7.	-0.8	-1.3
K8276			12.	-0.4	-0.4	25.	-0.5	-1.0
K8277			29.	-0.1	-0.1	10.	-0.8	-0.9
K8278	*		135.	2.2	2.2	60.	0.0	2.2
K8279			30.	-0.0	-0.0	17.	-0.7	-0.7
K8280	+		104.	1.5	1.5	45.	-0.2	1.3
K8281			36.	0.1	0.1	18.	-0.7	-0.6
K8282			18.	-0.3	-0.3	15.	-0.7	-1.0
K8283			26.	-0.1	-0.1	12.	-0.8	-0.9
K8284			35.	0.1	0.1	25.	-0.5	-0.5
K8285			13.	-0.4	-0.4	17.	-0.7	-1.1
K8286			13.	-0.4	-0.4	19.	-0.6	-1.0
K8287			25.	-0.2	-0.2	23.	-0.6	-0.7
K8288			23.	-0.2	-0.2	20.	-0.6	-0.8
K8289			14.	-0.4	-0.4	12.	-0.8	-1.1
K8290			10.	-0.5	-0.5	24.	-0.6	-1.0
K8291			12.	-0.4	-0.4	9.	-0.8	-1.2
K8292			10.	-0.5	-0.5	10.	-0.8	-1.3
K8293			54.	0.5	0.5	30.	-0.5	-0.0
K8294			24.	-0.2	-0.2	15.	-0.7	-0.9
K8295			29.	-0.1	-0.1	20.	-0.6	-0.7
K8296			30.	-0.0	-0.0	20.	-0.6	-0.7
K8297			25.	-0.2	-0.2	12.	-0.8	-0.9
K8298			36.	0.1	0.1	15.	-0.7	-0.6
K8300			20.	-0.3	-0.3	9.	-0.8	-1.1
K8301			44.	0.2	0.2	20.	-0.6	-0.4
K8302			10.	-0.5	-0.5	11.	-0.8	-1.2
K8303			14.	-0.4	-0.4	10.	-0.8	-1.2
K8304			10.	-0.5	-0.5	5.	-0.9	-1.3
K8305			14.	-0.4	-0.4	10.	-0.8	-1.2
K8306			15.	-0.4	-0.4	11.	-0.8	-1.1
K8307			19.	-0.3	-0.3	25.	-0.5	-0.8
K8308			32.	-0.0	-0.0	28.	-0.5	-0.5
K8309			42.	0.2	0.2	16.	-0.7	-0.5
K8310			11.	-0.4	-0.4	10.	-0.8	-1.2

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
K8311			7.	-0.5	-0.5	8.	-0.8	-1.4
K8312			20.	-0.3	-0.3	35.	-0.4	-0.6
K8313			14.	-0.4	-0.4	45.	-0.2	-0.6
K8314			14.	-0.4	-0.4	28.	-0.5	-0.9
K8315			19.	-0.3	-0.3	20.	-0.6	-0.9
K8316			7.	-0.5	-0.5	5.	-0.9	-1.4
K8317			28.	-0.1	-0.1	35.	-0.4	-0.5
K8318			21.	-0.2	-0.2	15.	-0.7	-0.9
K8319			12.	-0.4	-0.4	8.	-0.8	-1.2
K8320			56.	0.5	0.5	40.	-0.3	0.2
K8321			47.	0.3	0.3	85.	0.5	0.8
K8322			30.	-0.0	-0.0	60.	0.0	-0.0
K8323			38.	0.1	0.1	18.	-0.7	-0.5
K8324			12.	-0.4	-0.4	18.	-0.7	-1.1
P8001	+	*	115.	1.7	1.7	435.	6.3	8.0
P8002		*	50.	0.4	0.4	265.	3.5	3.8
P8003		+	55.	0.5	0.5	120.	1.0	1.5
P8004			50.	0.4	0.4	92.	0.6	0.9
P8005		*	41.	0.2	0.2	180.	2.0	2.2
P8006	*		141.	2.3	2.3	72.	0.2	2.5
P8007	*		210.	3.7	3.7	100.	0.7	4.4
P8008	*		135.	2.2	2.2	70.	0.2	2.4
P8009	*		135.	2.2	2.2	77.	0.3	2.5
P8010	*		155.	2.6	2.6	90.	0.5	3.1
P8011	*		146.	2.4	2.4	98.	0.7	3.1
P8012	*		240.	4.4	4.4	90.	0.5	4.9
P8013			46.	0.3	0.3	80.	0.4	0.7
P8014			36.	0.1	0.1	95.	0.6	0.7
P8015	*		165.	2.8	2.8	98.	0.7	3.5
P8016	*		170.	2.9	2.9	107.	0.8	3.7
P8017	+		110.	1.6	1.6	95.	0.6	2.3
P8018	*	+	137.	2.2	2.2	166.	1.8	4.0
P8019	+	+	125.	1.9	1.9	135.	1.3	3.2
P8020	*	+	130.	2.1	2.1	145.	1.5	3.5
P8021			55.	0.5	0.5	94.	0.6	1.1
P8022			36.	0.1	0.1	72.	0.2	0.3
P8023			55.	0.5	0.5	80.	0.4	0.9
P8024			46.	0.3	0.3	112.	0.9	1.2
P8025			56.	0.5	0.5	80.	0.4	0.9
P8026			35.	0.1	0.1	75.	0.3	0.3

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
P8027			6.	-0.6	-0.6	25.	-0.5	-1.1
P8028			10.	-0.5	-0.5	45.	-0.2	-0.7
P8029	*		285.	5.3	5.3	40.	-0.3	5.0
P8030	*		370.	7.1	7.1	40.	-0.3	6.8
P8031	*		230.	4.2	4.2	40.	-0.3	3.9
P8032	*		177.	3.0	3.0	40.	-0.3	2.7
P8033	*		500.	9.8	9.8	40.	-0.3	9.5
P8034	*		160.	2.7	2.7	40.	-0.3	2.4
P8035	*		237.	4.3	4.3	40.	-0.3	4.0
P8036	*		200.	3.5	3.5	40.	-0.3	3.2
P8037	+		106.	1.5	1.5	40.	-0.3	1.3
P8038	*		410.	7.9	7.9	40.	-0.3	7.6
P8039	*		360.	6.9	6.9	40.	-0.3	6.6
P8040	*		155.	2.6	2.6	40.	-0.3	2.3
P8041	*		160.	2.7	2.7	40.	-0.3	2.4
P8042	+		125.	1.9	1.9	40.	-0.3	1.7
P8043	*		260.	4.8	4.8	40.	-0.3	4.5
P8044	*		850.	17.2	17.2	40.	-0.3	16.9
P8045	*		335.	6.4	6.4	40.	-0.3	6.1
P8046	*		400.	7.7	7.7	40.	-0.3	7.4
P8047	*		190.	3.3	3.3	40.	-0.3	3.0
P8048	+		120.	1.8	1.8	40.	-0.3	1.6
P8049	*		150.	2.5	2.5	40.	-0.3	2.2
P8050	*		195.	3.4	3.4	40.	-0.3	3.1
P8051	*		400.	7.7	7.7	106.	0.8	8.5
P8052	+		95.	1.3	1.3	88.	0.5	1.8
P8053	*		410.	7.9	7.9	115.	1.0	8.9
P8054	*		260.	4.8	4.8	103.	0.8	5.5
P8055	+		99.	1.4	1.4	95.	0.6	2.0
P8955	+		112.	1.7	1.7	91.	0.6	2.2
P8056	+		113.	1.7	1.7	99.	0.7	2.4
P8057			74.	0.9	0.9	73.	0.3	1.1
P8058			69.	0.8	0.8	65.	0.1	0.9
P8059			74.	0.9	0.9	75.	0.3	1.2
P8060			54.	0.5	0.5	68.	0.2	0.6
P8061			44.	0.2	0.2	59.	0.0	0.3
P8062	*		192.	3.4	3.4	84.	0.4	3.8
P8063	+		105.	1.5	1.5	40.	-0.3	1.2
P8064	*		325.	6.1	6.1	63.	0.1	6.2
P8065	*		260.	4.8	4.8	35.	-0.4	4.4

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	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
P8066			66.	0.7	0.7	109.	0.9	1.6
P8067			25.	-0.2	-0.2	64.	0.1	-0.0
P8068			65.	0.7	0.7	65.	0.1	0.8
P8069	*	+	530.	10.5	10.5	150.	1.5	12.0
P8070			66.	0.7	0.7	96.	0.6	1.4
P8071		+	60.	0.6	0.6	128.	1.2	1.8
P8072			56.	0.5	0.5	61.	0.1	0.6
P8073			64.	0.7	0.7	70.	0.2	0.9
P8074			35.	0.1	0.1	54.	-0.1	0.0
P8075			40.	0.2	0.2	62.	0.1	0.2
P8076			60.	0.6	0.6	82.	0.4	1.0
P8077			41.	0.2	0.2	73.	0.3	0.4
P8078			27.	-0.1	-0.1	60.	0.0	-0.1
P8079			40.	0.2	0.2	41.	-0.3	-0.1
P8080	*		250.	4.6	4.6	78.	0.3	4.9
P8081			68.	0.7	0.7	80.	0.4	1.1
P8082			32.	-0.0	-0.0	50.	-0.1	-0.1
P8083			70.	0.8	0.8	99.	0.7	1.5
P8084			78.	1.0	1.0	95.	0.6	1.6
P8085			45.	0.3	0.3	72.	0.2	0.5
P8086	+		106.	1.5	1.5	111.	0.9	2.4
P8087	+		81.	1.0	1.0	103.	0.8	1.8
P8088			76.	0.9	0.9	107.	0.8	1.7
P8089			30.	-0.0	-0.0	80.	0.4	0.3
P8090			29.	-0.1	-0.1	66.	0.1	0.1
P8091			36.	0.1	0.1	59.	0.0	0.1
P8092			47.	0.3	0.3	71.	0.2	0.5
P8093		+	44.	0.2	0.2	128.	1.2	1.4
P8094			45.	0.3	0.3	106.	0.8	1.1
P8095			16.	-0.3	-0.3	44.	-0.2	-0.6
P8096	+		106.	1.5	1.5	104.	0.8	2.3
P8097	*		250.	4.6	4.6	104.	0.8	5.3
P8098	*	+	245.	4.5	4.5	146.	1.5	5.9
P8099	+		110.	1.6	1.6	114.	0.9	2.6
P8100	*	+	174.	3.0	3.0	136.	1.3	4.3
P8101			7.	-0.5	-0.5	115.	1.0	0.4
P8102			6.	-0.6	-0.6	53.	-0.1	-0.6
P8103			6.	-0.6	-0.6	69.	0.2	-0.4
P8104			40.	0.2	0.2	50.	-0.1	0.0
P8105			25.	-0.2	-0.2	55.	-0.0	-0.2

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
P8106			73.	0.9	0.9	63.	0.1	0.9
P8107	*		190.	3.3	3.3	102.	0.7	4.1
P8108	*		135.	2.2	2.2	96.	0.6	2.8
P8109	*	*	190.	3.3	3.3	225.	2.8	6.1
P8100	+		88.	1.2	1.2	92.	0.6	1.7
P8111	*	*	235.	4.3	4.3	185.	2.1	6.4
P8112	*	+	280.	5.2	5.2	142.	1.4	6.6
P8113	*		325.	6.1	6.1	114.	0.9	7.1
P8114	+		122.	1.9	1.9	84.	0.4	2.3
P8115	+		106.	1.5	1.5	62.	0.1	1.6
P8116	+		89.	1.2	1.2	65.	0.1	1.3
P8117			36.	0.1	0.1	37.	-0.3	-0.3
P8118	+		114.	1.7	1.7	100.	0.7	2.4
P8119			61.	0.6	0.6	80.	0.4	1.0
P8120			63.	0.6	0.6	80.	0.4	1.0
P8121	+		115.	1.7	1.7	75.	0.3	2.0
P8122	+		94.	1.3	1.3	47.	-0.2	1.1
P8123			50.	0.4	0.4	50.	-0.1	0.2
P8124			41.	0.2	0.2	27.	-0.5	-0.3
P8125			69.	0.8	0.8	45.	-0.2	0.6
P8126	*	*	650.	13.0	13.0	225.	2.8	15.8
P8127	*		210.	3.7	3.7	110.	0.9	4.6
P8128	*	*	310.	5.8	5.8	250.	3.2	9.0
P8129	*	*	400.	7.7	7.7	300.	4.0	11.8
P8130	+	+	115.	1.7	1.7	160.	1.7	3.4
P8131	*		183.	3.2	3.2	38.	-0.3	2.8
P8132	*		265.	4.9	4.9	58.	0.0	4.9
P8133			60.	0.6	0.6	50.	-0.1	0.5
P8134			79.	1.0	1.0	70.	0.2	1.2
P8135	*		135.	2.2	2.2	80.	0.4	2.5
P8136			76.	0.9	0.9	50.	-0.1	0.8
P8137			35.	0.1	0.1	65.	0.1	0.2
P8138	+		106.	1.5	1.5	55.	-0.0	1.5
P8139			64.	0.7	0.7	55.	-0.0	0.6
D8001	+	+	120.	1.8	1.8	160.	1.7	3.6
D8002		*	70.	0.8	0.8	260.	3.4	4.2
D8003		*	60.	0.6	0.6	348.	4.8	5.4
D8005			27.	-0.1	-0.1	105.	0.8	0.7
D8006			33.	0.0	0.0	94.	0.6	0.6
D8007			30.	-0.0	-0.0	92.	0.6	0.5

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D8008			25.	-0.2	-0.2	110.	0.9	0.7
D8009			32.	-0.0	-0.0	110.	0.9	0.9
D8010	+		100.	1.4	1.4	98.	0.7	2.1
D8011	+		80.	1.0	1.0	60.	0.0	1.0
D8012	+		95.	1.3	1.3	60.	0.0	1.4
D8013	+		106.	1.5	1.5	64.	0.1	1.7
D8014	+		100.	1.4	1.4	63.	0.1	1.5
D8015			70.	0.8	0.8	88.	0.5	1.3
D8016			74.	0.9	0.9	82.	0.4	1.3
D8017			78.	1.0	1.0	74.	0.3	1.2
D8018			75.	0.9	0.9	74.	0.3	1.2
D8019			70.	0.8	0.8	67.	0.2	1.0
D8020			75.	0.9	0.9	53.	-0.1	0.8
D8021	*		220.	3.9	3.9	87.	0.5	4.4
D8022	*	*	350.	6.7	6.7	325.	4.5	11.1
D8023	*	+	185.	3.2	3.2	150.	1.5	4.7
D8024	*	+	205.	3.6	3.6	161.	1.7	5.4
D8025	*	+	215.	3.8	3.8	162.	1.7	5.6
C001		+	70.	0.8	0.8	175.	2.0	2.8
C002		*	59.	0.6	0.6	182.	2.1	2.6
C003		+	44.	0.2	0.2	152.	1.6	1.8
C004		+	44.	0.2	0.2	120.	1.0	1.3
C005		+	48.	0.3	0.3	168.	1.8	2.2
C006		+	36.	0.1	0.1	161.	1.7	1.8
C007			48.	0.3	0.3	58.	0.0	0.3
C008		+	34.	0.0	0.0	175.	2.0	2.0
C009		*	36.	0.1	0.1	221.	2.7	2.8
C010		*	22.	-0.2	-0.2	178.	2.0	1.8
C011		+	38.	0.1	0.1	163.	1.8	1.9
C012		*	50.	0.4	0.4	185.	2.1	2.5
C013		*	66.	0.7	0.7	300.	4.0	4.7
C014		*	39.	0.1	0.1	320.	4.4	4.5
C015		+	20.	-0.3	-0.3	118.	1.0	0.8
C016		*	37.	0.1	0.1	186.	2.1	2.2
C017		*	71.	0.8	0.8	190.	2.2	3.0
C018		+	54.	0.5	0.5	141.	1.4	1.8
C019		+	47.	0.3	0.3	145.	1.5	1.8
C020		*	38.	0.1	0.1	185.	2.1	2.2
C021		*	44.	0.2	0.2	215.	2.6	2.9
C022		*	38.	0.1	0.1	195.	2.3	2.4

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
C023		*	53.	0.4	0.4	250.	3.2	3.6
C024			64.	0.7	0.7	53.	-0.1	0.6
C025			38.	0.1	0.1	64.	0.1	0.2
C026			31.	-0.0	-0.0	38.	-0.3	-0.4
C027			36.	0.1	0.1	70.	0.2	0.3
C028			32.	-0.0	-0.0	40.	-0.3	-0.3
C029			74.	0.9	0.9	40.	-0.3	0.6
C030			43.	0.2	0.2	36.	-0.4	-0.1
C031	*		130.	2.1	2.1	53.	-0.1	2.0
C032			38.	0.1	0.1	38.	-0.3	-0.2
C033			34.	0.0	0.0	30.	-0.5	-0.4
C034			52.	0.4	0.4	96.	0.6	1.1
C035			59.	0.6	0.6	48.	-0.2	0.4
C036			41.	0.2	0.2	67.	0.2	0.3
C037			44.	0.2	0.2	45.	-0.2	0.0
C038			57.	0.5	0.5	61.	0.1	0.6
C039			32.	-0.0	-0.0	77.	0.3	0.3
C040			16.	-0.3	-0.3	26.	-0.5	-0.9
C041			16.	-0.3	-0.3	20.	-0.6	-1.0
C042	*	*	135.	2.2	2.2	325.	4.5	6.6
C043	*	*	650.	13.0	13.0	1770.	28.5	41.5
C044		*	53.	0.4	0.4	284.	3.8	4.2
C045	*	*	270.	5.0	5.0	3300.	54.0	59.0
C046		+	37.	0.1	0.1	141.	1.4	1.5
C047		*	20.	-0.3	-0.3	218.	2.7	2.4
C048		*	66.	0.7	0.7	330.	4.5	5.2
C049	*	*	1000.	20.3	20.3	185.	2.1	22.5
C050		*	64.	0.7	0.7	230.	2.9	3.5
C051	*	*	940.	19.1	19.1	890.	13.9	32.9
C052		*	75.	0.9	0.9	360.	5.0	5.9
C053		*	27.	-0.1	-0.1	215.	2.6	2.5
C054		*	22.	-0.2	-0.2	223.	2.8	2.5
C055		*	27.	-0.1	-0.1	260.	3.4	3.3
C057		*	64.	0.7	0.7	325.	4.5	5.1
C058		*	52.	0.4	0.4	290.	3.9	4.3
C059	*	+	160.	2.7	2.7	152.	1.6	4.3
C060			25.	-0.2	-0.2	90.	0.5	0.4
C061			79.	1.0	1.0	100.	0.7	1.7
C062			42.	0.2	0.2	100.	0.7	0.9
C063			25.	-0.2	-0.2	100.	0.7	0.6

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
C064			44.	0.2	0.2	100.	0.7	1.0
C065			20.	-0.3	-0.3	100.	0.7	0.5
C066			16.	-0.3	-0.3	100.	0.7	0.4
C067	+		105.	1.5	1.5	100.	0.7	2.2
C068	*		980.	19.9	19.9	100.	0.7	20.6
C069		*	56.	0.5	0.5	2300.	37.4	37.9
C070		*	68.	0.7	0.7	940.	14.7	15.5
C071	+	*	107.	1.6	1.6	2150.	34.9	36.4
C072	+	*	100.	1.4	1.4	3700.	60.7	62.1
C073	+	*	98.	1.4	1.4	1850.	29.9	31.2
C074			50.	0.4	0.4	51.	-0.1	0.3
C075			54.	0.5	0.5	49.	-0.1	0.3
C076		*	45.	0.3	0.3	840.	13.0	13.3
C077			45.	0.3	0.3	97.	0.7	0.9
C078	+		111.	1.7	1.7	100.	0.7	2.4
C079			75.	0.9	0.9	91.	0.6	1.5
C080			20.	-0.3	-0.3	29.	-0.5	-0.7
C081			30.	-0.0	-0.0	46.	-0.2	-0.2
C082			24.	-0.2	-0.2	26.	-0.5	-0.7
C083	*		215.	3.8	3.8	114.	0.9	4.8
C084			45.	0.3	0.3	81.	0.4	0.7
C085			20.	-0.3	-0.3	52.	-0.1	-0.3
C086			22.	-0.2	-0.2	63.	0.1	-0.1
C087			46.	0.3	0.3	74.	0.3	0.6
C088			42.	0.2	0.2	43.	-0.2	-0.0
C089			50.	0.4	0.4	93.	0.6	1.0
C090			40.	0.2	0.2	87.	0.5	0.7
C091			29.	-0.1	-0.1	95.	0.6	0.6
C092			19.	-0.3	-0.3	52.	-0.1	-0.4
C093		+	54.	0.5	0.5	118.	1.0	1.5
C094			24.	-0.2	-0.2	34.	-0.4	-0.6
C095			59.	0.6	0.6	60.	0.0	0.6
C096	+		93.	1.3	1.3	98.	0.7	2.0
C097			69.	0.8	0.8	43.	-0.2	0.5
C098			68.	0.7	0.7	93.	0.6	1.3
C099			69.	0.8	0.8	91.	0.6	1.3
C100			19.	-0.3	-0.3	33.	-0.4	-0.7
C101			24.	-0.2	-0.2	59.	0.0	-0.1
C102			24.	-0.2	-0.2	38.	-0.3	-0.5
C103		*	69.	0.8	0.8	250.	3.2	4.0

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
C104			9.	-0.5	-0.5	75.	0.3	-0.2
C105			8.	-0.5	-0.5	55.	-0.0	-0.6
C106			12.	-0.4	-0.4	57.	-0.0	-0.4
C107			9.	-0.5	-0.5	55.	-0.0	-0.5
C108			16.	-0.3	-0.3	74.	0.3	-0.1
C109			22.	-0.2	-0.2	91.	0.6	0.3
C110			25.	-0.2	-0.2	116.	1.0	0.8
C111			24.	-0.2	-0.2	93.	0.6	0.4
C112			19.	-0.3	-0.3	86.	0.5	0.2
C113			20.	-0.3	-0.3	32.	-0.4	-0.7
C114			15.	-0.4	-0.4	93.	0.6	0.2
C115			10.	-0.5	-0.5	32.	-0.4	-0.9
C116		+	13.	-0.4	-0.4	145.	1.5	1.1
C117		+	17.	-0.3	-0.3	160.	1.7	1.4
C117			11.	-0.4	-0.4	67.	0.2	-0.3
C118			8.	-0.5	-0.5	65.	0.1	-0.4
C119			30.	-0.0	-0.0	28.	-0.5	-0.5
C120			49.	0.4	0.4	34.	-0.4	-0.0
C121	+		99.	1.4	1.4	65.	0.1	1.5
C122	+		115.	1.7	1.7	80.	0.4	2.1
C123	+		96.	1.3	1.3	45.	-0.2	1.1
C124	+		80.	1.0	1.0	43.	-0.2	0.8
C125		*	48.	0.3	0.3	265.	3.5	3.8
C126		*	79.	1.0	1.0	450.	6.5	7.5
C127	*	*	240.	4.4	4.4	700.	10.7	15.1
C128	+	*	84.	1.1	1.1	435.	6.3	7.4
C129		*	51.	0.4	0.4	375.	5.3	5.7
C130			43.	0.2	0.2	77.	0.3	0.6
R001			17.	-0.3	-0.3	50.	-0.1	-0.4
R002			26.	-0.1	-0.1	60.	0.0	-0.1
R003			17.	-0.3	-0.3	51.	-0.1	-0.4
R004			64.	0.7	0.7	43.	-0.2	0.4
R005			25.	-0.2	-0.2	50.	-0.1	-0.3
R006			26.	-0.1	-0.1	44.	-0.2	-0.4
R007			45.	0.3	0.3	59.	0.0	0.3
R008			19.	-0.3	-0.3	47.	-0.2	-0.5
R009			25.	-0.2	-0.2	48.	-0.2	-0.3
R010			28.	-0.1	-0.1	30.	-0.5	-0.5
R011			27.	-0.1	-0.1	50.	-0.1	-0.2
R012			16.	-0.3	-0.3	42.	-0.3	-0.6

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
R013			43.	0.2	0.2	66.	0.1	0.4
R014			21.	-0.2	-0.2	49.	-0.1	-0.4
R015			18.	-0.3	-0.3	43.	-0.2	-0.5
R016			36.	0.1	0.1	64.	0.1	0.2
R017			73.	0.9	0.9	57.	-0.0	0.8
R018			28.	-0.1	-0.1	51.	-0.1	-0.2
R019			48.	0.3	0.3	74.	0.3	0.6
R020			34.	0.0	0.0	85.	0.5	0.5
R021			19.	-0.3	-0.3	44.	-0.2	-0.5
R022			27.	-0.1	-0.1	37.	-0.3	-0.5
R023			15.	-0.4	-0.4	57.	-0.0	-0.4
R024			26.	-0.1	-0.1	47.	-0.2	-0.3
R025			22.	-0.2	-0.2	35.	-0.4	-0.6
R026			25.	-0.2	-0.2	37.	-0.3	-0.5
R027		*	35.	0.1	0.1	181.	2.1	2.1
R028			60.	0.6	0.6	107.	0.8	1.4
R029	+	*	82.	1.0	1.0	218.	2.7	3.7
R030		*	79.	1.0	1.0	350.	4.9	5.9
R031		+	39.	0.1	0.1	150.	1.5	1.7
R032		*	46.	0.3	0.3	200.	2.4	2.7
R033			16.	-0.3	-0.3	60.	0.0	-0.3
R034			22.	-0.2	-0.2	88.	0.5	0.3
R035			8.	-0.5	-0.5	53.	-0.1	-0.6
R036			14.	-0.4	-0.4	66.	0.1	-0.2
R037			14.	-0.4	-0.4	66.	0.1	-0.2
R038			11.	-0.4	-0.4	60.	0.0	-0.4
R039			13.	-0.4	-0.4	60.	0.0	-0.4
R040			11.	-0.4	-0.4	60.	0.0	-0.4
R041			14.	-0.4	-0.4	60.	0.0	-0.3
R042			25.	-0.2	-0.2	75.	0.3	0.1
R043	*	*	290.	5.4	5.4	560.	8.4	13.8
R044			55.	0.5	0.5	103.	0.8	1.2
R045	*	*	282.	5.2	5.2	700.	10.7	15.9
R046	*	*	178.	3.1	3.1	595.	9.0	12.0
R047			27.	-0.1	-0.1	102.	0.7	0.6
R048		*	34.	0.0	0.0	230.	2.9	2.9
R049	+	*	95.	1.3	1.3	580.	8.7	10.0
R050		*	57.	0.5	0.5	280.	3.7	4.2
R051		*	71.	0.8	0.8	340.	4.7	5.5
R052			27.	-0.1	-0.1	38.	-0.3	-0.4

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
R053		*	64.	0.7	0.7	320.	4.4	5.0
R054			23.	-0.2	-0.2	97.	0.7	0.5
R055		*	30.	-0.0	-0.0	220.	2.7	2.7
R056		*	73.	0.9	0.9	360.	5.0	5.9
R057		*	41.	0.2	0.2	225.	2.8	3.0
R058			31.	-0.0	-0.0	97.	0.7	0.6
R059	+	+	88.	1.2	1.2	120.	1.0	2.2
R060			30.	-0.0	-0.0	67.	0.2	0.1
R061	*	*	1410.	28.9	28.9	1220.	19.4	48.3
R062	*	+	175.	3.0	3.0	150.	1.5	4.5
R063	*	+	168.	2.9	2.9	142.	1.4	4.3
R064			28.	-0.1	-0.1	67.	0.2	0.1
R065		+	59.	0.6	0.6	120.	1.0	1.6
R066		*	33.	0.0	0.0	1600.	25.7	25.7
R067		+	19.	-0.3	-0.3	154.	1.6	1.3
R068		*	51.	0.4	0.4	200.	2.4	2.8
R069		*	57.	0.5	0.5	350.	4.9	5.4
R070	*	*	200.	3.5	3.5	1030.	16.2	19.7
R071	*	*	196.	3.4	3.4	610.	9.2	12.6
R072			48.	0.3	0.3	36.	-0.4	-0.0
R073	+	+	89.	1.2	1.2	157.	1.7	2.9
R074			77.	0.9	0.9	106.	0.8	1.7
R075	+		114.	1.7	1.7	64.	0.1	1.8
R076			32.	-0.0	-0.0	41.	-0.3	-0.3
R077			32.	-0.0	-0.0	45.	-0.2	-0.2
R078			37.	0.1	0.1	54.	-0.1	0.0
R079	+		86.	1.1	1.1	45.	-0.2	0.9
R080	*		143.	2.3	2.3	41.	-0.3	2.1
R081	+		111.	1.7	1.7	39.	-0.3	1.3
R082			14.	-0.4	-0.4	44.	-0.2	-0.6
R083			61.	0.6	0.6	45.	-0.2	0.4
R084			60.	0.6	0.6	82.	0.4	1.0
R085			43.	0.2	0.2	54.	-0.1	0.2
R086	+		108.	1.6	1.6	90.	0.5	2.1
R087			48.	0.3	0.3	38.	-0.3	0.0
R088			43.	0.2	0.2	37.	-0.3	-0.1
R089			46.	0.3	0.3	49.	-0.1	0.1
R090			59.	0.6	0.6	34.	-0.4	0.2
R091			11.	-0.4	-0.4	65.	0.1	-0.3
R092			16.	-0.3	-0.3	61.	0.1	-0.3

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
R093			4.	-0.6	-0.6	70.	0.2	-0.4
R094			9.	-0.5	-0.5	62.	0.1	-0.4
R095			12.	-0.4	-0.4	61.	0.1	-0.4
R096			24.	-0.2	-0.2	78.	0.3	0.2
R097			7.	-0.5	-0.5	59.	0.0	-0.5
R098			10.	-0.5	-0.5	53.	-0.1	-0.5
R099			9.	-0.5	-0.5	50.	-0.1	-0.6
R100			10.	-0.5	-0.5	44.	-0.2	-0.7
R101			14.	-0.4	-0.4	76.	0.3	-0.1
R102			18.	-0.3	-0.3	74.	0.3	-0.0
R103			8.	-0.5	-0.5	103.	0.8	0.2
R104		+	10.	-0.5	-0.5	138.	1.3	0.9
R105			15.	-0.4	-0.4	79.	0.4	-0.0
R106			15.	-0.4	-0.4	105.	0.8	0.4
R107			13.	-0.4	-0.4	78.	0.3	-0.1
R108			10.	-0.5	-0.5	58.	0.0	-0.5
R109			7.	-0.5	-0.5	72.	0.2	-0.3
R110	+		125.	1.9	1.9	88.	0.5	2.5
R111	*		150.	2.5	2.5	115.	1.0	3.4
R112	*		145.	2.4	2.4	83.	0.4	2.8
R113		+	39.	0.1	0.1	147.	1.5	1.6
R114			23.	-0.2	-0.2	90.	0.5	0.3
R115			65.	0.7	0.7	94.	0.6	1.3
R116			71.	0.8	0.8	98.	0.7	1.5
R117	*	+	290.	5.4	5.4	120.	1.0	6.5
R118	+		120.	1.8	1.8	115.	1.0	2.8
R119	+	+	120.	1.8	1.8	125.	1.1	3.0
R120			5.	-0.6	-0.6	65.	0.1	-0.4
R121			27.	-0.1	-0.1	65.	0.1	0.0
R122			7.	-0.5	-0.5	78.	0.3	-0.2
R123			25.	-0.2	-0.2	102.	0.7	0.6
R124			27.	-0.1	-0.1	75.	0.3	0.2
R125			13.	-0.4	-0.4	70.	0.2	-0.2
R126			7.	-0.5	-0.5	57.	-0.0	-0.5
R127			4.	-0.6	-0.6	54.	-0.1	-0.7
R128			12.	-0.4	-0.4	76.	0.3	-0.1
R129			13.	-0.4	-0.4	98.	0.7	0.3
R130		+	30.	-0.0	-0.0	170.	1.9	1.8
R131		+	36.	0.1	0.1	175.	2.0	2.0
R132		+	24.	-0.2	-0.2	150.	1.5	1.4

TOODOGGONE REGIONAL GEOCHEMISTRY

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DEVIATIONS ARE FROM GEOMETRIC MEAN

SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
R133		+	19.	-0.3	-0.3	135.	1.3	1.0
R134	+	+	115.	1.7	1.7	135.	1.3	3.0
R135		+	46.	0.3	0.3	120.	1.0	1.3
R136			36.	0.1	0.1	98.	0.7	0.8
R137			15.	-0.4	-0.4	65.	0.1	-0.2
R138			16.	-0.3	-0.3	59.	0.0	-0.3
R139			19.	-0.3	-0.3	107.	0.8	0.5
R140	+	*	122.	1.9	1.9	195.	2.3	4.2
R141		+	70.	0.8	0.8	168.	1.8	2.6
R142	+	*	120.	1.8	1.8	600.	9.0	10.9
R143	+	*	120.	1.8	1.8	515.	7.6	9.5
R144		*	64.	0.7	0.7	420.	6.0	6.7
R145		*	69.	0.8	0.8	230.	2.9	3.6
R146	+	*	80.	1.0	1.0	385.	5.5	6.5
R147	+		98.	1.4	1.4	98.	0.7	2.1
R148	+	*	80.	1.0	1.0	725.	11.1	12.1
B001			46.	0.3	0.3	91.	0.6	0.8
B002			31.	-0.0	-0.0	64.	0.1	0.1
B003			23.	-0.2	-0.2	101.	0.7	0.5
B004			19.	-0.3	-0.3	53.	-0.1	-0.4
B005			25.	-0.2	-0.2	94.	0.6	0.5
B006	+		88.	1.2	1.2	115.	1.0	2.1
B007	*		240.	4.4	4.4	73.	0.3	4.6
B008	*		160.	2.7	2.7	60.	0.0	2.7
B009			24.	-0.2	-0.2	28.	-0.5	-0.7
B010			25.	-0.2	-0.2	56.	-0.0	-0.2
B011			37.	0.1	0.1	75.	0.3	0.4
B012			18.	-0.3	-0.3	40.	-0.3	-0.6
B013	*		820.	16.5	16.5	20.	-0.6	15.9
B014	*		195.	3.4	3.4	43.	-0.2	3.2
B015	+		98.	1.4	1.4	60.	0.0	1.4
B016	+		113.	1.7	1.7	71.	0.2	1.9
B017			79.	1.0	1.0	82.	0.4	1.4
B018	+		84.	1.1	1.1	67.	0.2	1.2
B019			50.	0.4	0.4	80.	0.4	0.7
B020			46.	0.3	0.3	65.	0.1	0.4
B021			50.	0.4	0.4	55.	-0.0	0.3
B022			53.	0.4	0.4	61.	0.1	0.5
B023			33.	0.0	0.0	67.	0.2	0.2
B024			57.	0.5	0.5	72.	0.2	0.8

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
B025			73.	0.9	0.9	27.	-0.5	0.3
B026			57.	0.5	0.5	37.	-0.3	0.2
B027	*		130.	2.1	2.1	40.	-0.3	1.8
B028			53.	0.4	0.4	38.	-0.3	0.1
B029			54.	0.5	0.5	44.	-0.2	0.2
B030			13.	-0.4	-0.4	63.	0.1	-0.3
B031			44.	0.2	0.2	75.	0.3	0.5
B032			10.	-0.5	-0.5	78.	0.3	-0.1
B033			42.	0.2	0.2	95.	0.6	0.8
B034			40.	0.2	0.2	75.	0.3	0.5
B035			51.	0.4	0.4	77.	0.3	0.7
B036			27.	-0.1	-0.1	80.	0.4	0.3
B037			14.	-0.4	-0.4	57.	-0.0	-0.4
B038			76.	0.9	0.9	34.	-0.4	0.5
B039	*		144.	2.3	2.3	55.	-0.0	2.3
B040	+		86.	1.1	1.1	79.	0.4	1.5
B041	+		94.	1.3	1.3	44.	-0.2	1.1
B042			78.	1.0	1.0	35.	-0.4	0.6
B043	+		82.	1.0	1.0	50.	-0.1	0.9
B044	+		98.	1.4	1.4	57.	-0.0	1.4
B045			19.	-0.3	-0.3	40.	-0.3	-0.6
B046			32.	-0.0	-0.0	27.	-0.5	-0.5
B047			41.	0.2	0.2	30.	-0.5	-0.3
B048			45.	0.3	0.3	30.	-0.5	-0.2
B049			63.	0.6	0.6	39.	-0.3	0.3
B050			31.	-0.0	-0.0	31.	-0.4	-0.5
B051			17.	-0.3	-0.3	23.	-0.6	-0.9
B052			9.	-0.5	-0.5	23.	-0.6	-1.1
B053			9.	-0.5	-0.5	18.	-0.7	-1.1
B054			44.	0.2	0.2	33.	-0.4	-0.2
B055			41.	0.2	0.2	30.	-0.5	-0.3
B056			20.	-0.3	-0.3	22.	-0.6	-0.8
B057			28.	-0.1	-0.1	27.	-0.5	-0.6
B058			17.	-0.3	-0.3	22.	-0.6	-0.9
B059			29.	-0.1	-0.1	26.	-0.5	-0.6
B060			45.	0.3	0.3	30.	-0.5	-0.2
B061			31.	-0.0	-0.0	27.	-0.5	-0.5
B062			12.	-0.4	-0.4	27.	-0.5	-0.9
B063			2.	-0.6	-0.6	18.	-0.7	-1.3
B064			14.	-0.4	-0.4	62.	0.1	-0.3

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
B065			19.	-0.3	-0.3	72.	0.2	-0.0
B066			23.	-0.2	-0.2	32.	-0.4	-0.6
B067			9.	-0.5	-0.5	40.	-0.3	-0.8
B068			30.	-0.0	-0.0	45.	-0.2	-0.3
B069			19.	-0.3	-0.3	48.	-0.2	-0.4
B070			12.	-0.4	-0.4	35.	-0.4	-0.8
B071			4.	-0.6	-0.6	22.	-0.6	-1.2
B072			17.	-0.3	-0.3	30.	-0.5	-0.8
B073			16.	-0.3	-0.3	28.	-0.5	-0.8
B074	+		96.	1.3	1.3	53.	-0.1	1.3
B075			18.	-0.3	-0.3	108.	0.8	0.5
B076			23.	-0.2	-0.2	101.	0.7	0.5
B077			26.	-0.1	-0.1	113.	0.9	0.8
B078	+		83.	1.1	1.1	40.	-0.3	0.8
B079			74.	0.9	0.9	55.	-0.0	0.8
B080			45.	0.3	0.3	39.	-0.3	-0.0
B081			12.	-0.4	-0.4	37.	-0.3	-0.8
B082			66.	0.7	0.7	52.	-0.1	0.6
B083	+		87.	1.1	1.1	65.	0.1	1.3
B084			27.	-0.1	-0.1	40.	-0.3	-0.4
B085			69.	0.8	0.8	67.	0.2	0.9
B086			54.	0.5	0.5	36.	-0.4	0.1
B087			19.	-0.3	-0.3	26.	-0.5	-0.8
B088			39.	0.1	0.1	52.	-0.1	0.1
B089	+		80.	1.0	1.0	40.	-0.3	0.7
B090			54.	0.5	0.5	31.	-0.4	0.0
B091			10.	-0.5	-0.5	54.	-0.1	-0.5
B092			11.	-0.4	-0.4	49.	-0.1	-0.6
B093			12.	-0.4	-0.4	54.	-0.1	-0.5
B094			20.	-0.3	-0.3	66.	0.1	-0.1
B095			9.	-0.5	-0.5	49.	-0.1	-0.6
B096			16.	-0.3	-0.3	64.	0.1	-0.2
B097			13.	-0.4	-0.4	48.	-0.2	-0.6
B098			20.	-0.3	-0.3	61.	0.1	-0.2
B099			39.	0.1	0.1	89.	0.5	0.7
B100			35.	0.1	0.1	88.	0.5	0.6
B101			31.	-0.0	-0.0	78.	0.3	0.3
B102			13.	-0.4	-0.4	43.	-0.2	-0.6
B103			14.	-0.4	-0.4	51.	-0.1	-0.5
B104			8.	-0.5	-0.5	41.	-0.3	-0.8

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
B105			8.	-0.5	-0.5	35.	-0.4	-0.9
B106			10.	-0.5	-0.5	46.	-0.2	-0.7
B107			13.	-0.4	-0.4	50.	-0.1	-0.5
B108			14.	-0.4	-0.4	59.	0.0	-0.4
B109			13.	-0.4	-0.4	54.	-0.1	-0.5
B110			22.	-0.2	-0.2	80.	0.4	0.2
B111			10.	-0.5	-0.5	45.	-0.2	-0.7
B112			8.	-0.5	-0.5	45.	-0.2	-0.7
B113			5.	-0.6	-0.6	35.	-0.4	-0.9
B114			9.	-0.5	-0.5	39.	-0.3	-0.8
B115			16.	-0.3	-0.3	67.	0.2	-0.2
B116			8.	-0.5	-0.5	60.	0.0	-0.5
B117			3.	-0.6	-0.6	33.	-0.4	-1.0
B118			4.	-0.6	-0.6	26.	-0.5	-1.1
B119			5.	-0.6	-0.6	31.	-0.4	-1.0
B120			11.	-0.4	-0.4	60.	0.0	-0.4
B121			8.	-0.5	-0.5	52.	-0.1	-0.6
B122			32.	-0.0	-0.0	107.	0.8	0.8
B123		+	70.	0.8	0.8	140.	1.4	2.2
B124			35.	0.1	0.1	68.	0.2	0.2
B125			19.	-0.3	-0.3	66.	0.1	-0.1
B126			13.	-0.4	-0.4	76.	0.3	-0.1
B127			29.	-0.1	-0.1	91.	0.6	0.5
B128			16.	-0.3	-0.3	60.	0.0	-0.3
B129			18.	-0.3	-0.3	65.	0.1	-0.2
B130			20.	-0.3	-0.3	70.	0.2	-0.0
B131			2.	-0.6	-0.6	39.	-0.3	-0.9
B132			22.	-0.2	-0.2	76.	0.3	0.1
B133			16.	-0.3	-0.3	74.	0.3	-0.1
B134			28.	-0.1	-0.1	104.	0.8	0.7
B135			31.	-0.0	-0.0	99.	0.7	0.7
B136		*	51.	0.4	0.4	210.	2.5	2.9
B137			30.	-0.0	-0.0	71.	0.2	0.2
B138			25.	-0.2	-0.2	98.	0.7	0.5
B139	+		98.	1.4	1.4	59.	0.0	1.4
B140	+		107.	1.6	1.6	63.	0.1	1.7
B141	+		122.	1.9	1.9	63.	0.1	2.0
B142	+		110.	1.6	1.6	61.	0.1	1.7
B143			79.	1.0	1.0	50.	-0.1	0.9
B144			14.	-0.4	-0.4	63.	0.1	-0.3

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
B145			19.	-0.3	-0.3	73.	0.3	-0.0
B146			24.	-0.2	-0.2	70.	0.2	0.0
B147			29.	-0.1	-0.1	72.	0.2	0.2
B148			19.	-0.3	-0.3	68.	0.2	-0.1
B149			12.	-0.4	-0.4	56.	-0.0	-0.4
B150			24.	-0.2	-0.2	61.	0.1	-0.1
B151			24.	-0.2	-0.2	80.	0.4	0.2
B152			26.	-0.1	-0.1	85.	0.5	0.3
B153		+	31.	-0.0	-0.0	130.	1.2	1.2
B154	*		1150.	23.5	23.5	94.	0.6	24.1
B155			13.	-0.4	-0.4	34.	-0.4	-0.8
B156	*		250.	4.6	4.6	53.	-0.1	4.5
B157			20.	-0.3	-0.3	83.	0.4	0.2
B158			34.	0.0	0.0	34.	-0.4	-0.4
B159	*		190.	3.3	3.3	100.	0.7	4.0
B160			13.	-0.4	-0.4	59.	0.0	-0.4
B161			24.	-0.2	-0.2	82.	0.4	0.2
B162			21.	-0.2	-0.2	80.	0.4	0.1
B163			11.	-0.4	-0.4	63.	0.1	-0.4
B164		*	72.	0.8	0.8	250.	3.2	4.0
B165	+		82.	1.0	1.0	91.	0.6	1.6
B166	+		87.	1.1	1.1	61.	0.1	1.2
B167	*		150.	2.5	2.5	101.	0.7	3.2
B168	*		330.	6.3	6.3	91.	0.6	6.8
B169	+		123.	1.9	1.9	80.	0.4	2.3
B170	+		82.	1.0	1.0	60.	0.0	1.1
B171	+		109.	1.6	1.6	74.	0.3	1.9
B172			66.	0.7	0.7	52.	-0.1	0.6
B173	+		99.	1.4	1.4	70.	0.2	1.6
B174	+		119.	1.8	1.8	82.	0.4	2.2
B175			76.	0.9	0.9	42.	-0.3	0.7
B176		+	51.	0.4	0.4	155.	1.6	2.0
B177		+	30.	-0.0	-0.0	160.	1.7	1.7
B178			45.	0.3	0.3	57.	-0.0	0.3
B179			30.	-0.0	-0.0	40.	-0.3	-0.3
B180			62.	0.6	0.6	28.	-0.5	0.1
B181			34.	0.0	0.0	44.	-0.2	-0.2
B182			42.	0.2	0.2	43.	-0.2	-0.0
B183	+		120.	1.8	1.8	70.	0.2	2.1
B184	*		145.	2.4	2.4	79.	0.4	2.7

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SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
B185			30.	-0.0	-0.0	116.	1.0	0.9
B186			53.	0.4	0.4	70.	0.2	0.6
B187			30.	-0.0	-0.0	81.	0.4	0.3
B188			11.	-0.4	-0.4	49.	-0.1	-0.6
B189			28.	-0.1	-0.1	71.	0.2	0.1
B190		+	32.	-0.0	-0.0	121.	1.1	1.1
B191			34.	0.0	0.0	81.	0.4	0.4
B192			43.	0.2	0.2	106.	0.8	1.0
B193		+	72.	0.8	0.8	158.	1.7	2.5
B194			19.	-0.3	-0.3	55.	-0.0	-0.3
B195			27.	-0.1	-0.1	74.	0.3	0.2
B196			24.	-0.2	-0.2	59.	0.0	-0.1
B197			19.	-0.3	-0.3	65.	0.1	-0.2
B198			15.	-0.4	-0.4	64.	0.1	-0.3
B199			25.	-0.2	-0.2	71.	0.2	0.1
B200			30.	-0.0	-0.0	106.	0.8	0.8
B201			17.	-0.3	-0.3	72.	0.2	-0.1
B202			14.	-0.4	-0.4	49.	-0.1	-0.5
B203			35.	0.1	0.1	83.	0.4	0.5
B204			32.	-0.0	-0.0	85.	0.5	0.5
B205			35.	0.1	0.1	82.	0.4	0.5
B206			16.	-0.3	-0.3	39.	-0.3	-0.6
B207			22.	-0.2	-0.2	73.	0.3	0.0
B208			22.	-0.2	-0.2	36.	-0.4	-0.6
B209			23.	-0.2	-0.2	73.	0.3	0.1
B210			18.	-0.3	-0.3	45.	-0.2	-0.5
B211			15.	-0.4	-0.4	50.	-0.1	-0.5
B212			44.	0.2	0.2	74.	0.3	0.5
B213			32.	-0.0	-0.0	69.	0.2	0.2
B214			25.	-0.2	-0.2	106.	0.8	0.7
B215			34.	0.0	0.0	92.	0.6	0.6
B216			44.	0.2	0.2	69.	0.2	0.4
B217			24.	-0.2	-0.2	71.	0.2	0.1
B218			15.	-0.4	-0.4	48.	-0.2	-0.5
B219			19.	-0.3	-0.3	79.	0.4	0.1
B220			11.	-0.4	-0.4	66.	0.1	-0.3
B221			14.	-0.4	-0.4	61.	0.1	-0.3
B221			27.	-0.1	-0.1	104.	0.8	0.7
B222			26.	-0.1	-0.1	85.	0.5	0.3
B223			19.	-0.3	-0.3	84.	0.4	0.2

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WITHIN 1 ST.DEV OF MEAN
+ MORE THAN 1 ST.DEV ABOVE MEAN
* MORE THAN 2 ST.DEV ABOVE MEAN

DEVIATIONS ARE FROM GEOMETRIC MEAN

SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
B224		*	14.	-0.4	-0.4	340.	4.7	4.3
B225			11.	-0.4	-0.4	40.	-0.3	-0.7
B227			20.	-0.3	-0.3	109.	0.9	0.6
B228			1.	-0.7	-0.7	20.	-0.6	-1.3
B229			20.	-0.3	-0.3	53.	-0.1	-0.3
B230			16.	-0.3	-0.3	56.	-0.0	-0.4
B231			20.	-0.3	-0.3	65.	0.1	-0.1
B232			14.	-0.4	-0.4	64.	0.1	-0.3
B233	*		138.	2.2	2.2	78.	0.3	2.6
B234			50.	0.4	0.4	71.	0.2	0.6
B235			70.	0.8	0.8	54.	-0.1	0.7
B236			40.	0.2	0.2	60.	0.0	0.2
B237			14.	-0.4	-0.4	45.	-0.2	-0.6
B238			19.	-0.3	-0.3	85.	0.5	0.2
B239			43.	0.2	0.2	85.	0.5	0.7
B240			20.	-0.3	-0.3	52.	-0.1	-0.3
B241			66.	0.7	0.7	46.	-0.2	0.5
B242			22.	-0.2	-0.2	45.	-0.2	-0.4
B243			43.	0.2	0.2	70.	0.2	0.4
B244			48.	0.3	0.3	51.	-0.1	0.2
B245			41.	0.2	0.2	52.	-0.1	0.1
B246			70.	0.8	0.8	86.	0.5	1.3
B247	+		88.	1.2	1.2	105.	0.8	2.0
B248	+		93.	1.3	1.3	82.	0.4	1.7
B249			56.	0.5	0.5	90.	0.5	1.0
B250	*	*	133.	2.1	2.1	262.	3.4	5.5
B251	+	+	90.	1.2	1.2	124.	1.1	2.3
B252	*	*	138.	2.2	2.2	267.	3.5	5.7
B253			38.	0.1	0.1	90.	0.5	0.7
B254			35.	0.1	0.1	63.	0.1	0.1
B255			36.	0.1	0.1	60.	0.0	0.1
B256			46.	0.3	0.3	99.	0.7	1.0
B257			53.	0.4	0.4	68.	0.2	0.6
B258			48.	0.3	0.3	70.	0.2	0.5
B259			35.	0.1	0.1	75.	0.3	0.3
B260			18.	-0.3	-0.3	70.	0.2	-0.1
B261			61.	0.6	0.6	81.	0.4	1.0
B262			43.	0.2	0.2	72.	0.2	0.5
B263			35.	0.1	0.1	59.	0.0	0.1
B264			37.	0.1	0.1	66.	0.1	0.2

TOODOGGONE REGIONAL GEOCHEMISTRY

SYMBOLS USED IN ANOMALY RATINGS

= MORE THAN 2 ST.DEV BELOW MEAN
- MORE THAN 1 ST.DEV BELOW MEAN
WITHIN 1 ST.DEV OF MEAN
+ MORE THAN 1 ST.DEV ABOVE MEAN
* MORE THAN 2 ST.DEV ABOVE MEAN

DEVIATIONS ARE FROM GEOMETRIC MEAN

SAMPLE	RATINGS		CU			ZN		
	CU	ZN	MEAS	DV/S	C.DV	MEAS	DV/S	C.DV
B265	*		147.	2.4	2.4	90.	0.5	3.0
B266			48.	0.3	0.3	75.	0.3	0.6
B267			12.	-0.4	-0.4	53.	-0.1	-0.5
B268			55.	0.5	0.5	91.	0.6	1.0
B269			22.	-0.2	-0.2	79.	0.4	0.1
B270			13.	-0.4	-0.4	66.	0.1	-0.3
B271			8.	-0.5	-0.5	61.	0.1	-0.5
B272			30.	-0.0	-0.0	66.	0.1	0.1
B273			9.	-0.5	-0.5	91.	0.6	0.1
B274			19.	-0.3	-0.3	55.	-0.0	-0.3
B275	*	*	200.	3.5	3.5	243.	3.1	6.6
B276			22.	-0.2	-0.2	44.	-0.2	-0.4
B277			34.	0.0	0.0	113.	0.9	1.0
B278			31.	-0.0	-0.0	97.	0.7	0.6
B279			42.	0.2	0.2	72.	0.2	0.4
B280	*		163.	2.7	2.7	56.	-0.0	2.7
B281	*		227.	4.1	4.1	112.	0.9	5.0
B282	*		192.	3.4	3.4	53.	-0.1	3.3
B283			65.	0.7	0.7	74.	0.3	1.0
B284			22.	-0.2	-0.2	40.	-0.3	-0.5
B285			27.	-0.1	-0.1	18.	-0.7	-0.8
B286			32.	-0.0	-0.0	46.	-0.2	-0.2
B287	*	+	196.	3.4	3.4	119.	1.0	4.5
B288	+		88.	1.2	1.2	83.	0.4	1.6
B289	*		650.	13.0	13.0	84.	0.4	13.4
B290	*		158.	2.6	2.6	73.	0.3	2.9
B291	*		330.	6.3	6.3	68.	0.2	6.4
B292	*		195.	3.4	3.4	68.	0.2	3.6
B293	*		1475.	30.3	30.3	115.	1.0	31.3
B294	*		625.	12.4	12.4	85.	0.5	12.9
B295	*	+	180.	3.1	3.1	130.	1.2	4.3
B296	+		83.	1.1	1.1	90.	0.5	1.6
B297	+		93.	1.3	1.3	72.	0.2	1.5
B298	*		245.	4.5	4.5	70.	0.2	4.7
B299			36.	0.1	0.1	53.	-0.1	0.0
B300			65.	0.7	0.7	58.	0.0	0.7
B301			64.	0.7	0.7	75.	0.3	1.0

NUMBER OF SAMPLES = 2317

TOODOGGONE RIVER GEOCHEMICAL DATA

SAMPLE	EAST	NORTH	CU	ZN	SAMPLE	EAST	NORTH	CU	ZN
A8 1	533244	526990	80	71	A8 2	533029	527100	40	78
A8 3	533106	527075	43	91	A8 4	533122	527150	39	55
A8 5	533160	527224	45	91	A8 6	532918	527080	30	77
A8 7	532915	526987	46	79	A8 8	533022	526987	70	150
A8 10	532515	527166	35	83	A8 11	535582	522931	410	152
A8 12	535310	522808	190	98	A8 13	532690	527481	125	220
A8 14	535007	522564	165	80	A8 15	535081	522427	38	74
A8 16	532521	527423	30	81	A8 17	535303	523140	175	110
A8 18	535914	522359	235	99	A8 19	535914	522468	155	69
A8 20	535798	522514	225	100	A8 21	533722	527162	18	35
A8 22	533842	526879	70	54	A8 23	533963	526440	195	111
A8 24	533890	526590	75	91	A8 25	534024	526590	106	80
A8 26	534069	526827	162	107	A8 27	533918	527175	37	75
A8 28	534030	527023	75	70	A8 29	535454	522235	45	96
A8 30	535651	522290	120	48	A8 31	536310	522956	280	115
A8 32	536446	522784	180	102	A8 33	536433	522671	135	100
A8 72	526395	500871	200	100	A8 73	526226	500985	164	142
A8 74	526090	500973	152	125	A8 75	525906	501146	182	166
A8 76	525827	501484	85	105					
D 1	520702	513080	46	153	D 2	520610	513059	28	146
D 3	520547	513076	28	148	D 4	520489	513104	28	162
D 5	520435	513135	33	185	D 6	520380	513176	27	188
D 7	520330	513199	35	203	D 8	520263	513219	26	172
D 9	520188	513240	24	207	D 10	520134	513273	30	206
D 11	520070	513312	39	200	D 12	520009	513268	53	287
D 13	519965	513349	34	231	D 15	519855	513479	44	147
D 16	519817	513547	41	141	D 18	519767	513700	37	136
D 19	519756	513793	41	142	D 20	512526	521277	148	82
D 21	512479	521319	590	80	D 22	512573	521512	115	77
D 23	513153	521844	46	97	D 24	513227	521668	70	130
D 25	513307	521750	12	41	D 26	512920	522434	720	128
D 27	512949	522600	95	100	D 28	512699	522866	73	105
D 29	512087	524163	38	85	D 30	519067	517579	28	475
D 31	519226	517232	23	153	D 32	519319	517172	22	153
D 33	519251	516310	45	400	D 34	519238	516191	40	380
D 35	519156	515656	29	105	D 36	519163	515458	55	960
D 37	519332	515692	29	140	D 38	519236	515563	35	212
D 39	519026	514804	48	320	D 40	519091	514740	33	230
D 41	511726	520858	63	66	D 42	511664	520771	170	119
D 43	512714	521887	135	105	D 44	512619	521973	240	143
D 45	520229	517864	29	48	D 46	520274	517746	23	32
D 47	520145	517630	28	30	D 48	519922	517603	17	30
D 49	519948	517474	24	38	D 50	519831	517402	14	35
D 51	519902	517287	17	33	D 52	519880	517062	37	42
D 53	519814	517212	35	59	D 54	520031	516906	20	41
D 55	520031	516756	17	36	D 56	524714	513659	34	115
D 57	525178	513954	32	75	D 58	520229	516478	37	65
D 59	520522	516316	560	250	D 60	521868	515491	38	111
D 61	521806	515214	35	106	D 62	523707	514615	50	116
D 63	523598	514368	43	125	D 64	521468	513859	32	120
D 65	521771	512584	42	515	D 66	521768	512740	66	275

POSITIONED VALUES

POSITIONED VALUES

D 67	521884	512824	34	275	D 68	524563	514668	33	75
D 69	524474	514483	29	75	D 70	524472	514147	35	75
D 71	524529	514047	19	74	D 72	520250	507519	42	165
D 73	520302	507391	80	232	D 74	520224	507243	860	360
D 75	519898	507095	28	183	D 76	519958	507184	48	165
D 77	519537	507088	28	103	D 78	519464	506976	58	123
D 79	519858	506288	37	136	D 80	519792	506108	20	76
D 81	519840	505976	50	300	D 82	519832	505819	19	47
D 83	520078	505778	68	80	D 84	520270	509922	16	68
D 85	519259	509552	141	360	D 86	519586	508993	62	158
D 87	519331	509053	44	96	D 88	517483	510148	116	280
D 89	517546	510261	9	50	D 90	517695	510157	41	135
D 91	517663	509750	51	135	D 92	517134	509393	135	211
D 93	517462	509205	69	106	D 94	517970	508921	67	146
D 95	518112	508969	27	58	D 96	518212	508891	19	65
D 97	517804	509130	28	105	D 98	521865	508649	161	1140
D 99	521906	508539	31	260	D100	522314	508636	43	595
D101	522374	508528	40	200	D102	522785	508732	32	450
D103	523185	508821	75	1160	D104	523375	509027	68	295
D105	523444	509207	208	1570	D106	522156	507268	25	95
D107	522028	507179	79	76	D108	520741	514088	64	325
D109	522772	510230	63	310	D110	522967	510411	83	1070
D111	523348	510996	96	1040	D112	523150	510916	63	380
D113	523732	511201	106	380	D114	523146	519010	19	26
D115	523391	518907	32	41	D116	523926	519063	140	42
D117	524338	519495	35	36	D118	524537	519958	41	32
D119	524570	519835	40	46	D120	524379	520164	50	36
D121	522218	521755	60	50	D122	522582	521963	165	123
D123	522616	522046	40	50	D124	522842	521803	115	88
D125	522987	521712	68	100	D126	523547	521488	69	40
D127	523678	521450	62	112	D128	523850	521491	86	88
D129	518306	518133	108	177	D130	518442	518348	76	95
D131	518563	518483	132	100	D132	518627	518555	120	120
D133	518554	518959	17	54	D134	518870	519117	30	60
D135	518682	519107	42	67	D136	518527	519312	30	72
D137	518591	519904	28	62	D138	518480	520156	29	64
D139	520403	525015	63	18	D140	520324	525093	90	30
D141	520589	525131	44	20	D142	521551	524882	303	101
D143	521710	524838	298	105	D144	521764	524810	298	104
D145	521988	524770	197	74	D146	521362	526380	2	27
D147	521587	526126	67	34	D148	521579	526007	37	17
D149	521976	525699	25	18	D150	516998	518540	65	710
D151	517071	518876	46	510	D152	515494	517430	73	230
D153	517179	519280	123	272	D154	517238	519612	81	228
D155	515846	518027	78	450	D157	516066	518096	33	119
D158	515559	517626	30	235	D159	515650	516993	13	202
D161	515760	516486	23	175	D163	511646	520344	56	77
D164	511671	520221	40	59	D165	511550	520194	10	38
D166	511303	520060	75	78	D167	511090	519581	13	99
D168	510904	519774	14	58	D169	510847	519717	26	76
D170	510924	519337	16	51	D171	510816	519336	39	69
D172	510771	519205	7	69	D173	510584	519108	20	88
D174	510263	519028	13	68	D175	509852	519262	23	59
D176	509610	519329	13	74	D177	511167	521927	126	136
D178	511246	521998	215	160	D179	511102	522058	174	134
D180	510922	522304	132	150	D181	510652	522537	120	138
D182	510569	522523	82	128	D183	510471	522856	120	129
D184	510357	523057	166	170	D185	521642	512121	72	138
D186	521724	512095	22	79	D187	521742	511984	29	111

D188	521755	512084	45	144	D189	521758	512168	66	370
D190	521772	512264	70	380	D191	521652	512315	26	300
D192	521710	512503	28	245	D193	517762	514695	113	320
D194	517799	514771	60	265	D195	517553	514771	58	230
D196	517479	514713	54	185	D197	517186	514973	45	200
D198	517230	515128	53	155	D199	517000	515047	2	22
M 2	509287	532871	160	55	M 3	509092	532790	107	95
M 4	508839	532916	135	89	M 5	508519	533114	370	240
M 6	508478	533152	56	77	M 7	507804	533599	35	39
M 8	503398	531174	6	70	M 9	503358	531092	8	59
M 10	503174	531099	10	48	M 11	502986	530674	3	40
M 12	502881	530621	9	57	M 13	502540	530556	39	45
M 14	502284	530690	93	78	M 15	504366	528007	81	95
M 16	504414	527911	63	119	M 17	504624	528127	67	90
M 18	504322	528015	60	92	M 19	505088	528015	115	120
M 20	505479	527986	290	37	M 21	505344	527964	67	73
M 22	507759	531811	53	75	M 23	507826	531923	45	65
M 24	507650	531883	31	137					
M 25	508368	531904	153	122	M 26	508409	531799	36	63
M 27	508391	531708	15	83	M 28	507878	531115	18	46
M 29	507907	531021	25	60	M 30	506505	532286	100	97
M 31	506614	531926	49	72	M 32	509882	531816	146	79
M 34	509906	531728	59	50	M 35	509621	531850	70	100
M 36	509298	531271	69	90	M 37	509299	531118	51	67
M 38	509543	531063	25	55	M 39	509606	530715	70	29
M 40	509383	530381	5	32	M 41	508721	530428	27	45
M 42	508759	530336	25	40	M 43	513959	529075	58	32
M 44	513959	528893	99	61	M 45	513751	528795	59	63
M 46	513851	528607	20	47	M 47	513804	528388	47	45
M 48	513742	528273	153	55	M 49	513522	527903	25	30
M 50	513422	527736	71	50	M 51	513187	527707	39	50
M 52	509821	527858	56	84	M 53	510351	527611	31	65
M 54	510659	527796	64	75	M 55	510892	527757	23	70
M 56	509938	527683	109	74	M 57	511076	527927	35	59
M 58	511275	527939	51	74	M 59	511594	527951	83	80
M 60	511899	529510	62	25	M 61	511922	529388	68	29
M 62	511910	529213	78	25	M 65	514943	527420	27	42
M 66	514826	527328	21	31	M 67	514754	526670	33	38
M 68	516141	527147	100	47	M 69	516048	527162	24	35
M 70	514350	526275	23	65	M 71	509078	525595	35	51
M 72	508732	525583	29	50	M 73	508215	525499	31	52
M 74	508650	523770	15	70					
M 75	513725	524166	101	120	M 76	514907	524079	145	127
M 77	518577	527171	105	30	M 78	511510	530562	91	63
M 79	511494	530464	72	51	M101	526190	533003	6	29
M102	526227	533116	14	57	M103	525886	533307	10	52
M104	525770	533352	13	66	M105	525706	533486	13	60
M106	525670	533650	15	71	M107	525688	533762	5	35
M108	525475	533799	14	59	M109	525312	534055	17	66
M110	524775	533934	9	46	M111	522750	529521	5	31
M112	522763	529593	6	39	M113	523378	529468	3	45
M114	523735	529787	6	66	M115	523734	530060	2	40
M116	523930	530070	2	41	M117	523930	530231	4	46
M118	524294	528978	5	45	M119	523579	528298	10	66
M120	521522	530592	65	41	M121	521398	530759	11	68
M122	521374	530695	60	20	M123	522374	530672	3	41
M124	522321	530759	56	37	M125	522635	530646	19	80
M126	523533	530678	27	29	M127	523874	528233	5	32
M128	523989	528334	25	89	M129	523929	528512	1	17

M130	524129	528566	30	88	M131	524492	527267	2	14
M132	524746	527811	5	34	M133	525013	528179	16	90
M134	525642	528812	16	90	M135	525731	528924	20	98
M136	525755	529137	9	64	M137	525934	529059	10	61
M138	525987	529250	3	28	M141	524658	529059	4	40
M142	524747	528980	30	72	M143	525063	528979	4	45
M145	526388	524286	9	38	M146	526335	524165	14	50
M147	526404	524119	10	38	M148	526641	524190	11	53
M149	526903	524267	8	44	M150	527139	524323	24	76
M151	527448	524432	39	71	M152	527796	524541	19	70
M153	528008	524767	28	75	M154	533748	525755	57	71
M155	533767	525875	72	56	M156	533883	525851	31	46
M157	533643	525559	53	53	M158	533324	525349	40	150
M159	532992	525818	30	95	M160	532903	525800	9	65
M161	532907	525446	13	94	M162	535745	502810	16	71
M163	535688	502857	30	55	M164	535928	503009	19	50
M165	536134	503113	10	36	M166	536416	503019	24	54
M167	536666	503278	39	66	M168	531690	506091	31	86
M170	531717	506871	5	9					
M169	531619	506087	105	146	M171	530958	507338	25	32
M172	530799	507405	31	46	M173	530502	507617	44	66
M174	532414	508373	79	66	M175	532412	508457	65	59
M176	532477	508319	16	53	M177	532724	508789	38	60
M178	532611	509171	41	41	M179	530055	516164	49	97
M180	530243	516332	20	64	M181	530845	516862	30	98
M182	531467	517390	30	86	M183	529057	504073	146	39
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M186	529407	504792	59	100	M187	529227	504522	33	81
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M625	526719	511442	86	85	M626	518530	510168	29	270
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M632	522954	516231	35	72	S8 1	532067	530044	50	71
S8 2	532347	530103	60	140	S8 3	532294	530279	30	140
S8 4	532494	530591	50	120	S8 5	532450	530708	85	320
S8 6	532738	531151	35	153	S8 7	532907	531375	30	70
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S8 10	532502	528535	31	107	S8 11	532755	528711	86	140
S8 12	532746	528927	26	111	S8 13	532988	529135	27	103
S8 14	533187	529128	40	65	S8 15	533255	529203	25	70
S8 16	533333	529283	30	70	S8 17	533039	528177	40	146
S8 18	533108	528119	38	45	S8 19	533374	528412	45	70
S8 20	533451	528428	25	50	S8 21	533564	528739	30	89
S8 22	534112	528656	25	40	S8 23	534355	528797	40	48
S8 24	534786	528882	50	40	S8 25	534854	528998	25	40

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K 16	521500	520043	20	100	K 17	521311	520215	17	22
K 18	520963	520104	6	36	K 19	520862	520316	13	25
K 20	520481	520311	34	53	K 21	520154	520132	30	75
K 22	520076	520056	22	55	K 23	519926	520252	24	60
K 24	519794	520229	15	48	K 25	519382	520524	20	70
K 26	519342	520597	6	19	K 27	515895	514356	23	59
K 28	515896	514356	14	59	K 30	515458	513884	10	108
K 31	515712	514939	11	91	K 32	515539	514910	14	132
K 33	515539	514871	9	61	K 34	515274	514784	19	102
K 35	514810	514700	18	70	K 36	516418	514292	18	66
K 37	516322	514207	15	75	K 38	516479	514028	14	115
K 39	513335	516550	11	54	K 40	513359	516625	9	68
K 41	513441	516597	10	49	K 42	513396	516442	20	77
K 43	514058	516117	10	54	K 44	514464	515468	11	75
K 45	514383	515397	14	63	K 46	514402	515220	19	82
K 47	514679	514945	10	51	K 48	514830	514928	10	110
K 49	514796	518476	9	230	K 50	515057	518421	13	325
K 51	515585	519121	76	345	K 52	515446	519189	64	455
K 53	515423	519289	70	96	K 54	515036	520374	26	52
K 55	514338	519904	61	150	K 56	514404	519990	104	325
K 57	515179	519523	160	460	K 58	513336	519676	6	143
K 59	513294	519706	10	126	K 60	513238	519520	10	97
K 61	513228	519474	5	75	K 62	513214	519238	10	75
K 63	513330	518592	8	98	K 64	512887	518304	7	86
K 65	513008	518325	7	91	K 66	519813	512411	38	75
K 67	519824	512491	26	98	K 68	519839	512022	36	107
K 69	519799	511952	22	95	K 70	519741	511988	34	98
K 71	519754	512156	32	127	K 72	519683	512212	165	1100
K 73	519251	511912	148	890	K 74	519202	512018	820	1300
K 75	519103	511911	97	2500	K 76	519197	511723	154	800
K 77	518510	512681	110	500	K 78	518430	512764	47	450
K 79	518506	512875	13	88	K 80	518654	512899	750	800
K 81	518813	512661	1350	210	K 82	518780	512504	3200	118
K 83	518328	515772	3	39	K 84	518459	515426	16	145
K 85	518486	515491	19	100	K 86	518950	515489	59	1150
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L 3	518246	513949	18	95	L 4	518388	513879	19	96
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L 7	512365	533458	16	34	L 8	512174	533439	7	22
L 9	512082	533315	11	25	L 10	511814	533241	13	31
L 11	511436	533030	143	44	L 12	511881	533476	6	20
L 13	511974	533373	5	16	L 14	511657	533291	7	20
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L 22	503058	533500	12	44	L 23	504232	526676	67	78
L 24	504147	526815	37	66	L 25	504112	526619	49	85
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L 30	504541	526018	35	110	L 31	504746	525947	32	74
L 32	504743	525859	40	121	L 33	504866	525740	30	76
L 34	505098	525396	30	69	L 35	517198	521781	9	56
L 36	517299	521647	32	115	L 37	517458	522278	41	99
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L 54	507470	527015	29	34	L 59	519015	532105	12	11
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L 66	518011	532870	8	18	L 67	517878	532925	19	25
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L 74	516307	534015	35	29	L 75	516166	534122	75	37
L 76	516346	534131	52	35	L 77	516403	534327	70	62
L 78	516252	534336	144	62	L 79	516332	534535	155	58
L 80	520308	529856	71	33	L 81	520182	529750	59	53
L 82	520427	529304	145	50	L 83	520377	528531	11	36
L 84	520458	528694	21	36	L 85	520317	528455	3	42
L 86	520283	528587	45	30	L 87	520010	528363	60	80
L 88	519830	528291	31	35	L 89	519643	528190	6	15
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L 92	517481	527391	40	21	L 93	520710	532414	44	20
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L161	524654	508793	84	975	L162	523822	509291	119	850
L163	523694	509311	98	875	L164	523670	509386	109	1475
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L667	530378	502513	15	60	L668	530378	502439	15	52
L669	530232	502478	21	67	L670	530124	502250	52	70
L671	530124	501770	100	63	L672	531983	502494	30	55
L673	532027	502467	30	75	L674	531742	502302	45	58
L675	531110	502299	27	118	L676	531158	502353	13	68
L677	531021	502317	24	98	L678	530923	502391	32	80
L679	530865	502482	25	71	L680	530833	502690	29	70
L681	530578	502510	11	45	L682	526078	500469	32	58
L683	525475	500595	29	56	L684	525406	500534	64	70
L685	524929	500624	37	59	L686	524858	500551	24	65
L701	510963	515324	14	61	L702	511387	514978	12	80
L703	511787	514692	21	82	H8 18	531982	527460	8	80
H8 19	532071	527354	11	60	H8 20	532214	527230	16	60
H8 21	532186	526940	15	78	H8 22	533210	526714	53	83
H8 23	532946	526908	45	197	H8 24	533939	527370	12	42
H8 25	534106	527422	50	71	H8 26	534377	526934	250	152
H8 27	534260	527112	105	100	H8 28	534772	524438	72	71
H8 29	534840	524263	190	111	H8 30	534227	524238	75	90
H8 31	533971	524335	70	79	H8 32	534160	524471	96	80
H8 33	533467	524656	40	0	H8 34	533336	524591	20	27
H8 35	533346	524179	23	38	H8 36	533320	523808	22	40
H8 37	535232	523572	194	160	H8 38	535108	523471	26	151
H8 39	534984	523388	115	85	H8 40	534743	523488	320	219
H8 41	534520	523659	290	218	H8 42	534610	523746	325	192
H8 43	534629	523874	290	115	H8 44	534870	523811	132	156
H8 45	530787	530415	154	166	H8 46	530630	530274	47	84
H8 47	537405	522227	31	0	H8 48	536869	522353	40	79
H8 49	536776	521583	60	60	K8 14	520028	516229	48	80
K8 15	520027	516302	37	76	K8 16	520179	516407	41	84
K8 17	526910	531086	15	40	K8 18	527255	530638	15	36
K8 19	527443	530343	15	39	K8 20	528572	529544	20	56
K8 21	529208	529439	20	55	K8 22	529570	529362	21	68
K8 23	530264	527775	20	61	K8 24	531563	528436	40	100
K8 25	531742	528408	71	185	K8 26	531918	528350	75	198
K8 27	532038	528423	68	181	K8 28	532201	528382	110	340
K8 29	531638	528923	36	93	K8 30	531395	529104	40	112
K8 31	535386	524394	400	105	K8 32	535297	524277	195	92
K8 33	535202	524416	220	110	K8 34	535259	524686	145	70
K8 35	535334	524756	145	69	K8 36	535810	524566	161	90
K8 37	535747	524635	85	48	K8 38	536084	524287	120	54
K8 39	536249	524075	150	83	K8 40	536408	524026	105	73
K8 41	536302	523976	120	95	K8 42	539747	520072	10	40
K8 43	539103	519607	50	40	K8 44	539157	519488	40	40
K8 45	540300	520102	15	40	K8 46	539882	519322	73	40
K8 47	539515	518939	74	40	K8 48	539540	518835	64	40
K8 49	540368	519217	40	40	K8 50	540128	518516	88	40
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K8 53	540695	517914	35	40	K8 54	540417	517639	86	40
K8 62	518979	534409	15	72	K8 63	519054	534313	30	60
K8 64	518914	534205	15	65	K8 72	517872	534461	45	42
K8 73	517687	534197	106	81	K8 74	517812	534225	29	110

P8 1	532112	529023	115	435	P8 2	531943	529254	50	265
P8 3	532006	529516	55	120	P8 6	535611	525840	141	72
P8004	531766	529916	50	92					
P8005	531813	529374	41	180					
P8 7	535808	526110	210	100	P8 8	536068	526542	135	70
P8 9	535770	525295	135	77	P8 10	536254	525947	155	90
P8 11	536396	525810	146	98	P8 12	536034	525315	240	90
P8 13	537956	520286	46	80	P8 14	538214	519286	36	95
P8 15	538199	519413	165	98	P8 16	538010	519418	170	107
P8 17	537802	519546	110	95	P8 18	537783	519634	137	166
P8 19	537552	519549	125	135	P8 20	537292	519467	130	145
P8 21	538689	520046	55	94	P8 22	538838	520159	36	72
P8 23	538774	520207	55	80	P8 24	538868	520109	46	112
P8 25	538956	520075	56	80	P8 26	539242	520335	35	75
P8 27	539162	520540	6	25	P8 28	539187	520931	10	45
P8 55	509635	531119	99	95	P8955	510067	531556	112	91
P8 56	509824	531811	113	99	P8 57	509670	531807	74	73
P8 58	509418	531539	69	65	P8 59	509519	530780	74	75
P8 60	509534	530571	54	68	P8 61	509447	530343	44	59
P8 62	510700	531746	192	84	P8 63	511186	531822	105	40
P8 64	511106	531753	325	63	P8 65	511128	531635	260	35
P8 87	509124	531651	81	103	P8 88	509135	531738	76	107
P8 93	503859	530002	44	128	P8 94	503783	530002	45	106
P8 95	503898	529847	16	44	P8 96	504020	529742	106	104
P8 97	504070	529876	250	104	P8 98	504044	529991	245	146
P8 99	503983	529983	110	114	P8100	504083	530092	174	136
P8101	504022	530299	7	115	P8102	503845	530356	6	53
P8103	503777	530417	6	69	P8104	504132	530183	40	50
P8105	504257	530071	25	55	P8107	503725	527306	190	102
P8108	503710	527358	135	96	P8109	503533	527397	190	225
P8110	503534	527487	88	92					
P8111	503614	527343	235	185	P8112	503606	527410	280	142
P8113	503490	527361	325	114	P8114	503092	527594	122	84
P8115	503523	527680	106	62	P8116	509385	526644	89	65
P8127	508898	527571	210	110	P8128	508834	527684	310	250
P8129	508855	527810	400	300	P8130	508933	527990	115	160
P8131	508803	527559	183	38	P8132	508710	527571	265	58
D8 1	532593	529710	120	160	D8 2	532735	529663	70	260
D8 3	532970	529767	60	348	D8 5	532964	529448	27	105
D8 6	533062	529702	33	94	D8 7	533258	529831	30	92
D8 8	533604	529978	25	110	D8 9	533977	530055	32	110
D8 10	533368	530472	100	98	D8 11	533747	530672	80	60
D8 12	533840	530783	95	60	D8 13	534026	530978	106	64
D8 14	534156	531090	100	63	D8 15	534144	531274	70	88
D8 16	533927	525126	74	82	D8 17	533870	525277	78	74
D8 18	533789	525408	75	74	D8 19	533699	525447	70	67
D8 20	533526	525348	75	53	D8 21	535830	523479	220	87
D8 22	535983	523399	350	325	D8 23	536029	523315	185	150
D8 24	535896	523560	205	161	D8 25	536146	523652	215	162
C 1	516750	516750	70	175	C 2	516732	516611	59	182
C 3	516782	516538	44	152	C 4	516778	516412	44	120
C 5	516695	516373	48	168	C 6	516682	516310	36	161
C 7	516749	516232	48	58	C 8	516636	516140	34	175
C 9	516703	515815	36	221	C 10	516630	515727	22	178
C 11	516654	515597	38	163	C 12	516735	515528	50	185
C 13	516738	515432	66	300	C 14	516777	515338	39	320
C 15	516718	515245	20	118	C 16	516802	515205	37	186
C 17	516745	515092	71	190	C 18	516832	515042	54	141
C 19	516814	514877	47	145	C 20	516750	514767	38	185

C 21	516915	514544	44	215	C 22	517054	514288	38	195
C 23	517768	513550	53	250	C 24	523598	517830	64	53
C 25	523443	517656	38	64	C 26	523389	517548	31	38
C 27	523163	517331	36	70	C 28	523211	517176	32	40
C 29	523147	517112	74	40	C 30	523190	516994	43	36
C 31	523147	516958	130	53	C 32	523188	516803	38	38
C 33	523263	516728	34	30	C 34	523303	516603	52	96
C 35	523188	516507	59	48	C 36	523350	516402	41	67
C 37	523399	516240	44	45	C 38	523298	516058	57	61
C 39	523171	516103	32	77	C 40	523163	515915	16	26
C 41	523064	515799	16	20	C 42	519386	512203	135	325
C 43	519542	511998	650	1770	C 44	519543	512235	53	284
C 45	519487	512405	270	3300	C 46	519388	512515	37	141
C 47	519102	512764	20	218	C 48	518931	512784	66	330
C 49	518834	512728	1000	185	C 50	518789	512956	64	230
C 51	518695	512956	940	890	C 52	518681	513225	75	360
C 53	519985	512794	27	215	C 54	519919	512846	22	223
C 55	519974	512978	27	260	C 57	519860	513124	64	325
C 59	519966	513764	160	152					
C 58	519967	513222	52	290	C 60	520936	510240	25	90
C 61	520893	505957	79	100	C 62	520814	506035	42	100
C 63	520925	506058	25	100	C 64	521248	505975	44	100
C 65	521270	506068	20	100	C 66	521263	506190	16	100
C 67	521621	506627	105	100	C 68	522200	506521	980	100
C 69	523168	512038	56	2300	C 70	523118	512130	68	940
C 71	523200	512207	107	2150	C 74	522381	512651	50	51
C 72	522586	512136	100	3700					
C 73	522770	512396	80	232					
C 75	522334	512397	54	49	C 76	522275	512439	45	840
C 77	526497	519111	45	97	C 78	526471	518679	111	100
C 79	526225	517889	75	91	C 80	526202	517050	20	29
C 81	525943	516019	30	46	C 82	526225	515423	24	26
C 83	526706	515076	215	114	C 84	526527	514679	45	81
C 85	529107	515089	20	52	C 86	529012	515093	22	63
C 87	529099	515350	46	74	C 88	528966	515414	42	43
C 89	529004	515690	50	93	C 90	528889	515716	40	87
C 91	528807	515691	29	96	C 92	528339	516491	19	52
C 93	528297	516572	54	118	C 94	523683	523223	24	34
C 95	523635	523279	59	60	C 96	520956	522631	93	98
C 97	520975	522827	69	43	C 98	519761	521852	68	93
C 99	519777	521986	69	91	C100	520123	521175	19	33
C101	520062	521075	24	59	C102	521228	521465	24	38
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C107	513362	511188	9	55	C108	514572	511181	16	74
C109	514527	511120	22	91	C110	514470	511129	25	116
C111	514128	511190	24	93	C112	514250	511257	19	86
C113	514152	511323	20	32	C114	514071	511322	15	93
C115	514007	511338	10	32	C116	513569	511455	13	145
C117	513470	511427	17	160	C118	513356	511610	8	65
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C123	522627	524511	96	45	C125	517451	516868	48	265
C126	517420	516793	79	450	C127	517823	516812	240	700
C130	517443	517839	43	77	R 1	520903	515978	17	50
R 2	520991	515904	26	60	R 3	520964	515779	17	51
R 4	520890	515740	64	43	R 5	521043	515674	25	50
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R 8	521002	515224	19	47	R 9	521071	515019	25	48

R 10	520991	514933	28	30	R 11	521187	514668	27	50
R 12	521240	514576	16	42	R 13	522345	518562	43	66
R 14	521994	518483	21	49	R 15	521900	518291	18	43
R 16	521825	518423	36	64	R 17	521865	518155	73	57
R 18	521839	517740	28	51	R 19	521908	517587	48	74
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R 22	521587	516955	27	37	R 23	521415	516844	15	57
R 24	521749	517863	26	47	R 25	521671	517432	22	35
R 26	521247	516770	25	37	R 27	518406	511854	35	181
R 28	518346	511830	60	107	R 29	518164	511904	82	218
R 30	518077	511959	79	350	R 31	518068	512090	39	150
R 32	518109	512406	46	200	R 33	516163	510677	16	60
R 34	516294	510735	22	88	R 35	516474	510744	8	53
R 36	515988	510898	14	66	R 37	515754	511164	14	66
R 38	516493	511804	11	60	R 39	516287	512088	13	60
R 40	515090	512406	11	60	R 41	514971	512440	14	60
R 42	520219	511335	25	75	R 43	519978	511284	290	560
R 44	520236	511251	55	103	R 45	520078	511151	282	700
R 46	520383	510735	178	595	R 47	520496	510641	27	102
R 48	520579	510084	34	230	R 49	520491	509936	95	580
R 50	520651	509767	57	280	R 51	521079	509544	71	340
R 52	521201	509569	27	38	R 53	521659	509265	64	320
R 54	521791	509382	23	97	R 55	522538	509571	30	220
R 56	522606	509640	73	360	R 57	522551	509825	41	225
R 58	519758	509409	31	97	R 59	520115	509735	88	120
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R 62	521011	509537	175	150	R 63	521440	509276	168	142
R 64	521571	509245	28	67	R 65	521715	509222	59	120
R 66	522315	509119	33	1600	R 67	522652	509544	19	154
R 68	522700	509659	51	200	R 69	522638	510787	57	350
R 70	523114	511106	200	1030	R 71	523422	511333	196	610
R 72	524779	518551	48	36	R 73	525162	518802	89	157
R 74	525239	518939	77	106	R 75	525344	519154	114	64
R 76	525402	519604	32	41	R 77	525522	519680	32	45
R 78	519652	524961	37	54	R 79	519651	525032	86	45
R 80	519850	525114	143	41	R 81	519395	524972	111	39
R 82	519387	524793	14	44	R 83	519472	524906	61	45
R 84	519083	523902	60	82	R 85	519303	523924	43	54
R 86	519183	523979	108	90	R 87	518846	524518	48	38
R 88	518811	524415	43	37	R 89	518009	524301	46	49
R 90	517866	524305	59	34	R 91	511088	511956	11	65
R 92	511047	511849	16	61	R 93	511012	511942	4	70
R 94	510923	511973	9	62	R 95	511277	512582	12	61
R 96	511454	512837	24	78	R 97	511677	513832	7	59
R 98	511860	513808	10	53	R 99	513619	514649	9	50
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R102	512700	515914	18	74	R103	512352	516165	8	103
R104	512118	516077	10	138	R105	512093	515968	15	79
R106	512136	515865	15	105	R107	508890	519633	13	78
R108	509134	518724	10	58	R109	509199	518640	7	72
R110	510617	521177	125	88	R111	510719	521121	150	115
R112	510467	520966	145	83	R113	510254	520993	39	147
R114	510090	520770	23	90	R115	510204	520698	65	94
R116	510030	520266	71	98	R117	509958	520016	290	120
R118	512740	520173	120	115	R119	512680	520225	120	125
R120	512698	520015	5	65	R121	512507	519946	27	65
R122	512126	519511	7	78	R123	511958	519522	25	102
R124	511872	519143	27	75	R125	511974	519085	13	70
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R128	511315	518086	12	76	R129	511259	518006	13	98
R130	518820	511666	30	170	R131	518683	511735	36	175
R132	518587	511764	24	150	R133	518469	511814	19	135
R134	518462	511683	115	135	R135	518533	511578	46	120
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R139	518065	511311	19	107	R140	518268	511648	122	195
R141	518215	511788	70	168	R142	517972	511916	120	600
R143	517910	511739	120	515	R144	517862	511562	64	420
R145	517828	511656	69	230	R146	517597	511668	80	385
R147	517638	511614	98	98	R148	517775	511972	80	725
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B 3	524262	515647	23	101	B 4	523829	516059	19	53
B 5	526011	513064	25	94	B 6	517335	516430	88	115
B 7	511343	532511	240	73	B 8	511414	532411	160	60
B 9	509188	534414	24	28	B 10	509150	534312	25	56
B 11	508870	534268	37	75	B 12	508887	534349	18	40
B 13	511323	532686	820	0	B 14	511383	532574	195	43
B 15	512388	530303	98	60	B 16	506589	533527	113	71
B 17	506518	533827	79	82	B 18	506506	533602	84	67
B 19	506562	533730	50	80	B 20	506301	534551	46	65
B 21	506266	534658	50	55	B 22	506270	533943	53	61
B 23	506179	534219	33	67	B 24	507339	533636	57	72
B 26	510510	532732	57	37	B 27	510582	532679	130	40
B 30	505736	531129	13	63	B 31	505664	532195	44	75
B 32	502040	531757	10	78	B 33	501134	529367	42	95
B 34	501131	529270	40	75	B 35	501739	527840	51	77
B 36	501643	527846	27	80	B 37	507664	528290	14	57
B 38	513408	529570	76	34	B 39	513352	529535	144	55
B 40	513334	529352	86	79	B 41	513479	529324	94	44
B 42	513348	529114	78	35	B 43	513224	528802	82	50
B 44	513282	528753	98	57	B 45	512965	528590	19	40
B 46	512807	528590	32	27	B 47	512508	528504	41	30
B 48	511990	528391	45	30	B 49	513216	530874	63	39
B 50	513042	531209	31	31	B 51	513027	531727	17	23
B 52	512694	531342	9	23	B 53	512731	531272	9	18
B 54	512507	531406	44	33	B 55	512446	531315	41	30
B 56	512246	531234	20	22	B 57	512135	531286	28	27
B 58	512073	531175	17	22	B 59	511849	531007	29	26
B 60	511718	531079	45	30	B 61	511692	530819	31	27
B 62	515077	520775	12	27	B 63	515028	520866	2	18
B 64	515432	521387	14	62	B 65	515522	521351	19	72
B 66	515531	521544	23	32	B 67	515566	521668	9	40
B 68	515430	521687	30	45	B 69	515550	521791	19	48
B 70	515615	522075	12	35	B 71	515571	522159	4	22
B 72	515646	522465	17	30	B 73	515646	522542	16	28
B 74	516265	523238	96	53	B 75	508956	521570	18	108
B 76	508994	521472	23	101	B 77	508782	521425	26	113
B 78	510770	528791	83	40	B 79	510878	528818	74	55
B 80	510912	528894	45	39	B 81	510525	529314	12	37
B 82	509622	529186	66	52	B 83	510687	530410	87	65
B 84	510874	525878	27	40	B 85	510113	525959	69	67
B 86	510318	525980	54	36	B 87	510451	525094	19	26
B 88	509583	525547	39	52	B 89	514903	529603	80	40
B 90	515867	528574	54	31	B 91	526255	533937	10	54
B 92	526159	533955	11	49	B 93	526272	534103	12	54
B 94	526363	534075	20	66	B 95	526706	534005	9	49
B 96	527011	533959	16	64	B 97	527523	533975	13	48
B 98	527905	534244	20	61	B 99	528358	534003	39	89
B100	528398	534203	35	88	B101	527871	534443	31	78

B102	527517	534228	13	43	B103	527032	534202	14	51
B104	526859	534187	8	41	B105	527562	532586	8	35
B106	527611	532666	10	46	B107	527422	532752	13	50
B108	527458	532671	14	59	B109	527070	532707	13	54
B110	527143	532643	22	80	B111	527071	532495	10	45
B112	527067	532416	8	45	B113	526855	532376	5	35
B114	526932	532392	9	39	B115	526895	532235	16	67
B116	526895	532168	8	60	B117	526927	532073	3	33
B118	527149	531923	4	26	B119	527030	532002	5	31
B120	530879	533487	11	60	B121	531290	532971	8	52
B122	531726	532816	32	107	B123	531522	532280	70	140
B124	528353	532348	35	68	B125	528366	532260	19	66
B126	528266	532282	13	76	B127	528248	532123	29	91
B128	528170	532083	16	60	B129	528150	532236	18	65
B130	528145	532155	20	70	B131	522330	533921	2	39
B132	528808	528147	22	76	B133	528809	528026	16	74
B134	531932	531934	28	104	B135	532192	532316	31	99
B136	532396	532049	51	210	B137	533006	531443	30	71
B138	532659	531006	25	98	B139	534834	523470	98	59
B140	534570	523721	107	63	B141	534570	523535	122	63
B142	534326	523561	110	61	B143	534175	523515	79	50
B144	534175	523451	14	63	B145	529866	530915	19	73
B146	529522	531366	24	70	B147	529282	531774	29	72
B148	529094	531931	19	68	B149	529887	531454	12	56
B150	529960	531386	24	61	B151	530296	530895	24	80
B152	530388	530151	26	85	B153	530682	530328	31	130
B154	520472	526979	1150	94	B155	520534	527062	13	34
B156	521106	526452	250	53	B157	524713	524176	20	83
B158	524130	522549	34	34	B159	526279	520667	190	100
B160	527408	523053	13	59	B161	530494	527086	24	82
B162	530567	526982	21	80	B163	530264	527775	11	63
B164	536964	523122	72	250	B165	536888	523119	82	91
B166	536190	524540	87	61	B167	536330	524166	150	101
B168	536442	525519	330	91	B169	535491	525691	123	80
B170	535620	526340	82	60	B171	535282	526621	109	74
B172	534403	527389	66	52					
B173	533122	530452	99	70	B174	533182	530364	119	82
B175	533607	530621	76	42	B176	533726	530015	51	155
B177	533342	529866	30	160					
B178	533227	528261	45	57	B179	534106	528825	30	40
B180	534173	528756	62	28	B181	533658	528667	34	44
B182	534826	528117	42	43	B184	536108	525677	145	79
B185	530668	529996	30	116	B186	536928	500270	53	70
B187	537124	500446	30	81	B188	537211	500465	11	49
B189	537461	500850	28	71	B190	537535	501231	32	121
B191	537110	501254	34	81	B192	536598	501414	43	106
B193	536531	501446	72	158	B194	533750	502870	19	55
B195	533693	503018	27	74	B196	534385	502906	24	59
B197	534524	502905	19	65	B198	534418	502135	15	64
B199	534619	501413	25	71	B200	534751	500389	30	106
B201	534483	500483	17	72	B202	534432	500613	14	49
B203	535648	511451	35	83	B204	535891	510999	32	85
B205	536205	510705	35	82	B206	536559	511158	16	39
B207	533548	515523	22	73	B208	533399	515079	22	36
B209	533582	515060	23	73	B210	533881	514925	18	45
B211	534770	514349	15	50	B212	534882	514748	44	74
B213	535026	514347	32	69					
B214	531950	512025	25	106	B215	531892	512738	34	92
B216	532297	512338	44	69	B217	532590	512626	24	71

B218	532631	512753	15	48	B219	537338	510031	19	79
B220	537262	509684	11	66	B221	537122	509522	14	61
B222	536286	509483	26	85	B223	537020	510194	19	84
B224	536975	510709	14	340	B225	535328	514238	11	40
B227	535260	512138	20	109	B228	535208	512365	1	20
B229	534159	517906	20	53	B230	534010	518090	16	56
B231	534338	518050	20	65	B232	535916	518265	14	64
B233	527350	502698	138	78	B234	527423	502514	50	71
B235	527346	502461	70	54	B236	527479	502289	40	60
B237	527699	502386	14	45	B238	527699	502238	19	85
B239	527811	502067	43	85	B240	527866	502159	20	52
B241	527990	502011	66	46	B242	527870	501874	22	45
B243	527870	501695	43	70	B244	527782	501120	48	51
B245	528025	501148	41	52	B246	526679	500986	70	86
B247	526494	501021	88	105	B248	526285	501093	93	82
B249	526408	501134	56	90	B250	526154	501194	133	262
B251	525954	501350	90	124	B252	525867	501524	138	267
B253	525826	501727	38	90	B254	525715	501802	35	63
B255	525602	501660	36	60	B256	525659	501598	46	99
B257	525499	501525	53	68	B258	525285	501487	48	70
B259	525030	501458	35	75	B260	524990	501522	18	70
B261	524827	501392	61	81	B262	524785	501198	43	72
B263	524539	500690	35	59	B264	524520	500759	37	66
B265	526078	508270	147	90	B266	525418	507538	48	75
B267	525564	505550	12	53	B268	525652	505573	55	91
B269	524798	506138	22	79	B270	524708	505981	13	66
B271	524865	504862	8	61	B272	524934	504884	30	66
B273	524730	505043	9	91	B274	524794	505089	19	55
B275	523208	501106	200	243	B276	512447	532294	22	44
B277	512624	532902	34	113	B278	512806	532978	31	97
B279	512683	532998	42	72	B280	514224	532791	163	56
B281	514175	532856	227	112	B282	514651	533550	192	53
B283	516850	530226	65	74	B285	517194	530242	27	18
B286	517871	530107	32	46	B287	515578	533023	196	119
B288	515479	533046	88	83	B289	515331	532795	650	84
B290	515063	533185	158	73	B291	515187	532651	330	68
B292	515640	532325	195	68	B293	515022	532235	1475	115
B294	514827	532333	625	85	B295	518783	528949	180	130
B296	518646	528896	83	90	B297	516799	528782	93	72
B298	516447	528454	245	70	B299	505155	527026	36	53
B300	505203	526960	65	58	B301	505462	527032	64	75
	-99999								

Comments
on

A Regional Interpretation of the Toodoggone Project. by F.D. Forgerow, Ph.D.
October 9, 1970.

by. T.E.K.

activity with the resulting addition of pyrrhotite and pyrite. An economic source of copper mineralization is not indicated.

WATER SURVEY - EAST SECTOR

Results of the original water survey were inconclusive in that in no case was it possible to defenitely correlate high zinc values in water with known or probable occurrences of economic mineralization. These results were discussed originally in an earlier report by the writer, "Results of Geochemical Surveys in the Toodoggone River Area," 1968, and should be referred to by the reader.

Because of a number of factors, both logistical and geochemical, the East Sector does not lend itself very well to conventional stream sediment or water surveys and homogeneous dispersion patterns appear to be the exception, rather than the rule. As a result, it is unlikely that resampling of the area would provide any additional significant information. Instead, the following approach to preliminary follow -up work is recommended.

All "single-site" anomalies should be systematically resampled (waters and stream sediments) and tested for Zn in waters, and Cu, Pb, Zn in sediments. One full day at least, should then be spent at the time of sampling to thoroughly prospect the

W.F.B. July 17 1969.

Re. Page 2 (top. paragraph)

Water sampling in the eastern sector was recommended by W.F.B. in 1967 as a superior method due to lithology and topography. The stream sediment samples were only picked up as a "check" or afterthought, especially when water samples showed sporadic analytical results. Therefore some confusion prevails as to the best method of sampling.

Page 3

There was no attempt made to sample the wide, overburden-covered river valleys which were considered poor environments for geochemical surveys. (Obo, Thudaka, Finlay, Toodoggone, Chukachida, and others). This variation would obviously affect the uniformity of sample density. Therefore, excluding the river valleys the sample density is well over the considered minimum of .5 samples per square mile.

Page 10 & 11 - SE of the Finlay can definately stand more work by a prospecting-sampling team. (as was done at Spinel in 1968).

Page 11 - Toodoggone R - Jock Cr. Area.

Riga Group.

well exposed rock over ~25% ~~of the~~ areal & 1000' vertical extent ~~area~~ was prospected in detail (as well as nearby float). Interesting showings found in cliffs were rather confined. The low-lying overburden covered area open to question was subjected to magnetic and I.P. surveys, while the responsive areas of the above surveys were soil sampled. As a general check the streams in the immediate area were sampled and prospected in detail. The surveys failed to outline a definite target other than the known showings and the general area.

Recommendations — a study of metamorphism — would require highly expert help. Superficially the rocks are obviously metamorphosed.

Uranium & mercury vapour studies are O.K., as is Zn, Pb, Ag association.

The Pillar Group.

Page 15. - Anomalies as they are shown on the existing ground survey maps can be considered to have been cut off by the survey results or outcrops. One exception is a magnetic high at 15W, 30N in the Jock Cr. sediments.

Unquestionably this is a well altered area, the location of an air-mag high and .18% Cu over about 20' in DDH P-1 at 550 feet.

Detailed prospecting covered areas not surveyed by soil sampling and magnetics.

Incidentally, the 1967-68 stream sediment survey the Pillar ground as the most anomalous in that areas.

The Spartan Group

Page 17. - What will the recommended survey show in addition to the soil and rock chip - outcrop surveys already done, unless the surveys are extended beyond the claim boundaries

Garnet

Page 17. - stream samples analyzed for Mo resulted in background values only.

Source of the anomaly is a ridge surrounding a cirque. The rocks are exposed to 1000' vertically with no substantial variation in the sparse Cu mineralization. The anomaly is cut off on 3 sides by barren rock outcrops & sediments. The only areas open to question is the cirque opening easterly.

8A
46A-45A
30B
SE

Other anomalies —

Zn 24A, Cu 33A & 40A — Prospected in detail. Also. air mag & E.M. anomaly covered by 36 JK claims, soil sampled & ground mag. Detailed geology planned next year - 1971.

Zn 29A & 31A, Cu 43A. — Other than the valleys the ridges and outcrops which supply the stream sediments have been prospected, & old & new showings checked out as confined, narrow vein-type definitely non-economics at this time.

Page 21

It should be noted that claims were staked (and surveyed) to protect a particularly interesting area, all marginal ground has been prospected in detail as well.

Page 25. — The Zn anomaly east of Spinel was prospected in as much detail as the Cu near Fox Pass.

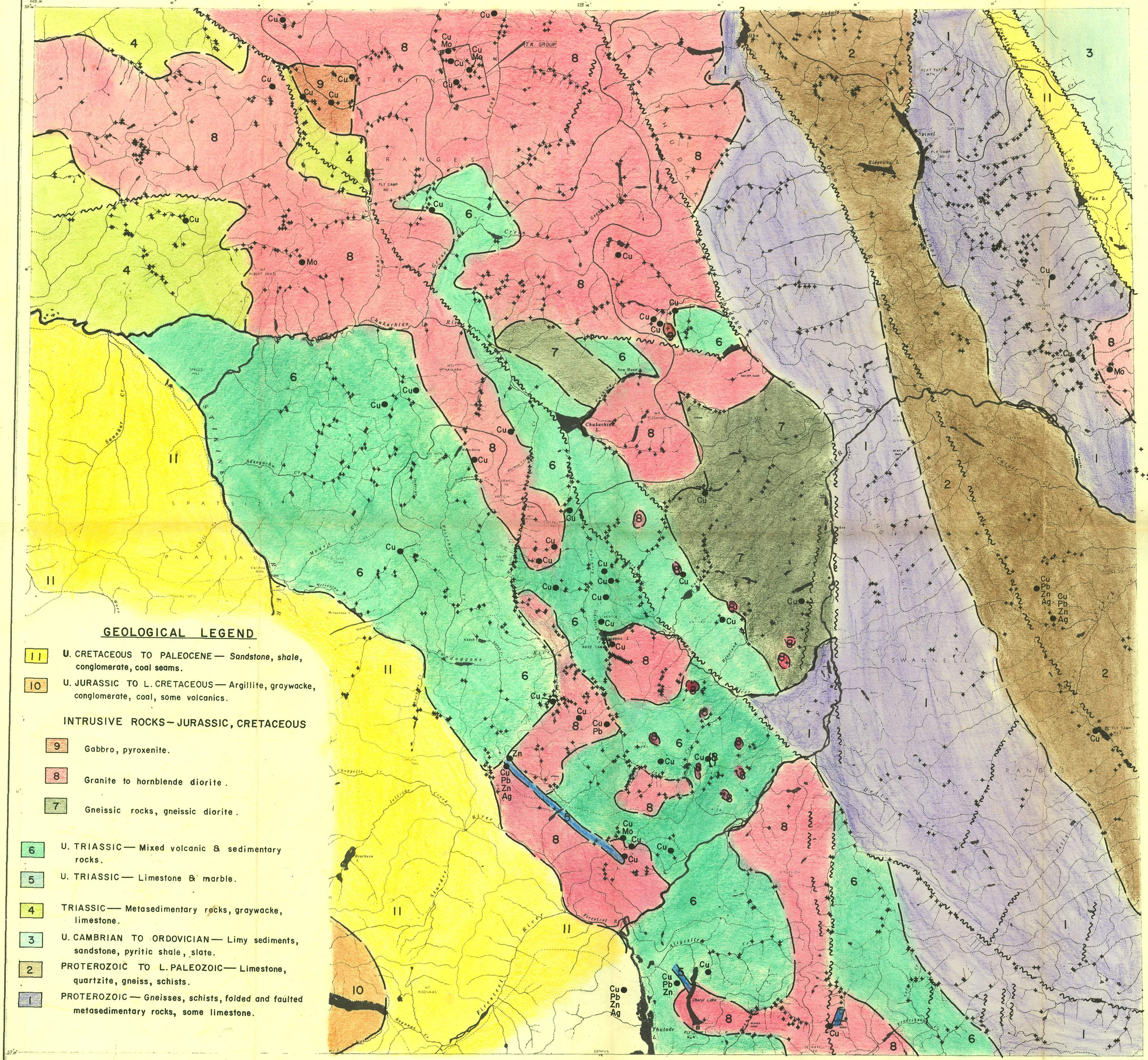
Admittedly anomalies 8A (Lunar Cr.), 45A-46A (Chukachida) 30B (Pine) and isolated anomalies SE of Finlay R. have not been prospected and or surveyed in detail mainly because the ground is owned & investigated by others (except the SE area of course). Otherwise the anomalies have been either staked and surveyed in detail by geochemical, geophysical and geological methods, or the outcrops have been prospected in detail.

Methods which have not been applied on a very scale are soil sampling, rock chip sampling (outside of property work), biogeochemical surveys, uranium and mercury vapour halo studies, or a good mobile ground geophysical method (other than magnetometer.)

A method effective to 50'+ depths would be the most favorable

Any or several of the above methods can be still applied to study the TDG anomalies, if reasonable evidence exists as to their effectiveness.

EK.



GEOLOGICAL LEGEND

11 U. CRETACEOUS TO PALEOCENE — Sandstone, shale, conglomerate, coal seams.

10 U. JURASSIC TO L. CRETACEOUS — Argillite, graywacke, conglomerate, coal, some volcanics.

INTRUSIVE ROCKS – JURASSIC, CRETACEOUS

9 Gabbro, pyroxenite.

8 Granite to hornblende diorite.

7 Gneissic rocks, gneissic diorite.

6 U. TRIASSIC — Mixed volcanic & sedimentary rocks.

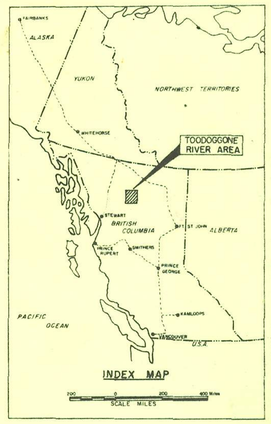
5 U. TRIASSIC — Limestone & marble.

4 TRIASSIC — Metasedimentary rocks, graywacke, limestone.

3 U. CAMBRIAN TO ORDOVICIAN — Limy sediments, sandstone, pyritic shale, slate.

2 PROTEROZOIC TO L. PALEOZOIC — Limestone, quartzite, gneiss, schists.

1 PROTEROZOIC — Gneisses, schists, folded and faulted metasedimentary rocks, some limestone.



This map is a plot of all samples which have corresponding analytical data.

WATERSHED DIVISION
DRAINAGE SUBDIVISION
CREEK
LAKE
MARSH
TRAIL
STREAM SEDIMENT SAMPLE POINT
WATER SAMPLE POINT
LOCATION OF KNOWN MINERAL OCCURRENCE

MAP I

REGIONAL GEOCHEMISTRY

SAMPLE POSITIONS

GEOLOGY

MINERAL OCCURRENCES

LEGEND

GEOLOGICAL BOUNDARY

FAULT

SAMPLE LOCATION

MINERAL OCCURRENCE — Cu, Mo

QUEBEC CARTIER MINING COMPANY

TOODOGGONE RIVER AREA (94E)

LIARD AND OMINECA MINING DIVISIONS B.C.

SCALE MILES

BY

CORDILLERAN EXPLORATION CORPORATION LTD.

400-837 W. HASTINGS ST. VANCOUVER, CANADA

DECEMBER, 1967

inches

centimetres

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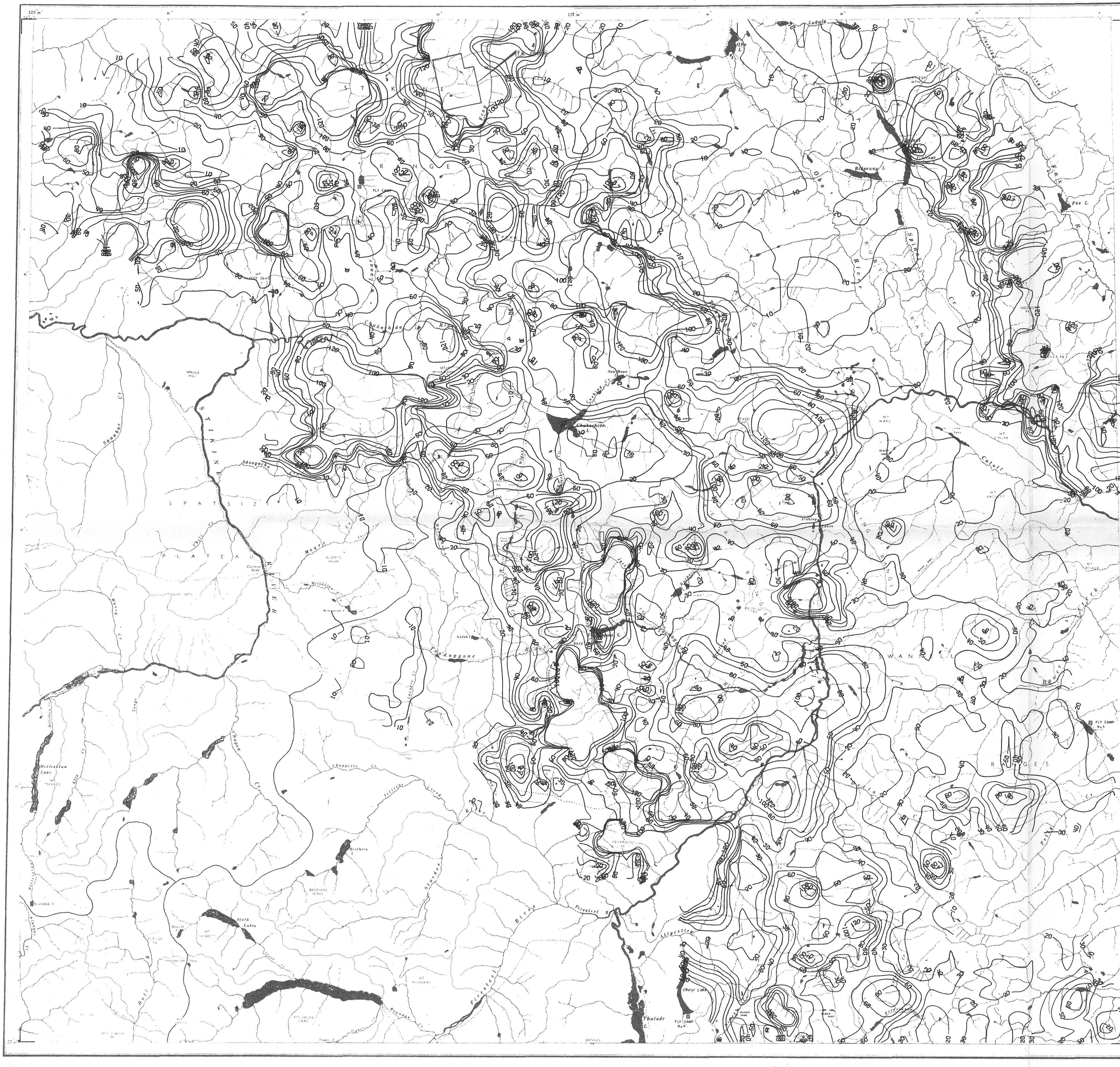

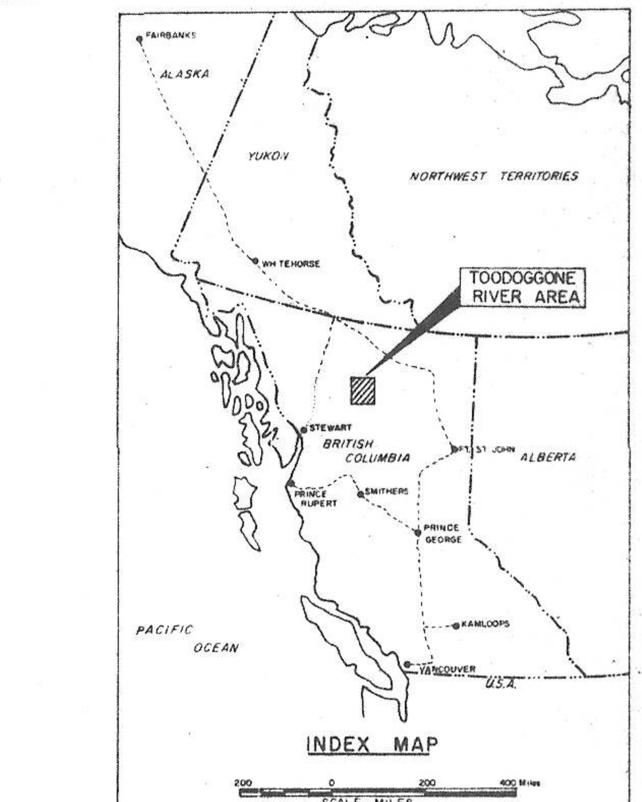

INDEX MAP

WATERSHED DIVISION
DRAINAGE SUBDIVISION
CREEK
LAKE
MARSH
TRAIL
STREAM SEDIMENT SAMPLE POINT
WATER SAMPLE POINT
LOCATION OF KNOWN MINERAL OCCURRENCE

MAP 2

REGIONAL GEOCHEMISTRY

MEASURED COPPER

COMPILATION, INTERPRETATION:
Forgeron, Gleeson, Smith & Assoc. Ltd.

INTERPOLATED COPPER CONTENTS CONTOURED AT 10, 20, 30, 40, 50, 60, 80, 100, AND 120 PPM.

QUEBEC CARTIER MINING COMPANY

TOODOGGONE RIVER AREA (94E)

LIARD AND OMINECA MINING DIVISIONS B.C.

SCALE MILES

BY

CORDILLERAN EXPLORATION CORPORATION LTD.
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inches
centimetres
BRITISH COLUMBIA GEOLOGICAL SURVEY
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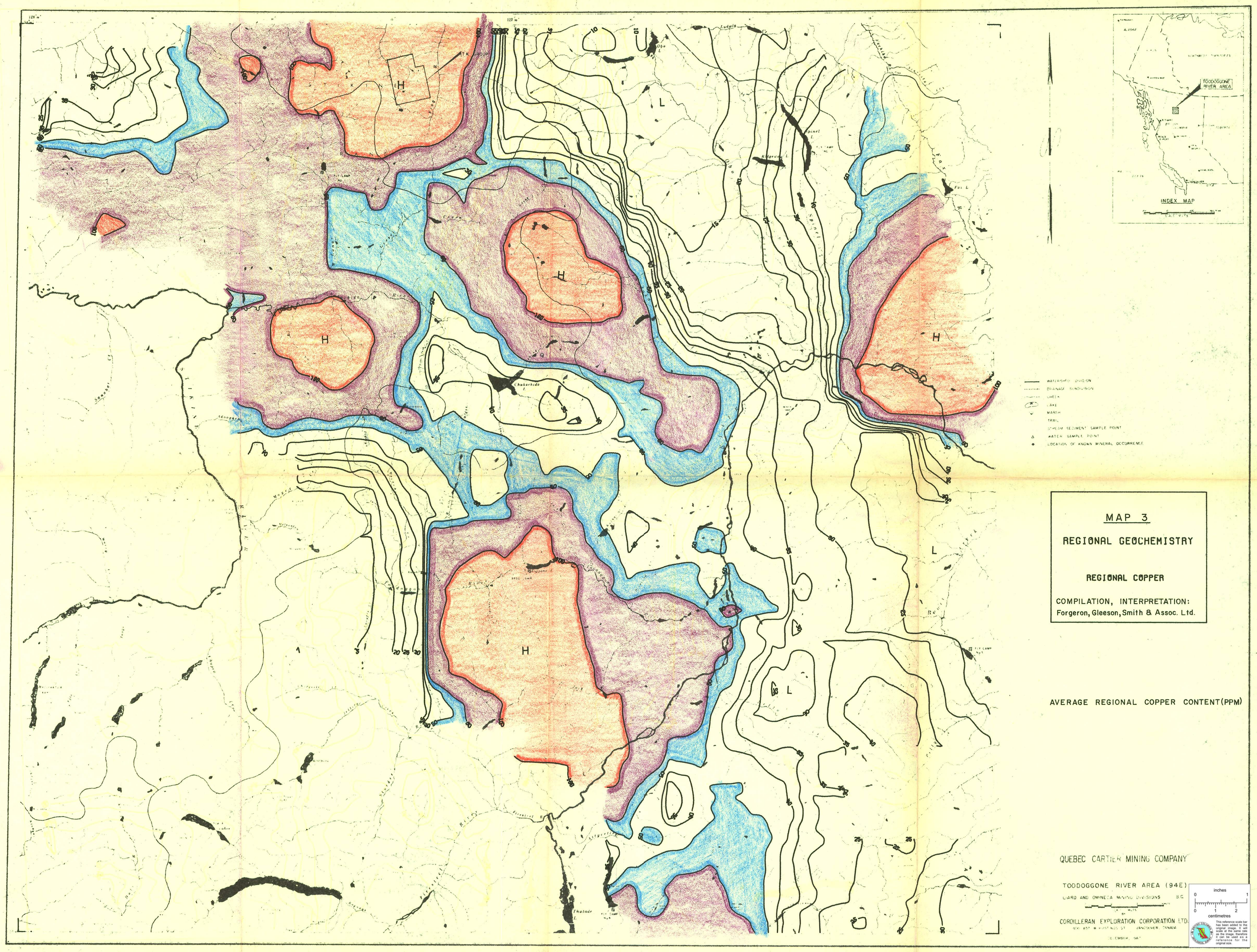
MAP 3
REGIONAL GEOCHEMISTRY
REGIONAL COPPER
COMPILATION, INTERPRETATION:
Forgeron, Gleeson, Smith & Assoc. Ltd.
AVERAGE REGIONAL COPPER CONTENT(PPM)
INDEX MAP
TOODOGGONE RIVER AREA
WATERSHED DIVISION
DRAINAGE SUBDIVISION
CREEK
LAKE
MARSH
TRAIL
STREAM SEDIMENT SAMPLE POINT
WATER SAMPLE POINT
LOCATION OF KNOWN MINERAL OCCURRENCE
QUEBEC CARTIER MINING COMPANY
TOODOGGONE RIVER AREA (94E)
LIARD AND OMINECA MINING DIVISIONS B.C.
CORDILLERAN EXPLORATION CORPORATION LTD.
inches
centimetres
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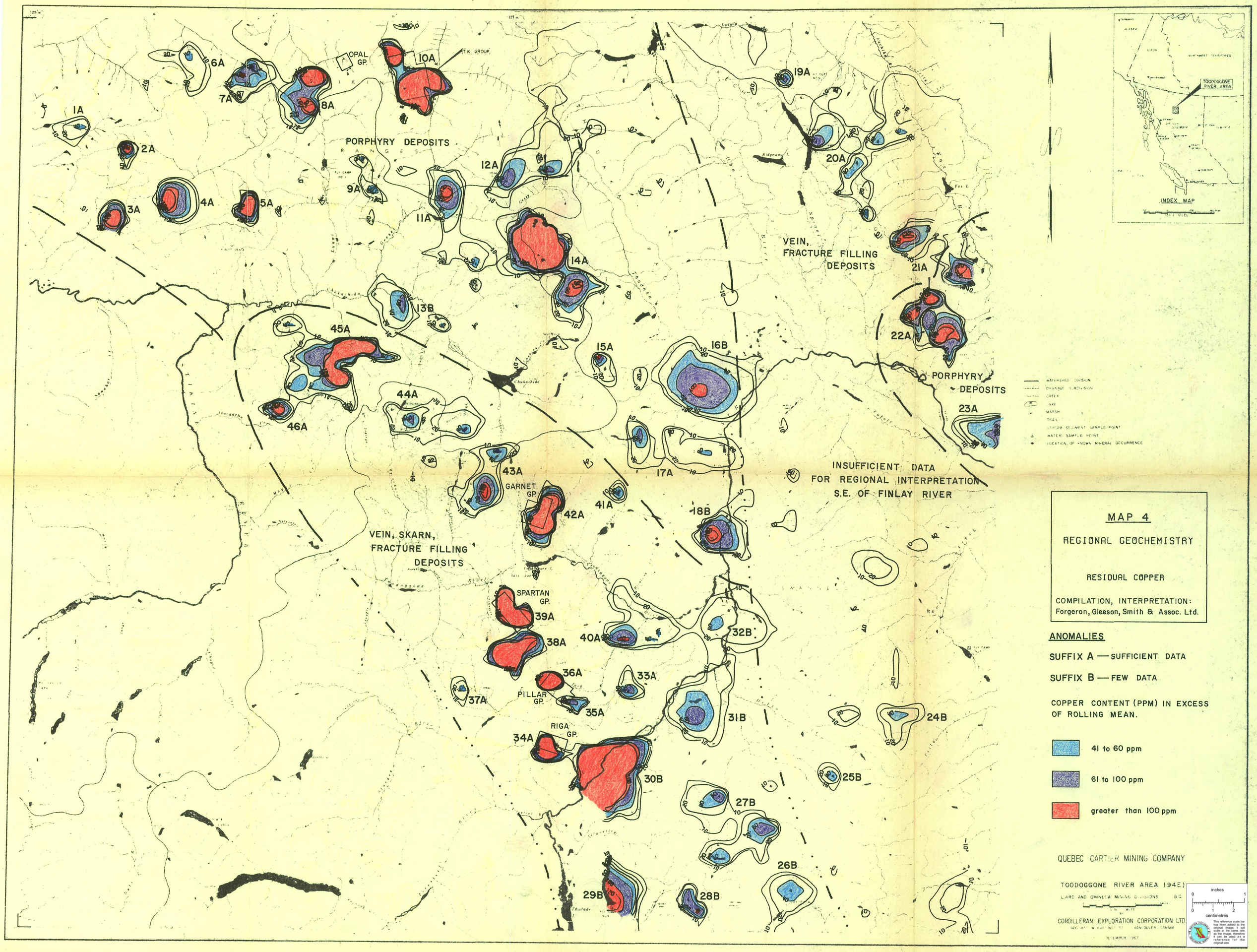
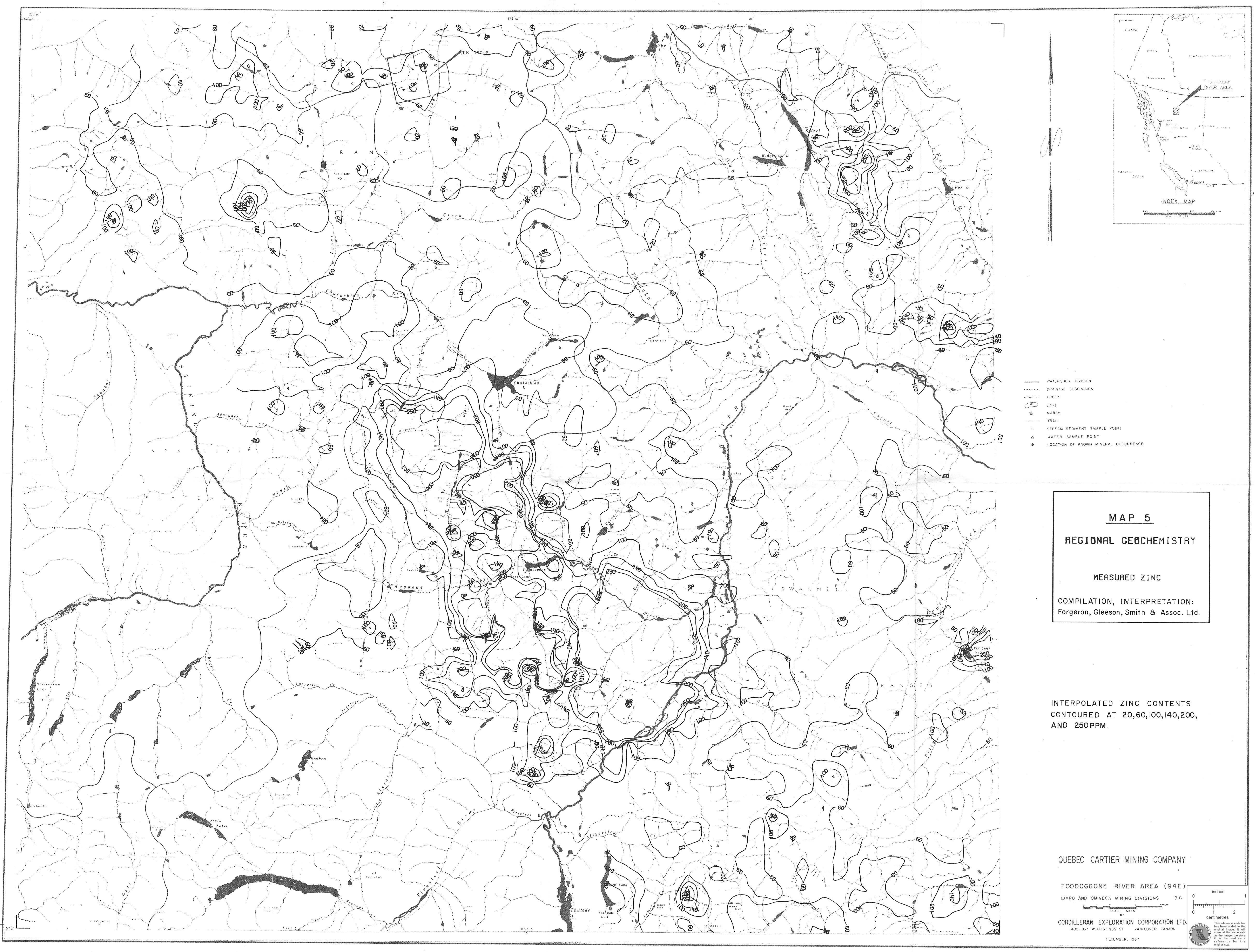

PORPHYRY DEPOSITS
OPAL GP.
T.K. GROUP
VEIN, FRACTURE FILLING DEPOSITS
PORPHYRY DEPOSITS
INSUFFICIENT DATA FOR REGIONAL INTERPRETATION S.E. OF FINLAY RIVER
GARNET GP.
VEIN, SKARN, FRACTURE FILLING DEPOSITS
SPARTAN GP.
PILLAR GP.
RIGA GP.
1A
2A
3A
4A
5A
6A
7A
8A
9A
10A
11A
12A
13B
14A
15A
16B
17A
18B
19A
20A
21A
22A
23A
24B
25B
26B
27B
28B
29B
30B
31B
32B
33A
34A
35A
36A
37A
38A
39A
40A
41A
42A
43A
44A
45A
46A
INDEX MAP
TOODOGGONE RIVER AREA
WATERSHED DIVISION
DRAINAGE SUBDIVISION
CREEK
LAKE
MARSH
TRAIL
STREAM SEDIMENT SAMPLE POINT
WATER SAMPLE POINT
LOCATION OF KNOWN MINERAL OCCURRENCE
MAP 4
REGIONAL GEOCHEMISTRY
RESIDUAL COPPER
COMPILATION, INTERPRETATION:
Forgeron, Gleeson, Smith & Assoc. Ltd.
ANOMALIES
SUFFIX A — SUFFICIENT DATA
SUFFIX B — FEW DATA
COPPER CONTENT (PPM) IN EXCESS OF ROLLING MEAN.
41 to 60 ppm
61 to 100 ppm
greater than 100 ppm
QUEBEC CARTIER MINING COMPANY
TOODOGGONE RIVER AREA (94E)
LIARD AND OMINECA MINING DIVISIONS B.C.
CORDILLERAN EXPLORATION CORPORATION LTD.
DECEMBER 1967
inches
centimetres



INDEX MAP
TOODOGGONE RIVER AREA
WATERSHED DIVISION
DRAINAGE SUBDIVISION
CREEK
LAKE
MARSH
TRAIL
STREAM SEDIMENT SAMPLE POINT
WATER SAMPLE POINT
LOCATION OF KNOWN MINERAL OCCURRENCE
MAP 5
REGIONAL GEOCHEMISTRY
MEASURED ZINC
COMPILATION, INTERPRETATION:
Forgeron, Gleeson, Smith & Assoc. Ltd.
INTERPOLATED ZINC CONTENTS CONTOURED AT 20,60,100,140,200, AND 250PPM.
QUEBEC CARTIER MINING COMPANY
TOODOGGONE RIVER AREA (94E)
LIARD AND OMINECA MINING DIVISIONS B.C.
SCALE MILES
BY
CORDILLERAN EXPLORATION CORPORATION LTD.
400-837 W. HASTINGS ST. VANCOUVER, CANADA
DECEMBER, 1967
inches
centimetres
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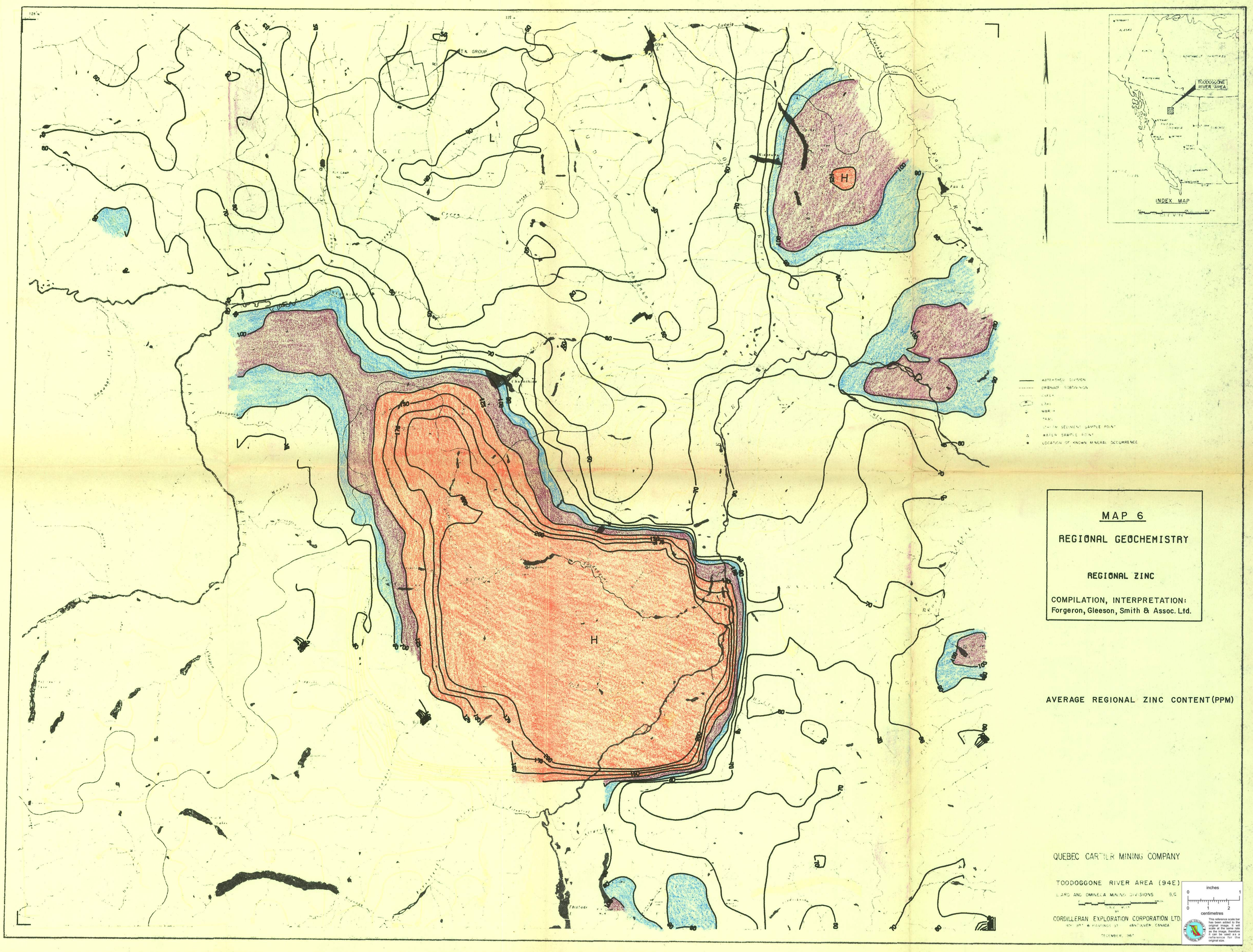
BRITISH COLUMBIA GEOLOGICAL SURVEY


MAP 6
REGIONAL GEOCHEMISTRY
REGIONAL ZINC
COMPILATION, INTERPRETATION:
Forgeron, Gleeson, Smith & Assoc. Ltd.
AVERAGE REGIONAL ZINC CONTENT (PPM)
INDEX MAP
TOODOGGONE RIVER AREA
WATERSHED DIVISION
DRAINAGE SUBDIVISION
CREEK
LAKE
MARSH
TRAIL
STREAM SEDIMENT SAMPLE POINT
WATER SAMPLE POINT
LOCATION OF KNOWN MINERAL OCCURRENCE
QUEBEC CARTIER MINING COMPANY
TOODOGGONE RIVER AREA (94E)
LARD AND OMINECA MINING DIVISIONS B.C.
CORDILLERAN EXPLORATION CORPORATION LTD.
DECEMBER, 1967
inches
centimetres
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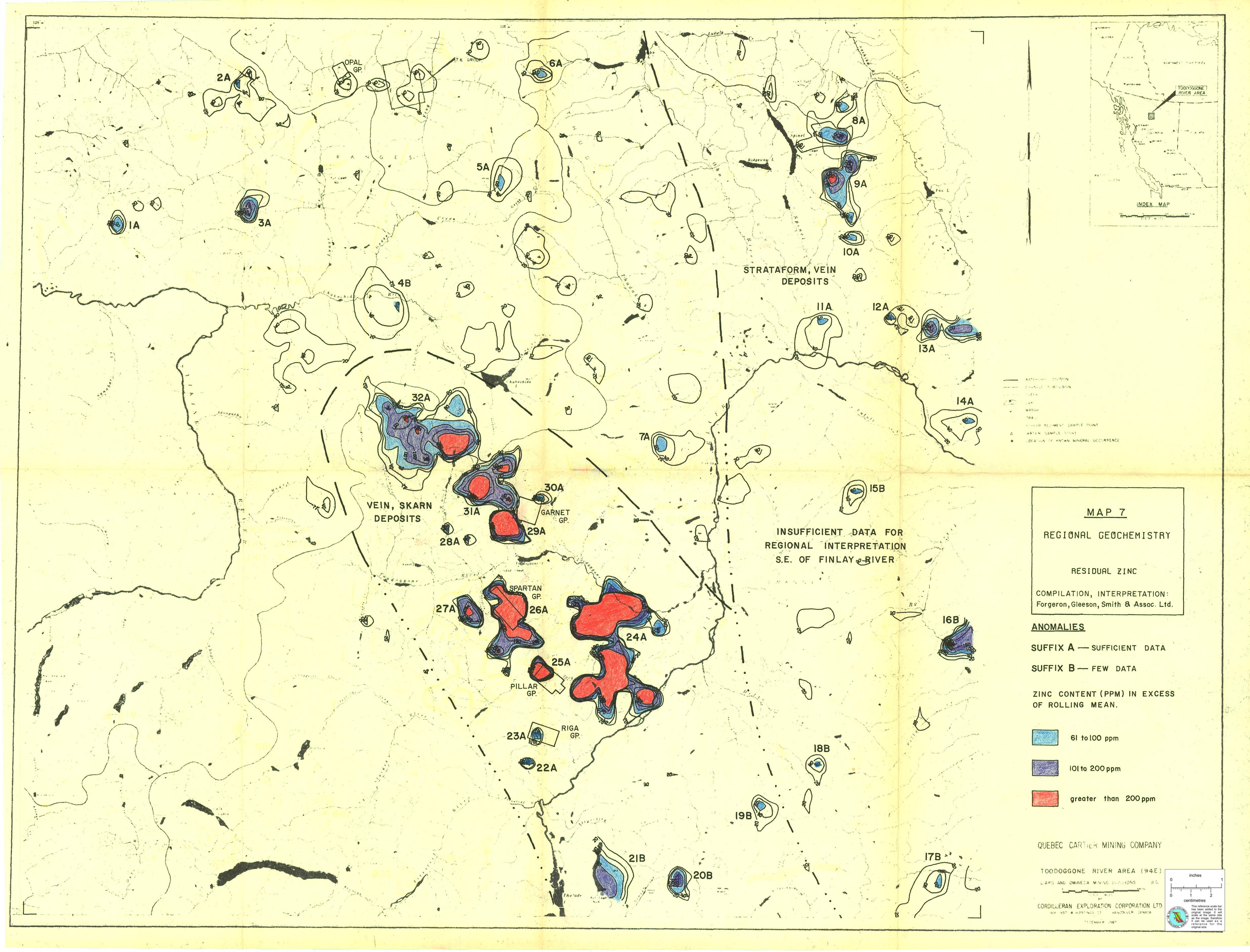
MAP 7
REGIONAL GEOCHEMISTRY
RESIDUAL ZINC
COMPILATION, INTERPRETATION:
Forgeron, Gleeson, Smith & Assoc. Ltd.
ANOMALIES
SUFFIX A — SUFFICIENT DATA
SUFFIX B — FEW DATA
ZINC CONTENT (PPM) IN EXCESS OF ROLLING MEAN.
61 to 100 ppm
101 to 200 ppm
greater than 200 ppm
QUEBEC CARTIER MINING COMPANY
TOODOGGONE RIVER AREA (94E)
LAKES AND OMINECA MINING DIVISIONS B.C.
CORDILLERAN EXPLORATION CORPORATION LTD.
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TOODOGGONE RIVER AREA
STRATAFORM, VEIN DEPOSITS
VEIN, SKARN DEPOSITS
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OPAL GP.
TK GROUP
GARNET GP.
SPARTAN GP.
PILLAR GP.
RIGA GP.
1A
2A
3A
4B
5A
6A
7A
8A
9A
10A
11A
12A
13A
14A
15B
16B
17B
18B
19B
20B
21B
22A
23A
24A
25A
26A
27A
28A
29A
30A
31A
32A
inches
centimetres