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1989 GEOLOGICAL REPORT ON THE KOR PROPERTY, B.C.

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NTS 92N/7E

(August 10, 1989)

for

GOLDEN RULE RESOURCES LTD.

by

R.D. Cruickshank, M.Sc., FGAC

GEOLOGICAL BRANCH ASSESSMENT REPORT

3/1

1989 GEOLOGICAL REPORT ON THE

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KOR PROPERTY, B.C.

NTS 92N/7E

LATITUDE 51 DEG. 22'30"N LONGITUDE 124 DEG. 36'00"W

CLINTON MINING DIVISION

for

GOLDEN RULE RESOURCES LTD.

by

R.D. CRUICKSHANK, M.Sc., FGAC

August 10, 1989

SUMMARY

The KOR property occurs in the Coast Mountains, about 250 km northwest of Vancouver. Access is by helicopter; the nearest base is at Bluff Lake, 40 km to the north. Topography in the area is very steep.

The claim group consists of four modified grid claims totalling 56 units. Two other claims staked in the area will not be retained.

Gold mineralization on the property was discovered by Falconbridge in the 1960's. Various other operators have held the area in subsequent years. The Morris "Mine", a small gold deposit discovered in 1907, occurs about 14 km east (there has been no significant production from this occurrence).

Gold mineralization at KOR occurs in the contact zone of the Tiedemann Pluton, part of the Coast Plutonic complex. Gold bearing veins are related to ankerite-pyrite-sericite alteration in the upper part of a granitic (quartz diorite?) sill. The alteration zone is about 900 m long and 15 m to 30 m thick. Veins consist of quartz and iron carbonate (ankerite?), with from nil up to a few percent sulphides (mainly pyrite; rarely chalcopyrite, arsenopyrite, or galena). The veins are dispersed through the alteration zone, rarely attain a maximum of 1 m in width, and constitute less than one percent of the overall volume. Some veins also occur in unaltered country rocks adjacent to the sill.

Chip samples from two veins contained appreciable arsenopyrite content which ran 49.7 g/tonne and 64.5 g/tonne gold (1.45 oz/ton and 1.88 oz/ton, respectively). Four other veins ran over 1 g/tonne in one or more samples. A chalcopyriteweaker gold - silver correlation is apparent in some of these veins: silver and gold attain a maximum of about 17 g/tonne and 10 g/tonne, respectively in this situation. Wall rocks adjacent to the richest vein(s) carry little gold.

Only veins within the sill carry significant gold, and of these, all but one occur in the upper, altered portion of the body. The mineralization therefore exhibits a marked lithological control. Large, mineralized structures were not observed.

It is unlikely that a large, economic deposit could be present at KOR, because:

a) large mineralized structures have not been identified;

- b) economic gold grades occur in small, dispersed veins which appear to be confined to the sill;
- c) the wall rocks adjacent to the richest vein(s) within the sill do not carry economic grades of gold, and all of the veins outside the sill are vertually barren; and
- d) the sulphide minerals that correlate with better gold grades (chalcopyrite, arsenopyrite) occur erratically.

Even if a large, low grade deposit could be established here, the economic benefits of bulk mining would be offset by the extreme topographical situation and attitude of the mineralized zone. Individual mineralized veins appear too small to support an underground, vein - mining operation.

No further work is recommended.

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I. <u>INTRODUCTION</u>

The property occurs in the Coast Mountains of British Columbia, about 250 km northwest of Vancouver. There has been no significant mineral production in the district. The only known mineral deposit in the region is the "Morris Mine", located 14 km east of the KOR property, which has been explored intermittently from 1907 up to recent times. Reserves at the Morris Mine were calculated in 1982 to consist of 27,215 tonnes (indicated) of 16.784 g/tonne (0.49 oz/ton) gold, 228.896 g/tonne (6.68 oz/ton) silver, and 11.4% antimony (Mineral Deposit File, occurrence 92N-2).

This report describes the results of property inspection and reconnaissance geological mapping conducted by the author and by A. Harmon (prospector) in the period July 16 to July 22, 1989. Thirty (30) rock samples were collected and analysed for gold, silver, and twenty-four (24) other elements.

II. <u>PROPERTY</u>

Table 1 is a list of the mineral claims along with their assessment status. Claims named KOR 1 through KOR 4 were staked in August, 1988. KOR 2 was subsequently disallowed by the gold commissioner because of conflict with another claim which existed at that time. The KOR 7 claim was staked in November, 1988 to cover ground originally claimed as KOR 2. Two other claims, KOR 5 and KOR 6, were also staked in November, 1988: it has been decided to forfeit these latter two dispositions. The locations of KOR 1, KOR 3, KOR 4, and KOR 7 are shown on Figure 1. It should be noted that their positions are marked somewhat incorrectly on the official claim map.

The claims were staked by A. Harmon of Vancouver, B.C., and subsequently transferred to Golden Rule Resources Ltd.



PROPERTY STATUS

No. of Record Record Assessment Assessment Claim Units Date No. Due Date Required KOR 1 16 2667 88-08-17 89-08-17 \$ 1,600 KOR 3 2669 12 88-08-17 89-08-17 1,200 KOR 4 12 2670 88-08-17 89-08-17 1,200 KOR 7 16 2812 88-11-16 89-11-16 1,600 TOTAL: 56 \$ 5,600 TOTAL: == FEE: 280

GRAND TOTAL: \$ 5,880

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III. LOCATION AND ACCESS

The general location of the claims is shown on Figure 2. The property is located in the Coast Mountains, 60 km south of the settlement of Tatla Lake, and 40 km south of a helicopter base (White Saddle Air Services) at Bluff Lake. Tatla Lake is 225 km west of Williams Lake on Highway 20, with Bluff Lake 35 road km south of Tatla Lake. The nearest road to the property reaches the south end of Tatlayoko Lake, 20 km to the northeast. The easiest access to the area is by helicopter from Bluff Lake. The only other alternative is by helicopter from the end of the road at Tatlayoko Lake.

Lodging, meals, gas, and some groceries are available in Tatla Lake. Room and board may also be obtained from the helicopter pilot's extended family at Bluff Lake. The nearest point with full facilities, including scheduled airline service, is Williams Lake. The highway from Williams Lake to Tatla Lake is a good all-weather road, with all but the final 50 km paved.

IV. <u>PHYSIOGRAPHY</u>

The property is located on the north side of Homathko Peak, extending down slope to Homathko River. These is about 7,000' (2,000 m) of relief in the 3.5 km north-south distance across the claim group. Slopes are steep, and precipitous cliffs are common. Foot traverses within the claim group are therefore slow and difficult. Road construction from the valley bottom to the showing area would be extremely difficult and probably impossible.

3

Table 1



Most of thealteration zone associated with the mineralization is accessible by foot. A glacier overhangs the west end of the zone, and was avalanching in July, 1989; however, avalanche debris tended to stop on the ledge above the zone of The campsite indicated on the geology map (Figure 4) interest. is the only feasible location within reasonable walking distance of the alteration zone.

The mineralization occurs at an elevation of about 5900' (1,800 m), at the top of an avalanche slope thickly vegetated with slide alder. Ridges unaffected by avalanches are sparsely treed with alpine fir and whitebark pine.

There is a great deal of bedrock exposure on the property, both above and below timberline. Covered intervals in the vicinity of the showings are underlain by glacier ice, terminal moraines, and talus.

The climate consists of long, cold winters and short, warm summers. Other than small mammals and birds, no wildlife was observed on the property, but it is believed that mountain goats, deer, and grizzly bears are occasionally present.

V. PREVIOUS WORK

According to Mr. Harmon, this property was first staked by Falconbridge in the 1960's. There is no record in the assessment file of work from this period. Both Harmon and von Rosen (1983) report that work at this time consisted of ground sluicing the discovery vein. The trenches were already caved when first investigated by von Rosen in 1974. Von Rosen (1983) reports that in 1974, the showing was covered by the "Eleven Ounce" mineral claim, named after a gold assay rumoured to have been obtained from a 20 cm wide quartz vein.

Assessment report 11770 (von Rosen, 1983) is the only public record of previous work on this occurrence. This report presents the results of an airphoto fracture density analysis, along with observations from von Rosen's 1974 visit to the property. He reports gold bearing quartz veins associated with a buff coloured alteration zone. The alteration zone was reportedly displaced 15 m to 30 m at most creeks and gullies; veins are sometimes found in the cross-faults. Quartz Veins 8 m wide were reported to occur 300 m west of the discovery vein. Assays of which von Rosen (1983) had knowledge were up to 0.68 oz/ton gold and 0.20 oz/ton silver over 5 cm. The fracture density study completed in 1983 found a high density of east - west fractures in the vicinity of the showings. The property was apparently owned by R.R. Dion in 1983.

The present operator, Golden Rule Resources Ltd., has conducted no exploration on the property prior to 1989.

VI. <u>ACTIVITIES IN JULY, 1989</u>

R.D. Cruickshank (geologist, author of this report), and A. Harmon (prospector) were on the claims from July 16, to July 20, 1989. After Harmon's departure on July 20, 1989, the author worked July 21st and 22nd, commuting daily from the helicopter base at Bluff Lake. Activities consisted of prospecting, sampling, reconnaissance geological mapping, and visually checking the mountainside from the helicopter. Assessment files were also examined in the Kamloops office of the MEMPR.

VII. <u>REGIONAL GEOLOGY AND GOLD DEPOSITS</u>

The regional geology has been compiled at a scale of 1:125,000 by Roddick (1985). Part of that map is reproduced as Figure 3 of this report. The property occurs along the northeastern contact of the Coast Plutonic Complex, specifically the Tiedemann Pluton. This pluton is about 100 km long in its southeasterly dimension, and 8 km to 20 km wide. In the vicinity of the KOR claims it consists principally of quartz diorite. In the contact zone, the pluton is structurally underlain by units of the Central Gneiss Complex, including metasediments, metavolcanics, porphyry, gneiss, schist, and granitoid gneiss.

Rocks of the Coast Plutonic Complex are generally in contact to the northeast with Triassic sedimentary and volcanic units. In the vicinity of Homathko Peak, this contact is interpreted by the G.S.C. to be a south-dipping thrust fault. The Blackhorn Thrust, just outside the northern boundary of the property, emplaced all of the previously described units over Cretaceous volcanic and sedimentary rocks (Figure 3).

The "Morris Mine", a property with gold-silver and copper occurrences, is about 14 km east of the KOR claims. The precious metals showings were discovered in 1907 and have been explored intermittently since that time. Information on this property is listed in the Mineral Deposits File (occurrences 92N-1 and 92N-2); assessment reports 1663, 8320, 10520, and 11961; and various old Minister of Mines Annual Reports (eg. 1935, p. F29 - F33). The term "Mine" seems to be a misnomer, as no significant production is recorded in the reports cited above. A road, aerial tramway, housing, and hydroelectric plant were constructed in the 1930's, and underground exploration was also undertaken. Gold-silver mineralization occurs in quartz-stibnite-arsenopyrite veins in Triassic sedimentary and volcanic rocks. Gold occurs free, and silver in tetrahedrite; cockscomb structures are common



KOR PROPERTY LEGEND FOR FIGURE 3

TRIASSIC





SHALE, SANDSTONE, PEBBLE CONGLOMERATE; MINOR SHALY LIMESTONE; UTSC:MAINLY PHYLLITE AND GARNETIFEROUS SCHIST

CARNIAN



DARK GREEN ANDESITIC BRECCIA, TUFF AND FLOWS; MINOR SHALE AND LIMESTONE

PLUTONIC AND METAMORPHIC ROCKS (AGE UNCERTAIN)

COAST PLUTONIC COMPLEX

t

TONALITE; tqd:TONALITE AND QUARTZ DIORITE; tq: TONALITE AND GRANODIORITE

qd

QUARTZ DIORITE; qdd: QUARTZ DIORITE AND DIORITE; qdt: QUARTZ DIORITE AND TONALITE; qm: QUARTZ MONZODIORITE; qmdap: Aplitic QUARTZ MONZODIORITE; IKqd QUARTZ DIORITE DATED BY K-AR

scqu

SCHIST AND QUARTZITE; SC**MV**: SCHIST AND METAVOLCANIC ROCK

mν

METAVOLCANIC ROCK; MVSC:METAVOLCANIC AND SCHIST; in the veins. Most veins occur in proximity to quartz diorite intrusions; the main contact of the Coast Plutonic Complex is 6 km to the south. The above units are all cut by post-ore basaltic dykes. Disseminated copper mineralization in andesite is also present on the property. A 1982 figure for indicated reserves is quoted as 27,215 tonnes grading 0.49 oz/ton gold, 6.68 oz/ton silver, and 11.4% antimony (Mineral Deposit File, occurrence 92N-2).

The Mineral Deposit File also reports pyrite, arsenopyrite, and stibuite in a fault zone about 5 km east of the KOR legal corner post (occurrence 92N-24). The present author feels that this occurrence may be improperly located, and is probably somewhat farther removed from KOR.

VIII. PROPERTY GEOLOGY

i) <u>Introduction</u>

The results of reconnaissance geological mapping by the author are presented on Figures 4 and 5 of this report. Only the contact zone of the Coast Plutonic Complex was investigated.

ii) <u>Tiedemann Pluton</u>

The ridge south of the legal corner post is underlain by a plutonic unit of probable quartz diorite composition. Mafic minerals, which constitute 40% of the rock, are more or less altered to epidote, and possibly chlorite; this alteration is most intense near the northern contact. Quartz comprises about 10% of this equigranular granitoid rock.

Granitoid rocks along the eastern ridge of Homathko Peak are somewhat different in aspect. Few mafic minerals are present, and the rock has a light greenish colour, quite distinct from the olive-green epidote that occurs in the centre of the claims. This greenish tinge probably represents incipient seritization, possibly combined with minor chlorite (no petrographic work has been done). Away from the contact, this is a coarsely crystalline, equigranular rock with about 30% quartz and 70% feldspar (much of the feldspar is plagioclase). An aphanitic, occasionally feldspar-phyric border phase is present, also displaying the light greenish colouration. Sericitic schists occasionally occur in this border phase, as does at least one pendant of thin bedded limestone.

Rocks assigned to Tiedemann Pluton comprise units Ii, If, and Ifb on the geology map, Figure 4.



iii) <u>Central Gneiss Complex</u>

Map units Im and Isc are assigned to this complex. The individual components of the complex were not mapped in detail. Mafic metavolcanics predominate in the western part of unit Im; these are aphyric, finely crystalline, foliated rocks, without compositional layering. The west end of the ankeritic alteration zone is underlain by distinctively layered (mafic - intermediate) gneiss. The hanging wall of that alteration zone consists of a pyroxene-phyric, massive, dioritic rock.

Map unit Isc consists principally of light coloured, platy sericitic schists with layers and lenses of feldspar porphyry. The porphyry increases in proportion eastwards towards unit Ifb, with which it may be correlative.

Aside from being metamorphosed, these units do not differ greatly in aspect from the Triassic rocks in the footwall of the Central Gneiss Complex. It is possible that unit Im results from metamorphism of the Triassic volcanics, and Isc from the Triassic sediments. The footwall of the gneissic complex has undoubtedly been sheared, but the amount of displacement along the postulated thrust need not be great.

iv) <u>Quartz Diorite (?) Sill</u>

A granitic sill occurs within the central gneiss complex northwest of the legal corner post. Topographically lower parts of this unit are relatively fresh, consisting of about 30% mafic minerals (hornblende exceeding biotite), a few percent quartz, and the remainder white feldspar. The upper part of this unit is altered, but appears to consist of 15% mafics (biotite at least equal to hornblende), 20% quartz, and the remainder white feldspar. In all cases, much of the feldspar is plagioclase. The unit is everywhere equigranular, but increases in grain size from about 1 mm to 2 mm at the bottom, to 2 mm to 3 mm at the top. This sill therefore appears to be differentiated, with the more felsic portion at the top.

The upper portion of the sill is altered to a distinctive This results from limonitic weathering of buff-orange colour. iron carbonate (unidentified, but referred to as "ankerite" includes The alteration suite also sericitic hereafter). alteration of biotite, and a small proportion of fine grained disseminated pyrite. Within the alteration zone, the entire body has been affected by this ankerite-sericite-pyrite metasomatism. Quartz-ankerite-(trace)pyrite veins and lenses occur throughout the zone, and also occur in otherwise unaltered country rocks and lower parts of the sill. The alteration zone strikes eastnortheast, with southerly dip of about 50 deg., and is 15 m to 30

m thick. The strike length is about 900 m; close inspection on foot and from the helicopter indicates that it does not extend any further east or west than shown on Figures 4 and 5.

v) <u>Lamprophyre Dykes</u>

Mafic dykes, which measure 1 m to 2 m wide, are present, but not indicated on the geology map. They tend to strike northsouth and have vertical dips. The dykes cut the alteration zone mentioned above, but are not themselves altered, and do not carry quartz-ankerite veins. They therefore appear to post-date the alteration episode.

These are very finely crystalline rocks, with 30% biotite phenocrysts to 1 mm or 2 mm in size.

vi) Triassic Volcanic and Sedimentary Rocks

These units were only inspected at the extreme eastern and western ends of the mapped area.

In the west, all units structurally below the Central Gneiss Complex are massive, finely crystalline to aphanitic, light green volcanic rocks. These are probably andesitic in composition.

Sedimentary rocks observed on the east ridge are platy, green or grey shale and siltstone. These are in contact to the south with dark grey-brown mafic volcanic rocks.

vii) Structural Geology

The contact between the Coast Plutonic Complex and the Triassic units on the property has been interpreted as a thrust fault by the G.S.C. (Roddick, 1985). In general, this explains the overall geometry of the contact, ubiquitous shearing, and the fact that metamorphic rocks of the Central Gneiss Complex structurally overlie unmetamorphosed Triassic units. Limestone observed in places along the eastern contact, and as a pendant in the intrusive rocks, may therefore belong to the Coast Plutonic Complex, and not to the unmetamorphosed Triassic units.

As indicated on Figure 4, foliation in the Central Gneiss Complex, and bedding in the Triassic sediments, both tend to strike east-northeasterly, and dip moderately to steeply to the south. The plutonic/gneissic contact was also observed to dip about 60 deg. to the south. The altered, differentiated sill (unit Ij) strikes east-northeast and dips about 50 deg. south. The units of the Central Gneiss complex are weakly to strongly sheared, with the vast majority of shears having this same orientation. The lamprophyre dykes and some of the wider quartzankerite veins strike northerly with near vertical dips, occupying extensional fractures. Faults offsetting the alteration zone were reported by von Rosen (1983). If present, these are not obvious; their existance could only be proven by detailed mapping.

IX. <u>MINERALIZATION</u>

Quartz-ankerite-(pyrite) veins are distributed throughout the alteration zone in the differentiated sill, but overall comprise much less than 1% of the rock volume. Similar veins also occur in adjacent, unaltered rocks, being particularly persistent in south-dipping, easterly trending shears in the hanging wall. They have been noted in country rocks up to 500 m west, and 700 m east, of the mapped extent of the alteration zone. They occur as pods, narrow veinlets, tension gashes, ladder veins, and wider and stronger veins up to 1 m wide at 10 m to 20 m long. Many run parallel to the regional structure, but some sharply cross-cut this trend. It can be categorically stated that veins 8 m wide as reported by von Rosen (1983) are not exposed: perhaps that author was referring to a zone composed of smaller veins.

The great majority of these veins consist of about 90% white or grey quartz, 10% brownish iron carbonate, and traces of fine grained disseminated pyrite. Trace quantities of tourmaline were identified in a few examples. Other sulphide minerals are occasionally present in the eastern part of the alteration zone: arsenopyrite or chalcopyrite rarely comprise up to a few percent of the veins, and trace quantities of galena are sometimes present.

Analytical results (Figure 5, Appendices 1 and 2) indicate that quartz-ankerite veins within the sill carry geochemically anomalous quantities of gold and silver. Economically important gold values only appear in the altered portion of the granitic sill, and then mainly in the west end of that zone. An exception is sample H-15, collected from a quartz-ankerite-sulphide pod in the <u>fresh</u> part of the sill, which ran 16.45 g/tonne gold. Where veins occur in country rocks, they appear not to contain anomalous gold values. The two highest gold results, sample H-10 at 49.7 g/tonne, and 66410 at 64.5 g/tonne, come from veins containing arsenopyrite; a gold - arsenic correlation is also apparent in samples H-11, H-14, and H-15 (Appendix 2). The presence of chalcopyrite is also a favourable indication of economic gold content (samples H-15 and 66408, Appendix 1). Silver content, although sometimes significant, never achieves economic grades, reaching a maximum of 17.1 g/tonne in sample 66408.

The highest gold result, 64.5 g/tonne, comes from a vein that vein occurs on a cliff below a distinctive conical hill of moraine, towards the centre of the alteration zone. The sample is a composite grab collected along about 10 m of a 10 cm to 80 cm wide vein that carries less than 1% sulphides (arsenopyrite, pyrite, trace chalcopyrite). The ICP results show that this vein also runs 10.1 g/tonne silver, >1000 ppm As, 1870 ppm Pb, and 1277 ppb Zn. The vein strikes 060 deg. with near vertical dip, and is at least 10 m long. Sample 66411 is a composite from wall rocks adjacent to this vein, but contains only 0.466 g/tonne gold, about the same amount of silver, and no anomalous quantities of any other elements.

Sample H-10, collected from large chunks of quartz-ankerite-(arsenopyrite) float, ran 49.7 g/tonne (1.45 oz/ton) gold, and 13.58 g/tonne silver. These blocks of float occur next to an intensely altered (now 50% to 70% limonite) outcrop. The sampled material probably results from previous trenching activity, possibly from the period of overburden sluicing. Significant arsenopyrite was noted in this rock; the ICP analysis returned >1000 ppm As, >10% Fe, and 1477 ppm Pb.

Samples H-11, H-12, and H-13 were collected from the same vein or set of veins, over a length of about 15 m. They returned 12.17, 9.93, and 0.49 g/tonne gold, respectively. Other elements present include up to about 8.0 g/tonne silver, anomalous arsenic in H-11 (>1000 ppm As), copper in H-12 (995 ppm), and lead in H-11 (733 ppm). The vein is up to 1 m wide, but generally consists of a zone of anastomosing veinlets in altered granitic wallrock. This area is at the extreme east end of the alteration zone.

At the west end of the altered intrusive, a cross-cutting, vertical vein up to 1 m wide, and 10 m high, returned analyses of 3.700 g/tonne (H-08), and 0.500 g/tonne (H-07) gold. Silver attained 12.36 g/tonne in H-08, with no other anomalous elements. H-07 ran 6.62 g/tonne silver, and 6421 ppm 2n.

Sample H-15, which ran 16.45 g/tonne gold, is unique in that it was collected below the alteration zone, in the fresh portion of the quartz diorite sill. The sampled material results from a 3 m X 0.7 m pod of quartz-ankerite-sulphide (2% to 3% of rock, mainly pyrite; trace arsenopyrite, trace chalcopyrite, trace galena). Other analyses include 8.65 g/tonne silver and 790 ppm As.

The final sample with significant gold, 66408, at 5.26 g/tonne, is a composite grab from a 4 cm wide vein that contains a few percent chalcopyrite. This returned the highest silver content of any sample (17.1 g/tonne), suggesting a correlation with chalcopyrite (the ICP analysis for copper yielded 3926 ppm).

Inspection of the multi-element ICP results (Appendix 2) indicates that at least five suites of intercorrelated elements are present. These suites, with maximum gold and silver associations, are listed in Table 2, below.

Inter-Element Correlations			
Suite	No. of <u>samples</u>	Max. Au <u>(g/tonne)</u>	Max. Ag <u>(g/tonne)</u>
Au-Ag-As-(Pb)	5	64.5	13.58
Au-Ag-Cu-(Mo)	3	9.93	17.10
Au-Ag only	1	3.70	12.35
Zn-Cd -(Ag)	2	0.50	6.62
Ca-U-(Ba, Mn)	8	0.66	0.25

The Au-Ag-As-(Pb) suite, which is associated with the most spectacular gold mineralization, occurs only in the eastern portion of the mineralized zone, in the approximate 300 m stretch between samples H-11 and 66410 (Figures 4 and 5). There is an apparent direct Au-As correlation, as the two samples with the greatest arsenopyrite content (H-10 and 66410) are the only two to grade in excess of 40 g/tonne gold.

Anomalous copper and arsenic never occur together in the same sample, although in at least one case they appear in adjacent samples. This indicates a separate Au-Ag-Cu-(Mo) Gold occurs in economic but not spectacular association. concentrations (up to 9.93 g/tonne), and the highest silver 17.10 g/tonne (sample 66408) from this analysis of comes association. These samples were collected from three scattered locations: H-12 from the east end and 66408 from the west end of the alteration zone; and 66409 from the fresh portion of the sill, below the altered rocks.

Near the extreme west end of the alteration zone, samples of the Au-Ag only (H-08), and Zn-Cd-(Ag) (H-05, H-07) associations, are present. Zinc attains a maximum of 6421 ppm, or 0.64% in sample H-07, which also ran 6.62 g/tonne silver and 0.500 g/tonne gold.

The Ca-U-(Ba, Mn) association only occurs in country rocks outside of the quartz-diorite sill. This is true even of samples collected within 1 m or 2 m of the contact (samples 66404, 66405, The higher Ca content, ranging from 3% to 10.5%, and 66406). indicates a difference in carbonate proportion, geochemistry, and (probably) mineralogy. The maximum levels of Ba and U are unknown, as they are listed only as > 1000 ppm and > 100 ppm, respectively. Except for sample 66404 (0.660 g/tonne gold), these veins do not carry geochemically anomalous quantities of precious or base metals. The difference in composition of quartz-carbonate veins inside and outside of the quartz-diorite sill could be attributed to either: a) the same hydrothermal fluid reacting differently to chemically differing wall rocks (eg. Bohlke, 1989); or b) veins being deposited from two The overall similarity and close spatial different fluids. association of the veins suggests that explanation (a) is most likely.

Sample 66401, collected from a zone of disseminated pyrite in epidotized rocks of the Tiedemann Pluton, contained 7.20% iron, but only 0.114 g/tonne gold and 0.63 g/tonne silver.

In contrast with the Morris deposit to the east, which contains abundant stibnite and over 10% Sb, antimony values at KOR are at background levels only (Appendix 2). Other metallic elements present in only background concentrations include Bi, Co, Cr, Ni, Sn, and W.

X. <u>CONCLUSIONS</u>

- 1) Gold mineralization on the KOR property occurs in the contact zone of the Tiedemann Pluton, part of the Coast Plutonic Complex.
- Gold bearing veins are related to ankerite-pyritesericite alteration in a differentiated granitic sill.
 Only the upper, more felsic portion of the sill is altered.
- 3) Veins consist of quartz-iron carbonate ("ankerite"), with from nil up to a few percent sulphides. Pyrite is the most common sulphide mineral, with chalcopyrite, arsenopyrite, or galena present in a minority of cases.
- 4) A few of the quartz-ankerite veins are up to a few meters long and one meter wide, but the majority are much smaller. The veins constitute much less than 1% by volume of the alteration zone.

- 5) Quartz-ankerite veins often occur in country rocks to the sill, but in this situation they do not carry gold and are geochemically distinct from the mineralized veins. The country rocks are always unaltered, even when veins are present.
- 6) The best gold grades (up to 64.5 g/tonne or 1.88 oz/ton) occur in veins carrying arsenopyrite. The occurrence of arsenopyrite is however, quite rare.
- 7) A. chalcopyrite-silver-gold correlation is also apparent. In this case, silver and gold attained maximum levels of about 17 g/tonne and 10 g/tonne, respectively. The occurrence of chalcopyrite is also rare.
- 8) Numerous quartz-ankerite veins, even within the alteration zone, carried little or only erratic gold mineralization. Wall rocks adjacent to the richest known gold vein ran less than 0.5 g/tonne gold.
- 9) The zone of pervasive alteration is controlled by lithology (the top of the granitic sill), and not by structure.
- 10) No significant large altered or mineralized structures were noted.
- 11) The principal similarities between KOR and the gold mineralization at the Morris "Mine", 14 km to the east, are: a) gold is the principal commodity of interest; and b) both occur north of the Tiedmann Pluton. However, at Morris, the mineralization is of lower temperature epithermal origin, occurs much farther (6 km) from the main pluton, and is highly enriched in antimony. Mineralization at KOR is probably mesothermal, and contains only background levels of antimony.
- 12) Given its adverse topographic position, mining at KOR would be inordinately expensive. The 50 deg. dip of the mineralized zone into the mountainside, and the steep terrain, would require underground mining. Another difficulty is that the zone is subject to avalanches in the winter months. It is likely that a large, high grade ore body would be necessary for profitability. A low grade, bulk mining situation would certainly be uneconomic. A large, well mineralized structure would be required.

- 13) The KOR mineralization exhibits an overall lithological, rather than structural control, being restricted to the granitic sill. It is likely (but not proven) that a late stage, carbon dioxide enriched fluid evolved during differentiation and cooling of the This fluid would have accumulated in the intrusion. upper part of the body, altering it to an assemblage dominated by iron carbonates. Quartz-carbonate veins were deposited in shears and fractures, both inside the sill, and in the country rocks. Veins from these two environments are geochemically distinct, possibly due to differing wall rock compositions.
- 14) It is unlikely that a large economic gold deposit could be present, because: a) large mineralized structures have not been identified; b) economic gold grades occur only in small, dispersed veins; c) sulphide minerals that correlate with better gold grades (arsenopyrite and chalcopyrite) occur only rarely; and d) wall rocks and many of the veins do not carry economic quantities of gold.

XI. <u>RECOMMENDATIONS</u>

It is recommended that no further work be undertaken on this property.

If, despite the above recommendation, further work is contemplated, then it should consist of:

- a) detailed mapping;
- b) channel sampling (the outcrops are glacially polished, and would be amenable to sampling with a diamond saw); and possibly
- overburden stripping (if approval can be obtained from regulatory authorities).

associa, Respectfully itted, R. D. CRUICKSHAN FELLOW

R.D. Cruicksnank, M.Sc., FGAC August 10, 1989

XII. <u>BIBLIOGRAPHY</u>

Bohlke, J.K. (1989):

Comparison of metasomatic reactions between a common carbon dioxide rich vein fluid and diverse wall rocks: intensive variables, mass transfers, and Au mineralization at Alleghany, California; Economic Geology, V. 84, p. 291 - 327.

Roddick, J.A. (1985):

Mt. Waddington (92N); Geological Survey of Canada open File 1163.

von Rosen, G. (1983):

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British Columbia MEMPR assessment report 11770.

References used in description of the Morris Mine are listed in that section of the report.

XIII. <u>CERTIFICATE</u>

I, Roy Douglas Cruickshank, hereby certify that:

- 1) I reside at 96 Braden Crescent, N.W., Calgary, Alberta, T2L 1N3;
- 2) I received a B.Sc. (hons) degree from the University of Calgary in 1969, and a M.Sc. degree in geology (metamorphic petrology) from the same institution in 1976;
- 3) I have practised my profession as a mineral exploration geologist from 1969 to 1971, and continuously since 1976;
- 4) I am a fellow of the Geological Association of Canada;
- 5) I am the author of the report entitled "1989 Geological Report on the KOR Property, British Columbia";
- 6) This report is based on the references cited, and on personal investigation in the field from July 16 to July 22, 1989; and
- 7) I have no interest, direct or indirect, in the securities of Golden Rule Resources Ltd., nor do I expect to receive any.

ASSOCIATIO 06/ **R.** D. CRUICKSHANK

R.D. Cruickshank, M.Sc., FGAC

XIV. <u>EXPENDITURES</u>

The following expenditures were incurred in July and August, 1989:

<u>Helicopter</u>

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Charter 6 hrs X \$580/hr Fuel 6 hrs @ \$ 70/hr	\$ 3,480.00
Subtotal:	3,900.00
Laboratory Analyses	
Preparation, 30 samples @ \$3.75/sample Gold-Silver, 30 samples @ \$9.75/sample Multi-element, 30 samples @ \$7.50/sample Gold assays, 4 samples @ \$9.50/sample	 112.50 292.50 225.00 39.00
Subtotal:	669.00
Field Expenses	
Car Rental Motel (Kamloops) Room and Board (Tatla Lake) Gas, Meals, Groceries, Supplies	\$ 380.31 37.80 90.50 524.80
Subtotal:	1,033.41
<u>Salaries (Field)</u>	
R.D. Cruickshank, 10.5 days @ \$250/day A. Harmon, 6.0 days @ \$200/day	 2,625.00 1,200.00
Subtotal:	3,825.00
Report Preparation	
R.D. Cruickshank, 4.0 days @ \$225/day Drafting, 12.0 hours @ \$ 25/hr Materials,	 900.00 300.00 57.50
Subtotal:	1,257.50
TOTAL EXPENDITURES FOR JULY & AUG./89:	\$ 10,684.91

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•••	Terminal moraine		
COAST	PLUTONIC COMPLEX	TRIASSIC ROCKS	
If	Felsic plutonic rock (granite to quartz monzonite ?)	T s Sediments: shale, siltstone,	tuff
Ifb	Border phase of If: very finely crystalline; includes feldspar porphyry.	Tva Andesitic volcanic rocks	
Ii	Intermediate plutonic rock (quartz diorite)	下vb Basaltic volcanic rocks	
Ij	Quartz diorite sill; top differentiated, more felsic	Note: Thin-bedded limestone occurs in contact with Ifb; it is uncle	s along ar to w
Isc	Sericite schist, gneiss, porphyry intrusions	complex it should be assigned	d.
Im	Mafic metavolcanic rocks, mafic gneiss, pyroxene-phyric diorite		
T. []]]	Ankerite-sericite-pyrite alteration of unit Ij		
×××	Epidote (chlorite-calcite) alteration of unit Ii (probably porphyritic alteration)		





APPENDIX 1

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LIST OF 1989 ROCK SAMPLES

KOR PROJECT, BC

LIST OF 1989 ROCK SAMPLES

(for locations, see Figures 4 and 5).

Note: "H" Series collected by A. Harmon.

SAMPLE_NO.	Au (g/	Ag tonne)	DESCRIPTION
H-01	0.002	0.23	Chip 0.75 m; network of quartz-ankerite veins.
H-02	0.074	0.75	Chip 1.0 m; as for H-1.
H-03	0.444	2.05	Quartz-ankerite float.
H-04	0.042	0.28	10 cm vein in footwall mafic gneisses.
H-05	0.330	0.91	Chip 0.6 m; vein material.
H-06	0.009	1.76	Chip 0.3 m; quartz-ankerite vein.
H-07	0.500	6.62	Chip 0.3 m; cross-cutting quartz-ankerite vein.
H-08	3.700	12.35	Same vein as H-07, at bottom of exposure.
H-09	0.096	0.23	1.0 m X 0.7 m X 0.3 m pod of gossanous quartz.
H-10	49.700	13.58	Large chunks of quartz- ankerite float (probably blasted from trench); much arsenopyrite.
H-11	12.170	7.53	Chip 0.6 m; quartz-ankerite vein.
H-12	9.930	7.85	Chip 0.6 m; as for H-11.
H-13	0.490	1.13	Same vein as H-11, 15 m west.
H-14	3.340	2.53	Float in bush; vein material.

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APPENDIX 1

KOR PROJECT, BC

LIST OF 1989 ROCK SAMPLES

SAMPLE NO.	Au (g/1	Ag tonne)	DESCRIPTION
H-15	16.450	8.65	Chip 0.6 m; quartz-ankerite blobs (few cm); pyrite and trace chalcopyrite.

Note: "664" Series collected by D. Cruickshank.

SAMPLE NO.	Au (g/t	Ag conne)	DESCRIPTION
66401	0.114	0.63	Pyrite (1% to 4%) disseminated in quartz diorite; 10.0 m wide.
66402	0.058	0.25	Quartz-ankerite ladder veins in feldspar porphyry; chip.
66403	0.048	0.13	As for 66402; here in sericitic schist; chip.
66404	0.660	0.09	Chip 2.0 m; quartz-ankerite shears in hanging wall diorite.
66405	0.026	0.31	Chip 2.0 m, same zone as 66404.
66406	0.064	0.10	Chip 0.5 m, quartz-ankerite in shears 1.5 m above sill.
66407	0.040	0.35	Chip 0.3 m, quartz-ankerite, trace pyrite.

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KOR PROJECT, BC

LIST OF 1989 ROCK SAMPLES

	Au	Aq	
SAMPLE NO.	<u>(a/</u>	tonne)	DESCRIPTION
66408	5.260	17.10	Composite grab, vein 4 cm wide; quartz-ankerite- chalcopyrite, pyrite.
66409	0.390	6.38	In fresh part of sill; chip 0.2 m of quartz-ankerite- chalcopyrite vein.
66410	64.460	10.10	Chip from 10 cm to 80 cm wide vein, along 10.0 m of strike; quartz-ankerite + arsenopyrite, pyrite, trace chalcopyrite.
66411	0.466	0.41	Wall rocks to vein at 66410; altered (ankerite, sericite).
66412	0.004	<0.02	Fine grained sulphides disseminated in quartz veinlets & matrix of host meta-mafic volcanic rock.
66413	0.012	<0.02	Composite grab; abundant quartz-ankerite talus at base of cliff; probable source is 8.0 m to 15.0 m up cliff.
66414	0.017	0.16	Shear zone 4.0 m wide is 1% to 2% quartz-ankerite veins; composite grab of vein material.
66415	0.084	0.14	Composite grab; aphanitic felsite talus, disseminated pyrite; quartz-ankerite veinlets; source about 20.0 m up cliff.

APPENDIX 2

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ANALYTICAL RESULTS



4200B - 10 STREET N.E., CALGARY, ALBERTA, CANADA T2E 6K3 PHONE: (403) 250-1901

AUTHORITY:D. CRUIKSHANK

GOLDEN RULE RESOURCES LTD. 410, 1122 - 4 STREET S.W. CALGARY, ALBERTA T2R 1M1 BARRINGER Laboratories (NWT) Ltd.

P.O. BOX 864, YELLOWKNIFE, NWT, CANADA X1A 2N6 PHONE: (403) 920-4500 07-AUG-89 PAGE: 1 OF 2

COPY: 1 OF 2

PROJECT: HX-BC-3

RECEIVED AUG 1 0 1989 WORK ORDER: 62760-89

*** FINAL REPORT ***

GEOCHEMICAL LABORATORY REPORT

	SAMPLE	TYPE: ROCK		· · · · · · · · · · · · · · · · · · ·
			FIRE ASSAY	FIRE ASSAY
G	амрт	FNIMBE		אממ
5				ггн
	H-:	1	2.0	0.23
	H-:	$\overline{2}$	74.0	0.75
	H-:	3	444 0	2 05
	H:	4	42.0	0.28
	H-:	5	330-0	0 91
		u		0.01
	H-:	6	9.0	1.76
	H-:	7	500.0	6.62
	H-:	8.	3700.0	12.35
	H-:	9	96.0	0.23
	н-:	10	>20000.0	13.58
	H-:	11	11100.0	7.53
	H-:	12	9930.0	7.85
	H-:	13	490.0	1.13
	H-:	14	3340.0	2.53
	H-:	15	14820.0	8.65
		66401	114.0	0.63
		66402	58.0	0.25
		66403	48.0	0.13
		66404	660.0	0.09
		66405	26.0	0.31
		66406	64.0	0.1
		66407	40.0	0.35
		66408	5260.0	17.1
		66409	390.0	6.38
		66410	>20000.0	10.1
		66411	466-0	0.41
		66412	4_0	<0.02
		66413	12.0	<0.02
		66414	17 0	Λ 1 G
		66415	1/ «V	V * 10 A 14
		00410	O M # V	V = 1 *



4200B - 10 STREET N.E., CALGARY, ALBERTA, CANADA T2E 6K3 PHONE: (403) 250-1901

AUTHORITY:D. CRUIKSHANK

GOLDEN RULE RESOURCES LTD. 410, 1122 - 4 STREET S.W. CALGARY, ALBERTA T2R 1M1

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BARRINGER Laboratories (NWT) Ltd.

P.O. BOX 864, YELLOWKNIFE, NWT, CANADA X1A 2N6 PHONE: (403) 920-4500 07-AUG-89 PAGE: 2 0F 2

COPY: 1 OF 2

PROJECT: HX-BC-3

WORK ORDER: 6276D-89

*** FINAL REPORT ***

GEOCHEMICAL LABORATORY REPORT

	S	AM	PI	E	T	YP	Е:		RO	CK			
												ASSAY FIRE ASSAY	
												AU	
S	A	М	P	L	Е	N	U	М	B	E	R	OZ/TON	
		н-	•:]	0					I	REI	PEA	AT 1.45	
		Н-	-:]	1					- I	REI	PEA	AT 0.355	
		H-	-:]	.5					-]	REI	PEA	AT 0.48	
			6	664	10				- I	REI	PEA	AT 1.88	
	SIGNED:										Ī o	ouglas Read,	
LABO											ORATORY MANAGER		

FOOTNOTES: P=QUESTIONABLE PRECISION; *=INTERFERENCE; TR=TRACE; ND=NOT DETECTED; IS=INSUFFICIENT SAMPLE; NA=NOT ANALYZED; MS=MISSING SAMPLE

Alexandria de Martina de Contra de C

BARRINGER LABS (ALTA) LTD. 42008-10 Street N.E., Calgary, Alberta, T2E 6K3 Ph:(403)250-1901 Fax:(403)250-8265

ICAP GEOCHEMICAL ANALYSIS

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1.00

A .5 gram sample is digested with 3 ml of multi acid HCl:HCl04:HHC04:H HC04:HH

ANALYST: 10

REPORT 8: 890405 PA	BARRINGER LABS						Proj: 6276-89			Bate In: 99/08/02			Date Dut:89/08/08			Att: D READ									Pa	ge Lof	of 1
Sample Mumber	Agf A	A1	As	Auf A	84	Bi	Ca 7	Cel	Co	Cr	Ce.	fe	K	Ng	Ha	ño	Ha 7	Ni.	P	P5	Sb	So	Sr	U	¥ 204	Za BDB	
94- 1	0.23	6.85	(3	(5	148	(3	0.66	4.4	, pp=	172	125	2.08	0.18	0.46	312	1	0.36	10	0.06	33	37	<pre> (2</pre>	220	(5	(3	178	
u. 1∎-7	0.75	6.58	25	74	13	16	0.57	1.8	77	133	134	5.49	0.26	0.71	149	- 8	0.32	21	0.06	38	48	(2	214	(5	(3	69	
H-3	2.05	4.10	376	444	ß	31	0.35	7.3	13	163	538	1.77	0.32	0.17	175	12	0.34	34	0.43	ទ	63	(2	54	(5	3	344	
H- 4	0.28	3.37	(3	42	>1000	(3	0.43	0.8	13	265	302	1.51	0.11	0.65	184	2	0.32	4 32	0.03	30	' 22	(2	65	<5	(3	36	
₽ -5	0.91	2.97	83	330	61	7	0.30	76.1	15	224	211	2.43	0.12	9.21	120	34	9.36	15	0.02	45	22	(2	64	(5	<3	3220	
H- 6	1.76	6.16	14	9	27	13	0.37	2.9	14	107	393	4.87	0.21	0.54	170	198	0.31	18	0.05	42	59	<2	115	<5	377	93	
₩-7	6.62	3.67	68	500	31	103	0.20	>100.0	17	213	389	2.92	0.12	0.13	78	10	0.38	18	0.03	103	34	(2	60	(5	14	6421	
N- 8	12.35	2.20	20	3700	639	211	0.17	9.6	1	243	59	1.20	0.06	0.12	53	7	0.35	8	0.01	126	25	<2	46	<5	(3	329	
¥- 5	0.23	2.23	629	96	256	(3	0.33	0.1	8	302	142	1.20	0.09	0.20	132	- 4	0.35	14	0.01	44	21	<2	49	<5	<3	32	
H-10	13.58	3.24	>1000	>10000	10	68	0.20	0.1	8	138	125	>10.00	0.40	0.11	54	9	0.30	17	0.02	1477	170	(2	29	< 5	(3	479	
H-11	7.53	2,03	>1000	>10000	35	5	0.20	1.3	5	201	455	2.47	0.10	0.06	97	4	0.31	10	0.01	733	23	<2	26	10	(3	262	
II-12	7.85	2.35	240	9930	341	3	0.17	2.4	9	267	1 75	1.%	0.08	0.05	42	- 4	0.39	11	0.01	371	10	<2	31	26	{3	135	
₩-13	1.13	3.10	260	490	15	43	0.20	1.1	23	273	75	5.30	0.19	0.07	35	17	0.56	11	0.01	57	50	<2	25	75	153	31	
#-14	2.53	2.99	>1000	3340	7-	- 45	. 0.12	0.1		234	- (31	8.32	6.26	0.08	60	. 10	0.38	33	0.01	<u>n</u> _	85	2	- 14	29	4	S2	
H-15	8.65	2.37	790	>10000	11	23	0.11	0.3	14	259	347	5.42	0.18	0.07	51	13	0.33	25	0.01	292	33	2	24	13	(3	46	
66401	0.63	B. 76	9 9	114	8	42	1.76	2.9	31	49	55	7.20	0.49	2.82	826	3	0.29	16	0.09	48	33	2	196	41	11	183	
66492	0.25	3.30	(3	58	>1000	10	3.43	1.2	1	139	30	2.92	0.60	1.60	740	3	0.28	. 9	0.03	30	14	<2	87	>100	(3	38	
66403	0.13	1.78	122	48	80	3	3.23	1.3	8	45	42	2.92	4.5 7	1.37	733	13	0.03	15	0.63	20	<2	<2	70	52	(3	65	
66404	{0.10	4.78	53	660	>1000	13	4.65	1.3	14	166	24	3.17	0.90	2.36	859	5	0.26	45	0.05	30	35	<2	216	>100	6	52	
6640 5	0.31	6.99	59	26	>1000	41	4.81	2.0	19	168	146	3.44	0.83	2.59	812	5	0.67	54	0.05	47	101	<2	291	>100	21	74	
66406	0.10	6.34	62	64	>1000	(3	2.48	0.9	14	165	44	2.22	0.44	1.36	541	1	0 .32	34	0.02	23	21	<2	169	73	(3	30	
66407	<i>a</i> .0	8.05	>1000	40	143	(3	0.94	0.1	12	111	162	2.31	0.22	0.41	383	6	0.33	19	0.05	22	33	<2	175	33	(3	56	
66498	17.10	3.08	80	5260	41	6	0.B1	4.1	10	152	3926	1.81	0.18	0.30	147	151	0.46	20	0.01	48	5	(2	70	83	(3	181	
55409	5,38	2.56	75	390	3/6	(3	9.18	8.0	9	200	6434	1.36	0.0/	0.10	169	753	0.36	2	0.01	30	2	(2	44	15	(3	40	
66410	10.10	2./6	>1000	>10000	248	38	V.17	17.0	y	198	328	2.04	0.08	0.05	60	2/0	0.52	9	0.01	18/0	B	Q	30	40	(3	12/7	
66411	0.41	8.59	21	466	816	18	2.29	1.9	19	48	108	3.91	0.48	1.77	591	5	0.33	20	0.13	39	35	(2	393	84	(3	114	
66412	<0.10	6.26	32	(5	132	36	10.50	2.2	40	547	113	5.12	1.71	3.98	873	3	0.31	179	0.06	32	34	<2	238	>100	18	64	
86413	(0.10	4.11	105	12	645	(3	1.37	0.2	4	164	13	0.91	0.23	0.37	271	4	0.49	5	0.03	72	2	(2	59	>100	(3	38	
66414	0.16	5.15	182	17	533	15	4.36	0.9	15	273	137	2.50	0.73	2.48	802	3	0.32	61	0.03	21	16	<2	202	>100	6	49	
66415	0.14	5.44	246	84	317	28	8.75	1.4	20	235	66	4.07	1.45	4.08	868	12	0.25	73	0.04	39	42	<2	451	>100	20	89	
Hinimum Detection	0,10	0.01	3	5	1	3	0.01	0,1	1	1	1	0.01	10.6	0.01	,	,	0 01		0.01	,	2	,	,	5	3	1	
Maximum Detection	50.00	10.00	1000	10000	1000	1000	20.00	100.0	20000	1000	20000	10.00	18 00	10 00	20000	1000	10.00	20000	10.00	20000	1000	100	10000	100	1000	20000	
< = Less than Minzmum	is = lasuf	ficient	Sample	ns =	No sampl	e) =	Greate	r than	Harinun	AufA	= Fire	assay/A	AS		20000	1000	14.44	60000	141.00	64446	1000	174			1444	74444	

<u>م</u> . ANOMALOUS RESULTS: FURTHER ANALYSES BY ALTERNATE METHODS SUGGESTED