REPORT
ON THE
EXPLORATION POTENTIAL
OF THE
MUSCOVITE - GRAPHITE - GOLD DEPOSIT
OF
THE QUINTO MINING CORPORATION,
VERNON MINING DIVISION,
BRITISH COLUMBIA, CANADA

LOCATED

NEAR LUMBY, B.C.

50 DEGREES 15.9 MINUTES NORTH LATITUDE
118 DEGREES 56.3 MINUTES WEST LONGITUDE
N.T.S. MAP AREA 82L/7W, 82L/6E

CONSISTING OF 19 CLAIMS (251 units)
(B.S. 1-2, 4-5, P.S., P.S. 2-4, P.S. 7,
QUIN, M.M. 1-5, LUM 1-4)

FOR

THE QUINTO MINING CORPORATION
606-626 WEST PENDER STREET
VANCOUVER, BRITISH COLUMBIA
V6B 1V9

BY

A.D. Drummond, Ph.D., P.Eng.
D.A. Howard, M.Sc., P.Eng.

March 9, 1993

TABLE OF CONTENTS

ILLUSTRATIONS

LIST OF TABLES

SUMMARY

The Quinto Mining Corporation owns 251 mineral claim units covering Saddle Mountain and the area north of the town of Lumby, B.C. in the Vernon Mining Division of British Columbia. Road access is excellent to and on the property. Local elevation of Saddle Mountain is from 500 metres (1,640 ft. asl.) to about 900 metres (about 3,000 ft. asl.). Geomorphologically the area has rounded hills, sparse outcrop and is covered with pine, cedar, shrubs and mountain grasses. Coordinates are 50 degrees 15.9 minute north latitude and 118 degrees 56.3 minutes west longitude. N.T.S. area is 82L/6E and 7W.

The mineral claim group covers Upper Triassic aged sedimentary and metamorphic rocks and has been intruded by Jurassic and Cretaceous intrusions. The Saddle Mountain portion of The Quinto Mining Corporation property has been the site of most of the exploration work. The southern part of Saddle Mountain is underlain by a hornblende diorite of Cretaceous age which has intruded a Upper Triassic sequence of argillaceous - micaceous schist rocks which near the hornblende diorite intrusion dip at about 45 degrees to the south toward the intrusion. It is within the tilted argillaceous horizon that the Plateau Shear Zone has formed and which is the site of the herein described muscovite-graphite-gold mineralization. Other zones of mineralization occur within the claim group and are mentioned but the emphasis of this report is directed to the evaluation of the potential economic worth of the muscovite, graphite and gold within the Plateau Shear Zone.

The Plateau Shear Zone has been traced across Saddle Mountain in an east-west direction for about 1,000 metres (3,280 ft.) by drilling. The muscovite, graphite and gold mineralization within the shear zone has been confirmed down dip in excess of 150 metres (about 500 ft.) and is still open. The down dip length from the ridge of Saddle Mountain to the valley floor is 500 metres (1,640 ft.).

Gold mineralization occurs as very fine grained native gold within pyrite grains and along hairline fractures in the abundant fine grained to massive pyrite. Recent sampling of the underground workings by the writer shows that the 190 X-cut contains a 20 metre interval (zone wider but not sampled) averaging 0.044 O.P.T. gold with an assay range of 0.001 to 0.313 O.P.T. gold. The 140 X-cut averaged 0.060 O.P.T. over a 14 metre width with an assay range of 0.005 to 0.222 O.P.T. gold. All samples were at least 2 metres in width. A comparison with previous sampling confirmed that an analytical repeatability problem still exists which indicated that only by collecting bulk samples will the problem be addressed.

Previous investigations had suggested that the Plateau Shear Zone contained a very high percentage of graphite because of its

shiny black appearance. After extensive metallurgical testing, microscope study,and research into the analytical methods used to analyze for graphite it was found that the flotation product only contained 5 to 6 percent graphite, therefore it is probable that the original rock contained somewhat less. The graphite (identified with a petrographic microscope - 1000 power) is ultra fine grained (0.1-0.3 by 2-5 microns) and occurs as interleaved grains between fine grained muscovite/sericite grains. The reason that the high percentage of muscovite floated was that the graphite adheres to some of the muscovite thus making it readily floatable. The economic significance of this phenomenon is that it is a very effective way to produce a high grade muscovite product which is valuable in its own right.

Metallurgical testing (Flotation using DF- 250 only) of the graphitic material produced a concentrate that represented 15 percent by weight of the original sample. The concentrate assayed 0.136 O.P.T. gold and contained 5.35 percent graphite with the remainder mainly very fine grained muscovite/sericite. Further flotation (with an addition of a collector) produced a pyrite concentrate which represented 20 percent by weight of the original sample and assayed 0.98 O.P.T. gold. The tail (62.8 percent by weight of original sample) assayed 0.038 O.P.T. gold. The calculated head assay is 0.275 verses an assay head of 0.18 O.P.T. gold. This upgrading factor is consistent with previous metallurgical work.

Further work is recommended to better define (1) the character and composition of the fine grained muscovite product with emphasis on producing a product that equals or exceeds the ASTM standards for fine grained muscovite, (2) the leachability of gold prior to flotation of the muscovite/graphite product, (3) methods of low temperature removal of the ultra-fine graphite from the muscovite product (ultra-fine grained graphite oxidizes at a much lower temperature than coarse flake graphite) and finally (4) a program of bulk testing to define the actual gold grade within the deposit.

INTRODUCTION

The firm of D.D.H. Geomanagement Ltd., 422-470 Granville Street, Vancouver, B.C., V6C 1V5 has been requested by The Quinto Mining Corporation, 606-626 West Pender Street, Vancouver, B.C., V6B 1V9 to supervise and report on recent investigations on possible economic potential of the newly defined graphite/mica association (micaceous graphitic schist) with known gold mineralization. Prior investigations dealt only with the gold content in the zone.

To accomplish this assignment, all available data both public and private has been reviewed. The property has been visited and sampled by the writer and numerous samples have been submitted for

assay and metallurgical testing.

LOCATION, ACCESS AND INFRASTRUCTURE

The Lumby gold-graphite deposit (Figures 1 and 2) of The Quinto Mining Corporation is located in south central British Columbia just outside the city, but in part within the village limits of Lumby, B.C. and is traversed by B.C. Highway No. 6.

Access to the property is via a network of narrow two and/or four wheel drive old logging roads. A good gravel road is in place to the underground workings and the 150 ton mill.

The town of Lumby is a service centre for local logging and agriculture located 22 kilometres east of Vernon, B.C. The town contains all necessary facilities in terms of lodging, restaurants and fuel to support any exploration program. A 3 phase power line extends from Lumby to the above mill and could be activated upon request.

PROPERTY AND TITLE

The Lumby property comprises 251 units contained in 19 modified grid claims (See Figure 3). The claims all lie within the Vernon Mining Division on N.T.S. map sheets 82L/7W and 82L/6E. The claims are listed below:

CLAIM NAME	RECORD NO.	UNITS	MIN. TEN. NO.	EXPIRY DATE
B.S. - 1	2002	20	259244	9/24/93
B.S. - 2	2003	20	259245	9/24/93
B.S. - 4	2005	20	259247	9/24/93
B.S. - 5	2006	20	259248	9/24/93
P.S.	-	20	308526	4/01/93
P.S. - 2	2007	20	259249	9/24/93
P.S. - 3	2008	20	259250	9/24/93
P.S. - 4	2009	20	259251	9/24/93
P.S. - 7	2012	15	259254	9/24/93
QUIN	3536	10	260147	5/07/94
M.M. - 1	-	1	308527	3/31/93
M.M. - 2	-	1	308528	3/31/93
M.M. - 3	-	1	308529	3/31/93
M.M. - 4	-	1	308530	3/31/93

M.M. - 5	-	1	308531	3/31/93
LUM - 1	-	20	313856	9/26/93
LUM - 2	-	20	313865	9/28/93
LUM - 3	-	20	313866	9/28/93
LUM - 4	-	1	304469	9/27/93
	TOTAL	251		

HISTORY

Historical development of mining activity on Saddle Mountain adjacent to Lumby, B.C. is summarized from Kuran (1986), Lebel (1987) and Bradley (1990).

Mineralization at the south end of Saddle Mountain adjacent to Lumby, B.C. was noted in the early 1900's by a local teacher whose prospect workings have been named the Teacher Showing.

After a hiatus of some 50 years, Chaput Logging Company exposed silver-lead-zinc-copper veins during logging operations on the west side of Saddle Mountain in the 1960's at which time the showing was staked (since named the Mine Showing). In 1968, F.K. Explorations Ltd. acquired the claims covering this showing, started underground development and constructed a 50 tonne per day flotation mill. During the period 1968 - 1970, some 1500 tonnes of concentrate were shipped to the smelter at Trail, B.C. Work was terminated.

In 1971, Alberta Gypsum Ltd. acquired the property and mill, undertook underground and surface exploration in an attempt to establish mineable reserves. Work was terminated in 1973. Coast Interior Ventures Ltd. acquired the property in 1974 and operated sporadically in the period 1974 to 1979. The mill was expanded to 150 tons capacity in 1980. Operations were terminated and the plant closed in 1981.

In 1983, The Quinto Mining Corporation purchased the Chaput (Lumby) property and increased the property size. Geochemical and geophysical surveys outlined coincident geochemical and V.L.F.-E.M. anomalies near the top of Saddle Mountain. A trenching program followed which exposed the Plateau Shear Zone. Sampling of the shear zone produced encouraging gold and silver results from brecciated quartz veins in a graphitic host. During 1985, an initial reverse circulation drill program of 10 holes was completed and followed by 1,396 metres of diamond drilling in 13 holes. In 1986, the Saddle Mountain portion of the property was geologically mapped, additional ground V.L.F and magnetometer surveys

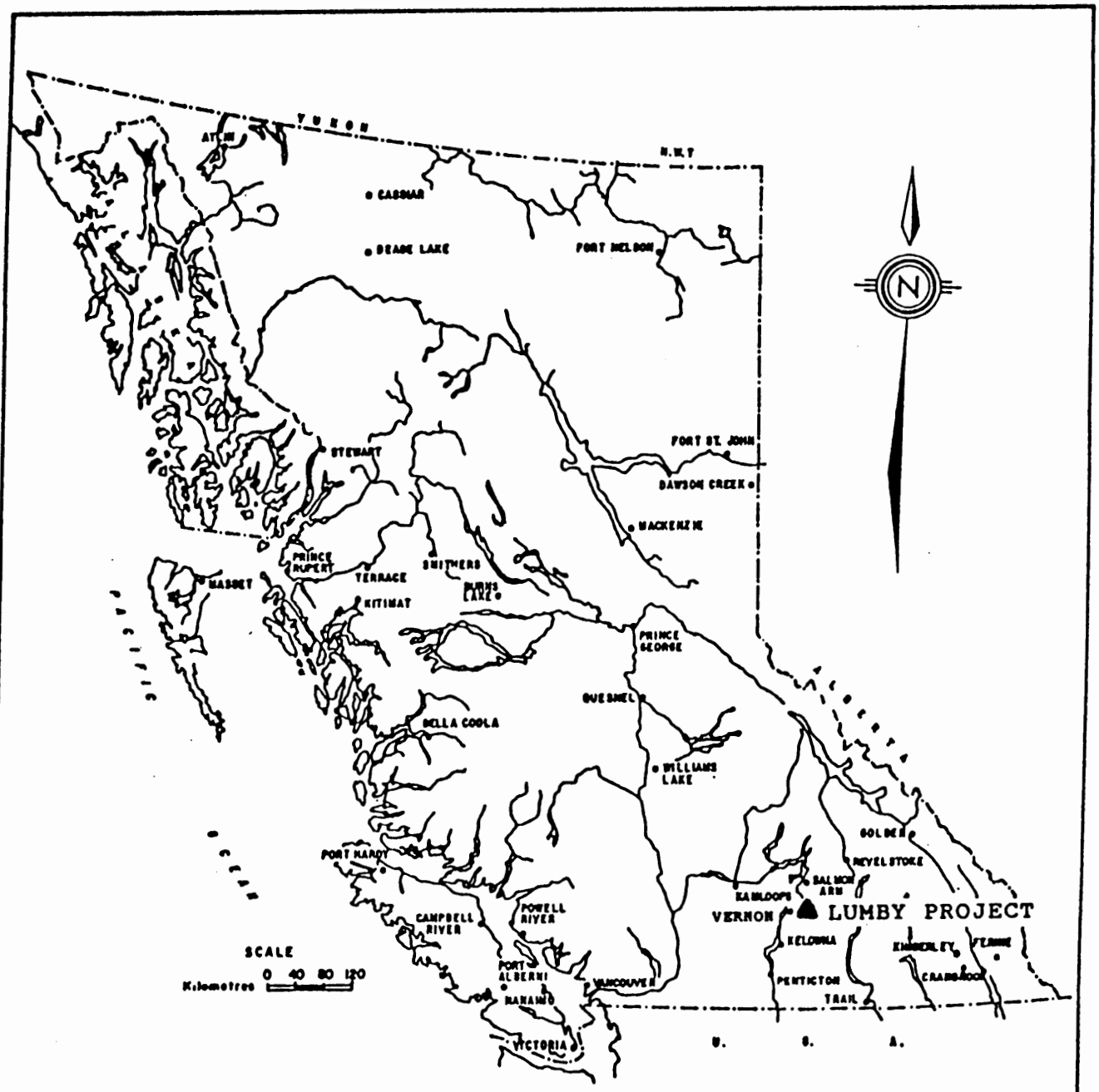


FIGURE 1

THE QUINTO MINING CORPORATION

LOCATION MAP

LUMBY PROJECT

Scale: as shown

D.D.H. GEOMANAGEMENT LTD.

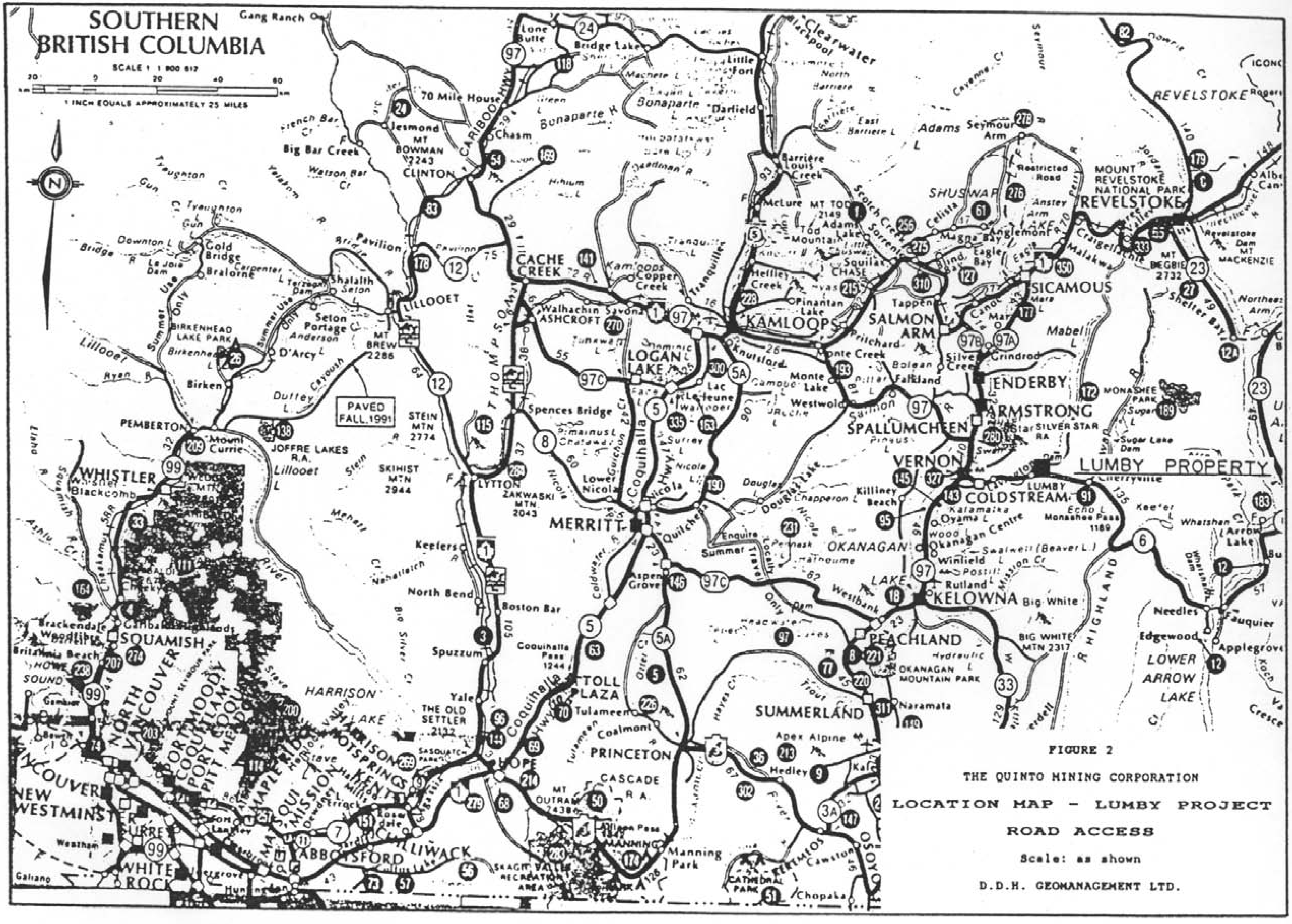


FIGURE 2

THE QUINTO MINING CORPORATION

LOCATION MAP – LUMBY PROJECT

ROAD ACCESS

Scale: as shown

D.D.H. GEOMANAGEMENT LTD.

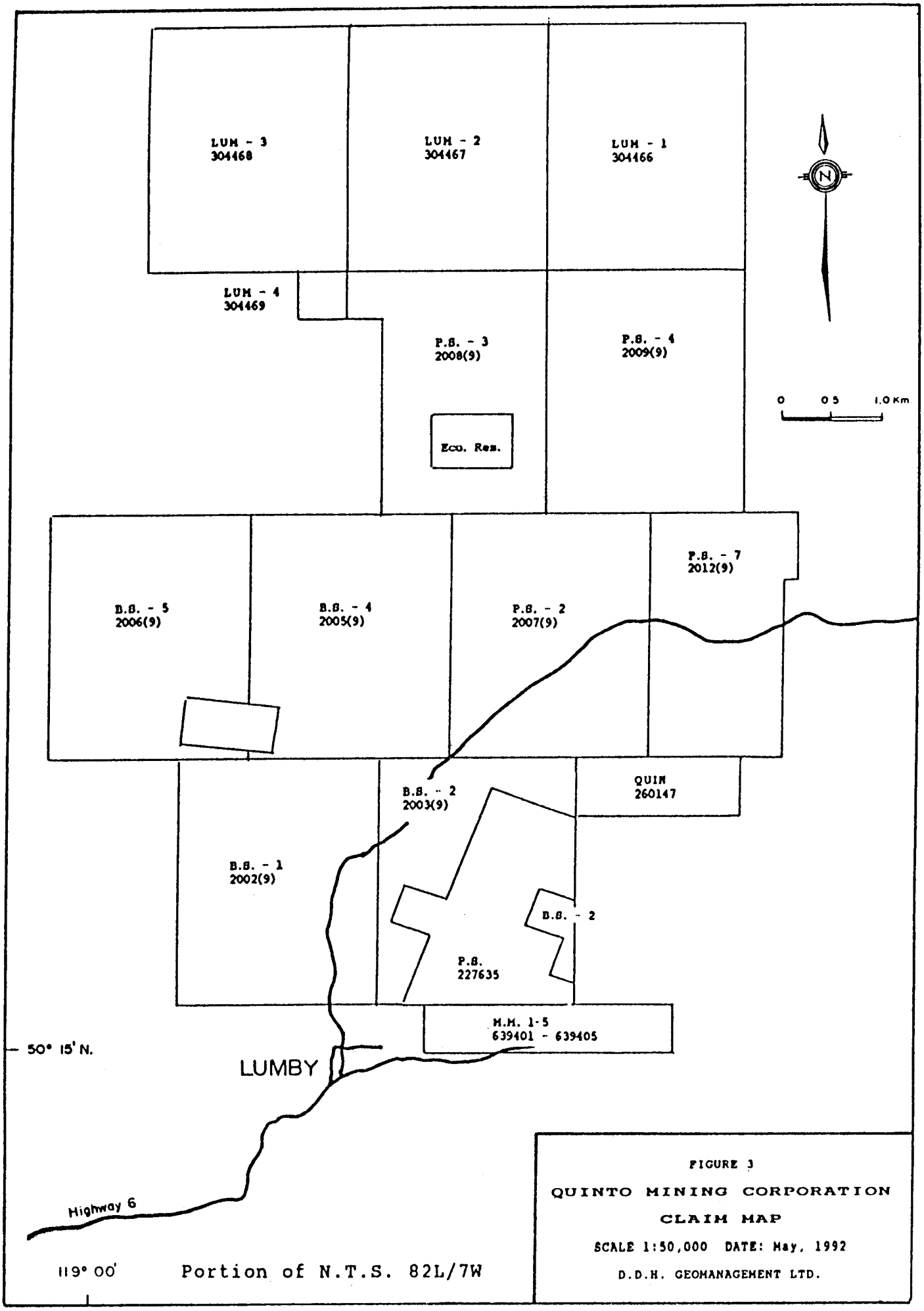


FIGURE 3

QUINTO MINING CORPORATION

CLAIM MAP

SCALE 1:50,000 DATE: May, 1992

D.D.H. GEOMANAGEMENT LTD.

conducted and 2,700 metres of NQ diamond drilling completed along the Plateau Shear Zone. During 1987, 32 reverse circulation and 7 diamond drill holes for a combined total of 3,030 metres was completed. Additional ground V.L.F.-E.M., magnetometer and geochemical surveys were conducted. An initial metallurgical test was completed by Lakefield Research. In early 1988, Kilborn Engineering constructed a computer generated model of the Plateau Shear Zone based on 21 vertical sections.

The Quinto Mining Corporation entered into a joint venture agreement with Golden Seville Resources Ltd. in the spring of 1988. Purpose of this agreement was to test a proprietary column leach process concept. During the period July to November, 1988, Sancold Resources Contractors Inc. completed 186 metres (610 feet) of 3.05 x 3.66 metre (10 x 12 feet) exploration drift in the hanging wall of the Plateau Shear Zone and two cross-cuts totalling 105 metres (344 feet) of 2.74 x 3.05 metres (9 x 10 feet). A preliminary feasibility study was completed by Bechtel Canada, Inc. in December 1988. At this point, Golden Seville Resources Ltd. could not fulfil its financial commitments and the column leach testing project was terminated. The property was inactive during 1989. During 1990, M. Bradley (1990) geologically mapped and sampled the Plateau Shear Zone workings. The Quinto Mining Corporation initiated this work having noted not only the variable gold content (nugget effect) but also the presence of abundant graphite. Bradley recommended bulk sampling to evaluate the gold and graphite content over the entire width of the Plateau Shear Zone. To date, the Bradley (1990) recommendations have not been implemented.

The property was visited by the writer during the period of May 11 to 12, 1992 and February 3-5, 1993.

REGIONAL GEOLOGY

Regional geology of the Lumby area is taken from Okulitch,(1979) and is shown on Figure 4. Modifications have been made to the geology map base for purposes of clarity and to reduce the number of rock units, some of which have no bearing on the presence or absence of mineralization.

Earlier geologic mapping by Jones (1959) of the Vernon map area shows the Lumby property mainly underlain by undefined rocks of the Shuswap Terrane-Monashee Group (Archean or later) and bracketed by two parallel northwest trending major faults.

Subsequent work by Okulitch,(1979) totally redefines this earlier interpretation. Jones (1959) considered the Shuswap Metamorphic Complex to be either an extension of the Archean and Proterozoic Canadian Shield (Okulitch, 1979). Okulitch (1979) has found that along the western margins of the Shuswap Metamorphic

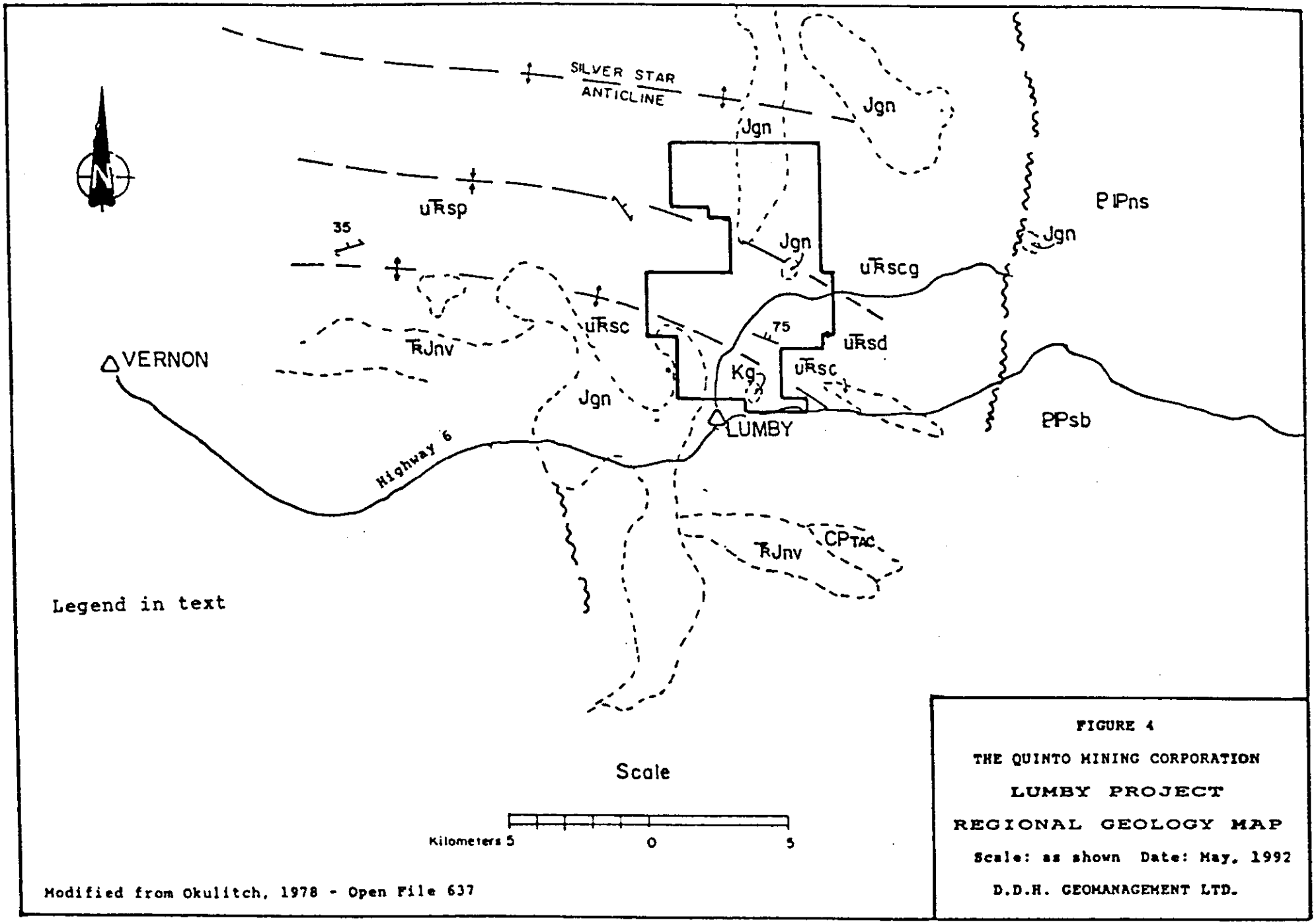


FIGURE 4

THE QUINTO MINING CORPORATION

LUMBY PROJECT

REGIONAL GEOLOGY MAP

Scale: as shown Date: May, 1992

D.D.H. GEOMANAGEMENT LTD.

LEGEND FOR FIGURE 4
(Modified from Okulitch, 1979)

MESOZOIC

Cretaceous

Kg Granite, Granodiorite, Lesser Quartz Monzonite and Quartz Diorite.

Jurassic

Jgn Massive and foliated, syntectonic Pegmatite, Aplite, Leucocratic Granite, and Quartz Monzonite bordering and within Shuswap Metamorphic Complex and Okanagan Plutonic and Metamorphic Complex; Silver Star Intrusions: (May include Orthogneiss of Paleozoic and Proterozoic ages).

INTRUSIVE CONTACT

Triassic and Jurassic

Nicola Group (Possibly includes Slocan Group)

TRJnv
Andesite and Basalt flow rocks, porphyritic augite Andesite, Breccia, Tuff, Agglomerate, Greenstone, chloritic Phyllite, minor Argillite, Limestone, Sericite Schist.

Slocan Group
Sicamous Formation

uTRsc
Sericitic, graphitic and argillaceous Limestone, calcareous Phyllite, Argillite.

uTRsp
Shale, Argillite, massive Siltstone, Phyllite, Tuff and calcareous Pelite, minor Conglomerate, Limestone.

uTRscg
Conglomerate.

Proterozoic and Paleozoic (may include Archean)

Shuswap Metamorphic Complex

PIPns
Undivided granitoid Gneiss, Paragneiss, Schist, minor Quartzite, Marble, Amphibolite.

PIPsb
Quartz mica Schist, commonly garnet and sillimanite bearing.

Complex, i.e., the Lumby area, units of probable Mesozoic and Paleozoic age can be traced into the Complex. Where this appears to be the case the units have been extracted from the Complex and correlated with those of known stratigraphic affinity (Okulitch, 1979).

Okulitch (1979) has mapped the Lumby area as being mainly underlain by shale, argillite, massive siltstone, conglomerate, phyllite, tuff, minor andalusite, staurolite and kyanite schist, limestone, greenstone and chloritic phyllite of the Slocan Assemblage. Okulitch (1979) could not locate the faulted boundary between the Slocan and Sicamous Formations and therefore has included everything in the Slocan Formation. The faulted block of Jones (1959) is not present. Okulitch (1979) shows the area covered by the Lumby property as being centred on a parallel westerly trending anticline-syncline structure that is parallel to the well defined Silver Star Anticline whose axis is just north of the property (See Figure 4).

PROPERTY GEOLOGY

Property geology for this report will be restricted to the Saddle Mountain portion of the property. Kuran (1985) mapped a hornblende diorite at the southern end of Saddle Mountain to the north of which occurs variably metamorphosed sedimentary rock and/or fine grained volcanic rocks. A sequence of argillaceous rocks lies interbedded with fine grained micaceous schists, the later being metamorphosed sedimentary rocks in the opinion of the writer rather than metamorphosed acid volcanic tuffs as suggested by Kuran (1985).

Of particular importance is the presence of the micaceous graphite-gold bearing Plateau Shear Zone. This shear zone strikes east-west with a dip of 45 degrees to the south toward the hornblende diorite intrusive and is the site of contorted quartz-carbonate(siderite)-pyrite veins bounded by massive foliated micaceous graphitic (mylonitic ?) schist containing pods of massive pyrite and scattered disseminated and sheared pyrite. The shear limits are bounded by harder, coarsely jointed, fine grained micaceous schist. The entire sequence appears to have been of a sedimentary nature originally. Through the mechanism of regional metamorphism and tilting during intrusion of the diorite, the less competent argillaceous beds became a plane of weakness along which movement occurred. This movement allowed the introduction of not only mineralizing solutions but also heat the result of which produced the quartz-pyrite-gold veins, the pyritic gold-bearing pods and the formation of graphite. A continuum of structural readjustments along this plane of weakness produced the contorted

and foliated Plateau Shear Zone that is observed today. Kuran (1985) geology map is reproduced herein as Figure 5.

GOLD MINERALIZATION - PLATEAU ZONE

Gold in the east-west striking, south dipping Plateau Shear Zone appears to be associated with the abundant pyrite mineralization The zone has been surface trenched, partially drilled along strike and down dip, intersected in underground working, assayed and metallurgically tested. Sulphide mineralization consists of abundant pyrite with minor amounts of galena, sphalerite and chalcopyrite. Marcasite has been mentioned as a constituent. Native gold occurs within and along fractures in pyrite and in quartz material. Microscopic examination of polished sections has indicated the presence of the mineral petzite - a gold, silver telluride. Non sulphide minerals include quartz, carbonate (ranging from calcite through ferroan dolomite to siderite) sericite or muscovite, clay altered feldspar and ultra-fine graphite (See graphite investigation). Recent petrographic work suggests that the bulk of the so called "graphitic material" is in fact very fine grained muscovite/sericite interleaved with ultra fine grained graphite (0.1-0.3 by 3-5 microns) thus giving the rock its black appearance.

Prior analytical work {Kuran (1986 and 1987), Lebel (1987)} has not shown good reproducibility in gold content within the Plateau Shear Zone.

Kuran (1987) completed preliminary gold grade calculation on a longitudinal down dip section (reproduced herein as Figure 6). This preliminary work suggested a geological resource figure in the order of (1) 255,893 tons at an average grade of 0.115 opt Au;
or (2) 334,685 tons at an average grade of 0.102 opt Au;
or (3) 518,266 tons at an average grade of 0.075 opt Au.

The main point of the above was to indicate that gold is noted throughout the Plateau Shear Zone where utilized intercepts ranged from 0.006 opt Au to 0.226 opt Au.

The above calculations were based in part on geochemical analytical methods which are subject to error due to the small sample size used in this method. Samples from percussion holes RC-85 - 1 through 11 and diamond drill holes 85 - 2 through 9, 86 - 1 through 18, 86 - 18, 86 - 22, 86-33, and 87 - 1 were analyzed by rock geochemical methods (i.e. on a 10 gram sample). The rest of the 87 reverse circulation drill program used a 500 gram split at minus 10 mesh which was pulverized to minus 150 mesh before a 30 gram sample (one assay ton) was taken.

In the recent investigation, 22 chip/channel samples (minimum 5 kilograms per sample; Sample width mostly 2 metres) were

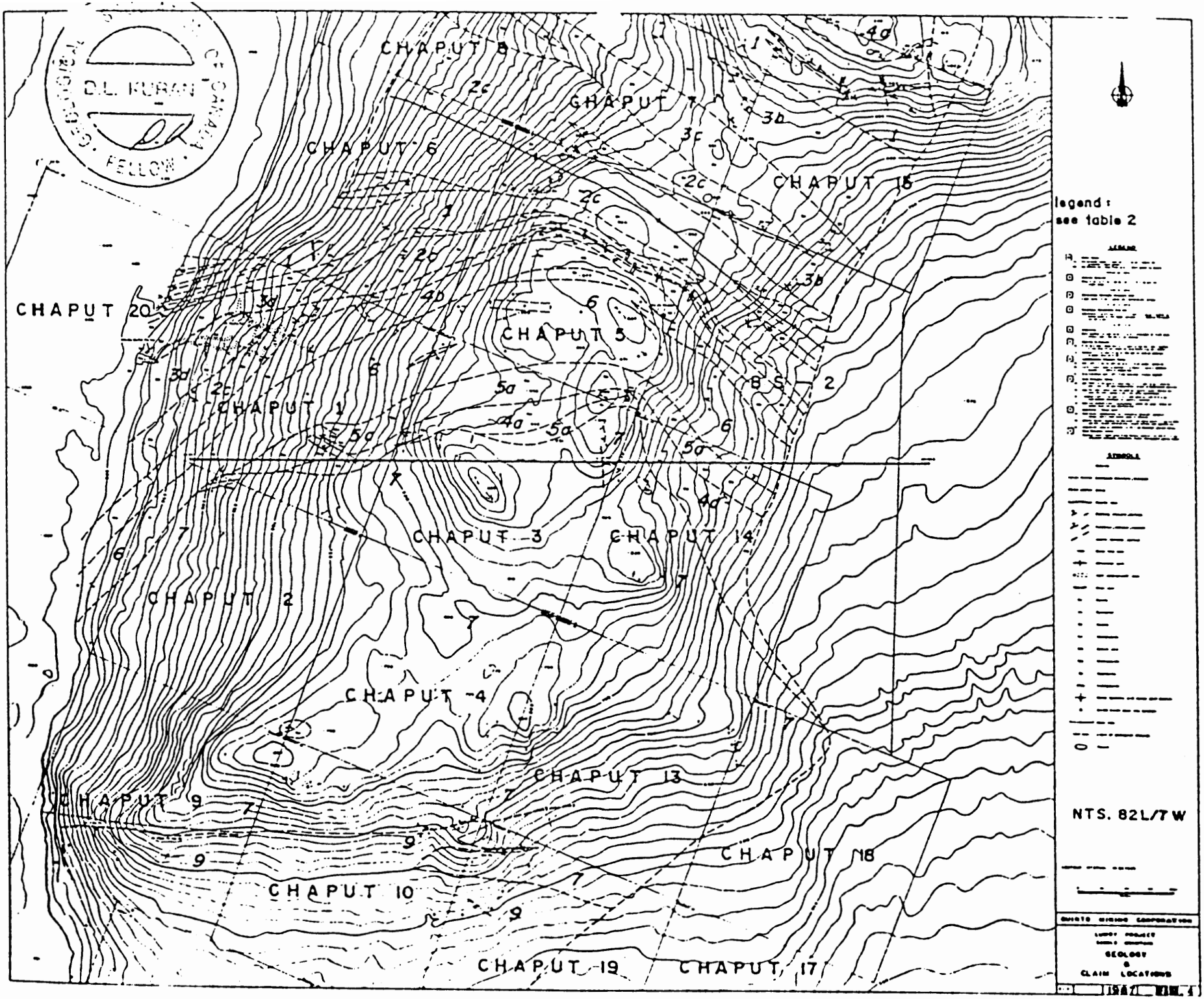


FIGURE 5 GEOLOGY MAP (After Kuran (1987))

LEGEND FOR KURAN (1987) GEOLOGY MAP - FIGURE 5

TABLE 2

Table of Formations

10 Mafic Dykes
- 10a Hornblende Gabbro; medium to coarse crystalline, granular, dark green.
- 10b Hornblendite; very fine grain, dark green to black.

-- Intrusive Contact --

9 Biotite Granite
Very fine to fine crystalline, 5-15% fine pyrite, light grey.

-- Intrusive Contact --

8 Hornblende Feldspar Porphyry Dyke
Light grey, fine crystalline, hornblende lathes.

-- Intrusive Contact --

7 Polyphase Hornblende Diorite
Undifferentiated very fine chilled to coarse crystalline, hornblende or feldspar porphyritic, weakly foliated, variably pyritic.

-- Intrusive Contact --

6 Argillite
Well bedded to laminated, black, interbeds of fine grey felsic ash, variably calcareous.

5 Biotite Siltstone
- 5a Fine grained, moderately to poorly sorted, well bedded, minor argillite, beds of argillite rip-up clasts.
- 5b Turbeditic cycles, fine siltstone to coarse pebbles, graded into unit 4b.

4 Intermediate Volcanic Tuffs
- 4a Ash tuff; fine to medium grain, drab green, massive.
- 4b Lithic tuff; poorly sorted, turbeditic cyclic members, polymictic matrix supported.
- 4c Argillaceous ash tuff; fine grained, finely bedded.

3 Acid Volcanic Tuffs
- 3a Ash Tuff; fine grain, rare lapilli, ligh grey, locally sericitic rich and crenulated, minor disseminated pyrite.
- 3b Lapilli-ash tuffs; ash to medium lapilli size, dacite to andi-dacite composition, variably calcareous.
- 3c Crystal tuff; fine sericitic ash matrix, 15% 0.5-2 mm subrounded feldspar or quartz crystals.
- 3d Spotted-banded tuff; calcareous, greenish grey, knots of brown biotite and pyrrhotite.

2 Argillite / Shear Zone
- 2a Argillite; moderately to intensely sheared, graphitic gouge, pyritized, minor quartz veining.
- 2b Quartz veins; sugary to bullish, variably pyritic, up to 60% pyrite, minor pyrrhotite, trace galena and sphalerite.
- 2c Argillite; poorly sheared, 2-3% 1 cm buckshot pyrite cubes.

1 Acid Volcanic Tuffs
Crystal tuff; dark grey fine felsic matrix, 10-20% 0.5-1 cm euhedral feldspar crystals, minor subrounded quartz eyes.

collected by the writer from the underground intersection of the Plateau Shear Zone. All samples were carefully collected to reduce any sampling error that may have been inadvertently introduced in previous sampling. All assay results (Appendix A) were reported using a one assay ton analysis. Figure 7 (in pocket) shows the location and values of the recent sampling. The 190 X-cut based on 12 samples over a 20 metre width averaged 0.044 O.P.T. gold with a range of 0.001 to 0.313 O.P.T. and the 140 X-cut based on 11 samples over a 14 metre width averaged 0.060 O.P.T. gold with a range of 0.005 to 0.220 O.P.T. gold. The overall average of both cross cuts is 0.052 O.P.T. gold. A comparison was made with previous sampling (Kuran, 1986, 1987) and it was obvious that the most recent sampling and/or analysis still has not addressed the analytical repeatability problem, particulary in light of past and present metallurgical testing.

In comparing the smaller X-cut samples with the metallurgical results (See following discussion on metallurgy) which were all based on much larger bulk samples, the gold distribution appears to have good distribution and be of higher grade. The smaller samples from drill intersections and wall sampling have very erratic distributions with lower grade than the larger samples used in the metallurgical tests.

GRAPHITE INVESTIGATION

Previous investigations by the writer and A.D. Drummond, Ph.D., P.Eng. lead to the conclusion that the Plateau Shear Zone contained a very high percentage of graphite due to the dense black sheen exhibited by the material in the zone. The black material behaved like graphite including its ability to mark paper. Subsequent assaying by the classical "Leco" method indicated that the rock only contained a trace of graphite. This inconsistency was finally addressed by changing the assay procedure. The "classical leco method" involves pre-heating the sample to 600 degrees centigrade to remove any organic carbon and/or carbonate carbon prior to placing it in the Leco Analyzer. The new method involved using a nitric acid wash to remove any organics, sulphur, calcium carbonate and soluble iron followed by a hydrofluoric acid wash to remove the silica. The sample was then analyzed by the "leco" method without the pre-heat step to determine carbon content. A comparison of the two methods is shown in Table 1 below: Assay certificates are in Appendix A.

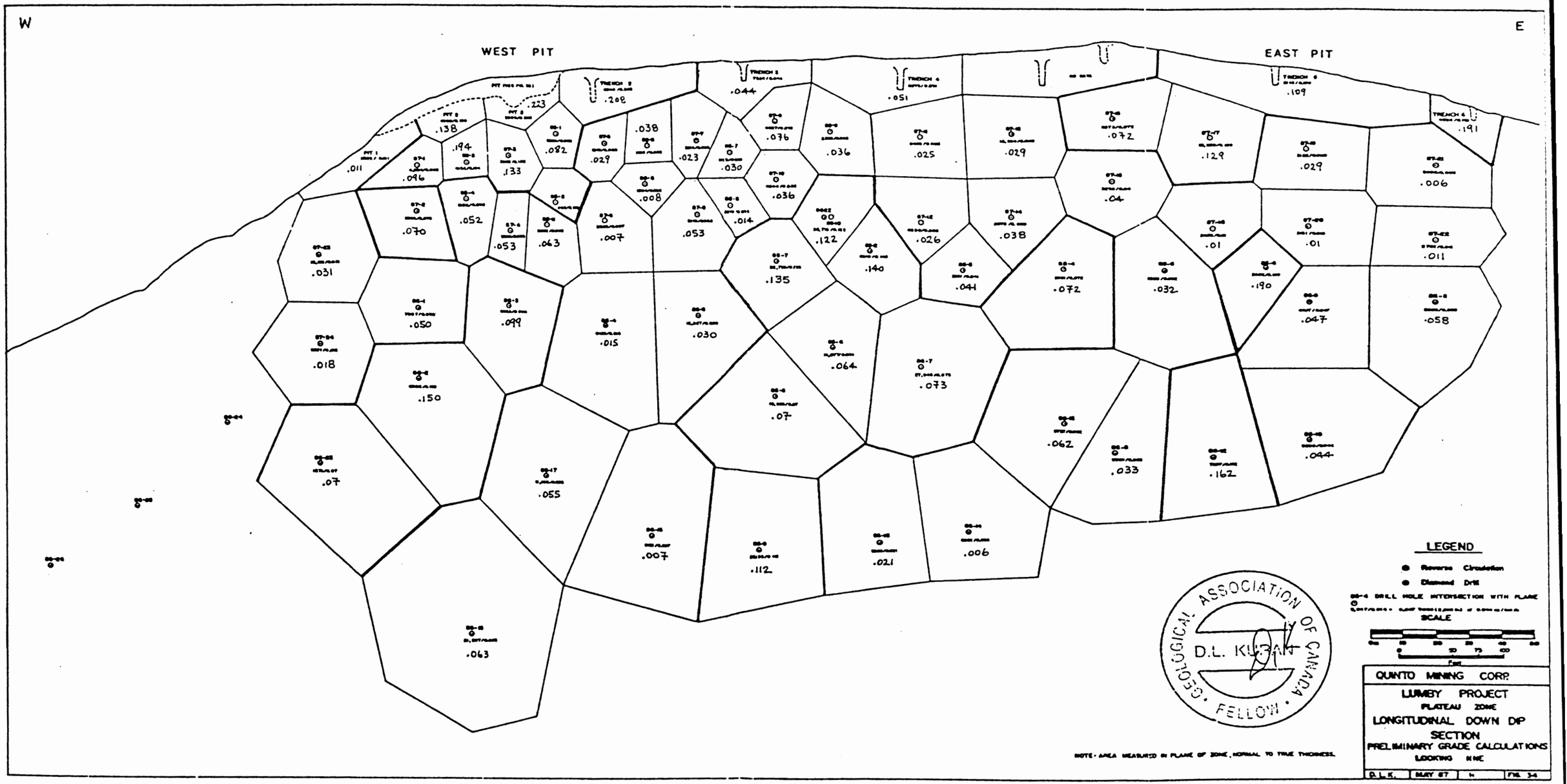


FIGURE 6

LONGITUDINAL DOWN DIP SECTION

PLATEAU SHEAR ZONE

THE QUINTO MINING CORPORATION

(After Kuran (1987), Figure 34)

GOLD VALUES ARE IN OUNCES PER SHORT TON

TABLE 1

A comparison of carbon assay methods

Sample No. 5015B

Method 1	Method 2
Preheat oxidation/leco	Wet chemical oxidation/leco
Graphite carbon percent	Graphite carbon percent
0.23	5.35

Sample 5015B is a flotation product produced by Westcoast Minerals Testings Inc. (See Appendix A and section on metallurgical testing) from a composite sample of fresh graphitic material from the underground workings.

The above discrepancy in carbon content between the two assay methods is explained by the fact that the oxidation rate (i.e. burning) is related to surface area of the mineral/element particle. In the present case it is now known that the graphite in the Plateau Zone samples is extremely fine grained. Under 1000 magnification it was determined that most of the graphite grains were in the 3-5 by 0.1-0.3 micron range which translates into a maximum surface area for each grain. Therefore in the thermal oxidation/leco method, the pre-heating to 600 degrees centigrade of the sample not only drove off the organic and carbonate carbon but also most of the fine grained graphite carbon prior to putting it in the Leco Analyzer. The thermal oxidation of very fined grained graphite was confirmed by submitting two chemically pure graphite samples for analysis using the "Classical Leco" method. The two samples (KS-75 and No. 763) were very fine grained (approx. 325 mesh) and were guaranteed to contain 99.9 and 96 percent carbon respectively. As can be seen in the following Table 2 the assay results using the "Classical Leco" method does not even approximate the correct value (See Appendix A).

TABLE 2

Classical Leco assays of graphite standards

Sample KS-75 (99.9% graphite)			Sample No. 763 (96% carbon)		
L.O.I.	TOT/C	GRA/C	L.O.I.	TOT/C	GRA/C
91.5%	100.49%	38.16%	91.6%	89.39%	7.37%

L.O.I. = Loss on ignition, TOT/C = Total carbon, GRA/C = Graphite

X RAY DIFFRACTION INVESTIGATION

Flotation product F-1 (Sample 5015B) was analyzed by A.D. Drummond on a Phillips X-Ray diffractometer at the University of British Columbia, Department of Metals and Material Engineering (See Appendix B for X-ray patterns). The purpose of this investigation was to determine the mineralogical content of the flotation product that looked like graphite but did not analyze as graphite using the LECO technique. On November 18, 1992 and on January 13, 1993, XRD patterns were obtained using copper radiation with a nickel filter, 36 Kv and 20 ma. "Graphitic material" from the light fraction of a Falcon concentrator and "graphitic material" obtained from the slip surface of graphitic schist gave similar patterns with d-spacings that indicated the presence of quartz (ASTM 33-1161), muscovite (ASTM 6-263) and graphite (ASTM 25-284) all of which have their major peak at 3.330 to 3.324, minor constituents were a chlorite phase at 14.12 Angstroms (ASTM 39-381), calcite (ASTM 5-586), possible siderite (ASTM 29-696) and pyrite which was megascopically identified but was not present in sufficient quantity to be detected on the diffractometer pattern.

The next part of the X-ray diffraction investigation used two graphite standards for comparison to a flotation concentrate (F-1) in which the flotation product was obtained using only Dow Froth 250. Graphite floats easily and the product produced megascopically appeared to be monomineralic with the exception of minor pyrite. The standards referred to above were (1) a commercial graphite known as Dixon KS-75 (99.9% synthetic carbon graphite) and (2) another commercial carbon product known as Asbury 763 (96% carbon composed of about 50% graphite and 50% lamp black). The KS-75 sample produced an excellent diffractometer pattern with the major d-spacing at 3.41 Angstroms and a good correlation to ASTM 41-1487. The Asbury 763 pattern was very different in that

the main peak was more diffuse between 3.411 and 3.437 Angstroms with almost an amorphous build up pattern between 23.0 and 26.3 degrees Two-Theta. The Asbury 763 pattern also indicated the very minor presence of muscovite (9.93 Angstroms), talc(?) (9.3 Angstroms) and kaolinite(?) (7.07 Angstroms). The flotation product F-1 indicated peaks for the presence of muscovite and graphite with minor pyrite and quartz and a possible trace of calcite (very low peak at 3.025 Angstroms which is the major peak for calcite). See Appendix C for X-ray patterns.

From the above, it is apparent that the megascopically uniform black flotation product F-1 contains mostly muscovite with a major constituent of graphite and minor to trace amount of pyrite, quartz and probably calcite.

METALLURGY

Prior to the present re-sampling and metallurgical testing a comparison with previous metallurgical work by Lakefield Research (Salter, Sarbutt and Rollwagen, 1987) was made in an attempt to isolate the repeatability problem. The results of these tests are summarized as follows:

Two bulk samples were taken from the Plateau Shear Zone and investigated for gold recovery by Lakefield Research (Salter, Sarbutt and Rollwagen (1987) and summarized by Kuran (1987) and by Richards (1988).

A. SURFACE VERSUS BULK GOLD GRADE

One sample was composed of reject from RC holes 85-1 to 10 and referred to as "core sample" in the reports. It is important to note the following:

(1) weighted grade from drill assays = 0.092 opt gold and
(2) calculated head assay = 0.152 opt gold.

This is a significant increase in the assigned gold value to the "core sample".

The second bulk sample was taken from the West Pit area and is referred to as "West Pit" or "Trench sample" (oxidized material). Again it is important to note the following:

(1) weighted average grade of chips from same area as "Trench sample" = 0.109 opt gold, and
(2) calculated head assay = 0.27 opt gold.

As in the above, this is a significant increase in the assigned gold value to the "Trench sample".

B. GRAVITY AND GRAVITY-FLOTATION TEST

Gravity - Flotation testwork suggested that gravity separation alone gave gold recoveries of 18.3% for the "Trench sample" and 21.9% for the "core sample". Gravity combined with rougher flotation gave gold recoveries of 80.6% for the "Trench sample" and 98.3% for the "core sample".

C. CYANIDE LEACH TESTS

Cyanide agitation leach tests on finely ground material (+95% passing 200 mesh) suggested 85.9% gold recovery in 48 hours on the "core sample" and 88.7% gold recovery on the "Trench sample". When these tests were done with carbon-in-leach, the results in 48 hours were 95.4% gold recovery on the "core sample" and 97.4% gold recovery on the "Trench sample".

The gold recovery with time is shown below for the tests done with carbon-in-leach:

Sample	Residue		Recovery to carbon			Head Grade	
	g/t Au	opt Au	6 hrs %	24 hrs %	48 hrs %	g/t Au	opt Au
"core"	0.48	0.014	-	-	85.9	3.40	0.099
"core" with carbon	0.16	0.005	85.9	94.3	95.4	3.64	0.105
"Trench"	1.10	0.032	-	-	88.7	9.76	0.283
"Trench" with carbon	0.27	0.008	89.3	96.9	97.4	10.70	0.310

The above indicates that gold is readily solubilized with cyanide within 24 hours (NOTE: recovery in 6 hours).

The presence of a telluride in the testwork is not mentioned.

The present on going metallurgical testing by Westcoast Mineral Testing Inc. was originally initiated to define the possibility of recovering graphite in economic quantities as a by product of the gold mineralization (Hawthorn, 12/23/92; in Appendix C). The results of the initial investigation showed that graphite was present but in a form that would probably not be recoverable as a separate product (See "GRAPHITE INVESTIGATION" above).

In the present investigation approximately 10 kilograms of graphitic underground material was dry crushed to 90 percent passing 20 mesh by the Placer Research Centre. Westcoast Mineral Testing Inc. combined this material with higher percentage pyritic

material to approximate "mine run" rock. A summary of the Westcoast Mineral Testing Inc. test is as follows (From Hawthorn, 1/3/93):

SAMPLE COMPOSITION

The test sample consisted of 73 percent graphitic material assaying 0.024 O.P.T. gold and 27 percent pyritic material assaying 0.60 O.P.T. gold for a combined head assay of 0.180 O.P.T. gold.

PROCEDURE

Grind 1000 gm / 5 min. / 67% solids
Pan: K = +200:1
Float: Staged rougher to completion
Wet/dry screen rougher tailings to 325 mesh

METALLURGICAL CALCULATIONS

			Assay			Distribution%
Product	Wt%	Au oz./t	LOI%	Fe%	S%	Au
Pan conc.	1.1	2.28				9.1
F-1 RC	15.2	0.136	11.3	5.5	2.3	7.6
F-2 RC	20.9	0.980	25.1	34.4	35.6	74.6
F	36.1					82.2
Tails	62.8	0.038				8.7
Feed(calc)	100.0	0.275				100.0
	Assay	0.180				

RC = Rougher Concentrate

Note when comparing the results of the latest test above it again shows a very significant increase in gold content in comparison to the head assay.

The F-1 product although looking like pure graphite only contained 5.35 percent graphite carbon. Visually under high magnification (60x) fine grained pyrite (4-5 percent) was visible which explains the above iron and sulphur assays. A whole rock analysis of the F-1 product (Sample 5015B, Appendix A) confirmed that one or more silicate minerals constituted approximately 90 percent of the product. The percentages of silica, aluminum and potassium were consistent with a muscovite/sericite composition as indicated by the X.R.D work (See X-ray Diffraction Investigation).

Preliminary petrographic analysis suggests that the graphitic portion of the host rock is mainly composed of very fine grained

muscovite/sericite. The reason that it appears so readily floatable is the ultra fine grained nature of the interleaved graphite which makes the muscovite grains behave like graphite. Muscovite is not normally floatable with low concentration of DF 250 (Dow Froth 250). It should be noted that in excess of 15 percent by weight of the original sample was a flotation product. If a pure enough muscovite product can be produced using this natural floatable characteristic it is very likely that a "By Product" market can be found since fine grained muscovite has numerous industrial applications. Future metallurgical investigations will be directed toward producing a saleable product of this nature.

CONCLUSIONS AND RECOMMENDATIONS

The 1992-1993 exploration program on The Quinto Mining Corporation Lumby property has concentrated on a better definition of the gold grades of the previously defined Plateau Shear Zone and to investigate the possibility of additional "By Product" values, i.e., Industrial Minerals associated with the shear zone. To this end the present program consisted of re-sampling a portion of the underground working, assaying, conducting mineralogical and metallurgical testing.

Early indications suggested that a valuable graphite resource existed in the Plateau Shear Zone, but subsequent tests proved that graphite although present, is not in a readily extractable form, i.e., too fine grained and too tightly bound to muscovite. The graphite occurs as ultra fine grained grains interleaved in very fine grained muscovite/sericite grains. The graphite causes the muscovite/sericite to be readily floatable which in turn may have a considerable "By Product" value.

Sampling of the walls of the cross cuts has produced variable gold values and have indicated that the gold is not necessarily associated with the quartz as was originally thought. Sampling of the underground workings has suggested that there is free gold as well as gold with pyrite which can occur within the quartz vein material, in graphitic material adjacent to the quartz vein material, within the pyrite boudins and disseminated pyrite throughout the shear zone. Recent sampling and assaying has yet to address the previous repeatability and actual grade problem. It still can be shown that more gold is recovered using large samples and metallurgical methods (flotation or barrel leach using cyanide) rather than the small samples used for standard fire assay (small chip/channel samples). It is probable that the actual gold content of the Plateau Shear Zone can only be defined by using bulk sampling techniques.

Based on the success to date in defining better gold grades when large samples are analyzed and the presence of what appears as a large quantity of "By Product" muscovite and/or a graphite/muscovite product it is recommended the following

investigations be instituted:

(1) Conduct further mineralogical studies to better define the character and composition of the fine grained muscovite in the zone.

(2) Continue with the metallurgical testing to optimise the recovery of the muscovite - muscovite/graphite product with special attention given to producing a product with ASTM specifications.

(3) Conduct metallurgical tests on the leachability of the graphitic material with an additional emphasis on the depression of pyrite with cyanide. These tests will hopefully define a higher gold grade for the deposit than what conventional assaying has indicated.

(4) Conduct metallurgical tests on the low temperature removal of graphite from the graphite/muscovite. In other words produce a saleable white muscovite product.

(5) If all or most of the above tests are successful then a program of bulk sampling should follow to develop a flow sheet for the deposit.

PERSONNEL TIME DISTRIBUTION

(B.S 1-5, P.S., P.S. 2-4, 7, Quin, M.M. 1-5, Lum 1-4)

A.D. Drummond, Ph.D., P.Eng. (Geological Engineer)

Field	May 11-13, 1992 inclusive	3 days
Office	Research and report preparation Period January 5 - February 28,1993	120 hours

D.A. Howard, M.Sc., P.Eng. (Geological Engineer)

Field	May 11-13, 1992 inclusive February 3-5, 1993 inclusive	6 days
Office	Research and report preparation Period January 5 - February 28, 1993	100 hours

Gary Hawthorn, P.Eng. (Metallurgist)
Time included in Westcaost Mineral Testing Inc. invoice

Steve McAlister, P.Eng. (Metallurgist)
Time included in Falcon Concentrators Inc. invoice

Jerry White (Sampler/Miner) 6 days

Bernhard Klein, Ph.D. (Senior Process Metallurgist)
Time included in Process Research Associates Ltd. invoice

Cat Operator
Time included in Chaput Logging invoice.

COST STATEMENT

PERSONNEL

A.D. Drummond, Ph.D., P.Eng.			
Field	3 days @ $400/day		$1200.00
Office	120 hours @ $50/hr. (Research)		6000.00
D.A. Howard, M.Sc., P.Eng.			
Field	6 days @ $400/day		2400.00
Office	100 hours @ $50/hr. (Research & Report)		5000.00
Jerry White, Sampler/Miner			
Field	6 days @ $250/day		1500.00
		Sub-total	16,100.00
		GST @ 7%	1127.00
		Sub-total	$17,227.00

EXPENSES AND DISBURSEMENTS

Westcoast Mineral Testing Inc. Metallurgical Testing	$ 584.00
Falcon Concentrators Inc. Metallurgical Testing	500.00
Process Research Associates Metallurgical Testing	375.00
Acme Analytical Laboratories Ltd. Assaying	93.00
Eco-Tech Laboratories Ltd. Assaying	370.00

The University of British Columbia Metals and Materials Engineering Department X.R.D. analysis		74.00
The University of British Columbia Department of Geological Sciences Optical and microprobe analysis		800.00
Cominco Research Laboratory Petrography		134.00
Chaput Logging Cat work opening road (Snow removal)		1338.00
Transportation 4x4 truck - 6 days @ $100/day		600.00
Accommodation and food 2 rms., 4 nights in Vernon		820.00
Report preparation (Typing and copying)		100.00
	Sub-total	5788.00
	TOTAL	$23,015.00

Respectfully submitted,

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. D. DRUMMOND Mar 9/93

A.D. Drummond, Ph.D., P.Eng.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA DAVID A. HOWARD Mar 9/93

D,A. Howard, M.Sc., P.Eng.

CERTIFICATION

I, Arthur Darryl Drummond of the City of Vancouver, Province of British Columbia, hereby certify as follows:

1. I am a geological engineer residing at 3249 West 35th Ave., Vancouver, B.C., V6N 2M9 and employed by D.D.H. Geomanagement Ltd., with an office at 422 - 470 Granville St., Vancouver, B.C., V6C 1V5.

2. I am a registered Professional Engineer of the Province of British Columbia, certificate number 5778. I graduated from the University of British Columbia in 1959 with a B.A.Sc. in geological engineering, and in 1961 with a M.A.Sc. in geological engineering. I graduated from the University of California at Berkeley in 1966 with a Ph.D. in geology.

3. I have practised my profession continuously for 30 years primarily with the Placer Development Group of Companies at Craigmont, Endako and Gibraltar mines, and in mineral exploration in Canada, United States of America, Chile, Argentina, Mexico and the Philippines.

4. I am a co-author of this report which is based on personal supervision of the described work program and from data contained in the files of D.D.H. Geomanagement Ltd., private reports and government publications.

5. I hold an employee stock option on shares of The Quinto Mining Corporation.

6. This report may be utilized for development of the property provided that no portion may be used out of context in such a manner as to convey a meaning which differs from that set out in the whole.

7. Consent is hereby given to The Quinto Mining Corporation to use or reproduce this report or any part of it for the purposes of development of the property, or related to the raising of funds.

Dated at Vancouver, B.C. this 9th day of March, 1993.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. D. DRUMMOND
Mar 9/93

A.D. Drummond, Ph.D., P.Eng.
D.D.H. GEOMANAGEMENT LTD.

CERTIFICATION

I, David A. Howard, of the City of Vancouver, Province of British Columbia, hereby certify as follows:

1. I am a geologist residing at 9040 Glenallan Gate, Richmond, B.C., with an office at 422-470 Granville Street, Vancouver, B.C.

2. I am a registered Professional Engineer of the Province of British Columbia. I graduated from Montana State University in 1964 and from the University of Washington in 1967.

3. I have practised my profession continuously since June, 1966.

4. I am a co-author of this report which is based on personal supervision of the described work program and from data contained in the files of D.D.H. Geomanagement Ltd., private reports and government publications.

5. I hold an employee stock option on shares of The Quinto Mining Corporation.

6. This report may be utilized for development of the property provided that no portion may be used out of context in such a manner as to convey a meaning which differs from that set out in the whole.

7. Consent is hereby given to The Quinto Mining Corporation to use or reproduce this report or any part of it for the purposes of development of the property, or related to the raising of funds.

Dated at Vancouver, B.C. this 9th day of March, 1993.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
DAVID A. HOWARD
Mar 9 93

David A. Howard, M.Sc., P.Eng.

REFERENCES

Bradley, M. (1990) Report On Chip/Channel Sampling And Geological Mapping Of The 140East And 190East Cross-cuts, 808 m Level Underground, Chaput 5 Claim: a private report for The Quinto Mining Corporation by Mike Bradley and Associates, dated October 1, 1990.

Jones, A.G. (1959) Vernon Map-Area, British Columbia: Geol. Surv. Can., Memoir 296, pp.182.

Kiss, F. and Smith, P.A. (1986) Dighem III Survey Of The Lumby Project, Vernon, B.C.: a private report for The Quinto Mining Corporation by Dighem Surveys and Processing Inc., dated October 17, 1986.

Kuran, D.L. (1986) Report On The Lumby Project: an internal report for The Quinto Mining Corporation, dated February 3, 1986.

Kuran, D.L. (1987) Report On The Lumby Project, Lumby, B.C., Vernon Mining Division, Phase III Exploration: a private report for The Quinto Mining Corporation, co-signed by Alfred R. Allen, P.Eng., dated June 22, 1987.

Landsbury, N.R. (1983) Geology, Geophysics, Geochemistry And Trenching At The Lumby Mine, Near Vernon, B.C.: a private report for The Quinto Mining Corporation, dated November 24, 1983.

LeBel, J.L. (1987) Report On The Lumby Project, Vernon M.D., British Columbia: a private report for Greyhawk Resources Ltd., by LeBel Geophysics, dated August 10, 1987.

Okulitch, A.V. (1979) Thompson-Shuswap-Okanagan Map-Area, British Columbia: Geol. Surv. Can., Open File 637, Scale 1:250,000.

Richards, R.H. (1988) Preliminary Feasibility For Lumby Gold Project: a private report for Golden Seville Resources by Bechtel Canada Inc., dated December 28, 1988.

Salter, R.S., Sarbutt, K.W. and Rollwagen, D.W. (1987) An Investigation Of The Recovery Of Gold From "Core" And Trench Samples, Progress Report No. 1: a private report for The Quinto Mining Corporation by Lakefield Research, dated February 25, 1987.

APPENDIX A

ASSAY CERTIFICATES

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

ASSAY CERTIFICATE

D.D.H. Geomanagement Ltd. File # 93-0027R

SAMPLE#	GRA/C %
5015B	5.35

- SAMPLE TYPE: PULP Leco - after HNO_3 + HF Leach.

DATE RECEIVED: JAN 20 1993 DATE REPORT MAILED: Jan 26/93 SIGNED BY. . . . . D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

WHOLE ROCK ICP ANALYSIS

D.D.H. Geomanagement Ltd. PROJECT QUINTO File # 93-0074

422 - 470 Granville St., Vancouver BC V6C 1V6 Submitted by: A.D. Drummond

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Sr ppm	Zr ppm	Y ppm	Nb ppm	LOI %	SUM %
KS-75	.29	.12	.01	.04	.03	.08	.22	.01	.05	.01	.002	47	7	9	6	26	91.5	92.08
NO.763	2.49	.92	.64	.95	.10	.10	.22	.03	.03	.01	.002	5	9	7	6	9	91.6	96.87

.200 GRAM SAMPLES ARE FUSED WITH 1.2 GRAM OF LIBO2 AND ARE DISSOLVED IN 100 MLS 5% HNO3. Ba IS SUM AS BaSO4 AND OTHER METALS ARE SUM AS OXIDES.
- SAMPLE TYPE: CONCENTRATE

DATE RECEIVED: JAN 12 1993 **DATE REPORT MAILED:** Jan 21/93 **SIGNED BY**.....D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

GEOCHEMICAL ANALYSIS CERTIFICATE

D.D.H. Geomanagement Ltd. PROJECT QUINTO File # 93-0074

422 - 470 Granville St., Vancouver BC V6C 1V6 Submitted by: A.D. Drummond

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	TOT/C %	GRA/C %
KS-75	1	4	2	2	.5	51	1	7	.05	9	5	ND	1	2	.2	2	2	130	.01	.001	2	2	.01	11	.01	2	.01	.01	.01	1	100.49	38.16
NO.763	1	5	2	3	.7	27	2	12	.13	14	5	ND	1	3	.2	2	2	18	.04	.001	2	11	.10	3	.01	3	.03	.01	.01	1	89.39	7.37
RE KS-75	1	3	2	1	.5	51	1	3	.02	9	5	ND	1	1	.2	2	2	131	.01	.001	2	2	.01	10	.01	2	.01	.01	.01	1	-	-

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER.
THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.
- SAMPLE TYPE: CONCENTRATE TOT/C BY LECO. Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: JAN 12 1993 **DATE REPORT MAILED:** Jan 21/93. **SIGNED BY** ..... D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

ECO-TECH LABORATORIE

ASSAYING - ENVIRONMENTAL TESTING

10041 East Trans Canada Hwy., Kamloops, B.C. V2C 2J3 (604) 573-5

FEED DOCUMENT THIS DIRECTION

IMPORTANT FAX MESSAGE

TO Paul Schiller
COMPANY Quinto Mining
FAX NO 681-7620
FROM Eco-Tech Lab
NO OF PAGES 1
RE Result as per request.

Regards

FEBRUARY 12, 1993

CERTIFICATE OF ASSAY ETK 93-36

QUINTO MINING CORPORATION
606-626 WEST PENDER STREET
VANCOUVER, B.C.
V6B 1V9

ATTENTION: PAUL SCHILLER

SAMPLE IDENTIFICATION: 23 ROCK SAMPLES RECEIVED FEBRUARY 5, 1993

ET#	Description	AU (g/t)	AU (oz/t)	AG (g/t)	AG (oz/t)
1 -	27115	.11	.003	.5	.02
2 -	27116	2.59	.076	1.2	.04
3 -	27117	10.73	.313	5.1	.15
4 -	27118	.57	.017	1.3	.04
5 -	27119	1.26	.037	2.3	.07
6 -	27120	1.04	.030	2.8	.08
7 -	27121	.72	.021	1.6	.05
8 -	27122	<.03	<.001	.6	.02
9 -	27123	.04	.001	.6	.02
10 -	27124	.13	.004	.9	.03
11 -	27125	.66	.019	1.5	.04
12 -	27126	7.52	.219	.5	.02
13 -	27127	5.34	.156	2.6	.08
14 -	27128	7.56	.220	6.0	.18
15 -	27129	.16	.005	.2	.01
16 -	27130	1.54	.045	1.5	.04
17 -	27131	.29	.008	1.4	.04
18 -	27132	1.02	.030	1.9	.06
19 -	27133	.29	.008	.8	.02
20 -	27134	1.42	.041	1.5	.04
21 -	27135	1.97	.057	1.3	.04
22 -	27136	.32	.009	1.8	.05
23 -	27137	2.42	.071	1.2	.04

190 X-Cut

NOTE: < = LESS THAN

ECO-TECH LABORATORIES LTD.
FRANK J. PEZZOTTI, A.Sc.T.
B.C. Certified Assayer

SC93/kmisc#1

CDN RESOURCE LABORATORIES LTD.
6329 DORESPORD STREET, BURNABY, B.C. V5E 1B3 / PH: 435-8378 / FAX: 435-9746

	Ru oz/T	
DDH - Geo 10kg	.024	
Loose Rock	.789	mostly pyrite nodule.
Rocks in Bag	.600	grey - graphitic - carbonaceous ss with Ru + large pyrite grains

ACME ALTTICAL LABORATORIES LTD. 852 E. HASTINGS ST VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-171

WHOLE ROCK ICP ANALYSIS

D.D.H. Geomanagement Ltd. File # 93-0027

422 - 470 Granville St., Vancouver BC V6C 1V6

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Sr ppm	Zr ppm	Y ppm	Nb ppm	LOI %	SUM %
50158	43.20	21.19	7.88	2.87	3.62	.66	4.09	1.00	.23	.08	.031	1637	304	812	98	242	13.6	98.92
RE 50158	43.46	21.37	7.85	2.95	3.65	.66	4.21	1.00	.24	.08	.029	1652	306	825	93	247	13.8	99.77

.200 GRAM SAMPLES ARE FUSED WITH 1.2 GRAM OF LIBO2 AND ARE DISSOLVED IN 100 MLS 5% HNO3. Ba IS SUM AS BaSO4 AND OTHER METALS ARE SUM AS OXIDES.
- SAMPLE TYPE: PULP Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: JAN 6 1993 DATE REPORT MAILED: Jan 15/93 SIGNED BY ..... D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

GEOCHEMICAL ANALYSIS CERTIFICATE

D.D.H. Geomanagement Ltd. File # 93-0027

422 - 470 Granville St., Vancouver BC V6C 1V6

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	F ppm	TOT/C %	GRA/C %
5015B	23	174	262	424	7.2	49	17	544	4.76	114	5	ND	2	200	7.0	3	10	30	2.44	.095	4	28	1.34	46	.01	2	1.26	.01	.16	27	300	6.44	.23
RE 5015B	24	182	275	439	7.6	49	18	568	4.97	115	5	ND	2	209	6.9	3	15	32	2.55	.096	4	29	1.41	52	.01	4	1.33	.01	.18	28	310	6.55	.24

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER.
THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.
- SAMPLE TYPE: PULP F - NaOH FUSION - SPECIFIC ION ELECTRODE ANALYSIS. TOT/C BY LECO. GRA/C - Ignite, analyse by Leco.
Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: JAN 6 1993 **DATE REPORT MAILED:** Jan 15/93. **SIGNED BY**.....D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

GEOCHEMICAL ANALYSIS CERTIFICATE

Quinto Mining Corp. File # 92-4356

606 - 626 W. Pender St., Vancouver BC V6B 1V9

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
250g TAILS	19	49	36	289	9.0	57	8	660	3.16	27	5	ND	3	261	4.7	3	2	46	3.13	.051	8	62	1.61	165	.01	3	2.10	.02	.32	1
750g TAILS	16	42	26	234	1.4	51	6	618	3.05	23	5	ND	2	249	3.9	2	2	43	2.95	.037	6	55	1.68	80	.01	2	2.14	.01	.29	1
67003	12	93	35	645	1.9	118	30	813	6.19	143	5	ND	1	306	11.1	2	2	24	4.11	.091	2	55	1.32	23	.01	4	1.05	.01	.14	1
69074	12	91	35	631	6.7	105	29	797	6.17	139	5	ND	1	297	11.2	2	2	25	4.05	.090	3	54	1.30	21	.01	4	1.08	.01	.16	2
RE 67003	11	87	28	640	1.8	99	28	792	6.06	138	5	ND	1	295	11.0	2	2	23	4.07	.090	2	53	1.28	18	.01	5	.96	.01	.13	1
STANDARD C	18	60	39	129	7.2	67	31	1043	3.96	42	18	7	37	53	18.0	14	21	56	.50	.087	39	60	.94	188	.09	34	1.88	.06	.14	11

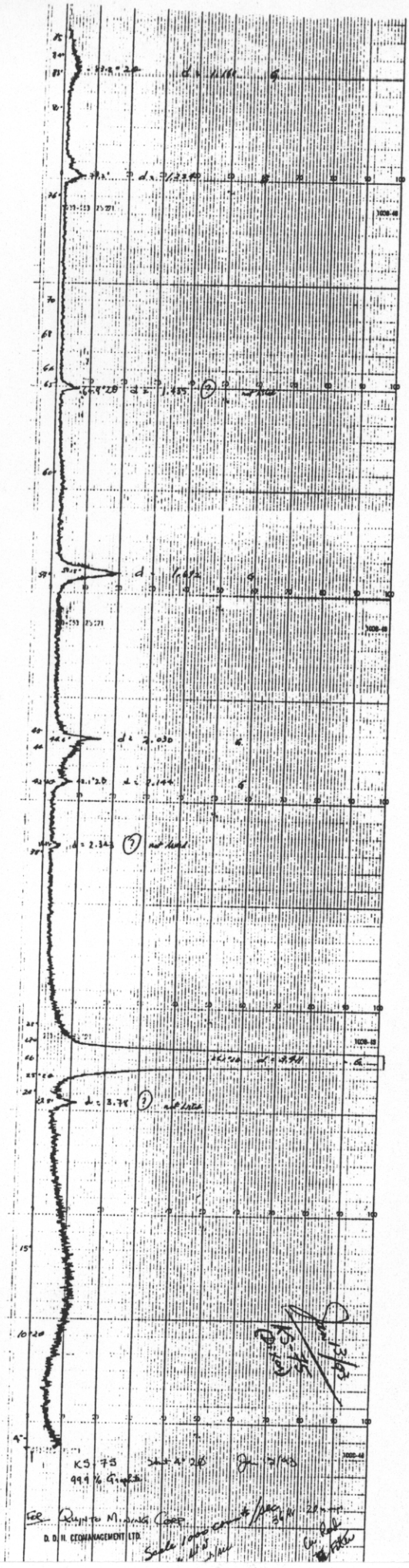
ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER. THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.
- SAMPLE TYPE: TAILS Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: DEC 15 1992 **DATE REPORT MAILED:** Dec 22/92 **SIGNED BY** ..... D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

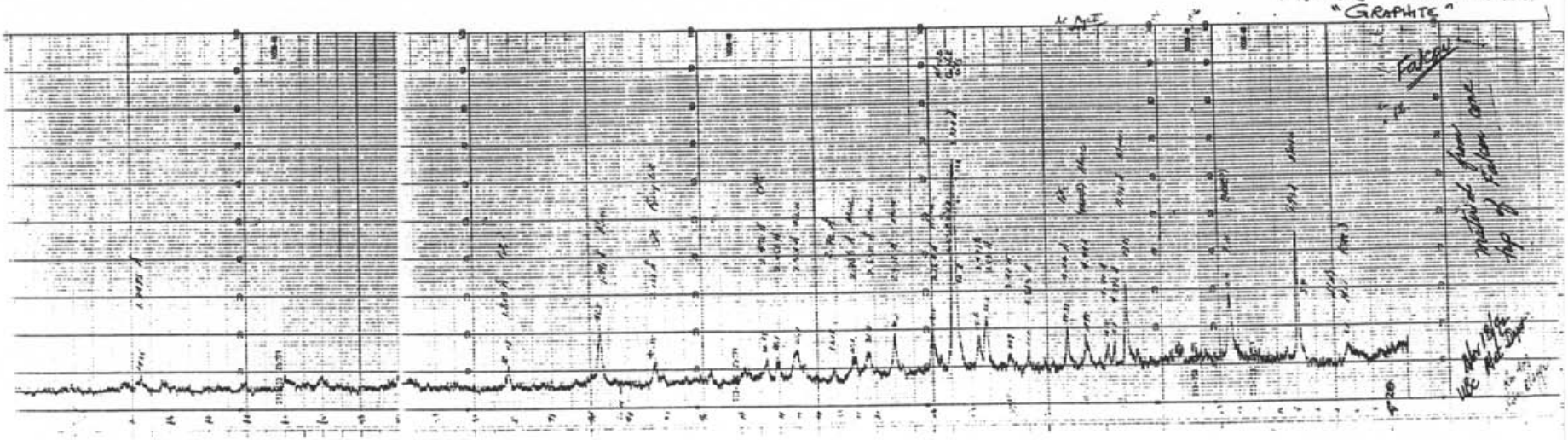
TOTAL P.002

APPENDIX B

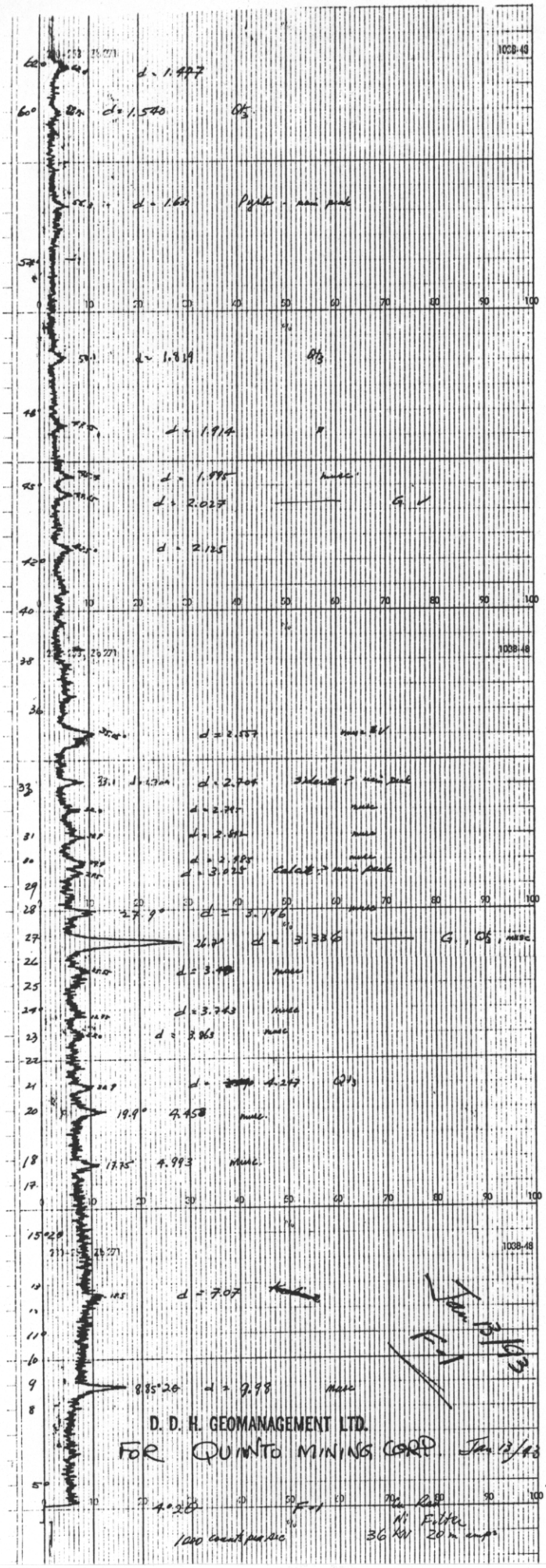
X-RAY DIFFRACTION PATTERNS


KS 73
99.9% Grade
D. D. H. GEOMANAGEMENT LTD.

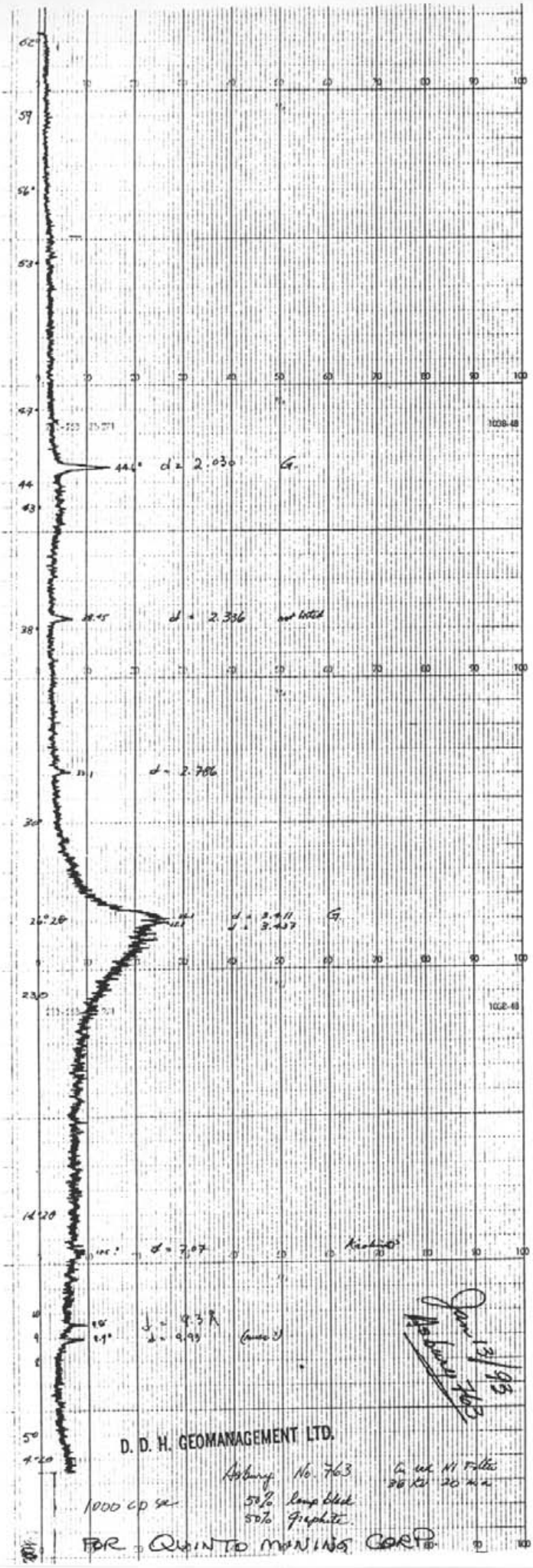
FALCON LIGHT FRACTION
"GRAPHITE"

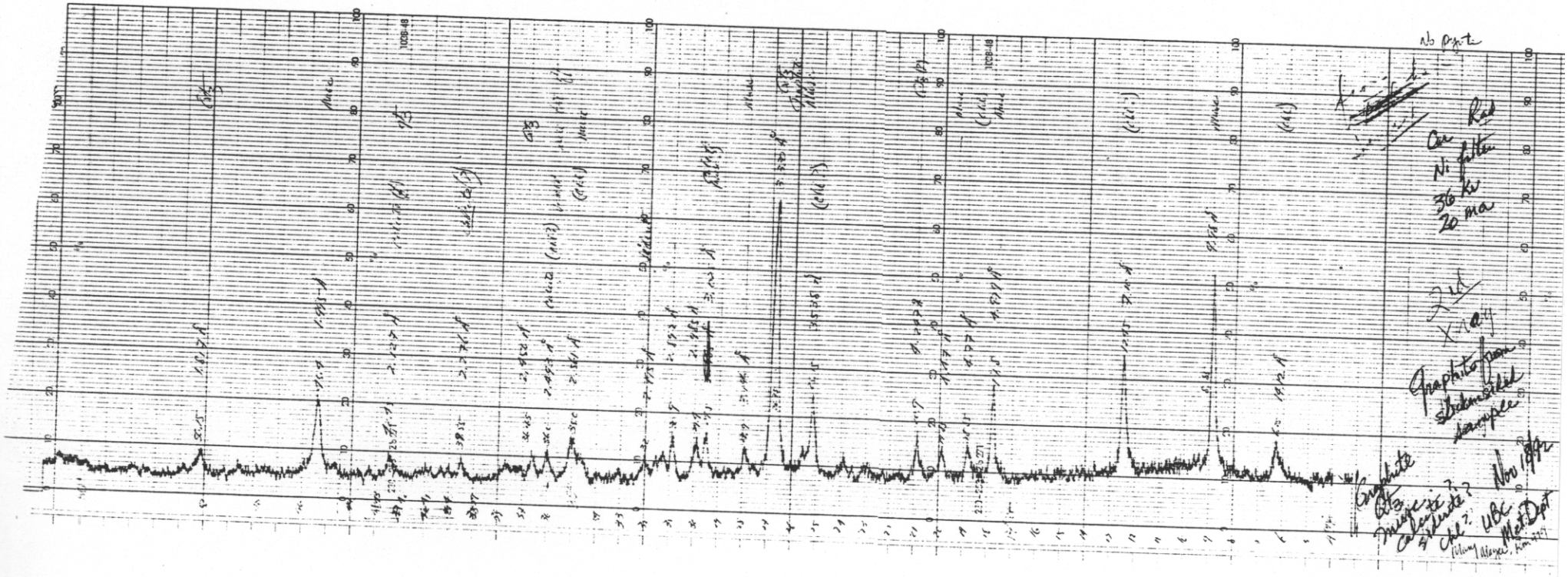


D. D. H. GEOMANAGEMENT LTD.
FOR QUATTO MINING CORP.

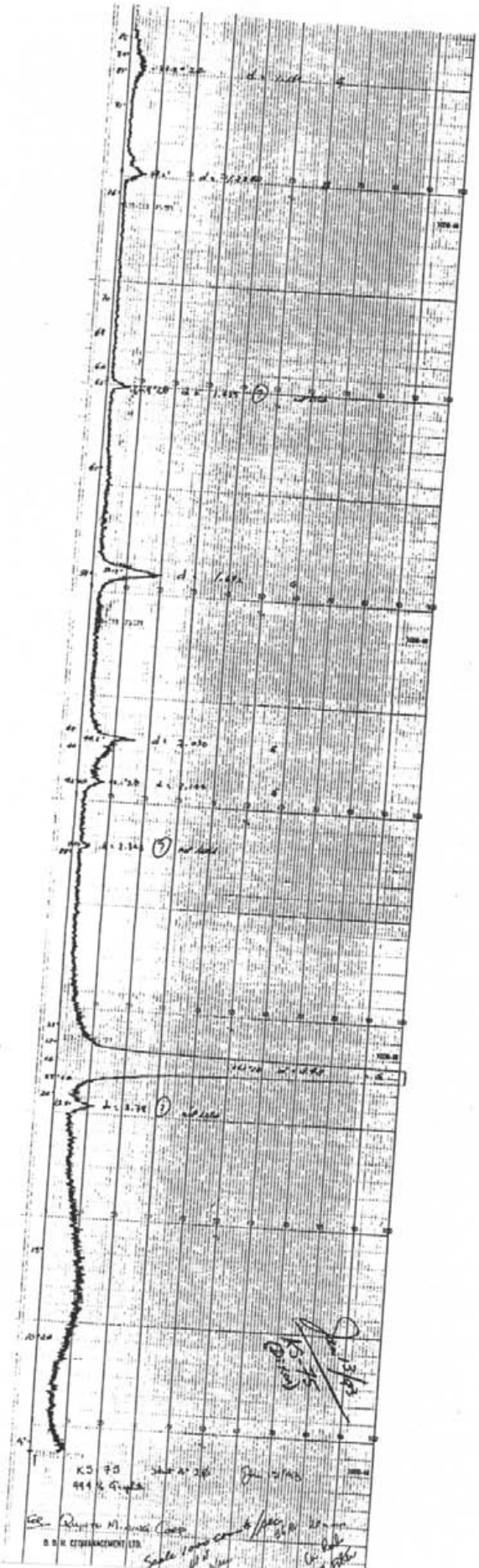


ROTATION PRODUCT.


44.6° d = 2.030 G
38.45 d = 2.336
d = 2.786
d = 3.911
d = 3.437 G
d = 7.07
9.3 K
9.93
D. D. H. GEOMANAGEMENT LTD.
Hole No. 763
50% lamp black
50% Graphite
1000 cps
FOR QUINTO MINING CORP.



D. D. H. GEOMANAGEMENT LTD.
FOR QUINTO MINING CORP.



5- 586 JCPDS-ICDD Copyright (c) 1991 Quality: i

Calcite.

$CaCO_3$

Calcium Carbonate

2θ 29,4° –

Calcite, syn

Rad: CuKal Lambda: 1.5405 Filter: Ni d-sp:
Cutoff: Int: Diffractometer I/Icor: 2.00
Ref: Svanson, Fuyat, Natl. Bur. Stand. (U.S.), Circ. 539, II 51 (1953)

Sys: Rhombohedral (Hex) S.G.: R-3c (167)
a: 4.989 b: c: 17.062 A: C: 3.4199
A: B: C: Z: 6 mp:
Ref: Ibid.

Dx: 2.71 Dm: 2.71 SS/FOM: F30=50(.016,37)

ea: 1.487, nwB: 1.659, ey: Sign: - 2V:
Ref: Dana's System of Mineralogy, 7th Ed., 2 142

Color: Colorless
X-ray pattern at 26 C. Sample from Mallinckrodt Chemical Works. CAS no.: 13397-26-7. Spectroscopic analysis: <0.1% Sr; <0.01% Ba; <0.001% Al, B, Cs, Cu, K, Mg, Na, Si, Sn; <0.0001% Ag, Cr, Fe, Li, Mn. Merck Index, 8th Ed., p. 190. Other form: aragonite. Calcite group, calcite subgroup.
#Not permitted by space group.
PSC: hR10. Mwt: 100.09. Volume[CD]: 367.78.

d A	Int.	h k l
3.86	12	0 1 2
3.035	100	1 0 4
2.845	3	0 0 6
2.495	14	1 1 0
2.285	18	1 1 3
2.095	18	2 0 2
1.927	5	0 2 4
1.913	17	0 1 8
1.875	17	1 1 6
1.626	4	2 1 1
1.604	8	1 2 2
1.587	2	1 0 10
1.525	5	2 1 4
1.518	4	2 0 8
1.510	3	1 1 9
1.473	2	1 2 5
1.440	5	3 0 0
1.422	3	0 0 12
1.356	1	2 1 7
1.339	2	0 2 10
1.297	2	1 2 8
1.284	1	3 0 6
1.247	1	2 2 0
1.235	2	1 1 12
1.1795	3	2 1 10
1.1538	3	1 3 4
1.1425	1	2 2 6
1.1244	<1	1 2 11
1.0613	1	2 0 14
1.0473	3	4 0 4
1.0447	4	3 1 8
1.0352	2	1 0 16
1.0234	<1	2 1 13
1.0118	2	3 0 12
0.9895	<1	3 2 1
0.9846	1	2 3 2
0.9782	1	[1 3 10]
0.9767	3	1 2 14
0.9655	2	3 2 4
0.9636	4	4 0 8#
0.9562	<1	2 0 16#
0.9429	2	4 1 0
0.9376	2	2 2 12

Strong lines: 3.04/X 2.29/2 2.10/2 1.91/2 1.88/2 2.50/1 3.86/1 1.60/1

39-381 JCPDS-ICDD Copyright (c) 1991 Quality:

Chlorite Group.

Na Al (Si,Al) O (OH) !H O
0.5 6 8 20 10 2

Sodium Aluminum Silicate Hydroxide Hydrate

Chlorite-vermiculite-montmorillonite

Rad: CuKa Lambda: 1.542 Filter: Mono. d-sp: Diff.
Cutoff: 40.0 Int: Diffractometer I/Icor:
Ref: Bayliss, P., James, D., Clay Miner., 16 213 (1981)

Sys: S.G.:
a: 5.1 b: 8.9 c: 14.4 A: C:
A: B: C: I: mp:
Ref:

Dx: Dm: SS/FOM:

ea: nvB: ey: Sign: 2V:
Ref:

Specimen from oil sand deposits, Alberta, Canada. A di/dioctahedral chlorite-vermiculite-montmorillonite irregular mixed-layer. 001 is 15.0 A glycollated, 12.4 A heated 400 C, 11.8 A heated 600 C. Pseudohexagoanl. Mixed-layer group, random subgroup.
*Asymmetrical.
See original PDF Card for Graphical diffractometer trace.

d A	Int.	h k l
14.2	10	0 0 1
7.7*	50	0 0 2
4.78	10	0 0 3
4.44*	50	0 2 , 1 1
3.50	100	0 0 4
2.88	6b	0 0 5
2.56	15	2 0
2.50	15	1 3
2.34	20b	0 0 6
1.98	6b	0 0 7
1.82	4b	0 0 8
1.66	6b	0 0 9

Missing? Needs more identification

Strong lines: 3.50/X 7.70/5 4.44/5 2.34/2 2.56/2 2.50/2 14.2/1 4.78/1

25-284 JCPDS-ICDD Copyright (c) 1991 Quality: C

Graphite

C

2θ 26.6°

43.6°

Carbon

Graphite, syn

Rad: CuKa Lambda: 1.54178 Filter: d-sp: Calculated
Cutoff: Int: Calculated I/Icor:
Ref: Holcombe, USAEC Oak Ridge Y-12 Plant, Report Y1887 (1973), Private Communication, (1974)

Sys: Hexagonal S.G.: P63/mmc (194)
a: 2.456 b: c: 6.696 A: C: 2.7264
A: B: C: Z: 4 mp:
Ref: Ibid.

Dx: 2.28 Dm: SS/FOM: F19=280(.003,24)

ea: nvB: ey: Sign: 2V:
Ref:

Peak height intensities. CAS no.: 7440-44-0. C type. PSC: hP4. To be deleted by I-525; good experiment pattern; Bayliss 6/90. Mwt: 12.01.
Volume[CD]: 34.98.

d A	Int.	h k l	2θ
3.348	100	0 0 2	26.6°
2.127	3	1 0 0	42.5°
2.027	15	1 0 1	44.7°
1.795	3	1 0 2	
1.674	6	0 0 4	54.8°
1.5398	4	1 0 3	60.0°
1.3154	1	1 0 4	
1.2280	4	1 1 0	77.7°
1.1529	6	1 1 2	83.8°
1.1333	1	1 0 5	
1.1160	1	0 0 6	
1.0503	1	2 0 1	
0.9902	4	1 1 4	
0.9601	1	2 0 3	
0.8724	1	1 0 7	
0.8370	1	0 0 8	
0.8328	1	2 0 5	
0.8259	4	1 1 6	
0.7982	2	2 1 1	

Strong lines: 3.35/X 2.03/2 1.67/1 1.15/1 1.54/1 1.23/1 0.99/1 0.83/1

41-1487 JCPDS-ICDD Copyright (c) 1991 Quality: i

Graphite

C

Carbon

Graphite-2H

Rad: CuKal Lambda: 1.54051 Filter: Ni d-sp: Diff.
Cutoff: 22.1 Int: Diffractometer I/Icor: 7.78
Ref: Sanc, I., Polytechna, Foreign Trade Corporation, Panska, Czechoslovakia, JCPDS Grant-in-Aid Report, (1990)

Sys: Hexagonal S.G.: P63/mmc (194)
a: 2.4704(15) b: c: 6.7244(38) A: C: 2.7220
A: B: C: Z: 4 mp:
Ref: Ibid.

Dx: 2.24 Dm: 2.16 SS/FOM: F10=18(.042,13)

ea: nwB: ey: Sign: 2V:
Ref:

Color: Black
Pattern taken at 25(1) C. Specimen from Netolice, Czechoslovakia. CAS no.: 7782-42-5. sigma(Iobs)=+/-0.05. C type. Also called: cliftonite. Also called: plumbago. Silicon used as external standard. PSC: hP4. To replace 23-64 and 34-567, and validated by calculated pattern 25-284. Structure reference: Aust. J. Chem., 42 479 (1989). Mwt: 12.01. Volume[CD]: 35.54.

d A	Int.	2θ°	h	k	l
3.38	100	26.3°	0	0	2
2.139	2	42.2°	1	0	0
2.039	6	44.4	1	0	1
1.807	<1		1	0	2
1.681	4	54.5°	0	0	4
1.548	1	59.65	1	0	3
1.234	3	77.2°	1	1	0
1.1604	3	83.2°	1	1	2
1.1208	<1		0	0	6
1.0567	<1		2	0	1

Strong lines: 3.38/X 2.04/1 1.68/1 1.23/1 1.16/1 2.14/1 1.81/1 1.55/1

14-164 JCPDS-ICDD Copyright (c) 1991 Quality: i

Kaolinite.

$Al_2Si_2O_5(OH)_4$

Aluminum Silicate Hydroxide

Kaolinite-1A

Rad: CuKa Lambda: 1.5418 Filter: Mono. d-sp:
Cutoff: Int: Visual I/Icor:
Ref: Goodyear, Duffin, Mineral. Mag., 32 902 (1961)

Sys: Triclinic S.G.: P-1 (2)
a: 5.155 b: 8.959 c: 7.407 A: C:
A: 91.68 B: 104.9 C: 89.94 Z: 2 mp:
Ref: Ibid.

Dx: 2.60 Dm: 2.64 SS/FOM: F30=19(.022,72)

ea: 1.559(6), nwB: 1.564(5), ey: 1.565(5), Sign: -, 2V: 24-50 deg.
Ref: Deer, Howie, Zussman, Rock Forming Minerals, 3 194

Color: White sometimes with reddish, brownish or bluish tints
Specimen from Scalby, Yorkshire, England. Validated by calculated pattern Borg and Smith, GSA Memoir, 122. Kaolinite-Serpentine group, dioctahedral subgroup. C.D. Cell: a=7.407, b=8.959, c=5.155, alpha=90.06, beta=104.90, gamma=88.32, a/b=0.8268, c/b=0.5754. PSC: aP34. To replace 12-447 and 5-143. Mwt: 258.16. Volume[CD]: 330.43.

d A	Int.	h k l
7.17	100	0 0 1
4.478	35	0 2 0
4.366	60	-1 1 0
4.186	45	-1 -1 1
4.139	35	-1 1 1
3.847	40	0 -2 1
3.745	25	0 2 1
3.579	80	0 0 2
3.420	5	1 -1 1
3.376	35	1 1 1
3.155	20	-1 -1 2
3.107	20	-1 1 2
2.754	20	0 2 2
2.566	35	-2 0 1
2.553	25	1 3 0
2.535	35	-1 -3 1
2.519	10	1 -1 2
2.495	45	2 0 0
2.385	25	0 0 3
2.347	40	-2 0 2
2.338	40	1 -3 1
2.305	5	-1 1 3
2.293	35	1 3 1
2.253	20	-1 -3 2
2.237	5	0 4 0

d A	Int.	h k l	d A	Int.	h k l	d A	Int.	h k l
2.218	10	-2 2 1	1.921	20	-2 3 0	1.633	30	-3 1 0
2.197	20	-1 3 2	1.906	5b	2 3 0	1.620	70	1 3 3
2.186	20	2 0 1	1.897	25	-1 -3 3	1.607	30	0 4 3
2.173	5	2 2 0	1.870	20	0 4 2	1.594	10	-1 -5 2
2.151	10	0 -4 1	1.845	25	-1 3 3	1.586	60	-1 -3 4
2.133	20	0 -2 3	1.838	35	-2 -2 3	1.572	10	-3 2 2
2.116	10	2 1 1	1.810	20	-2 2 3	1.553	30	-2 2 4
2.093	10	-1 2 3	1.789	25	0 0 4	1.545	40	1 -1 4
2.080	5	0 2 3	1.710	25	2 -2 2	1.537	40	2 0 3
2.064	20	-2 2 2	1.689	25	-1 5 0	1.514	5	3 -1 1
1.997	35	-2 0 3	1.681	25	-1 -5 1	1.505	5	-2 -4 3
1.987	35	1 -3 2	1.669	40	-2 4 0	1.489	90b	-3 -3 1
1.974	20	2 -2 1	1.660	40	2 4 0			
1.952	20	2 2 1	1.656	10	0 -4 3			
1.939	35	1 3 2	1.649	40	-3 1 2			

Strong lines: 7.17/X 1.49/9 3.58/8 1.62/7 4.37/6 1.59/6 4.19/5 2.50/5

29-1488 JCPDS-ICDD Copyright (c) 1991 Quality:

Kaolinite.

Al Si O (OH)
2 2 5 4

Aluminum Silicate Hydroxide

Kaolinite-1Md

Rad: CuKa Lambda: 1.5418 Filter: Ni d-sp:
Cutoff: Int: Diffractometer I/Icor:
Ref: Brindley, G., Penn State University, University Park, Pennsylvania, USA, JCPDS Grant-in-Aid Report, (1977)

Sys: Monoclinic S.G.: C#/#
a: 5.16 b: 8.93 c: 7.39 A: C:
A: B: 104.5 C: Z: 2 mp:
Ref: Robertson, R. et al., Am. Mineral., 39 118 (1954)

Dx: 2.60 Dm: SS/FOM: F20=2(.112,87)

ea: nwB: ey: Sign: 2V:
Ref:

Specimen from Pugu, Tanganyika. Q=impurity, probably quartz.
Kaolinite-Serpentine group, dioctahedral subgroup. C.D. Cell: a=7.390, b=8.930, c=5.160, beta=104.50, a/b=0.8275, c/b=0.5778, S.G.=A#/#. PSC: aC34.
See original PDF Card for Graphical diffractometer trace. To replace 6-221.
Mwt: 258.16. Volume[CD]: 329.68.

d A	Int.	h k l
7.1	100	0 0 1
4.41	60b	1 1 0
3.56	100	0 0 2
2.551	25	1 3 0
2.491	30	2 0 0
2.430	5	
2.375	20	0 0 3
2.327	40	-1 1 3
2.200	5	2 0 1
1.980	10	2 2 1
1.888	6	0 4 2
1.787	6	0 0 4
1.679	12	1 5 0
1.665	16	-2 0 4
1.540	3	1 1 4
1.488	30	0 6 0
1.455	5	3 3 0
1.430	3	0 0 5
1.378	3	0 6 2
1.309	3	2 0 4
1.284	6	-4 0 2

Strong lines: 7.10/X 3.56/X 4.41/6 2.33/4 2.49/3 1.49/3 2.55/3 2.38/2

6- 263 JCPDS-ICDD Copyright (c) 1991 Quality: i

Musc.

$KAl_2(Si_3Al)O_{10}(OH,F)_2$

Potassium Aluminum Silicate Hydroxide

Muscovite-2M1

Rad: CuKa Lambda: 1.5418 Filter: Ni d-sp:
Cutoff: Int: Diffractometer I/Icor:
Ref: Gillery, F., Penn State University, University Park, Pennsylvania, USA, Private Communication

Sys: Monoclinic S.G.: C2/c (15)
a: 5.19 b: 9.03 c: 20.05 A: C:
A: B: 95.77 C: Z: 4 mp:
Ref: Ibid.

Dx: 2.84 Dm: SS/FOM: F30=12(.045,56)

ea: 1.50-1.56, nvB: ey: 1.59-1.61, Sign: -, 2V: 36-50 deg.
Ref: Hendricks, Jefferson, Am. Mineral., 24 759 (1939)

Color: Colorless
Space group by Jackson, West, Z. Kristallogr., 76 211 (1930) and Hendricks, Jefferson, Am. Mineral., 24 729 (1939). Other sources give refractive indexes for muscovites: alpha=1.55-1.57, beta=1.58-1.61, gamma=1.59-1.62. Locality not given. Mica group, dioctahedral subgroup. C.D. Cell: a=20.050, b=9.030, c=5.190, beta=95.77, a/b=2.2204, c/b=0.5748, S.G.=A2/a (15). PSC: mC84. Volume[CD]: 934.90.

d A	Int.	2θ°	h k l
9.95	95	8.85	0 0 2
4.97	30	17.8	0 0 4
4.47	20	18.57	-1 1 1
4.30	4		1 1 1
4.11	4		0 2 2
3.95	6		1 1 2
3.88	14		-1 1 3
3.73	18		0 2 3
3.48	20		-1 1 4
3.34	25		0 2 4
3.32	100		0 0 6
3.19	30		1 1 4
3.12	2		-1 1 5
2.987	35		0 2 5
2.859	25		1 1 5
2.789	20		-1 1 6
2.596	16		-1 3 1
2.566	55		1 1 6
2.505	8		-1 1 7
2.491	14		0 0 8
2.465	8		-1 3 3
2.450	8		2 0 2
2.398	10		-2 0 4
2.384	25		1 3 3
2.254	10		0 4 0
2.236	4		-1 3 5
2.208	8		2 2 1
2.189	4		0 2 8
2.149	16		2 2 2
2.132	20		1 3 5
2.070	4		2 2 3
2.053	6		0 4 4
1.993	45		0 0 10
1.972	10		-1 3 7
1.951	6		2 0 6
1.941	4		-2 2 6
1.894	2		-2 0 8
1.871	4		1 3 7
1.822	4		0 2 10
1.746	4		-2 2 8
1.731	8		-1 3 9
1.710	6		2 0 8
1.704	6		-1 5 1
1.699	4		-3 1 1
1.662	12		0 0 12
1.646	25		1 3 9
1.631	6		-1 5 4
1.620	6		2 4 3
1.603	6		-2 4 5
1.573	4		-3 1 6
1.559	8		-2 2 10
1.541	4		-1 5 6
1.524	12		-1 3 11
1.504	30	(PEAK)	-2 4 7
1.453	4		0 2 13
1.424	2		0 0 14
1.414	2		0 4 11
1.388	2		1 5 8
1.375	2		-3 3 7
1.352	12		-1 3 13
1.335	10		-3 3 8
1.321	4		-2 2 13
1.299	8		-2 6 0
1.292	6		-3 3 9
1.274	6		-2 6 4
1.267	4		0 4 13
1.253	6		-2 2 14
1.246	8		-3 5 0
1.227	4		3 5 2
1.221	6		-1 7 4
1.208	4		3 5 3
1.200	4		4 2 3
1.1903	4		-2 2 15
1.1828	4		-1 7 6
1.1582	2		0 6 11
1.1300	2		2 6 8
1.1220	4		1 5 13
1.1167	4		0 6 12

Strong lines: 3.32/X 9.95/X 2.57/6 1.99/5 2.99/4 4.97/3 3.19/3 1.50/3

dioctahedral mica type

  Quality: i

Musc.

$KAl_2Si_3AlO_{10}(OH)_2$

Potassium Aluminum Silicate Hydroxide

Muscovite-1M, syn

Rad: CuKa Lambda: 1.5418 Filter: Ni d-sp:
Cutoff: Int: Diffractometer I/Icor:
Ref: Yoder, H., Eugster, H., Geochim. Cosmochim. Acta, 8 225 (1955)

Sys: Monoclinic S.G.: C2/m (12)
a: 5.208 b: 8.995 c: 10.275 A: C:
A: B: 101.6 C: Z: 2 mp:
Ref: Ibid.

Dx: 2.81 Dm: 2.83 SS/FOM: F29=9(.037,84)

ea: 1.563(11), nwB: 1.596(14), ey: 1.602(15), Sign: -, 2V: 30-47 deg.
Ref: Ibid.

Color: Colorless, or light shades of green-red or brown
CAS no.: 1318-94-1. Synthesized from KAlSiO4 + kaolinite + water at 200 C and 15,000 P.S.I. for 4120 hours. *Mica group, dioctahedral subgroup.* C.D. Cell: a=10.275, b=8.995, c=5.208, beta=101.60, a/b=1.1423, c/b=0.5790, S.G.=A2/m (12). PSC: mC42. To replace 2-56. Mwt: 398.31. Volume[CD]: 471.51.

d A	Int.	h k l
10.1	100	0 0 1
5.04	35	0 0 2
4.49	90	0 2 0
4.35	25	-1 1 1
4.11	16	0 2 1
3.66	60	-1 1 2
3.36	100	0 0 3
3.07	50	1 1 2
2.929	6	-1 1 3
2.689	16	0 2 3
2.582	50	-1 3 0
2.565	90	-1 3 1
2.550	20	2 0 0
2.450	12	1 3 1
2.405	4	-1 3 2
2.380	12	-1 1 4
2.246	8	0 4 0
2.219	8	2 2 0
2.191	4	0 4 1
2.156	20	-1 3 3
2.109	6	2 0 2
2.013	30	0 0 5
1.957	8	1 3 3
1.900	4	-1 3 4
1.668	18	-2 4 2
1.653	12	1 5 1
1.635	12	2 0 4
1.514	4	1 3 5
1.499	35	0 6 0

Strong lines: 10.1/X 3.36/X 4.49/9 2.57/9 3.66/6 3.07/5 2.58/5 5.04/4

Pyrite

FeS
2

Iron Sulfide

Pyrite, syn

Rad: CuKa1 Lambda: 1.5405 Filter: Ni d-sp:
Cutoff: Int: Diffractometer I/Icor:
Ref: Svanson et al., Natl. Bur. Stand. (U.S.), Circ. 539, 5 29 (1955)

Sys: Cubic S.G.: Pa3 (205)
a: 5.417 b: c: A: C:
A: B: C: Z: 4 mp: 642 C
Ref: Ibid.

Dx: 5.01 Dm: 5.02 SS/FOM: F24=22(.029,37)

ea: nwB: ey: Sign: 2V:
Ref:

Color: Black (in powder), brass-yellow (in crystals)
X-ray pattern at 26 C. CAS no.: 1309-36-0. Sample prepared as a fine precipitate and heated in a closed tube in S2 atmosphere for 4 hours at 700 C. Spectroscopic analysis: <0.1% Al, Ca, Mg, Si; <0.01% Co, Cu, Mo, Ni, Pb; <0.001% Cr, Ge, Mn; <0.0001% Ag. Validated by calculated pattern 24-76. Opaque mineral optical data on specimen from Tavistock, Devon, England: RR2Re=51.7, Disp.=16, VHN100=1505-1620, Color values=.327, .335, 51.8, Ref.: IMA Commission on Ore Microscopy QDF. Measured density and melting point by Dana's System of Mineralogy, 7th Ed., 1 238. FeS2 type.
Pyrite group, pyrite subgroup. Also called: pyrites. Also called: fools gold.
PSC: cP12. To be deleted by I-506, lower Fn, Bayliss, 11/90. Mwt: 119.97.

d A	Int.	h k l
3.128	35	1 1 1
2.709	85	2 0 0
2.423	65	2 1 0
2.2118	50	2 1 1
1.9155	40	2 2 0
1.6332	100	3 1 1
1.5640	14	2 2 2
1.5025	20	2 3 0
1.4448	25	3 2 1
1.2427	12	3 3 1
1.2113	14	4 2 0
1.1823	8	4 2 1
1.1548	6	3 3 2
1.1057	6	4 2 2
1.0427	25	5 1 1
1.0060	8	2 5 0
0.9892	6	5 2 1
0.9577	12	4 4 0
0.9030	16	6 0 0
0.8788	8	6 1 1
0.8565	8	6 2 0
0.8261	4	5 3 3
0.8166	4	6 2 2
0.7981	6	6 3 1

Strong lines: 1.63/X 2.71/9 2.42/7 2.21/5 1.92/4 3.13/4 1.44/3 1.04/3

33-1161 JCPDS-ICDD Copyright (c) 1991 Quality: *

Quartz

SiO
2

Silicon Oxide

Quartz, syn

>d 2.085
2θ 26.7°

Rad: CuKa1 Lambda: 1.540598 Filter: Mono. d-sp: Diff.
Cutoff: Int: Diffractometer I/Icor: 3.6
Ref: Natl. Bur. Stand. (U.S.) Monogr. 25, 18 61 (1981)

Sys: Hexagonal S.G.: P3221 (154)
a: 4.9133(2) b: c: 5.4053(4) A: C: 1.1001
A: B: C: Z: 3 mp:
Ref: Ibid.

Dx: 2.65 Dm: 2.66 SS/FOM: F30=77(.013,31)

ε: nωB: 1.544, εγ: 1.553, Sign: + 2V:
Ref: Svanson, Fuyat, Natl. Bur. Stand. (U.S.), Circ. 539, 3 24 (1954)

Color: Colorless
Pattern at 25 C. Sample from the Glass Section at NBS, Gaithersburg, Maryland, USA, ground single-crystals of optical quality. Pattern reviewed by J. Holzer and G. McCarthy, North Dakota State University, Fargo, North Dakota, USA, JPDS Grant-in-Aid Report (1990). Agrees well with experimental and calculated patterns. O2Si type. Quartz group. Also called: silica. Silicon used as internal standard. PSC: hP9. To replace 5-490. Plus 6 reflections to 0.9089. Mwt: 60.08. Volume[CD]: 113.00.

d A	Int.	h k l
4.257	22	1 0 0
3.342	100	1 0 1
2.457	8	1 1 0
2.282	8	1 0 2
2.237	4	1 1 1
2.127	6	2 0 0
1.9792	4	2 0 1
1.8179	14	1 1 2
1.8021	<1	0 0 3
1.6719	4	2 0 2
1.6591	2	1 0 3
1.6082	<1	2 1 0
1.5418	9	2 1 1
1.4536	1	1 1 3
1.4189	<1	3 0 0
1.3820	6	2 1 2
1.3752	7	2 0 3
1.3718	8	3 0 1
1.2880	2	1 0 4
1.2558	2	3 0 2
1.2285	1	2 2 0
1.1999	2	2 1 3
1.1978	1	2 2 1
1.1843	3	1 1 4
1.1804	3	3 1 0
1532	1	3 1 1
1.1405	<1	2 0 4
1.1143	<1	3 0 3
1.0813	2	3 1 2
0635	<1	4 0 0
1.0476	1	1 0 5
1.0438	<1	4 0 1
1.0347	<1	2 1 4
1.0150	1	2 2 3
0.9898	1	4 0 2
0.9873	1	3 1 3
0.9783	<1	3 0 4
0.9762	1	3 2 0
0.9636	<1	2 0 5

Strong lines: 3.34/X 4.26/2 1.82/1 1.54/1 2.46/1 2.28/1 1.37/1 1.38/1

29-696 JCPDS-ICDD Copyright (c) 1991 Quality: *

Siderite

$FeCO_3$

Iron Carbonate

Siderite

Rad: CuKa1 Lambda: 1.540598 Filter: Mono. d-sp:
Cutoff: Int: Diffractometer I/Icor:
Ref: Natl. Bur. Stand. (U.S.) Monogr. 25, 15 32 (1978)

Sys: Rhombohedral (Hex) S.G.: R-3c (167)
a: 4.6935(2) b: c: 15.386(8) A: C: 3.2782
A: B: C: Z: 6 mp:
Ref: Ibid.

Dx: 3.93 Dm: 3.89 SS/FOM: F30=75(.010,39)

ea: nwB: 1.8728(1), ey: 1.6331, Sign: - 2V:
Ref: Dana's System of Mineralogy, 7th Ed., 2 167

Color: Light yellowish brown
Pattern at 25 C. Specimen from Ivigtut, Greenland. (NMNH 132849).
Spectrographic analysis indicates 1-2% Mn. Optical data specimen from
Spectrographic analysis indicates 1-2% Mn. Optical data specimen from
Canborne. Calcite group, calcite subgroup. Silicon used as internal standard.
PSC: hR10. To replace 8-133. Mwt: 115.86. Volume[CD]: 293.53.

d A	Int.	h k l
3.593	25	0 1 2
2.795	100	1 0 4
2.564	<1	0 0 6
2.346	20	1 1 0
2.134	20	1 1 3
1.965	20	2 0 2
1.7968	12	0 2 4
1.7382	30	0 1 8
1.7315	35	1 1 6
1.5291	3	2 1 1
1.5063	14	1 2 2
1.4390	3	1 0 10
1.4266	11	2 1 4
1.3969	6	2 0 8
1.3818	3	1 1 9
1.3548	11	3 0 0
1.2823	5	0 0 12
1.2593	1	2 1 7
1.2278	3	0 2 10
1.2269	3	1 2 8
1.2002	5	
1.1977	4	3 0 6
1.1737	2	2 2 0
1.1254	4	1 1 12
1.1154	1	3 1 2
1.0872	3	2 1 10
1.0820	5	1 3 4
1.0671	4	2 2 6
0.9825	5	4 0 4
0.9724	5	3 1 8
0.9666	2	2 0 14
0.9358	2	1 0 16
0.9309	6	3 2 1
0.9256	3	2 3 2

Strong lines: 2.80/X 1.73/4 1.74/3 3.59/3 2.35/2 2.13/2 1.97/2 1.51/1

13-558 JCPDS-ICDD Copyright (c) 1991 Quality: i

Talc

$Mg_3Si_4O_{10}(OH)_2$

Magnesium Silicate Hydroxide

Talc-2M

Rad: CuKa Lambda: 1.5418 Filter: d-sp:
Cutoff: Int: Diffractometer I/Icor:
Ref: Steeple, Brindley, J. Am. Ceram. Soc., 43 34 (1960); Deer, Howie, Zussman, Rock Forming Minerals, 3 121

Sys: Monoclinic S.G.: C2/c (15)
a: 5.287 b: 9.158 c: 18.95 A: C:
A: B: 99.5 C: Z: 4 mp:
Ref: Ibid.

Dx: 2.78 Dm: 2.58 SS/FOM: F30=2(.053,300)

ea: 1.5445(5), nwB: 1.5915(2), ey: 1.5945(5), Sign: -, 2V: 0-30 deg.
Ref: Ibid.

Color: Colorless, white pale green, dark green, brown
Specimen from Manchuria, China. CAS no.: 14807-96-6. Magnesite removed on purification. Talc group, dioctahedral subgroup. C.D. Cell: a=18.814, b=9.158, c=5.287, beta=96.59, a/b=2.0544, c/b=0.5773, S.G.=A2/a (15).
*Enhanced by orientation.
PSC: aC84. To replace 3-881. Mwt: 379.27. Volume[CD]: 904.94.

d A	Int.	h k l
9.34	100*	0 0 2
4.66	90*	0 0 4
4.55	30	-1 1 1
3.51	4	-1 1 4
3.43	1	1 1 3
3.116	100*	0 0 6
2.892	1	0 2 5
2.629	12	-2 0 2
2.595	30	-1 3 2
2.476	65	1 3 2
2.335	16*	0 0 8
2.212	20	2 2 1
2.196	10	-2 0 6
2.122	8	2 0 4
2.103	20	-1 3 6
1.930	6b	2 2 4
1.870	40*	0 0 10
1.725	2	-2 4 2
1.682	20b	1 5 2
1.557	20*	0 0 12
1.527	40	0 6 0
1.509	10	3 3 0
1.460	8b	3 3 2
1.406	16	3 1 6
1.394	20	-1 3 12
1.336	16*	3 3 5
1.318	10	2 4 8
1.297	10b	-2 6 4
1.269	10	1 7 0
1.169	6*	-3 5 8

Strong lines: 9.34/X 3.12/X 4.66/9 2.48/7 1.87/4 1.53/4 4.55/3 2.60/3

APPENDIX C

METALLURGICAL TEST RESULTS

D.D.H. Geomanagement Ltd.
422-470 Granville St.
Vancouver, B.C.
V6C 1V5

December 23, 1992

Attention: A.D. Drummond

Subject: Laboratory Evaluation / Quinto Gold / Graphite Deposit.

This will confirm the discussion which took place in a meeting in Quinto's office on December 21, 1992 in which the processing options for this material were reviewed.

The Quinto deposit contains both gold (est 0.18 - 0.20 oz/t) and graphite, as well as pyrite. The graphite and the pyrite grades have not been determined, but it is thought that the "mineable" portion of the deposit may contain several percent of each.

This suggests the possible recovery of both gold and graphite into saleable products.

Previous testing (Lakefield and Coastech) indicate that gold can be recovered, by cyanidation providing the carbon-in-leach procedure is used to counter the modest preg-robbing character of the graphite. CIL leaching, after grinding, appears to yield gold recoveries of + 95 %, and about 88 % using conventional cyanidation.

Heap leaching was evaluated, on samples crushed to minus 6 mesh, yielding gold recoveries of about 50 %. Based upon a comparison with the tests which were performed on ground samples, the loss in recovery would appear to be a function of "grind" rather than preg-robbing carbon. This is consistent with the optical microscopy photographs which were viewed, and which indicated that the gold is quite fine (a few microns) and is predominantly located along natural "fracture" lines in the pyrite.

Flotation of unweathered ore produced good gold recoveries, at 98 %, but the low (4:1) ratio of concentration in rougher flotation resulted in a low concentrate grade. It was suggested that these results, when compared to CIL cyanidation, were not encouraging, and no further studies were recommended.

Gravity concentration (Lakefield test No.3 / 1987) indicated that 28 % of the gold could be recovered into a gravity concentrate grading • 60 oz/t Au. Because of the small quantity of sample which was used in this test, it was not possible to evaluate additional upgrading of the first cleaner gravity concentrate.

Mineral Processing Potential

The previous studies have indicated that cyanidation will effectively recovery the gold, providing CIL leaching is used.

What needs to be determined is whether an effective separation can be made between the graphite and pyrite to produce a graphite concentrate which is sufficiently depleted in pyrite to make it saleable.

It is hoped that grinding will differentially liberate the graphite and pyrite so that the former can be recovered as a "clean" flotation concentrate, while leaving the pyrite for subsequent flotation concentration of the contained gold. If this is successful, the gold / pyrite flotation concentrate could be leached, or sold if the gold grade is sufficiently high.

Since some portion of the gold is "liberated" during comminution, and since gold is readily floated, it may occur that a significant portion (the data suggests +20%) of the gold may be recovered with the graphite, which is not be desirable.

If this occurs, other process flowsheets need to be considered, as follows:

(1) Leach the entire ore after grinding, then perform differential flotation on the leached tailing.

(2) Leach the graphite flotation concentrate for gold recovery, then dewater and sell the graphite concentrate.

Testing Proposal

The following testing program was agreed upon:

Three samples, all apparently "fresh" and all collected from the underground exploration mining program, were provided for testing, as follows:

(1) About 20 kg of -20 mesh graphitic sample, which graded about 0.03 oz/t Au.

(2) A single rock weighing about 2 kg and having a high pyrite content thought to grade 1 oz/t Au.

(3) About 3 kg of lower grade sample.

These will be assayed separately for gold, and will be composited to produce a sample grading 0.18 - 0.20 oz/t Au. Undoubtedly, this sample will contain both graphite and pyrite.

The composite will be ground to an estimated 50 % - 200 mesh, and will be subjected to gravity concentration followed by staged flotation to evaluate the natural differential flotation characteristics of the gold, graphite, and pyrite.

Only once this test has been evaluated, will subsequent testing be performed.

Cost Estimate

It is estimated that no more than 3 tests will be required to determine the potential for the production of a graphite concentrate.

The cost of this program will not exceed $ 1,000, including assaying, although an additional allowance of $ 500 should be provided for possible optical microscopy.

If the testing is encouraging at that time, an additional $ 2,000 should be allocated to further investigate process parameters, such as optimum grind, and flotation reagent requirements.

Comments

To the best of my knowledge, there is no industrial precedent for this approach, so the study cannot really upon published literature. Nevertheless, the potential for success should be readily observed within the proposed 3 initial tests.

Thank you

G.Hawthorn, P.Eng

(g-0305)

WESTCOAST MINERAL TESTING INC.
3650 Emerald Dr., North Vancouver, B.C., Canada V7R 3B8 Telephone (604) 986-8455 Fax: (604) 986-2125

DDH — 662-3161

W-92078

GRAVITY + FLOTATION TEST: GF-1 Jan 3, 1993

CLIENT: DDH Geomanagement PROJECT: Quinto / Lumby

SAMPLE: C-1 (73 % DDH sample @ 0.24 oz/t Au + 27 % Au-pyrite grab sample from underground @ 0.60 oz/t Au).Composite grade approximetely 0.2 oz/t Au.

Note that the DDH sample had already been dry ground to -20 mesh.

OBJECTIVE: Evaluate gravity concentration followed by flotation in an attempt to separate the graphite and the gold-pyrite.

PROCEDURE: Grind: 1,000 gm / 5 min / 67 % solids
Pan: K = + 200:1
Float: Staged rougher to completion.
Wet/dry screen rougher tailing to 325 mesh.

TEST CONDITIONS: Flotation

Time	Event	DF 250	PAX	3418A	pH
0	F-1	125			
3		75			
8		75			
13		75			
17		50			
22		50			
23		50			
26	F-2	50	25		
27		25			8.5
31		50	25		
33	Finish	625	50		

DRAFT

Note: (1) All reagent additions in g/t of original feed.

METALLURGICAL CALCULATIONS:

Product	Wt %	Assay Au oz/t	LOI %	Fe %	S %	Distribution % Au	
Pan conc	1.1	2.28				9.1	
F-1 RC	15.2	0.136	11.3	5.5	2.3	7.6	
F-2 RC	20.9	0.980	25.1	34.4	35.6	74.6	
F RC	36.1					82.2	
Tails	62.8	0.038				8.7	
Feed (calc)	100.0	(0.275)				100.0	
assay		0.18					

Note: CC - cleaner concentrate
CT - cleaner tailing
RC - rougher concentrate
RT - rougher tailing

SCREEN ANALYSIS: Flotation rougher tailing

Mesh	Wt %	Au oz/t	
	22.8	0.007	
150			
	13.2	0.032	
200			
	16.6	0.020	
325			
	47.4	0.060	???
	100.0	(0.038)	

64.0 % - 200 mesh.

DRAFT

NOTES:

-- For purposes of economy in assaying, the graphite content of the first flotation concentrate, ie. the graphite concentrate, was approximated using a loss-on-ignition (LOI) analysis, rather than the more expensive carbon analysis. For purposes of comparison,a LOI analysis was performed on the second flotation concentrate, ie. pyrite concentrate as well.

-- The gold grade of the - 325 mesh tailing fraction will need to be evaluation in future testing, since possible contamination from a prior test may have occurred.

OBSERVATIONS:

-- There was no optically visible gold in the pan concentrate. The product consisted almost entirely of pyrite.

-- There were virtually no naturally floatable minerals in the flotation feed, although the "graphite" floated well, but slowly, on the addition of Dowfroth 250.

-- There was "no" optically discernable pyrite in the F-1 concentrate.

-- The F-2 concentrate floated almost immediately upon the addition of PAX, and went to "completion" within about 6 minutes.

This product appeared to contain minor "graphite".

CONCLUSIONS:

DRAFT

-- See comments under NOTES

-- The recovery of gold, at 91.3 % justifies further investigation. Although the majority of the gold reported to the F-2, ie. pyrite, flotation concentrate, the grade of this product, at 0.98 oz/t Au, is too low to justify direct marketing. Previous testing, by others, however indicates that the gold is amenable to cyanidation using the CIL procedure.

-- The gold grade of the "graphite" concentrate is relatively low, but probably is sufficient to justify cyanidation.

-- The F-1 "graphite" concentrate is perplexing in that while it appeared to consist almost entirely of graphite, the chemical analysis suggests otherwise. The material contains pyrite (the Fe:S ratio indicates a possible second iron mineral), but the loss-on-ignition (LOI) is very low, and not consistent with the impression that the black mineral is graphite. This requires further investigation which will include additional assaying and optical microscopy.

-- The pan concentrate contained only 9.1 % of the gold, and appeared not to contain any "coarse" gold. Gravity concentration may be suitable for the plant operation, but if it is, it will almost certainly require the use of a centrifugal concentrator.

-- The tailing fractional analysis will need to be investigated in future testing, since it may be that the - 325 mesh fraction is still suffering from carry-over from a previous high grade test.

-- Previous testing, by Coastech Research, on a different sample from this property, indicated that flotation is sensitive to grind, and that overgrinding will increase the grade of the flotation tailing. This will need to be investigated further.

RECOMMENDATIONS:

-- Prior to undertaking any additional laboratory testing, the mineral character of the "graphite" concentrate needs to be investigated and understood.

Because of the uncertain mineral composition of this product and the possible effect which it may have on the future of this property, this report has been issued in DRAFT, and will remain so until this difficulty is resolved.

(5015-16)

DRAFT

QUINTO C .E/92/12

10000 GRAM TEST

PRODUCT	SAMPLE TAG NO.	WEIGHT GRAMS	WEIGHT DIST.	GOLD ASSAY OZ./TON	DISTRIBUTION Au	CUMULATIVE WEIGHT	CUMULATIVE Au RECOVERY	CUMULATIVE Au GRADE OZ./TON	UNITS
CONCENTRATE 1	67005	180.7	1.87%	0.187	13.94%	1.87%	13.94%	0.187	33.79
CONCENTRATE 2	67006	255.0	2.63%	0.149	15.68%	4.50%	29.62%	0.165	38.00
CONCENTRATE 3	67007	262.8	2.71%	0.081	8.78%	7.21%	38.40%	0.133	21.29
CONCENTRATE 4	67008	132.3	1.37%	0.058	3.17%	8.58%	41.57%	0.121	7.67
FINAL TAILING	67009	8852.0	91.42%	0.016	58.43%				141.63
OVERSIZE (+20 MESH)		0.0	0.00%	0.000	0.00%				0.00
CALCULATED HEAD		9682.8	100.00%	0.025	100.00%				242.38
ASSAYED HEAD	67004	317.2		0.035					

250 GRAM TEST

	SAMPLE TAG NO.	WEIGHT GRAMS	GOLD ASSAY OZ./TON
TAIL (LIGHTS)	69073	39.8	
CONC. (HEAVIES)	69074	209.3	0.054
	TOTAL	249.1	

750 GRAM TEST

	SAMPLE TAG NO.	WEIGHT GRAMS	GOLD ASSAY OZ./TON
TAIL (LIGHTS)	67002	121.9	
CONC. (HEAVIES)	67003	624.1	0.031
	TOTAL	746.0	

500 GRAM TEST

	SAMPLE TAG NO.	WEIGHT GRAMS	GOLD ASSAY OZ./TON
TAIL (LIGHTS)	69075	84.2	
CONC. (HEAVIES)	67001	413.8	0.033
	TOTAL	498.0	

PROCESS RESEARCH ASSOCIATES LTD.
9145 Shaughnessy Street
Vancouver, B.C.
Canada V6P 6R9

FACSIMILE

TEL. (604) 322-0118
FAX. (604) 322-4907

PROJECT NO: 93-007 **DATE: March 10, 1993**
NO. OF PAGES (including this page): 3

COMPANY: **Quinto Mining**
ATTENTION: **Mr. Paul Schiller**
FAX NO: **662-3161**
FROM: **Bern Klein**

Dear Mr. Schiller:

Re: Flotation test to recover Sericite.

Attached are the flowsheet and mass balance for the flotation test that was performed. As was apparent, the test showed that it was difficult to float a sericite product. The poor selectivity is mainly due to the inability to reduce the pulp pH to the 3.0 - 3.5 range. At higher pH levels, the flotation collector (Armac T) activates almost all oxide minerals present. The result was that everything tried to float which produced the excessively stable froth. The difficulties associated with de-sliming also contributed to the poor selectivity. Excessive amounts of fine particles contribute to the stability of the froth which can in turn entrain gangue particles. It is also possible that the presence of the fines contributed to the difficulties associated with decreasing the pulp pH.

Based on the results of the first test, a second test is proposed. The float test should be carried out on coarser feed material to minimize the amount of slimes present. Following graphite flotation, xanthate will be added to produce a pyrite concentrate. Prior to sericite flotation, the pulp will be diluted and de-slimed. It may be necessary to deslime twice to remove a majority of the fines. For the sericite flotation the pH will be lowered to 3.5 using H_2SO_4. It is hoped that the pH can be lowered once the slimes are removed. The pulp will conditioned at a high pulp density (following desliming) using Armac T.

The products from float test one are dried and can be picked up. If you prefer, we can send the samples to an analytical laboratory for you. If you have any questions regarding the test one results or the propose float tests, please call me.

Sincerely,

Bernhard Klein

Bernhard Klein, Ph.D.
Senior Process Metallurgist
PROCESS RESEARCH ASSOCIATES LTD.

cc. D. Drummond

TESTWORK PROCEDURE

Test No: 93-007 F1 **Date:** 8-Mar-93

Purpose: Initial bench flotation scoping test

STAGE	TIME (Minutes)	ADDITIONS	
		g/tonne	REAGENT
Grind	0		
Graphite Flotation			Natural pH = 8.0
Graphite rougher float	10	50	MIBC
Graphite scavenger float	5	18	MIBC
Sericite Flotation			
De-Slime			Unable to settle the fines
Condition	15	26315	93% Conc. H2SO4 Unable to lower pH 8.0 to pH3.0
		750	Armac T
Rougher float	3		pH=4.8
Condition	5	1500	Armac T
Scavenger float	5		pH=6.0

MATERIAL BALANCE

Project no : 93-007
Test no : F1

Date: March 8, 1993

Sample description : 90% -200 mesh material

Products	Weight (g)	Weight (%)	Assays Graphite (%)	Assays Sericite (%)	% Distribution Graphite	% Distribution Sericite
Graphite Ro Conc	106.7	5.2				
Graphite Scav Conc	55.6	2.7				
Total Graphite Conc	**162.3**	**7.9**				
Sericite Ro Conc	68.4	3.3				
Sericite Scav Conc	549.3	26.8				
Total Sericite Conc	**617.7**	**30.1**				
Final Tails	1273.3	62.0				
Calculated head	**2053.3**	**100.0**				
Assay head						

APPENDIX D

XRD, electron microprobe and optical studies
By Dr. Maria Mastalerz

THE UNIVERSITY OF BRITISH COLUMBIA

Department of Geological Sciences
6339 Stores Road
Vancouver, B.C. Canada V6T 1Z4
Tel: (604) 822-2449
Fax: (604) 822-6088

Paul Schiller
Quinto Mining Corporation
606-626 West Pender Street
Vancouver, B.C.
V6B 1V9

10th March, 1993

Dear Mr. Schiller,

As you requested I am providing the analyses of two samples containing graphite. The analyses include: XRD, electron microprobe, optical observation in transmitted and reflectad light (plus reflectance measurements in reflected light) as well as dissolution in HCl and HF and subdivisions into grain size fractions. The report enclosed includes analyses and short interpretation of the analyses.

The total cost of analyses is 800 dollars and it includes :

17 hours of sample preparation (making polished section, coating samples, preparation for XRD) as well as optical studies, dissolution and splitting into size groups - 17 x $30 = $510,

3 hours of XRD plus microprobe (analyst time plus machine time) 3 x $80 = $240,

materials used during sample preparation (chemicals, resin, polishing powder etc) $ 50

Total $800

Please make cheque payable to Geotrans Consulting Services.

If you need any further assistance with the interpretations or some other analyses, please contact me.

Yours sincerely,

Maria Mastalerz.

Dr. Maria Mastalerz

Graphite concentrate from the sandstone

METHODS:

1) Optical examination - transmitted and reflected light

2) XRD

3) Dissolution with HCl and HF

RESULTS

Optical studies revealed the following **minerals associated with graphite**: carbonates (calcite and dolomite), quartz, native sulphur and very rare green translucent mineral, possibly pyroxene.

Treatment with HCl resulted in weight loss of 3.47%. Carbonate content then is 3.47%, or a bit less than that because it is possible that some graphite was lost after treatment with HCl, during transferalfrom one container to the other.

Microscopic examination after HCl treatment showed that no carbonatesremainded and quartz was the dominating mineral. The portion left after HCl dissolution was separated into the following **size fractions:**

1) > 50 mesh	- 8.55%
2) 50-60 mesh	- 7.50%
3) 60-150 mesh	- 45.06%
4) <150 mesh	- 38.89%
	100.00%

The composition of each fraction is as follows:

Fraction 1. (>50 mesh)-- flakes of graphite + 0.5% quartz + traces of sulphur

Fraction 2. (50-60 mesh) - as above

Fraction 3.(60-150 mesh) - flakes of graphite +15% quartz + 0.3% sulphur + traces of

green mineral

Fraction 4. (<150 mesh) - flakes of graphite + ~10% quartz + traces of sulphur

***Dissolution in HF** removed all inorganic matter*

0.4680g - weight before treatment

0.4020g - weight after treatment

0.0660g - difference = 14.1% weight loss during treatment with HF

This 14.1% is mainly quartz below 60 mesh in size

Reflected light microscopy and XRD were used to determine the level of graphitization.l. Reflectance values (Romax) ranging from 16.6 to 19.8% (in oil) indicate that the material is natural graphite. These values compare well with reflectances of other natural graphite (Kwiecinska et al., 1977). The X-ray diffraction of the.concentrate after treatment with HCl shows that there is exellent agreement between the theoretical peak position for graphite (002 difraction; the green line at 2O = 26.6 degrees) and the most intense peak of the sample. Thus, the sample contains crystalline graphite. Unfortunately, it was not possible to identify other minerals with XRD because their concentrations were too low to yield discernible peak.

Mylonitized quartz-muscovite-calcite-graphite schist

METHODS:

1) optical studies (transmitted and reflected light)

2) electron microprobe

RESULTS

Observation in reflected light showed nothing; this rock is very hard to polish. Only dispersed bright spots (i.e., areas of high reflectance) were visible but they were very small and beyond resolution at 500x magnification. Thin section analysis showed the

presence of carbonaceous material, muscovite, quartz, calcite and pyrite. There are also traces of light green pyroxene in some pressure shadows. The estimated volume is as follows:

carbonaceous material (graphite)	35%
calcite	35%
muscovite	15%
quartz	10%
pyrite	3-5%

Microprobe analyses of a polished blocks of the raw sample (4 analyses, in weight %) are presented below.

An.	1	2	3	4
C	17.00	10.78	10.99	15.00
O	51.26	52.85	52.34	53.22
S	0.00	0.04	0.03	0.01
Fe	5.70	0.07	0.01	4.30
Si	22.67	25.75	27.54	18.67
Al	2.00	8.39	7.07	1.61
Ca	1.30	2.01	1.97	5.00
Total	99.93	99.89	99.95	97.81

Microprobe analyses were done using an electron beam size of 10 micrometers. However, the elemental data (e.g., O, Si, Al contents) indicate that the beam interacted with graphite plus other minerals present in the sample. Thus, carbon data reflect contribution from graphite plus carbonates, and suggest that graphite content is below 10 weight %. Due to the complex "intergrowth" of the calcite, muscovite, quartz and graphite, it was not possible to obtain good representative data on mica composition in the sample.

Due to huge surface imperfections (hard to polish), It was possible to obtain only one microprobe analysis on the pellet from the ground concentrate from the graphite shist. This analysis is as follows:

C - 48.86%

O - 30.30%

S - 0.06%

Fe - 0.60%

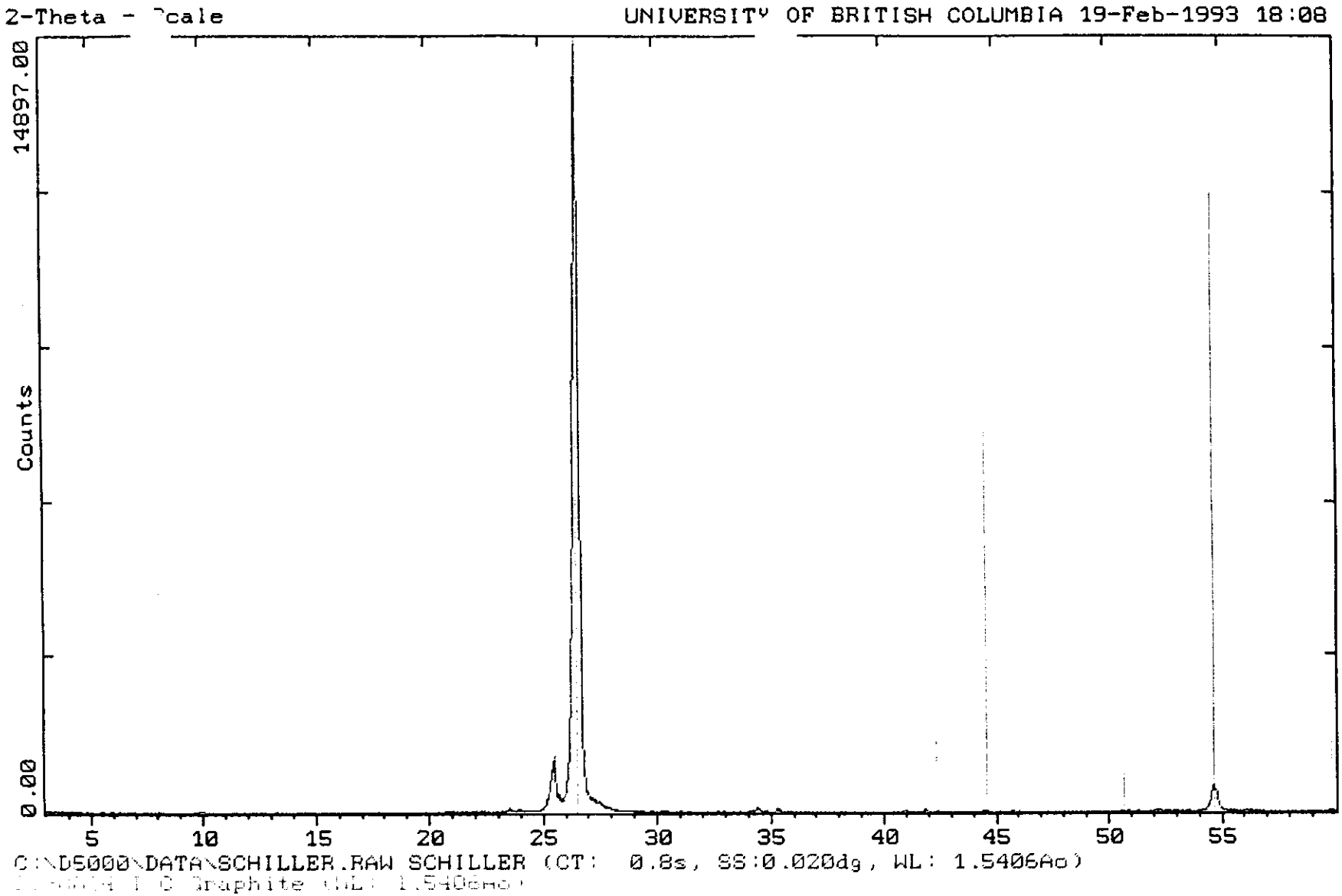
Si - 9.91%

Al - 4.96%

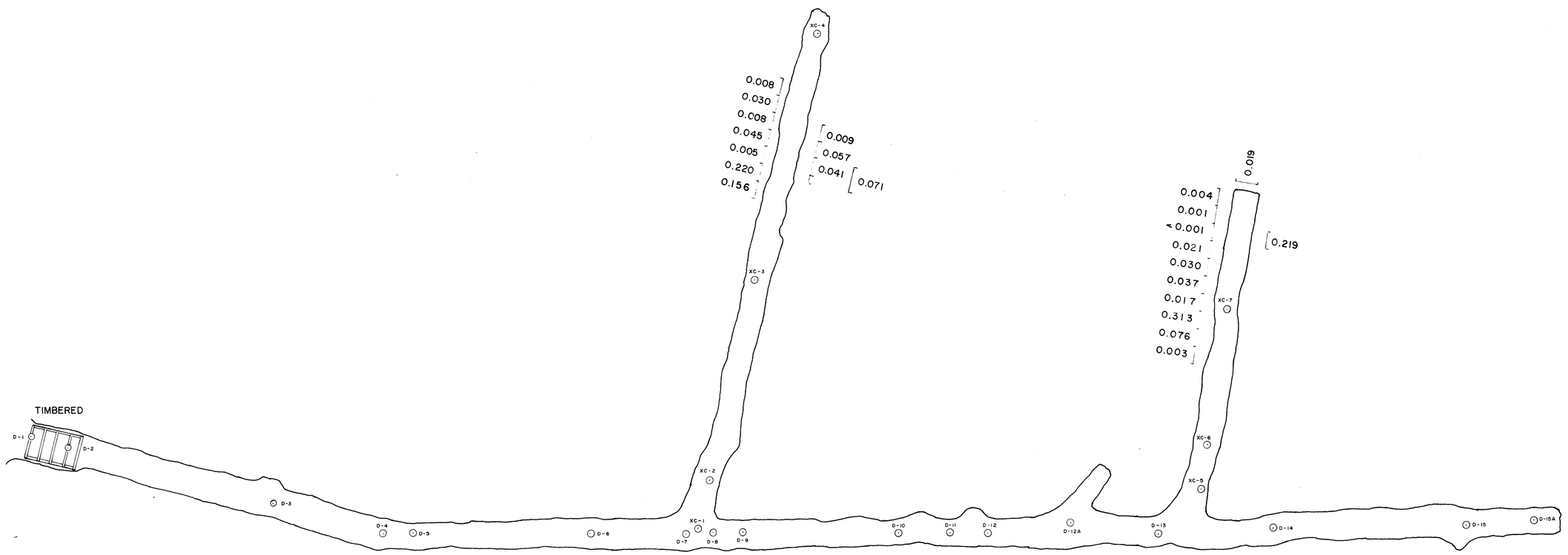
Ca - 1.50%

Total 96.69%

As expected, this analysis shows much higher content of carbonaceous material than the raw sample, and suggesting that graphite content in the concentrate may reach 45%.



SCHILLER concentrate



⊙ Survey Spad

Scale 1:250

0 5 10 20 30m.

GEOLOGICAL BRANCH
ASSESSMENT REPORT

22,837

QUINTO MINING CORP.

LUMBY PROJECT
PLATEAU ZONE

UNDERGROUND WORKINGS
ASSAY PLAN

GEOLOGY BY D.A.H.	DATE 10/2/93
SCALE 1:250	FIGURE NO. 7
D.D.H. GEOMANAGEMENT LTD.	