MAR 19990013: NORTHWEST

Received date: May 14, 1999

Public release date: May 15, 2000

Mineral Assessment Report

Metallic and Industrial Minerals
Permit Nos. 9397010001 and 9397010002

Permit Holder Alan David Lewis

NORTHWEST PROJECT

submitted by

713803 Alberta Ltd.

May 14, 1999

Table of Contents

EXECUTIVE SUMMARY

The target ores on the permit lands are the Bad Heart Sandstone and Conglomerate which are present in large quantities and which are exposed extensively at surface in several locations.

The definition of the ore body was determined from several field trips conducted both by personnel of 713803 Alberta Ltd. and by geologists representing two commercial mining companies (Placer Done and BHP).

A limited rotary drilling program (six holes) was conducted by 713803 Alberta Ltd. to further confirm the large volume of ore bodies, which were judged to be present from the surface exploration.

The critical question is therefore whether commercial quantities of gold and other precious metals exist in these formations. The most extensive assaying, both fire assays directly and fire assay of leached precipitates has been conducted by Al Lewis, the prospector who initially discovered the ore bodies on the permit lands.

Mr. Lewis' analyses have been conducted in a home based laboratory and have consistently obtained bead weights, which indicated commercially significant quantities of gold, with many tests in the 0.5 oz./ton range. While initial checks of bead purity confirmed a high percentage of gold purity (90% +), multiple later checks have found that most, but not all, beads submitted for checking have much lower or insignificant quantities of gold. These check analyses for bead purity have been done by five outside laboratories.

Samples of bead ore have been submitted by 713803 Alberta Ltd. to nine outside laboratories (with the notable exception of one U.S. laboratory who obtained very high values in excess of 1 oz./ton), usually found no or commercially insignificant quantities of gold in most individual samples. With the exception of the above noted laboratory significant quantities of gold (greater than 0.1 oz./ton) were found in a very few tests, with several more tests in the 0.01 to .1 oz./ton range. Of the outside laboratories consulted, the most comprehensive analysis was performed by the Saskatchewan Research Council. All results obtained by SRC were uniformly negative.

The two commercial mining companies who visited the permits and calculated their own samples found no commercial quantities of any precious metals.

The assessments conducted to date by 713803 Alberta Ltd. have clearly not established the existence of commercial quantities of gold or precious metals. However, some positive and encouraging results have been obtained particularly from continuing "inhouse" analysis. On that basis 713803 Alberta Ltd. anticipates that it will continue to conduct further work to determine if the anomalous results are occurring because of sampling problems, flaws in assaying techniques, nugget affect in the ore, etc., to come to a more definitive conclusion with respect to the commercial possibilities of the properties than is possible based on assessments conducted to date.

1. Introduction

713803 Alberta Ltd. was incorporated in 1996 for the purpose of pursuing exploration and development of potential precious metal bearing properties in Northwestern Alberta, including the properties that are subject of this report held under Metallic and Industrial Minerals Permit No. 9397010002 in the name of Alan David Lewis, a shareholder of 713808 Alberta Ltd. (See Figure 1.1 showing Mineral Permit Location).

The assessment work conducted since late 1996 to the present time has consisted of:

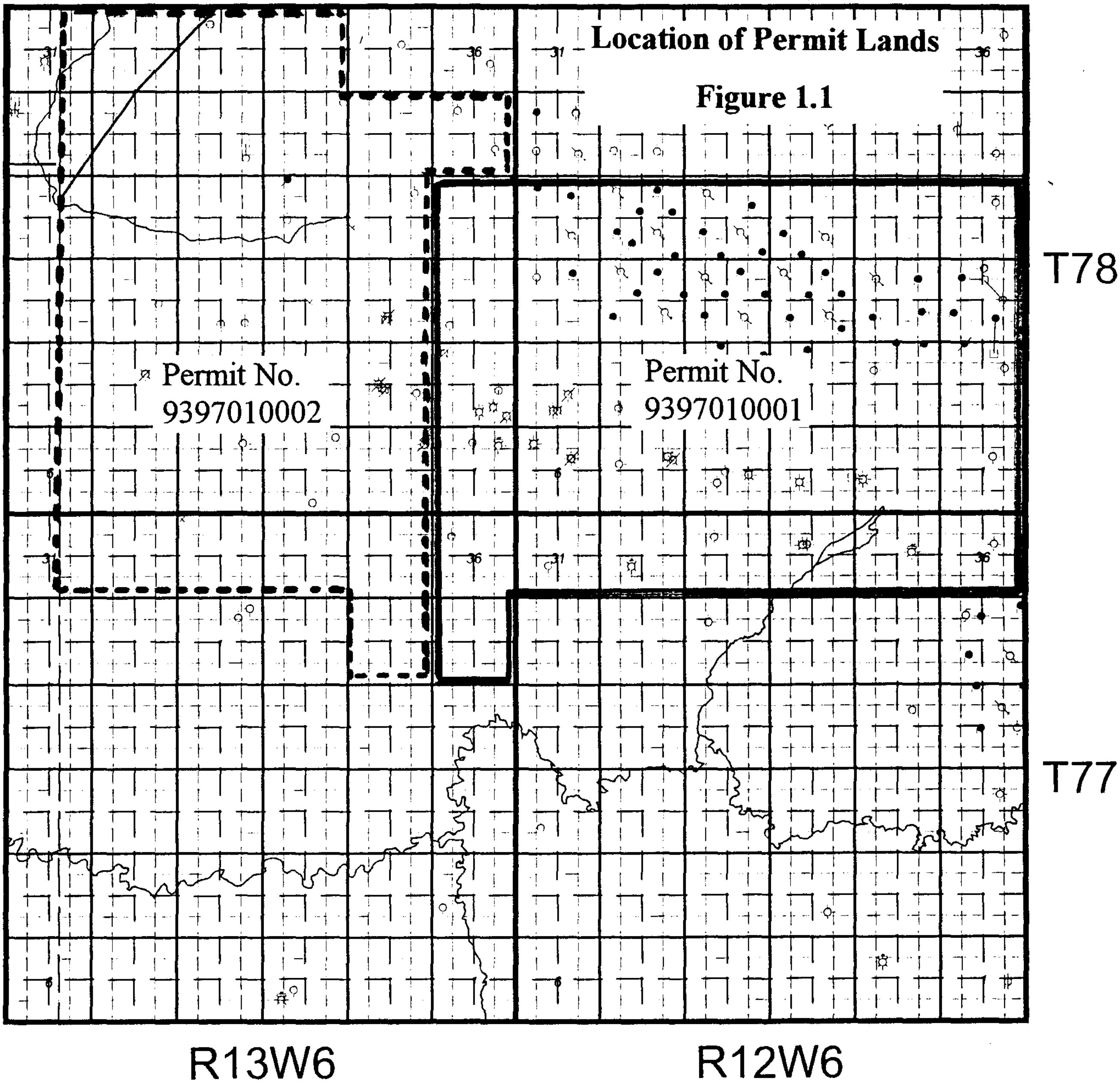
- field exploration, primarily surface supported by drilling
- geological interpretation of the location and extent of the potential ore bodies
- analysis of samples to determine mineral content

The target ore bodies are present at the surface of the permit lands so that a minimum of exploration work has been necessary to define their location and extent. (See Figure 1.2 showing relative location of ore bodies within permit lands). The majority of the work effort has accordingly occurred in the area of analysis. A large number of individual analyses have been conducted both internally by 713803 Alberta Ltd. (by Alan Lewis in his home based facilities) and by a series of external parties located in Canada and the United States.

In response to inquiries from 713803 Alberta Ltd., four commercial mining companies have also performed their own independent examination of ore from the properties, including in some cases the collection of their own field samples.

The results of the work to date has been inconclusive in determining whether commercial possibilities exist. It appears that some level of gold and platinum group metals exist in the ore bodies. However, the majority of analyses, particularly from external parties, indicate no measurable or only trace quantities of precious metals in individual samples.

Since no bulk sample analysis has been completed, any information on the average content of the ore bodies remains unknown at this time.



713803 Alberta Ltd.

Location of Alan D. Lewis Permits

Permit No. 9397010001 (solid line)

Permit No. 9397010002 (dashed line)

Licensed to : Geo-Energy Ventures Ltd.

geoSCOUT for windows	geoLOGIC systems ltd. (403) 262-1992 www.geologic.com	By :	Date : 1999/06/02
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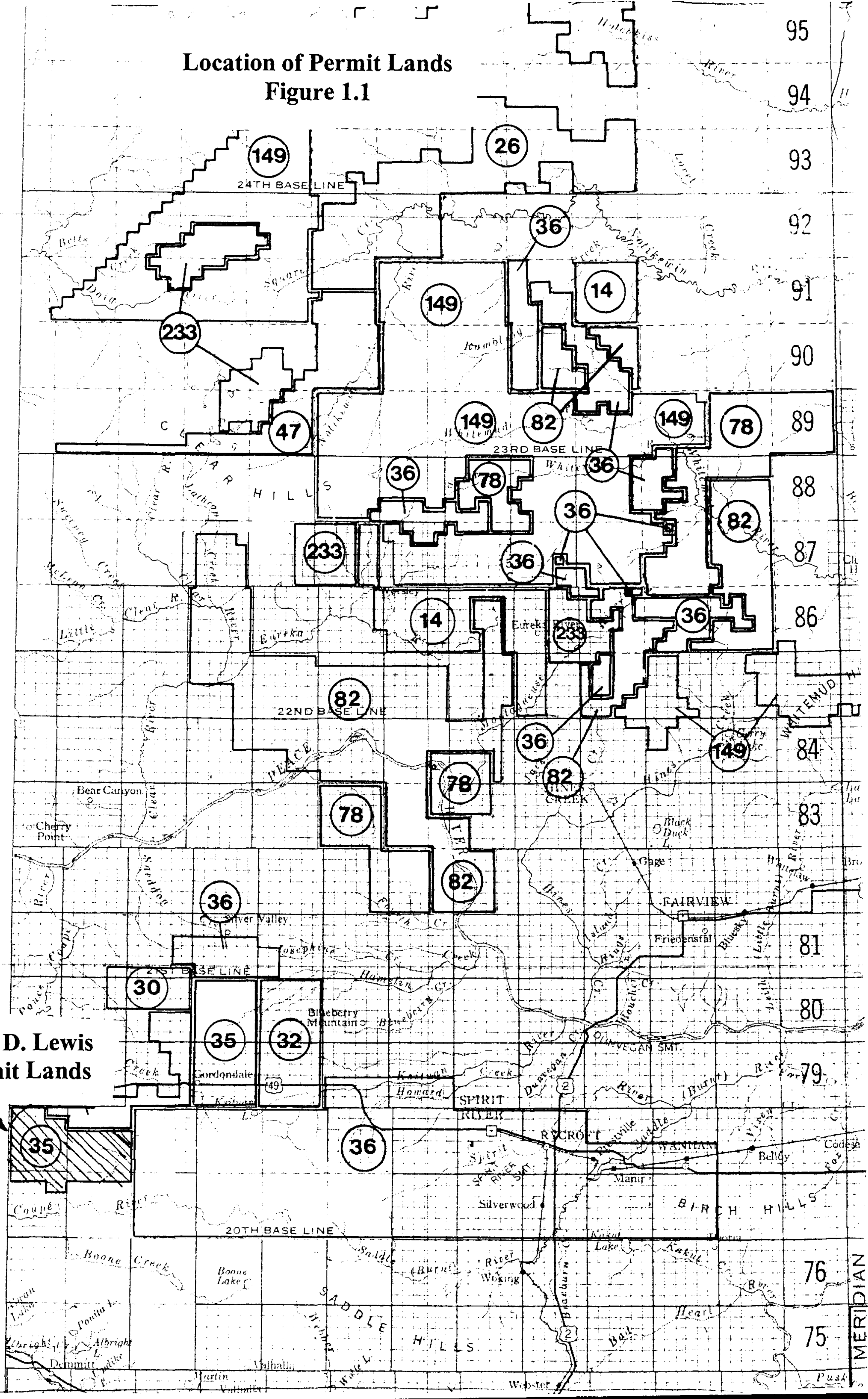
Location of Permit Lands
Figure 1.1

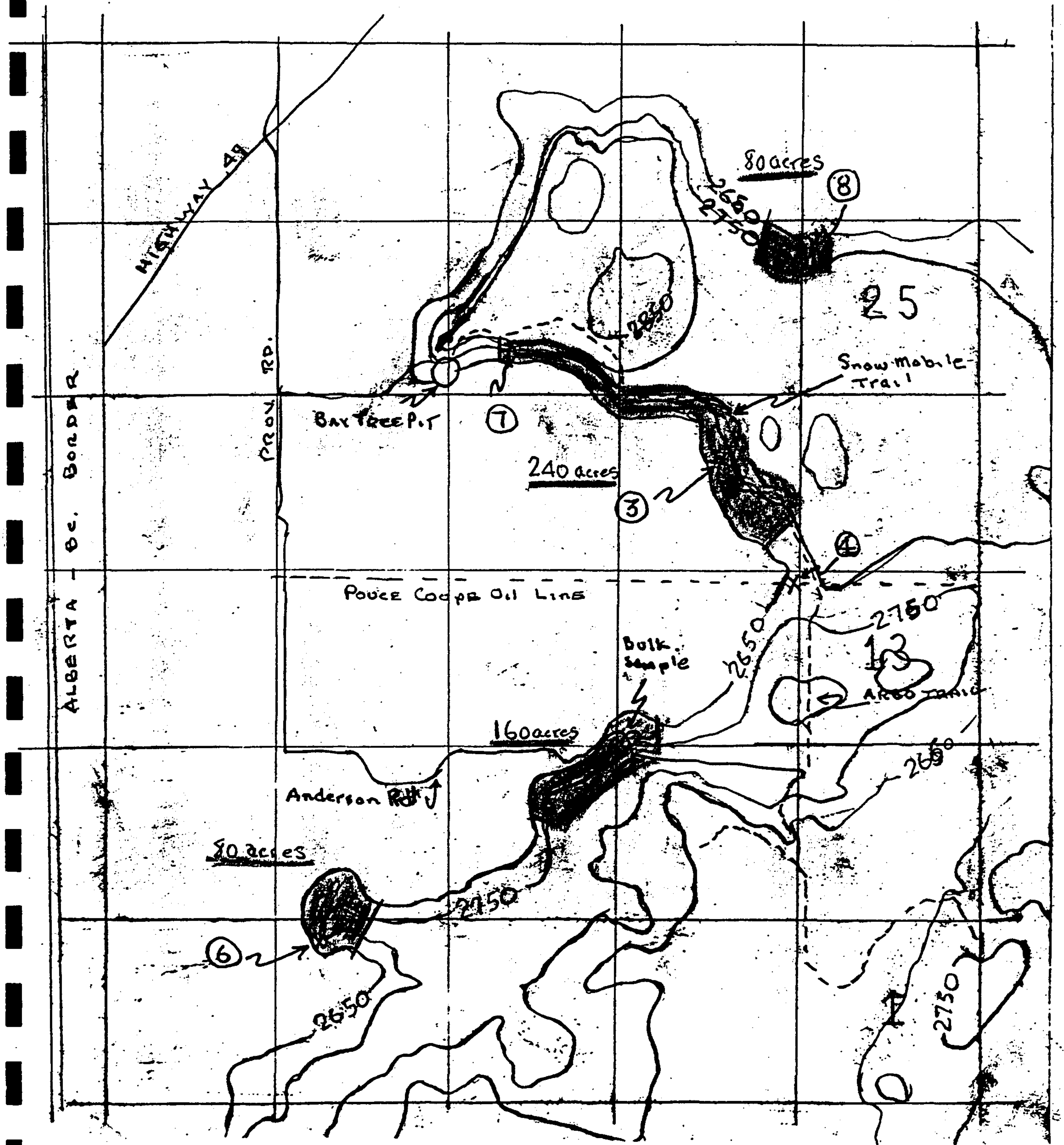


TWP 78 RGE 13 W6M

MAP 2.

Fig 1.2

Location of Ore Bodies
Figure 1.2



− 2750 − SURFACE ELEVATION

② e.g. SITE LOCATION

2. Field Exploration

A series of field trips for exploration purposes were conducted in the period from October 1996 to November 1998. The purpose and results of each of those trips is summarized below.

2.1 Initial Field Reconnaissance October 8-11, 1996

Initial field reconnaissance conducted by Alan Lewis located outcrops of the target Bad Heart sand formation along a ditch line on the Anderson Exploration lease access road located in 5-15 -78-13 W6M. It was also observed that large volumes of Bad Heart conglomerate existed as cliff face outcrops in sections 23and 27-78-13 W6M. Small volume samples were recovered for initial analysis.

On this basis, application was made for a mineral exploration permit which is the subject of this report covering the lands of interest and additional surrounding lands.

2.2 Sample Recovery November 18-23, 1996

Under Exploration Licence 5145 granted to Liddle Engineering Ltd. and approved Exploration Program MME- 96-0925, a larger volume (approximately one ton) sample was excavated from the 5-15-78-13 W6M site for planned purposes of a bulk analysis. On that same trip a smaller volume sample was recovered from a Bad Heart conglomerate outcrop in Section 23-78-13 W6M

2.3 Exploration and Sample Recovery Trips, Spring to Fall of 1997

There were three further field reconnaissance trips (May 12-14, September 8 -11 and November 11-13) conducted by various individual shareholders of 713803 Alberta Ltd., having professional geological qualifications, to visually explore for more Bad Heart sandstone and conglomerate outcrops on the subject permit lands and to gather more samples for continuing lab scale analysis. The extensive geographical extent of the formations on the subject lands was confirmed over the course of these three trips.

2.4 Sample Recovery March 3-5, 1998

On this trip, larger volumes (approximately 600lbs. each of sandstone and conglomerate) were recovered to support continued analytical testing.

2.5 Exploration Drilling -- Exploration Project MME-971273 March 21-25, 1998

This approved exploration program was originally targeted to drill 11 holes using a rotary drilling rig to further delineate the extent of the Bad Heart formation. Due to difficulties of terrain access and the existence of a proposed protected area under the Alberta Special Places Program, only 6 holes were actually drilled, but these did contribute to better definition of the extent of the Bad Heart formation.

A copy of the final report on the drilling activity submitted to Lands and Forest is included in Section 3.2.

2.6 Placer Dome Field Trip August 10-13, 1998

Placer Dome had been approached by 713803 Alberta Ltd. and supplied with a sample of conglomerate. Upon their analysis of that sample Placer Dome requested further samples which would be collected by Placer Dome personnel. Two representatives of 713803 Alberta Ltd. accompanied the Placer Dome geologist on the field trip to the site to recover the necessary samples. Results of the further Placer Dome analysis are included in Section 5.1 of this report.

2.7 BHP Field Trip November 2-4, 1998

BHP was invited by 713803 Alberta Ltd. to conduct a field examination of the property. Mr. Peter Kleespies, contract geologist retained by BHP visited the property on November 3 and 4th collecting 19 samples for analysis. Results of the BHP analysis are included in Section 5.2 of this report.

3. Geological Interpretation Report

The 713803 Alberta Ltd. geological interpretation of the "west" permit area, as it relates to the Bad Heart sandstone and conglomerate deposits is set out in the following report entitled "Geological Survey, November 11-12, 1997" prepared by A.A. Wilkins, P.Geol.[1]

Also attached is a copy of a field drilling report prepared by the Manager of Drilling, Mr. B. Luft, for activity undertaken during the period March 21 through March 25, 1998 (Attachment 3.1). This report has been previously submitted to the Alberta Land and Forest Service on May 22, 1998.

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[1] Note that further interpretation letter reports have also been provided by Placer Dome North America (Section 5.1) and BHP Minerals Canada Ltd. (Section 5.2).

Geological Survey November 11-13, 1997

A geological Field Trip was made to the West Permits to determine the best location to capture bulk samples for analysis.

Base Camp was established at the Airport Motel in Dawson Creek on November 11, 1997. Using Alan Lewis' 4x4 Dodge Ram Extended Cap Truck and all terrain ARGO low pressure rubber tire 8 wheel vehicle Messrs. Lewis, Luft, and Wilkins carried out a two day geological field trip over 713803 Alberta Ltd.'s West Permits and adjacent lands.

Although unanimous agreement concerning the geological interpretation of the West Permits was not reached, the following summarizes the writer's observations and opinions regarding the stratigraphic nature of the Bad Heart Conglomerate and Sandstones at eight (8) locations visited during the field trip. (See Map 1).

<u>Day 1 November 12</u>

<u>Site (1) NW ¼ Section 29 78 12 W6M (Not on Map)</u>

This site, a local "gravel pit" on crown lands, sits approximately two miles east of the West Permit's eastern boundary. Access was reached by foot from a good condition provincial road. Very little sediment has been removed from a twenty foot high glacial mound of poorly sorted clays, sand, pebbles and boulders. A very poor access road, mainly ice covered, probably is the reason why only limited amounts of material have been taken from this pit. The surface elevation of the pit ranges between 2650 and 2700 feet therefore the top of the Bad Heart Sandstone has been glacially eroded. Drilling would be required to determine:

1) the surface elevation and thickness of the Bad Heart Sandstone; or
2) if it has been totally glaciated at this location

Site (2) N ½ Section 10 78 13 W6M

Access to this location was reached, from Site 1, by Lewis' 4x4 truck with the ARGO in tow. Travelling in a south and southwesterly direction the surface elevation ranged between 2650 and 2850+ feet over the eight miles traversed. Road conditions, provincial and well site, over the eastern portion of the West Permit varied from good to very poor. Timber in the area is mainly mature poplar with some spruce growing out of clayey glacial debris. The Bad Heart Sandstone was not observed to outcrop along this road traverse.

At the Site, Luft and Wilkins walked a ¼ mile South to North traverse along a cut line from an abandoned well site in the NW ¼ of section 10 to the boundary of section 15 (Anderson Road). Glacial debris caps the hill at the well site location. About 200 feet of elevation drop took place from the beginning to the end of the traverse (2793 to 2600 feet).

No out crops of the Bad Heart Sandstone were observed, however it was evident from sediments contained in the root systems of fallen trees that the Bad Heart Sandstone lies very close, within 1 to 3 feet, of the surface at this location.

The sample collected by Luft and Lewis in this locality, during their September trip, is probably a mixture of indigenous Bad Heart Sandstone and glacial debris. Also, in close proximity to this location, a large (1 and ½ ton) bulk sample was taken by Lewis and Wilkins during the brutally cold winter of 1996. No further samples were collected from this site since Lewis has carried out numerous assays on the bulk sample sediments, as well as the material mentioned above, collected in September.

Site (3) NW ¼ Section 23 78 13 W6M

The ARGO was used to reach this location, following a quick carburator overhaul done by Lewis with Luft's assistance. A good trail (ARGO TRAIL) about 30 feet wide, impassible in places by a 4x4, runs due north along the western boundary of section 13 and then NNW across section 23. Logging of poplar trees has occurred along this trail with preparations underway for further removal of timber during the upcoming winter.

This site was first visited in the winter of 1996 by Wilkins. Access was gained, from the west, by snowmobile operated by a local farmer/trapper who resides in the Spirit River Area. Messrs. Fonteyne, M. Frost and Lewis collected samples from this site and surrounding area this past summer. As well Luft and Lewis collected bed rock samples from this site during their September trip.

About 45 feet of Bad Heart Conglomerate outcrops at this location, forming a near vertical cliff face. Considerable spalling and slumping has taken place dislodging large, up to 40 x 40 foot blocks, of conglomerate. The sandstone has a gradual slope, about 3.0 degrees, and is covered by topsoil and vegetation. The conglomerate was observed to outcrop 50 to 75 yards to the east of the cliff face. To the SE for about 1/2 mile the conglomerate outcrops and is generally covered by a thin layer of moss. To the NW the cliff face can be seen extending almost to the Bay Tree pit.

Both the conglomerate and sandstone dip about 5 degrees to the East, although a true dip reading is not possible because of the slumping that has occurred at this location. Samples of the conglomerate and sandstone (at the contact point) were collected. It was observed that the grain size of the conglomerate pebbles increased from the base to the top of the exposed interval suggesting a shore line environment rather than channel fill.

Site (4) NW ¼ Section 14 78 13 W6M

A glaciated depression forms a draw and shallow saddle between the two major topographic highs on the West Permit. The Pouce Coupe oil pipeline right-of-way runs up the center of this draw along the northern border of section 14. Luft and Lewis collected a sample from this right-of-way during their September trip. Rounded glacial boulders, granite and quartzite, were observed at the sample collection site as well as 20 feet below such site where a large uprooted tree exposed the underlying sediments. Sufficient platy sand fragments were observed at both locations to indicate that the glacial till probably contains, in part, Bad Heart Sandstone indigenous to the area.

Day 2 November 13

Base Camp was Vacated at 8:30 a.m.

Site 5 Tree Tower Pit (Located in B.C. 3 Miles due West of Section 4 of West Permits) (Not on Map)

Site 6 NW ¼ Section 4 78 13 W6M

This site was reached by ARGO, travelling south on a cut line which runs along the eastern boundary of Section 8 and then east on a very old cut line, heavily overgrown by 2 to 3 inch poplar trees. Luft and Lewis collected random samples from this cut line near the 2700 to 2750 foot surface elevation during such trip. A short distance to the south of the cut line Wilkins observed and collected samples from Bad Heart Sandstone outcrops which were discovered at 2750, 2700 and 2675 foot surface elevations. The sandstone dips in the range of 5 to 10 degrees to the east at this location although some slumping may have taken place. The Bad Heart Conglomerate was not found at this location.

Site 7 SW ¼ Section 27 78 13 W6M

Luft and Wilkins accessed this location by foot climbing in a northeasterly direction from the Bay Tree pit. The northwestern end of the horseshoe shaped cliff escarpment was intersected about ½ mile from the Bay Tree pit. At this location, the cliff is capped by 1 foot of conglomerate underlayen by cliff forming sandstone. Total vertical thickness, "eye balled" from the top of the cliff, is estimated to be 25 to 30 feet. Samples from both the conglomerate and sandstone were carried back to the 4x4 at the Bay Tree pit.

Site 8 NW ¼ Section 25 78 13 W6M

This site, referred to as the Moxely Pit, was accessed by the Dodge 4x4 via a good provincial road. The Bad Heart Sandstone is within 1 foot of the surface at this location. The surface elevation ranges between 2750 to 2700 feet. Interbedded in the sand is 1 foot of conglomerate occurring 5 feet below the top of the sand. This conglomerate is finer grained and more friable than the cliff forming conglomerates observed at the other sites. Samples of the conglomerate and sandstone were collected.

General Topography & Stratigraphy

The thickest exposed Bad Heart conglomerate section observed was at Site 3. Pit excavations at Sites 5 & 8 expose the thickest sections of Bad Heart Sandstone. The most extensive removal of the Bad Heart formation has occurred at the Bay Tree pit which covers an area the size of a CFL football field from the pit's entrance to the eastern rim of the pit. Drilling will be required to confirm the remaining thickness of sandstone, however, a good estimation would be that about 5 feet of sand remains below the base of the pit. There is possibly an unexcavated 10 foot tier of sandstone about 50 by 30 yards remaining in the pit below the glacial till deposit which forms the topographic high (2800+ feet surface elevation) on the north side of the pit. (See schematic X Section 1).

The Bad Heart conglomerate is interpreted to be a shoreline deposit about 55 feet in thickness where it outcrops at Site 3. It occurs as a wedge in the sandstone sequence thinning to the northwest and the southeast. Based on a discussion held with a local Spirit River resident, who worked for NOVA during its pipeline construction in the area, the conglomerate extends several miles to the east. If dip readings at Site 3 are true the conglomerate will occur at increasing depths to the east. Overburden thickness will also be significantly greater in some areas. (See Schematic X Section 2).

More detailed mapping will be necessary to confirm the wedge-like nature of the conglomerate and facies change to sandstone along the horseshoe bluffs in sections 23 & 27.

The Bad Heart conglomerate is dark grey in color. Grain size of the pebbles varies form ¼ to 1 inch and all are rounded or oval in shape. The pebbles are predominantly micro crystalline quartz or chert. The cementing agent is non-calcareous, probably silica. The matrix consists of fine sandstone and silt with only minor amounts of argillaceous material typical of a shoreline deposit. Grain size orientation provides the rock with considerable strength and hardness in one direction. However, when fragments are broken away from the outcrop they become very friable.

The Bad Heart Sandstone is tan in color composed predominantly of poorly rounded and irregular clear quartz grains in a very argillaceous matrix. The rock is weakly silica cemented and rock integrity results form packing of the argillaceous matrix.

The sandstone is interpreted to be marine deposit laid down in a tectonically active basin. Diastrophism formed the Peace River Arch, an uplift which occurred throughout the depositional history of the northwestern portion of the Western Canada Sedimentary Basin. Rapid sedimentation, in the geological sense, lays down poorly sorted argillaceous sandstones which the Bad Heart sandstone typifies.

The thickness of the Bad Heart sandstone underlying the West Permits is at least 90 feet. The base of the sandstone has not been seen in outcrop, however, the base of the Bay Tree pit may be near the contact with the underlying formation which is most likely a shale deposit (Muskiki Shale).

Bedding planes have been observed in outcrop sections and pit excavations. Bed thickness varies between only a few inches to over five feet. In sections where the sand is thinly bedded (platy), the rock splits along muscovite rich bedding planes.

Summary and Conclusions

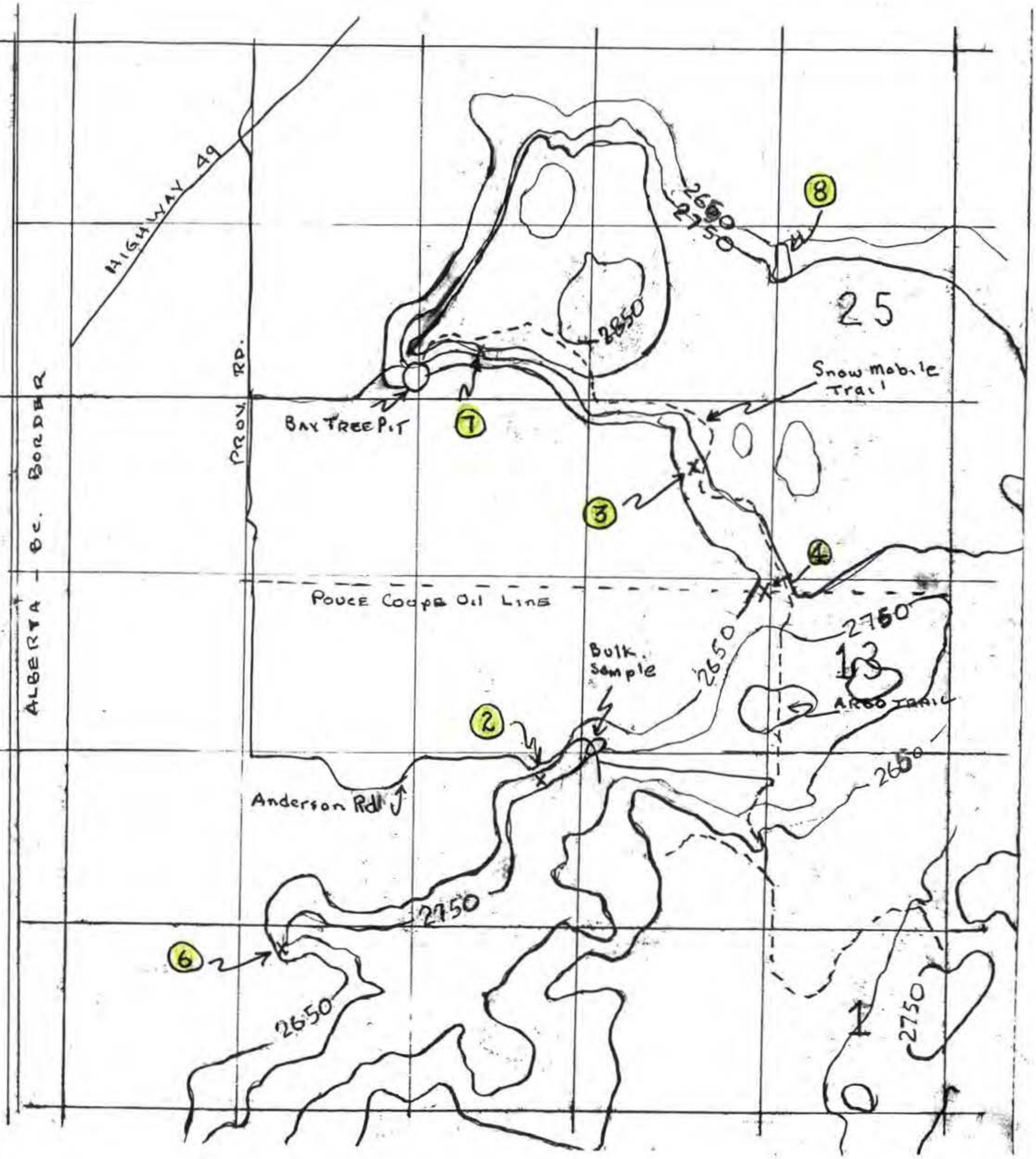
Field geology has identified 4 large areas where conglomerate and/or sandstone rock is within 1 foot of the surface. (See Map 2).

More selective analysis of the samples collected at the above sites will be necessary.

Sites 2 & 8 are the most easily accessible for bulk sample collection. Sites 3 & 7 may become more readily accessible if logging operations upgrade the roads into these sites.

TWP 78 RGE 13 W6M

MAP 1

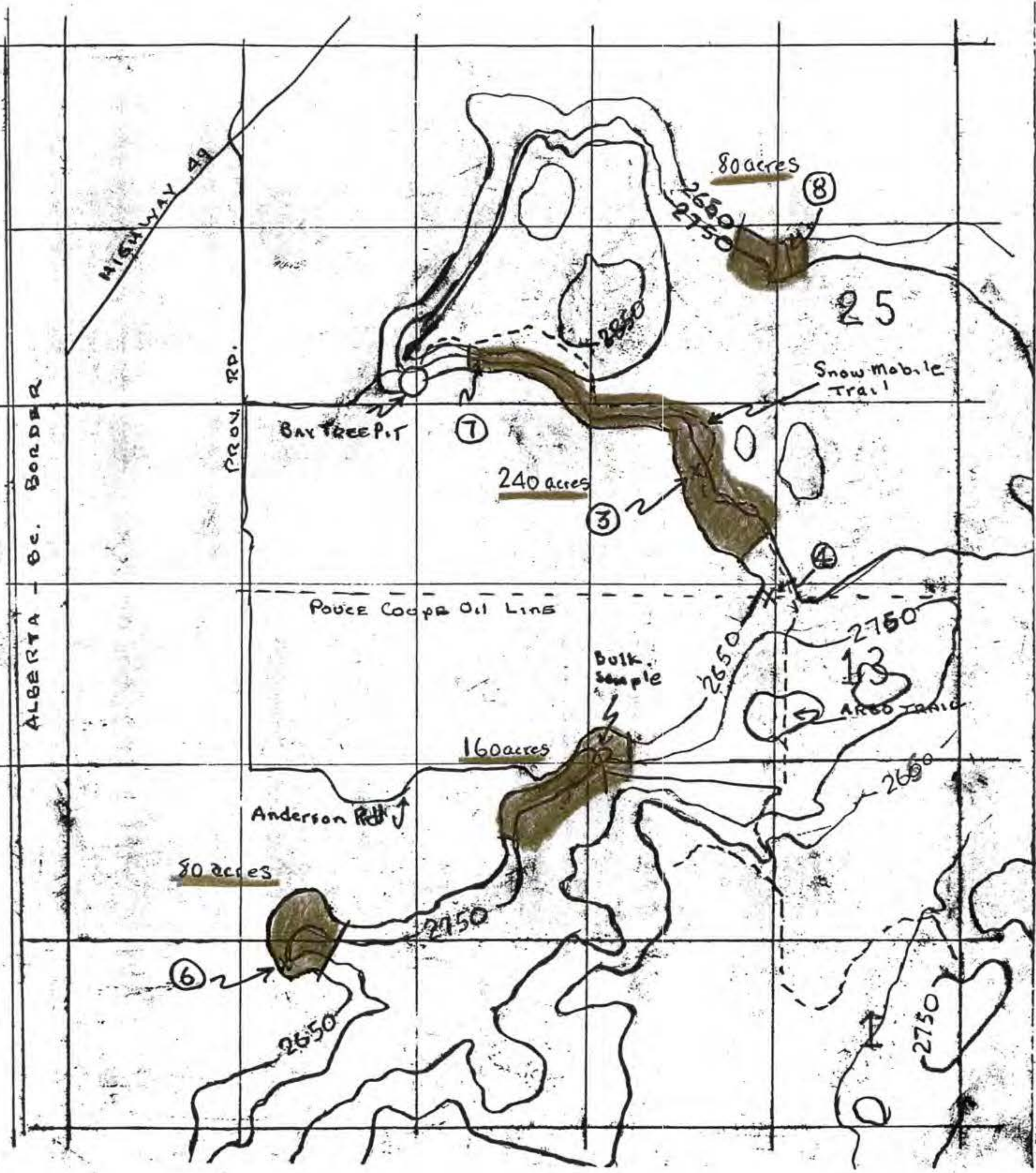


– 2750 – SURFACE ELEVATION

② e.g. SITE LOCATION

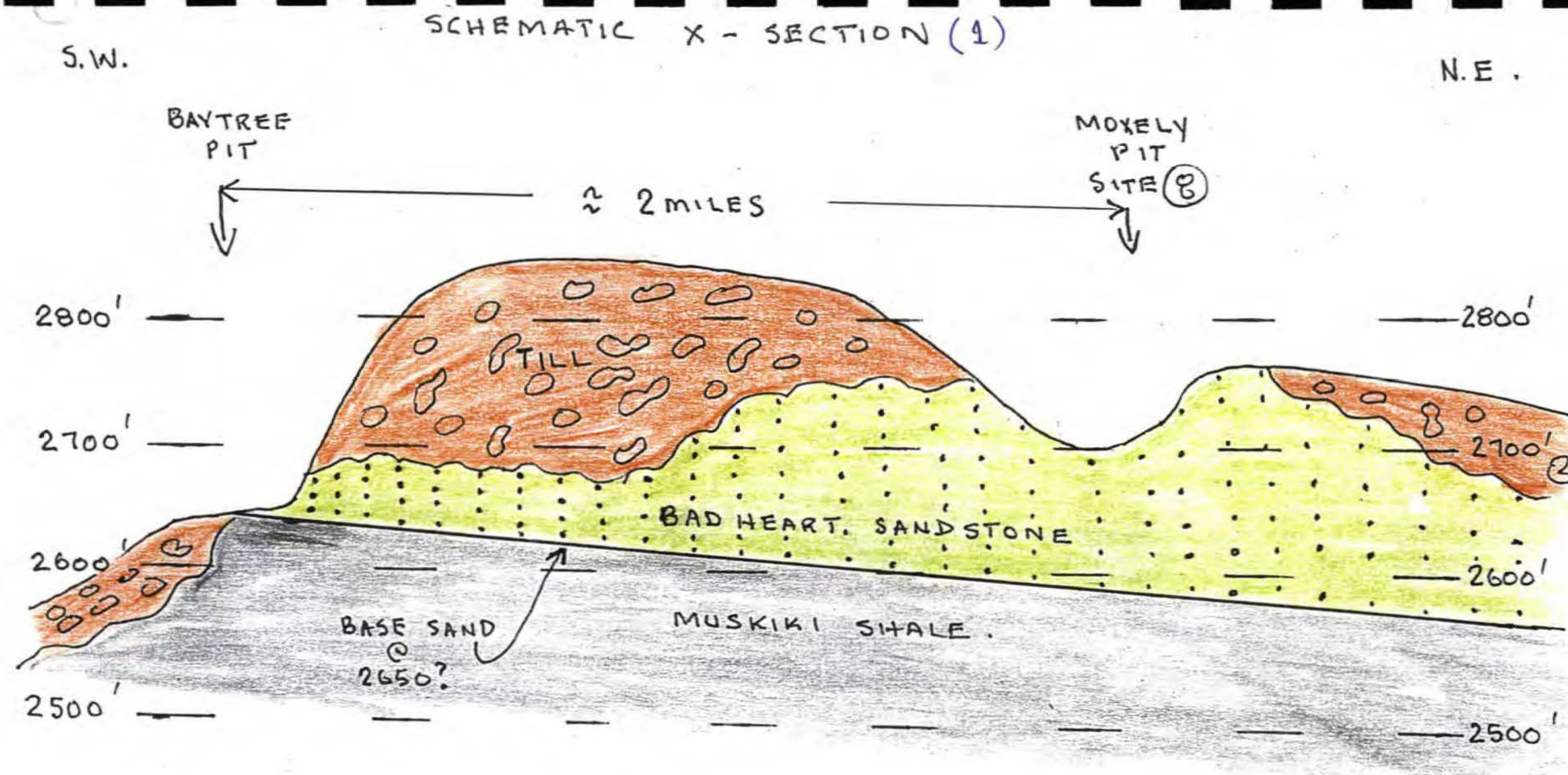
TWP 78 RGE 13 W6M

MAP 2.

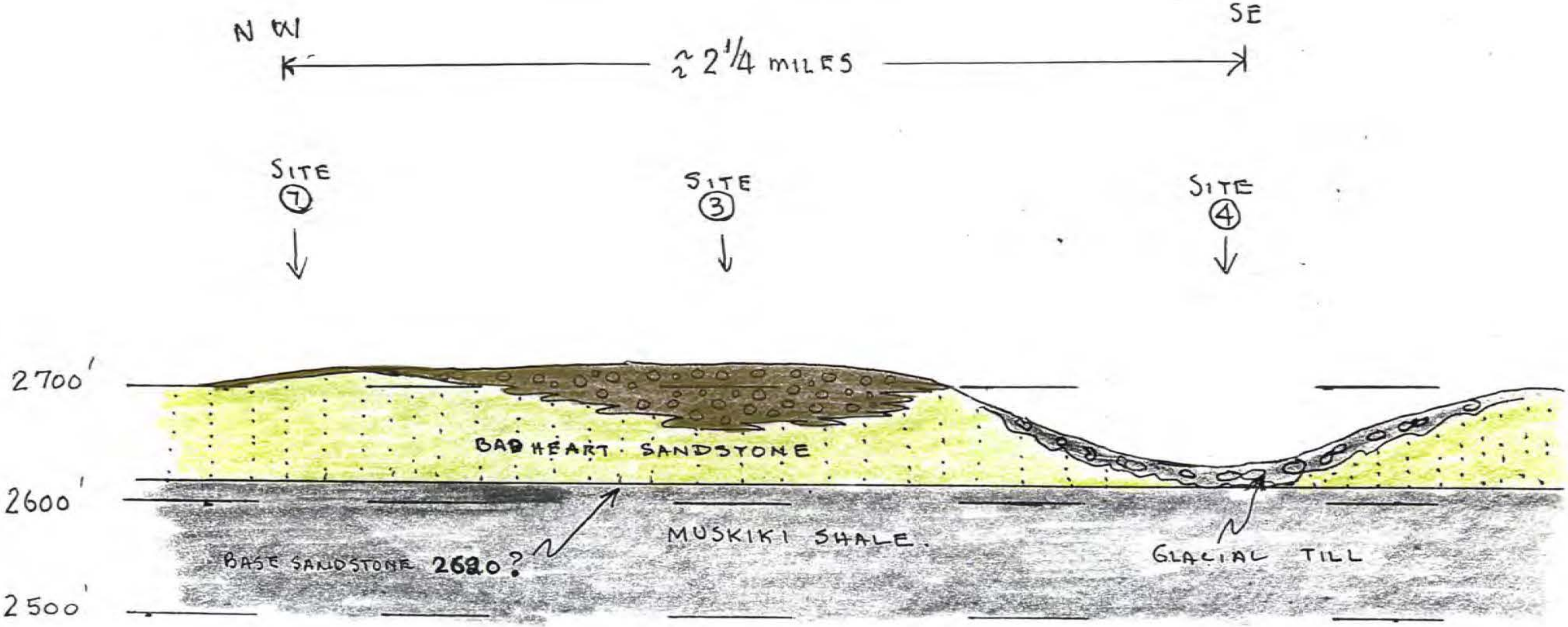


– 2750 – SURFACE ELEVATION

② e.g. SITE LOCATION


SCHEMATIC X - SECTION (1)
S.W.
N.E.
BAYTREE PIT
MOXELY PIT SITE (8)
≈ 2 MILES
2800'
2700'
2600'
2500'
TILL
BAD HEART. SANDSTONE
MUSKIKI SHALE.
BASE SAND @ 2650?

SCHEMATIC X-SECTION (2)



Attachment 3.1

B.G. Luft
116 Oakland Place S.W.,
Calgary, Ab. T2V 4M8

Phone (403)251-4508
Fax (403)251-4508

May 22, 1998

Mr. Ralph Jamieson
Exploration Technologist
Disposition Services Branch
Lands and Forest Service
Petroleum Plaza, South Tower
9914 - 108th Street,
Edmonton, Alberta
T5K 2G8

Dear Mr. Jamieson,

Re: Exploratory Drilling, Baytree, Alberta
713803 Alberta Limited
Exploration Licence #5145

Enclosed are five copies of the final report on the exploratory drilling activity undertaken by 713803 Alberta Ltd. during March 23 and 24, 1998.

Also enclosed are copies of a summary report sent by our Mr. Alan Lewis to Mr. Cory Wojtowicz, Forest Officer, Land and Forest Service, in Grande Prairie, Alberta.

The drill cutting samples, 27 in all, have been forwarded to Mr. Dixon Edwards, P. Geology, at the Alberta Geological Survey in Edmonton. (MCRF)

Please contact myself or Bob Liddle at (403)239-4546 if you have any questions or comments.

Thank you.

Barry Luft
for 713803 Alberta Ltd.

FIELD REPORT

Saturday March 21 - Wednesday March 25, 1998

The objective was to arrange and oversee the drilling of six test holes to define the geographical extent, overburden depth and gross thickness of the Bad Heart conglomerate zone. Cutting samples were taken at all six wells.

SATURDAY - MARCH 21

Lewis and Luft travelled to Hythe, Alberta and met with representatives of Hopper Drilling. (The principals of Hopper Drilling are located in Beaverlodge, Alberta, but their shop is in Hythe). We arranged to meet with the driller and his helper (Murray and Chad) in Pouce Coupe on Sunday, to travel to our permit area and determine the viability of the drilling program. Arrangements completed, Lewis and Luft progressed to Dawson Creek.

SUNDAY - MARCH 22

We met with drillers in Pouce Coupe at 9 A.M., then travelled to the site of the recent oil well on the 'Anderson Road' (16-9-78-13), unloaded skidoos and travelled to site of #1 proposed test hole (NE/4 - Lsd. 16-9-78-13) at the top of the hill at the junction. It was apparant that the road would have to be snow-plowed prior to bringing in the drilling rig and water truck. Al and Murray continued on the snowmobiles to reconnoiter the other potential drill sites. All required some snow-plowing of roads, trails or cut lines to provide accessibility. We returned to Pouce Coupe and met with Herb Nodes of Nodes Construcion, to arrange for snow-plowing equipment. Herb agreed to provide a D-6 caterpillar tractor for Monday morning. We arranged to meet at the 16-9 lease site before 8 A.M. The driller agreed to be there shortly after 8 A.M. It was clear that any travel with heavier equipment had to occur prior to 9 A.M. NOTE: There was a 10 A.M. to 10 P.M. road ban in effect in Alberta.

MONDAY - MARCH 23

Truck carrying the D-6 showed up at 16-9 lease at approximately 7:43 A.M., unloaded, attached dozer blade and proceeded to snow-plow the 'Anderson Road'. We reached #1 drill site at 8:55 A.M. Drilling rig and water truck arrived at the same time. Drill rigged up and started drilling at 9:25 A.M.

**** #1 NE/4 of Lsd. 16-10-78-13 Elev. 2750' TD 60'
Sample intervals 0-10, 20-30, 30-40 and 40-50.

DRILLERS COMMENTS:

Encountered brown sand(stone?) at 4'
Grey sand(stone?) at 7'
Brown sand(stone?) to 17'
2 or 3 ft. shale lens at 17'
Brown sandstone from 20' to 30'
Thin shale lens at 30'
Brown sandstone to 35'
Sandstone and shale to 40'
Brown sandstone to 52'
Grey shale from 52 to 60'
End of stand - quit drilling

Cleaned up site and filled hole (didn't have enough cuttings to completely fill hole, so returned on Tuesday and completed filling with bagged produce supplied by driller). Travelled east to gas plant, then north to pipeline right-of-way to second site, immediate north side of the right-of-way. Rigged up and started drilling #2 at 11:50 A.M.

**** #2 NW/4 of Lsd 8-14-78-13 Elev. 2760' TD 60'
Sample intervals 0-10, 10-20, 20-30, 30-40, 50-60

DRILLERS COMMENTS:

Blue clay
Some brown sand returns at about 5'
Blue clay at 6'
Blue clay all the way to 60'; odd brown SS rock
End of stand, quit drilling

Cleaned up site, filled hole, rigged down and returned to north/south road, and proceeded north to the southwest corner of logged out area. Moved to site #3 and rigged up - started drilling at 2:40 P.M.

**** #3 NE/4 of Lsd. 13-13-78-13 Elev. 2760' TD 80'
Sample intervals 30-40, 40-50, 50-60, 60-70, 70-80.

DRILLERS COMMENTS:

Blue clay from surface to 42'
Conglomerate at 42'
Hard drilling at 64' - sandstone?
Changed bits at 64'
Still conglomerate to 72'
Encountered grey sandstone at 72'
End of stand at 80' - still grey sandstone
Quit drilling at 80' --- Time: 4:10 P.M.

Cleaned up site and filled hole - rigged down and moved east along the cutline towards #4 site.

TUESDAY - MARCH 24

****#4 NE/4 of Lsd. 16-13-78-13 Elev. 2770' TD 20'
Samples taken 0-10, 10-20 and bottom.

DRILLERS COMMENTS:
Loose conglomerate gravel at surface
3 feet of brown sand at 4 or 5'
Clay from 8' to 20'
End of stand; quit drilling.

Tidy up site and fill hole; progress south down cutine to pipeline right-of-way --rig up and drill #5.

**** #5 NE/4 of Lsd. 7-13-78-13 Elev. 2780' TD 20'
Sample taken at 20'.

Clay from surface to end of stand 20'
Quit drilling.

Filled hole, rigged down and travelled west to north/south road, went north to site #6, rigged up and started drilling at 12:35 P.M.

**** #6 NE/4 of Lsd. 1-23-78-13 Elev. 1740' TD 80'
Samples 0-10, 10-20, 20-30, 30-40, 40-50, 50-60, 60-70 and 70-80.

DRILLERS COMMENTS:
Conglomerate at 1 or 2'
Sandy conglomerate to 15'
'Pure' conglomerate from 15' to 58'
Grey sandstone from 58' to 80'
End of stand, quit drilling at 2:50 P.M.

Fill hole, tidy up site.

WEDNESDAY - MARCH 25

Lewis and Luft travelled to Grande Prairie; tried to meet with Cory at the Alberta Forestry and Environment, as a follow-up to Al's attempts to contact him last week. Cory was out of the office but Al reached him on his cellular and recapped our activities. Lewis and Luft then to south Grande Prairie to visit with Weyerhauser Canada Ltd. Weyerhauser owns the timber rights in the area of our interest.

NOTE:

Our original plan included the drilling of some test holes to the north of holes 3,4 and 6. However, because the 'rim trail' is in the protected area where no equipment is allowed and the cutlines north of site #4 encounter considerable stretches of muskeg, we were unable to drill in that general area. More field work should be done in the area between the conglomerate outcrop rim and the Moxnes pit (where conglomerate is visible) to determine thickness of the Bad Heart conglomerate at various locations.

**** Locations and elevations are taken from small scale surface and topographic maps and should be read as approximate.

Government of Alberta,
Lands & Forests,
Grande Prairie, Alberta.

Attention: Cory Woytowicz,

Re: MME - 971273.

EXPLORATION SOUTH OF BAYTREE, ALBERTA,
713803 ALBERTA LTD.,
EXPLORATION LICENSE NO. 5145.

Two snow machines were used on March 22, 1998, to assess the project, but the depth of the snow in the area made it very difficult.

The snowplowing and drilling started March 23, 1998, and it was all finished March 24, 1998. One tandem drill truck, one tandem water truck, one 4 x 4 ½ton and one D6 Caterpillar - this was the equipment used.

The access to the drilling (see accompanying map) is the shaded - in road from highway 49. ½ mile East of the county road on Anderson Road, at the new oil well drill site approach, the road had to be plowed to all 6 test holes. All the plowing and drilling was done on existing trails and cutlines.

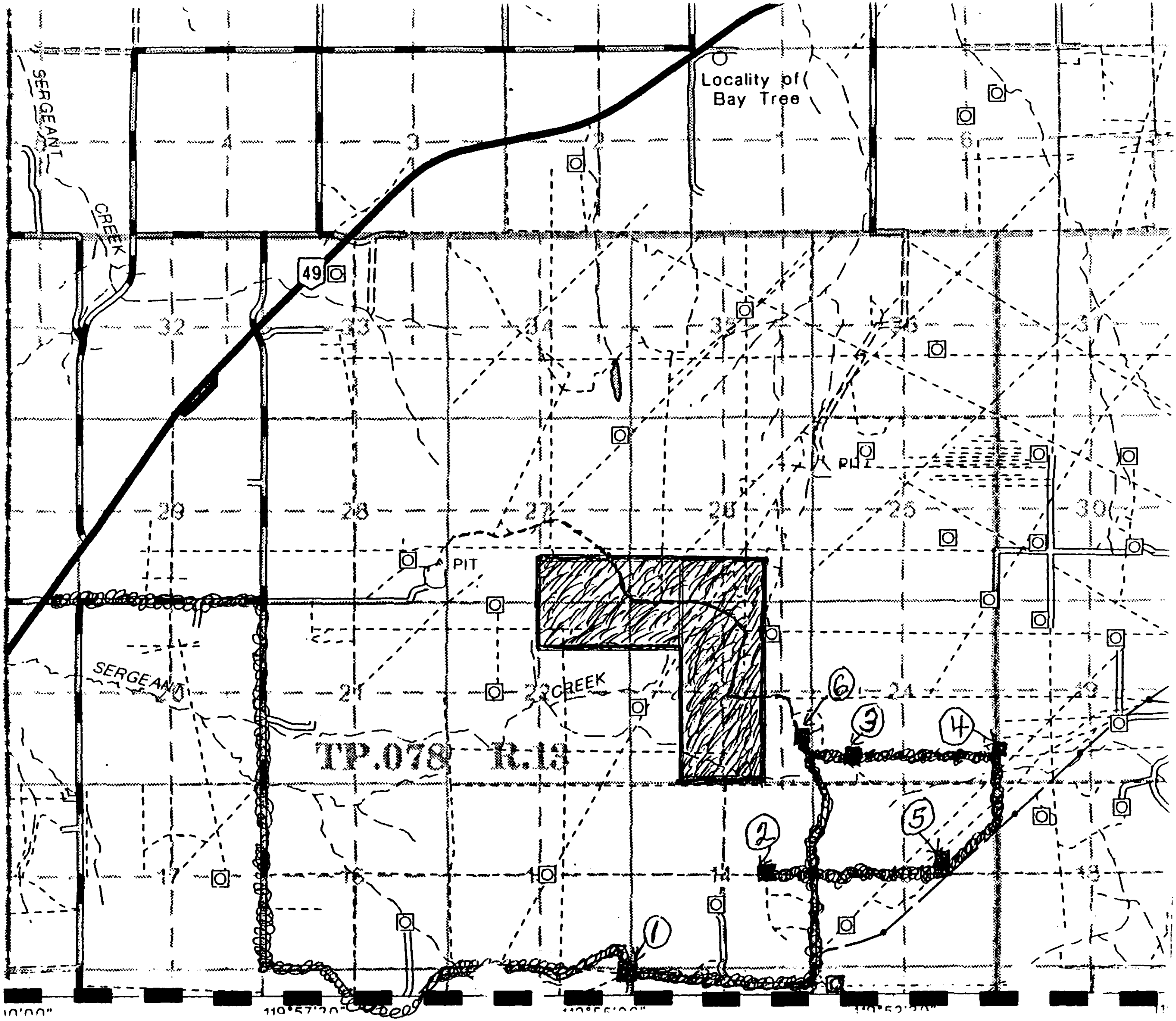
End Report.

[redacted]

ALAN LEWIS.
04/02/98

9,67

ATTENTION: CORY WOJTOWICZ
COMPANION MAP OF DRILL REPORT
713803 ALBERTA LTD
LICENSE #5145.



4. Mineral Content Analyses

The primary analytical work has been performed by Alan Lewis, the prospector who originally identified the potential mineral values in the Bad Heart formation and who is a founding shareholder of 713803 Alberta Ltd. Mr. Lewis has 17 years (summer- fall) of gold mining experience in the Yukon from 1980 to 1996 and has been pursuing potential prospects in Northwestern Alberta since 1992.

Additional analyses have been conducted for 713803 Alberta Ltd. by a number of outside commercial or research organizations. Results obtained from the various analysts are described below:

4.1 Alan Lewis

Mr. Lewis has performed over 430 tests on ores similar to those found on the permit lands.

The values obtained by Mr. Lewis over the course of performing over 250 individual analyses (as of April 30, 1999) on samples from the permit lands have generally been very encouraging. His results, which are summarized on Table 4.1, have been obtained using a variety of techniques including:

- fire assay
- leaching with various leaching agents with recovered precipitate fire assayed
- gravity concentration
- scorification

Each of these techniques and a summary of results obtained will be described below:

In reporting his results, Lewis assumed that the beads being obtained were of a high degree of gold purity (91% or better) which was based on early (August, 1996) confirmation of bead purity received from Control Labs Inc. However, later testing of bead purity by Cantech and other labs (Loring and Saskatchewan Research Council) frequently showed that a majority of the Lewis beads contained only very small quantities of gold, although a few beads continued to test at a high level of purity. Accordingly, the Lewis results reported here are subject to the uncertainty of the bead purity. Based on the results of outside laboratory checking done to date, it is necessary to assume that many of the reported Lewis results probably overstate significantly the gold values.

Fire Assay

This was the first technique used by Lewis from mid 1996 until October 1997. The equipment , flux materials and sample preparation processes used by Lewis are consistent with industry standards and were observed and confirmed to be acceptable by Cantech Laboratories. (see further discussion in section 4.2)

Lewis does not have electronic scales necessary to perform accurate weight measurement of the small precious metal beads obtained from the assay process. Lewis does have a mechanical balance scale capable of measuring to 1 milligram. Lewis also used a published calibration system to estimate bead weight by observing bead diameter under a microscope and converting that diameter to a weight equivalent. This method was checked for accuracy by having bead weights estimated by Lewis checked against actual weights of the same beads determined by outside laboratories. These checks showed that Lewis' technique produced results that were generally within +/- 10%. See further discussion in Section 4.2 of the checks performed by Cantech Laboratories.

In addition to the results summarized in Table 4.1, additional detail on the results obtained by Lewis using the fire assay technique are shown in attachment 4.1.1.

Leaching

Based on information gained from a visit and analyses conducted by Bahamian Refining Ltd., an equipment supplier/ laboratory in Phoenix Arizona, it was postulated that better results could be obtained if the sample was first leached, the pregnant leach solution precipitated and the precipitate dried and fire assayed.

The leaching agents utilized for various tests included:

- Sodium Chloride - $NaCl$
- Sodium Bromide - $NaBr$. (Geo Brome)
- Aqua Regia

In addition to the summary of leach test results shown in Table 4.1, further detail on the tests are included in Attachment 4.1.2.

Concentration of Ore Samples

Prior to fire assaying or leaching of some samples efforts were undertaken to concentrate the precious metal content of samples through:

- panning
- flotation using linseed oil and soap as agglomeration agents
- a table device using rotating magnets and water wash to separate and concentrate the mineral bearing ore.

None of these methods produced any significant improvements in the eventual assay analyses of the assayed samples. Those tests which included concentration of the sample prior to analysis are reported in Attachment 4.1.2.

Scorification

Scorification involves firing of a smaller (5gram) sample of ore along with 70 grams of lead and one gram of silver inquart. The firing is done in a flatter profile ceramic dish as compared to the conventional fire assay crucible. This technique was suggested by an outside analyst to 703183 Alberta Ltd. as one that would be superior to conventional fire assaying for the type of ore body being analyzed. The results obtained from scorification are summarized in Table 4.1 and reported in further detail in Attachment 4.1.2.

In addition to the analytical work performed by Alan Lewis, extensive efforts were undertaken to try to obtain confirming assays of the values being obtained by Lewis from independent third party analysts. These efforts were of two types:

- to obtain confirmation of values from assays of head ore samples
- to confirm the weights and precious metal content of beads obtained in assays performed by Lewis

A series of independent analysts have performed work for 713803 Alberta Ltd. as discussed in the following sections.

TABLE 4.1

Summary of Lewis Mineral Content Analysis

Dates	Ore Type	Technique	No. of Tests	Range of Results - oz/ton	References to Attachments
Oct. 14/96 to Nov. 27/97	Conglomerate	Fire Assay	34	tr - 0.555 *	Attach. 4.1.1, Items 2, 5, 6 & 8
Oct. 14/96 to Nov. 27/97	Sandstone	Fire Assay	73	.06 - 0.540 *	Attach. 4.1.1, Items 1, 3, 4, 7, 9 10
Dec. 2/97 to Apr. 30/99	Sandstone	Bromide Leach	31	0 - 0.675	Attach. 4.1.2, page 1
Nov. 28/97 to Jan. 30/99	Conglomerate	Bromide Leach	21	0 - 0.910	Attach. 4.1.2, page 2
Dec. 8/97 to Aug. 5/98	Sandstone	Chloride Leach	38	tr - 0.507	Attach. 4.1.2, page 3
Dec. 17/97 to Aug. 3/98	Conglomerate	Chloride Leach	7	0 - 0.558	Attach. 4.1.2, top page 4
Jul. 11/98 to Apr. 20/99	Sandstone	Aqua Regia Leach	8	0.04 - 0.639	Attach. 4.1.2, mid page 4
Jul. 15/98 to Feb. 24/99	Conglomerate	Aqua Regia Leach	3	0.01 - 0.351	Attach. 4.1.2, mid page 4
Aug. 17/98 to Aug. 27/98	Sandstone	Acid Wash Prep Fire Assay	6	0.035 - 0.558	Attach 4.1.2, bottom page 4
Aug. 19/98 to Sept. 2/98	Conglomerate	Acid Wash Prep Fire Assay	8	tr - 0.2010	Attach 4.1.2, bottom page 4

Note * These ranges of results report sub group averages. Individual results with the sub group will show higher maximums and lower minimums.

Dates	Ore Type	Technique	No. of Tests	Range of Results - oz/ton	References to Attachments
Nov. 6/98 to Nov. 21/98	Sandstone	Gravity Concentration & Scorification	11	tr - 0.939	Attach. 4.1.2, top page 5
Nov. 10/90 to Nov. 22/98	Conglomerate	Gravity Concentration & Scorification	3	tr - 0.436	Attach. 4.1.2, top page 5
Nov. 23/98 to Nov. 25/98	Sandstone	Flotation	2	tr - 0.286	Attach. 4.1.2, mid page 5
Dec. 4/98 to Jan. 21/99	Sandstone	Scorification	3	tr - 0.286	Attach. 4.1.2, bottom page 5
Dec. 16/98 to Dec. 19/98	Sandstone	Bromide Leach	2	0.036 - 0.281	Attach. 4.1.2, bottom page 5
Feb. 19/99 to Mar. 2/99	Sandstone	Sulfur Acid Wash & Assay	5	0 - 0.195	Attach. 4.1.2, bottom page 5
Feb. 20/99 to	Conglomerate	Sulfur Acid Wash & Assy	2	0 - 0.146	Attach. 4.1.2, bottom page 5

Sandstone & Conglomerate
Fire Assays

Starting October 14, 1996...

(1) Sandstone
#57 & #75 to #101 — Fine Grind
Average .384 — Acid treatment w/Nitric Acid & Sodium Hydroxide.

(2) Conglomerate — Fine Grind
#122 to #124 — Conventional Assay
Average .204
#125 to #132
Average .098

(3) Sandstone
#136 to #143 — Grind varies from fine to coarse.
Average .540

(4) Sandstone — Fine Grind
#145 to #155 — Treated with HNO_3 & NaOH & some w/HCl.
Average .187

(5) Conglomerate
#159 to #167 — Conventional Fire Assay.
Average trace

(6) Conglomerate — Some treated with NaOH & some w/H_2SO_4.
#168 to #176
Average .585

(7) Sandstone
#177 to #191 — Calgary Grind & Varied acid treatments.
Average .127

(8) Conglomerate — Gravity Separation & Fired
#212 & #213
Average .082
#'s 224, 225 & 231
Averages: .478, .132 & .188

(9) Sandstone — Screened, Ground then Fired.
#214 to #219
Average .060

(10) Sandstone — Gravity Separation & Fired
#221 to #223
#226 & #230
Average .255

Leaching Tests

Attachment 4.1.2

DATE	TEST NO.	VALUE oz/ton	PROCESS	ORE
Dec. 2/97 -	#255	.330	NaBr. Leach	SS. (Sandstone)
Jan. 3/98 -	#271	.165	NaBr.	SS.
Jan. 28/98-	#274	.407	NaBr.	SS.
Feb. 21/98-	#281	.363	NaBr.	SS.
Feb. 22/98	#282	.0	NaBr.	SS.
Apr. 10/98-	#287	.054	NaBr.	SS.
	#288	,075	NaBr.	SS.
Apr. 11/98-	#289	.0	NaBr.	SS.
Apr. 18/98	#290	.027	NaBr.	SS.
Apr. 21/98	#292	.052	NaBr.	SS.
Apr.23 to 30/98 -	#294 to 300	trace	NaBr.	SS.
Aug. 4/98	#339	.055	NaBr.	SS.
Jan. 17/99 -	#388	.084	NaBr.	SS.
	#389	.165	NaBr.	SS.
Apr. 5/99 -	#421	N/A	NaBr.	SS.
	#422	trace	NaBr.	SS.
Apr. 6/99 -	#423	trace	NaBr.	SS.
Apr. 7/99 -	#424	trace	NaBr.	SS.
	#425	trace	NaBr.	SS.
Apr. 8/99 -	#426	trace	NaBr.	SS.
-	#427	trace	NaBr.	SS
Apr 14/99 -	#429	.675	NaBr.	SS.
Apr. 16/99 -	#430	.075	NaBr.	SS.
Apr. 22/99 -	#433	.016Au.,Pt .030, Rh .001 3A.T.	NaBr.	SS.
Apr. 30/99 -	#435	.333	NaBr.	SS.

DATE	TEST	VALUE oz/ton	PROCESS	ORE
Nov. 28/97 -	#254	.740	NaBr.	Cong. (Conglomerate)
Jan. 16/98 -	#273	.910	NaBr.	Cong.
Feb. 02/98 -	#275	.454	NaBr.	Cong.
Feb. 06/98 -	#276	.363	NaBr.	Cong.
Feb. 09/98 -	#277	Electronic Microscope U. of A., P.G.M. type Bead.		
Feb. 10/98 -	#278	Electronic Microscope U. of A.		
Feb. 14/98 -	#279	.401	NaBr.	Cong.
Feb. 19/98 -	#280	.480	NaBr.	Cong.
Feb. 22/98 -	#283	.165	NaBr.	Cong.
Feb. 23/98 -	#284	.054	NaBr.	Cong.
Apr. 07/98 -	#285	.054	NaBr.	Cong.
-	#286	.027	NaBr.	Cong.
Apr. 17/98 -	#291	.062	NaBr.	Cong.
Jun. 11/98 -	#325	Tech. failure	NaBr.	Cong.
Jun. 17/98 -	#326	CanTech #1	NaBr	Cong.
	#327	CanTech #2	NaBr	Cong.
	#328	CanTech #3	NaBr	Cong.
Jun. 18/98 -	#329	CanTech-trace	NaBr.	Cong.
Jun. 19/98 -	#330	CanTech-trace	NaBr.	Cong.
Sept.2/98 -	#362	.225	NaBr.	Cong.
Jan. 30/99 -	#394	.048	NaBr.	Cong.

DATE	TEST	VALUE oz/ton	PROCESS	ORE
Dec. 08/97 -	#256	.150	Chloride Leach	SS. (Sandstone)
Dec. 10/97 -	#257	.188	Cl.	SS.
Dec. 12-13/97-	#258,259,260,261	-trace	Cl.	SS.
Dec. 14/97 -	#262	.070	Cl.	SS.
-	#263, 264	trace	Cl.	SS.
Dec. 15/97 -	#265	.330	Cl.	SS.
-	#266	.507	Cl.	SS.
Dec. 16/97 -	#267	.507	Cl.	SS.
-	#268	.413	Cl.	SS.
Dec. 17/97 -	#269	.339	Cl.	SS.
-	#270	.407	Cl.	SS.
Jan. 03/98 -	#272	.124	Cl.	SS.
May 06/98 -	#301	.156	Cl.	SS.
May 17/98 -	#302	.055	Cl.	SS.
-	#303	.047	Cl.	SS.
-	#304	trace	Cl.	SS.
May 14/98 -	#306	.070	Cl.	SS.
May 15/98 -	#307	.180	Cl.	SS.
May 17/98 -	#309	.057	Cl.	SS.
-	#310	.224	Cl.	SS.
-	#311	.090	Cl.	SS.
-	#312	trace	Cl.	SS.
May 19 to May 21/98 -	#313-314	.206	Cl.	SS.
May 27/98 -	#315	P.G.M. type bead	Cl.	SS.
Jun. 2/98 -	#316	P.G.M.-type bead	Cl.	SS.
Jun. 9-10/98	#317-324	trace	Cl.	SS.

DATE	TEST	VALUE oz/ton	PROCESS	ORE
Aug. 5/98 -	#340	.363	Cl. leach	SS. (Sandstone)
Dec. 17/97 -	#269	.339		
-	#270	.407	Cl.	Cong. (Conglomerate)
May 15/98 -	#308	.490	Cl.	Cong.
May 14/98 -	#305	.163	Cl.	Cong.
Jul. 6/98 -	#333	.060 Jordon	Cl.	Cong.
-	#334	-----	Cl.	Cong.
Aug. 3/98 -	#338	.558	Cl.	Cong.
Jul. 11/98 -	#336	.500	Aqua Regia	SS.
Jul. 15/98 -	#337	.333	A.R.	Cong.
Sept.2/98 -	#364	.351	A.R.	Cong.
Feb. 2/99 -	#397	.291	A.R.	SS.
Feb. 12/99 -	#398	a..253 b..253	A.R.	SS.
Feb. 16/99 -	#404	lge.P.G.M.-type bead	A.R.	SS.
Feb. 18/99 -	#405	S.R.C.	A.R.	SS.
Feb. 24/99 -	#411	.04 Au. .01 Pt Jordon	A.R.	Cong.
Mar. 12/99 -	#418	.639	A.R.	SS.
Apr. 17/99 -	#431	Loring	A.R.	SS.
Apr. 20/99 -	#432	.042 Loring	A.R.	SS.
Aug. 17/98 -	#341	.082	Nitric Acid	SS.
-	#342	.227	HNO3	SS.
Aug. 19/98 -	#343	.227	HNO3	Cong.
-	#344	.660		
-	#345	.082		
Aug. 26/98 -	#346	2.01	HNO3	Cong.
-	#347	.056	HNO3	SS.
Aug. 27/98 -	#348	.558	HNO3	SS.
-	#349	.084	Phosphoric Acid	Cong.
-	#350	.035	HNO3	SS.
-	#351	.084	Phosphoric Acid	SS.
Sept. 1/98 -	#360	trace	HNO3	Cong.
-	#361	trace	HNO3	Cong.
Sept. 2/98 -	#363	.082	HNO3	Cong.

Scorification, Flotation And Acid Prep Tests

DATE	TEST NO.	VALUE oz/t	PROCESS	ORE
Nov. 6/98 -	#365 to #370	from .084 to .286	Scorification	SS. (Sandstone)
Nov. 10/98-	#371	.291	Scor.	Cong. (Conglomerate)
-	#372	.436	Scor.	Cong.
Nov. 11/98 -	#373	.939	Scor.	SS.
-	#374	.225	Scor.	SS.
-	#375	.356	Scor.	SS.
Nov. 12/98 -	#376	.165	Scor.	SS.
Nov. 21/98 -	#377	trace	Scor.	SS.
Nov. 22/98 -	#378	trace	Scor.	Cong.

- All the above scorification results were determined from material put over a magnetic concentrating table.

DATE	TEST NO.	VALUE	PROCESS	ORE
Nov. 25/98 -	#381	trace	Floatation	SS.
Nov. 23/98 -	#380	.286	Fl.	SS.
Dec. 4/98 -	#382	.286	Scor.	SS.
Dec. 6/98 -	#383	trace	Scor.	SS.
Dec. 16/98 -	#384	.281(Loring)	NaBr.	SS.
Dec. 17-19/98	#385	.036(Loring)	NaBr. w/resin bead recovery	SS.
Jan. 21/99 -	#391	.168	Scor.	SS.
Feb. 19/99 -	#406	lge. P.G.M.-type bead	Sulfuric Acid	SS.
Feb. 20/99 -	#407	--------	H2SO4	SS.
-	#408	.076,.076,.146,.146	"	Cong.
Feb. 22/99 -	#409	.195,.075	H2SO4	SS.
Feb. 24/99 -	#410	Pt.-type .086,.086	H2SO4	SS.
Mar. 2/99 -	#413	-----	H2SO4	SS.
-	#414	-----	"	Cong.

4.2 Cantech Laboratories Inc.

Cantech was the first laboratory used to confirm the weight and purity of beads obtained by Lewis. The first two beads checked were from assays done by Lewis on ore from a permit not owned by 713803 Alberta Ltd. These initial checks, dated August 21,1996 confirmed that the Lewis beads were of a high degree of purity (88 and97 %) See Attachment 4.2.1 in this section.

Cantech was also asked to perform further tests on the weight and content of further beads obtained by Lewis in four further tests on June 15/97, June 27/97, Feb13/98 and June 26/98 for a total of 30 beads. These further tests are included as Attachments 4.2.2 to 4.2.5. Of this total, 4 were of a high degree of purity, 4 more had significant gold values with the balance of non-commercial gold content. Therefore eight of the thirty (27%) beads submitted to Cantech had gold values of significance.

Cantech was also asked to perform their own fire assays or leaches on head ores directly as summarized below:

Table 4.2.1

Date	Ore Type	Number of Samples	Average Au % Oz./ton	Reference to Attachment
Sept. 23/96	Sandstone	3	.0005	4.2.6
Oct. 15/96	Sandstone	3	.0423	4.2.7
Feb. 5/97	Conglomerate	3	.280	4.2.8
May 5/97	Sandstone	3	.0001	4.2.9
May 23/97	Sand. & Congl.	5	.0001	4.2.10
Jun. 15/97	Sandstone	6	.264	4.2.2
Sept. 29/97	Sand. & Congl.	6	.005	4.2.11
Jan. 26/98	Sand. & Congl.	4	.001	4.2.12
	Leach & Fire Assay			
Feb. 5/98	Congl. & Sand.	4	.001	4.2.13

As can be observed from the above Table, with the exception of the October 15/96 and particularly the February 7/97 and June 15/97 tests, the Cantech work did not confirm the Lewis analyses. However the fact that 3 out of 9 tests provided significant values is of encouragement. The percentage of encouraging assay tests performed by Cantech is similar to the percentage of encouraging bad purity tests.

In addition to the analytical work performed by Cantech, Mr. Doug Read, the president of Cantech visited Al Lewis' home assay laboratory, observed the processes being used by Lewis and provided a letter confirming that the procedures used by Lewis were adequate. Mr. Read also provided a Canmet Certified Reference Sample to Lewis for analysis. As stated in Mr. Read's letter, a copy of which is included as Attachment 4.2.14 in this section, Mr. Lewis' preparation and assaying procedures were found to be acceptable.

CanTech *Laboratories Inc.*

4200B - 10 Street N.E.
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

G.R. WALSH & ASSOCIATES LTD.
750, 700 - 4th Avenue S.W.
Calgary, Alberta
T2P 3J4

Attention: George R. Walsh

Certificate of Analysis

Work Order: 9796-96
Date: August 21, 1996

Sample ID	Au %
Bead -1	88.0
Bead-2	97.4

CanTech Laboratories, Inc.

Signed: [redacted]
Richard Magner
Laboratory Supervisor

Attachment 4.2.1

CanTech *Laboratories Inc.*

4200B - 10 Street N.E.
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

713803 Alberta Ltd.
124 Edgehill Close N.W.
Calgary, Alberta
T3A 2X1

Attention: Al Lewis / George Walsh

Certificate of Analysis

Work Order: 97148
Date: June 15, 1997

Sample ID	Bead Weights Gold + Silver mg	Parted Gold mg	
#177	0.170	0.085	– 1 A.T. = .085 oz. per ton.
#181	15.380	1.075	– #172 - 1 A.T. / #173 - 3 A.T / #174 - 1 A.T / #175 - 2 A.T / #176 - 1 A.T } made into 1 bead, weighed by CanTech - 15.38 mgs Value - 1.075 ÷ 8 = .134 opt.

Sample ID	Au g/t	Au oz/ton	
1-A	20.300	0.592	– #182 - 1. AT
1-B	15.450	0.451	– #182 - 1. A.T.
2-A	0.860	0.025	– #183 - 1. A.T
2-B	0.540	0.016	– #183 - 1. A.T
3	17.110	0.499	– #184 - 1. A.T
4	0.010	<0.001	– #184 - 1. A.T

CanTech Laboratories, Inc.

Signed: [redacted]

Attachment 4.2.2

CanTech *Laboratories Inc.*

4200B - 10 Street N.E.
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

G.R. WALSH & ASSOCIATES LTD.
750, 700 - 4th Avenue S.W.
Calgary, Alberta
T2P 3J4

Attention: Al Lewis / George Walsh

Certificate of Analysis

Work Order: 97140
Date: June 27, 1997

Sample ID	Bead Weights Gold + Silver mg	Parted Gold mg	Notes
Slaq 1 AT 9	0.180		Bead too small to pick after parting
Slag 1 AT 11	0.335		Bead too small to pick after parting
Glass 1 AT 11	0.365		Bead too small to pick after parting
Glass 1 AT 21	3.885	0.040	
Glass 12	0.490	0.185	
5-15 1 AT	0.880	0.005	
5-15 1/2 AT	0.290		Bead too small to pick after parting
5-15 1/2 AT	0.220		Bead too small to pick after parting
5-15-W 1/2 AT	0.115		Bead too small to pick after parting
5-15-W 1/2 AT	0.300		Bead too small to pick after parting
5-15-W 24	3.230	0.390	
5-15 5	-		Bead too small to pick from cupel
5-15 8	0.080		Bead too small to pick after parting
22 4.47	2.770	0.005	
22 4.47	2.335	<0.005	
10 .963	0.190		Bead too small to pick after parting
13 .813	0.360		Bead too small to pick after parting
8 H2SO4	0.180		Bead too small to pick after parting
15 H2SO4	1.460	1.120	

CanTech Laboratories, Inc.

Attachment 4.2.3

Signed: [redacted]

(3)

CanTech *Laboratories Inc.*

4200B - 10 Street NE
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8267

713803 Alberta Ltd.
124 Edgehill Close N.W.
Calgary, Alberta
T3A 2X1

Attention: Al Lewis

Certificate of Analysis

Work Order: 98027

Sample ID	Bead Weight (mg) pre-firing	Bead Weight (mg) parted	Au Purity	Al Lewis Estimate
Composite	-	-	-	454.0
Sandstone	0.370	0.325	88 % pure	363.0

end

My bead measured .363 mgs. and CanTech weighed the bead @ .370 mgs., so that's quite comparable.

[redacted]

Attachment 4.2.4

CanTech *Laboratories Inc.*

713803 Alberta Ltd.
124 Edgehill Close N.W.
Calgary, Alberta
T3A 2X1

Attention: Al Lewis

Certificate of Analysis

Work Order . 98106

Sample ID	Bead Weight (mg)	Bead Split for Assay Weight (mg)	Au milligrams	Pt milligrams	Bead Split for return Weight (mg)
#1 = 3 A.T.	582.3	301.2 = 51.7%	0.015	<0.001	281.0 = 48.3% = .014
#2 = 3 A.T.	754.6	385.0 51.0%	0.023	<0.001	369.7 = 49.0% = .022
#3 = 3 A.T.	537.0	262.1 48.8%	0.015	<0.001	273.7 = 51.2% = .0157
#4 = 5.5 A.T.	535.2	300.5 56.1%	0.040	<0.001	234.0 = 43.9% = .0326
#5 = 5.5 A.T.	532.2	288.5 54.2%	0.160	<0.001	243.3 = 45.8% = .135

end

100% value per assay ton @ $430 oz price

#1 = .015 + .014 = .029 X 430 = $12.47 ÷ 3 A.T. = $4.16 per ton
#2 = .023 + .022 = .045 X 430 = $19.35 ÷ 3 AT = $6.45 " " "
#3 = .015 + .0157 = .0307 X 430 = $13.20 ÷ 3 AT = $4.40 " " "
#4 = .040 + .0326 = .0726 X 430 = $31.22 ÷ 5.5 AT = $5.68 " " "
#5 = .160 + .135 = .295 X 430 = $126.85 ÷ 5.5 AT = $23.06 " " "

Attachment 4.2.5

CanTech *Laboratories Inc.*

42008 - 10 Street N.E.
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-9265

G.R. WALSH & ASSOCIATES LTD.
750, 700 - 4th Avenue S.W.
Calgary, Alberta
T2P 3J4

Attention: George R. Walsh

Certificate of Analysis

Work Order: 9823-96
Date: September 23, 1996

Sample ID	Au ppb	Ag ppm
Sample 1	12	0.2
Sample 1	18	0.2
Sample 1	20	0.2

Sample 2 Bead Weight 3.375 mg

CanTech Laboratories, Inc.

[redacted]

Signed:________________
Richard Magner
Laboratory Supervisor

Attachment 4.2.6

CanTech *Laboratories Inc.*

4200B - 10 Street N.E.
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

G.R. WALSH & ASSOCIATES LTD.
750, 700 - 4th Avenue S.W.
Calgary, Alberta
T2P 3J4

Attention: George R. Walsh

Certificate of Analysis

Work Order: 9844-96
Date: October 15, 1996

Sample ID	Au ppb	oz/ton
Sample 1	1330	.039
Sample 1	1740	.051
Sample 1	1280	.037

CanTech Laboratories, Inc.

Signed [redacted]
Richard Magner
Laboratory Manager

Attachment 4.2.7

CanTech *Laboratories Inc.*

4200B - 10 Street N.E.
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

G.R. WALSH & ASSOCIATES LTD.
750, 700 - 4th Avenue S.W.
Calgary, Alberta
T2P 3J4

Attention: George R. Walsh

Certificate of Analysis

Work Order: 97028
Date: February 5, 1997

Sample ID	Au g/t	oz/ton
Conglomerate	13.60	0.397
Conglomerate	6.90	0.201
Conglomerate	8.40	0.245

Ave. 0.281 oz/ton

CanTech Laboratories, Inc.

Signed: [redacted]
Richard Magner
Laboratory Manager

Attachment 4.2.8

CanTech *Laboratories Inc.*

4200B - 10 Street N.E.
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

G.R. WALSH & ASSOCIATES LTD.
750, 700 - 4th Avenue S.W.
Calgary, Alberta
T2P 3J4

Attention: George R. Walsh

Certificate of Analysis

Work Order: 97109
Date: May 5, 1997

Sample 5-15

Sample Size Used	Fire Assay Au g/t	Sample Size Used	Cyanide Leach Au g/t
1 Assay Ton	0.003	750 grams	<0.05
1 Assay Ton	0.002	750 grams	<0.05
2 Assay Ton	0.003		

RECEIVED MAY - 7 1997

CanTech Laboratories, Inc.

Signed: [redacted]
Richard Magner, B.Sc.
Laboratory Manager

Attachment 4.2.9

CanTech *Laboratories Inc.*
42008 - 10 Street N.E.
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

G.R. WALSH & ASSOCIATES LTD.
750, 700 - 4th Avenue S.W.
Calgary, Alberta
T2P 3J4

Attention: George R. Walsh

Certificate of Analysis

Work Order: 97128
Date: May 23, 1997

Sample ID	Fire Assay Au g/t
Site #1, Conglomerate	0.004
Site #1, Sandstone	0.009
Site #2, Face	0.008
Site # 3	0.006
Site #3, Sandstone	<0.002

CanTech Laboratories, Inc.

Signed: [redacted]
Richard Magner, B.Sc.
Laboratory Manager

D. Fonteyne and
M. Frost samples
Ave .0054 gm/t
= .00016 oz/t

Attachment 4.2.10

CanTech *Laboratories Inc.*

4200B - 10 Street N.E.
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

713893 Alberta Ltd.
124 Edgehill Close N.W.
Calgary, Alberta
T3A 2X1

Attention: Al Lewis

Certificate of Analysis

Work Order: 97198
Date: September 29, 1997

Sample ID	Sample Weight (grams)	Au mg (per vial)
#1	8.17	0.114
#2	73.77	0.032
#3	21.66	0.063
#4	23.22	0.032
#5	61.76	0.039
#6	31.86	0.019

CanTech Laboratories, Inc.

(See comparison att'd to A. Lewis values)

[redacted]

Attachment 4.2.11

Samples Sent to CanTech - Sept 29/97.

Lewis Findings

Location	Panned To	Oz. per ton	$ Value.
1 - 6 A.T. - East Cutline	8.5 gms	.478 ÷ 6 = .0797	35.00.
2 - 6 A.T. - Calgary grind 5-15	105. gms	.454 ÷ 6 = .0756	33.26
3 - 6 A.T. - 5-15 #3B site	23. gms -	5.54 ÷ 6 = .923	406.12
4 - 6 A.T - (6-26) Plant site	23. gms.	2.91 ÷ 6 = .486	213.00
5 - 6 A.T. - Baytree +5/8 #2B	93. gms.	.862 ÷ 6 = .143	62.92.
6 - 4 A.T. - Conglom. South - on W. side of Hill	31. gms.	.528 ÷ 4 = .132	58.00.

CanTech Findings.

Sample I.D.	Sample Wt.	Oz per ton	$ Value.
1.	8.17 gms.	.019	8.36
2.	73.77 gms.	.0064	2.18
3.	21.66 gms.	.0126	5.54
4.	23.22 gms.	.0064.	2.18.
5.	61.76 gms.	.0078	3.43
6	31.86 gms	.0038	1.67.

Comments:

Note the discrepancy in the sample weights of #2 and #5 between Lewis and CanTech. CanTech values were 3.4% of Lewis values overall.

[redacted]

(1)

CanTech *Laboratories Inc.*
[illegible] Calgary Alberta Canada [illegible]
Tel (403) 258 [illegible]
Fax (403) [illegible]

713803 Alberta Ltd.
124 Edgehill Close N.W.
Calgary, Alberta
T3A 2X1

Attention: Al Lewis

Certificate of Analysis

Work Order: 98004

First Leach

Sample ID	Sodium Bromide Leach Fire Assay Finish Au / ppb	Conventional Fire Assay Au / ppb
Conglomerate	40 - 25 = 15	25 - 5 = 20
Sandstone	75 - 25 = 50 ppb	40 - 5 = 35
Blank	25	<5
end		

50 ppb = .002 g per ton @ $440 = 88¢ per ton

Attachment 4.2.12

CanTech Laboratories Inc.

 (2)

4200B - 10 Street N.E.
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

713803 Alberta Ltd.
124 Edgehill Close N.W.
Calgary, Alberta
T3A 2X1

Attention: Al Lewis

Certificate of Analysis

Work Order: 98004

Sample ID	Acidic Sodium Bromide Leach Fire Assay Finish Au / ppb	Basic Sodium Bromide Leach Fire Assay Finish Au / ppb		Fire Assay Au / ppb
Conglomerate	40	94	94¢ per ton @ $430	25
Sandstone	75	114	1.07 " " " "	40
Blank	25	35		<5

end

Attachment 4.2.13

CanTech *Laboratories Inc.*

4200B-10 Street N.E.
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

Kleine Waterstraat 2-6
Box 2510
Paramaribo - Suriname
Tel (597) 421523
Fax (597) 421533

September 15, 1997

713803 Alberta Ltd.
124 Edgehill Close N.W.
Calgary, Alberta
T3A 2X1

Attention: Mr. G.R. Walsh

Re: Assay Procedure (Alan Lewis)

Dear Sir:

At your request, I visited the home of Mr. Alan Lewis in Ponoka, Alberta on July 17, 1997 to view his assaying operation. In adddition to yourself, Alan and Mr. Bob Liddle, two other gentlemen were also present, namely Messrs. Art Wilkins and Barry Luft whom I understood are also participants of this Company.

I make a few comments herewith:

Sample Preparation: The rolling ball mill in use is acceptable and appropriate for this type of operation. I did not see the cleaning of the mill after the sample was prepared; however, Alan assured me that compressed air and brushes were used between samples.

Sample Weighing: A beam balance was used for weighing both the sample and the flux charge for fire assay. A more accurate digital top-loading balance would be more suitable and accurate.

Fire Assaying: The electric furnace in use is acceptable. My only comment would be that the temperature increase is slow and difficult to maintain at the desired temperatures of 1600 F and 2000 F. This lack of temperature control could possibly have some effect on the end result.

...\2

I provided Alan with a CANMET Certified Reference Sample from Ottawa to run alongside the samples he was assaying that day. The result he obtained for this standard was certainly within the accepted range after taking into consideration the possibility of errors arising from the above comments. His result of 0.165 opt compared with the accepted value of 0.25 opt.

Overall I found the procedures for sample preparation and fire assaying carried out by Alan to be of a generally acceptable standard.

I hope this information is of assistance to you. If you have any questions, please do not hesitate to contact me.

Yours truly,
CanTech Laboratories, Inc.

[redacted]

C. Douglas Read
President

4.3 Norm Smalley

Mr Smalley is an independent analyst located in Langley B.C, who is also a shareholder of 713803 Alberta Ltd. He conducted analyses on ore from the 5-15 location. Mr. Smalley initially conducted fire assays and calculated gold contents at 3 to 5 oz./ton and silver at 10 to 15 oz/ton. (See Attachment 4.3.1).

Mr Smalley also conducted leaching tests on the same sample using a bromide leach. The bromide leach precipitates and tailings were analyzed by Cantech and provided a result of 0.04 oz/ton of gold. (See Attachment 4.3.2).

Cantech also performed ICP analysis in the bead ore and tailings for all other elements, which is included as Attachment 4.3.3.

Attachment 4.3.1

TO GEORGE WALSH - 403-266-1525 DEC 31/96.

TO QUALIFY LEWIS ORE RECEIVED FROM AL. LEWIS. THIS ORE DOESNT SEEM TO CONTAIN ANY OO LITES BUT RECOVERY AFTER SEVERAL SMELTS IS FROM 3-5 oz p.T. AU. AND 10-15 oz p.T. Ag. THE PROCEDURE OUTLINED BELOW.

(1) FINE GRIND -100 MESH
ORE - 1 KILO
SODA ASH 1 "
BORAX 1 "
POT. NITRATE 200 gr.
Silica 200 gr.
Silver 250 gr.

(2) FIRE - WHEN MOLTEN INCREACE HEAT - ADD INCOR.
POUR TO CONICAL MOLD

(3). CLEAN SILVER SLUG AND MELT SILVER FROM MAGNECTIC TOP
TAKE OUT IRON BUTTON AND PUT TO SIDE.
POUR SILVER TO FLAT BAR.

(4) PLATE SILVER OUT.
SILVER BAR + POSITIVE. ENCLOSE IN NYLON BAG.
STAINLESS STEEL PLATE - NEGATIVE
SOLUTION - 30 ML. NITRIC TO 1 L. DISTILLED H_2O
STAY UNDER 3 VOLTS.

(5) RESIDUE IN BAG - CLEAN LIGHT NITRIC - WASH - DRY
AND FIRE GOLD WITH SMELTING FLUX

(6) REUSE POWDERED SILVER TO NEXT BATCH.

(7) MAGNECTIC BUTTONS - CONTAIN SOME AU - Pt. PL. NI etc.
REFIRE USING MORE SILVER INCOR.

SOME SMELTS COME OUT 3 TIMES AS MUCH GOLD SO I AM GRINDING A BIG SAMPLE IN CASE OF NUGGET EFFECT. AND WILL FIRE THIS.

[redacted]

CanTech *Laboratories Inc.*

4200B - 10 Street N.E.
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

G.R. WALSH & ASSOCIATES LTD.
750, 700 - 4th Avenue S.W.
Calgary, Alberta
T2P 3J4

Attention: George R. Walsh

Certificate of Analysis

Work Order: 97044
Date: February 24, 1997

Sample ID	Au g/t	Au oz/ton
Lewis Head Ore	0.14	0.004
Tailings	0.08	0.002
Bromine Precipitate	2.85	0.083

0.085 ÷ 2 A.T = .043 oz/ton

CanTech Laboratories, Inc.

Signed: [redacted]
Richard Magner, B.Sc.
Laboratory Manager

Attachment 4.3.2

CanTech *Laboratories Inc.*

4200B - 10 Street N.E.
Calgary, Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

G.R. WALSH & ASSOCIATES LTD.
750, 700 - 4th Avenue S.W.
Calgary, Alberta
T2P 3J4

Attention: George R. Walsh

Certificate of Analysis

Work Order: 97044B
Date: March 24, 1997

Name Sample	Ag PPM	Al %	As PPM	B PPM	Ba PPM	Be PPM	Bi PPM	Ca %	Cd PPM	Co PPM	Cr PPM	Cu PPM	Fe %	K %	La PPM	Mg %	Mn PPM	Mo PPM	Na %	Ni PPM	P PPM	Pb PPM	Sb PPM	Sr PPM	Ti %	V PPM	W PPM	Zn PPM
Head Ore	2.3	4.39	15	58	1486	2.7	<5	0.30	2	29	445	73	6.52	0.94	30	0.31	467	52	0.14	246	1244	91	<3	102	0.32	198	5	326
Tailings	0.6	1.17	8	71	301	1.8	<5	0.08	3	23	126	16	6.75	0.35	21	0.13	320	13	0.10	70	721	17	<3	45	0.15	98	<5	247
Bromide Prec.		insufficient sample																										

CanTech Laboratories, Inc.

Signed: [redacted]
Richard Magner, B.Sc.
Laboratory Manager

Attachment 4.3.3

4.4 Accurassay Laboratories

A specific program was designed with the assistance of an independent adviser, Mr Dan Larkin, wherein a bulk sample of ore (50 kg) was ground and riffled by Cantech. Cantech was then instructed to send portions of this prepared sample to further independent labs for analyses. Two 1 kg samples were sent to Accurassay who performed a cyanide leach on each of the two samples. The combined results from the assay of the cyanide leach and the residual material was .005oz./ton and .006 oz./ton for the two samples. See the Certificate of Analysis provided by Accurassay included as Attachment 4.4.1 in this section.

Attachment 4.4.1

ACCURASSAY LABORATORIES
A DIVISION OF ASSAY LABORATORY SERVICES INC.

Box 426, 3 Industrial Drive, KIRKLAND LAKE, Ontario, P2N 3J1
Tel: (705) 567 3361 Fax: (705)568 8368 email: accurassay@onlink.net
also at: 1070 Lithium Drive, Unit 2, THUNDER BAY, Ontario, P7B 6G3
Tel: (807) 623 6448 Fax: (807) 623 6820 email: accuracy@foxnet.net

PRESIDENT: Dr. GEORGE DUNCAN, M.Sc., Ph.D., M.C.I.C., M.R.S.C., C. Chem., C.E.P.

CERTIFICATE OF ANALYSIS

W/O Number 97043A

Date: April 29, 1997

ATT: Mr. George Walsh

713803 Alberta Ltd.,
#750, 700 Fourth Ave., SW
Calgary, AB
T2P 3J4

Lab Sample #	Client Sample #	Wt. Sample Analysed (g)	mg Gold Leached	**Leach Assay ppm**	Residue Sample Wt. (g)	**Resid. Assay ppm**	Total Gold Assay		% extraction by cyanide
							ppm	oz/T	
23024	5-15A	1051	0.175	0.167	15.7	0.009	0.176	0.005	94.89
23025	5-15B	1017	0.200	0.197	20.2	0.005	0.202	0.006	97.52

Leach Assay is the amount of gold in the sample leached by cyanide extraction.

Residue Assay is the amount of gold not extracted by cyanide leach.

Total Gold Assay is the sum of Leach Assay + Residue Assay.

Signed:

4.5 Activation Laboratories Ltd.

As described in section 4.4, Activation Laboratories Ltd. received 2 kg of the prepared sample from Cantech and performed neutron activation analysis on the entire sample. No gold or silver values were found in the samples. A copy of the full analysis report is included as Attachment 4.5.1 in this sub-section.

Attachment 4.5.1

ACTLABS

ACTIVATION LABORATORIES LTD

Invoice No.: 13011
Work Order: 13050
Invoice Date: 23-MAY-97
Date Submitted: 23-APR-97
Your Reference: NONE
Account Number: 700
GST # R121979355

7[illegible]3803 ALBERTA LTD.
1[illegible]4 EDGEHILL CLOSE N.W.
CALGARY, ALBERTA
T3A 2X1
ATTENTION: GEORGE WALSH/BOB LIDDLE

No. samples	Description	Unit Price	Total
67	1D	$ 11.75	$ 787.25
		Subtotal :	$ 787.25
		GST (7.0%) :	$ 55.11
		AMOUNT DUE :	$ 842.36

Net 30 days 1 1/2 % per month charged on overdue accounts.

ACTLABS

ACTIVATION LABORATORIES LTD

Invoice No.: 13011
Work Order: 13050
Invoice Date: 23-MAY-97
Date Submitted: 23-APR-97
Your Reference: NONE
Account Number: 700

7[illegible]3803 ALBERTA LTD.
124 EDGEHILL CLOSE N.W.
CALGARY, ALBERTA
T[illegible]A 2X1
ATTENTION: GEORGE WALSH/BOB LIDDLE

CERTIFICATE OF ANALYSIS

[illegible] PULPS were submitted for analysis.

The following analytical packages were requested. Please see our current fee schedule for elements and detection limits.

REPORT 13011 PKG 1D-INAA

This report may only be reproduced in its entirety without the express consent of ACTIVATION LABS. If no instructions were received or will be received within 90 days from the date of this report, excess material will be discarded. Our liability is limited solely to the analytical cost of these analyses.

CERTIFIED BY :

[redacted]

DR. E. L. HOFFMAN

Sample description	AU PPB	AG PPM	AS PPM	BA PPM	BR PPM	CA %	CO PPM	CR PPM	CS PPM	FE %	HF PPM	HG PPM	IR PPB	MO PPM	NA %	NI PPM	RB PPM	SB PPM	SC PPM	SE PPM	SN %	SR %	TA PPM	TH PPM
1	<5	<5	13	390	3	<1	13	84	2	4.42	15	<1	<5	<5	0.07	<50	32	1.0	7.9	<5	<0.01	<0.05	<1	8.3
2	<5	<5	14	540	2	<1	13	99	<2	4.68	16	<1	<5	<5	0.07	<50	30	1.1	8.2	<5	<0.01	<0.05	<1	9.0
3	9	<5	14	530	2	<1	13	83	3	4.32	15	<1	<5	<5	0.06	<50	42	1.1	7.6	<5	<0.01	<0.05	<1	8.2
4	<5	<5	14	410	3	<1	12	89	2	4.21	15	<1	<5	<5	0.07	<50	33	1.0	7.3	<5	<0.01	<0.05	<1	7.7
5	<5	<5	15	530	2	<1	11	86	3	4.37	15	<1	<5	<5	0.07	<50	30	1.2	7.6	<5	<0.01	<0.05	<1	8.6
6	<5	<5	15	500	2	<1	12	95	2	4.73	17	<1	<5	<5	0.07	<50	36	1.1	8.5	<5	<0.01	<0.05	<1	9.2
7	<5	<5	14	520	2	<1	12	86	<2	4.26	15	<1	<5	<5	0.07	<50	41	1.2	7.6	<5	<0.01	<0.05	1	7.5
8	10	<5	14	390	2	<1	12	82	<2	4.20	15	<1	<5	<5	0.06	<50	47	1.1	7.4	<5	<0.01	<0.05	<1	7.8
9	<5	<5	14	530	3	<1	12	90	3	4.45	15	<1	<5	<5	0.07	<50	38	1.0	7.9	<5	<0.01	<0.05	1	8.2
10	<5	<5	14	420	2	<1	12	89	2	4.72	16	<1	<5	<5	0.07	<50	43	1.2	8.1	<5	<0.01	<0.05	<1	8.8
11	<5	<5	12	470	3	<1	12	83	2	4.45	15	<1	<5	<5	0.07	<50	32	1.2	7.9	<5	<0.01	<0.05	<1	7.9
12	<5	<5	15	520	3	<1	13	98	3	4.89	17	<1	<5	<5	0.07	<50	49	1.3	8.4	<5	<0.01	<0.05	<1	9.3
13	<5	<5	14	470	3	<1	13	89	2	4.46	17	<1	<5	<5	0.07	<50	43	1.2	8.0	<5	<0.01	<0.05	<1	8.9
14	<5	<5	13	460	2	<1	13	91	2	4.56	16	<1	<5	<5	0.07	<50	33	1.2	8.1	<5	<0.01	<0.05	<1	8.6
15	<5	<5	14	470	3	<1	12	89	2	4.32	15	<1	<5	<5	0.07	<50	37	1.2	7.9	<5	<0.01	<0.05	1	8.1
16	<5	<5	14	560	3	<1	13	89	3	4.50	15	<1	<5	<5	0.07	<50	41	1.2	8.3	<5	<0.01	<0.05	<1	8.6
17	9	<5	14	470	3	<1	13	96	<2	4.85	16	<1	<5	<5	0.07	78	45	1.1	8.5	<5	<0.01	<0.05	<1	9.1
18	6	<5	15	520	2	<1	12	91	3	4.55	15	<1	<5	<5	0.07	<50	36	1.1	8.0	<5	<0.01	<0.05	<1	9.0
19	<5	<5	13	470	3	<1	11	90	2	4.32	15	<1	<5	<5	0.07	<50	44	1.1	7.8	<5	<0.01	<0.05	<1	8.4
20	<5	<5	13	490	2	<1	13	88	2	4.38	15	<1	<5	<5	0.07	<50	44	1.1	7.8	<5	<0.01	<0.05	<1	8.3
21	<5	<5	14	520	2	<1	14	91	3	4.76	16	<1	<5	<5	0.07	<50	39	1.3	8.5	<5	<0.01	<0.05	<1	8.7
22	<5	<5	13	490	3	<1	14	91	2	4.67	15	<1	<5	<5	0.07	<50	30	1.1	8.1	<5	<0.01	<0.05	<1	8.6
23	<5	<5	13	480	2	<1	13	89	2	4.42	15	<1	<5	<5	0.07	<50	32	1.2	7.8	<5	<0.01	<0.05	<1	7.7
24	<5	<5	13	390	2	<1	13	87	2	4.39	15	<1	<5	<5	0.07	<50	37	1.1	7.7	<5	<0.01	<0.05	<1	8.3
25	<5	<5	13	500	2	<1	12	82	2	4.10	14	<1	<5	<5	0.07	<50	46	1.2	7.4	<5	<0.01	<0.05	<1	7.7
26	<5	<5	13	490	2	<1	12	86	2	4.24	15	<1	<5	<5	0.06	<50	38	1.1	7.4	<5	<0.01	<0.05	<1	7.6
27	<5	<5	14	510	3	<1	12	86	3	4.34	15	<1	<5	<5	0.06	<50	38	1.0	7.9	<5	<0.01	<0.05	<1	8.4
28	<5	<5	14	500	3	<1	12	90	2	4.51	15	<1	<5	<5	0.07	<50	44	1.1	7.9	<5	<0.01	<0.05	1	8.8
29	<5	<5	13	470	2	<1	12	80	2	4.11	14	<1	<5	<5	0.06	<50	30	1.0	7.3	<5	<0.01	<0.05	1	7.8
30	<5	<5	13	440	3	<1	12	85	2	4.19	14	<1	<5	<5	0.06	<50	33	1.1	7.3	<5	<0.01	<0.05	<1	8.1
31	<5	<5	13	480	2	<1	13	91	2	4.47	15	<1	<5	<5	0.07	<50	40	1.2	7.8	<5	<0.01	<0.05	<1	8.6
32	<5	<5	13	380	2	<1	12	82	2	4.27	15	<1	<5	<5	0.07	<50	48	1.1	7.6	<5	<0.01	<0.05	<1	8.7
33	<5	<5	14	580	2	<1	12	80	<2	4.30	14	<1	<5	<5	0.07	<50	32	1.1	7.5	<5	<0.01	<0.05	<1	7.5
34	<5	<5	15	440	2	<1	13	88	3	4.52	15	<1	<5	<5	0.07	<50	42	1.2	7.9	<5	<0.01	<0.05	<1	8.4
35	<5	<5	13	390	2	<1	12	83	3	4.35	15	<1	<5	<5	0.07	<50	30	1.1	7.7	<5	<0.01	<0.05	<1	7.6
36	<5	<5	13	470	2	<1	12	90	2	4.46	15	<1	<5	<5	0.06	<50	47	1.1	7.8	<5	<0.01	<0.05	<1	8.2
37	<5	<5	13	430	2	<1	12	83	2	4.14	14	<1	<5	<5	0.06	<50	35	1.0	7.4	<5	<0.01	<0.05	<1	7.7
38	<5	<5	13	400	2	<1	12	89	2	4.29	15	<1	<5	<5	0.06	<50	33	1.1	7.6	<5	<0.01	<0.05	<1	7.7
39	<5	<5	13	370	2	<1	13	88	2	4.40	15	<1	<5	<5	0.07	<50	40	1.1	7.8	<5	<0.01	<0.05	<1	8.1
40	<5	<5	13	420	2	<1	11	85	<2	4.52	14	<1	<5	<5	0.06	<50	30	1.1	7.2	<5	<0.01	<0.05	<1	7.3
41	<5	<5	13	450	2	<1	11	83	<2	4.38	13	<1	<5	<5	0.06	<50	30	1.0	7.2	<5	<0.01	<0.05	<1	7.4
42	<5	<5	13	390	2	<1	12	85	3	4.25	15	<1	<5	<5	0.06	<50	35	1.1	7.6	<5	<0.01	<0.05	<1	8.0
43	<5	<5	13	420	3	<1	12	94	3	4.39	15	<1	<5	<5	0.07	<50	36	1.1	7.8	<5	<0.01	<0.05	<1	8.8
44	<5	<5	13	430	2	<1	12	80	2	4.29	15	<1	<5	<5	0.06	<50	30	1.1	7.5	<5	<0.01	<0.05	<1	7.8
45	<5	<5	14	420	2	<1	12	85	3	4.36	15	<1	<5	<5	0.07	<50	30	1.2	7.8	<5	<0.01	<0.05	<1	8.0

Sample description	AU PPB	AG PPM	AS PPM	BA PPM	BR PPM	CA %	CO PPM	CR PPM	CS PPM	FE %	HF PPM	HG PPM	IR PPB	MO PPM	NA %	NI PPM	RB PPM	SB PPM	SC PPM	SE PPM	SN %	SR %	TA PPM	TH PPM
46	<5	<5	13	450	2	<1	12	90	2	4.34	16	<1	<5	<5	0.07	<50	30	1.1	7.8	<5	<0.01	<0.05	<1	8.5
47	<5	<5	15	500	3	<1	12	91	2	4.37	16	<1	<5	<5	0.06	<50	32	1.1	7.7	<5	<0.01	<0.05	<1	8.7
48	<5	<5	13	450	3	<1	12	80	2	4.16	15	<1	<5	<5	0.06	<50	35	1.0	7.5	<5	<0.01	<0.05	<1	7.9
49	<5	<5	13	430	3	<1	11	82	2	4.27	15	<1	<5	<5	0.07	<50	36	1.0	7.5	<5	<0.01	<0.05	<1	7.7
50	<5	<5	15	480	2	<1	13	82	2	4.41	15	<1	<5	<5	0.07	<50	37	1.1	7.7	<5	<0.01	<0.05	1	8.5
51	<5	<5	13	430	2	<1	12	80	2	4.24	14	<1	<5	<5	0.06	<50	44	1.0	7.1	<5	<0.01	<0.05	<1	7.5
52	<5	<5	14	430	2	<1	11	83	<2	4.21	14	<1	<5	<5	0.06	<50	30	1.0	7.5	<5	<0.01	<0.05	<1	8.0
53	<5	<5	13	370	2	<1	11	85	2	4.36	15	<1	<5	<5	0.06	<50	31	1.0	7.6	<5	<0.01	<0.05	<1	8.0
54	<5	<5	14	450	2	<1	12	81	<2	4.35	15	<1	<5	<5	0.07	<50	40	1.2	7.8	<5	<0.01	<0.05	<1	7.9
55	<5	<5	13	440	2	<1	12	85	<2	4.18	15	<1	<5	<5	0.06	<50	45	1.1	7.4	<5	<0.01	<0.05	<1	7.9
56	<5	<5	13	450	2	<1	12	85	2	4.20	15	<1	<5	<5	0.06	<50	37	1.1	7.6	<5	<0.01	<0.05	<1	8.1
57	<5	<5	13	490	2	<1	13	85	2	4.27	15	<1	<5	<5	0.06	<50	44	1.1	7.5	<5	<0.01	<0.05	<1	8.5
58	<5	<5	13	380	2	<1	12	85	3	4.16	15	<1	<5	<5	0.06	<50	37	1.0	7.3	<5	<0.01	<0.05	<1	8.0
59	<5	<5	13	460	3	<1	11	82	3	4.03	14	<1	<5	<5	0.06	<50	32	1.1	7.3	<5	<0.01	<0.05	<1	7.8
60	<5	<5	13	490	2	<1	12	84	<2	4.27	15	<1	<5	<5	0.06	<50	30	1.2	7.5	<5	<0.01	<0.05	<1	8.0
61	<5	<5	13	420	2	<1	12	86	<2	4.24	15	<1	<5	<5	0.07	<50	43	1.1	7.5	<5	<0.01	<0.05	<1	8.2
62	<5	<5	13	480	2	<1	12	82	<2	4.16	14	<1	<5	<5	0.06	<50	36	0.9	7.1	<5	<0.01	<0.05	<1	7.9
63	<5	<5	12	440	2	<1	12	81	<2	4.05	14	<1	<5	<5	0.06	<50	37	0.9	7.2	<5	<0.01	<0.05	<1	7.7
64	<5	<5	13	440	3	<1	12	89	2	4.41	15	<1	<5	<5	0.07	<50	45	1.1	7.6	<5	<0.01	<0.05	<1	8.4
65	9	<5	13	390	3	<1	12	88	2	4.34	15	<1	<5	<5	0.06	<50	30	1.2	7.6	<5	<0.01	<0.05	<1	7.9
66	8	<5	13	460	2	<1	12	79	<2	4.16	14	<1	<5	<5	0.06	<50	37	1.1	7.3	<5	<0.01	<0.05	<1	7.7
67	<5	<5	13	480	3	<1	15	90	2	4.74	17	<1	<5	5	0.07	<50	45	1.3	8.5	<5	<0.01	<0.05	<1	8.5

Sample description	U PPM	W PPM	ZN PPM	LA PPM	CE PPM	ND PPM	SM PPM	EU PPM	TB PPM	YB PPM	LU PPM	Mass g
1	2.0	<4	125	33	46	26	4.3	1.2	0.6	2.7	0.47	29.10
2	2.3	<4	157	35	47	25	4.6	1.3	0.9	3.1	0.50	26.71
3	3.0	<4	127	32	47	31	4.2	1.1	0.8	2.6	0.49	30.39
4	2.3	<4	116	32	43	28	4.1	1.1	0.6	2.6	0.47	28.67
5	2.3	<4	131	32	47	25	4.3	1.2	0.7	2.8	0.48	29.40
6	2.5	<4	109	36	54	27	4.7	1.2	1.0	3.0	0.54	25.03
7	1.9	<4	129	33	46	28	4.4	1.2	<0.5	2.6	0.51	27.12
8	1.8	<4	99	31	44	28	4.1	1.0	0.6	2.6	0.54	25.20
9	1.9	<4	114	34	46	28	4.4	1.1	<0.5	2.5	0.53	31.23
10	1.9	<4	150	35	45	32	4.6	1.2	0.7	3.0	0.50	28.43
11	2.2	<4	84	34	46	24	4.4	1.1	1.0	2.5	0.50	29.75
12	2.4	<4	123	36	52	34	4.8	1.3	1.1	2.9	0.57	27.13
13	2.1	<4	135	34	43	29	4.4	1.1	<0.5	2.7	0.50	32.77
14	2.2	<4	161	34	47	34	4.5	1.1	1.0	2.3	0.48	32.22
15	2.4	<4	124	33	47	33	4.3	1.1	0.5	2.5	0.49	30.17
16	2.1	<4	162	35	48	30	4.6	1.2	<0.5	2.8	0.55	29.08
17	2.3	<4	168	35	52	25	4.6	1.1	<0.5	3.1	0.49	30.72
18	2.0	<4	117	34	47	25	4.5	1.2	0.9	2.7	0.55	27.74
19	1.9	<4	142	33	45	34	4.2	1.1	<0.5	2.8	0.49	31.72
20	2.7	<4	158	33	44	26	4.3	1.2	<0.5	2.6	0.48	31.44
21	2.5	<4	138	35	50	26	4.6	1.2	<0.5	3.0	0.51	29.16
22	2.6	<4	159	33	45	32	4.4	1.3	1.0	2.6	0.50	30.65
23	2.6	<4	128	33	43	27	4.2	1.1	<0.5	2.8	0.50	30.96
24	2.1	<4	146	33	46	32	4.2	1.1	0.9	2.7	0.50	32.95
25	2.5	<4	160	32	41	29	4.0	1.1	0.8	2.5	0.47	34.03
26	1.7	<4	99	31	44	22	4.2	1.1	0.9	2.6	0.47	29.69
27	2.4	<4	127	34	46	28	4.4	1.2	0.9	2.8	0.53	29.23
28	1.4	<4	141	34	46	30	4.4	1.1	0.8	2.8	0.53	30.10
29	2.2	<4	140	32	41	28	4.1	1.0	0.7	2.5	0.43	31.89
30	2.5	<4	138	31	46	29	4.1	1.1	<0.5	2.5	0.52	30.25
31	2.1	<4	157	34	44	29	4.3	1.1	0.9	2.8	0.50	32.74
32	1.8	<4	155	32	44	32	4.2	1.1	<0.5	2.8	0.49	33.23
33	1.7	<4	132	33	43	31	4.2	1.1	0.8	2.5	0.47	30.15
34	2.0	<4	149	34	47	39	4.5	1.2	0.8	2.8	0.50	28.62
35	1.8	<4	137	32	44	24	4.2	1.1	0.8	2.8	0.48	30.44
36	2.3	<4	136	34	45	25	4.3	1.1	0.8	2.6	0.47	29.66
37	1.8	<4	132	32	43	23	4.1	1.1	<0.5	2.4	0.47	28.84
38	1.7	<4	153	33	45	29	4.3	1.1	0.8	2.6	0.48	31.35
39	2.3	<4	156	33	45	24	4.3	1.1	<0.5	2.8	0.51	29.63
40	1.8	<4	132	30	40	28	3.9	1.0	<0.5	2.3	0.47	34.45
41	2.2	<4	125	31	39	29	3.9	1.0	0.6	2.3	0.45	34.64
42	2.2	<4	137	32	44	28	4.1	1.1	0.8	2.6	0.46	33.53
43	2.3	<4	125	33	47	33	4.4	1.1	0.8	2.7	0.48	30.06
44	2.2	<4	150	32	45	26	4.1	1.1	0.8	2.6	0.49	32.61
45	2.4	<4	128	33	46	33	4.3	1.2	0.6	2.8	0.52	28.56

Sample description	U PPM	W PPM	ZN PPM	LA PPM	CE PPM	ND PPM	SM PPM	EU PPM	TB PPM	YB PPM	LU PPM	Mass g
46	1.9	<4	127	33	47	30	4.5	1.2	0.9	2.8	0.50	28.45
47	2.5	<4	161	33	44	29	4.3	1.1	0.6	2.7	0.50	29.30
48	1.7	<4	139	32	45	31	4.1	1.0	0.7	2.5	0.44	28.73
49	2.0	<4	146	32	45	34	4.2	1.1	0.8	2.6	0.45	29.42
50	2.7	<4	146	33	47	28	4.3	1.1	<0.5	2.7	0.48	28.07
51	1.9	<4	127	30	41	22	3.9	1.1	0.7	2.5	0.45	31.35
52	2.0	<4	108	31	46	27	4.2	1.2	<0.5	2.5	0.47	28.70
53	2.1	<4	123	32	46	28	4.2	1.1	0.6	2.7	0.46	29.11
54	1.9	<4	125	33	45	26	4.3	1.0	0.9	2.7	0.51	30.74
55	1.9	<4	114	32	44	24	4.2	1.1	0.8	2.8	0.52	30.06
56	1.9	<4	133	33	43	31	4.3	1.1	0.7	2.5	0.44	28.73
57	2.2	<4	143	32	44	28	4.2	1.0	0.7	2.7	0.48	30.62
58	2.0	<4	115	31	42	31	4.1	1.1	0.8	2.4	0.43	29.76
59	2.0	<4	119	31	45	30	4.1	1.0	0.8	2.7	0.49	29.01
60	2.1	<4	135	31	44	29	4.2	1.0	0.7	2.5	0.45	31.49
61	2.0	<4	131	32	44	28	4.2	1.1	0.8	2.8	0.47	30.44
62	2.0	<4	99	31	41	29	4.0	1.0	0.6	2.4	0.44	29.54
63	2.1	<4	118	31	42	27	4.1	1.1	1.0	2.3	0.45	29.09
64	1.8	<4	126	33	45	34	4.3	1.1	0.8	2.5	0.49	27.80
65	2.2	<4	131	33	45	33	4.3	1.2	0.7	2.8	0.50	27.42
66	1.9	<4	108	31	45	28	4.1	1.1	0.8	2.4	0.47	29.50
67	2.1	<4	159	33	50	28	4.7	1.3	0.8	2.8	0.50	28.32

4.6 James Metallurgical

James Metallurgical, located in Abbotsford, B.C. performed a leaching test on 5-15 sample material. The results obtained were a trace of gold, 0.43 oz./ton of silver, 0.16 oz./ton of platinum and a trace of palladium. A copy of the report received from James Metallurgical is included as Attachment 4.6.1 in this section.

Fr. 6-26

Name: Al Lewis

Submittal ID: 182

Date of Assay: 8/20/97

Results are shown in: OPT = Ounces Per ton

	Sample ID	Date	Gold (Au)	Silver (Ag)	Platinum (Pt)	Palladium (Pd)	Rhodium (Rh)
Acid Leach:							
Chemical Leach	963561		tr	0.4	tr	tr	
	963561		tr	0.03	0.16	tr	
			tr	0.43	0 [illegible]	[illegible]	
Fire Assay:							
Average:							
Additional Comments:							

7-30528 Great Northern Way, Abbotsford, BC, V2T 6H4, Canada, Plant: 604-556-0551 Evening: 604-856-8401 Fax: 604-850-0586

4.7 International Metallurgical and Environmental Inc

International Metallurgical and Environmental Inc analyzed three samples titled 5-15, site 2 composite and 6-26. The 6-26 sample was from a permit that is not part of this report and is therefore not applicable The analytical technique used was initial gravity separation using a Knelson concentrator followed by flotation of the concentrator tailings. The results obtained were .02 oz./ton of gold for the site 2 composite and .003 oz. ton for the 5-15 sample. No analysis was performed for silver or platinum values.

A copy of the letter report received is included as Attachment 4.7.1

Attachment 4.7.1

INTERNATIONAL METALLURGICAL AND ENVIRONMENTAL INC
13 - 2550 Acland Road, Kelowna, B.C., Canada, V1X 7L4, Telephone: (250) 491-1722, Facsimile: (250) 491-1723

August 23, 1997

Mr George Walsh
6 Varsity Estate Close N.W.
Calgary Alberta
T3V 6J2

Dear George,

International Metallurgical and Environmental Inc. has completed gravity and flotation test work using 3 samples which you delivered to our facilities. The test results are attached and indicate that all samples are very low grade in terms of contained gold. The following table summarizes the calculated feed grade of each sample based on the gravity and flotation test results.

Summary of Sample Gold Grades

Sample	Gold Grade g/t	oz/ton
Site 2 Composite	0.62	0.02
5 - 15	0.09	0.003
R6 - 26/4	0.09	0.003

All three samples were ground in a stainless rod mill and the then processed using a Knelson Concentrator for the recovery of free gold into a gravity concentrate. The tailings from the Knelson Concentrator were then used in a flotation stage to recover additional gold into a flotation concentrate.

All products from these separations were assayed and thus allowed for the completion of a metallurgical balance for each sample. Results are attached as distributive and cumulative metallurgical balances, as well as the reagent schedule used in the flotation test work. Samples were assayed for gold only and silver was ignored in this preliminary test work.

Site 2 Composite sample contained a large component of silica and appeared to contain chert and Jasperite. The sample was very hard to grind and was significantly harder than the other two samples. The silicate minerals were apparently absence from samples 5 - 15 and R6 - 26/4.

The samples 5 - 15 and R6 - 26/4 were severely weathered and represent surface samples that have been subject to intense oxidation. The clay content of the samples was very high and the filtration of the samples was difficult. The gravity concentrate produced from the Site 2 Composite contained a silver mineral that could possibly be identified as arsenopyrite and is commonly associated with gold bearing ores. There was no indication of other sulphide minerals contained in the ores. The silver mineral was absence from the other two samples. The possibility of sample contamination contributing to the gold grades in the Site 2 Composite was considered, and the silver sulphide mineral was identified in a separate gravity test of the Site 2 Composite. This second test was not assayed and contamination of the material has been ruled out for the Site 2 Composite.

A majority of the recovered gold reported as a gravity recoverable gold, although at the grades of contained gold in the samples, recovery data is less important than overall gold content.

INTERNATIONAL METALLURGICAL AND ENVIRONMENTAL INC.
13 - 2550 Acland Road, Kelowna, B.C. Canada, V1X 7L4. Telephone: (250) 491-1722. Facsimile: (250) 491-1723

In conclusion, the sample Site 2 Composite is significantly different in terms of silica content and gold content. The use of silica placement could possibly be used to track gold values, although additional work would be required to confirm this association.

Given the low grades of the samples, additional work in terms of cyanide leaching was not completed. The reconciliation of the assayed heads and calculated head grades was very good and there is no apparent problem in assaying and reporting the contained gold values. The fact that a majority of the gold is gravity recoverable, albeit very small amounts, could indicate a sampling problem in materials that contain much higher gold values.

I would recommend that higher grade material be identified and subject to similar testing at a future date to better evaluate the occurrence of gold.

Yours very truly,

[redacted]

Jeffrey R. Austin, P.Eng. - President
International Metallurgical and Environmental Inc.

International Metallurgical and Environmental Inc.
Flotation Test Summary

Project: George Walsh
Test No. Flot 100
Test Sample: Sits #2 comp
Test Objectives: Production of a bulk sulphide conc
Primary grind: 15 min; 22.5 % passing 200 mesh

Metallurgical Balance

Sample	Wt. %	Au g/t	Ag g/t	Au %	Ag %
Gravity Conc	0.27	128		54.4	
Conc	0.3	71		32.8	
2nd Cl Tail	0.7	2.1		2.3	
1st Cl Tail	2.5	0.36		1.5	
Final Tail	93.4	0.06		9.0	
Calculated Head	97	0.62			
Assayed Head		0.25			

Flotation test 100

Cumulative Metallurgical Balance

Sample	Wt. %	Au g/t	Ag g/t	Au %	Ag %
Gravity Conc	0.27	126		54.4	
Au Conc	0.3	71		32.8	
1st Cl Conc	1.0	23		35.1	
Ro Conc	3.5	7		36.6	
Final Tail	93.4	0.06		9.0	
Calculated Head	97	0.62			
Assayed Head		0.25			

International Metallurgical and Environmental Inc.
Flotation Test Reagent Schedule

Project: George Walsh
Flotation Test: 100
Sample: Site #2 comp
Test Objectives: Production of a bulk sulphide con
Primary Grind: 15 min; 22.5 % passing 200 mesh

		Reagent			Process	
Stage	pH	PAX g/t	3418A g/t	MIBC g/t	Cond min	Froth min
Grind					15	
Gravity Recovery						
Rougher/Scav						
Rougher	6.0	60	15	14	1	2
Scav		60	15	14	1	8
Cleaners						
1st Cleaner	6.8			7		5
2nd Cleaner	6.9			7		4

-All cleaners were completed in a 1.1l cell

International Metallurgical and Environmental Inc.
Flotation Test Summary

Project: George Walsh
Test No. Flot 101
Test Sample: 5-15
Test Objectives: Production of a bulk sulphide conc
Primary grind: 15 min; % passing 200 mesh

Metallurgical Balance

Sample	Wt. %	Au g/t	Ag g/t	Au %	Ag %
Gravity Conc	0.22	17		39.6	
Conc	0.5	6		33.7	
2nd Cl Tail	2.5	0.2		3.9	
1st Cl Tail	6.4	0.05		3.4	
Final Tail	90.5	0.02		19.3	
Calculated Head	100	0.09			
Assayed Head		0.07			

Flotation test 101

Cumulative Metallurgical Balance

Sample	Wt. %				
		Au g/t	Ag g/t	Au %	Ag %
Gravity Conc	0.22	17		39.6	
Au Conc	0.5	6		33.7	
1st Cl Conc	3.0	1		37.6	
Ro Conc	9.3	0		41.0	
Final Tail	90.5	0.02		19.3	
Calculated Head	100	0.09			
Assayed Head		0.07			

International Metallurgical and Environmental Inc.
Flotation Test Reagent Schedule

Project: George Walsh
Flotation Test: 101
Sample: 5-15
Test Objectives: Production of a bulk sulphide con
Primary Grind: 15 min; % passing 200 mesh

		Reagent			Process	
Stage	pH	PAX g/t	3418A g/t	MIBC g/t	Cond min	Froth min
Grind					15	
Gravity Recovery						
Rougher/Scav						
Rougher	6.4	60	15	14	1	2
Scav		60	15	14	1	8
Cleaners						
1st Cleaner	6.7			7		5
2nd Cleaner	6.8			7		4

•All cleaners were completed in a 1.1l cell

International Metallurgical and Environmental Inc.
Flotation Test Summary

Project: George Walsh
Test No. Flot 102
Test Sample: R6-26/4
Test Objectives: Production of a bulk sulphide conc
Primary grind: 15 min; % passing 200 mesh

Metallurgical Balance

Sample	Wt. %				
		Au g/t	Ag g/t	Au %	Ag %
Gravity Conc	0.22	32		77.4	
Conc	0.4	2		7.4	
2nd Cl Tail	0.7	0.1		.9	
1st Cl Tail	9.7	0.04		4.4	
Final Tail	89.0	0.01		10.0	
Calculated Head	100	0.09			
Assayed Head		0.02			

Flotation test 102

Cumulative Metallurgical Balance

Sample	Wt. %				
		Au g/t	Ag g/t	Au %	Ag %
Gravity Conc	0.22	32		77.4	
Au Conc	0.4	2		7.4	
1st Cl Conc	1.1	1		8.3	
Ro Conc	10.8	0		12.6	
Final Tail	89.0	0.01		10.0	
Calculated Head	100	0.09			
Assayed Head		0.02			

International Metallurgical and Environmental Inc.
Flotation Test Reagent Schedule

Project: George Walsh
Flotation Test: 102
Sample: R6-26/4
Test Objectives: Production of a bulk sulphide con
Primary Grind: 15 min; % passing 200 mesh

		Reagent			Process	
Stage	pH	PAX g/t	3418A g/t	MIBC g/t	Cond min	Froth min
Grind					15	
Gravity Recovery						
Rougher/Scav						
Rougher	6.8	60	15	14	1	2
Scav		60	15	21	1	8
Cleaners						
1st Cleaner	7.0			7		5
2nd Cleaner	7.1			7		4

-1st Cleaner was completed in a 2.5l cell
-2nd cleaners was completed in a 1.1l cell

4.8 Bahamian Refining Corporation

This laboratory located in Phoenix, Arizona conducted bromide leaching analysis using variations of leaching formulas on a conglomerate sample and a sandstone sample. Gold and silver contents of the pregnant leach solution measured by atomic absorption spectrograph. This laboratory was the only external laboratory to obtain high values from samples provided by 713803 Alberta Ltd. Results are summarized below:

Sample	Leaching Formula	Range of Contents -- oz./ton	
		Gold	Silver
Conglomerate	Basic	.08 to 1.81	0 to .14
Conglomerate	Acid	.18 to 2.17	.03 to .34
Sandstone	Basic	.21 to 1.80	.06 to .44
Sandstone	Acid	.26 to 1.84	.01 to .59

Bahamian Refining also suggests that significant values of platinum may also be present.

A copy of Bahamian Refining's letter report is included in this section as Attachment 4.8.1, for the conglomerate tests and Attachment 4.8.2 for the sandstone tests.

Attachment 4.8.1

BRS

BAHAMIAN REFINING SERVICES & MINING EQUIPMENT COMPANY
A Division of Bahamian Refining Corporation
9222 N. 14th AVE., PHOENIX, ARIZONA 85021 • TELEPHONE (602) XXXXXXX
NEW NUMBER 602-944-6577 FAX 944-1893

DATE: DECEMBER 26, 1997

SAMPLE NAME: # 2 -1/2

Name: ALAN LEWIS
RR 1, SITE 13, BOX 18
PONOKA, ALB T4J-1R1

RE: Complete Basic & Acid Workup - BIO-D-Leachent

This report is to provide you with BIO-D-Leachent amenability data on the sample you submitted; and preparation, head analyses, and leach recovery results.

SAMPLE PREPARATION

The entire sample which we received from you was dried by slow evaporation to eliminate errors that could be caused by moisture content. It was then thoroughly mixed and put through a Jones' splitter to obtain an average sample and then ground up for the test. A control sample was also taken, and will be held in storage for 30 days to enable us to do additional testing should you request it.

HEAD ANALYSES

The head analyses reported below were derived from combining the results from actual recovery of both the tailing pulp and the pregnant leach solution. (See attached sheet for the individual results of each formula used.) The total values for the best formula(s) are reported as follows in oz./ton.

FORMULA	GOLD Au	SILVER Ag
Basic # 5	1.72	.13
Acid # 2	2.17	.24

2

LEACH RECOVERY

The samples prepared for the leach tests for each formula were placed in appropriate sized containers, and the test was commenced. The following formulas were determined to be the best for this sample. (See attached sheet for all formulas used.)

BASIC FORMULA # 5		
DI Water	408	ml
Sodium Bromide	25	grams
Sodium Hydroxide	.50	grams
BIO-D-Leachent	.05	grams

ACID FORMULA # 2		
DI Water	100	ml
Sodium Bromide	25	grams
Acid	none	
BIO-D-Leachent	1.5	grams

These tests were done as a soak leach amenability test on the samples and the leach time was 24 hours. No agitation was used and the temperature was ambient, varying from 75 degrees to 80 degrees. The oxidizing strength of the solution was maintained by monitoring with Potassium Iodide Starch Test Paper.

After 24 hours of leach time, the entire slurry for each test was filtered through a Whatman ashless No. 42 filter, and washed with 5 times the volume of the pregnant solution with deionized laboratory water to rinse out the dissolved precious metals from the pulp.

The tails pulp was dried. Then a total recovery by both hydrochemical and ferometallurgical methods was done to determine precious metals not yet dissolved by the leachent.

DI water was added to the entire volume of rinse water containing the pregnant leach solution up to a total of 1000 ml using a volumetric Erlenmeyer flask. The pregnant solution was analyzed by atomic absorption spectrograph and represents the actual values recovered from the sample by this particular testing procedure. (See attached sheet for all results.)

The percentages of recoveries are as follows:

FORMULA #	GOLD (Au)	SILVER (Ag)
Basic # 5	100	100
Acid # 2	100	100

3

COMMENTS

A 24 hour soak leach is a good method to determine the amenability of an ore to release its values using a certain formula, however, in practice this is not an efficient method and is not used. The amounts of precious metals recovered would be greatly increased in a far shorter time span if there were a liquid flow through the ore as is normally done in production.

Other factors that would increase the yield would be agitation, increasing the solution temperature, fine grinding, and adding an oxidizer to the solution. Any production method used would produce far greater results than the 24 hour soak leach method of testing will produce.

RECOMMENDATIONS & CONCLUSIONS

This test was re-done as Kathi told you, and I have attached the recovered gold to this report to prove that the -1/2" must be processed. In addition to the gold value present in this sample, indications show that there is over 5 times that value in platinum metals. The recovery has been sent out for platinum group (all 6) oz. per ton evaluation. Please call for additional information.

I am available by phone between 2:00 and 8:00 p.m. daily to discuss this report and answer any questions you may have.

[redacted]

Fred Finell, Jr., Pres.

FF:kt

4

BAHAMIAN REFINING CORPORATION
9222 N. 14th Ave., Phoenix, AZ 85021 (602) 944-6577

NAME: ALAN LEWIS
ADDRESS: RR 1, SITE 13, BOX 18, PONOKA, ALB T4J-1R1
DATE: DECEMBER 26, 1997 TELEPHONE: 403-783-4567

1 ASSAY TON TEST REPORT/BASIC BIO-D-Leachent FORMULAS
"TAILS, RECOVERY & TOTAL" ALL REPORTED IN OZ/TON

SAMPLE NAME: # 2 -1/2 Conc
BEST BASIC FORMULA: # 5

FORMULA #1
WATER 100 ml NaBr 10 gr NaOh .5 gr "Bio-D" 1.5 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	.01	.61	.10	.61	.11	100	90.9	Starting pH 6 Maintained pH 11

FORMULA #2
WATER 100 ml NaBr 25 gr NaOh .5 gr "Bio-D" 1.5 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	1.81	.14	1.81	.14	100	100	Starting pH 6 Maintained pH 11

FORMULA #3
WATER 100 ml NaBr 25 gr NaOh .5 gr "Bio-D" .05 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
.06	.04	1.55	.08	1.61	.12	96.3	66.7	Starting pH 6 Maintained pH 11

FORMULA #4
WATER 100 ml NaBr 2 gr NaOh .5 gr "Bio-D" .05 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	.08	0	.08	0	100	0	Starting pH 6 Maintained pH 11

FORMULA #5
WATER 408.33 ml NaBr 25 gr NaOh .5 gr "Bio-D" .05 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	1.72	.13	1.72	.13	100	100	Starting pH 6 Maintained pH 11

FORMULA #6
WATER 100 ml NaBr 20 gr NaOh .5 gr "Bio-D" .33 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
TR	.01	1.08	.03	1.08	.04	99.5	75.0	Starting pH 6 Maintained pH 11

FORMULA #7
WATER 100 ml NaBr 2.5 gr NaOh none "Bio-D" .05 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
.06	.04	.04	0	.10	.04	40.0	0	Starting pH 6 Maintained pH 11

FORMULA #8
WATER 100 ml NaBr 5 gr NaOh .5 gr "Bio-D" 5 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	.20	0	.20	0	100	0	Starting pH 6 Maintained pH 11

(gr = gram)

5

BAHAMIAN REFINING CORPORATION

9222 N. 14th Ave., Phoenix, AZ 85021 (602) 944-6577

1 ASSAY TON TEST REPORT/ACID BIO-D-Leachent FORMULAS
"TAILS, RECOVERY & TOTAL" ALL REPORTED IN OZ/TON

SAMPLE NAME: #2 -1/2 - Conc.
TYPE OF ACID USED: none required
BEST ACID FORMULA: # 2

FORMULA #1
WATER 100 ml NaBr 10 gr Acid -0- ml "Bio-D" 1.5 gr

TAILS Au	TAILS Ag	RECOVERY Au	RECOVERY Ag	TOTAL Au	TOTAL Ag	% RECOVERY Au	% RECOVERY Ag	
0	TR	.80	.05	.80	.05	100	99.5	Starting pH 6 Maintained pH 5

FORMULA #2
WATER 100 ml NaBr 25 gr Acid -0- ml "Bio-D" 1.5 gr

TAILS Au	TAILS Ag	RECOVERY Au	RECOVERY Ag	TOTAL Au	TOTAL Ag	% RECOVERY Au	% RECOVERY Ag	
0	0	2.17	.24	2.17	.24	100	100	Starting pH 6 Maintained pH 5

FORMULA #3
WATER 100 ml NaBr 25 gr Acid -0- ml "Bio-D" .05 gr

TAILS Au	TAILS Ag	RECOVERY Au	RECOVERY Ag	TOTAL Au	TOTAL Ag	% RECOVERY Au	% RECOVERY Ag	
.05	.03	2.01	.27	2.06	.30	97.6	90.0	Starting pH 6 Maintained pH 5

FORMULA #4
WATER 100 ml NaBr 2 gr Acid -0- ml "Bio-D" .05 gr

TAILS Au	TAILS Ag	RECOVERY Au	RECOVERY Ag	TOTAL Au	TOTAL Ag	% RECOVERY Au	% RECOVERY Ag	
.06	.03	.12	.01	.18	.04	66.7	25.0	Starting pH 6 Maintained pH 5

FORMULA #5
WATER 408.33 ml NaBr 25 gr Acid -0- ml "Bio-D" .05 gr

TAILS Au	TAILS Ag	RECOVERY Au	RECOVERY Ag	TOTAL Au	TOTAL Ag	% RECOVERY Au	% RECOVERY Ag	
.04	.03	1.58	.31	1.62	.34	97.5	91.2	Starting pH 6 Maintained pH 5

FORMULA #6
WATER 100 ml NaBr 20 gr Acid -0- ml "Bio-D" .33 gr

TAILS Au	TAILS Ag	RECOVERY Au	RECOVERY Ag	TOTAL Au	TOTAL Ag	% RECOVERY Au	% RECOVERY Ag	
0	0	.90	.22	.90	.22	100	100	Starting pH 6 Maintained pH 5

FORMULA #7
WATER 100 ml NaBr 2.5 gr Acid -0- ml "Bio-D" .05 gr

TAILS Au	TAILS Ag	RECOVERY Au	RECOVERY Ag	TOTAL Au	TOTAL Ag	% RECOVERY Au	% RECOVERY Ag	
.04	.03	.16	.01	.20	.04	80.0	25.5	Starting pH 6 Maintained pH 5

FORMULA #8
WATER 100 ml NaBr 5 gr Acid -0- ml "Bio-D" 5 gr

TAILS Au	TAILS Ag	RECOVERY Au	RECOVERY Ag	TOTAL Au	TOTAL Ag	% RECOVERY Au	% RECOVERY Ag	
0	0	.25	.03	.25	.03	100	100	Starting pH 6 Maintained pH 5

(gr = gram)

[redacted]

Fred Finell, Jr., President

Attachment 4.8.2

BAHAMIAN REFINING SERVICES & MINING EQUIPMENT
A Division of Bahamian Refining Corporation
9222 N. 14th AVE., PHOENIX, ARIZONA 85021 • TELEPHONE (602)XXXXXXX
NEW NUMBER 602-944-5577 FAX 944-1893

BRS

DATE: DECEMBER 26, 1997

SAMPLE NAME: # 3

Name: ALAN LEWIS
RR 1, SITE 13, BOX 18
PONOKA, ALB T4J-1R1

RE: Complete Basic & Acid Workup - BIO-D-Leachent

This report is to provide you with BIO-D-Leachent amenability data on the sample you submitted; and preparation, head analyses, and leach recovery results.

SAMPLE PREPARATION

The entire sample which we received from you was dried by slow evaporation to eliminate errors that could be caused by moisture content. It was then thoroughly mixed and put through a Jones' splitter to obtain an average sample and then ground up for the test. A control sample was also taken, and will be held in storage for 30 days to enable us to do additional testing should you request it.

HEAD ANALYSES

The head analyses reported below were derived from combining the results from actual recovery of both the tailing pulp and the pregnant leach solution. (See attached sheet for the individual results of each formula used.) The total values for the best formula(s) are reported as follows in oz./ton.

FORMULA	GOLD Au	SILVER Ag
Basic # 5	1.80	.44
Acid # 2	1.84	.59

B

LEACH RECOVERY

The samples prepared for the leach tests for each formula were placed in appropriate sized containers, and the test was commenced. The following formulas were determined to be the best for this sample. (See attached sheet for all formulas used.)

BASIC FORMULA # 5		
DI Water	408	ml
Sodium Bromide	25	grams
Sodium Hydroxide	.50	grams
BIO-D-Leachent	.05	grams

ACID FORMULA # 2		
DI Water	100	ml
Sodium Bromide	25	grams
Acid	none	
BIO-D-Leachent	1.5	grams

These tests were done as a soak leach amenability test on the samples and the leach time was 24 hours. No agitation was used and the temperature was ambient, varying from 75 degrees to 80 degrees. The oxidizing strength of the solution was maintained by monitoring with Potassium Iodide Starch Test Paper.

After 24 hours of leach time, the entire slurry for each test was filtered through a Whatman ashless No. 42 filter, and washed with 5 times the volume of the pregnant solution with deionized laboratory water to rinse out the dissolved precious metals from the pulp.

The tails pulp was dried. Then a total recovery by both hydrochemical and ferometallurgical methods was done to determine precious metals not yet dissolved by the leachent.

DI water was added to the entire volume of rinse water containing the pregnant leach solution up to a total of 1000 ml using a volumetric Erlenmeyer flask. The pregnant solution was analyzed by atomic absorption spectrograph and represents the actual values recovered from the sample by this particular testing procedure. (See attached sheet for all results.)

The percentages of recoveries are as follows:

FORMULA #	GOLD (Au)	SILVER (Ag)
Basic # 5	100	81.8
Acid # 2	100	57.6

COMMENTS

A 24 hour soak leach is a good method to determine the amenability of an ore to release its values using a certain formula, however, in practice this is not an efficient method and is not used. The amounts of precious metals recovered would be greatly increased in a far shorter time span if there were a liquid flow through the ore as is normally done in production.

Other factors that would increase the yield would be agitation, increasing the solution temperature, fine grinding, and adding an oxidizer to the solution. Any production method used would produce far greater results than the 24 hour soak leach method of testing will produce.

RECOMMENDATIONS & CONCLUSIONS

Study the attached form reporting result of all 16 formulas. You will notice that all of the tails were 0 except for the best formulas. This only occurs when the platinum metals are over 3 times the value of the gold, because the best formula broke the matrix and released more of the values. Nine formulas produced over 1 oz. per ton, and 5 formulas over 1 1/2 oz. per ton. This ore recovered excellent using BIO-D-Leachent.

I am available by phone between 2:00 and 8:00 p.m. daily to discuss this report and answer any questions you may have.

[redacted]

Fred Finell, Jr., Pres.

FF:kt

D

BAHAMIAN REFINING CORPORATION
9222 N. 14th Ave., Phoenix, AZ 85021 (602) 944-6577

NAME: ALAN LEWIS
ADDRESS: RR 1, SITE 13, BOX 18, PONOKA, ALB T4J-1R1
DATE: DECEMBER 26, 1997 TELEPHONE: 403-783-4567

1 ASSAY TON TEST REPORT/BASIC BIO-D-Leachent FORMULAS
"TAILS, RECOVERY & TOTAL" ALL REPORTED IN OZ/TON

SAMPLE NAME: # 3 – HB*
BEST BASIC FORMULA: # 5

FORMULA #1
WATER 100 ml NaBr 10 gr NaOh .5 gr "Bio-D" 1.5 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	.75	.22	.75	.22	100	100	Starting pH 6 Maintained pH 9

FORMULA #2
WATER 100 ml NaBr 25 gr NaOh .5 gr "Bio-D" 1.5 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	1.75	.34	1.75	.34	100	100	Starting pH 6 Maintained pH 9

FORMULA #3
WATER 100 ml NaBr 25 gr NaOh .5 gr "Bio-D" .05 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	1.69	.35	1.69	.35	100	100	Starting pH 6 Maintained pH 9

FORMULA #4
WATER 100 ml NaBr 2 gr NaOh .5 gr "Bio-D" .05 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	.21	.03	.21	.03	100	100	Starting pH 6 Maintained pH 9

FORMULA #5
WATER 408.33 ml NaBr 25 gr NaOh .5 gr "Bio-D" .05 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	.08	1.80	.36	1.80	.44	100	81.8	Starting pH 6 Maintained pH 9

FORMULA #6
WATER 100 ml NaBr 20 gr NaOh .5 gr "Bio-D" .33 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	TR	1.23	.20	1.23	.20	100	99.5	Starting pH 6 Maintained pH 9

FORMULA #7
WATER 100 ml NaBr 2.5 gr NaOh none "Bio-D" .05 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	.29	.06	.29	.06	100	100	Starting pH 6 Maintained pH 9

FORMULA #8
WATER 100 ml NaBr 5 gr NaOh .5 gr "Bio-D" 5 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	.50	.10	.50	.10	100	100	Starting pH 6 Maintained pH 9

(gr = gram)

E

BAHAMIAN REFINING CORPORATION
9222 N. 14th Ave., Phoenix, AZ 85021 (602) 944-6577

1 ASSAY TON TEST REPORT/ACID BIO-D-Leachent FORMULAS
"TAILS, RECOVERY & TOTAL" ALL REPORTED IN OZ/TON

SAMPLE NAME: # 3 HB
TYPE OF ACID USED: none required
BEST ACID FORMULA: # 5

FORMULA #1
WATER 100 ml NaBr 10 gr Acid -0- ml "Bio-D" 1.5 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	1.02	.11	1.02	.11	100	100	Starting pH 6 Maintained pH 5

FORMULA #2
WATER 100 ml NaBr 25 gr Acid -0- ml "Bio-D" 1.5 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	.25	1.84	.34	1.84	.59	100	57.6	Starting pH 6 Maintained pH 5

FORMULA #3
WATER 100 ml NaBr 25 gr Acid -0- ml "Bio-D" .05 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	1.39	.29	1.39	.29	100	100	Starting pH 6 Maintained pH 5

FORMULA #4
WATER 100 ml NaBr 2 gr Acid -0- ml "Bio-D" .05 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	.31	.01	.31	.01	100	100	Starting pH 6 Maintained pH 5

FORMULA #5
WATER 408.33 ml NaBr 25 gr Acid -0- ml "Bio-D" .05 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	1.71	.29	1.71	.29	100	100	Starting pH 6 Maintained pH 5

FORMULA #6
WATER 100 ml NaBr 20 gr Acid -0- ml "Bio-D" .33 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	1.01	.18	1.01	.18	100	100	Starting pH 6 Maintained pH 5

FORMULA #7
WATER 100 ml NaBr 2.5 gr Acid -0- ml "Bio-D" .05 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	.31	.01	.31	.01	100	100	Starting pH 6 Maintained pH 5

FORMULA #8
WATER 100 ml NaBr 5 gr Acid -0- ml "Bio-D" 5 gr

TAILS		RECOVERY		TOTAL		% RECOVERY		
Au	Ag	Au	Ag	Au	Ag	Au	Ag	
0	0	.26	.02	.26	.02	100	100	Starting pH 6 Maintained pH 5

(gr = gram)

[redacted]

Fred Finell, Jr., President

4.9 University of Alberta

Electron Microscope analysis was performed by the University of Alberta on beads recovered from test nos. 277 and 278. Four readings were taken from the polished faces of the beads with results ranging as follows:

Element	Au	Ag	Pb	Pt	Bi	Si
Range in %	1.4-17.5	43.0 – 95.1	3.0 - 51.3	6 – 2.8	6 – 2.0	0 – 0.25

The significant platinum content in one measurement (Attachment 4.9.1) was of particular interest. Copies of the four tests are included as Attachments 4.9.1 to 4.9.4.

Attachment 4.9.1

pectrum file : IAL3
#3 LIVETIME(spec.)= 300

ENERGY	RES	AREA
7.5	72.46	146023

Conglomerate

'TAL AREA= 1198843

..
eak at .38 keV omitted?
eak at 1.58 keV omitted?
Peak at 1.76 keV omitted?
eak at 2.06 keV omitted?
eak at 6.40 keV omitted?
Peak at 7.10 keV omitted?
eak at 19.54 keV omitted?
IT INDEX=40.16

ELMT	APP.CONC	ERROR(WT%)
gL : 1	26.511	.145
bL : 1	9.372	.462
AuL : 1	3.081	.317
tL : 1	16.372	.415

ZAF CALCULATIONS

..[2 iterations]

0.00 kV TILT = .00 ELEV = 35.00 AZIM = .00 COSINE = 1.000

Spectrum: #3 CHEM.&MATERIALS ENG.

1 elmts analysed,NORMALISED

ELMT	ZAF	Ratio	%ELMT		Error	ATOM.%
gL : 1		.811	50.742	+-	.277	65.530
bL : 1		.898	16.200	+-	.799	10.892
AuL : 1		.914	5.227	+-	.538	3.697
tL : 1		.912	27.842	+-	.707	19.881
OTAL			100.011			100.000

Spectrum file : IAL4
#2 (Cut Surface)   LIVETIME(spec.)=   300

ENERGY	RES	AREA
7.4	72.25	158195

TOTAL AREA= 1303169

...
Peak at .40 keV omitted?
Peak at 1.24 keV omitted?
Peak at 1.78 keV omitted?
Peak at 2.14 keV omitted?
Peak at 5.40 keV omitted?
Peak at 19.54 keV omitted?
FIT INDEX= 9.11

ELMT	APP.CONC	ERROR(WT%)
AgL : 1	44.553	.182
PbL : 1	1.656	.466
AuL : 1	9.869	.374
BiL : 1	1.079	.495

ZAF CALCULATIONS

.[2 iterations]

20.00 kV TILT = .00 ELEV = 35.00 AZIM = .00 COSINE = 1.000

Spectrum: #2 (Cut Surface)   CHEM.&MATERIALS ENG.

All elmts analysed,NORMALISED

ELMT	ZAF Ratio	%ELMT		Error		ATOM.%
AgL : 1	.891	77.544	+-	.317		86.450
PbL : 1	.857	2.995	+-	.843		1.739
AuL : 1	.874	17.506	+-	.664		10.688
BiL : 1	.857	1.952	+-	.896	<3 sd	1.123
TOTAL		99.997				100.000

Spectrum file : GC1   Spectrum : Gain Calibration (Cu)
LIVETIME= 100   I/P= 3601 cps

ENERGY	RES	AREA
- 7.5	72.32	44045
8040.9	160.48	127702

TOTAL AREA= 360140 GF= 50.045

Spectrum file : IAL1
#1   LIVETIME(spec.)= 300

ENERGY	RES	AREA
- 7.6	72.16	158310

TOTAL AREA= 1303005
...
Peak at .40 keV omitted?
Peak at 1.26 keV omitted?
FIT INDEX= 5.36

ELMT	APP.CONC	ERROR(WT%)
AgL : 1	55.013	.201
PbL : 1	1.586	.375
AuL : 1	.715	.245
SiK : 1	.114	.018

ZAF CALCULATIONS

.[2 iterations]

20.00 kV TILT = .00 ELEV = 35.00 AZIM = .00 COSINE = 1.000

Spectrum: #1   CHEM.&MATERIALS ENG.

All elmts analysed,NORMALISED

ELMT	ZAF Ratio	%ELMT		Error		ATOM.%
AgL : 1	.975	95.117	+-	.347		96.529
PbL : 1	.833	3.210	+-	.758		1.696
AuL : 1	.850	1.418	+-	.486	<3 sd	.788
SiK : 1	.760	.253	+-	.039		.987
TOTAL		99.998				100.000

Spectrum file : IAL2

#2 LIVETIME(spec.)= 300

ENERGY	RES	AREA
7.4	71.93	152860

TOTAL AREA= 1261500

...

Peak at .38 keV omitted?
Peak at .64 keV omitted?
Peak at 1.80 keV omitted?
Peak at 2.10 keV omitted?
Peak at 5.42 keV omitted?
Peak at 6.40 keV omitted?
FIT INDEX=**.**

ELMT	APP.CONC	ERROR(WT%)
AgL : 1	23.308	.138
PbL : 1	31.819	.607
AuL : 1	3.623	.293

ZAF CALCULATIONS

.[2 iterations]

20.00 kV TILT = .00 ELEV = 35.00 AZIM = .00 COSINE = 1.000

Spectrum: #2 CHEM.&MATERIALS ENG.

All elmts analysed,NORMALISED

ELMT	ZAF Ratio	%ELMT		Error	ATOM.%
AgL : 1	.800	42.954	+-	.253	58.994
PbL : 1	.914	51.309	+-	.979	36.689
AuL : 1	.930	5.740	+-	.464	4.317
TOTAL		100.002			100.000

4.10 Saskatchewan Research Council

The Saskatchewan Research Council (SRC) conducted standard fire assays of samples of sandstone from an ore being tested in mid 1996 by Al Lewis (from a different source than lands covered by this permit). Lewis had been obtaining high gold values from this ore. SRC tests did not duplicate these results finding only trace quantities of gold as shown in their letter report included in this section as Attachment 4.10.1.

In late 1998, 713803 Alberta Ltd. had further discussions with SRC who agreed to perform a more comprehensive series of tests and analyses on samples from the permit lands to see if confirmation could be obtained of the values being obtained by Lewis and Bahamian Refining. SRC did not find any significant gold or platinum values in their further analyses as may be seen in their report, which is included as Attachment 4.10.2 to this report.

Apart from their report, SRC also analysed a number of beads obtained form testing performed by Lewis. In the same manner as has been the experience with similar bead content testing done by Cantech (section 4.2) and Loring (section 4.11) SRC generally found insignificant gold content, but with a few notable exceptions where more significant gold values were confirmed, but still much lower than the Lewis values. Copies of SRC's bead content analysis are included in their report, Attachment 4.10.2.

Attachment 4.10.1

technology is our business

Saskatchewan Research Council
15 Innovation Blvd.
Saskatoon, SK Canada S7N 2X8
Ph: 306-933-5400 Fax: 306-933-7896
Internet: http://www.src.sk.ca

September 24, 1996

Mr. R.T. Liddle
Liddle Engineering Ltd.
124 Edgehill Close N.W.
Calgary, Alberta
T3A 2X1

Dear Bob:

Please find enclosed the fire assay and size fractionation data for the 'gold ore' samples. As expected, the vast majority of the pre-ground sample is less than 63 μm in grain size. The Au contents of the raw ore sample, split into 3 subsamples (Liddle 1, Liddle 2, Liddle 3) <u>and</u> the pre-ground ore sample (Liddle 4) are very low. <u>All</u> samples were re-analysed using the standard SRC procedure. The pre-ground ore sample contains slightly elevated values (12 ppb Au) relative to the raw ore sample (~1 ppb Au) but it is not significantly contaminated. Please note that there is a minor amount of scatter in the Au data but the picture that emerges is one <u>without gold.</u>

The fire assay procedure used at SRC is the traditional crucible fire assay as described, for example, by Bugbee (1915, and others) and by Shepard and Detrich (1940). The flux used by your "amateur" analyst appears to be a suitable one, similar to that used at SRC. A possible source of Au contamination could be the lead and/or litharge used in the flux.

Sincerely,

[redacted]

Dave Quirt
Research Scientist
Mineral Exploration Branch

DQ/sn

Enclosure

Andrea

SASKATCHEWAN RESEARCH COUNCIL GEOCHEMICAL LAB

64 QUIRT SRC AUG. 28/96 (4) [FIRE ASSAY]
1 AU ppb FIRE ASSAY ICP SRC96.80
2 PT ppb FIRE ASSAY ICP
3 PD ppb FIRE ASSAY ICP
4 AU ppb FIRE ASSAY ICP CHECKS
5 PT ppb FIRE ASSAY ICP CHECKS
6 PD ppb FIRE ASSAY ICP CHECKS
7
8
9

	AUppb	PTppb	PDppb	AUppb	PTppb	PDppb
LIDDLE 1	2	1	1	4	2	7
LIDDLE 2	54	1	1	1	1	1
LIDDLE 3	1	1	1	1	1	10
LIDDLE 4				12	1	1

SASKATCHEWAN RESEARCH COUNCIL GEOCHEMICAL LAB

```
R67  QUIRT  SRC  SEPT 24 1996  (1)  [SIEVE ANALYSIS]
 1 +1.7MM   %                      SRC96.89
 2 -1.7MM +250UM  %
 3 -250UM +106UM  %
 4 -106UM +63UM   %
 5 -63UM    %
 6
 7
 8
 9
```

	+1.7	-1.7MM	-250UM	-106UM	-63UM
LIDDLE 4	0.00	0.08	3.44	7.81	88.67

Attachment 4.10.2

CONFIDENTIAL REPORT

Characterization of potentially gold-bearing sandstone and conglomerate for 713803 Alberta Limited

by

David H. Quirt

Mineral Exploration Branch

Saskatchewan Research Council
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Saskatoon, Sask., S7N 2X8
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SRC Publication No. 10400-3C98

December, 1998
augmented April, 1999

TABLE OF CONTENTS

LIST OF TABLES

1. INTRODUCTION

Mr. Bob Liddle and Mr. Al Lewis, representing 713803 Alberta Limited, submitted to the Saskatchewan Research Council (SRC) a suite of five sedimentary rock samples for analysis on September 24, 1998. The goals of this study are to identify the absolute concentration of gold and platinum group elements (PGE) in the submitted samples and to identify their location (mineral, size fraction, density fraction) and any minerals and/or elements associated with them.

The agreed-upon plan of work included:

1. examination of the rock specimens, followed by subsampling for geochemical and mineralogical analyses and by cutting a rock slab for thin sectioning purposes,
2. fractionation of subsamples by size (6 fractions) and density,
3. crushing and agate grinding of the fractionated subsamples,
4. full geochemical analysis: 56 element ICP (Inductively-Coupled Plasma spectrometry) scan, Au, PGE (Pt, Pd, Rh, Ir) , FeO, CO_2, LOI, B, ultratrace Pb, total U by fluorimetry, fire assay (Au, Pt, Pd, Rh)
5. mineralogical examination of bulk sample and fractionated subsamples by X-Ray Diffraction (XRD),
6. preparation of polished thin sections, microscopic petrographic examination,
7. Scanning Electron Microscopy (SEM) and/or Electron Microprobe (EM) analysis,
8. interpretation/evaluation of data with respect to gold and PGE,
9. preparation of a brief report containing an outline of the work done, interpretations of the data obtained, and a section with summary, conclusions, and recommendations.

Two circa 3 kg sample splits, one 'coarse crush' and one 'fine grind', from two samples were obtained from Mr. Al Lewis, in February 1999, for precious metal assay: #1 conglomerate 'fine', #1 conglomerate 'coarse', #2 sandstone 'fine', and #2 sandstone 'coarse'. In addition, he supplied Fire Assay metal beads from samples #1 (three beads), #2 , #3, #4 (two beads), and #5. In early March 1999, he supplied eight Fire Assay cupels with metal beads, all from sample #2 sandstone, for final Au, Pd, Pt analysis at SRC.

2. SAMPLE EXAMINATION AND DESCRIPTION

Five samples were received for examination. Two samples were composed of fine-grained friable sandstone/siltstone (#2 and #5), while three samples were composed of moderately indurated pebble/cobble conglomerate (#1, #3, and #4). The samples were examined visually and with a 16-power hand lens. Sedimentary rock terminology, textures, and grain sizes follow that outlined in Pettijohn et al. (1972) and Scholle (1979). The resulting descriptions of the samples are as follows:

#1 conglomerate

The rock is a weakly indurated, relatively friable, poorly sorted, unbedded pebble/cobble conglomerate consisting of ovoid pebbles and cobbles, up to 3 centimeters in maximum dimension, set in a sandy to granular matrix of sandy quartz and lithic grains. Matrix grain sizes range from less than 0.2 millimeters in size (fine sand) to small pebbles. The clasts are not bedded or layered on the scale of the sample and the pebble orientations are (semi-)random. Bedding was not observed.

Many clasts consist of light to dark grey shale (siltstone/mudstone), with quartzofeldspathic clasts being only rarely observed. The matrix is typically sandy-brown to buff in colour, with local regions being limonitic yellowish-brown. Matrix cementation is minimal. The rock is not fractured and stylolites and partings are not present.

#2 sandstone

This rock is a weakly indurated to moderately friable, limonitic (yellowish-)brown, well sorted, very fine- to fine-grained sandstone which is essentially unbedded. The somewhat elongate detrital grains are less than 0.2 millimeters in size and display orientations which are parallel to sedimentary layering, however, bedding was not observed. Only minor amounts of matrix material is present in the rock and it is limonitic. A minor number of well rounded lithic grains/pebbles, up to 12 millimeters in size, are scattered throughout the sandstone. No fractures were observed and stylolites and partings are not present.

#3 conglomerate

The moderately to well indurated, poorly sorted pebble/cobble conglomerate consists of ovoid pebbles and cobbles, up to 8 centimeters in maximum dimension but generally less than 3 centimeters, set in a sandy to granular matrix of quartz sand and lithic grains. Matrix grain sizes vary from fine- to medium-grained sand, less than 0.5 mm in size, to small pebbles. The clasts are poorly aligned, with the long axes of the pebbles often lying roughly parallel to sedimentary layering. Locally, bedding was observed at an abrupt contact with weakly bedded, medium-grained sandstone lying below(?) the conglomerate horizon.

The conglomerate matrix is dominantly sandy-brown to buff to limonitic yellowish-brown in colour, but is locally hematitic reddish-purple around the contact with the sandstone bed. Many clasts consist of light to dark grey shale (siltstone/mudstone), with quartzofeldspathic clasts being only rarely observed. Matrix cementation is minor. The rock is not fractured or sheared, and does not contain stylolites and partings.

#4 conglomerate

The moderately to well indurated, poorly sorted pebble/cobble conglomerate consists of ovoid pebbles and cobbles, up to 3 centimeters in maximum dimension but generally less than 1 centimeter, set in a sandy to granular matrix of quartz sand and lithic grains. Matrix grain sizes vary from fine- to medium-grained sand, less than 0.5 mm, to small pebbles. The clasts are poorly aligned, with the long axes of the pebbles often lying roughly parallel to sedimentary layering. One rock fragment is composed of poorly indurated, bedded, coarse-grained pebbly sandstone, similar in composition to the conglomerate matrix, with some beds containing ovoid granules and pebbles with long axes oriented parallel to bedding.

The conglomerate matrix is dominantly sandy-brown to buff to limonitic yellowish-brown in colour, but is locally hematitic reddish-purple. Many clasts consist of light to dark grey shale (siltstone/mudstone), with quartzofeldspathic clasts being only rarely observed.

#5 sandstone

The rock is a very friable, very fine- to fine-grained sandstone which is rich in silt- and clay-size material and is limonitic (yellowish-)brown in colour. The detrital grains are well sorted and are generally less than 0.2 mm in size. The rock is laminated and is easily broken parallel to the sedimentary layering (along bedding planes?), resulting in the formation of small, soft, friable, tabular rock chips. No fractures were observed and stylolites and partings are not present.

3. PETROGRAPHIC ANALYSIS AND DESCRIPTION

Portions of all five samples were cut into a series of rock slabs for use in the production of polished thin sections. All slabs were epoxy-impregnated as the rocks were very friable, particularly the two sandstone samples. Three standard-size 27x46 mm polished thin sections were made from each sandstone sample and two over-size 51x75 mm polished thin sections were prepared from each conglomerate sample. Brief petrographic descriptions are presented in Appendix A.

3.1 Lithic Conglomerate Samples

Samples #2, #3, and #4 are composed of very poorly sorted lithic granules, pebbles, and cobbles. They are rounded to well rounded ovoids ranging from 0.2 mm to 2 cm in size (to 4 cm in sample #3). A number of grain lithologies are present, including: quartzite, siliceous siltstone, silty volcanic-derived material, and rarer argillaceous siltstone. Trace quantities of metamorphic quartz grains are present in sample #3. Many of the volcanic-derived grains are cut by thin, quartz-healed, brittle fracture veinlets.

Other detrital grains present include moderate amounts of fine- to coarse-grained monocrystalline quartz and trace amounts of micaceous minerals (biotite, muscovite), and clay minerals (kaolinite). Very restricted quartz overgrowths are locally present.

The only significant matrix mineral is iron oxyhydroxide (limonite: goethite and/or lepidocrocite [FeOOH]) which occurs as grain coatings and as diffuse impregnations into the outer portions of the more argillaceous grains. Hematite is also present in the matrix of sample #4. Where present, the hematite commonly fills the intergranular pore space. However, the limonitic matrix typically only lines the pore space, leaving abundant intergranular voids.

These conglomerates are texturally immature, primarily due to their very poor gain sorting, and have experienced essentially no post-sedimentation deformation.

3.2 Lithic Sandstone Samples

Samples #2 and #5 are fine- to very fine-grained sandstones dominantly composed of well-sorted monocrystalline quartz and lithic grains. Quartz grains are generally from 0.05 to 0.20 mm in size and are angular to subrounded in shape. Locally, some grains display moderate amounts of quartz overgrowths, but only where iron oxide cement is absent. The lithic grains are variable in composition and contain variable amounts of fine-grained clay and silt-sized quartz. They are pervasively stained by brownish limonite/hematite. Trace quantities of K-feldspar, tourmaline, zircon, biotite, and muscovite were also observed.

The matrix of the sandstone samples is composed of iron oxide (limonite ± hematite) and kaolinite. Sample #2 contains more limonite than kaolin, while sample #5 contains more kaolin than limonite.

Texturally, these samples are mature; a result of low clay content, good grain sorting, and angular to subangular to subrounded grain shapes. These rocks have experienced essentially no post-sedimentation deformation.

4. ELECTRON MICROPROBE EXAMINATION

In an attempt to detect native gold particles, the polished thin sections were also examined using a JEOL model 8600 SuperProbe electron microprobe at the Department of Earth Sciences, University of Saskatchewan, in energy-dispersive mode (EDS). Back-scattered electron images were also obtained to illustrate the mineral textural features observed (Appendix B). The results of these examinations are as follows:

#2 sandstone

The very fine- to fine-grained (circa 100-150 µm) framework detrital grains present are dominantly quartz (with rare biotite and barite inclusions), with minor amounts of K-feldspar and lithic grains. The quartz and lithic grains are subrounded to rounded in shape, while the K-feldspar grains are typically angular to sub-angular. A variety of lithic grains are present, including: (a) quartz + chloritic clay, (b) quartz + illitic clay, (c) quartz + kaolinitic clay, (d) microcrystalline quartz (chert), and (e) illitic clay. Accessory detrital grains present in trace to minor amounts include biotite, zircon, almandine garnet, Cr-spinel, magnetite, monazite [Th-poor LREE phosphate], xenotime [Y phosphate], and hematite. Detrital biotite flakes are typically squeezed and are partially altered to illite. The minor amounts of zircon and trace amounts of garnet present are often angular, however, the coarser grains tend to be rounded. The rare grains of Cr-spinel and magnetite are tiny, circa 1µm in size.

The matrix material is dominated by kaolinitic clay and Fe oxide [limonite]. Within the kaolinitic clay are minor amounts of illite and trace amounts of extremely fine-grained goyazite [Ca,Sr phosphate]. The limonitic iron oxide occurs as skeletal-textured material within the clay matrix and, to a lesser extent, as local rims on detrital grains and as pore-lining material. Trace to minor amounts of barite occur in the matrix, generally in association with Fe oxide. Minor amounts of rutile [Ti oxide] are present mostly as very fine grains in the matrix, but also appear as skeletal-textured material in the matrix with Fe oxide.

#5 sandstone

The very fine- to fine-grained (circa 100-150 µm), subrounded to rounded framework detrital grains are dominantly quartz (locally with apatite, biotite, and zircon inclusions and locally with shard-like shape), with minor amounts of K-feldspar (± inclusions of barite) and lithic grains. A variety of lithic grains are present, including: (a) quartz + apatite, (b) illite + Fe-chlorite, (c) quartz + clay ± K-feldspar with Ba,K-feldspar matrix cement, (d) quartz + Ba,K- feldspar, (e) quartz + illitic clay (+ trace rutile and monazite, ± local gorceixite [Ca, Ba phosphate]), (f) microcrystalline quartz (chert), and (g) quartz + kaolinitic clay. Accessory detrital grains are present in trace to minor amounts and include biotite, zircon, monazite, apatite, and rare Cr-spinel. The biotite is generally squeezed and is locally altered to chlorite + rutile ± hematite. Monazite occurs as very fine grains (<10µm), while zircon is present as coarser grains up to 100 µm in size.

Compared to sample #2, this sample contains relatively little matrix material, which is dominated by kaolinitic clay (± illite) with lesser regions of clay + apatite + Fe oxide [limonite]. The amount of matrix present is variable between sample chips, with some chips containing more matrix composed of clay + Fe oxide (limonite). This sample generally contains little or no rutile [Ti oxide] which, where present, is mostly within lithic grains and altered biotite grains.

All five samples were scanned for the presence of discrete particles of gold, however, no gold grains were detected in either the sandstone samples (#2, #5) or the conglomerate samples (#1, #3, #4), although the thin section preparer had noted the possible presence of a fleck of gold in one thin section from sample #3. Due to (a) the lack of gold grains detected, and (b) the very low geochemical Au contents of the samples, further textural and mineralogical work was not carried out on the conglomerate samples.

5. GEOCHEMICAL ANALYSIS

The sandstone samples were lightly disaggregated by a light roll crush at 1.5 mm, while the conglomerate samples were disaggregated and homogenized by rotation in a ½-cubic yard cement mixer. Fractionation of the samples was done by wet-sieving (6 size-fractions) and use of a shaker table (2 density-fractions). The size-fractions used and the weights and proportions within these fractions are as follows:

sample	+4.75 mm (kg)	-4.75/ +2 mm (kg)	-2 mm (kg)	total weight of sample (kg)	-2/+0.25 mm (g)	-0.25/ +0.10 mm (g)	-0.10 mm/ +63 µm (g)	-63 µm (g)	total weight of -2 mm (g)
#1 congl.	6.20	0.95	2.975	10.125	2600	240.2	62.4	72.3	2974.9
#2 sst.	0.00	0.00	2.393	2.393	450.9	726.0	340.9	874.9	2392.7
#3 congl.	6.25	1.20	3.104	10.554	2550	439.0	49.1	66.2	3104.3
#4 congl.	4.55	1.60	2.371	8.521	1800	392.4	36.3	62.2	2370.9
#5 sst.	0.00	0.00	3.466	3.466	0.0	903.6	912.4	1650.0	3466.0

Table 5-1 Sample size fractionation: weights of sample within size-fractions.

sample	+4.75 mm	-4.75/ +2 mm	-2 mm	total sample	-2/+0.25 mm	-0.25/ +0.10 mm	-0.10 mm/ +63 µm	-63 µm	total -2 mm
#1 congl.	61.2	9.4	29.4	100	87.4	8.1	2.1	2.4	100
#2 sst.	0.0	0.0	100.0	100	18.8	30.3	14.2	36.6	100
#3 congl.	59.2	11.4	29.4	100	82.1	12.6	1.6	2.1	100
#4 congl.	53.4	18.8	27.8	100	75.9	16.6	1.5	2.6	100
#5 sst.	0.0	0.0	100.0	100	0.0	26.1	26.3	47.6	100

Table 5-2 Sample size fractionation: proportions (wt%) of sample within size-fractions.

sample	-2/+0.25 mm (g)			-2/+0.25 mm (%)			-0.25/+0.10 mm (g)			-0.25/+0.10 mm (%)		
	heavies	lights	total	heavies	lights	total	heavies	lights	total	heavies	lights	total
#1 congl.	53.61	2546.4	2600	2.1	97.9	100.0	24.38	215.8	240.2	10.1	89.9	100.0
#2 sst.	16.43	434.4	450.9	3.6	96.4	100.0	32.59	693.4	726.0	4.5	95.5	100.0
#3 congl.	46.68	2503.3	2550	1.8	98.2	100.0	30.49	408.5	439.0	6.9	93.1	100.0
#4 congl.	28.16	1771.8	1800	1.6	98.4	100.0	59.14	333.2	392.4	15.1	84.9	100.0
#5 sst.	n/a	n/a	n/a	n/a	n/a	n/a	32.56	871.0	903.6	3.6	96.4	100.0

Table 5-3 Sample density fractionation: weights and proportions within density-fractions.

The -2 mm portion of the samples (Tables 5-1, 5-2) was geochemically analysed following crushing and agate grinding of the fractionated subsamples. The two finest size-fractions (-0.10 mm/+63 μm, -63 μm) underwent a full geochemical analysis consisting of a 56 element ICP scan (Appendix D) and a Fire Assay for Au and PGE (Pt, Pd, and occasionally Rh). Two Fire Assays were performed on each of these size-fractions for the sandstone samples (#2, #5) due to the abundance of available material. Other analyses performed included several other elements/oxides such as FeO, CO_2, Loss On Ignition (LOI), B, ultratrace Pb, and total U by fluorimetry. The two size-fractions of mid-size material (-2/+0.25 mm, -0.25/+0.10 mm) were also subjected to density fractionation by tabling on a shaker table (Table 5-3) prior to the full geochemical analysis as noted above. As part of the heavy mineral separation, all gold grains present in the heavy fraction (density greater than circa 3) were to be extracted and weighed.

The two coarsest size-fractions (+4.75 mm, -4.75/+2 mm) of the +2 mm material from the three conglomerate samples also underwent the full geochemical analysis as noted above, including Fire Assay analysis for Au, Pt, and Pd (Appendix D).

The units of measure used in this study include: percent = parts per hundred, ppm = parts per million = grams/tonne (or g/t), ppb = parts per billion = 0.001 ppm, Troy ounces (oz(T)), and short ton (ton(S)) = 2000 pounds. The conversion factor from oz(T)/ton(S) to ppm is 34.2857, thus 0.10 oz(T)/ton(S) = 3.429 ppm = 3429 ppb, 1 ppm = 0.0292 oz(T)/ton(S), and 100 ppb = 0.0029 oz(T)/ton(S).

sample	-0.10mm/+63 μm						-63 μm					
	assay 1			assay 2			assay 1			assay 2		
	Au	Pt	Pd	Au	Pt	Pd	Au	Pt	Pd	Au	Pt	Pd
#1 congl.	8	1	1	n/a	n/a	n/a	49	1	1	n/a	n/a	n/a
#2 sst.	1	1	1	1	1	1	4	1	1	4	1	1
#3 congl.	5	1	1	n/a	n/a	n/a	174	1	1	n/a	n/a	n/a
#4 congl.	28	1	1	n/a	n/a	n/a	39	1	1	n/a	n/a	n/a
#5 sst.	1	1	1	12	1	1	2	1	1	1	1	1

Table 5-4 Fire assay Au, Pt, Pd data (in ppb) for the -0.10mm/+63 μm and -63 μm size-fractions.

The Au and PGE fire assay data for the fine size-fractions (-0.10mm/+63 μm, -63 μm)are presented in Table 5-4. Only detection limit levels (1 ppb) to trace amounts of gold were found. From the five samples, only the -63 μm size-fraction of conglomerate sample #3 returned over 100 ppb Au (174 ppb or 0.005 oz(T)/ton(S)). All PGE elemental contents are at detection limit level (1 ppb) or less. Invariably, the -63 μm size-fraction returned higher gold values than the -0.10 mm/+63 μm size-fraction.

The coarse size-fractions of the conglomerate samples contain only detection-limit to ultratrace levels of Au and PGE. A maximum assay of 7 ppb Au was obtained from the -4.75/+2 mm size-fraction of sample #1 (Table 5-5). The sandstone samples do not contain any +2 mm material.

sample	+4.75 mm			-4.75/+2 mm		
	Au	Pt	Pd	Au	Pt	Pd
#1 congl.	3	1	5	7	1	2
#2 sst.	n/a	n/a	n/a	n/a	n/a	n/a
#3 congl.	2	1	1	2	1	2
#4 congl.	4	1	1	2	1	3
#5 sst.	n/a	n/a	n/a	n/a	n/a	n/a

Table 5-5 Fire assay Au, Pt, Pd data (in ppb) for the +4.75 mm and -4.75/+2 mm size-fractions.

The mid-size material (-2/+0.25 mm and -0.25/+0.10 mm size-fractions) was also fractionated by density (Table 5-6). However, no gold grains were retrieved from the 'heavy' density fraction, which consisted mostly of quartz with minor amounts of Fe-Ti oxide and zircon. Only detection limit levels (1 ppb) to ultratrace amounts of gold were found in this material. While still at trace levels (maximum 172 ppb), platinum was consistently found in greater concentrations than gold and palladium.

sample	-2/+0.25 mm				-0.25/+0.10 mm			
	light density fraction			heavy density fraction	light density fraction			heavy density fraction
	Au	Pt	Pd	gold grains (mg)	Au	Pt	Pd	gold grains (mg)
#1 congl.	4	15	1	0.0	5	55	1	0.0
#2 sst.	1	42	4	0.0	1	2	1	0.0
#3 congl.	1	5	1	0.0	7	84	1	0.0
#4 congl.	1	172	1	0.0	1	5	2	0.0
#5 sst.	n/a	n/a	n/a	n/a	1	4	1	0.0

Table 5-6 Fire assay Au, Pt, Pd data (in ppb) for the light density (table) fraction and gold grain data for the heavy density fraction for the -2/+0.25 mm and -0.25/+0.10 mm size-fractions.

The Au, Pd, and Pt contents of the combined size fractions (ie. the bulk sample) are presented in Table 5-7. The grades for all samples and elements are below 10 ppb, except for the platinum grade of 37 ppb present in sample #4 conglomerate. This value is strongly influenced by a relatively high value reported from a single size fraction (174 ppb in the -2/+.25 mm fraction). Even this bulk content converts to only 0.001 oz(T)/ton(S) Pt.

sample	grade (ppb)			grade (oz(T)/ton(S))		
	Au	Pt	Pd	Au	Pt	Pd
#1 congl.	4.0	5.9	3.5	<0.001	<0.001	<0.001
#2 sst.	2.1	9.0	1.6	<0.001	<0.001	<0.001
#3 congl.	2.9	5.0	1.1	<0.001	<0.001	<0.001
#4 congl.	3.0	37.3	1.4	<0.001	0.001	<0.001
#5 sst.	1.5	1.0	1.0	<0.001	<0.001	<0.001

Table 5-7 Au, Pt, Pd grade data (in ppb and oz(T)/ton(S)) for the combined bulk sample.

Eight 1 Assay-Ton analyses were performed on each split of the two sample splits ('fine', 'coarse') from samples #1 and #2 supplied by Mr. Al Lewis to check for homogeneity of the sample with respect to precious metals. The zinc metal powder used by Mr. Lewis in his fire assay operation was also analysed; the analysis returning 29 ppb Au, as were the Fire Assay metal beads supplied by him. The Fire Assay final results are presented in Tables 5-8 and 5-9. These data indicate that the replicate analyses of the #1 conglomerate and the #2 sandstone return consistently very low to low Au, Pd, and Pt values. The #2 sandstone averages less than 5 ppb Au while the #1 conglomerate averages circa 23 ppb Au. The Pd and Pt contents were consistently near their detection limits of 1 ppb.

sample	grade (ppb)								average grade (ppb)			average grade (oz(T)/ton(S))		
	Au1	Au2	Au3	Au4	Au5	Au6	Au7	Au8	Au	Pt	Pd	Au	Pt	Pd
#1 congl. 'fine'	25	16	24	32	19	20	18	64	27.3	1.8	1.0	0.001	<<0.001	<<0.001
#1 congl. 'coarse'	7	51	20	13	10	34	10	8	19.1	1.1	1.0	0.001	<<0.001	<<0.001
#2 sst. 'fine'	6	8	3	4	3	3	8	3	4.8	1.6	1.1	<0.001	<<0.001	<<0.001
#2 sst. 'coarse'	2	2	2	1	1	2	6	3	2.4	1.5	1.0	<<0.001	<<0.001	<<0.001
zinc metal									29	5	13			

Table 5-8 Au, Pt, Pd grade data (in ppb and oz(T)/ton(S)) for splits from samples #1 and #2.

The gold analyses of the supplied Fire Assay metal beads returned highly variable results, ranging from 11 ppb (#4A) to 9625 ppb (#1).

sample bead	bead wt. (mg)	Fire Assay (A.T.)	Sample wt. (g)	Fire Assay Au (µg)	Au (ppb)	Au grade (oz(T)/ton(S))	notes
#1	2.80	8	240	2310	9625	0.281	3 beads combined
#2 + #3	0.67	12	360	290	806	0.023	2 beads combined
#4A	0.31	1.5	45	0.5	11	<0.001	
#4B	0.16	1.5	45	1.1	24	<0.001	
#5	0.12	8	240	18.5	77	0.002	

Table 5-9 Au grade data (in ppb and oz(T)/ton(S)) for Fire Assay beads supplied by Mr. Al Lewis.

The Au, Pd, and Pt analyses on the beads from the eight supplied Fire Assay cupels, all from sample #2 sandstone, are listed in Table 5-10. These data reveal highly variable Au and Pt contents (7 to 1565 ppb Au, 1 to 224 ppb Pt), but only ultratrace levels of Pd ((<1 to 3 ppb), regardless of the pretreatment applied to the sample material.

sample	#2 sandstone (ppb)			#2 sandstone (oz(T)/ton(S))			sample weight (g)	pretreatment
	Au	Pt	Pd	Au	Pt	Pd		
cupel 1	30	10	2	0.001	<0.001	<<0.001	45	H_2SO_4
cupel 2	7	4	<1	<0.001	<<0.001	<<0.001	45	H_2SO_4
cupel 3	11	224	2	<0.001	0.007	<<0.001	45	H_2SO_4
cupel 4	12	4	1	<0.001	<<0.001	<<0.001	45	Aqua Regia
cupel 5	10	2	3	<0.001	<<0.001	<<0.001	30	Aqua Regia
cupel 6	10	10	1	<0.001	<0.001	<<0.001	45	H_2SO_4
cupel 7	547	1	2	0.016	<<0.001	<<0.001	30	Aqua Regia
cupel 8	1565	2	2	0.046	<<0.001	<<0.001	45	Aqua Regia

Table 5-10 Au, Pt, Pd grade data (in ppb and oz(T)/ton(S)) for beads obtained by Mr. Al Lewis from samples #1 conglomerate and #2 sandstone.

The multi-element geochemical analyses for the various size-fractions are listed in Appendix D. For the conglomerate samples, these data indicate that the granules, pebbles, and cobbles are siliceous (quartz: >93% SiO_2 for fractions >0.25 mm in size), indicating that the volcanic-derived clasts are siliceous (quartz-bearing) rather than argillaceous or feldspathic. Similarly, for the sandstone size-fractions greater than 0.25 mm, the geochemical data (>90% SiO_2) suggests a dominance of quartz and siliceous lithic grains. The geochemical data from -0.25 mm material indicates that the finer-grained fractions contain higher proportions of clay minerals (Al_2O_3: kaolin), carbonate minerals (CaO and CO_2: calcite), feldspar minerals (K_2O, Na_2O: K-feldspar and plagioclase), and matrix iron oxide minerals (Fe_2O_3: limonite, hematite). Calcite occurs primarily in the -0.10 mm/+63 μm and -63 μm size-fractions of conglomerate samples #3, #4, and to a lesser extent, #1. In the latter sample, elevated values of Na_2O in these size-fractions suggest the presence of authigenic plagioclase (albite: see Appendix B). Low ratio values for K_2O/Al_2O_3 and MgO/Al_2O_3 indicate that the dominant clay mineral in all samples and size-fractions is kaolinite, rather than illite (K_2O-bearing) or biotite or chlorite (MgO-bearing).

The dominant trace element is Ba and it is carried mostly in the +2 mm size fractions, likely in volcanic-derived siliceous pebbles and cobbles containing some feldspar. Chromium follows a similar trend. The finer size-fractions of the conglomerate samples contain higher quantities of TiO_2, As, Co, Cu, Ni, Pb, U, V, Y, Zn, Zr, and the REE, all of which are associated with the heavy mineral suite of zircon, Fe-Ti oxides (hematite, ilmenite), sulphide (pyrite, chalcopyrite), and REE-phosphates (monazite and xenotime).

6. XRD MINERALOGICAL ANALYSIS

A representative portion of each size-fraction from each sample was analysed mineralogically using XRD methods. However, only the mineralogy from the four -2 mm size fractions (-2/+0.25 mm, -0.25/+0.10 mm, -0.10/+63 μm, and -63 μm) are reported here as: (a) these fractions combined represent nearly one-third of the bulk sample for conglomerate samples #1, #3, and #4 and all of sandstone samples #2 and #5, and (b) the geochemical data indicate that there is little difference between the -2/+0.25 mm size-fraction and the coarser size-fractions in the conglomerate samples. The x-ray diffractograms are presented in Appendix C and the mineral proportion data are listed in Table 6-1.

The conglomerate samples contain very little material less than 0.25 mm in size (<5%). Of this material, quartz is by far the dominant component (78 to 97%). Feldspar (plagioclase and K-feldspar) is the next most abundant mineral, but is present only in very minor amounts in samples #3 and #4. Plagioclase comprises a moderate proportion in sample #1, particularly in the finest size-fractions, and may represent authigenic feldspar cement (see Appendix C). No feldspar was detected in the -2/+0.25 mm fraction in these samples, with quartz comprising over 97% of the samples.

The dominant clay present (in minor quantities) in the conglomerates is kaolinite, with only traces of illite (and/or biotite). The other matrix minerals (see Section 3) are hematite and limonite (goethite and lepidocrocite), also present only in minor to trace quantities, respectively. Trace to ultratrace amounts of a number of accessory minerals were also detected: tourmaline, anatase, calcite, amphibole, epidote, and jarosite.

In the sandstone samples, quartz also dominates the mineralogy of these size fractions but, unlike conglomerate sample #1, feldspar is not present in the finest size-fractions. It occurs only as a trace component of sample #2 while K-feldspar comprises a moderate proportion (~ 25%) of the coarsest size fraction (-0.25/+0.10 mm) of sample #5.

As for the conglomerate samples, kaolinite is the most abundant clay mineral, with lesser amounts of illite/biotite being detected, and hematite and limonite are also present. Essentially no accessory minerals were detected in the sandstone samples, particularly when compared to the conglomerate samples, with only anatase being detected in sample #5. Tourmaline, amphibole, epidote, calcite, and jarosite were not detected.

mineral proportions	-63 um					-0.10 mm/+63 um				
	#1	#2	#3	#4	#5	#1	#2	#3	#4	#5
% in fraction	0.7	36.6	0.6	0.7	47.6	0.6	14.2	0.5	0.4	26.3
quartz	78	90	92	82	90	92	97	95	94	98
biotite/illite	1	2	1	1	1	0	<1	1	0	<1
kaolinite	3	3	3	4	1	1	1	1	1	<1
hematite	0	2	0	3	1	0	0	0	0	<1
goethite (est.)	0	1	1	1	<1	0	<1	1	<1	<1
lepidocrocite (est.)	<1	1	1	1	<1	1	<1	0	<1	0
tourmaline (est.)	0	0	0	0	0	0	0	0	0	0
anatase (est.)	0	0	0	0	5	0	0	0	0	0
chlorite	0	0	0	0	0	0	0	0	0	0
calcite	0	0	<1	1	0	0	0	0	<1	0
K-feldspar	2	0	0	0	0	1	1	2	<1	1
plagioclase	15	0	0	0	0	5	0	0	0	<1
amphibole (est.)	1	0	0	0	0	0	0	0	0	0
epidote (est.)	0	0	3	0	0	0	0	0	0	0
jarosite (est.)	0	0	0	7	0	0	0	0	4	0

mineral proportions	-0.25/+0.10 mm					-2/+0.25 mm				
	#1	#2	#3	#4	#5	#1	#2	#3	#4	#5
% in fraction	2.4	30.3	3.7	4.6	26.1	25.6	18.8	24.1	21.1	0.0
quartz	89	91	97	95	75	97	98	97	98	n/a
biotite/illite	1	1	1	1	0	1	<1	<1	<1	n/a
kaolinite	1	3	1	1	<1	1	1	1	<1	n/a
hematite	1	1	0	0	0	0	1	0	0	n/a
goethite (est.)	<1	<1	<1	<1	<1	<1	<1	<1	<1	n/a
lepidocrocite (est.)	1	2	<1	<1	<1	<1	<1	<1	<1	n/a
tourmaline (est.)	<1	0	<1	0	0	<1	0	<1	1	n/a
anatase (est.)	<1	0	0	<1	0	0	0	0	<1	n/a
chlorite	0	0	0	<1	0	<1	0	0	0	n/a
calcite	0	0	0	0	0	0	0	0	0	n/a
K-feldspar	1	2	1	1	23	0	0	0	0	n/a
plagioclase	6	1	0	<1	2	0	0	0	0	n/a
amphibole (est.)	0	0	0	0	0	0	0	0	0	n/a
epidote (est.)	0	0	0	0	0	0	0	0	0	n/a
jarosite (est.)	0	0	0	2	0	0	0	0	0	n/a

Table 6-1. XRD mineral proportions in the four -2 mm size fractions.

7. DISCUSSION

7. 1 Sample Lithology and Mineralogy

The fine- to very fine-grained sandstones are well sorted and contain little but detrital quartz grains and detrital lithic grains with minor iron oxide plus kaolin matrix. Heavy minerals are sparse. The fine grain size and good grain sorting suggests that detrital gold grains should not occur in this lithology due to the extreme difference in hydraulic equivalence between fine gold grains and the detrital grains in these sandstones.

On the other hand, the very poorly sorted conglomerate samples, which contain detrital lithic cobbles up to 8 cm in size, do show the high energy environment of deposition suitable for detrital gold grain accumulation. However, the general lack of fine-grained accessory heavy minerals may indicate that heavy mineral (including gold) accumulation was not occurring with the deposition of the framework cobbles in these samples.

7.2 Geochemistry

For the conglomerate samples, these data indicate that the granules, pebbles, and cobbles are siliceous (>93% SiO_2 for fractions >0.25 mm in size), indicating that the volcanic-derived clasts are siliceous rather than argillaceous or feldspathic. Similarly, for the sandstone size-fractions greater than 0.25 mm, the geochemical data (>90% SiO_2) suggests a dominance of quartz and siliceous lithic grains. The geochemical data from -0.25 mm material indicates that the finer-grained fractions contain higher proportions of clay minerals (Al_2O_3: kaolin), carbonate minerals (CO_2: calcite), feldspar minerals (K_2O, Na_2O: K-feldspar and plagioclase), and matrix iron oxide minerals (Fe_2O_3: limonite, hematite).

The dominant trace element is Ba and it is carried mostly in the +2 mm size fractions, likely in volcanic-derived siliceous pebbles and cobbles containing some feldspar. Chromium follows a similar trend. The finer size-fractions of the conglomerate samples contain higher quantities of TiO_2, As, Co, Cu, Ni, Pb, U, V, Y, Zn, Zr, and the REE, all of which are associated with the heavy mineral suite of zircon, Fe-Ti oxides (hematite, ilmenite), sulphide (pyrite, chalcopyrite), and REE-phosphates (monazite and xenotime).

7.3 Location and grade of Au and PGE

The sample preparation and elemental analyses performed by SRC consistently returned very low quantities of Au and the PGE. The coarsest size-fractions of the conglomerate samples contain only detection-limit to ultratrace levels of Au and PGE which suggests that any gold or PGE present in the conglomerate occurs in the -2 mm material and is not derived from the pebble and cobble clasts. Similarly, the mid-size fractions of all the samples, conglomerate and sandstone, contain only ultratrace levels of Au and Pd and erratic trace levels of Pt. Erratic trace values of Au were obtained from the finest size-fractions of the conglomerate samples, while the sandstone samples returned detection limit level to ultratrace levels only. The maximum, but low, values obtained are:

Au: 174 ppb (0.005 oz(T)/ton(S)) in the -63 μm size-fraction of sample #3 conglomerate
Pd: 5 ppb in the +4.75 mm size-fraction of sample #1 conglomerate
Pt: 172 ppb (0.005 oz(T)/ton(S)) in the -2/+0.25 mm size-fraction of sample #4 conglomerate

Replicate analyses of two grinding splits of a conglomerate sample (#1) and a sandstone sample (#2) returned consistent but very low Au values (circa 23 ppb and <5 ppb, respectively). However, analyses of Fire Assay beads supplied by Mr. Al Lewis returned highly variable/erratic Au and Pt values and near-detection limit values for Pd which were sample-independent.

7.4 Placer mining

Gold grain extraction from relatively poorly indurated coarse clastic sedimentary material (gravel/conglomerate) is typically done through placer mining (CANMET, 1998). These operations are generally small (ie. 2 to 20 workers) and process relatively large volumes (60 to 250 cubic yards per hour) of low-grade placer gravels. The raw material is fed to the processing equipment by diesel-powered earth moving equipment such as tracked bulldozers and rubber-tired loaders, scrapers, and backhoes. Gravimetric methods are used to process the feed gravel and to recover and concentrate the free gold. Chemical addition to the extraction process is essentially absent. The processing equipment is typically mobile and consists of screens (trommels) to remove oversize material and sluice boxes to recover free gold from the fine gravel. Jigs, shaker tables, and/or pans are used in the final concentration of the gold, which can reach the 90% recovery level, and beyond, using modern improvements to the sluice box technology.

Settling ponds are used to retain suspended solids in the processed waste water in order to comply with regulated effluent discharge levels. Land restoration practices are also carried out as a part of the mining activity.

8. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

1. The conglomerate samples are lithic pebble/cobble conglomerates containing lithic clasts of volcanic-derived siliceous material, quartz, and some siltstone. The fine- to very fine-grained sandstone samples are similar in clast composition, but range from containing subequal quartz and lithic material to being dominantly quartz-bearing. The rock matrices are composed of iron oxide (dominantly limonite) with lesser kaolin.
2. Heavy minerals (Fe, Ti-oxide, zircon, LREE phosphate, tourmaline) are not present in significant quantities, suggesting that gold grains may also not be abundant in the rocks found in the vicinity sampled, particularly the sandstones.
3. As all samples, sandstone and conglomerate, are consistently low in Au and PGE contents, but particularly the sandstone samples, the preferred lithology for the presence of (placer) Au and PGE in the sampled region is conglomerate.
4. Small but variable amounts of gold (and PGE) have been obtained from the sample materials supplied.
5. However, the numerous very low Au and PGE values obtained from all of the samples suggests that little Au and PGE are contained in the lithologies sampled in the current location.
6. The occurrence of erratic minor amounts of Au and Pt in 'replicate' Fire Assay beads supplied by Mr. Al Lewis from Fire Assays of a sandstone sample (#2) and the occurrence of the highest Au value identified in the current study of 9625 ppb (0.281 oz(T)/ton(S)) being from a supplied bead from sample #1 conglomerate, suggests, however, that there <u>may</u> be some gold in the sample material. But, as essentially none was found in beads prepared by SRC personnel, there is either a 'nugget effect' sampling problem (highly erratic gold distribution) or there is a problem with the Fire Assays performed by Mr. Lewis. To deal with the possibility of erratic gold distribution, it is recommended that (a) individual Assay results for samples of a given lithology (and general sample location) be averaged to obtain a 'bulk' gold grade which will be more representative of the sample lithology, or (b) a larger bulk sample of at least several tens of kilograms be subjected to a gold-specific leach, for instance cyanide or bromide leaches. If the erratic Au values are a result of a problem with the Fire Assays performed by Mr. Lewis, either with respect to possible sample contamination or in assay procedure, then it is recommended that only confirmation analyses performed at another Fire Assay laboratory should be used to evaluate the Au and PGE grade of the sample material.

9. REFERENCES

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APPENDIX A

Petrographic Descriptions

#1 Lithic Pebble/Cobble Conglomerate

Hand Specimen Description:

See Section 2 of report.

Mineralogy: Detrital grains: >95% Matrix: <5%

Detrital grains	%	Matrix	%
Lithic grains	90-95	Limonite	100
Quartz	5-10		
Muscovite	trace		
Biotite	trace		

Mineral Descriptions:

A. Detrital grains:

Lithic grains: Very poorly sorted and essentially unbedded, rounded to well rounded, ovoid granules, pebbles, and cobbles ranging in size from 0.3 mm to 2 cm in size, but typically being greater than 0.1 cm (1 mm). The grain lithologies range from quartzite to siliceous siltstone to very fine-grained silty volcanic material to rarer clay-rich siltstone (argillaceous). The siltstone grains are commonly medium- to dark-brown in colour due to the presence of very fine-grained hematite/limonite. Many volcanic-derived siltstone grains display quartz-healed brittle fracture veinlets less than 0.1 mm in width.

Quartz: Generally fine- to coarse-grained (0.05 to nearly 1 mm), subrounded, and monocrystalline. Some grains display weak silica overgrowths. Many of the coarser grains display strain shadowing.

Biotite and Muscovite: Trace quantities of platy, elongate grains up to 0.35 mm length.

B. Matrix:

The only matrix material is orange iron oxyhydroxide (limonite: goethite and/or lepidocrocite [FeOOH]. It occurs as coatings on the detrital grains and locally as diffuse impregnations into the outer portions (0.4 mm maximum) of the more argillaceous detrital grains.

Textures:

The typically rounded grains are very poorly sorted and display ubiquitous point and long contacts providing grain support to the conglomeratic rock. Only weak grain long axis parallelism is present. Little matrix is present and intergranular void space is commonly observed. Locally orange iron oxyhydroxide (limonite: FeOOH) cement heavily coats the grains. The low clay content and the poor sorting result in an immature textural classification.

Cements:

Orange to orangish-brown iron oxyhydroxide (limonite) locally cements the rock. The rock is poorly cemented.

Post-sedimentation Deformation:

Essentially none. Very minor development of local concavo-matrix mutual grain boundaries between smaller grains on larger pebbles/cobbles. Minor pressure indentation on coarser siltstone grains by the harder quartz grains is locally observed.

Diagenesis:

Very minor and local development of quartz overgrowths on detrital quartz grains has occurred. Rock cementation is by local precipitation of recent orange iron oxyhydroxide (limonite).

#2 Fine-grained Lithic Arenite/Wacke

Hand Specimen Description:

See Section 2 of report.

Mineralogy: Detrital grains: variably <70 to >95% Matrix: variably <5 to >30%

Detrital grains	%	Matrix	%
Quartz	45-55	Kaolinite	10
Lithic grains	45-55	Iron Oxide	90
K-feldspar	1-2	(limonite/hematite)	
Zircon	trace		
Tourmaline	trace		
Kaolinite	trace		
Biotite	trace		

Mineral Descriptions:

A. Detrital grains:

Quartz: Subangular to lesser subrounded, well sorted, unbedded, monocrystalline grains ranging in size from 0.03 to 0.20 mm in size. Most grains are between 0.07 and 0.20 mm in size (very fine- to fine-grained). A minor proportion of the grains are coarse silt-size. Microcrystalline ('cherty') grains are only rarely present. Locally, some grains display moderate amounts of quartz overgrowth in regions where iron oxide cement is absent and the overgrowths are preserved where filling the intergranular space.

Kaolinite: Blocky grains <0.2 mm in size.

Lithic grains: Contain very fine-grained clay (argillaceous) and/or silty quartz and abundant pervasive brown limonite/hematite stain. Grain size ranges from 0.07 to 0.35 mm with very rare granules up to 3 mm in size.

K-feldspar: Subangular to angular grains 0.1 to 0.2 mm in size.

Tourmaline: Angular, greenish pleochroic grains <0.07 mm in size.

Biotite: Green pleochroic, elongate, platy grains up to 0.25 mm in length.

Zircon: Angular, high relief grains <0.05 mm in size.

B. Matrix:

Iron oxide constitutes the bulk of the sample matrix. It is orangish-brown to dark brown in colour and it locally fills the intergranular space. The iron oxide species appears to be dominantly limonite (goethite and/or lepidocrocite [FeOOH]) with some of the dark brown to opaque material possibly being hematite.

Very minor amounts of fine-grained kaolin locally forms part of the matrix.

Textures:

Where the matrix is abundant, many of the well sorted, subangular to subrounded detrital grains are matrix supported and float in the limonitic/hematitic matrix. Where the matrix is less abundant, the rock is tightly grain supported. Bedding is not apparent but the long axes of the detrital grains are oriented subparallel to sedimentary layering. Texturally, the low clay content, good sorting, and subangular shapes result in a mature classification.

Cements:

The iron oxide matrix material cements the rock.

Post-sedimentation Deformation:

Very minor burial compaction is indicated by weak squeezing of argillaceous detrital grains by the more competent detrital quartz grains in regions without significant iron oxide cement.

Diagenesis:

Minor to moderate amounts of quartz overgrowth material has locally precipitated on detrital quartz grains. This overgrowth material has been corroded/removed by later (but still early paragenetic) pore fluids which precipitated the dominant iron oxide cement. The iron oxide cementation occurred prior to burial compaction.

#3 Lithic Pebble/Cobble Conglomerate

Hand Specimen Description:

See Section 2 of report.

Mineralogy: Detrital grains: >95-98% Matrix: 2-5%

Detrital grains	%	Matrix	%
Lithic grains	90-95	Limonite	100
Quartz	5-10		
Kaolinite	trace		

Mineral Descriptions:

A. Detrital grains:

Lithic grains: Very poorly sorted and essentially unbedded, rounded to well rounded, ovoid granules, pebbles, and cobbles ranging from 0.2 mm to 4 cm in size, typically greater than 1 mm. Grain lithologies include metamorphic quartz, quartzite, siliceous siltstone, fine-grained silty volcanic material, and minor argillaceous siltstone. Many siltstone grains are commonly medium- to dark-brown in colour due to the presence of very fine-grained hematite/limonite. Many volcanic-derived siltstone grains display quartz-healed brittle fractures (veinlets) less than 0.1 mm in width.

Quartz: Generally fine- to coarse-grained (0.05 to nearly 1 mm), subrounded, and monocrystalline. Some grains display weak silica overgrowths. Many of the coarser grains display strain shadowing.

Kaolinite: Several coarse blocky grains, highly limonitized, circa 1 mm in size.

B. Matrix:

The matrix is composed of brownish to orangish-brown iron oxyhydroxide (limonite: goethite and/or lepidocrocite [FeOOH]). It is present as coatings on detrital grains and as diffuse impregnations into the outer portions of the more argillaceous detrital grains. A second generation of bright orange limonite occurs locally as a circa 15 µm-thick pore lining.

Textures:

The typically rounded grains are very poorly sorted and display ubiquitous point and long contacts providing grain support to the conglomeratic rock. Only weak grain long axis parallelism is present. Little matrix is present and intergranular void space is commonly observed. Locally orange iron oxyhydroxide (limonite) cement heavily coats the grains. The low clay content and the poor sorting result in an immature textural classification.

Cements:

Orange to orangish-brown iron oxyhydroxide (limonite) locally cements the rock. The rock is poorly cemented.

Post-sedimentation Deformation:

Essentially none. Very minor development of local concavo-matrix mutual grain boundaries between smaller grains on larger pebbles/cobbles. Minor pressure indentation on coarser siltstone grains by the harder quartz grains is locally observed.

Diagenesis:

Very minor and local development of quartz overgrowths on detrital quartz grains has occurred. Rock cementation is by local precipitation of recent orange iron oxyhydroxide (limonite), of which there are two generations.

#4 Lithic Pebble/Cobble Conglomerate

Hand Specimen Description:

See Section 2 of report.

Mineralogy: Detrital grains: circa 90% Matrix: circa 10%

Detrital grains	%	Matrix	%
Lithic grains	90-95	Limonite	40-50
Quartz	5-10	Hematite	50-60
Muscovite	trace to 1		

Mineral Descriptions:

A. Detrital grains:

Lithic grains: Very poorly sorted and essentially unbedded, rounded to well rounded, ovoid granules, pebbles, and cobbles ranging in size from 0.3 mm to 2 cm in size, but typically being greater than 0.1 cm (1 mm). The grain lithologies range from quartzite to siliceous siltstone to very fine-grained silty volcanic material to rarer clay-rich siltstone (argillaceous). The siltstone grains are commonly medium- to dark-brown in colour due to the presence of very fine-grained hematite/limonite. Many volcanic-derived siltstone grains display quartz-healed brittle fracture veinlets less than 0.1 mm in width and one grain is cut by a 0.4 mm-wide silica-filled veinlet.

Quartz: Generally fine- to coarse-grained (0.05 to nearly 1 mm), subrounded, and monocrystalline. Some grains display weak silica overgrowths. Many of the coarser grains display strain shadowing.

Muscovite: Minor amounts of platy, elongate, non-pleochroic grains ranging from 0.3 to 0.8 mm in length.

B. Matrix:

The matrix is composed of brownish to orangish-brown iron oxyhydroxide and hematite. The iron oxyhydroxide is limonite (goethite and/or lepidocrocite [FeOOH]). It is present as coatings on detrital grains and as diffuse impregnations into the outer portions of the more argillaceous detrital grains. Opaque hematite commonly cements the detrital grains as complete intergranular pore fillings and detrital grain coatings.

Textures:

The typically rounded grains are very poorly sorted and display ubiquitous point and long contacts providing grain support to the conglomeratic rock. Only weak grain long axis parallelism is present. A moderate amount of hematitic matrix is present, but intergranular void space is locally observed in hematite-poor regions. Locally orange iron oxyhydroxide (limonite) cement heavily coats the grains. The low clay content and the poor sorting result in an immature textural classification.

Cements:

Semi-opaque hematite and orangish-brown limonite moderately cement this rock.

Post-sedimentation Deformation:

Essentially none. Very minor development of local concavo-matrix mutual grain boundaries between smaller grains on larger pebbles/cobbles. Minor pressure indentation on coarser siltstone grains by the harder quartz grains is locally observed.

Diagenesis:

Very minor and local development of quartz overgrowths on detrital quartz grains has occurred. Rock cementation is by local precipitation of recent orange iron oxyhydroxide (limonite) and opaque hematite.

#5 Very Fine-grained Sublithic Arenite

Hand Specimen Description:

See Section 2 of report.

Mineralogy: Detrital grains: >95% Matrix: <5%

Detrital grains	%	Matrix	%
Quartz	75-80	Limonite	10-20
Lithic grains	20-25	Kaolinite	80-90
K-feldspar	1-2		
Muscovite/Biotite	trace		
Zircon	trace		

Mineral Descriptions:

A. Detrital grains:

Quartz: Angular to subangular, well sorted, unbedded, monocrystalline grains ranging in size from 0.03 to 0.20 mm in size. Most grains are between 0.05 and 0.15 mm in size (very fine-grained). A minor proportion of the grains are coarse silt-size. Microcrystalline ('cherty') grains are only rarely present. Locally, some grains display moderate amounts of quartz overgrowth in regions where iron oxide cement is absent and the overgrowths are preserved where filling the intergranular space.

Lithic grains: Contain very fine-grained clay (argillaceous) and/or silty quartz and abundant pervasive brown limonite/hematite stain. Grain size ranges from 0.07 to 0.35 mm.

K-feldspar: Subangular to angular grains 0.1 to 0.2 mm in size.

Zircon: Angular, high relief grains <0.05 mm in size.

Muscovite/: Biotite Trace quantities of elongate platy grains <0.15 mm in length.

B. Matrix:

Kaolinite clay dominates the matrix over iron oxide (limonite). The kaolinite is extremely fine-grained and displays a (sub)vermicular habit. Limonite stain on the kaolinitic clay is ubiquitous. The matrix clay appears similar to some of the lithic grains and may be derived from a similar material.

Textures:

The well sorted, grain-supported rock contains angular to subangular detrital grains and a minor amount of matrix clay. These features result in a mature textural classification. Bedding is not observed but elongate grains are oriented subparallel to sedimentary layering.

Cements:

Kaolinitic matrix clay and matrix limonite cement the rock.

Post-sedimentation Deformation:

Very minor burial compaction is indicated by weak squeezing of argillaceous detrital grains by the more competent detrital quartz grains in regions without significant iron oxide cement.

Diagenesis:

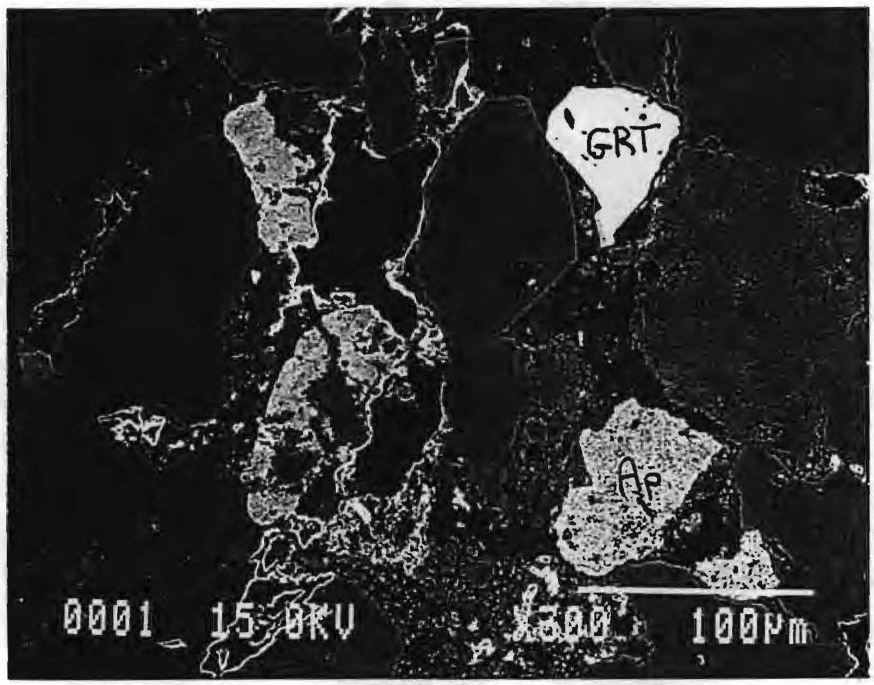
Very minor and local precipitation of quartz overgrowths on detrital quartz grains has occurred. Some of the matrix clay may have originated by breakdown of detrital argillaceous grains. The matrix clay is stained by late limonite.

APPENDIX B

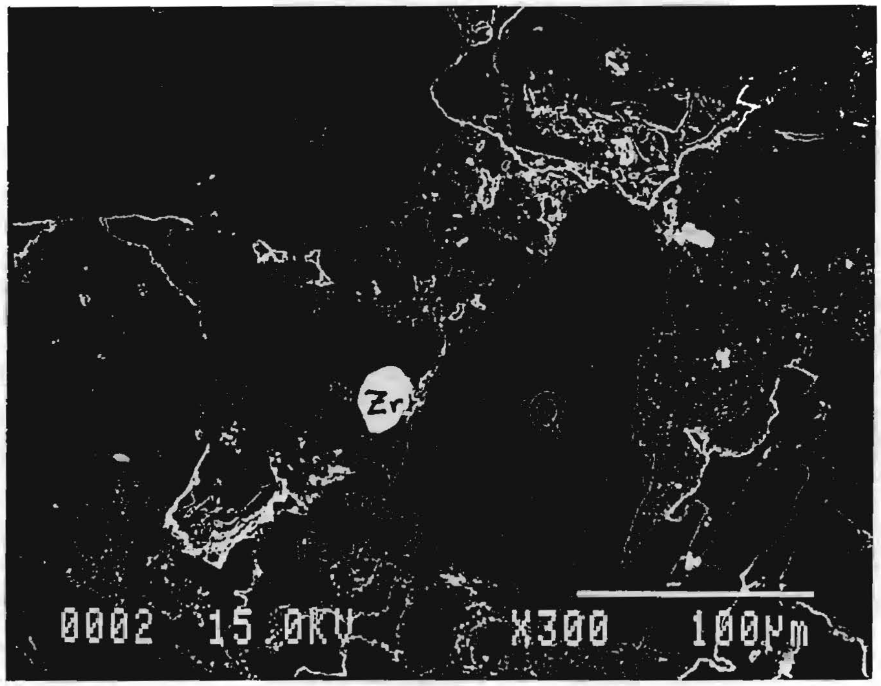
Back-Scattered Electron Images

1. Back-scattered electron images (December 18, 1998)

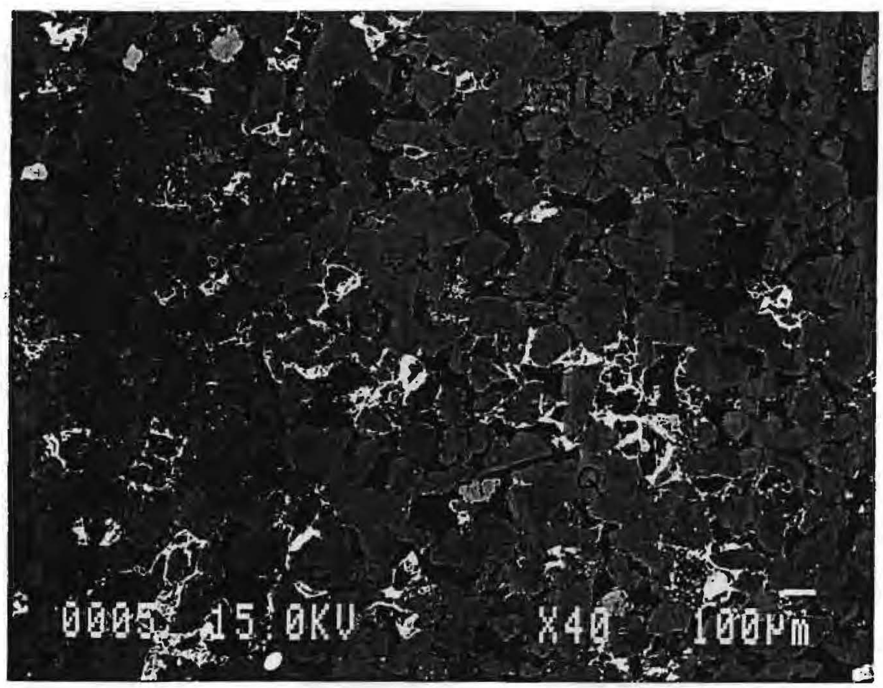
#2 sandstone



001 detrital quartz grains with apatite rims; single detrital almandine garnet grain; kaolinitic matrix clay.

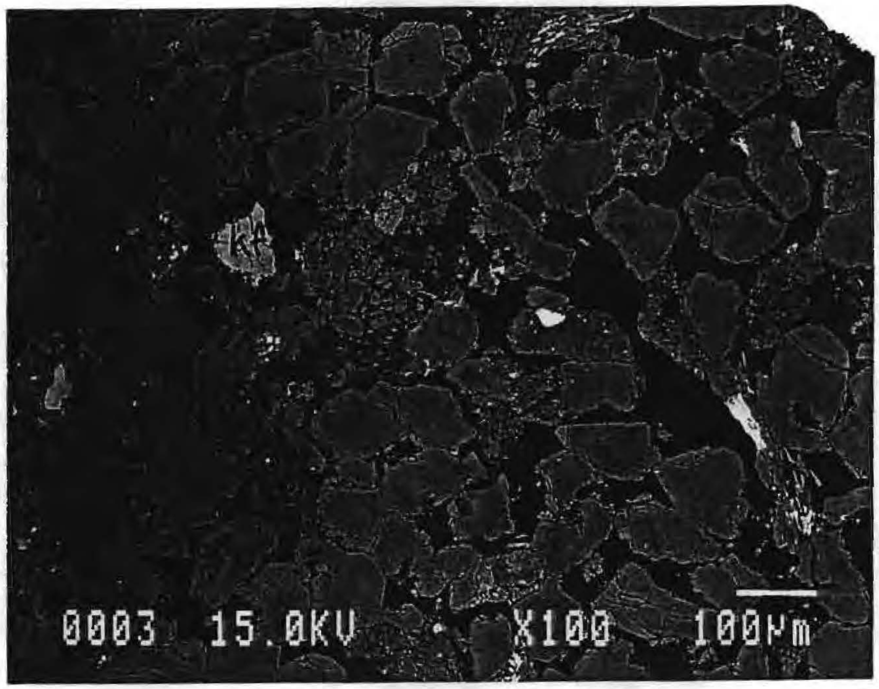


002 detrital quartz grains; single detrital zircon grain; limonite (Fe oxide) rims on detrital grains.

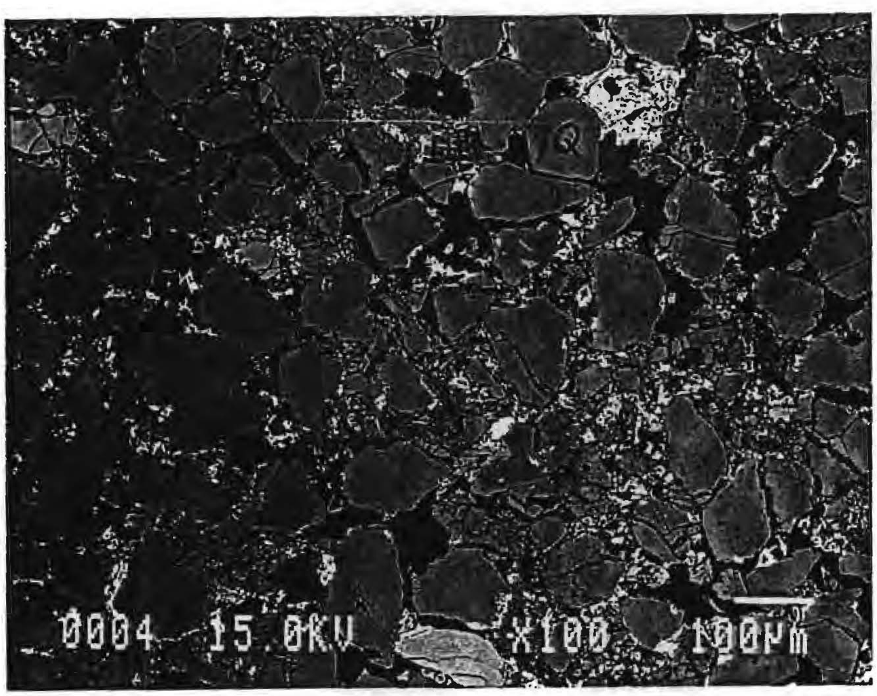


005 detrital quartz grains; limonite (Fe oxide) in matrix.

#5 sandstone



003 detrital quartz grains with lithic grains and a single grain of K-feldspar; bright specks of rutile; large inclusion of gorceixite [Ca,Ba phosphate]; small grain of monazite at bottom.



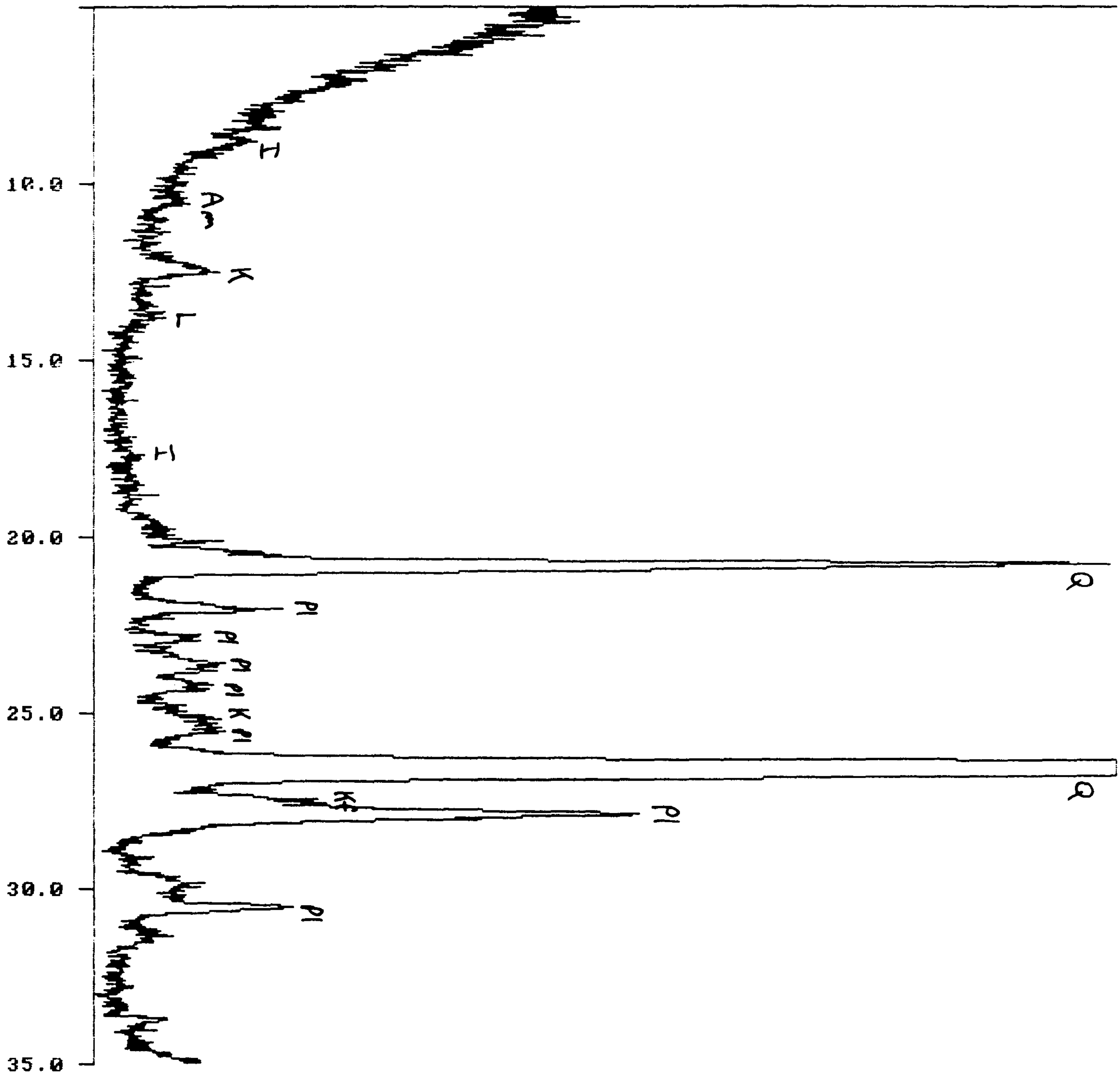
004 detrital quartz grains with lithic grains and isolated biotite and K-feldspar grains; limonite (Fe oxide) in matrix with clay minerals (illite + kaolinite ± chlorite) ± authigenic K-feldspar cement (adularia).

APPENDIX C

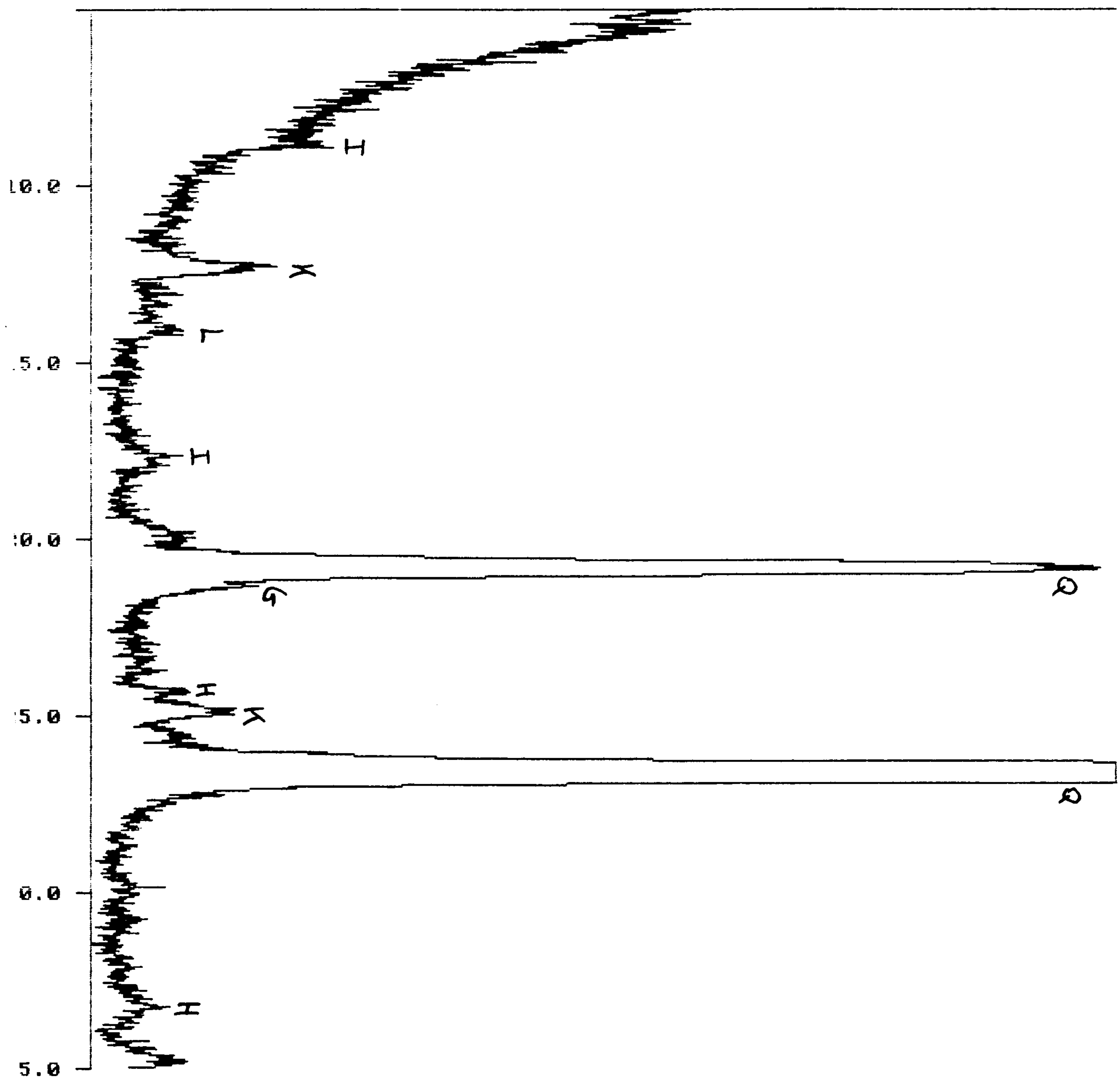
XRD Diffractograms

Legend

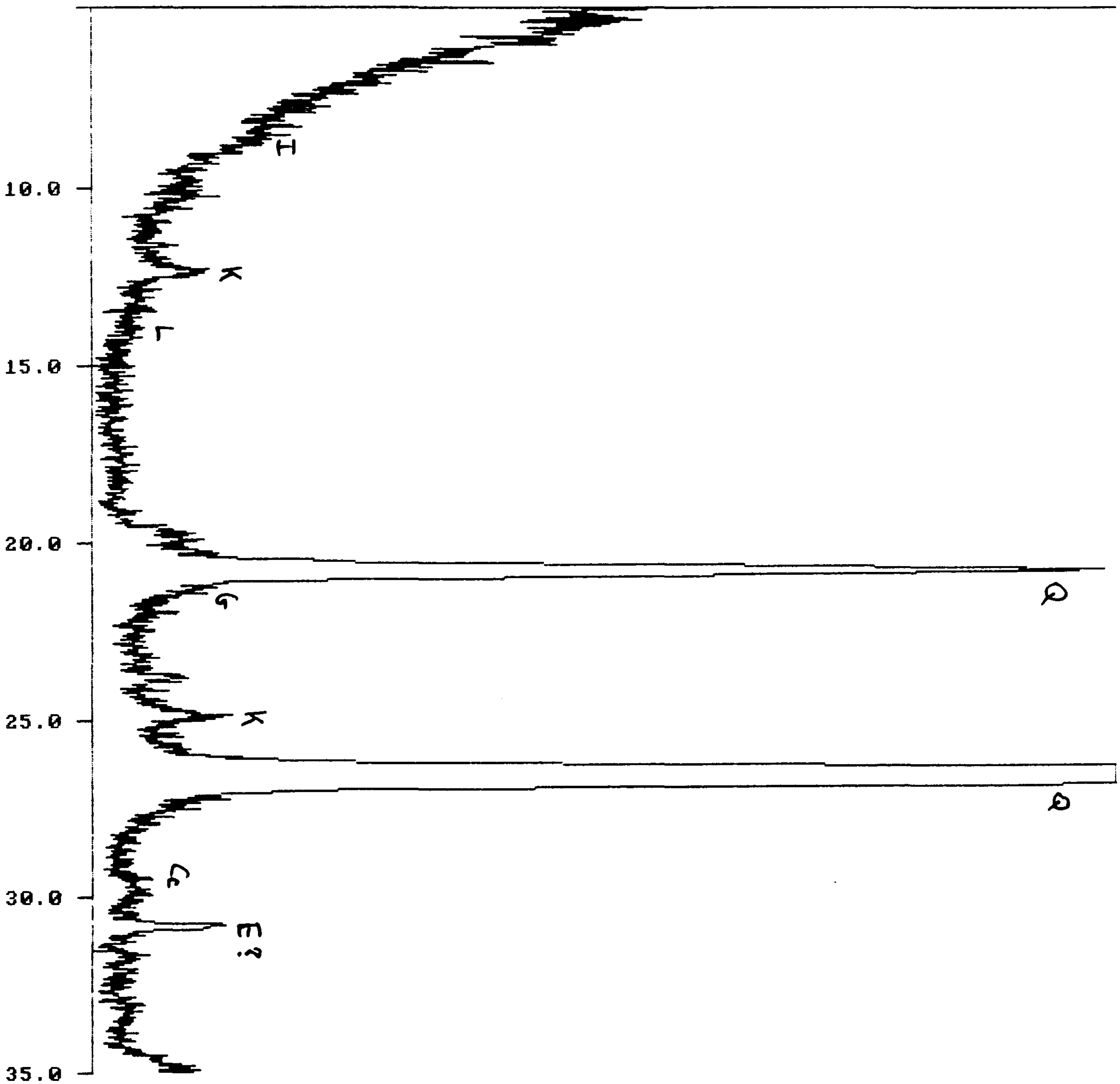
Q	-	quartz
I	-	illite/biotite
K	-	kaolinite
C	-	chlorite
H	-	hematite
G	-	goethite
L	-	lepidocrocite
Kf	-	K-feldspar
Pl	-	plagioclase
T	-	tourmaline
A	-	anatase
Cc	-	calcite
Am	-	amphibole
E	-	epidote
J	-	jarosite



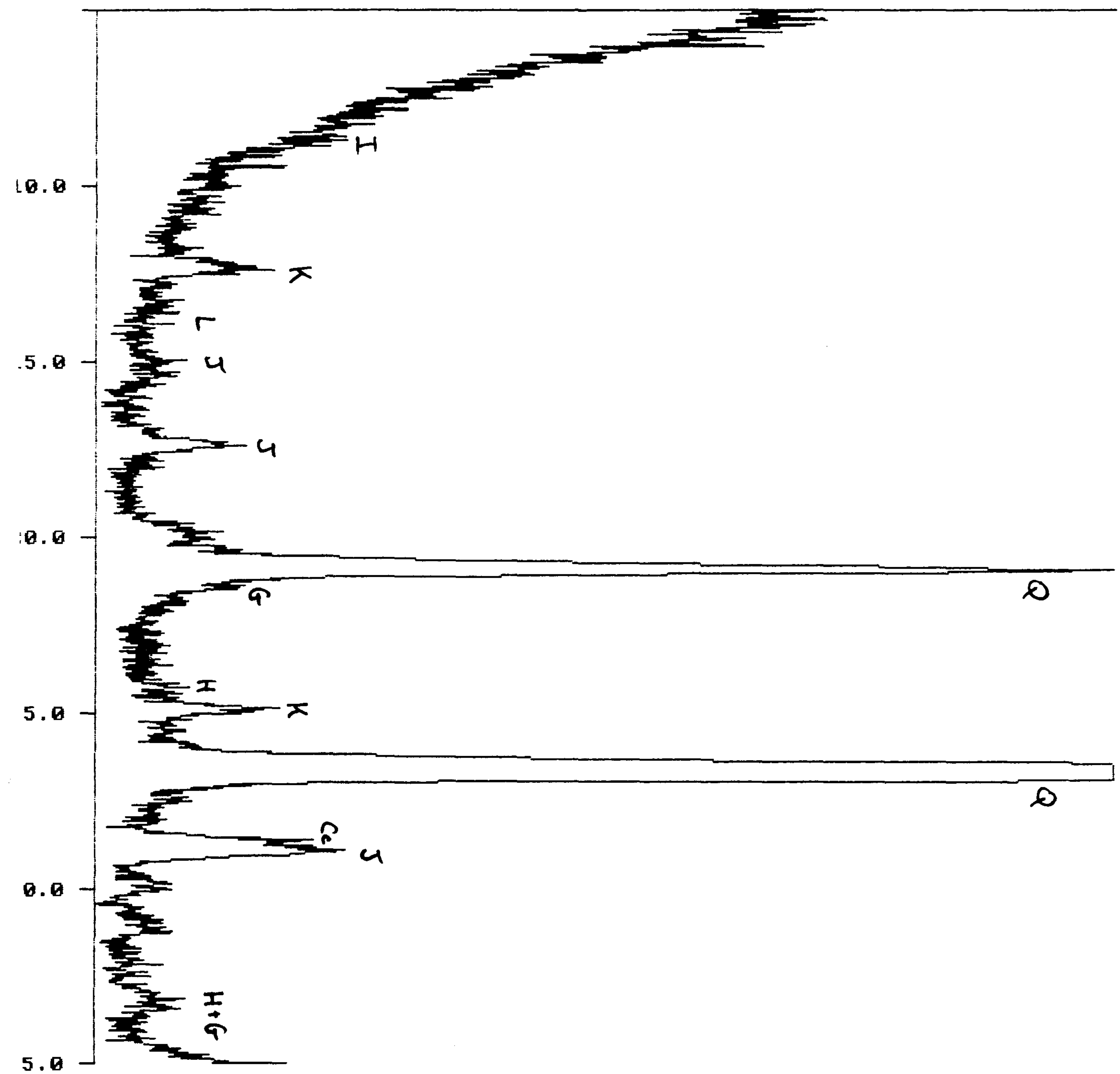
JP11s ms 510 Liddle 713803 Alta Ltd #1 -63 um 7-5-99



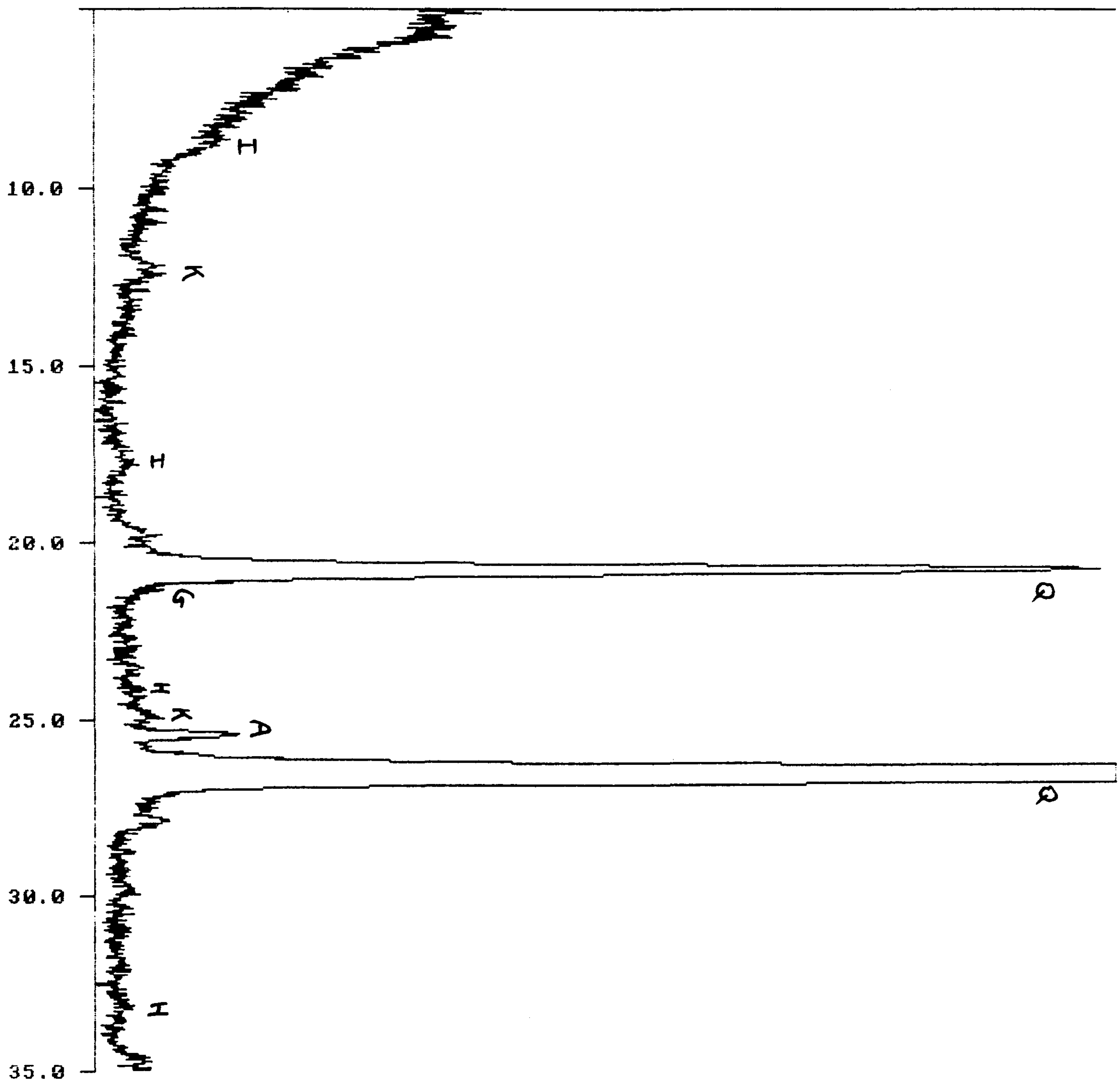
JP12s ms 420 Liddle 713803 Alta Ltd #2 -63 um 7-5-99



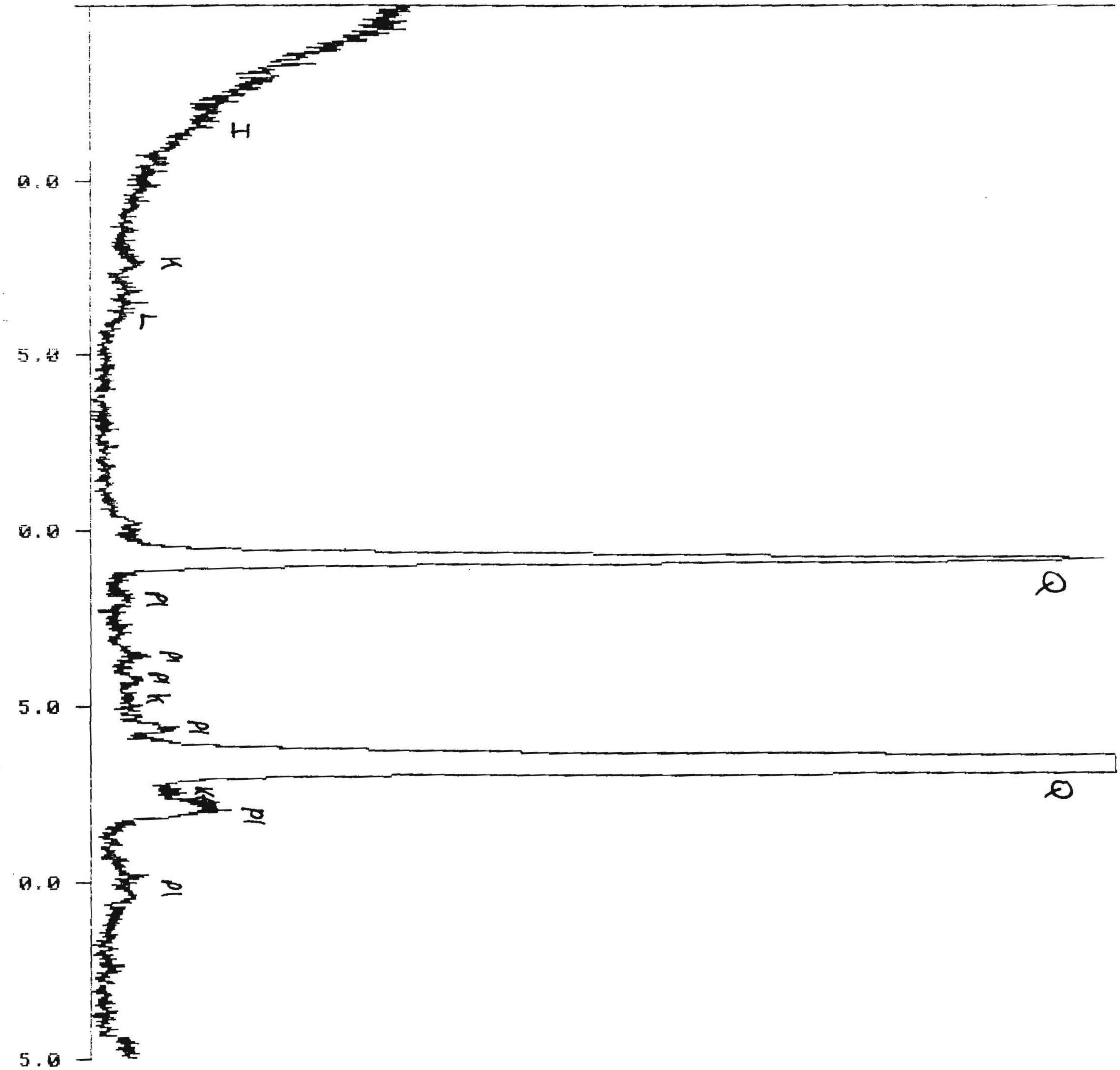
JP13s ms 455 Liddle 713803 Alta Ltd #3 -63 um 7-5-99



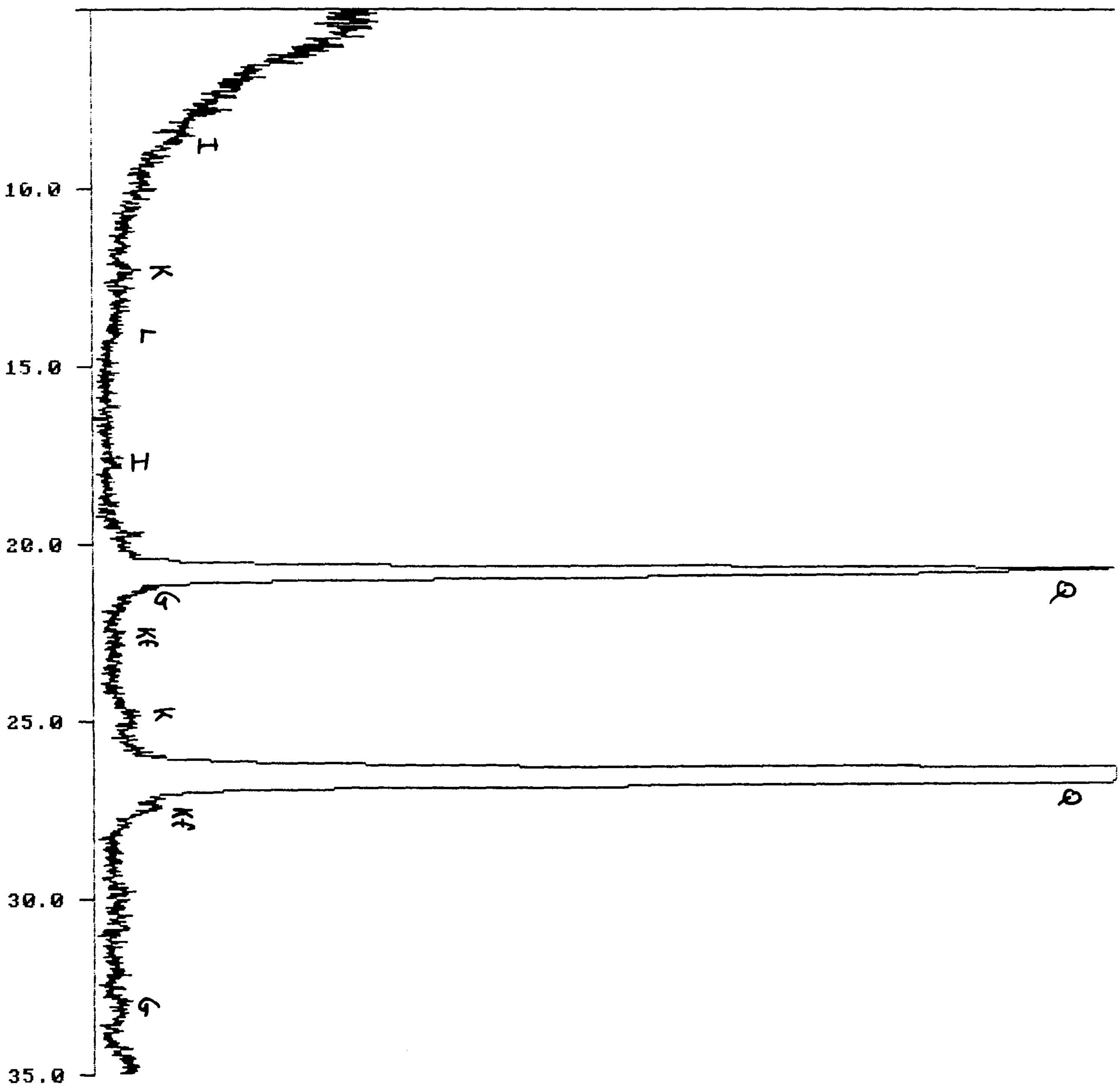
JP14s ms 350 Liddle 713803 Alta Ltd #4 -63 um 7-5-99



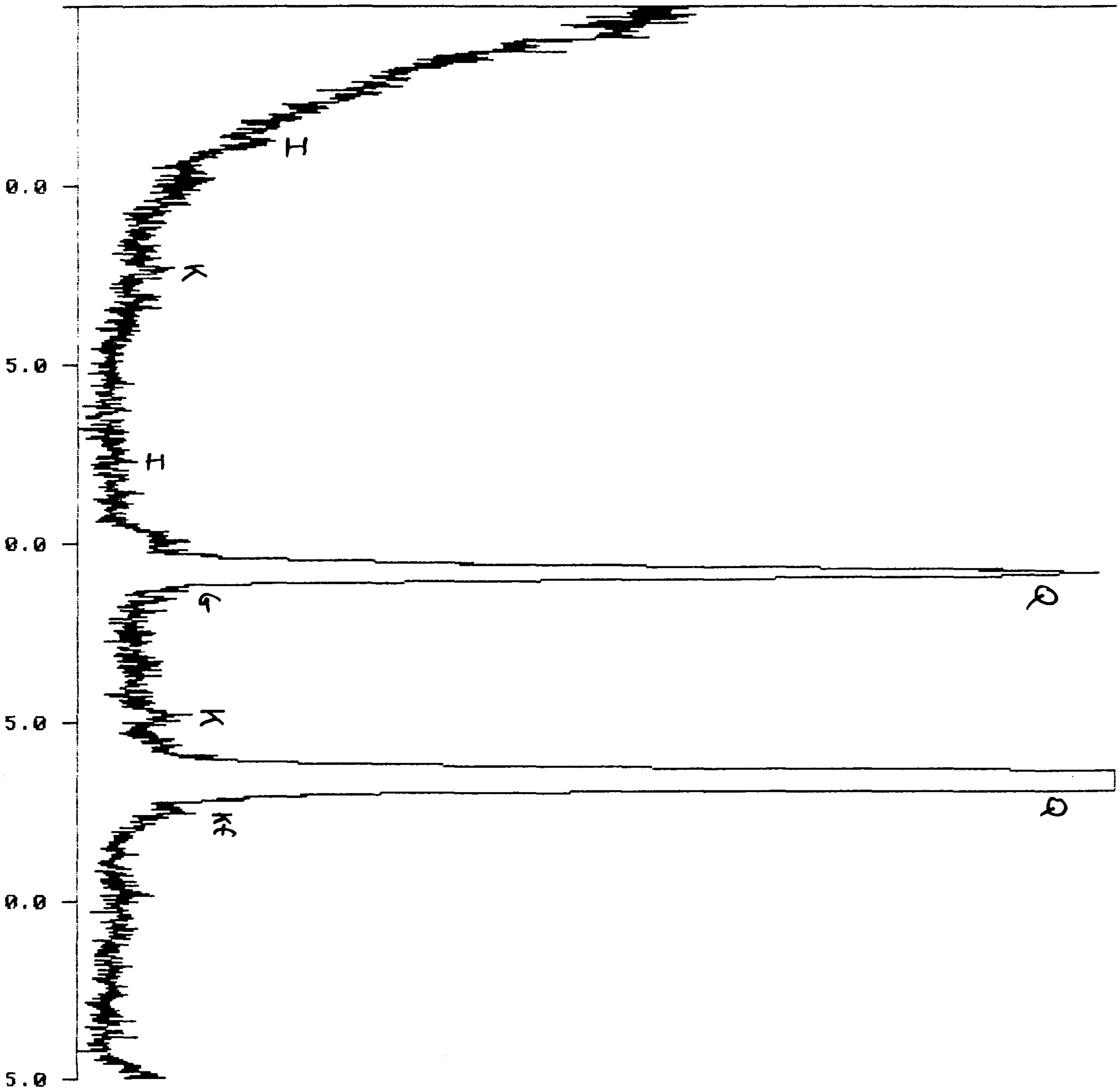
JP15s ms 645 Liddle 713803 Alta Ltd #5 -63 um 7-5-99



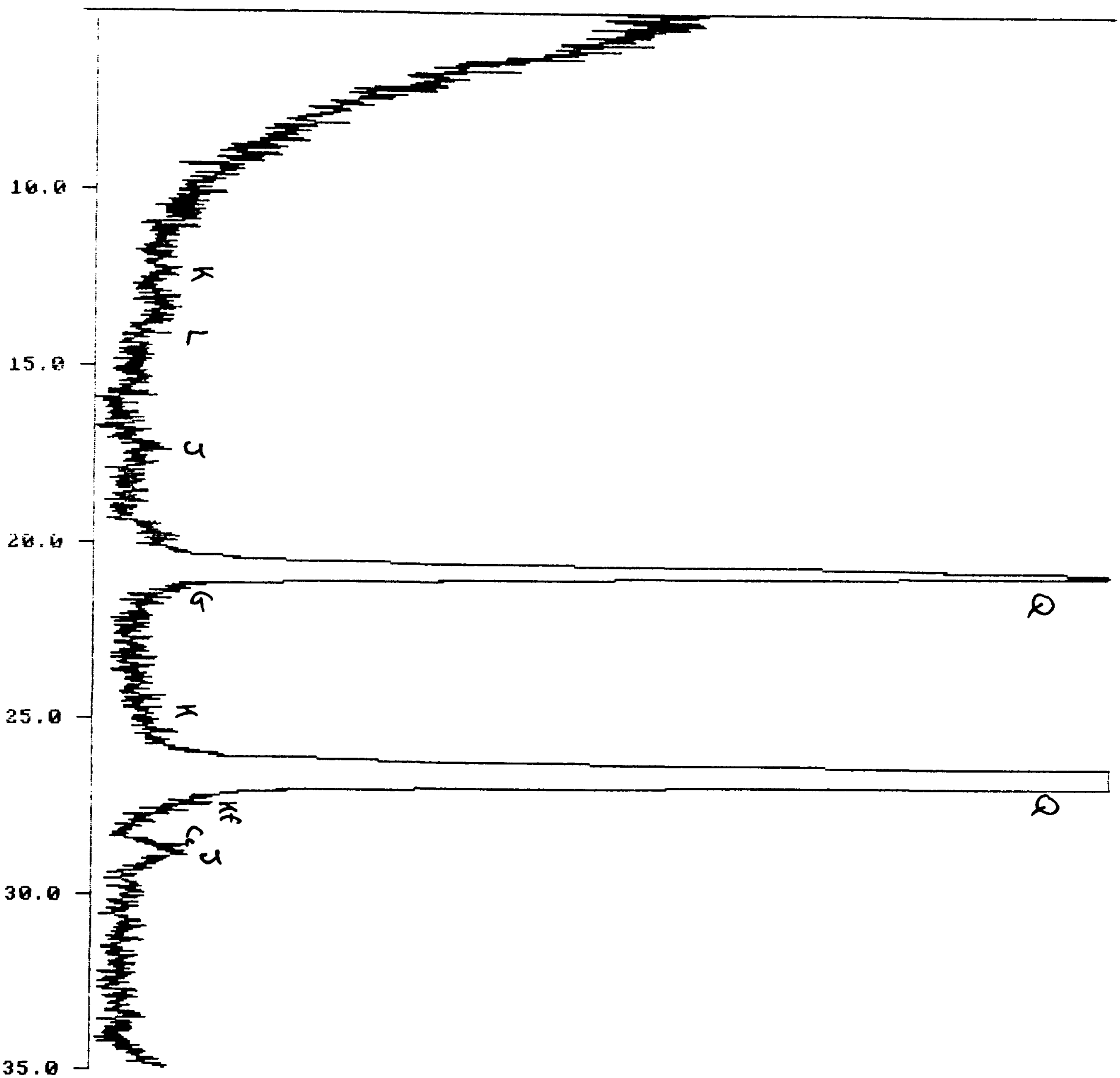
JP16s ms 720 Liddle 713803 Alta Ltd #1 -0.10 mm/+63 um 7-5-99



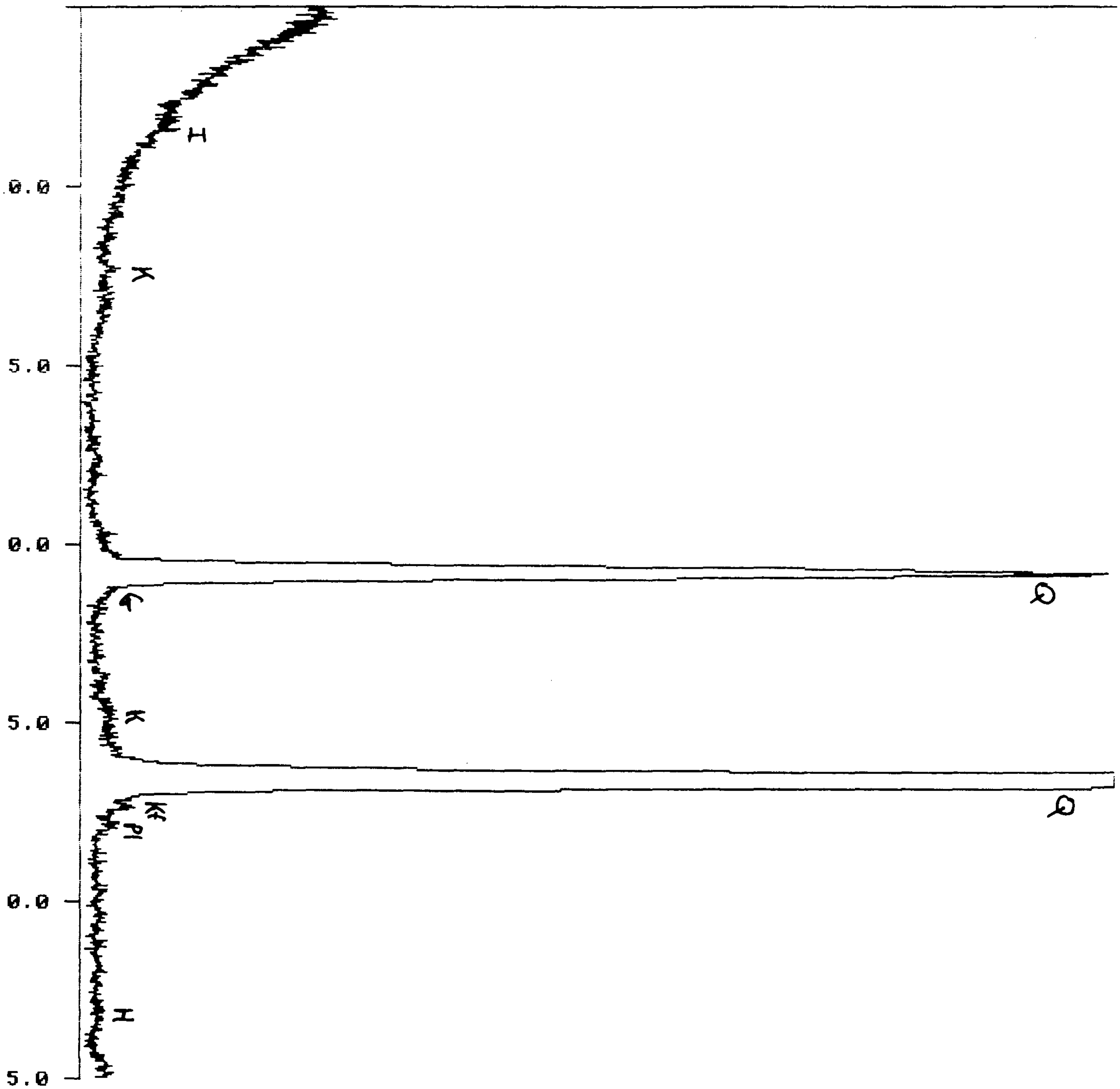
JP17s ms 800 Liddle 713803 Alta Ltd #2 -0.10 mm/+63 um 7-5-99



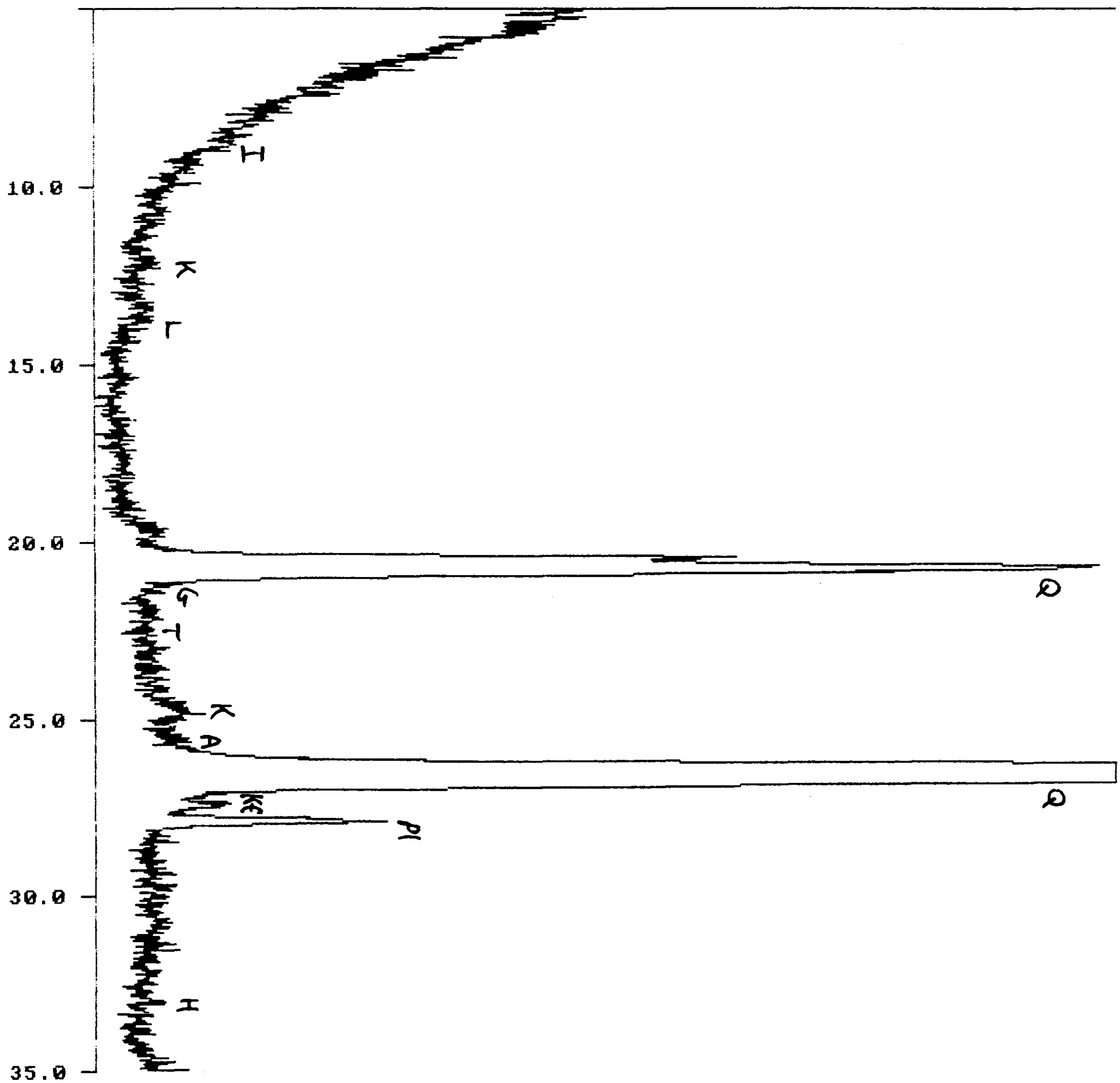
JP18s ms 410 Liddle 713803 Alta Ltd #3 -0.10 mm/+63 um 7-5-99



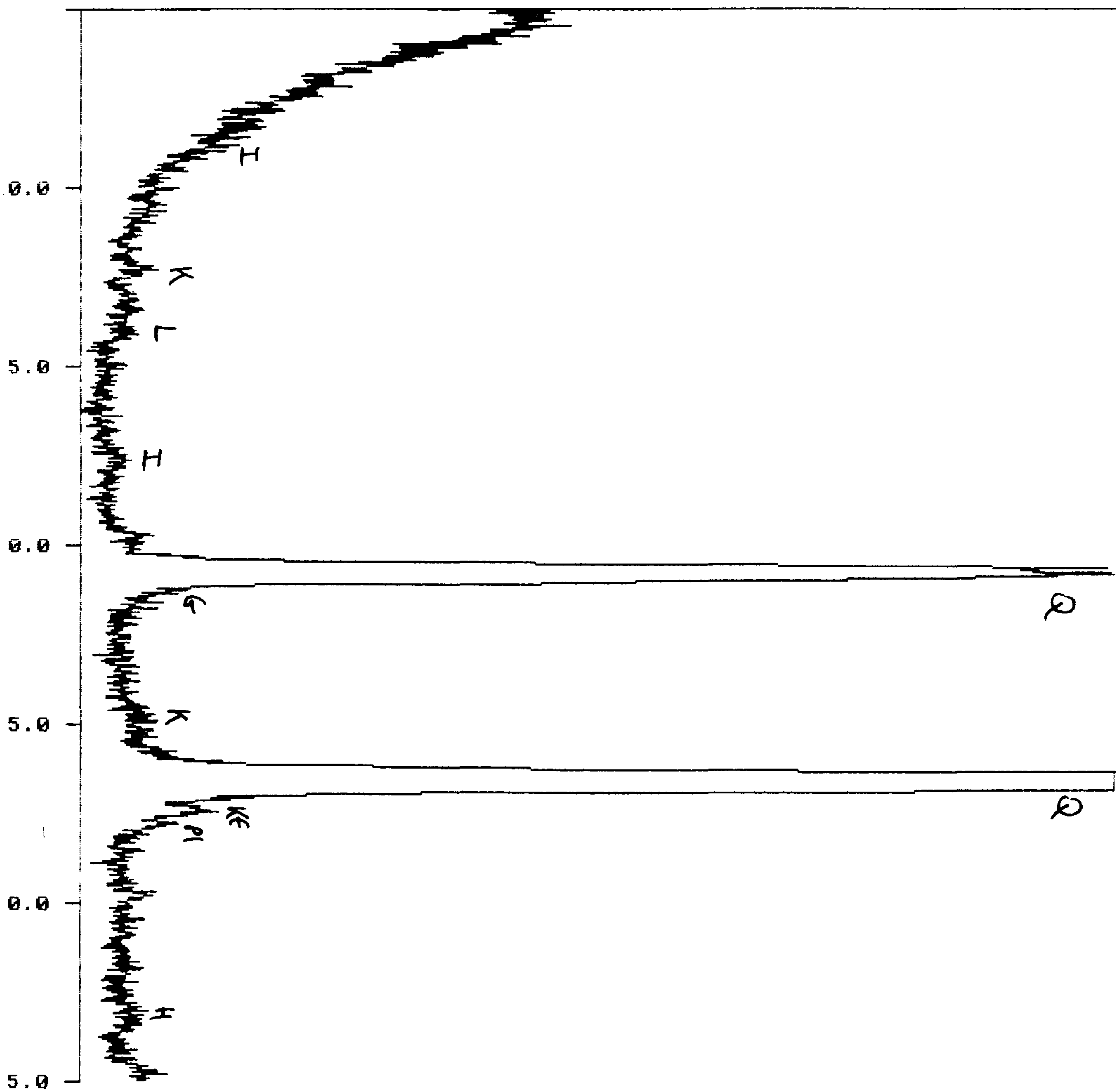
JP19s ms 400 Liddle 713803 Alta Ltd #4 -0.10 mm/+63 um 7-5-99



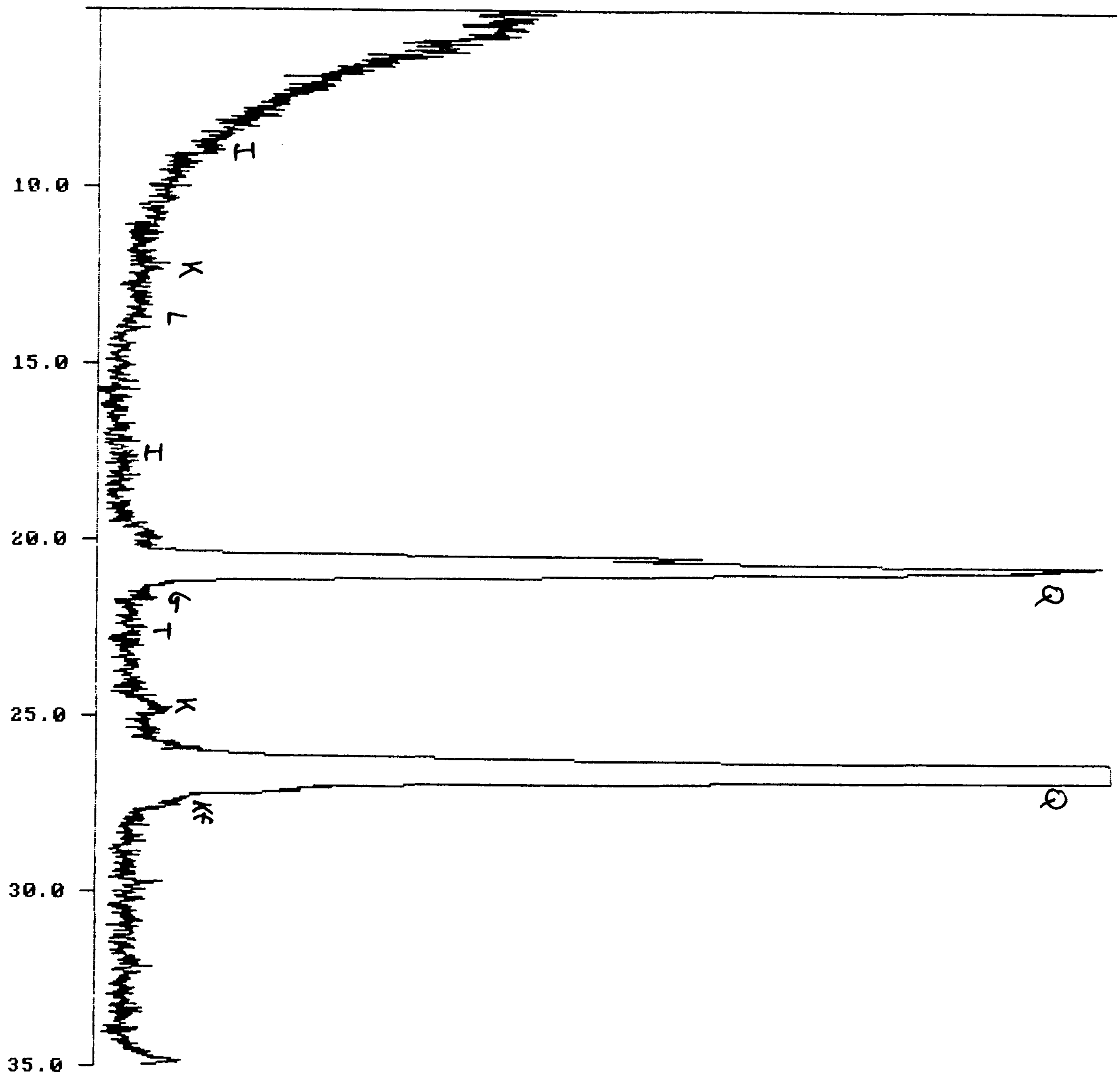
JP20s ms 965 Liddle 713803 Alta Ltd #5 -0.10 mm/+63 um 7-5-99



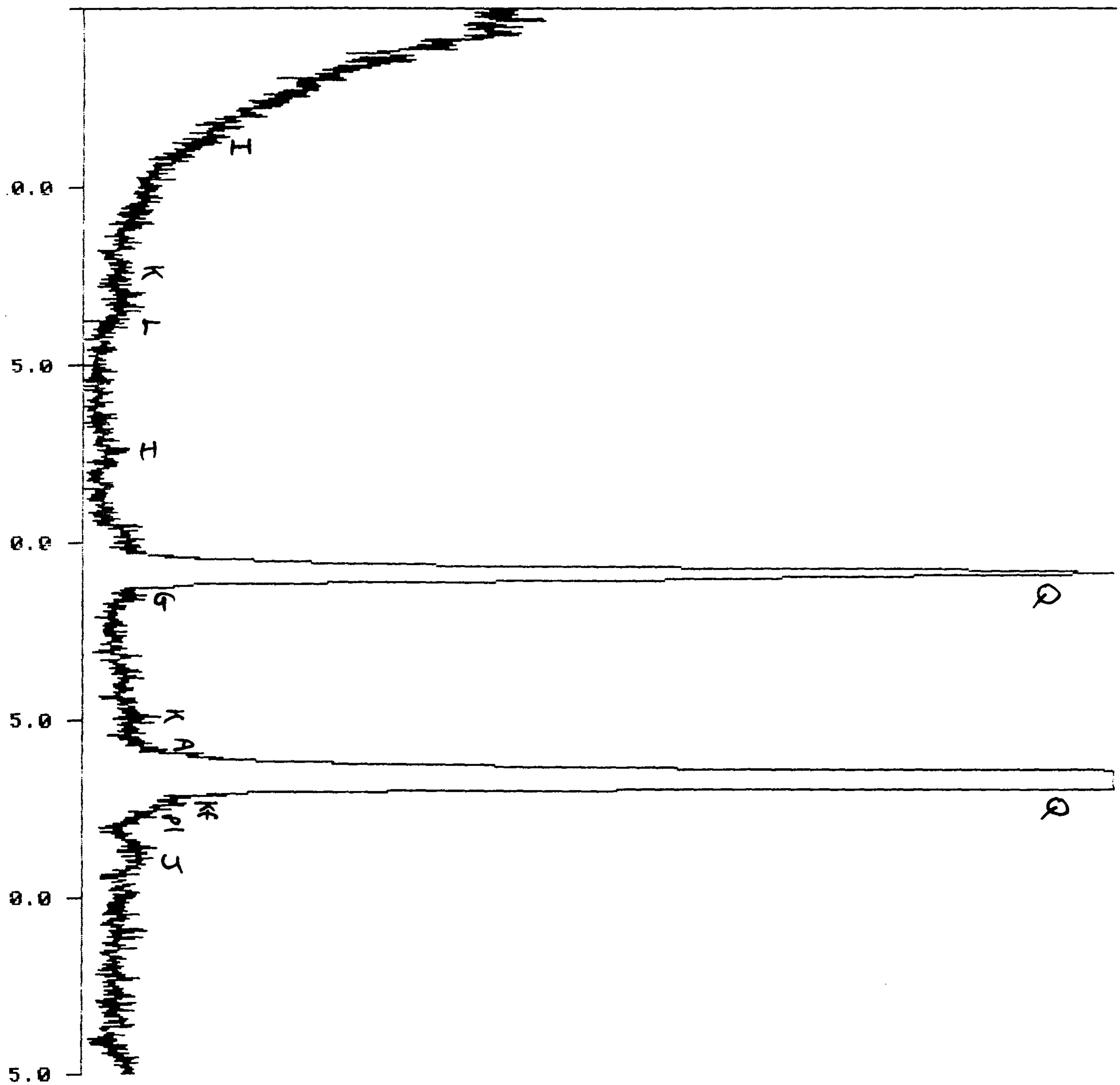
JP21s ms 490 Liddle 713803 Alta Ltd #1 -0.25 mm/+0.10 mm 7-5-99



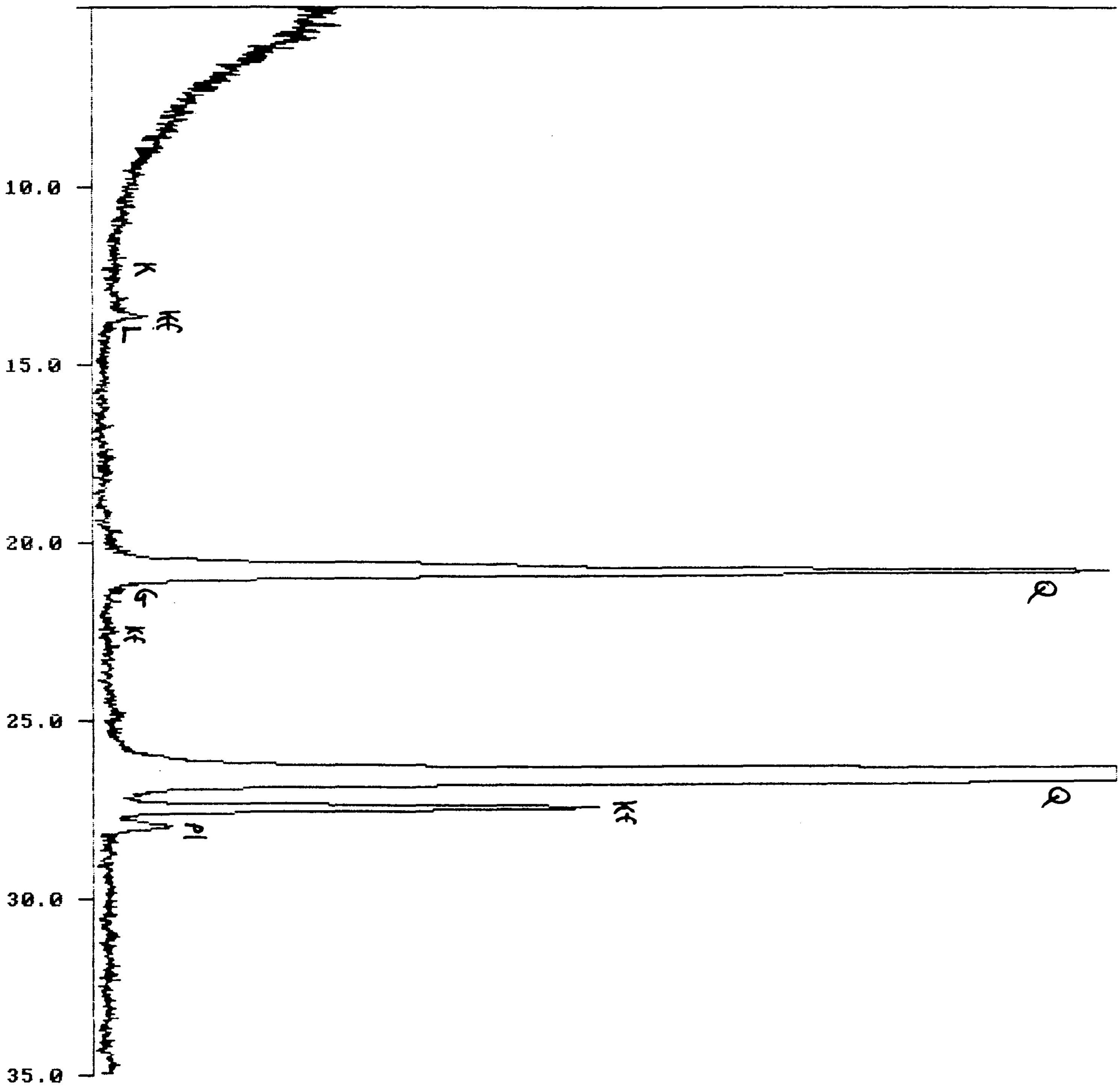
JP22s ms 505 Liddle 713803 Alta Ltd #2 -0.25 mm/+0.10 mm 7-5-99



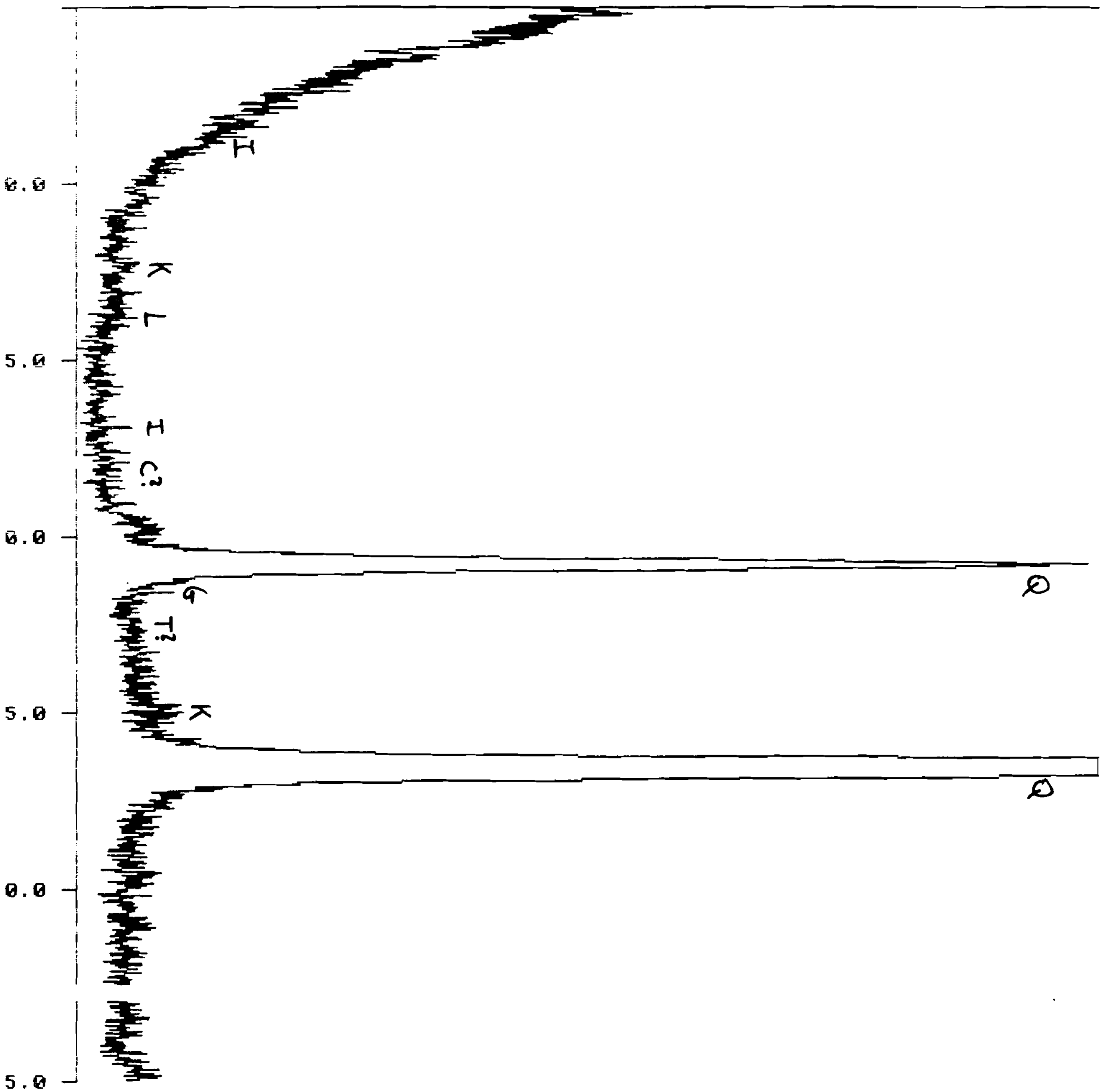
JP23s ms 530 Liddle 713803 Alta Ltd #3 -0.25 mm/+0.10 mm 7-5-99



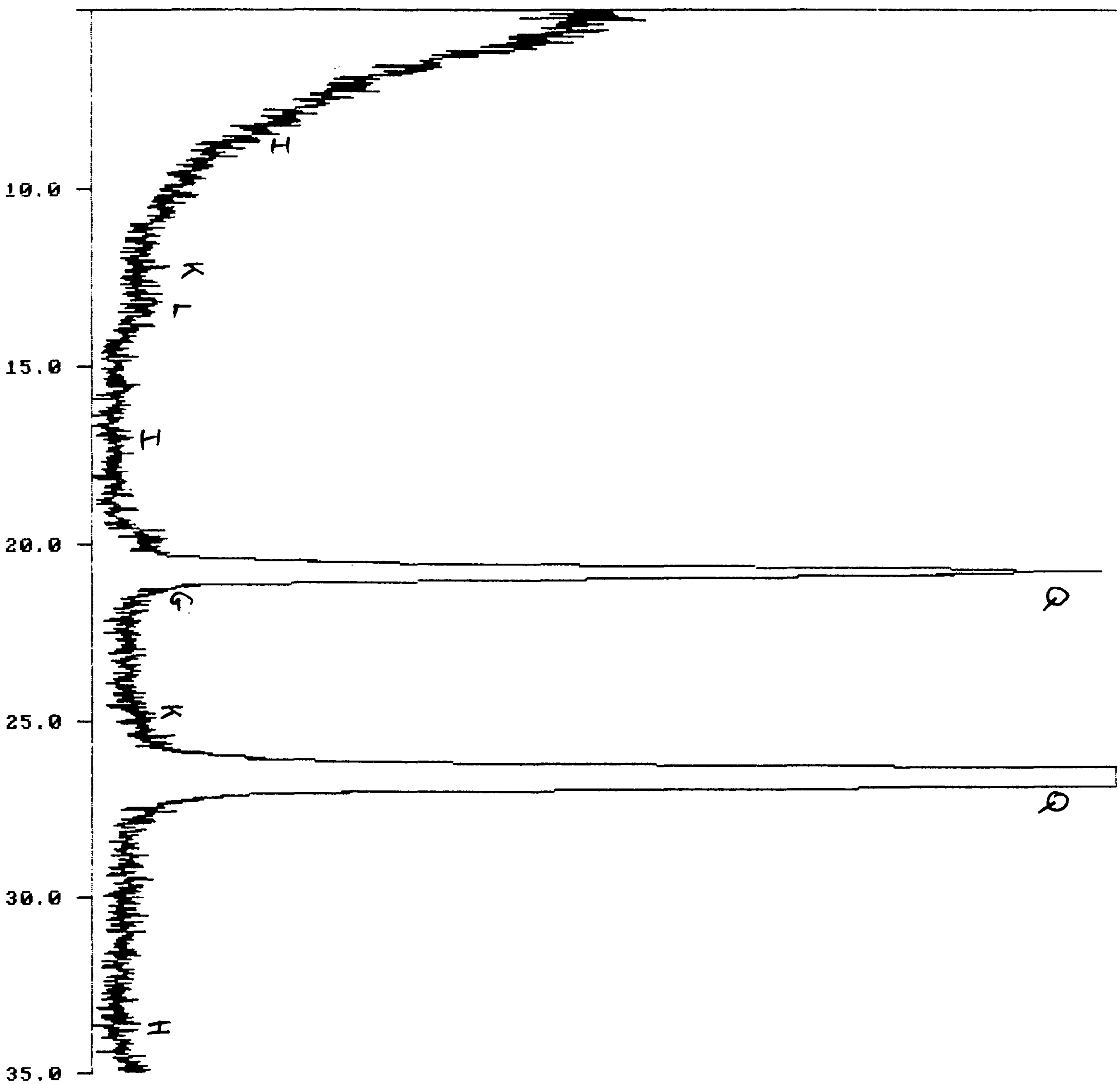
JP24s ms 510 Liddle 713803 Alta Ltd #4 -0.25 mm/+0.10 mm 7-5-99



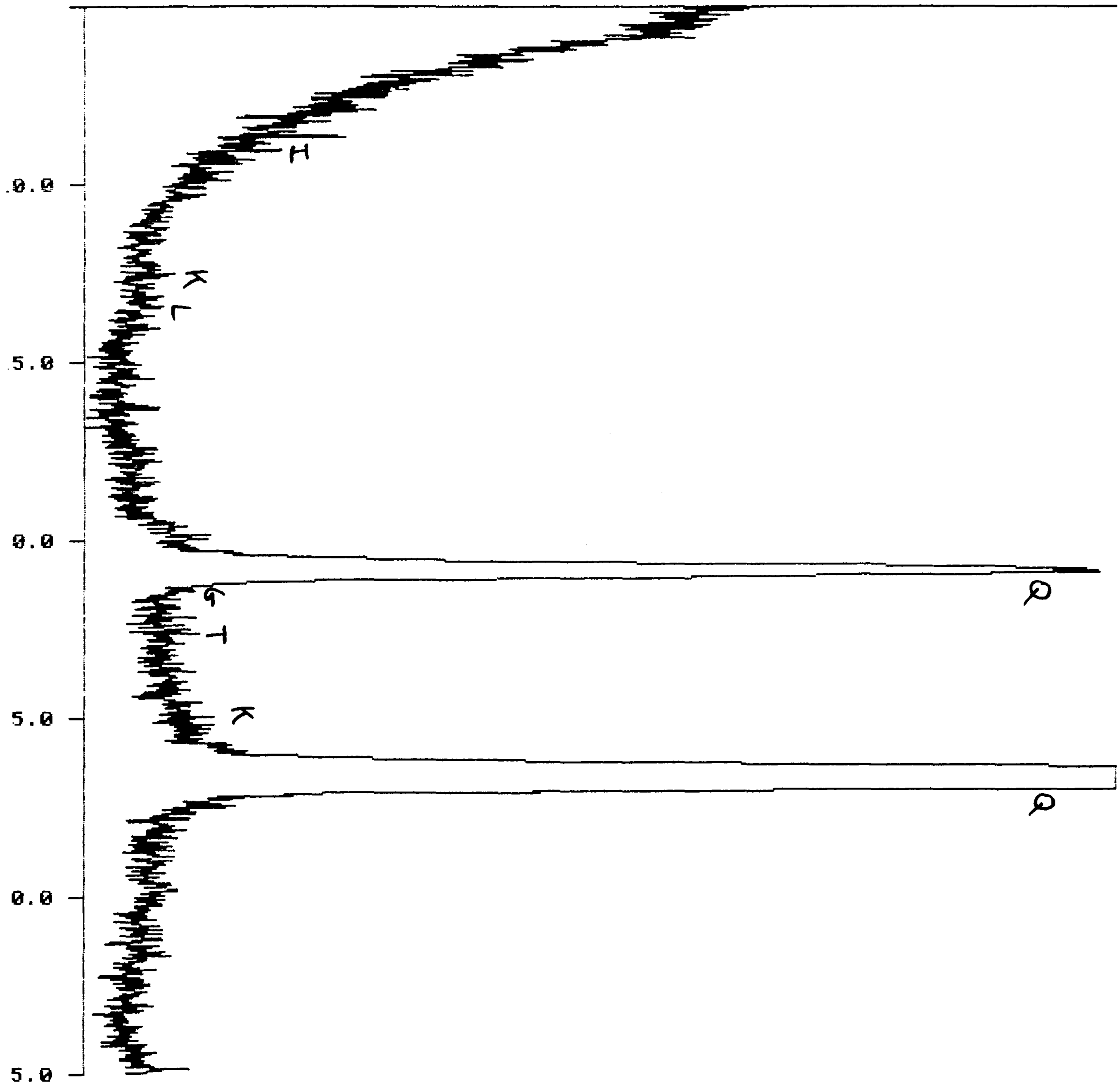
JP25s ms 960 Liddle 713803 Alta Ltd #5 -0.25 mm/+0.10 mm 7-5-99



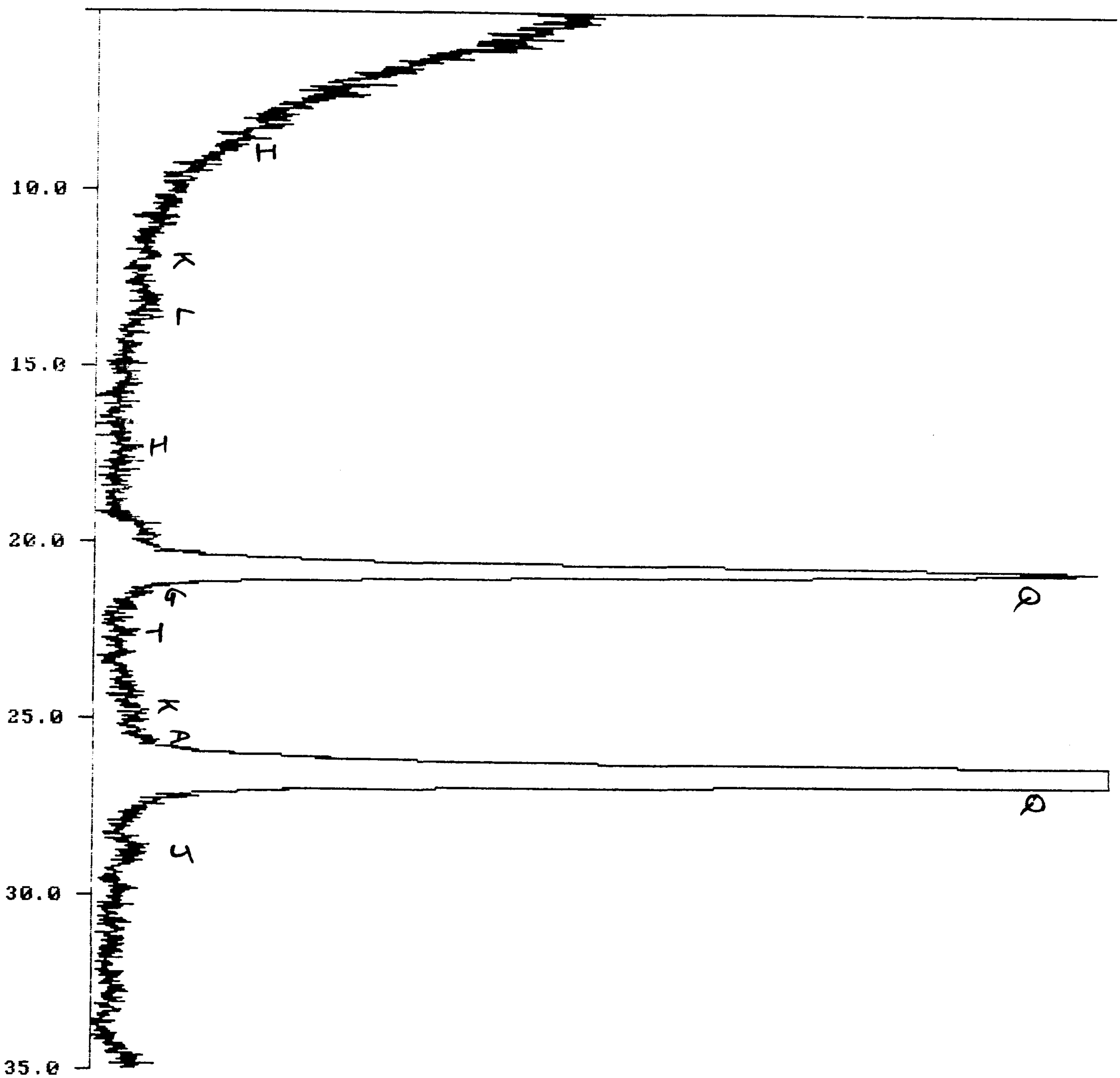
JP26s ms 450 Liddle 713803 Alta Ltd #1 -2 mm/+0.25 mm 7-5-99



JP27s ms 445 Liddle 713803 Alta Ltd #2 -2 mm/+0.25 mm 7-5-99



JP28s ms 365 Liddle 713803 Alta Ltd #3 -2 mm/+0.25 mm 7-5-99



JP29s ms 480 Liddle 713803 Alta Ltd #4 -2 mm/+0.25 mm 7-5-99

APPENDIX D

Geochemical Data

	SiO2c	TiO2	Al2O3	Fe2O3t	Fe2O3c	FeO	CaO	MgO	MnO	K2O	Na2O	P2O5	LOI	CO2
		tri-acid	tri-acid	tri-acid			tri-acid	tri-acid	tri-acid	tri-acid	tri-acid	tri-acid	1000C	
	calculated	ICP	ICP	ICP	calculated	titration	ICP	ICP	ICP	ICP	ICP	ICP	gravimetric	gravimetric
	wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%	wt%
1 +4.75	94.75	0.088	2.34	0.52	0.08	0.4	0.06	0.151	0.002	0.428	0.05	0.141	1.3	0.10
1 +2	94.46	0.094	2.47	0.60	0.04	0.5	0.08	0.160	0.016	0.446	0.04	0.160	1.3	0.12
1 -2+.25	92.93	0.106	2.54	1.89	1.56	0.3	0.06	0.167	0.007	0.442	0.05	0.174	1.5	0.15
1 -.25+.10	94.17	0.084	2.53	0.95	0.62	0.3	0.06	0.158	0.005	0.446	0.05	0.174	1.3	0.15
1 -.10+63	88.52	0.290	4.84	1.68	1.01	0.6	0.53	0.391	0.027	0.869	0.58	0.165	2.0	0.34
1 -63	78.09	0.487	9.62	3.21	1.43	1.6	1.31	0.956	0.047	1.440	1.99	0.212	2.5	0.48
2 -2+.25	93.25	0.103	2.49	1.73	1.40	0.3	0.06	0.166	0.006	0.436	0.05	0.174	1.4	0.13
2 -.25+.10	90.24	0.131	2.29	4.69	4.47	0.2	0.14	0.140	0.019	0.508	0.05	0.199	1.5	0.04
2 -.10+63	88.56	0.278	3.09	4.62	4.29	0.3	0.28	0.179	0.022	0.651	0.10	0.302	1.8	0.11
2 -63	82.57	0.231	4.04	8.39	7.61	0.7	0.28	0.235	0.038	0.728	0.10	0.342	2.9	0.21
3 +4.75	94.47	0.094	2.47	0.63	0.19	0.4	0.06	0.151	0.002	0.447	0.05	0.154	1.3	0.11
3 +2	94.63	0.084	2.37	0.70	0.26	0.4	0.03	0.140	0.002	0.402	0.04	0.135	1.3	0.15
3 -2+.25	94.36	0.094	2.44	0.81	0.59	0.2	0.03	0.143	0.002	0.400	0.04	0.147	1.4	0.16
3 -.25+.10	93.04	0.085	2.62	1.82	1.49	0.3	0.05	0.136	0.006	0.443	0.04	0.182	1.5	0.18
3 -.10+63	87.76	0.140	4.00	2.59	1.48	1.0	0.13	0.215	0.019	0.667	0.10	0.272	4.0	1.26
3 -63	81.86	0.207	5.80	4.68	3.24	1.3	0.20	0.331	0.023	0.834	0.15	0.472	5.3	1.69
4 +4.75	93.65	0.091	2.33	1.41	0.97	0.4	0.05	0.148	0.002	0.465	0.05	0.140	1.5	0.12
4 +2	93.50	0.087	2.35	1.54	1.10	0.4	0.05	0.147	0.002	0.463	0.05	0.137	1.5	0.16
4 -2+.25	93.20	0.089	2.26	1.89	1.56	0.3	0.05	0.139	0.001	0.438	0.05	0.141	1.6	0.16
4 -.25+.10	93.90	0.069	1.90	1.92	1.70	0.2	0.05	0.111	0.002	0.421	0.04	0.114	1.4	0.06
4 -.10+63	87.44	0.177	3.12	4.59	3.59	0.9	0.14	0.171	0.015	0.699	0.09	0.242	3.2	0.51
4 -63	72.77	0.234	5.91	11.02	9.91	1.0	0.36	0.319	0.020	1.146	0.19	0.542	7.3	1.32
5 -.25+10	95.25	0.067	1.56	1.59	1.37	0.2	0.09	0.102	0.013	0.304	0.07	0.106	0.8	0.05
5 -.10+63	92.25	0.140	2.85	2.19	1.86	0.3	0.17	0.186	0.018	0.582	0.16	0.177	1.2	0.08
5 -63	89.62	0.151	3.57	3.33	2.77	0.5	0.20	0.236	0.028	0.696	0.16	0.215	1.7	0.17

	Ag	Ag	As	B	Ba	Be	Bi	Cd	Co	Co	Cr	Cu	Cu	Ga
	tri-acid	partial	partial	Na2O2 fusion	tri-acid	tri-acid	partial	tri-acid	tri-acid	partial	tri-acid	tri-acid	partial	tri-acid
	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
1 +4.75	0.2	0.1	3.3	24	1178	0.6	0.3	0.2	1	0.4	170	6	5.1	4
1 +2	0.4	0.1	3.7	24	1171	0.7	0.4	0.2	1	0.5	190	7	5.0	4
1 -2+.25	0.3	0.1	5.9	21	926	0.8	1.0	0.2	3	2.4	30	7	4.7	3
1 -.25+.10	0.3	0.1	11.5	15	481	0.6	0.6	0.3	1	1	23	6	5.1	2
1 -.10+63	0.2	0.1	10.7	18	552	0.8	1.1	0.4	4	3.8	52	8	7.6	4
1 -63	0.2	0.1	14.5	24	511	1.3	1.8	0.3	6	4.8	90	15	14.9	10
2 -2+.25	0.2	0.1	6.4	22	920	0.8	1.0	0.3	3	2.3	32	7	4.9	2
2 -.25+.10	0.6	0.2	2.2	15	403	0.9	2.7	0.3	9	8.2	26	6	5.7	1
2 -.10+63	0.2	0.2	3.1	29	492	1.0	3.1	0.3	10	8.2	40	7	6.4	2
2 -63	0.4	0.3	4.2	27	571	1.5	4.4	0.5	16	13.9	49	12	12.3	1
3 +4.75	0.2	0.1	5.6	21	1217	0.7	0.5	0.2	1	0.5	149	10	9.2	4
3 +2	0.3	0.1	6.7	22	1147	0.7	0.4	0.2	1	0.6	178	12	10.6	3
3 -2+.25	0.2	0.1	11.0	20	963	0.8	0.4	0.2	1	0.6	28	11	9.7	3
3 -.25+.10	0.2	0.1	21.3	15	414	1.0	1.1	0.5	2	1.5	22	17	15.4	2
3 -.10+63	0.2	0.1	32.4	22	555	1.3	1.5	0.8	2	2.5	49	25	23.9	3
3 -63	0.2	0.1	65.0	26	620	2.2	2.7	1.6	7	4.9	109	51	51.0	3
4 +4.75	0.2	0.1	10.0	22	1180	0.6	0.9	0.2	1	0.7	126	8	8.7	3
4 +2	0.3	0.1	10.5	22	1201	0.6	0.9	0.2	2	0.6	149	8	7.2	4
4 -2+.25	0.2	0.1	13.4	22	1059	0.6	1.2	0.5	2	0.6	28	8	7.0	2
4 -.25+.10	0.2	0.1	17.3	11	431	0.4	1.1	0.5	2	1	19	10	9.1	2
4 -.10+63	0.4	0.1	37.5	20	552	0.7	2.6	1.0	3	2.5	45	21	20.7	2
4 -63	0.4	0.2	88.2	29	850	1.3	4.8	2.2	6	5.1	103	41	37.5	3
5 -.25+10	0.2	0.1	1.6	9	191	0.4	1.0	0.2	5	4.4	15	3	2.9	1
5 -.10+63	0.2	0.1	2.2	21	338	0.7	1.5	0.2	8	6.5	29	5	4.3	2
5 -63	0.2	0.2	3.0	23	346	0.9	2.1	0.2	13	9.4	37	7	6.9	3

	Ge partial ICP ppm	Hf tri-acid ICP ppm	Hg partial ICP ppm	Li tri-acid ICP ppm	Mo tri-acid ICP ppm	Mo partial ICP ppm	Nb tri-acid ICP ppm	Ni tri-acid ICP ppm	Ni partial ICP ppm	Pb tri-acid ICP ppm	Pb partial ICP ppm	Sb partial ICP ppm	Sc tri-acid ICP ppm	Se partial ICP ppm
1 +4.75	0.2	0.5	0.03	12	2	1.0	1	6	3.4	5	2.89	0.3	3	0.2
1 +2	0.2	0.5	0.03	13	1	0.6	1	6	3.9	6	3.79	0.3	3	0.2
1 -2+.25	0.2	0.5	0.03	14	1	0.5	1	12	7.3	14	9.49	0.5	3	0.2
1 -.25+.10	0.2	0.7	0.03	17	1	0.3	1	6	3.6	7	4.03	0.6	2	0.2
1 -.10+63	0.2	2.4	0.03	17	2	0.5	3	28	9.8	11	6.18	0.8	3	0.2
1 -63	0.2	3.5	0.03	26	3	1.2	3	31	18.8	19	10.89	1.3	6	0.2
2 -2+.25	0.2	0.7	0.03	14	1	0.5	1	10	7.3	18	12.81	0.6	3	0.2
2 -.25+.10	0.2	0.9	0.04	12	2	1.8	3	27	24.3	13	8.94	0.4	3	0.2
2 -.10+63	0.2	1.9	0.03	14	2	1.9	6	28	24.2	16	9.91	0.3	4	0.2
2 -63	0.4	1.9	0.03	16	3	2.7	6	46	40.5	21	13.88	1.4	6	0.2
3 +4.75	0.2	0.5	0.03	13	1	0.7	1	8	4.9	6	3.61	0.4	3	0.2
3 +2	0.2	0.5	0.03	13	1	0.9	1	9	5.8	5	3.41	0.4	3	0.2
3 -2+.25	0.2	0.6	0.03	14	1	0.4	2	8	4.7	7	4.53	0.5	3	0.2
3 -.25+.10	0.2	0.5	0.03	16	1	0.6	1	13	11.4	7	4.36	0.8	3	0.2
3 -.10+63	0.2	1.2	0.03	19	1	1.1	2	21	20.6	11	6.93	0.9	5	0.3
3 -63	0.2	1.4	0.03	25	5	2.3	4	53	37.1	19	12.90	0.8	8	0.3
4 +4.75	0.2	0.7	0.03	12	1	0.8	2	8	4.3	5	2.94	0.3	3	0.2
4 +2	0.2	0.6	0.03	13	1	0.8	1	7	4.2	5	3.02	0.2	2	0.2
4 -2+.25	0.2	0.5	0.03	13	1	0.8	2	6	5.3	6	3.38	0.3	2	0.2
4 -.25+.10	0.2	0.7	0.03	13	1	1.1	1	6	4.0	5	2.83	0.5	2	0.2
4 -.10+63	0.2	2.7	0.03	16	4	2.4	4	16	12.7	11	5.96	0.2	3	0.2
4 -63	0.7	2.4	0.05	26	9	5.3	4	46	21.9	18	7.70	1.5	6	0.2
5 -.25+10	0.2	0.5	0.03	11	1	0.1	1	14	13.4	26	18.95	0.9	1	0.2
5 -.10+63	0.2	1.0	0.03	13	1	0.2	3	21	20.4	12	9.32	0.2	2	0.2
5 -63	0.2	1.3	0.03	15	1	0.4	3	32	29.2	14	9.87	0.2	3	0.2

	Sn tri-acid ICP ppm	Sr tri-acid ICP ppm	Ta tri-acid ICP ppm	Te partial ICP ppm	Th tri-acid ICP ppm	U tri-acid fluorimetry ppm	U partial ICP ppm	V tri-acid ICP ppm	V partial ICP ppm	W tri-acid ICP ppm	Y tri-acid ICP ppm	Zn tri-acid ICP ppm	Zn partial ICP ppm	Zr tri-acid ICP ppm
1 +4.75	1	97	1	0.2	2	0.7	0.5	71	10.0	2	6	8	5.7	26
1 +2	1	82	1	0.2	1	0.7	0.5	102	13.0	2	6	10	6.6	23
1 -2+.25	1	65	1	0.2	2	0.7	0.5	95	17.0	1	8	43	35.4	26
1 -.25+.10	1	40	1	0.2	2	0.7	0.5	57	11.5	1	3	21	15.5	20
1 -.10+63	1	101	1	0.2	4	1.3	0.9	63	17.7	1	8	30	24.9	77
1 -63	1	175	1	0.2	9	3.8	2.8	81	30.8	3	11	61	47.7	118
2 -2+.25	1	66	1	0.2	2	0.7	0.5	95	17.2	1	7	39	34.7	24
2 -.25+.10	1	54	1	0.2	3	0.8	0.5	86	33.3	1	16	126	119.1	24
2 -.10+63	1	68	1	0.2	5	1.4	0.8	107	31.9	1	22	121	112.8	73
2 -63	3	77	1	0.2	6	1.7	0.7	139	52.2	1	26	216	195.7	66
3 +4.75	1	108	1	0.2	1	1.0	0.7	68	11.9	1	7	11	9.7	24
3 +2	1	85	1	0.2	1	1.1	0.9	94	15.9	1	6	15	15.2	20
3 -2+.25	1	72	1	0.2	2	1.2	1.1	82	11.8	1	6	18	15.6	20
3 -.25+.10	1	36	1	0.2	2	1.2	1.2	62	19.2	1	6	50	47.1	19
3 -.10+63	1	52	1	0.2	3	3.3	3.1	79	30.1	1	9	67	64.3	37
3 -63	1	61	1	0.2	4	6.1	6.2	113	49.2	1	14	130	124.8	52
4 +4.75	1	98	1	0.2	1	0.7	0.5	85	15.6	1	7	22	21.0	23
4 +2	1	90	1	0.2	2	0.8	0.5	101	16.0	1	7	18	18.4	21
4 -2+.25	1	80	1	0.2	1	0.7	0.5	94	16.9	1	7	25	23.4	25
4 -.25+.10	1	46	1	0.2	2	0.5	0.5	55	14.2	1	3	39	36.3	21
4 -.10+63	1	69	1	0.2	3	1.2	0.6	79	34.8	1	7	77	72.0	81
4 -63	3	132	1	0.3	4	1.9	2.1	135	54.1	1	9	167	143.3	109
5 -.25+10	3	31	1	0.2	3	0.4	0.5	43	10.2	1	9	70	65.5	14
5 -.10+63	1	51	1	0.2	3	0.7	0.5	78	13.8	1	15	99	91.5	23
5 -63	1	53	1	0.2	4	0.7	0.5	90	17.5	1	19	139	129.3	31

	La tri-acid ICP ppm	Ce tri-acid ICP ppm	Pr tri-acid ICP ppm	Nd tri-acid ICP ppm	Sm tri-acid ICP ppm	Eu tri-acid ICP ppm	Gd tri-acid ICP ppm	Tb tri-acid ICP ppm	Dy tri-acid ICP ppm	Ho tri-acid ICP ppm	Er tri-acid ICP ppm	Tm tri-acid ICP ppm	Yb tri-acid ICP ppm	Lu tri-acid ICP ppm
1 +4.75	10	14	2	10	2.3	0.4	1.9	0.3	1.3	0.4	0.6	0.3	0.7	0.2
1 +2	11	17	2	12	2.5	0.5	2.1	0.5	1.3	0.5	0.6	0.2	0.7	0.2
1 -2+.25	11	18	2	11	2.3	0.4	2.0	0.3	1.9	0.4	0.3	0.4	0.7	0.1
1 -.25+.10	6	8	2	5	0.8	0.3	0.9	0.3	0.7	0.4	0.5	0.6	0.5	0.2
1 -.10+63	13	26	2	11	1.6	0.3	1.9	0.3	1.7	0.4	0.6	0.2	0.8	0.1
1 -63	24	42	4	19	2.7	0.5	2.7	0.3	2.4	0.4	1.3	0.6	1.1	0.2
2 -2+.25	11	17	3	11	2.5	0.3	2.0	0.3	1.7	0.6	1.0	0.2	0.7	0.1
2 -.25+.10	11	20	3	12	2.2	0.4	2.6	0.3	2.6	0.4	1.5	0.2	1.2	0.3
2 -.10+63	21	38	4	21	3.0	0.6	3.5	0.6	3.5	0.5	2.2	0.2	1.9	0.3
2 -63	22	40	3	22	3.4	0.7	4.6	0.4	4.3	0.5	2.1	0.6	2.1	0.5
3 +4.75	10	15	2	11	2.6	0.5	2.1	0.4	1.5	0.4	0.7	0.5	0.8	0.2
3 +2	9	14	2	10	2.3	0.5	1.9	0.4	1.4	0.4	0.8	0.4	0.7	0.2
3 -2+.25	9	16	2	9	1.7	0.4	1.8	0.4	1.3	0.6	0.2	0.6	0.7	0.2
3 -.25+.10	6	11	1	5	1.1	0.2	1.3	0.3	1.6	0.4	0.4	0.2	0.7	0.1
3 -.10+63	9	13	2	8	1.6	0.3	1.7	0.3	2.0	0.4	0.5	0.9	1.1	0.2
3 -63	12	22	2	11	1.8	0.4	3.0	0.4	3.3	0.5	1.8	0.6	1.7	0.4
4 +4.75	9	17	2	11	2.2	0.5	2.0	0.3	1.5	0.5	0.3	0.3	0.7	0.1
4 +2	10	17	2	12	2.4	0.5	2.1	0.3	1.5	0.5	0.6	0.3	0.6	0.1
4 -2+.25	10	15	3	11	2.2	0.4	2.0	0.3	1.6	0.4	0.2	0.2	0.7	0.1
4 -.25+.10	6	9	1	5	0.7	0.2	0.9	0.3	0.7	0.4	0.4	0.2	0.4	0.1
4 -.10+63	13	22	2	12	1.8	0.2	2.3	0.3	1.5	0.4	0.7	0.2	0.8	0.2
4 -63	14	28	1	14	2.0	0.2	2.9	0.3	2.1	0.4	0.8	0.8	1.0	0.4
5 -.25+10	7	10	3	8	1.4	0.2	1.7	0.3	1.4	0.5	0.9	0.2	0.7	0.1
5 -.10+63	11	21	2	13	2.4	0.4	2.8	0.3	2.3	0.4	0.7	0.6	0.9	0.2
5 -63	14	26	3	15	2.8	0.5	3.5	0.5	2.8	0.4	1.4	0.2	1.1	0.2

	sum REE calculated ppm	sum traces calculated ppm	Au1 fire assay ICP ppb	Au2 fire assay ICP ppb	Pt1 fire assay ICP ppb	Pt2 fire assay ICP ppb	Pd1 fire assay ICP ppb	Pd2 fire assay ICP ppb	Rh fire assay ICP ppb
1 +4.75	44.4	1677.1	3		1		5		
1 +2	51.1	1713.6	7		1		2		
1 -2+.25	50.8	1338.4	4		15		1		1
1 -.25+.10	26.2	750.2	5		55		1		1
1 -.10+63	59.9	1066.2	8		1		1		
1 -63	101.2	1332.6	49		1		1		
2 -2+.25	51.4	1331.8	1		42		4		1
2 -.25+.10	57.7	899.1	1		2		1		4
2 -.10+63	100.3	1161.2	1	1	1	1	1	1	
2 -63	106.2	1432.0	4	4	1	1	1	1	
3 +4.75	47.7	1713.4	2		1		1		
3 +2	44.0	1673.9	2		1		2		
3 -2+.25	43.9	1323.4	1		5		1		2
3 -.25+.10	29.3	747.6	7		84		1		1
3 -.10+63	41.0	1048.3	5		1		1		
3 -63	60.9	1448.8	174		1		1		
4 +4.75	47.4	1671.6	4		1		1		
4 +2	49.9	1721.6	2		1		3		
4 -2+.25	47.1	1451.3	1		172		1		4
4 -.25+.10	25.3	719.1	1		5		2		3
4 -.10+63	57.4	1120.4	28		1		1		
4 -63	67.9	1873.9	39		1		1		
5 -.25+.10	35.4	494.2	1		4		1		1
5 -.10+63	58.0	792.3	1	12	1	1	1	1	
5 -63	71.4	916.6	2	1	1	1	1	1	

4.11 Envirogold Technologies Inc.

Envirogold Technologies Inc. is a Calgary company who have developed a bromide leaching process and constructed a skid mounted pilot plant capable of processing 100kg samples. As a first step, Envirogold had lab scale leaching analyses performed by Cantech on smaller samples provided by 713803 Alberta Ltd. and were unable to obtain any significant gold values. (See Attachment 4.11.1). Accordingly, no pilot scale testing has been commissioned at this point in time.

Attachment 4.11.1

ENVIRO GOLD
TECHNOLOGIES INC

FAX COVER PAGE

DATE: December 28, 1998

TO: Mr. Walter Haessel

FAX NUMBER: 247-9411

FROM: Wayne Miyagishima

RE: Assay Results

NUMBER OF PAGES (INCLUDING COVER PAGE): 3

MESSAGE: Please see attached assay report from CanTech Laboratories Inc. Sample 12898-1 is your gravel conglomerate, while sample 12998-1 is your sandstone conglomerate. As discussed, we are proceeding with additional tests that are within the agreed initial budget.

Regards,

[redacted]

Suite 204, 224 - 6th Avenue N.E., Calgary, Alberta, Canada T2E 0L7, Tel: 403.276.8097 Fax: 403.276.7850

CanTech *Laboratories Inc.*

4200B - 10 Street N.E.
Calgary Alberta
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

EnviroGold Technologies Inc.
Suite 204, 224 - 6th Avenue N.E.
Calgary, Alberta
T2E 0L7 Attention: Bud T.J. Johnson

*** FINAL REPORT ***

Certificate of Analysis

Work Order: 98171A
December 23, 1998

FIRE ASSAY - Precious Metals

Sample Number	Au g/t	Pt ppb	Pd ppb	Rh ppb
conglomerate				
12898-1 Heads	0.34	-	-	-
12898-1 Tails	0.14	-	-	-
12898-1 Prec.	0.02	<30	<20	<30
sandstone				
12998-1 Heads	0.01	-	-	-
12998-1 Tails	0.01	-	-	-
12998-1 Prec.	0.01	30	<20	<30

Prepared by Ted Dylong

CanTech *Laboratories Inc.*

42008 -10 Street N.E.
Calgary, Alberz
Canada T2E 6K3
Tel (403) 250-1901
Fax (403) 250-8265

ENVIROGOLD Technologies Inc.
Suite 204, 224 - 8 Avenue N.E.
Calgary, Alberta
T2E 0L7

DATE: 23-Dec-98
PROJECT:
PURCHASE ORDER:
WORK REPORT 98171A
GST #R100405208

TERMS: NET 30 DAYS **Net 15 Days**

AUTHORITY: ***Bud Johnson***

INVOICE No.
16163A

TO:

For the analyses on supplied samples	
Preparation of 6 Samples @ $ 3.50 per sample	$21.00
For the assay of 6 samples for Gold @ $ 11.30 per sample	$67.80
For the assay of 2 samples for Platinum & Palladium [illegible]	$88.00
For the assay of 2 samples for Rhodium @ $ 27.50 per sample	$55.00
Administration Charge	$10.00
Sub-Total	$241.80
G.S.T.	$16.93
TOTAL THIS INVOICE	**$258.73**

4.12 Loring Laboratories Ltd.

Loring has also conducted a series of bead content analyses on beads obtained by Lewis. Loring's results are similar to those of Cantech and SRC in that for most beads insignificant gold values are determined but for some beads the values are significant. A comparability test was performed by Loring (Attachment 4.12.1) on the remaining values of beads 2 & 5 from the Cantech test (Attachment 4.2.5) and confirmed very closely the Cantech results.

In further tests conducted by Loring, the average content of the beads obtained from assays by Al Lewis from table concentrate was .095 oz./ton. This is shown on Attachment 4.12.2. One sample (#1 on Attachment 4.12.3) showed a significant gold content at 0.329 oz/ton. Loring conducted three other tests with some individual samples showing values of greater than .01 oz./ton. These further tests are included as Attachments 4.12.4 through 4.12.6.

Attachment 4.12.1

To : 713803 ALBERTA LTD.

ATTN . Barry Luft

File No : 40289
Date July 14, 1998
Samples : Beads
Project :
P.O.#

Certificate of Assay

Loring Laboratories Ltd.

629 Beaverdam Road, NE Calgary Alberta
Tel. (403)274-2777 Fax: (403)275-0541

Sample No.	Bead Weight mg	Au Weight mg	Pt Weight mg
BEAD # 2	370.00	0.0237	< 0.001
BEAD # 5	243.86	0.0123	< 0.001

NOTE: the results are in complete agreement with the CanTech report

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples :

[redacted]
Assayer

To : MR. BARRY LUFF
116 Oakland Place S.W.
Calgary, Alberta
T2V 4M8

File No : 40670
Date : November 16, 1998
Samples : Silver Dore
Project :
P.O.#

Certificate of Assay
Loring Laboratories Ltd.

629 Beaverdam Road, NE Calgary Alberta
Tel: (403)274-2777 Fax: (403)275-0541

Sample No.	Total Wt of Ag Dore Rec'd in milligrams	Total Wt of Au found in Dore Beads mgs
A	1.755	0.082
B	1.459	0.128
~~C~~ T	1.604	0.090

From Concentrating Table:

Sample No

A 1 grms = 30 × .082 = 2.460 mgms

B 5 grms = 6 × .128 = .768 mgs

T 9 grms = 324 × .090 = .292 mgs

3.520 mgs

Samples were concentrated from total of 46.65 AT.

Average Value of A, B and T = 3.52 ÷ 46.65 AT

= 0.075 oz/ton

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples :

[redacted]
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541

TO: 713803 ALBERTA LTD.
RR 1,Site 13, Box 18
Ponoka, Alberta
T4J 1R1

FILE:41019

DATE:Mar.31,1999

Attn: Alan Lewis

PGM ANALYSIS

Sample No.	Au ug.	Pt ug.
1	109.7	1.025
2	5.58	0.453
3	7.76	1.075

Total sample digested in aqua regia and analyzed by ICP.

Certified by: [redacted]

Test #417A - 1.- HENDERSON - 10 gm. sample=109.7X3=.329 oz. per ton Au.
Test #430 - 2. - 3 A.T. 5.58 ÷ 3 = .002 "
Test #429 - 3. - 3 A.T. 7.76 ÷ 3 = .002 "

Attachment 4.12.4

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541

TO: ALAN LEWIS
RR 1,Site 13, Box 18
Ponoka, Alberta
T4J 1R1

FILE:41063

DATE:April15,1999

Attn: Alan Lewis

PGM ANALYSIS

Sample No.	Au ug.	oz/ton	Pd ug.	Pt ug.	Rh ug.
1 2 A.T	0.93	÷2 = .0005	<0.15	<0.15	<0.15
2 1 A.T	6.26	= .006	<0.15	<0.15	<0.15
3 2 A.T	6.12	÷2 = .003	<0.15	<0.15	<0.15
4 1 A.T	5.18	= .005	<0.15	<0.15	<0.15
5 3 A.T	3.86	÷3 = .001	<0.15	<0.15	<0.15
6 3 A.T	6.32	÷3 = .002	<0.15	<0.15	<0.15

Samples analyzed as received.
Total sample digested in aqua regia and analyzed by ICP.

Certified by: [redacted]

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541

TO: ALAN LEWIS
RR 1,Site 13, Box 18
Ponoka, Alberta
T4J 1R1

FILE:41063-1

DATE:April26,1999

Attn: Alan Lewis

PGM ANALYSIS

Sample No.	Au ug.	Pd ug.	Pt ug.	Rh ug.
VIAL-1	64.75	0.025	0.2	<0.015
VIAL-2	12.5	0.4	0.35	<0.015
VIAL-3	16.63	0.325	0.625	<0.015
VIAL-4	3589	<0.15	<0.15	<0.15
CUPEL	0.55	<0.015	1.05	<0.015

Samples analyzed as received.
Total sample digested in aqua regia and analyzed by ICP.

Certified by: [redacted]

A Lewis Test No — Vial No

Test #431 - 1 - 3 A.T. - .0647 mgs. Au. ÷ 3 = .021 3/t...

#429A- 2 - 3 A.T. - .0125 mgs. Au. ÷ 3 = .004 "

#433A- 3 - 3 A.T. - .0166 mgs. Au. ÷ 3 = .006 "

4 - Test control blank - 3.589 mgs. Au.

CUPEL-10X14 P.G.M.-type bead from #429A - trace Pt.

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541

TO: ALAN LEWIS
RR 1,Site 13, Box 18
Ponoka, Alberta
T4J 1R1

FILE:41063-2

DATE:April26,1999

Attn: Alan Lewis

PGM ANALYSIS

Sample No.	Au ug.	Pd ug.	Pt ug.	Rh ug.
VIAL-1	37.80	<0.015	0.051	<0.015
VIAL-2	4.575	0.211	0.075	<0.015
VIAL-3	4.909	0.052	0.362	0.173
VIAL-4	11.39	<0.015	30.11	1.298
VIAL-5	5.089	0.102	0.422	<0.015
Cupel A(8x10)	2.326	<0.015	3.023	<0.015
Cupel A(12x15)	2.440	<0.015	3.374	<0.015
Cupel B	1.398	<0.015	0.927	0.433
Cupel-C	2.845	<0.015	0.222	0.346

Samples analyzed as received.
Total sample digested in aqua regia and analyzed by ICP.

Certified by: [redacted]

Pt. - $563.00 Cnd.
Pd. - $519.00 Cnd.
Rh. - $1,312.00 Cnd.

Test #432
1., A., A. } .0426 mgs. Au. (3 assay tons) ÷3 = .014 oz/ton

Test #433 - (3 assay tons)
2., 4. } .016 mgs. Au. .030 mgs. Pt. .001 mgs. Rh.
÷3 = .005 oz/ton

Test #434
3., B., C. } .009 mgs. Au. (3 assay tons)
÷3 = .003 oz/ton

Henderson #5 - 5 gm. sample: 1 assay ton = 6X5.089= 30.53= .0305 mgs. Au. = .03 oz/ton
.0025 mgs. Pt.
.006 mgs. Pd.

4.13 Metallurgical Research and Assay Laboratory

This laboratory located in Henderson, Nevada conducted five assays on sample beads provided by 713803 Alberta Ltd. and obtained values of gold ranging from 0.02 oz./ton to 0.06 oz./ton, platinum values from 0 to 0.11 oz./ton and a palladium value in one bead of 0.01 oz/ton. These bead content values generally fall in the mid range of those found by Cantech and Loring, but do not contain any significantly high values nor any zero values for gold. They also found more significant platinum values in three out of the five tests conducted. Copies of the assays performed by this laboratory are included in this section as Attachments. Note the comparison provided on the bottom of Attachment 4.13.1 which compares the Lewis results to all the further Metallurgical Research and Assay Laboratory results, numbered 1 to 5, which are included as attachments 4.13.1 to 4.13.5.

FROM : M R A Labs PHONE NO. : 7025650074 Mar. 22 1999 04:18PM P1

Metallurgical Research and Assay Laboratory

745 Sunset Road Suites 8
Henderson, NV 89015
702-565-0074

ASSAY REPORT

Assay Number: 5068 **Date:** 3/19/99

Customer : ALAN D. LEWIS

Sample Identification: # 333 - 1 DORE' FROM 4 AT SMELT

#1

Element	Oz/Ton
Au-Gold	0.06

REGISTERED ASSAYER CERTIFICATE NO. 19:27 DONALD E JORDAN Date Signed ARIZONA U.S.A.

Don Jordon DCP Henderson NV -

		total
#1 - Test #333 - 4 A.T. Bromide leach.	au .06	= $25.80
#2 Test #411 - 4 A.T. Aqua Rega leach	au .04 [17.20], Pt .01 [5.63]	= $22.83
#3 Test #412 - H_2SO_4 pretreat - 3 A.T.	au .03 [12.90], Pt .02 [11.26]	= $24.16
#4 Test #417 - 3 Bromide leach 3 A.T.	au .05 [21.50], Pt .11 [61.93], Pd .01 [5.19]	= $88.62
#5 Test #415 - 1 A.T. NAOH digest	au .02	= $8.60

Gold $430.00
Pt $563.00
Pd $519.00

Metallurgical Research and Assay Laboratory

745 Sunset Road Suites 8
Henderson, NV 89015
702-565-0074

ASSAY REPORT

Assay Number: 5069 Date: 3/19/99

Customer : ALAN D. LEWIS

Sample Identification: # 411 - 2 DORE' FROM 4 AT SMELT

#2

Element	Oz/Ton
Au-Gold	0.04
Pt-Platinum	0.01

REGISTERED ASSAYER
CERTIFICATE
19127
DONALD E
JORDAN
Date Signed 3/19/99
ARIZONA, U.S.A.

These results are based on well known accepted analytical procedures used solely on the sample submitted by the customer. This report is prepared for the exclusive use of the customer. No warranty as to the reproducibility or extractability of the material other than the sample is given. Donald E. Jordan and/or Metallurgical Research and Assay Laboratory make no representation express or implied on material other than that represented by the sample assayed.

Note: " #VALUE! " MEANS THAT ELEMENT HAS NOT BEEN ANALYZED FOR THIS REPORT.
Unless prior arrangements are made, all samples will be discarded after 30 days.

Attachment 4.13.3

Metallurgical Research and Assay Laboratory

745 Sunset Road Suites 8
Henderson, NV 89015
702-565-0074

ASSAY REPORT

Assay Number: 5070 Date: 3/19/99

Customer : ALAN D. LEWIS

Sample Identification: # 412 - 3 DORE' FROM 3 AT SMELT

#3

Element	Oz/Ton
Au-Gold	0.03
Pt-Platinum	0.02

REGISTERED ASSAYER
CERTIFICATE NO.
19127
DONALD E
JORDAN
Date Signed 3/19/99
ARIZONA, U.S.A.

These results are based on well known accepted analytical procedures used solely on the sample submitted by the customer. This report is prepared for the exclusive use of the customer. No warranty as to the reproducibility or extractability of the material other than the sample is given. Donald E. Jordan and/or Metallurgical Research and Assay Laboratory make no representation express or implied on material other than that represented by the sample assayed.

Note: " #VALUE! " MEANS THAT ELEMENT HAS NOT BEEN ANALYZED FOR THIS REPORT.
Unless prior arrangements are made, all samples will be discarded after 30 days.

Metallurgical Research and Assay Laboratory

745 Sunset Road Suites 8
Henderson, NV 89015
702-565-0074

ASSAY REPORT

Assay Number: 5071 Date: 3/19/99

Customer : ALAN D. LEWIS

Sample Identification: # 417 - 4 DORE' FROM 3 AT SMELT

#4

Element	Oz/Ton
Au-Gold	0.05
Pt-Platinum	0.11
Pd-Palladium	0.01

REGISTERED ASSAYER
CERTIFICATE NO
19127
DONALD E
JORDAN
Date Signed 3/19/99
ARIZONA, U.S.A.

Note: " #VALUE! " MEANS THAT ELEMENT HAS NOT BEEN ANALYZED FOR THIS REPORT.
Unless prior arrangements are made, all samples will be discarded after 30 days.

Attachment 4.13.5

FROM : M R A Labs PHONE NO. : 7025650074

Metallurgical Research and Assay Laboratory

745 Sunset Road Suites 8
Henderson, NV 89015
702-565-0074

ASSAY REPORT

Assay Number: 5072 Date: 3/19/99

Customer : ALAN D. LEWIS

Sample Identification: 5 DORE' FROM 1 AT SMELT

#5

Element	Oz/Ton
Au-Gold	0.02
Pt-Platinum	0.00

REGISTERED ASSAYER CERTIFICATE NO. 19127 DONALD E JORDAN Date Signed 3/19/99 ARIZONA, U.S.A.

These results are based on well known accepted analytical procedures used solely on the sample submitted by the customer. This report is prepared for the exclusive use of the customer. No warranty as to the reproducibility or extractability of the material other than the sample is given. Donald E. Jordan and/or Metallurgical Research and Assay Laboratory make no representation express or implied on material other than that represented by the sample assayed.

Note: " #VALUE! " MEANS THAT ELEMENT HAS NOT BEEN ANALYZED FOR THIS REPORT.
Unless prior arrangements are made, all samples will be discarded after 30 days.

5.0 Exploration and Mineral Content Analysis by Commercial Mining Companies

A number of commercial mining companies have been contacted by 713803 Alberta Ltd. as part of its efforts to have independent analysis of the content of the ores. If confirmation of significant values were obtained then discussions would have ensued to determine if satisfactory commercial arrangements could be reached for ongoing development of the properties.

To date these efforts have been unsuccessful in obtaining any confirmation of significant values and accordingly no commercial arrangements have been concluded. The companies who have conducted examinations and the results of those examinations are described in the following subsections.

5.1 Placer Dome North America Limited

A sample was provided to Placer Dome North America Limited ("Placer") who analyzed that sample in their lab and expressed an interest in making an exploration trip to the permit and collecting their own samples for further analysis. That trip was arranged and Placer did recover several samples on a field trip to the site. The results of their analysis of those samples was negative as was summarized in their letter to 713803 Alberta Ltd. which is attached as Figure 5.1.1 in this section. The maximum gold value obtained was .002 oz./ton.

PLACER DOME NORTH AMERICA Limited

In Canada, acting for PLACER DOME (CLA) LIMITED
In the U.S., acting for PLACER DOME U.S. INC.

KAMLOOPS, BC V1S 1L8 · CANADA
FAX: (250) 372-7784

BRIAN P. FOWLER
SENIOR GEOLOGIST
TEL: (250) 371-3518
Email: brian_fowler@placerdome.com

November 3, 1998

Mr. Allan Lewis
RR 1, Site 13, Box 18
Ponoka, Alberta
T4J 1R1

Dear Allan:

Re: Lewis Gold Property

Hello again Al. I trust you are doing well these days. As promised during our telephone conversation last week, I am writing to present the results from my recent evaluation of your gold property near Dawson Creek, B.C.

You recall that I had our company laboratory assay the sample you left me in Kamloops back in June of this year (attached). We crushed the entire sample to 80% passing 10 mesh, and then split out 4 samples. Three 1 kg samples were used for metallurgical studies and 1-250 g sample was fire assayed utilizing a 1 assay ton sub-sample and an AA finish. Additionally, 2-1 assay ton subsamples were fire assayed from 2 of the 1-kg samples. No gold was detected any of the sub-samples.

Two of the 1 kg samples were pulverized and wet screened to 400 mesh. One sample (SCN-1) was passed through a Knelson concentrator, and the gravity concentrate was panned and assayed for gold by conventional fire assay. A gold assay of 257 g/t Au was recorded from the 0.3 grams of total pan concentrate. A gold assay of 0.4 g/t Au was recorded from the 993.32 gram gravity tails by cyanide leach. Gold recovery by gravity concentration was 65.9%, and 29.8% by cyanide leach, for a total of 95.7%. Back-calculated head grade for the entire sample was 0.12 g/t Au. The discrepancy between this and the head grade assay (<0.01 g/t Au) was explained by a possible nugget effect, and provided me sufficient encouragement to pursue the evaluation and visit your property. Of the two remaining 1-kg samples, one was retained for reference, and the other was dry screened to 150, 200 and 270 mesh. These size fractions were hand panned, and the concentrate was placed in vials for examination. I am in possession of these vials, and no additional analysis has been performed.

On August 11th of this year, I met with you and Barry Luft in Dawson Creek, and we proceeded to visit your property – see attached photos. During the property exam, we made several stops and I collected 4 continuous chip samples from 1 location and 6 large samples from 4 locations (see attached map). These samples were again forwarded to our Vancouver laboratory for analysis for gold, silver, platinum and palladium. Of the 4 chip samples analyzed, 3 had gold grades at the 0.01 g/t Au detection limit while the 4th was below the limit. None of the samples were above the 0.01 g/t detection limit when assayed for silver, platinum or palladium.

For the remaining 6 large samples, the following procedure was employed. Samples were crushed to 80% passing 200 mesh and processed through a 3 ½" Knelson concentrator. The concentrate was upgraded by panning, and 3 products were submitted for gold, silver, platinum and palladium assay – the pan concentrate, pan tails, and gravity tail. For all 6 samples, calculated head grades were less than 0.02 g/t Au, and silver, platinum and palladium grades were below detection limit. The highest pan concentrate gold assay was 58 grams, however sample size was less than 0.01% of the total, and back-calculated head grade was 0.016 g/t Au. Assay results are appended.

The results of our test-work is disappointing, clearly suggesting that there is no significant amount of recoverable gold occurring in the samples I collected from your property. While minute amounts of gold are present, it is clearly not of sufficient concentration to provoke further interest on our part.

You have kindly provided me with ample documentation of your own analytical results, as well as those from selected analytical laboratories. I am not a certified assayer, but it is no stretch for me to vouch for the accuracy and validity of our own in-house analytical techniques and procedures. I have no doubt that your analytical techniques provide you with the gold values you state, and have never desired to question your qualifications or abilities in this work. From the onset, the existence of gold in your samples, and the economic ramifications of this have only intrigued me.

It is my belief that there is a good possibility of gold being concentrated in "pay streaks" on your property. One can only guess on the size, location and tenor of such streaks. As I stated earlier, a true test of your analytical work would be an attempt to extract gold from a bulk sample. This may be costly, but I can think of no other way to unequivocally determine whether economic concentrations of gold exists on your property. You may remember my arguments last summer – it's of little use being able to determine whether or not the gold is present, however abundant, if it cannot not be commercially (and economically) extracted. Another possible avenue for consideration might be extracting any contained gold as a by-product from a sand and gravel operation. This material is quite friable and may be amenable to such a concept.

Based upon the above, I cannot recommend any further action on our part, with regards to advancing your property. I thank you for bringing this intriguing opportunity to Placer Dome, and welcome updates on any future developments. Please do not hesitate to contact me should you have any questions pertaining to our evaluation of your property. It was a pleasure meeting with you and Barry, and I wish you all the best.

Yours truly,

[redacted]

Brian P. Fowler, P.Geo.

attachments

cc: Lewis Gold Grid File
Helen Farnstrom

PLACER DOME RESEARCH CENTRE	PROJECT:	LEWIS GOLD
METALLURGICAL LABORATORY	PROJECT NO.	MET-9814
GRAVITY CYANIDATION TEST REPORT	DATE:	June 29, 1998
	TEST NO.	SCN-1

Objective: To recover gold by gravity separation and cyanidation
Test Variable: None
Composite: Gravity Tails and Minus 400 fractions are combined and leached

(I) Metallurgical Balance

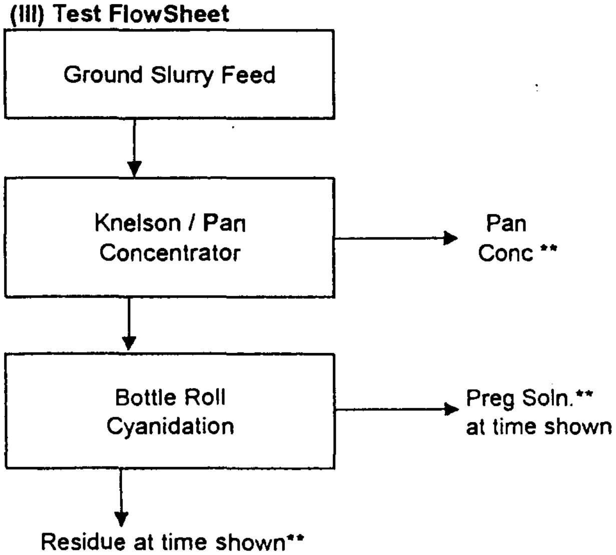
Unit Operation/ Product	Wt. (g)	Wt (%)	Assay Au (g/t)	Assay Cu (%)	Assay Ag (g/t)	Distribution Au (%)	Distribution Au O'all Cum.	Distribution Cu (%)	Distribution Ag (%)	NaCN :Cu Ratio
Gravity Concentration										
Gravity Conc	0.30	0.03	257			65.9	65.9			
Gravity Tails*	993.2	99.97	0.04			34.1	-			
Calc Head	993.5	100.0	0.12			100.0	-			
Assayed Head			<0.01							
Cyanidation on Grav Tails										
Preg Soln. 24 h	2319.8	70.0	0.015			87.5	29.8			
Residue 24 h	993.2	30.0	0.005			12.5	4.3			
Calc Grav Tails	3313.0	100.0	0.04			1092.9	100.0			
Assayed Residue A			<0.01							
Assayed Residue B			<0.01							

Notes: A value of 0.015 g/t Au is used to replace the lower-detection-limit assayed value "<0.03 g/t" of 24 h pregnant solution
A value of 0.005 g/t Au is used to replace the lower-dectection-limit assayed value "<0.01 g/t" of leach residue

(II) Cyanidation Test Conditions

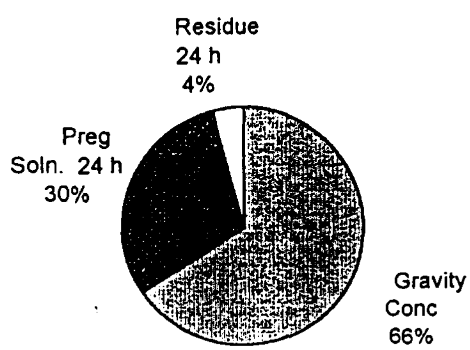
Products	Test Variable	pH	DO2 ppm	Addition kg/t ore NaCN	Addition kg/t ore CaO	Titration kg/t solution NaCN	Titration kg/t solution CaO	Consumption kg/t ore NaCN	Consumption kg/t ore CaO
Initial Conditions		5.0	-						
Preg. Soln 0 h	P80 (µm) = 51	10.80	.-	1.18	4.43				
Preg Soln. 24 h		10.10	8.1			0.45	0.06	0.13	4.30
Total				1.18	, 4.43				
	Reducing Power =		30	ml 0.1N K2MnO4 per litre of solution					

(III) Test FlowSheet



** : Submitted for assays

(IV) Extraction Profiles

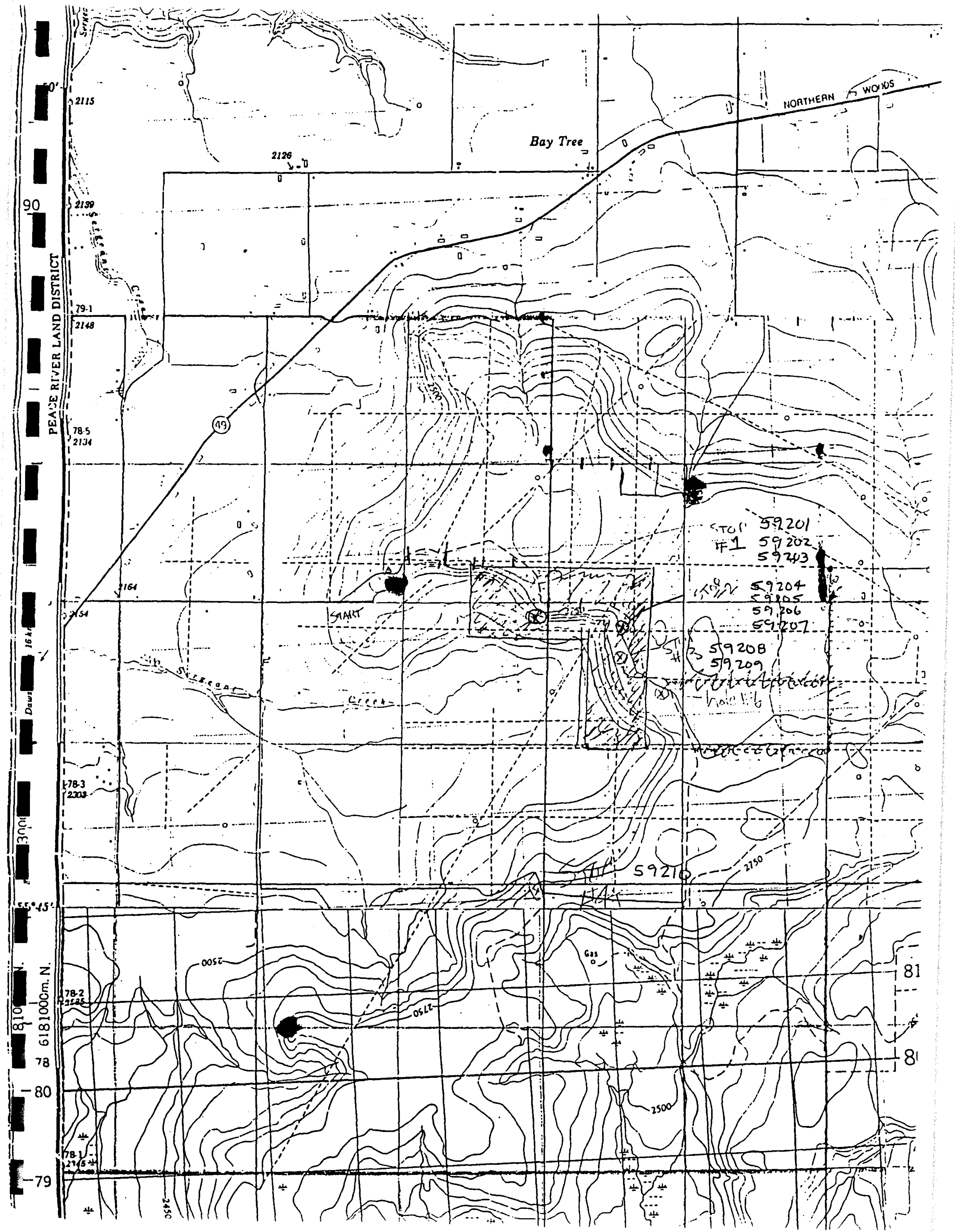


Summary of Chip Sample Analysis

Chip Sample Number	Weight (g)	Assay (g/t)			
		Au	Ag	Pt	Pd
59204	728	<0.01	<0.01	<0.01	<0.01
59205	608	0.01	<0.01	<0.01	<0.01
59206	354	0.01	<0.01	<0.01	<0.01
59207	708	0.01	<0.01	<0.01	<0.01

Summary of Head Grades Calculated from Gravity Concentration Results

Rock Sample Number	Weight (g)	Assay (g/t)			
		Au	Ag	Pt	Pd
59201	2868	0.002	<0.01	<0.01	<0.01
59202	4374	0.012	<0.01	<0.01	<0.01
59203	4100	0.003	<0.01	<0.01	<0.01
59208	7280	0.016	<0.01	<0.01	<0.01
59209	3008	0.000	<0.01	<0.01	<0.01
59210	2411	0.01	<0.01	<0.01	<0.01



NORTHERN WOODS
Bay Tree
PEACE RIVER LAND DISTRICT
90
2115
2126
2139
79-1
2148
78-5
2134
49
2164
2154
START
STOP 59201
#1 59202
59203
STOP 2 59204
59205
59206
59207
59208
59209
Creek
78-3
2303
59210
2750
2500
Gas
618100m. N.
78-2
78
80
78-1
79
81

5.2 BHP Minerals Canada Limited

BHP was contacted and agreed to send a contract geologist, Mr. Peter Kleespies, to the field to conduct a site examination and collect samples (19) which were assayed by Chemex Laboratories in North Vancouver. No significant values were obtained. A copy of BHP's letter report is included as Attachment 5.2.1.

Attachment 5.2.1

BHP

Harry Muntanion
Discovery Dept
BHP Diamonds Inc.
1600-1050 W Pender St
Vancouver, BC
V6E3S7
February 16, 1999

Mr. Allen Lewis
RR 1
Site 13
Box 18
Ponoka, Alberta
T4J1R1

Re: Ponoka Gold Property Review

Dear Mr. Lewis,

Thank you for inviting BHP to look at your property in the Ponoka area. As mentioned by telephone, we have received the results from the property examination conducted by our contract geologist Peter Kleespies in November and unfortunately found the results to be unequivocally negative. The best result for gold was only 6 ppb. BHP, therefore, has no further interest in the ground.

Enclosed is a copy of the property examination report and a copy of the 19 laboratory results which were analized by Chemex Laboratories in North Vancouver. All samples were prepared at Chemex and analized for 32 element ICP (induced coupled plasma technique) and for gold, platinum and palladium by fire assay of a 30 gram sample.

Yours truly,
Harry Muntanion
Principal Geologist
[redacted]

BHP Minerals Canada Ltd., 1050 West Pender Street, Suite 1600, Vancouver, B.C., Canada V6E 3S7
Telephone: (604) 683-6921 Facsimile (604) 683-4125
New Business Development is a Division of BHP Minerals, which is a Division of The Broken Hill Proprietary Company Limited

SUMMARY REPORT
INVESTIGATION OF THE BAYTREE CONGLOMERATE
BAYTREE, ALBERTA, NTS 83M

Reports of anomalous Au and PGE concentrations within the Baytree conglomerate were investigated on behalf of BHP Minerals Canada Ltd. on November 3 and 4, 1998. The purpose of the investigation was to attempt to verify the presence of anomalous Au and PGE, as reported by Mr. Alan Lewis, owner of the property.

LOCATION, PHYSIOGRAPHY, ACCESS

The Baytree conglomerate is located within NTS Map sheets 83M/13 and 83M/12. The outcroppings investigated are covered by Mineral Claims registered to a Private Alberta Company (713803 Alberta Ltd.). The area is characterized by prominent ridges, which reach a maximum elevation of ~2700 ft. These ridges represent outcroppings of the conglomerate unit, which forms a resistant cap on the uplands. Access throughout the property is good with many seismic cutlines, trails and oilfield service roads, which can be easily accessed with four-wheel drive utility vehicles.

PREVIOUS WORK

Previous mineral exploration on the property is minimal, consisting of rock sampling and minor rotary air blast drilling conducted by Mr. A. Lewis and Mr. B Luft. These samples were analyzed by Mr. Lewis utilizing non-standard assay techniques, which yielded anomalous Au concentrations often reaching multi-ounce levels. Analysis of samples prepared by Mr. Lewis by a commercial laboratory also yielded anomalous levels silver, platinum, osmium, rhenium, rhodium, iridium, and palladium. Mr. Lewis claims that due to the presence of osmium, normal fire assay analysis for gold yields negative results, and therefore samples must be leached with nitric acid prior to firing, which supposedly rectifies this problem.

In the spring of 1998, six RAB holes were drilled in order to evaluate the distribution of the conglomerate unit in till covered areas of the uplands. Results of this drilling program are presented in Appendix 1 from a report supplied by Mr. Barry Luft. No systematic presentation of assay results from this drilling or previous rock sampling were provided by the proprietors of the property.

GEOLOGY

The Baytree area is underlain by rocks of Upper Cretaceous age, specifically members of the Santonian, Coniacian and Turonian Smoky Group (see strat column and cross-section). The unit of interest is a conglomerate which has been identified as either a member of the Bad Heart or Cardium formations, (Stelck, 1955, Jones, 1966, Krause et al., 1994).

The most recent work, The Geological Atlas of the Western Canadian Sedimentary Basin (Krause et al., 1994) identify the Baytree outcroppings as Cardium Formation, which is a prolific oil-producing unit in the subsurface. The Cardium Formation comprises a terrigenous, muddy, sandy, and conglomeratic clastic wedge that accumulated along the western margin of the Alberta Foreland Basin. The wedge is a

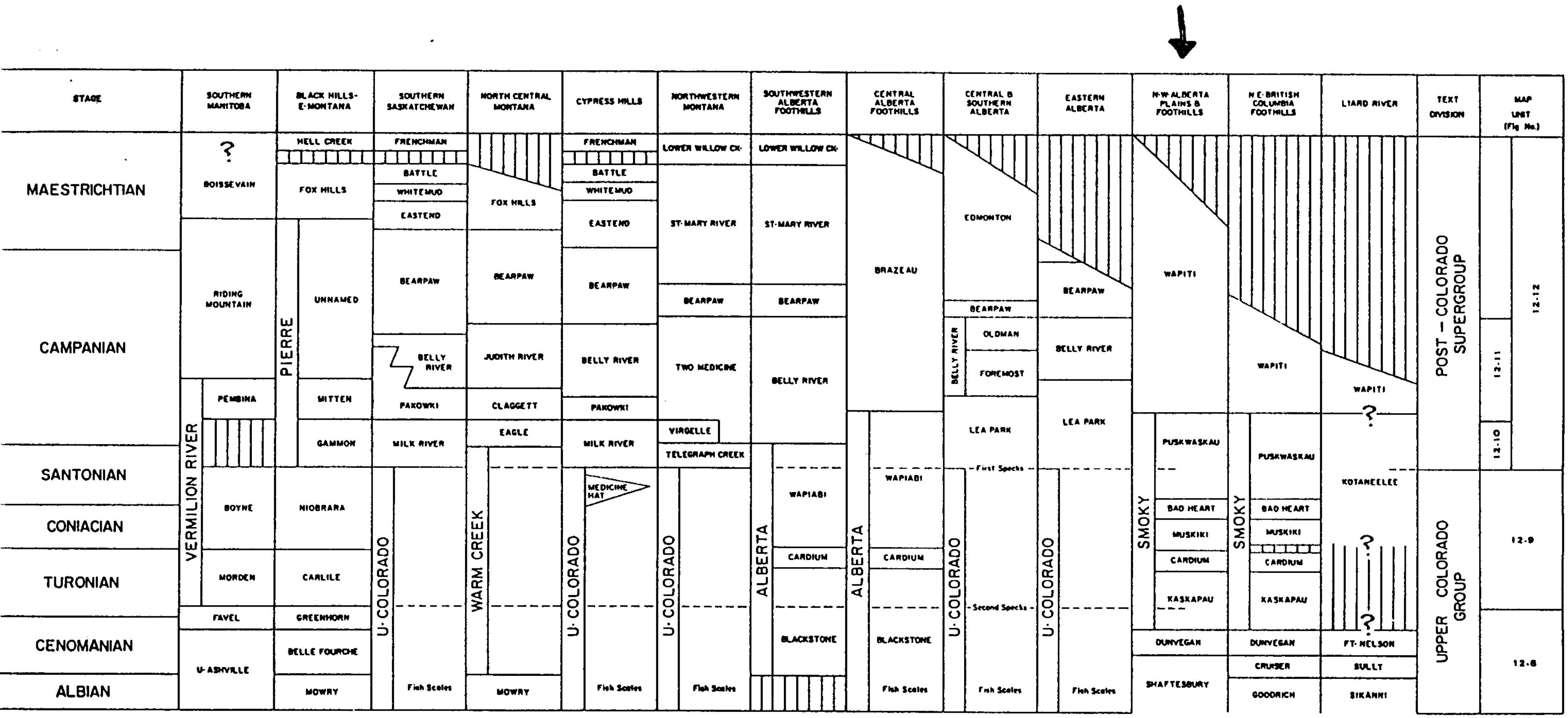


Fig. 12-1 Upper Cretaceous correlation chart, western Canadian Plains and Foothills.

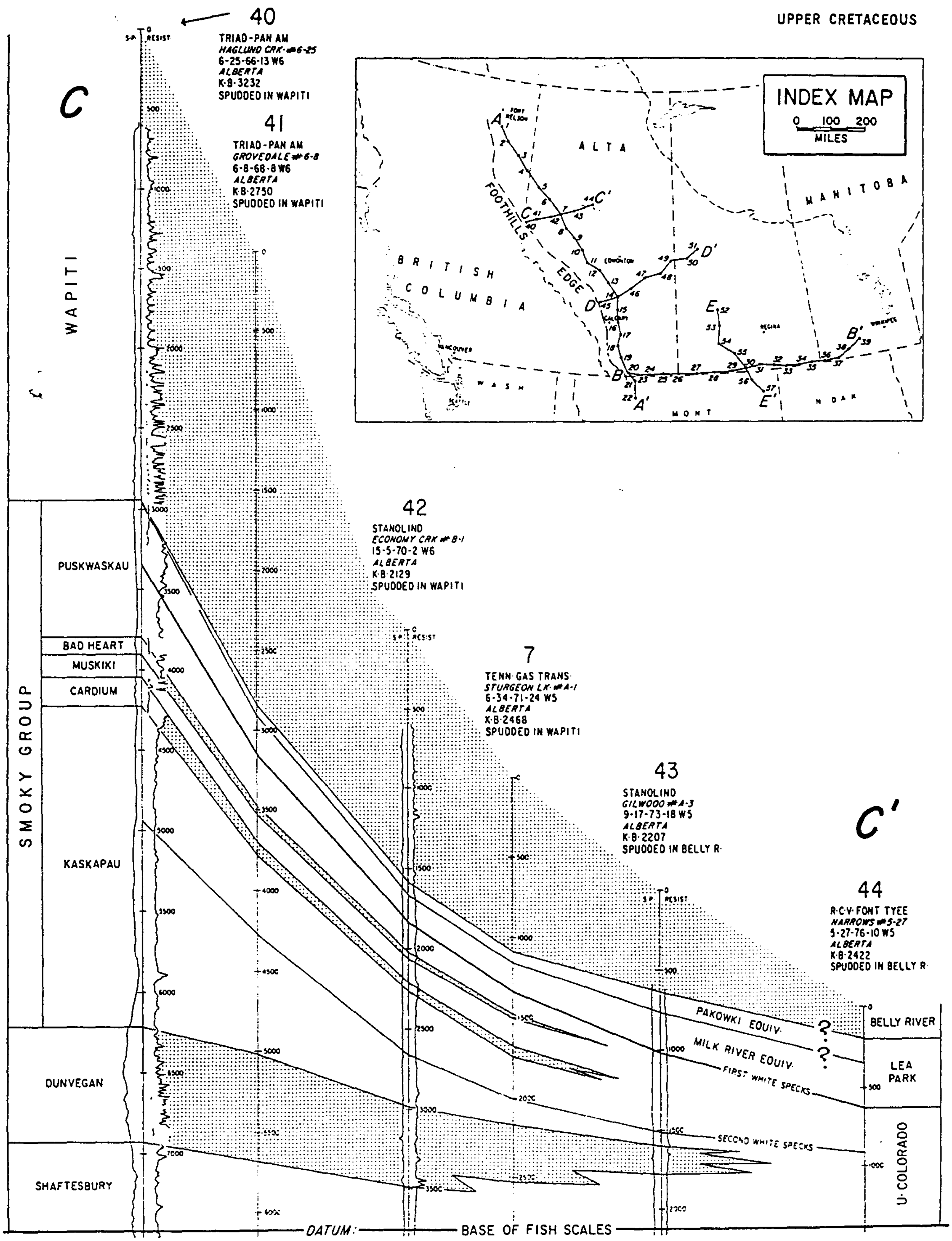


Fig. 12-4 Upper Cretaceous stratigraphic section C-C', west to east, Alberta.

complex lithostratigraphic interval, which accumulated in muddy and sandy inner and outer shelf, shoreface, lagoonal, tidal, estuarine, and coastal plain settings. The deposits alternate between coarse and fine grained stages that were controlled by both autocyclic and allocyclic processes such as delta avulsion, compaction driven subsidence, tectonically-controlled sediment sources and tectonic and eustatically controlled changes in sea-level. The Baytree occurrences of the Cardium Formation are thought to represent conglomeratic shoreface to distal channel deposits.

The exposures examined were characterized by sequences of beds which varied from a coarse, clast supported chert conglomerate which graded upwards into finer chert pebble beds capped by coarse cross-bedded sandstones. These sequences were typically 2-3m thick, and displayed considerable and rapid lateral facies variations, consistent with channel deposits. The conglomerate is composed primarily of black to green, rounded chert clasts, and displays extreme variations in terms of quantity and grain size of interstitial material. Pressure solution? pits were commonly observed on clasts from all exposures visited (see photos). A fine to medium grained, platy, buff colored sandstone underlies the conglomerate unit. All stratigraphy examined was essentially flat lying, and no post depositional structure, hydrothermal alteration or sulphide mineralization was observed. Many of the exposures displayed hematite and or limonite staining, and in part the matrix was highly ferruginous.

Through conversation with Mr. Luft it appears that the group holding the property believes that the conglomerate is a member of the Bad Heart Formation rather than the Cardium. Detailed examination of oil well logs and formation structure maps would aid in verifying whether or not these exposures are correlateable with Cardium in the nearby subsurface.

Several other areas indicated by Mr. Lewis to contain anomalous Au and PGE values consisted of ferruginous fine-grained sandstone to siltstone, with common ironstone concretions. These exposures appeared to be till deposits containing relatively large clasts of locally derived bedrock, however which formation contributed the clasts was not clear.

SAMPLING

One and a half days were spent examining and sampling the surface exposures, in the company of Mr. Alan Lewis and Mr. Barry Luft. In total 19-rock chip samples were collected. The majority of the samples collected were taken as chip samples across stratigraphy, with individual samples representing vertical facies variations. Some large (5 kg) samples of conglomerate were also collected from surface exposures. Sampling sites were located using topographic maps and a hand held GPS unit. Samples were shipped to Chemex Labs via Kindersley Transport.

Stop 1

UTM ZONE 11, 0317107, 6185438
Conglomerate exposed along escarpment

98 PKB-01 – sample taken on top of outcrop, chip across 1 m of chert pebble conglomerate

98 PKB-02, 03, 04 – samples collected as chips across stratigraphy from large slump blocks on scarp face. Samples of rusty weathering, conglomerate, mostly matrix supported with 10 cm sandy lenses.
(see photos)

Stop 2

UTM ZONE 11, 0318100, 6184888
Conglomerate exposed along escarpment

98 PKB-05, 06, 07, 08 – samples collected as chips across stratigraphy
(see strat column and photos)

Stop 3

UTM ZONE 11, 0317540, 6185057
Conglomerate exposed along escarpment

98 PKB –09, 10, 11, 12, 13, 14 – samples collected as chips across stratigraphy
(see strat column and photos)

Stop 4

UTM ZONE 11, 0318839, 618~~5057~~ 4163

98 PKB-15 – grab sample from surface rubble/subcrop. Matrix supported conglomerate, Fe stained/cemented, limonite and hematite.
Sample site adjacent to drill hole #6, approximately ½ mile inland from escarpment.

Stop 5

Baytree Pit
See map for location

98 PKB-16 – grab sample from working face of pit. Appears to be till, with large (to 50 cm) rounded to angular blocks of ferruginous siltstone/sandstone, soft. Abundant ironstone concretions. Sample as aggregate of chips from contained clasts.

98 PKB-17 – grab sample from road cut, platy 'shale'?, in clayey matrix, red to red-red brown, Fe stained

Stop 6

UTM Zone 11, 0317176, 6181986

98-PKB-18 – grab sample of ferruginous sandstone/siltsone cobbles taken from 1/2m pit. Appear to be locally derived bedrock in till matrix. Very similar to material in Baytree pit.

Stop 7

UTM ZONE 11, 0314293, 6180750 ?

Escarpment. No conglomerate outcrop, but chert pebbles common in overburden. Some subcrop of red silt/sandstone. 98 PKB-19 - chip/grab across subcrop block, massive to platy, brown to red, Fe stained silt/sandstone (see photos).

REFERENCES

Jones, J.F., 1966. Geology and groundwater resources, of the Peace River District, Northwestern Alberta, Research Council of Alberta, Bulletin 16, 143p.

Stelck, C. R., 1955. Cardium Formation of the foothills of northeastern British Columbia, Trans. Bulletin Canadian Institute of Mining and Metallurgy, Volume48, No. 517, p. 266-273.

Krause, F. F., Deutsch, K. B., Joiner S. D., Barclay, S.E., Hall, R.L., and Hills, L. V., 1994. Cretaceous Cardium Formation of the Western Canada Sedimentary Basin; in Geological Atlas of the Western Canada Sedimentary Basin, G. D Mossop and I. Shetsen (comps), Calgary, Canadian Society of Petroleum Geologists and Alberta Research Council, p. 375-380.

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers

212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: BHP MINERALS CANADA LTD.

1600 - 1050 W. PENDER ST.
VANCOUVER, B.C.
V6E 3S7

Project :
Comments: ATTN: HARRY MUNTANION

Page Number : 1-A
Total Pages : 1
Certificate Date: 18-NOV-1998
Invoice No. : 19835871
P.O. Number :
Account : E

CERTIFICATE OF ANALYSIS A9835871

SAMPLE	PREP CODE		Au ppb AFS	Pt ppb AFS	Pd ppb AFS	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm
98PKB-01	205	226	2	< 5	< 2	< 0.2	0.35	8	490	< 0.5	< 2	0.03	< 0.5	1	205	6	0.51	< 10	< 1	0.12	< 10
98PKB-02	205	226	< 4	< 10	< 4	< 0.2	0.42	12	540	0.5	< 2	0.04	< 0.5	7	168	16	1.42	< 10	< 1	0.11	< 10
98PKB-03	205	226	2	< 5	< 2	< 0.2	0.46	4	530	0.5	< 2	0.07	< 0.5	4	189	10	1.03	< 10	< 1	0.13	< 10
98PKB-04	205	226	4	< 5	< 2	< 0.2	0.36	10	420	< 0.5	< 2	0.04	< 0.5	1	153	8	0.92	< 10	< 1	0.12	< 10
98PKB-05	205	226	2	< 5	< 2	< 0.2	0.41	12	510	< 0.5	< 2	0.03	< 0.5	1	183	7	0.73	< 10	< 1	0.12	< 10
98PKB-06	205	226	6	< 5	< 2	< 0.2	0.34	20	530	0.5	< 2	0.06	< 0.5	3	150	14	2.34	< 10	< 1	0.11	< 10
98PKB-07	205	226	2	< 5	< 2	< 0.2	0.35	22	400	0.5	< 2	0.15	< 0.5	9	114	9	4.90	< 10	< 1	0.12	< 10
98PKB-08	205	226	6	< 5	< 2	< 0.2	0.36	14	440	< 0.5	< 2	0.03	< 0.5	< 1	96	18	0.51	< 10	< 1	0.08	< 10
98PKB-09	205	226	2	< 5	< 2	< 0.2	0.52	16	220	0.5	< 2	0.03	< 0.5	8	82	11	1.59	< 10	< 1	0.12	< 10
98PKB-10	205	226	< 2	< 5	< 2	< 0.2	0.29	6	300	< 0.5	< 2	0.09	< 0.5	2	103	5	0.46	< 10	< 1	0.11	< 10
98PKB-11	205	226	2	< 5	< 2	< 0.2	0.28	8	600	< 0.5	< 2	0.06	< 0.5	< 1	119	7	0.39	< 10	< 1	0.09	< 10
98PKB-12	205	226	2	< 5	< 2	< 0.2	0.34	< 2	620	< 0.5	< 2	0.06	< 0.5	1	145	8	0.35	< 10	< 1	0.10	< 10
98PKB-13	205	226	2	< 5	< 2	< 0.2	0.46	10	560	0.5	< 2	0.10	< 0.5	< 1	159	10	0.49	< 10	< 1	0.15	< 10
98PKB-14	205	226	< 2	< 5	< 2	< 0.2	0.43	8	530	< 0.5	< 2	0.03	< 0.5	< 1	160	8	0.41	< 10	< 1	0.12	< 10
98PKB-15	205	226	< 2	< 5	< 2	< 0.2	0.37	16	320	< 0.5	< 2	0.01	< 0.5	< 1	158	2	5.20	< 10	< 1	0.09	< 10
98PKB-16	205	226	2	< 5	< 2	< 0.2	0.71	28	510	2.0	2	0.82	1.0	20	58	4	12.90	< 10	< 1	0.12	10
98PKB-17	205	226	< 2	< 5	< 2	< 0.2	0.77	18	630	1.5	< 2	0.46	< 0.5	5	37	9	>15.00	< 10	< 1	0.17	< 10
98PKB-18	205	226	2	< 5	< 2	< 0.2	0.73	8	180	1.0	< 2	0.07	< 0.5	7	93	31	7.29	< 10	1	0.15	< 10
98PKB-19	205	226	2	5	4	< 0.2	0.58	8	100	0.5	< 2	0.07	< 0.5	13	128	6	4.29	< 10	< 1	0.16	< 10

CERTIFICATION:________________

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: BHP MINERALS CANADA LTD.

1600 - 1050 W. PENDER ST.
VANCOUVER, B.C.
V6E 3S7

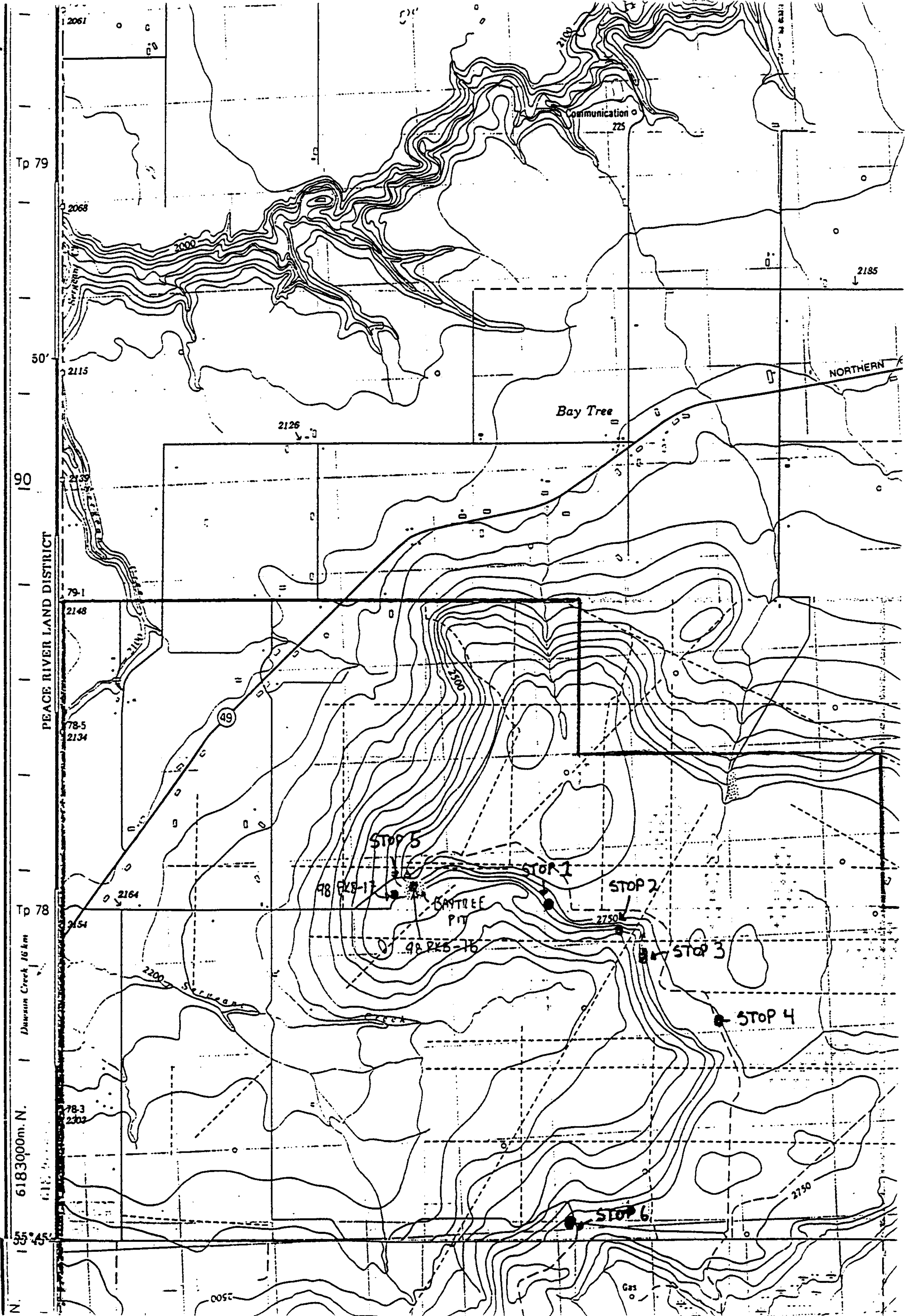
Project :
Comments: ATTN: HARRY MUNTANION

Certificate Date: 18-NOV-1998
Invoice No. : 19835871
P.O. Number :
Account : E

CERTIFICATE OF ANALYSIS A9835871

SAMPLE	PREP CODE		Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
98PKB-01	205	226	0.03	20	1	0.01	6	360	8	2	1	54	< 0.01	< 10	< 10	28	< 10	34
98PKB-02	205	226	0.03	70	1	< 0.01	23	700	6	< 2	2	70	< 0.01	< 10	< 10	29	< 10	102
98PKB-03	205	226	0.03	65	1	< 0.01	16	820	8	2	3	75	< 0.01	< 10	< 10	35	< 10	70
98PKB-04	205	226	0.03	55	1	< 0.01	9	470	6	< 2	1	66	< 0.01	< 10	< 10	24	< 10	46
98PKB-05	205	226	0.03	55	1	< 0.01	6	580	8	< 2	1	55	< 0.01	< 10	< 10	28	< 10	30
98PKB-06	205	226	0.03	60	1	< 0.01	13	620	6	2	2	61	< 0.01	< 10	< 10	27	< 10	88
98PKB-07	205	226	0.06	205	2	< 0.01	26	950	10	< 2	5	56	< 0.01	< 10	< 10	62	< 10	130
98PKB-08	205	226	0.02	20	1	< 0.01	6	530	8	< 2	1	62	< 0.01	< 10	< 10	20	< 10	10
98PKB-09	205	226	0.05	60	1	< 0.01	31	410	10	< 2	2	32	< 0.01	< 10	< 10	38	< 10	148
98PKB-10	205	226	0.03	25	1	< 0.01	8	490	8	< 2	1	44	< 0.01	< 10	< 10	19	< 10	48
98PKB-11	205	226	0.02	35	1	< 0.01	4	540	6	< 2	1	72	< 0.01	< 10	< 10	20	< 10	20
98PKB-12	205	226	0.03	50	1	< 0.01	5	420	6	< 2	1	62	< 0.01	< 10	< 10	20	< 10	30
98PKB-13	205	226	0.04	30	1	< 0.01	7	720	6	< 2	1	75	< 0.01	< 10	< 10	24	< 10	40
98PKB-14	205	226	0.03	35	1	< 0.01	6	410	6	2	1	71	< 0.01	< 10	< 10	27	< 10	14
98PKB-15	205	226	0.02	50	1	< 0.01	2	320	6	2	< 1	31	< 0.01	< 10	< 10	23	< 10	18
98PKB-16	205	226	0.17	860	1	0.01	56	4580	8	< 2	10	100	< 0.01	< 10	< 10	112	< 10	272
98PKB-17	205	226	0.38	565	< 1	0.01	13	2220	10	< 2	16	43	< 0.01	< 10	< 10	76	< 10	58
98PKB-18	205	226	0.06	165	< 1	0.01	23	960	4	< 2	3	21	< 0.01	< 10	< 10	42	< 10	214
98PKB-19	205	226	0.08	465	1	< 0.01	34	880	8	< 2	3	22	< 0.01	< 10	< 10	42	< 10	182

CERTIFICATION:________________


Tp 79
Tp 78
50'
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55°45'
6183000m. N.
PEACE RIVER LAND DISTRICT
Dawson Creek 16 km
Communication
225
Bay Tree
NORTHERN
49
2061
2068
2115
2126
2139
2148
2134
2164
2154
2185
2302
79-1
78-5
78-3
2000
2100
2200
2500
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Sergeant Creek
STOP 1
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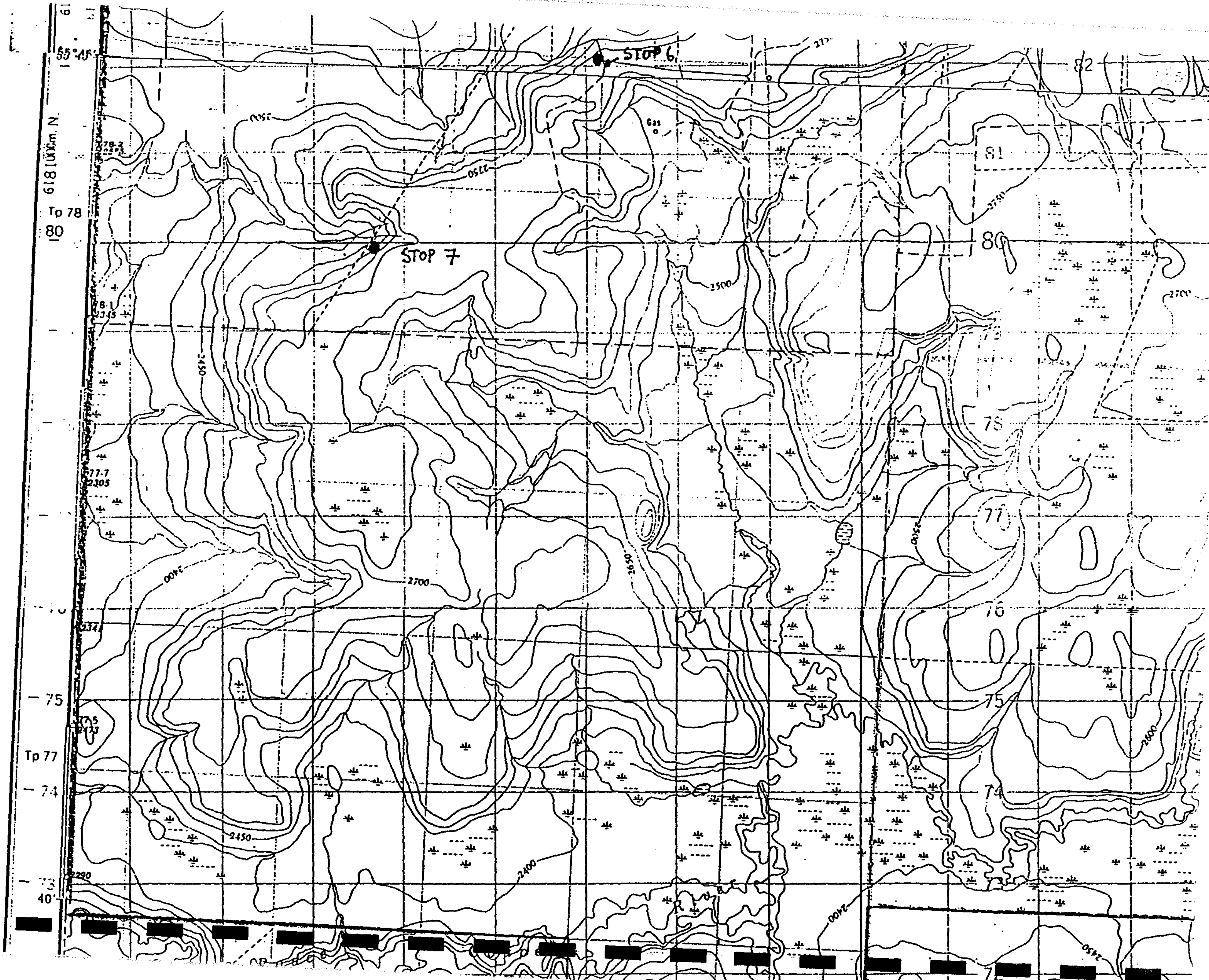
STOP 5
STOP 6
98 RKB-17
98 RKB-76
BAYTREE PIT
Gas



STOP 6
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2290

5.3 Stillwater Mining Company Limited

This company operates the only commercial platinum mining operation in North America. Since it is postulated that our ore bodies also contain platinum, it was hoped that Stillwater might be able to identify platinum values in our ores. An ore sample was sent to Stillwater for their analysis, but no significant values were found in their analysis or shown in their letter report which is included as Attachment 5.3.1.

November 30, 1998

Mr. Al Lewis
RR1 Site 13 Box 18
Penoka, AB T4J 1R1
Canada

Dear Mr. Lewis:

Attached are the assay results from the samples you forwarded. We were not able to detect PGM's in either of the samples. Our assay methods closely replicate our processing facilities. If we are not able to assay the material, we will not be able to recover it in our downstream facilities.

Thanks for submitting the samples and I wish you well in the future.

Sincerely,

[redacted]

J. Lewis Cluett
Director Strategic Planning

Enclosures

Stillwater Mining Company
536 East Pike Avenue, P.O. Box 1330 • Columbus, MT 59019 • 406-322-9700 • Fax: 406-322-9985

STILLWATER MINING COMPANY

HC 54, Box 365
Nye, MT 59061
(406) 328-8469

Laboratory Report

Report No. O-1181

Date: 10/19/98

To: Al Lewis
Lewis Cluett
RR1 Ste 13 Box 18
Penoka, AB T4J1R1

403-783-4567

Sample ID	*Pt* oz/t	*Pd* oz/t	*Au* oz/t		
Top Bag	< 0.005	< 0.005	< 0.005		
Bottom Bag	< 0.005	< 0.005	< 0.005		

STILLWATER MINING COMPANY

Analytical Laboratory

Invoice No. O-1181

Transaction No. 480

To: Al Lewis
Attn: Lewis Cluett
RR1 Ste 13 Box 18
Penoka, AB T4J1R1

Phone: 403-783-4567
Fax

Remit To: Stillwater Mining Company
Laboratory
HC-54, Box 365
Nye, MT 59061

Phone: (406) 328-8478
Fax: (406) 328-8506

Date: 10/19/98

Quantity	Service	Unit Price	Extended	
2	Assay for Au, Pt, Pd and report.	n/a		n/a
		Total		n/a

5.4 Echo Bay Mines Ltd.

Echo Bay Mines Ltd. has provided a sample of both the conglomerate and sandstone ore which they had assayed by Swastika Laboratories. No significant values were found. A copy of Echo Bay's letter report is included as Attachment 5.4.1

ECHO BAY MINES LTD.
Mailing: P.O. Box 551 , Timmins, Ontario P4N 7E7
569 Moneta Avenue, Timmins, Ontario P4N 7E7
Phone: (705) 268-6555
Fax: (705) 268-5887

September 21, 1998

Mr. A.D Lewis
RR #1, Sit 13, Box 18
Ponoka, AB
T4J 1R1

RE: Alberta gold property

Dear Al:

Attached please find assay results from the samples you sent me earlier in September. The lab we used, Swastika, uses a fire assay technique on a portion of the pulp and we have used them successfully to assay all our drill core from the Timmins area.

In summary, Echo Bay would not be interested in your property at this time. If we can not detect the gold using Swastika's assay techniques we would have a difficult time evaluating any gold deposits.

I appreciate the opportunity to assay the samples and if any other situations come up, please call anytime.

Yours truly,
ECHO BAY MINES LTD.

[redacted]

Wayne Reid
Regional Geologist

WR/dg

cc: Jerry Bensing

Swastika Laboratories

A Division of TSL/Assayers Inc.

Assaying - Consulting - Representation

Established 1928

Geochemical Analysis Certificate

8W-2729-RG1

Company: ECHO BAY MINES LTD

Date: SEP-17-98

Project: 702 - LEWIS PROPERTY

Attn: W. Reid

We hereby certify the following Geochemical Analysis of 6 Rock/Pulp samples submitted SEP-14-98 by .

Sample Number	Au PPB	Au Check PPB	
34975	5	-	light brown fine to med grained SST. from bag
34976	3	-	same as 34975
34977	2	-	gry polymictic matrix supported Conglomerate
34978	22	15	grey pulp - (marked conglomerate)
34979	5	-	brown pulp (marked Conglomerate and SST)
34980	2	7	tan colored sand and silt in bottom of bucket

One assay ton portion used.

Certified by [redacted]

1 Cameron Ave., P.O. Box 10, Swastika, Ontario P0K 1T0

Telephone (705)642-3244 Fax (705)642-3300

5.5 Barrick Gold Ltd.

Barrick was contacted with respect to the properties, and while interest was initially expressed, they ultimately declined to visit the site or conduct any analysis on samples.

6. Summary of Expenditures

Expenditure on assessment of the permit lands occurred in the following categories:

• Field exploration and sample collection (See Section 6.1)	
(i) personnel time contributed in kind and expenses by 713803 Alberta Ltd. shareholders	$ 24,053.77
(ii) third party contract services	7,867.90
Sub Total Costs	31,921.67
• Analysis of mineral content (See Section 6.2)	
(i) assay analysis by [redacted] contribution in kind as shareholder of 713803 Alberta Ltd. and expenses	115,491.91
(ii) meetings and discussions with third party analysts; contributions in kind by several 713803 Alberta Ltd. shareholders and expenses	25,903.82
(iii) contract or fee analysis of mineral content performed by third party laboratories or research organizations	19,426.34
Sub Total Costs	160,822.07
• Report preparation (See Section 6.3)	
(i) geological interpretation and exploration drilling	1,200.00
(ii) mineral content assessment reports	6,700.00
Sub Total Costs	7,900.00
Grand Total	$200,643.74

Expenditure in each of the above categories will be itemized in the following sub-sections.

6.1 Field Exploration, Sample Collection and Sample Delivery

The principal expenditure in this category is the time contributed in kind by 713803 Alberta Ltd. and their out-of-pocket expenditures. Contributed time in kind by 713803 Alberta Ltd. shareholders was valued at $200.00/day. There were also specific expenditures with respect to contract services for site access and drilling. The tabulation of expenditures follows:

(i) Trips

No.	Date	Purpose of Trip	Personnel/Contractors On Site	Costs
1.	Oct. 8-11/96	Surface exploration and sample collection	[redacted]	$ 800.00
			Out-of-pocket expenses	$ 279.36
2.	Nov.18-23/96	Sample collection	[redacted]	$ 1,200.00
				$ 1,200.00
			Out-of-pocket expenses	$ 689.07
			Local Contractors	$ 551.25
3.	Dec.3-6/96	Bulk sample delivery to Hope, B.C.	[redacted]	$ 1,000.00
				$ 551.11
4.	May 12-14/97	Surface exploration and sample collection	[redacted]	$ 600.00
				$ 600.00
				$ 600.00
			Out-of-pocket expenses	$ 974.89
5.	Sept 8-11/97	Surface exploration and sample collection	[redacted]	$ 800.00
				$ 800.00
			Out-of-pocket expenses	$ 765.22
6.	Nov. 11-14/97	Surface exploration and sample collection	[redacted]	$ 800.00
				$ 800.00
				$ 800.00
			Out-of-pocket expenses	$ 874.99
7.	Mar 3-5/98	Sample Collection	[redacted]	$ 600.00
				$ 600.00
				$ 600.00
			Out-of-pocket expenses	$ 628.99

8.	Mar 21-25/98	Exploration Drilling and sample recovery	[redacted]	$ 1,000.00
				$ 1,000.00
			Out- of -pocket expenses	$ 1,075.35
9.	Aug. 10-12/98	Surface Exploration and sample collection with Placer Dome	[redacted]	$ 600.00
				$ 600.00
			Out-of-pocket expenses	$ 717.24
10.	Nov. 2-4/98	Surface Exploration and sample collection with BHP	[redacted]	$ 600.00
				$ 600.00
			Out-of-pocket expenses	$ 746.30
			Sub Total Costs	$24,053.77

(ii) Third Party Expenses – Drilling & Site Access $ 7,867.90

Total Costs $31,921.67

6.2 Mineral Content Analysis

There are three primary categories of expenditure in this area. First is the time spent in visiting and discussing concerns with third party analysts, second are the fees charged for services provided by third party analysts and finally the analytical services provided in kind by Al Lewis.

6.2.1 Discussions with Third Party Analysts/Mining Companies

Contributed costs of 7130803 Alberta Ltd. shareholder time deemed at $200/day, expenses at cost.

(i) Trips

No.	Date	Purpose of Trip	Personnel	Costs
1.	Jan. 28-31/97	Discussions and observation of tests by Norm Smalley	[redacted]	$ 800.00
			Out-of-pocket expenses	$ 453.57
2.	Feb 7-8/97	Discussions and observation of tests by Norm Smalley	[redacted]	$ 400.00
			Out-of-pocket expenses	$ 614.70
3.	Aug 11-14/97	Discussions with Smalley, James Metallurgical, John Sevege, International Metallurgical and Environmental Inc.	[redacted]	$ 800.00
				$ 800.00
			Out-of-pocket expenses	$ 924.07
4.	Oct 13-19/97	Discussions with Bahamian Refining, observation of tests	[redacted]	$ 1,000.00
				$ 1,000.00
				$ 1,000.00
			Out-of-pocket expenses	$ 1,540.39
4.	Nov. 2-5/97	Discussions with Smalley obtain assay supplies	[redacted]	$ 800.00
			Out-of-pocket expenses	$ 458.68
5.	Jan. 5-8/98	Discussions with Smalley and Plummer	[redacted]	$ 800.00
				$ 800.00
			Out-of-pocket expenses	$ 776.44

No.	Date	Purpose of Trip	Personnel	Costs
6.	Apr. 14-16/98	Discussions with Smalley, James Mettalurgical, Doug Redden	[redacted]	$ 600.00
				$ 600.00
			Out-of-pocket expenses	$ 581.86
7.	Jun. 3-5/98	Discussions with Placer Dome	[redacted]	$ 800.00
			Out-of-pocket expenses	$ 379.04
8.	June 24/98	Discussions with Alberta Research Council	[redacted]	$ 200.00
				$ 200.00
				$ 200.00
9.	Sept. 24/98	Discussions with Saskatchewan Research Council	[redacted]	$ 200.00
				$ 200.00
			Out-of-pocket expenses	$ 93.67
10.	Oct. 3-5/98	Discussions with BHP	[redacted]	$ 600.00
			Out-of-pocket expenses	$ 369.34
11.	Oct.25-30/98	Discussions with analysis in Utah and Nevada, obtain assay supplies	[redacted]	$ 800.00
			Out-of-pocket expenses	$ 446.55
12.	Feb. 7-10/99	Discussions with Saskatchewan Research Council	[redacted]	$ 800.00
				$ 800.00
			Out-of-pocket expenses	$ 1,065.51
			Sub Total Costs	$21,903.82

(ii) Miscellaneous discussions with local analysts, research of literature, etc.

[redacted]	$ 2,000.00
	$ 1,200.00
	$ 800.00
Sub Total Costs	$ 4,000.00
Total Costs	$25,903.82

/

LEGEND: Gr.-Grinding F.& C.-Firing & Cupelling Prep.- Preparation Trt.- Treatment.

DATE & TEST	PROCEDURE TIMES	TOTAL TIME IN HOURS
Oct. 25/96 #58 to #62	Gr.- 5 hrs, F.& C.-7 hrs, Prep.-3 hrs	15 HRS.
Oct. 27/96 #63 to #67	F.& C.-7 hrs, Prep.-3 hrs	10
Oct. 29 & 30/96 #68 to #72	Trt.-6 hrs, Prep.-8 hrs,F.& C.-7hrs.	21
Nov. 01/96 #73 to #76	F. & C.-7hrs.	07
Nov. 03/96 #77 to #81	Trt.- 7hrs, F. & C.-7hrs	14
Nov. 07/96 #82 to #85	Trt.-7hrs, F. & C.-7hrs.	14
Nov. 08/96 #86 to #89	Gr. - 10hrs., F. & C.-7 hrs. Completed Nov. 09/96	17
Nov. 10-13/96 #90 to #101	Trt.-22hrs, Gr.-6hrs,F. & C.-14hrs.	42
Nov. 16-18/96 #102 to #107	Trt.-18hrs, F. & C.-7hrs.	25
Jan. 06/97 #108 to #110	Gr.-6hrs, F. & C.-7hrs.	13
Jan. 07/97 #111 to #113	Gr.-6hrs, F. & C.-7hrs.	13
Jan. 08/97 #114 to #116	Gr.-5hrs, F. & C.-7hrs.	12
Jan. 09/97 #117 to #119	F. & C.-7hrs.	07
Jan. 10/97 #120	F. & C.-7hrs.	07
Jan. 13/97 #121	C.-2hrs.	02
Jan. 13-17/97 #122 to #132	Prep.-10hrs,F. & C.-14hrs.	24
Feb. 15/97 #133 to #135	Gr.-5hrs, F. & C.-7hrs.	12
Mar. 11/97 #136 & #137	Gr.-2hrs, Prep.-4hrs, F. & C.-7hrs.	13
	TOTAL	268

DATE & TEST	PROCEDURE TIMES	TOTAL TIME in HOURS
Mar. 26-31/97 #138 to #145	Trt.-12hrs, F. & C.-28hrs.	40
Apr. 05-07/97 #146 to #149	F. & C. - 21hrs.	21
May 04-08/97 #150 to #155	Trt.5hrs.,Gr.-12hrs, F.&C.-28hrs.	45
May 09 & 10/97 #156 to #158	F.-15hrs, C.-2hrs.	17
May 15/97 #159 to #162	Gr.- 6hrs, F. & C.-7hrs.	13
May 16-19/97 #163 to #167	Gr.-8hrs, F. & C.-21hrs.	29
Jun. 10-22/97 #168 to #173	Trt.-23hrs, F. & C.-26hrs.	49
Jun. 23-30/97 #174 to #184	Trt.-19hrs, F. & C.-30hrs.	49
Jul. 06-10/97 #185 to #195	Gr.-9hrs, Trt.-21hrs, F. & C.-28hrs.	58
Jul. 12-30/97 #196 to #209	Gr.-9hrs, Trt.-32hrs, F. & C.-56hrs.	97
Aug. 01-19/97 #210 to #213	Gr.-2hrs, Trt.-6hrs, F. & C.-28hrs.	36
Sep. 14-19/97 #214 to #227	Gr.-10hrs, Trt.-5hrs, F. & C.-28hrs.	43
Oct. 07-10/97 #228 to #231	Gr.-2hrs, Prep.-2hrs, C.-2hrs, F. & C.-7hrs.	13
	TOTAL	507

3

DATE	TEST I	LEGEND: Lch.-leach, Prec.-precipitating, F.&C.-firing & cupelling	
DEc. 2/97 -	#255	Lch.-3hrs, Prec.-2hrs, F.&C.-7hrs.	12 Hrs. TOTAL
Jan. 3/98 -	#271	Lch.-6hrs, Prec.-4hrs, F.&C.-7hrs.	17
Jan. 28/98-	#274	Lch.-3hrs, Prec.-2hrs, F.&C.-7hrs.	12
Feb. 21/98-	#281	Lch.-5hrs, Prec.-2hrs, F.&C.-7hrs.	14
Feb. 22/98	#282	Parting & Cupelling- 2hrs.	02
Apr. 10/98-	#287 #288	Lch.-4hrs, Prec.-2hrs, F.&C.-7hrs.	13
Apr. 11/98-	#289	Lch.-3hrs, Precip.-2hrs, F. &C.-7hrs.	12
Apr. 18/98	#290	Lch.-4hrs, Prec.-4hrs, F.&C.-7hrs.	15
Apr. 21/98	#292	Lch.-7hrs, Ashing beads-3hrs, F.&C.-7hrs.	17
Apr. 22/98	#293	Prec.-4hrs, F&C-7hrs.	11
Apr.23 to 30/98 -	#294-300	Lch.-60hrs.	60
Aug. 4/98	#339	Lch.-3hrs, Prec.-2hrs, F.&C.-7hrs.	12
Jan. 17/99 -	#388 #389	Lch.-6hrs, Prec.-4hrs, F.&C.-7hrs.	17
Mar. 10/99 -	#417	Lch.-5hrs, F&C-7hrs.	12
Apr. 5/99 -	#421 #422	Lch.-6hrs, Prec.-3hrs, F.&C.-7hrs.	16
Apr. 6/99 -	#423	Prec.-3hrs, F&C-7hrs.	10
Apr. 7/99 -	#424	Prec.-3hrs, F&C-7hrs.	
	#425	Trt.-2hrs.	12
Apr. 8/99 -	#426	Trt.-2hrs, F&C-7hrs.	
-	#427	Trt.-2hrs.	11
Apr 14/99 -	#429	Prec.-6hrs, F&C-7hrs.	13
Apr. 16/99 -	#430	Prec.-6hrs, F&C-7hrs.	13
Apr. 22/99 -	#433	Prec.-3hrs, F&C-7hrs.	10
Apr. 30/99 -	#435	Lch.-6hrs, Prec.-3hrs, F&C-7hrs.	16
		TOTAL	327 HOURS

DATE	TEST		
Nov. 28/97 -	#254	Lch.-6hrs, Prec.-2hrs, F&C-7hrs.	15
Jan. 16/98 -	#273	Lch.-3hrs, Prec.-2hrs, F&C-7hrs.	12
Feb. 02/98 -	#275	Lch.-3hrs, Prec.-2hrs, F&C-7hrs.	12
Feb. 06/98 -	#276	Lch.-8hrs, Prec.-4hrs, F&C-7hrs.	19
Feb. 09/98 -	#277	Lch.-6hrs, Prec.-2hrs, F&C-7hrs.	15
Feb. 10/98 -	#278	C.-2hrs.	02
Feb. 14/98 -	#279	Lch.-5hrs, Prec.-4hrs, F&C-7hrs.	16
Feb. 19/98 -	#280	Lch.-3hrs, Prec.-2hrs, F&C-7hrs.	12
Feb. 22/98 -	#283	Lch.-4hrs, Prec.-2hrs, F&C-7hrs.	13
Feb. 23/98 - to Feb. 23/98	#284	Gr.-10hrs, Lch.-7hrs, Hydrocyclone-10hrs, F&C-7hrs.	34
Apr. 07/98 -	#285	Ashing resin beads-3hrs, F&C-7hrs	22
&Apr. 08/98 -	#286	F&C-7hrs, Lch.-3hrs, Prec.-2hrs	
Apr. 17/98 -	#291	Lch.-3hrs, Prec.-2hrs, F&C-7hrs.	12
Jun. 11/98 -	#325	Lch.-3hrs, Prec.-2hrs, F.Failure-4hrs.	09
Jun. 17/98 -	#326 #327 #328	Lch.-3hrs, Prec.-4hrs, F&C-7hrs.	14
Jun. 18/98 -	#329	Lch.-6hrs, Prec.-2hrs, F&C-7hrs.	15
Jun. 19/98 -	#330	Lch.-6hrs, Prec.-2hrs, F&C-7hrs.	15
Sept.2/98 -	#362	Trt.-4hrs, F&C-7hrs.	11
Jan. 30/99 -	#394	Gr.-2hrs, Lch.-3hrs, F&C-7hrs.	12
		TOTAL	260

5

DATE	TEST		
Aug. 5/98 -	#340	Lch.-2hrs, Prec.-2hrs, F&C-7hrs.	11
Dec. 17/97 -	#269	Lch.-3hrs, Prec.-2hrs, F&C-7hrs.	12
-	#270		
May 15/98 -	#308	Lch.-6hrs, Prec.-2hrs, F&C-7hrs.	15
May 14/98 -	#305	Lch.-6hrs, Prec.-4hrs, F&C-7hrs.	17
Jul. 6/98 -	#333	Prec.-2hrs, F&C-7hrs, Parting-3hrs.	12
-	#334		
Aug. 3/98 -	#338	Lch.-5hrs, Prec.-2hrs, F&C-7hrs.	14
Jul. 11/98 -	#336	Lch.-2hrs, Prec.-2hrs, F&C-7hrs.	11
Jul. 15/98 -	#337	Lch.-2hrs, Prec.-2hrs, F&C-7hrs.	11
Sept.2/98 -	#364		
Feb. 2/99 -	#397	Lch.-3hrs, Prec.-2hrs, F&C-7hrs.	12
Feb. 12/99 -	#398	Trt.-10hrs, F&C-7hrs.	17
Feb. 16/99 -	#404	Lch.-3hrs, Prec.-2hrs, F&C-7hrs.	12
Feb. 18/99 -	#405	Trt.-5hrs, Prec.-2hrs, F&C-7hrs.	14
Feb. 24/99 -	#411	Trt.-5hrs, Lch.-2hrs, Prec.-2hrs, F&C-7hrs.	16
Mar. 12/99 -	#418	Lch.-3hrs, Prec.-2hrs, F&C-7hrs.	12
Apr. 17/99 -	#431	Lch.-5hrs, Prec.-2hrs, F&C-7hrs.	14
Apr. 20/99 -	#432	Prec.-3hrs.	03
Aug. 17/98 -	#341	Pre-Trt.-2hrs, F&C-7hrs.	09
-	#342		
Aug. 19/98 -	#343	Pre-Trt.-2hrs, F&C-7hrs.	09
-	#344		
-	#345		
Aug. 26/98 -	#346	Pre-Trt.-2hrs, F&C.-7hrs.	09
-	#347		
Aug. 27/98 -	#348	Pre-Trt-4hrs, F&C-7hrs.	11
-	#349		
-	#350		
-	#351		
Sept. 1/98 -	#360	Pre-Trt.-3hrs, F&C-7hrs.	10
-	#361		
Sept. 2/98 -	#363	TOTAL	251

6

DATE	TEST		
Dec. 08/97 -	#256	Lch.-6hrs, Prec.-2hrs, F&C-7hrs.	15
Dec. 10/97 -	#257	Lch.-3hrs, Prec.-2hrs, F&C-7hrs.	12
Dec. 12-13/97-	#258, 259, #260, 261.	Lch.-4hrs, Prec.-4hrs, F&C-7hrs.	15
Dec. 14/97 -	#262 - #263 - #264	Lch.-3hrs, Prec.-6hrs, F&C-7hrs.	16
Dec. 15/97 -	#265 - #266	Lch.-6hrs, Prec.-2hrs, F&C-7hrs.	15
Dec. 16/97 -	#267 - #268	Lch.-1hr, Prec.-4hrs, F&C-7hrs.	12
Dec. 17/97 -	#269 - #270	Lch.-3hrs, Prec.-2hrs, F&C-7hrs.	12
Jan. 03/98 -	#272		
May 06/98 -	#301	Lch.-4hrs, Prec.-2hrs, Resin Column-3hrs F&C-7hrs.	16
May 7./98 -	#302 - #303 - #304	Lch.-6hrs, Prec.-4hrs, F&C-7hrs.	17
May 14/98 -	#306		
May 15/98 -	#307		
May 17/98 -	#309 - #310 - #311 - #312	Lch.-6hrs, Prec.-4hrs, F&C-7hrs.	17
May 19 to May 21/98	-#313 & #314	Lch.-6hrs, Prep.-27hrs, F&C-7hrs.	40
May 27/98 -	#315	Lch.-3hrs, Prec.-2hrs, F&C-7hrs.	12
Jun. 2/98 -	#316	Lch.-3hrs, Prec.-2hrs, F&C-7hrs.	12
Jun. 9-10/98	#317-324	Lch.-14hrs, Prec.-14hrs, F&C-7hrs	35
		TOTAL	246

7

DATE	TEST NO.		
Nov. 6/98 -	#365 to #370	Scorifying-8hrs, C.-4hrs, Parting-3hrs.	13
Nov. 10/98-	#371	Scorifying-5hrs, C.-2hrs.	07
-	#372		
Nov. 11/98 -	#373	Scorifying-7hrs, C.-2hrs.	09
-	#374		
-	#375		
Nov. 12/98 -	#376	Tabling-4hrs, F&C-7hrs.	11
Nov. 21/98 -	#377	Scorifying-5hrs, C.-2hrs, Parting-2hrs.	09
Nov. 22/98 -	#378	F&C-7hrs.	07
Aug. 31/98 -	#358	Pre-Trt.-2hrs, F&C-7hrs.	09
	#359		
Nov. 25/98 -	#381	Floatation-2hrs, F&C-7hrs.	09
Nov. 23/98 -	#380	Floatation-2hrs, F&C-7hrs.	09
Dec. 4/98 -	#382	Scorifying & C.-7hrs, Parting-2hrs.	09
Dec. 6/98 -	#383	F&C-7hrs, Parting-2hrs.	09
Dec. 16/98 -	#384	Lch.-5hrs, Circulating resin beads-5hrs, F&C-7hrs.	17
Dec. 17-19/98	#385	Lch.-8hrs, Resin bead circ.-7hrs, Drying beads-4hrs, F&C-7hrs.	26
Jan. 21/99 -	#391	Scorifying-5hrs, Parting-2hrs.	07
Feb. 19/99 -	#406	Trt.-2hrs, F&C-7hrs.	09
Feb. 20/99 -	#407	Trt.-2hrs, F&C-7hrs.	09
-	#408		
Feb. 22/99 -	#409	Trt.-2hrs, F&C-7hrs.	09
Feb. 24/99 -	#410	Trt.-5hrs, Lch.-2hrs, Prec.-2hrs, F&C-7hrs.	16
Mar. 2/99 -	#413	Trt.-4hrs, F&C-7hrs.	11
-	#414		
Mar.8/99 -	#415	Trt.-2hrs, F&C-7hrs.	09
Mar. 25/99 -	#419	Scorifying-3hrs, C.-2hrs.	05
Jan. 20/99 -	#390	Trt.-2hrs, F&C-7hrs.	09
Jan. 23/99 -	#392a	Scorifying-5hrs, Parting-3hrs.	08
Jan. 26/99 -	#392b	Screening-1hr, Trt.-2hrs, F&C-7hrs.	10
Jan. 31/99 -	#395	Prec.-2hrs, F&C-7hrs.	09
Sep. 21/98 -		Preparing sample for S.R.C. - 6hrs.	06
Sep. 29/98 -		Preparing sample for Stillwater MT. - 3hrs.	03
Aug. 28/98 -	#352-#355	Pre-Trt.-4hrs, F&C-7hrs.	11
		Total	275
		Grand Total	2134

6.2.2 Mineral Content Assessments

The following third party organizations have conducted mineral content analysis for 713803 Alberta Ltd. with costs incurred summarized below:

Organization	Costs
Cantech Laboratories Inc.	1,638.82
Accurassay Laboratories	85.60
Activation Laboratories Ltd.	842.36
James Metallurgical	321.00
International Metallurgical and Environmental Inc.	1,258.32
Bahamian Refining Corporation	3,307.00
University of Alberta	128.40
Saskatchewan Research Council	10,165.00
Loring Laboratories Ltd.	176.91
Envirogold Technologies Inc.	258.73
Metallurgical Research and Assay Laboratory	1,244.20
Total Costs	**19,426.34**

6.2.3 Mineral Content Analysis by Al Lewis

Continuing analytical work has been conducted by Al Lewis on behalf of 713803 Alberta Ltd. from October, 1996 through to the present time. This work has been contributed in kind to 713803 Alberta Limited and was valued based on the time expended by Al Lewis at a rate of [redacted]

The detail of the time expended for individual tests is included in Attachment 6.2.1 The total hours are 2,134.

Contributed time [redacted]	[redacted]
Materials & Supplies at Cost	
Total	$115,491.91

6.3 Report Preparation

The categories in which expenditures were incurred are:

Geological Interpretation Report	
[redacted]	$ 800.00
Exploration Drilling Report	
[redacted]	400.00
Mineral Assessment Report	
[redacted]	2,500.00
	500.00
	2,500.00
Total	$ 6,700.00