KERR ADDISON MINES LIMITED
P.O. BOX 91
COMMERCE COURT WEST
TORONTO, ONTARIO
M5L 1C7

92H

LEGACY PETROLEUM'S GRANITE CREEK

PLACER MINE PROSPECT, NR. PRINCETON, B.C.

JULY 1985

COPY

820894

Mr. A. K. Mossfeldt
President
Legacy Petroleum Ltd.
R.R. #4
Calgary, Alberta
T2M 4L4

Dear Mr. Mossfeldt:

Thank you for bringing your Granite Creek placer mine prospect to our attention. However, we do not wish to participate in the operation and are therefore returning the data you sent us.

We appreciate your submittal and wish you all the best with your endeavour.

Yours very truly,

KERR ADDISON MINES LIMITED

P. Bojtos, P. Eng.
Manager of Project Engineering

PB/sm
Enclosure

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COMMERCE COURT WEST
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July 2, 1985

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PB/sm
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PB

Cal-West Petroleums Ltd. (N.P.L.)

R.R. #4, Calgary, Alberta, Canada T2M 4L4 (403) 274-9531

June 17, 1985 JUN 2 0 1985 OF: Granite Creek

KERR ADDISON MINES LIMITED,
P.O. Box 91,
Commerce Court West,
Toronto Ontario M5L 1C7

Attention: I.D. Bayer, President

Dear Sir,

We submit what we believe to be a very favourable placer mine prospect near Princeton, B.C.

It is our intention to find a bonafide operator to enter the operation and finish developing the prospect.

At the moment we have almost two million dollars worth of equipment on the lease. If your firm is interested in discussing the prospect please contact us a your earliest convenience.

Yours very truly,
LEGACY PETROLEUM LTD.; formerly,
CAL-WEST PETROLEUMS LTD. (NPL)

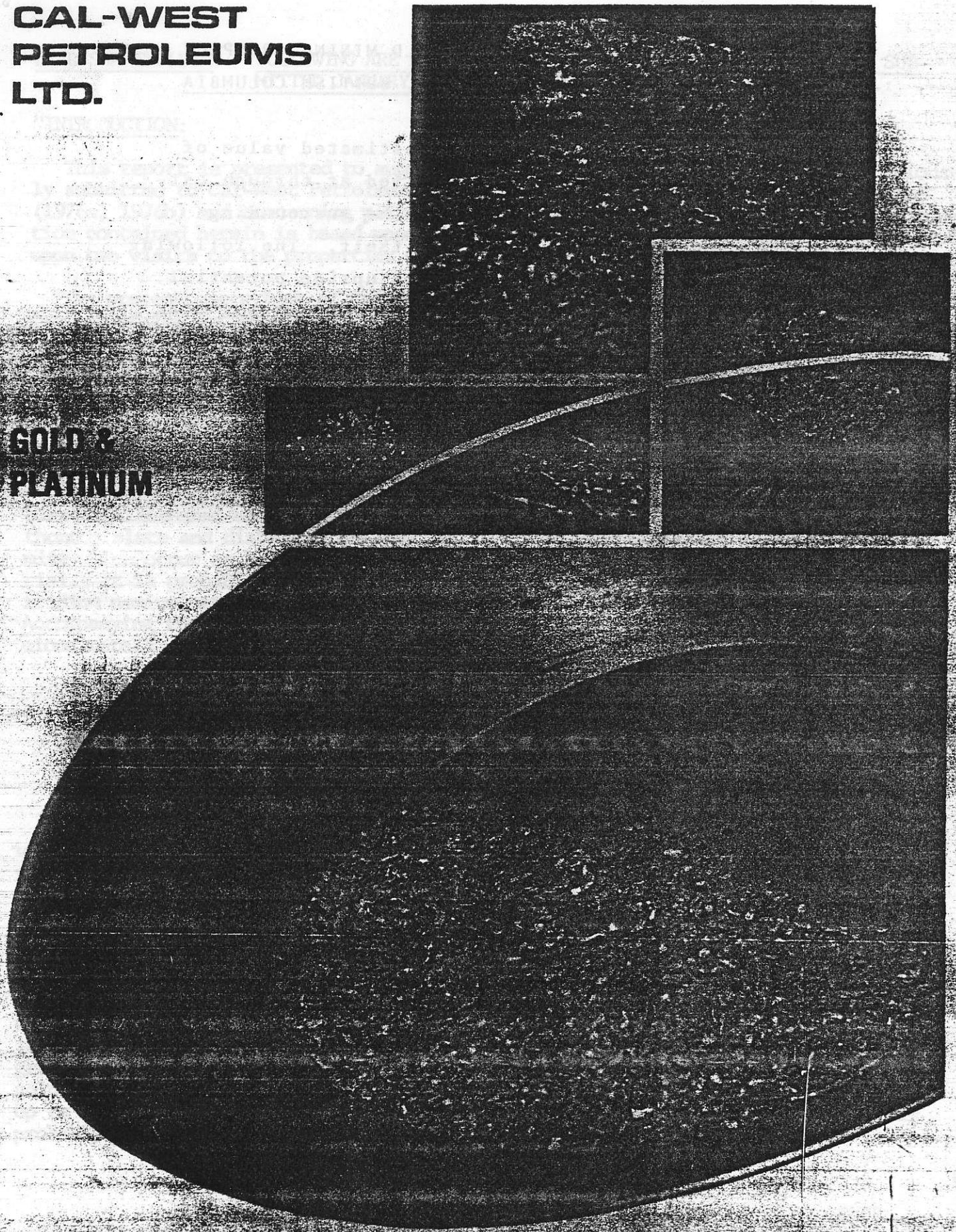
A. Kenneth Mossfeldt,
President

AKM/cam
Encl.

No interest.

26-June-85
I'd like to try and mine a placer deposit by underground methods. Especially when I think they don't have any real idea of what they're doing.

CAL-WEST PETROLEUMS LTD.



GOLD & PLATINUM

#10[illegible] 902 - 11th Avenue S.W., Calgary, Alberta, Canada T2R 0E7 - Telephone (403) 2[illegible]5-3774

GRANITE CREEK GOLD MINING PROSPECT

HOPE-PRINCETON, BRITISH COLUMBIA

The Granite Creek prospect has an estimated value of $5.5 million. This figure was arrived at through estimates of prior reports taken from the surrounding area and production from the mine itself. The following reports better describe the enormous upside potential in this property. However, it must be understood that these figures are estimated and can only be proven through further exploration.

DEAR SHAREHOLDER: FOLLOWING ARE EXCERPTS FROM DR. ROGER D. MORTON'S REPORT SUBMITTED JANUARY, 1978, ON THE SWAN PROJECT, COALMONT, B.C.:

"INTRODUCTION:

This report is presented to augment those data contained within reports previously submitted to Cal-West Petroleums Ltd. by W.G. Timmins (1976) and D.R. Cochrane (1976a, 1976b) and concerning placer leases 1466, 1370, 1819 and 1975. The information contained herein is based upon a thorough review of pre-existing literature and upon two visits to the properties during September and October of 1977."

"The present operations of Cal-West Petroleums Ltd. are based upon the southern reaches of the buried placer deposit and since 1977 the company has been successfully extracting gold and platinum bearing gravels from its underground workings. At the time of the present author's last visit to the property, it was proposed that a seismic refraction survey should be initiated to accurately delineate the configuration, orientations and dimensions of the buried placer deposit. This survey was performed by Geotronics Surveys Ltd. in November 1977 and the results are included in the following descriptive section."

"Sluicing of the gravels has now shown them to contain abundant boulders and cobbles of allochthonous intrusive and extrusive igneous rocks and fragments of autochthonous slate and diabase. The most abundant heavy minerals are magnetite and chromite which occur as boulders and cobbles intergrown with ultramafic intrusive material. It is probable that these materials contain significant amounts of platinum, iridium osmium, etc. (As yet no testing has been performed on these fractions). Accompanying the magnetite and chromite are an abundance of heavy minerals and precious metals which include:

Native gold	Garnets	Platinum-iron alloys
Native platinum	Zircon	Tulameenite? (Pt_2FeCu alloy)
Native silver	Ilmenite	Iridosmine (OsIrPt alloy)
Gold-silver-copper alloys		Ruthenirídosmine (OsIrPt alloy)

The bulk gold:platinum ratio of the deposit appears to be relatively constant at ~5:1. The gold occurs as nuggets 1mm to 25mm in diameter. Many of the nuggets are well-flattened, but others are still rounded and associated with a quartz matrix. The gold appears to be >800 fine. In contrast, the platinum-bearing nuggets are 1mm to 4mm in diameter and always well rounded or botryoidal."

"Subsequent to this initial test sampling, the efficiency of the sluicing operation has clearly increased and the overall grade of material appears noticeably higher. Above all, the previous estimates of gross yield assumed that the metals were to be sold as metallurgical smelting ores. Such is not the case as the majority of the gold and platinum alloys will be sold as jewelry and as collector-grade materials. Hence prices in excess of 4x the current metal prices (i.e., the gold might retail at up to an average of $400-$500/oz., and the platinum alloys at up to $400/oz.) would be more realistic. In view of this, the Cal-West deposit is probably yielding gross values well in excess of $200/yd. at present."

OVER...

"THE ECONOMIC POTENTIAL OF THE PROPERTIES:

If a strike-length of up to 4000 ft. is accepted for the buried channel and the deposit had a pay zone 15 ft. thick and an average of 100 ft. wide, one could anticipate (with $200/yd. yields and costs of $20/yd. for mining and processing) a net worth of ~$40 million for such a deposit. If the productive zone was 100 ft. thick and 150 ft. wide over this 4000 ft. strike length the equivalent yield would be ~$400 million. These figures, although at present totally theoretical, serve to illustrate the hitherto unmentioned magnitude of the long-term potential of the Granite Creek properties. At the present rate of pilot production, there is a distinct chance of producing an annual net profit of around $1 million/year minimum (assuming a 300 day year and per yard net of $180).

"CONCLUSIONS:

The Granite Creek properties of Cal-West Petroleums Ltd. must constitute one of the highest potential precious metal deposits in W. Canada today."

R.D. Morton, B.Sc., Ph.D., P.Geol.

Street Noises continued from page 5

River between Hope and Yale, B.C. Engineer Elwell estimates at least two million yards, grading approximately six dollars a yard, with an additional three to four million yards to be tested and developed. Quatsino President Malcolm A. Stuart said the placer material will be treated by management personnel in a vibrating sluice box, concentrates from which are to be further upgraded at a lower mainland refinery and the gold, silver and platinum extracted for market.

* * *

Ron Stokes, the consulting engineer with SEMCO is getting much more work with placer mining than in the past. That perhaps is natural with the price of gold at $200 (Cdn) per oz. and the price of nuggets double that. Ron has purchased a 2 ton, 20 ft long mobile washing plant. "There is a need for better bulk testing of placer properties, before they are put into production," he said. "Too often the operators go in on past records of production or panning tests." That's fine for finding out *where* it is, but to find out *how much* there is needs some big volume tests. A pan volume goes 200-400 to the yard and a few specks of gold influence the whole estimate. Too often a big expensive plant is installed before the potential of the property has been tested in volume and values. With this bulk testing plant we are providing a better service to our clients," said Stokes. Ron will be lecturing to the B.C. & Yukon 'Placer Mining' School again this year. The course starts on April 11, 1978 and covers Placer History, Minerals, Geology, Exploration, Testing and Mining, as well as a field trip. The cost is $25.00. He appeared on the Bannerman show CKNW, Monday, April 10, 10:30 to 12:00 a.m. talking about Placer Mining. On a recent CJOR show with Ed Murphy, the clink of gold in the pan must have had effect, 10 people signed up next day.

* * *

"Herbert, someone's here to see you about the swampland you reclaimed."

And while we're on the subject of new improved gold recovery techniques, this column was introduced to another of mind boggling potential a day or two before press time. This latest approach to the age old problems surrounding placer gold, our informant tells us, has passed every test and is now being finalized for the market by a Vancouver, B.C., private group. Says he, the only similarity between this and any former or current methods of gold recovery is in the employment of gravity—and even in this there's a highly improved twist. Development is so far advanced that B.C.'s placer gold industry may be in for "one hell of a surprise by April's end."

* * *

B.C. & Yukon Chamber of Mines' Placer Mining School 1978 got under way 7:30 p.m., Tuesday, April 11 at Vancouver's Point Grey Junior Secondary School. For $25, this student body gets five evening lectures, handout notes and one informative field trip, all delivered in everyday, plain English. Course covers placer history, minerals, geology, prospecting, operating methods, law and regulations.

* * *

Meanwhile, Calgary based Cal-West Petroleum Ltd. goes quietly on about the business of extracting placer gold and platinum from a buried channel deposit, the north end of which emerges in the bank of the Tulameen river near Coalmont, B.C. The channel extends for 4,000 feet and the productive material is at least 15 feet thick. In a report to the company, Professor and Professional Engineer, P.D. Morton of Thurnex Consulting Ltd., stated: "The bulk gold : platinum ratio of the deposit appears to be relatively constant at approximately 5 : 1. The gold occurs as nuggets 1 mm to 25 mm in diameter. Many of the nuggets are well flattened, but others are still rounded and associated with a quartz matrix. The gold appears to be over 800 fine. In contrast, the platinum-bearing nuggets are 1 mm to 4 mm in diameter and always well rounded or botryoidal." (He could have said that platinum was occurring in clusters like bunches of grapes but what the hell . . . a Ph.D. entitles a guy to a little mystique). But the foregoing's just for openers. Occurring with the gold and platinum are native silver, gold-silver-copper alloys, garnets, zircon, platinum-iron alloys, tulameenite, iridosmine, ruthenirodosmine. And who presides over this treasury of precious metals and semi-precious gems? Just good old "Multi-Mineral Al" Farrell himself, whose Silver Bay Mine near Great Bear Lake is smelting 1000 ounce dore bars, mostly silver but about as complex as they come with something like 10 other minerals. Professor Morton went on to say, "At the present rate of pilot production, there is a distinct chance of producing an annual net profit of around $1 million/year minimum (assuming a 300 day year and per yard net of $180)." An assumption he made when gold was $143 Canadian. Morton concluded, "The Granite Creek properties of Cal-West Petroleum Ltd. must constitute one of the highest potential precious metal deposits in Western Canada today. Within a short period of time, the Company has brought into production a *small mine* which is turning out to be a *big producer*. There is every hope that progress during 1978 will reveal the enormous profitability of this operation and that the present worth of the Company stock is far understated."

* * *

There's heartening news for those two Stewart area advocates, Bob Schumacher and Spencer Davis. Tournigan Mining's John Hembling reports plans are afoot for underground development on the big Missouri-Unicorn gold-silver property adjacent to the Premier Mine at Stewart, B.C. Financial arrangements, says the company president, are in the final stages and details will be more fully reported in the next few weeks.

* * *

Calgary stock brokers Peters & Co. Ltd. say Shelter Oil & Gas Ltd., headed by John A. Tessari, "an experienced and successful oil and gas engineer and entrepreneur", should enjoy a free cash flow after debt servicing, of $165,000 (5.7 cents per share) for year March 78 - March 79. The company also owns marketable securities with a current market value of about $99,000 and is permitted to borrow up to $286,000 under terms of the convertible debenture. Accordingly, should suitable prospects emerge besides planned drilling at Hays-Grand Forks on working-interest acreage, Shelter can maintain a respectable exploration program.

* * *

Kaiser Resources chief, Edgar F. Kaiser, Junior, says Pierre Trudeau's government turned on a green light to Kaiser's request to get in among Canada's oil and gas goodies. Said Edgar, "The company is now proceeding with its previously announced participation with Petro-Canada in oil and gas exploration in the Sable Island area, off the east coast of Nova Scotia."

* * *

Contract for a further 3,000 feet of diamond drilling on the Yuill 1,500 level at the Silver Cup property has been let to Bridesville Drilling company, reports C.T. Explorand-da's President Dick Newsom. He said the Freibergite rich part of the Yuill vein now extends over about 60 feet and still appears in the face of the drift and in vein widths of 14 to 17 inches. Two chip samples taken across the vein averaged 98.7 ounces and 166.02 ounces silver per ton; 0.166 and 0.410 ounces gold; 12.73 and 21.11% lead, and 22.47 and 16.96% zinc per ton. Prime among the current drill targets is that of the intersection of the Towser and Silver Cup structures.

* * * Continued on page 11

REPORT CONCERNING
THE SWAN PROJECT, GRANITE CREEK,
SIMILKAMEEN MINING DISTRICT,
BRITISH COLUMBIA

(P.L.M. 1466, 1370, 1819 and 1975)

CAL-WEST PETROLEUM LTD.
Calgary, Alberta

by

Prof. Roger D. Morton, P. Geol.
Consulting Geologist
Thuranex Consulting Ltd.
9103-118 Street
Edmonton, Alberta

A. Kenneth Mossfeldt
President
James R. Lawrence
Vice-President
Joyce Morrish
Secretary

INTRODUCTION:

This report is presented to augment those data contained within reports previously submitted to Cal-West Petroleum Ltd. by W.G. Timmins (1976) and D.R. Cochrane (1976a, 1976b) and concerning placer leases 1466, 1370, 1819 and 1975. The information contained herein is based upon a thorough review of pre-existing literature and upon two visits to the properties during September and October of 1977.

The properties lie within the environs of Granite Creek, some 2 km south of Coalmont at 49°30'N and 120°45'W. Placer gold was first discovered in the Granite Creek Valley in 1885, and in 1898 the Slate Creek Mining Company discovered what appeared to be an ancient, northward trending buried river channel, containing placer gold and platinum, on the site of the present PML #1466. This buried placer deposit is that presently being developed by Cal-West Petroleum Ltd. It was later discovered (around 1930) that the northward extension of this channel emerged into the south bank of the Tulameen River near Coalmont. (The placer gold of this northward extension was briefly worked in 1932-33 by International Ltd.) The gold-bearing channel deposit was thus indicated to have a lateral extent of at least 4000 ft. In the period 1974-1976 Harker Developments commenced work on the Granite Creek property and performed drifting excavations below the southern end of the channel deposit. Raising from the bedrock-sited drifts resulted in the rediscovery of the gold-bearing placer deposit. Work was suspended in March 1976.

Legacy

A. Kenneth Mossfeldt
President
James R. Lawrence
Vice-President
Joyce Morrish
Secretary

The present operations of Cal-West Petroleum Ltd. are based upon the southern reaches of the buried placer deposit and since 1977 the company has been successfully extracting gold and platinum bearing gravels from its underground workings. At the time of the present author's last visit to the property, it was proposed that a seismic refraction survey should be initiated to accurately delineate the configuration, orientations and dimensions of the buried placer deposit. This survey was performed by Geotronics Surveys Ltd. in November 1977 and the results are included in the following descriptive section.

THE GEOLOGY OF THE GRANITE CREEK BURIED PLACER DEPOSIT:

The buried channel deposit is probably pre-glacial and has now been clearly demonstrated to be a canyon-like entity whose walls dip inwards at angles in excess of 45°. The bedrock of the channel is composed of compact grey slates cut by diabase dikes. The southern portion of the channel has been demonstrated by the 1977 seismic refraction survey to strike toward true north, to have an apparent width varying between 100 ft. to 200 ft. and to be covered by an estimated 200 to 350 ft. of sands and gravels. Sampling during the initial stages of extraction has shown that the lower 15 ft. of the buried channel are filled by a poorly sorted, consolidated, clay-rich, polymictic conglomerate which bears boulders up to 5 ft. in diameter. Abundant native gold and platinum-rich nuggets occur in this conglomerate. The conglomerate is relatively dry and behaves in a competent manner so that a quasi-vertical working face can be maintained. (Timbering is naturally required [illegible] to ensure safe working con-

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Secretary

ditions). Cochrane (1977) and the present author have observed the encouraging fact that there does not appear to be any obvious concentration of precious metals in the lower parts of the channel bed. It would seem that the productive material is at least 15 ft. thick and could well be up to 100 or 200 ft. thick if the whole channel is filled by a totally unsorted gravel deposit.

Sluicing of the gravels has now shown them to contain abundant boulders and cobbles of allochthonous intrusive and extrusive igneous rocks and fragments of autochthonous slate and diabase. The most abundant heavy minerals are magnetite and chromite which occur as boulders and cobbles intergrown with ultramafic intrusive material. It is probable that these materials contain significant amounts of platinum, iridium, osmium, etc. (As yet no testing has been performed on these fractions). Accompanying the magnetite and chromite are an abundance of heavy minerals and precious metals which include:

Native gold	Garnets	Platinum-iron alloys
Native platinum	Zircon	Tulameenite? (Pt_2FeCu alloy)
Native silver	Ilmenite	Iridosmine (OsIrPt alloy)
Gold-silver-copper alloys		Ruthenirídosmine (OsIrPt alloy)

The bulk gold:platinum ratio of the deposit appears to be relatively constant at ~5:1. The gold occurs as nuggets 1mm to 25mm in diameter. Many of the nuggets are well-flattened, but others are still rounded and associated with a quartz matrix. The gold appears to be >800 fine. In contrast, the platinum-bearing nuggets are 1mm to 4mm in diameter and always well rounded or botryoidal.

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liminary tests performed by Cochrane in Sep[illegible]7 indicated that the gravels contained an equivalent total content of $35.53/yd. in platinum-group elements and gold (at $143 gold, $172 platinum, $150 osmium, $300 iridium). It is the present author's opinion that these figures present a serious understate of the potential gross yield of this deposit. Subsequent to this initial test sampling, the efficiency of the sluicing operation has clearly increased and the overall grade of material appears noticeably higher. Above all, the previous estimates of gross yield assumed that the metals were to be sold as metallurgical smelting ores. Such is not the case as the majority of the gold and platinum alloys will be sold as jewelry and as collector-grade materials. Hence prices in excess of 4x the current metal prices (i.e., the gold might retail at up to an average of $400-$500/oz., and the platinum alloys at up to $400/oz.)would be more realistic. In view of this, the Cal-West deposit is probably yielding gross values well in excess of $200/yd. at present.

THE ECONOMIC POTENTIAL OF THE PROPERTIES:

If a strike-length of up to 4000 ft. is accepted for the buried channel and the deposit had a pay zone 15 ft. thick and an average of 100 ft. wide, one could anticipate (with $200/yd. yields and costs of $20/yd. for mining and processing) a net worth of ∿$40 million for such a deposit. If the productive zone was 100 ft. thick and 150 ft. wide over this 4000 ft. strike length the equivalent yield would be ∿$400 million. These figures, although at present totally theoretical, serve

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SCALE

FEET 400 0 400 800 FEET

GEOTRONICS SURVEYS LTD.

CAL-WEST PETROLEUM LTD.
SWAN PROJECT
GRANITE CREEK
COALMONT AREA, SIMILKAMEEN M.O., B.C.

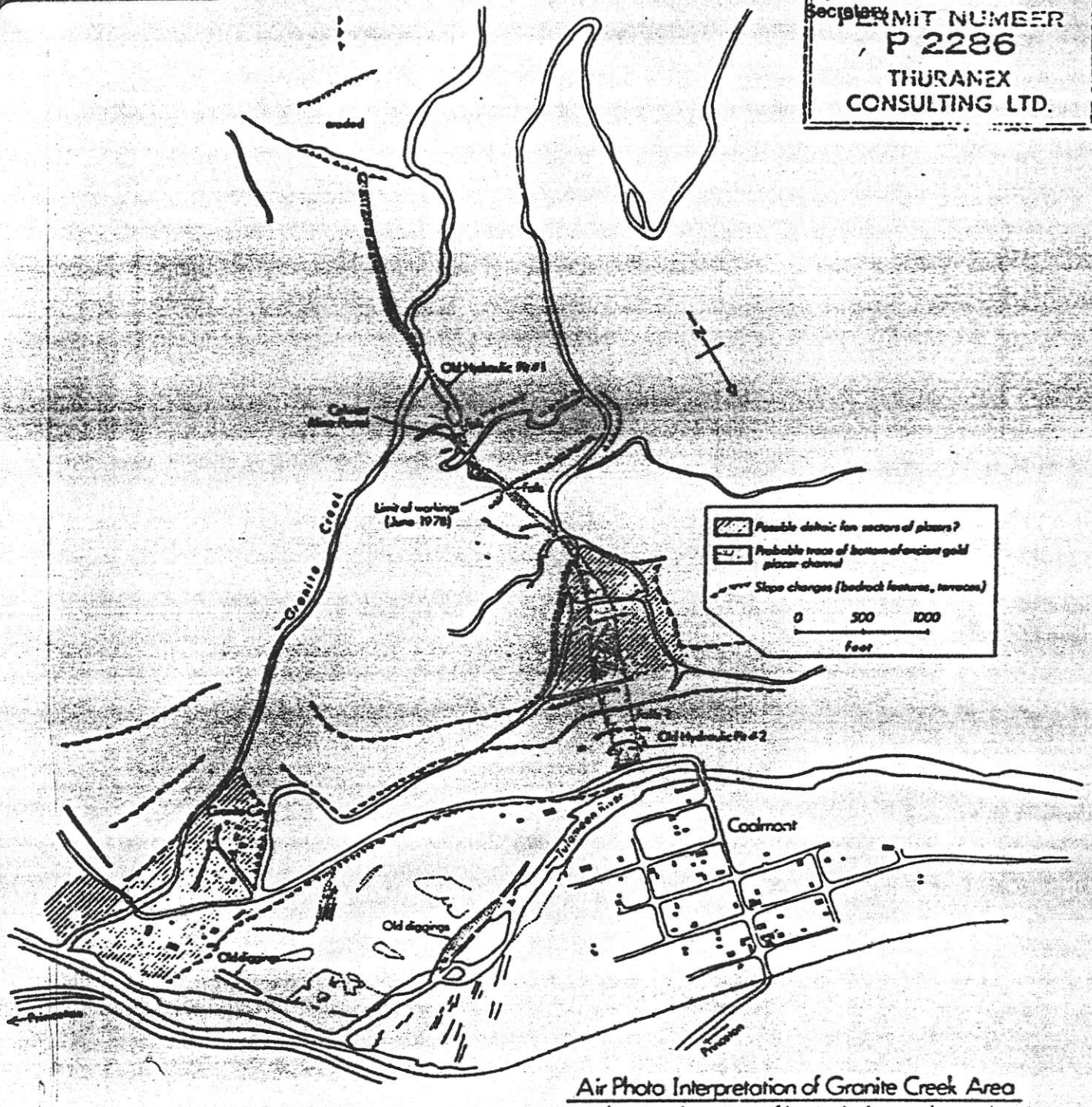
SEISMIC REFRACTION STUDY
PLAN

LEGEND

Seismic line showing

Legacy Oil & Gas Ltd.
Ste 810, 808 - 4th Ave S.W. - Calgary, Alberta, T2P 0X1 (403) 266-0722

Legacy



Air Photo Interpretation of Granite Creek Area
showing location of buried placer channel

R.D. Morton — 1978

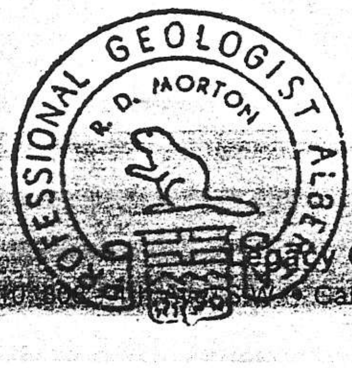
During the early part of 1978 the Company decided to increase the efficiency of the operation by adopting a different mining procedure. Prior to 1978 the method employed was to drift within the basal sector of the ancient channel, thus necessitating extensive timbering. It has been decided that a more profitable approach would be to drift below the actual channel in the bedrock and to draw off the gold/platinum-bearing gravels at close intervals by a series of finger raises. This latter method is much safer and alleviates the expense of timbering in the gravels.

Conclusions and Recommendations

The Swan Creek operation has now passed through its pilot development stage successfully. Results of recent exploration have confirmed the magnitude of the original discovery. 1978 should be a year when considerable progress can be recorded both in development and exploration.

The scale of operations on the Swan project must clearly be increased to facilitate a higher cash flow. This would demand a more definitive survey of the potential reserves of the northern extent of the deposit. It is proposed that a program of seismic investigations, perhaps augmented by surface and drill sampling, be initiated at the earliest possible date. Consideration must also be given to the increased mechanization of the mining and processing operations, the possible resiting of the extraction plant and the feasibility of open-pit extraction of higher level (above the channel) gravel deposits.

Respectfully submitted,



R. D. Morton, P. Geol.
[illegible]anex Consulting Ltd.

SHORT REPORT

on a

SEISMIC REFRACTION SURVEY

on the

SWAN PROJECT PROPERTY

GRANITE CREEK, SIMILKAMEEN M.D., B.C.

Report for: Cal-West Petroleum Ltd.,
101-902, 11th Avenue S.W.
CALGARY, Alberta

by: David G. Mark
Geophysicist
GEOTRONICS SURVEYS LTD.,
420-890 West Pender Street,
Vancouver,
British Columbia

dated: November 22nd, 1977

SHORT REPORT

on a

SEISMIC REFRACTION SURVEY

on the

SWAN PROJECT PROPERTY

GRANITE CREEK, SIMILKAMEEN M.D., B.C.

The interpretation of data obtained from the seismic refraction survey carried out on the above-named property has been completed. A total of three lines, located as shown on the accompanying Figure No. 1, were profiled. These were labelled SL-1 to SL-3 respectively. The purpose of the study was to locate a buried bedrock channel that was probably an old course of Granite Creek. The geophysical information presented here is based upon our best interpretation of field data which were collected according to generally accepted field procedures.

The procedure was as follows:

Twelve geophones were planted at 50- or 100-foot intervals along the line of investigation. The 'two-way, in-line' seismic refraction method was used. The data were recorded from five or six shots; 2 200-500 feet off-end, one at each end and one or two within the spread. A 12-channel, SIE Dresser refraction seismic system was used for recording.

SL-1 and SL-2 were carried out by doing one 1100-foot spread with 100-foot separated geophones, and then moving the whole spread 50 feet west along the profile and redoing the spread. This then gave depth points every 50 feet. The 1100-foot spread was thought to be needed since the depth to bedrock was thought to be 150 feet or more. The length of these two profiles was therefore, 1150 feet. SL-3 was carried out with one spread 550 feet long and geophones 50 feet apart.

In addition to the three profiles, a velocity spread was done along each profile.

The data were interpreted by calculating the delay time for each geophone as follows:

1. Pick the first arrivals from the field records and draw time-distance graphs for each spread;

2. With the help of a 'Russian', determine which points are bedrock and which are overburden, and how many layers occur in the overburden;

3. Draw a delay line for each end shot and from this determine the delay time for each geophone;

4. Proportion the delay time for each geophone into the various times spent in the various layers. Multiply each layer time by the corresponding layer velocity to obtain the layer thickness. Adding the layer thicknesses together will give the total overburden depth.

The seismic-interpretted profiles are shown on Figures 2 to 4 and are drawn at a scale of one inch to 50 feet. The plan of the survey area as well as the location of the buried channel is shown on Figure one. The profiles are

discussed as follows:

SL-1 (Figure 2)

This profile is basically a 2-layer case except for the channel area where it is a 3-layer case. The first layer has a velocity of 1,350 feet/sec. and is likely loose unconsolidated sand and/or gravel. The second layer has a velocity of 5,200 feet/sec and appears to occur from geophones 12 to 21. The third layer has a velocity of 19,400 feet/sec which is most assuredly the velocity of bedrock. In fact, it is a typical velocity for intrusives. However, the bedrock noted in all the outcrops in the area is slate (or shale) which at surface, is loose and broken up. Therefore, if this high velocity reflects the slate, then it must be hard and quite competent only a few feet below the surface.

The depth to bedrock, except for the channel area, varies from 6 feet below geophone 1, to 119 feet below geophone 15.

From geophones 16 to 19, a bedrock velocity was not obtained. It is, therefore, very likely that a canyon-type bedrock channel occurs between these geophones. The velocity spread indicates it to be filled with a 5,200 feet/second material, which is probably partially saturated sands and gravels. Because a bedrock velocity was not obtained, the depth to bedrock within the channel area cannot be calculated. The depth, however, is probably close to 200 feet.

SL-2 (Figure 3)

This is a 2-layer case, except for the channel area, with the upper layer having a velocity of 1,600 feet/second and the lower layer, 15,400 feet/second. As on profile SL-1 the 2 layers are likely loose, unconsolidated sand and/or gravel, and hard, competent slate.

The depth to bedrock, other than the channel area varies from 19 feet below geophone 1 to 86 feet below geophone 14. Geophone 1 appeared to be within one or two feet of bedrock and, therefore, depth to bedrock probably means hard, competent rock.

The channel on this profile appears to occur between geophones 6 and 9. Like that part of the channel on SL-1, it is filled with a 5,200 feet/sec. material that is likely partially saturated sands and gravels. The depth to the bottom of the channel is cautiously estimated to be somewhat over 100 feet.

SL-3 (Figure 4)

This profile is somewhat different from the previous two in that it is a 4-layer case rather than a 2-layer case.

The first layer is likely unconsolidated sand or gravel with a velocity of 1,500 feet/second. The second layer is probably more consolidated sand or gravel with a velocity of 2,500 to 3,000 feet/second. The third layer, considering its velocity of 5000 feet/sec, is probably the same material as the second layer, but water-saturated. The fourth layer has a velocity of 16,700 feet/second and is probably hard, competent slate.

The depth to hard, competent bedrock, other than the channel area, varies from 26 feet below geophone 12 to 126 feet below geophone 3. An outcrop of bedrock occurs near geophone 11 on the side of the road, and, considering the low velocity, is probably loose and fractured. However, the upper layer velocity below geophones 11 and 12 was somewhat difficult to determine and, therefore, the depth to the competent bedrock may be somewhat different.

The channel on this profile occurs between geophones 3 and 8 and is filled with a 6,500 feet/second material which is probably water-saturated glacial till and/or well-consolidated gravels. As on SL-1, the depth to the bottom of the channel cannot be calculated.

In conclusion, the three seismic profiles show the buried bedrock channel to be a canyon-like feature with walls greater than 45°. It is probably filled with water-saturated sands and gravels and/or glacial till. Figure 1 shows it to strike approximately true north. Because the channel is a buried canyon-like feature, the depth to the bottom could not be calculated but is estimated to vary from 100 feet below SL-2 to 200 feet below SL-1.

SUGGESTED VELOCITY CLASSIFICATION

Velocity ft/sec	Suggested material
1,350 to 1,600	Loose, unconsolidated sands, and gravels
2,500 to 3,000	Consolidated sands and gravels
5,000 to 6,500	Water-saturated sands and gravels, possibly glacial till.
15,400 to 19,400	Hard, competent bedrock, probably slate.

Respectfully submitted,
GEOTRONICS SURVEYS LTD.,

David G. Mark
Geophysicist

November 22nd, 1977

Legacy

A. Kenneth Mossfeldt
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Vice-President
Joyce Morrish
Secretary

for your information

Roger

THESIS PROPOSAL

SWAN PROJECT

BURIED PLACER AU-PT DEPOSIT

by

A. Aubut
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INTRODUCTION:

The Granite Creek property is located 16 km (10 miles) west of Princeton, B.C., and is covered by four placer leases (1466, 1370, 1918 and 1975). Development is restricted, at present, to lease 1466. The site is located at coordinates 49°30'N and 120° 45'W (NTS 92 H/10).

Access to the property is accomplished via a paved road to the small village of Coalmont, from Princeton, and thence some 2 km south by gravel road.

The title to the four placer leases is presently held under option agreement by Cal-West Petroleum Ltd. of Calgary, Alberta.

HISTORY:

Placer gold has been recovered from the vicinity of the Tulameen and Similkameen Rivers, and their tributaries since the early 1860's. It was not until 1885 that rich placer showings, along Granite Creek, promoted interested in the area. In the year following, production reached its peak figure of $193,000.

In 1898 the Slate Creek Mining Company worked what is now PL 1466 (then the Swan claims), utilizing hydraulic methods. Work was initiated on what at first was believed to be a bench deposit but it was subsequently discovered that the auriferous deposit was a northward trending buried channel. The company followed up with some crude drifting then abondoned the property.

In 1924 and 1933 attempts were made to locate and work the channel utilizing underground methods. The 1933 effort also included work on the apparent northern end of the channel which had been located along the banks of the Tulameen river. Both attempts met with failure and work was terminated after a couple of years.

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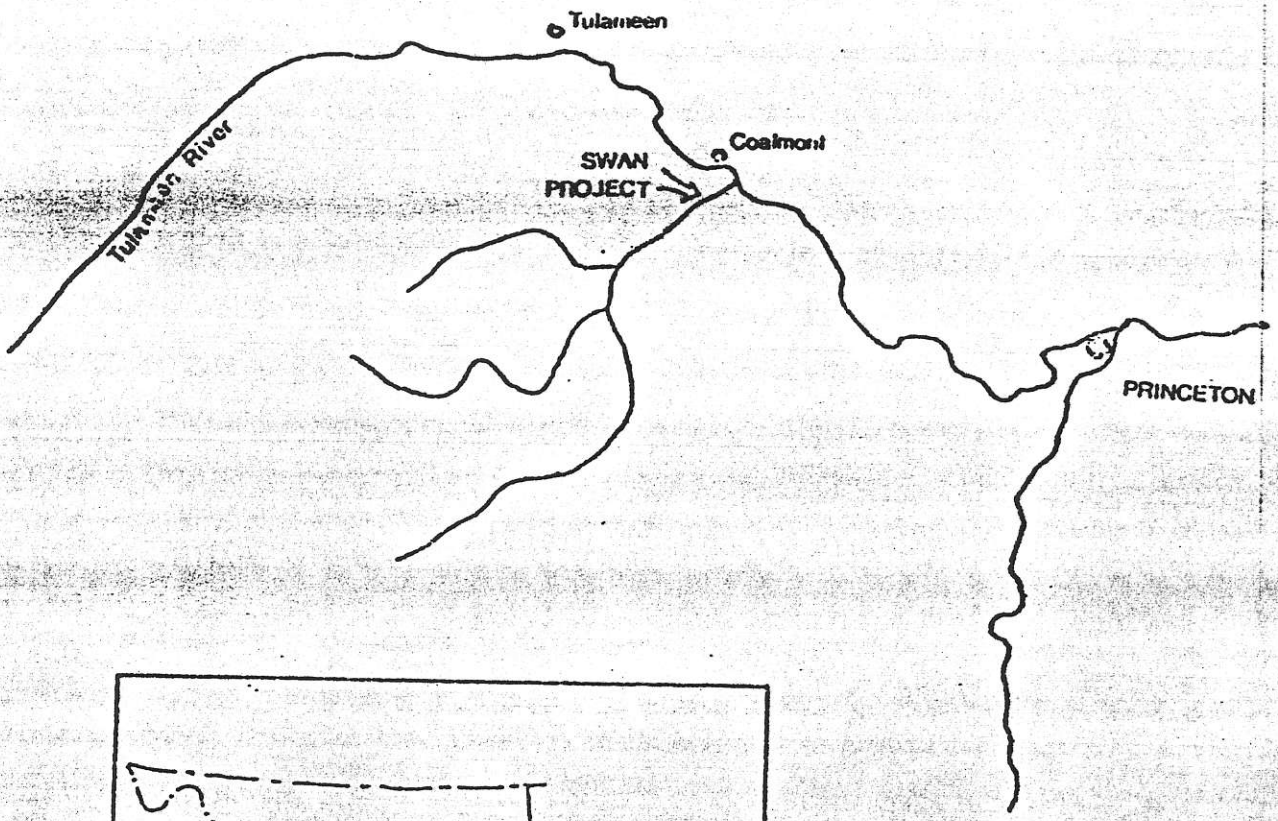

Location Map

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1960, Mr. J.A. Farrell, through Geojimal Mining Development Company Ltd., initiated what are now the present underground workings. Since this new effort began, a drift has been driven towards, then turned to parallel, the buried channel. A number of raises have been driven upward with the most recent being the first not to hit only old workings.

In the fall of 1977 Cal-West, the present owners, had three seismic lines run at right angles to the apparent strike of the channel. The purpose of this survey was to try and delineate the position of the channel, as well as to prove the feasibility of the method with regard to this type of deposit. The project proved successful in both cases.

GEOLOGY:

The deposit consists of a preserved Tertiary paleochannel of the present Granite Creek. This channel cuts through volcanic-volcanoclastic-sedimentary rocks of the Upper Triassic Nicola group. The stream gravels include autochthonous slates and greywackes and allochthonous material including fragments of the nearby Tulameen ultramafic complex. During the Quaternary, glacial till, silt, sand and gravel were deposited in the channel. After the Pleistocene ice sheet retreated Granite Creek, unable to follow its original course, cut its present channel and so preserving part of the old stream course.

MINERALOGY:

Heavy mineral concentrates obtained after sluicing of the gravels consist of two main components. These are magnetite and chromite. Other heavy minerals found are gold, 'platinum', garnet, zircon, ilmenite, plus minor native silver and copper. The gold is generally present as coarse, moderately flattened nuggets with some having

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d white quartz. The 'platinum' nuggets occur as rounded, grains of relatively uniform size. Most of these pellet-like nuggets have a roughly pitted surface with adhering chromite and magnetite also being common. Occasionally olivine and pyroxene crystals are also attached.

The term 'platinum' is used here in a very general sense since the nuggets found actually consist of a number of platinoid alloys. Raicevic and Cabri (1976) performed a study on platinum-group minerals from placers on the Tulameen River and showed that nineteen different minerals existed there; these are listed, together with compositions in Table 1.

ORIGIN OF THE PLACER DEPOSIT

Based on associated allocthonous pebble compositions, attached minerals and metal-bearing occurrences, it is reasonably assured that the original source of the precious metals is the Tulameen Complex. This ultramafic body has ubiquitous small concentrations of chromitite and associated magnetite. These chromitite zones have been found by Camsell (1913) to contain moderate amounts of platinum-group metals. This relationship is in agreement with the ultramafic-mafic-chromium-nickel-platinoid association as outlined by Stanton (1972). Also associated with the complex are gold-bearing veins which have been found around its periphery such as the upper portions of Granite Creek and in the vicinity of Grasshopper Mountain.

SOURCES OF INFORMATION:

There is a relatively abundant amount of data available concerning the Tulameen area. The older references are the most complete in that they cover most aspects of the area. These include reports by Camsell (1913) and Rice (1947) as well as numerous B.C. Dept. of Mines summaries. More recent material includes Schau's (1968) study of the Nicola Group, Findlay (1963), who did a study on the Tulameen Complex, a number of papers by L.J. Cabri dealing with various aspects of the platinum mineralogy of the placer deposits of the area, together

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TABLE 1 — Platinum-Group Minerals Found In Placers From the Tulameen River Area, B.C.

	Mineral	Ideal Formula	Minor Elements
MOST COMMON	1. isoferroplatinum	~ Pt_3Fe	Ir, Cu, Ni, Sb
	2. native platinum	(Pt, Fe) <20 at. % Fe	Fe, Ir, Pd, Cu, Ni
	3. ferroan platinum	(Pt, Fe) >20 at. % Fe	Ir, Cu, Ni
COMMON	4. tulameenite	Pt_2FeCu	Ir, Ni, Sb
	5. iridosmine	(Os, Ir)	Ru, Pt, Rh, Ni, Fe, Cu, Ni
	6. osmium	Os	Ru, Pt, Ir, Rh, Pd, Fe, Cu, Ni
	7. ruthenarsenite	(Ru, Os, Ir)	Rh, Pt, Pd, Fe, Cu, Ni
RARE	8. iridium	Ir	Os, Ru, Pd, Rh, Fe, Cu, Ni
	9. platiniridium	(Ir, Pt)	Os, Ru, Fe, Cu, Ni
	10. laurite	RuS_2	Ir, Os, Rh
	11. geversite	$PtSb_2$	As, Bi
	12. irarsite	IrAsS	Rh, Ru, Pt, Pd, Os, Ni, Cu
	13. osmiridium	(Ir, Os)	Ru, Pd, Ni, Fe, Cu, Ni
VERY RARE	14. erlichmanite	OsS_2	Ir, Pt, Rh, Pd
	15. sperrylite	$PtAs_2$	Pd, Ni, As
	16. cooperite	PtS	Pd, Ni
	17. unnamed IrSbS	IrSbS	Rh, As
	18. unnamed RhSbS	RhSbS	Ir, Pt, As
	19. kotulskite*	PdTe	Pt, Bi, Sb

*Only form of platinum in one grain of ore. Considered to have a different source rock than the other PGM listed above.

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with internal company reports of Cal-West Petroleum. In short, documentation regarding the area is definitely not in short supply.

THESIS PROPOSAL

The thesis will be divided into three major areas of study.

1. General Geology

A detailed description of the Nicola Group, the Tulameen Complex, and glaciation of the area will be made. Mainly this will be a summary of the literature available with annotations added, based on first-hand observation, where possible.

2. Mineralogy

This portion of the study will deal primarily with the placer gold-platinum mineralization. Size and shape analysis of the gold and platinum grains will be done. Also the detailed mineralogy, utilizing electron microprobe and reflected light techniques, will be studied.

3. Description of the Deposit

A complete description of present underground working will be given. The form, shape and grades of the channel will be noted. An attempt will be made to relate the structure and changes in lithology of the Nicola Group plus the physiography of the area to determine stream controls and extrapolate further the paleochannels course.

REFERENCES

CAMSELL, C. (1913). Geology and mineral deposits of the Tulameen district, B.C. G.S.C. Memoir 243.

FINDLAY, D.C. (1963). Petrology of the Tulameen ultramafic complex, Yale district, B.C. Unpub. Ph.D. thesis, Queen's University.

RAICEVIC, D. and CABRI, L.J. (1976). Mineralogy and concentration of Au- and Pt-bearing placers from the Tulameen River area in British Columbia. CIMM Bulletin, Vol. , No. 6.

RICE, H.M.A. (1947). Geology and mineral deposits of the Princeton map-area, B.C. G.S.C. Memoir 243.

. (1968). Geology of the Upper Triassic Nicola Group in southcentral B.C. Unpub. Ph.D. thesis, U.B.C.

STANTON, R.L. (1972). Ore Petrology, McGraw Hill, New York.