

GEOCHEMICAL REPORT

Concerning a

SOIL SAMPLING SURVEY

of the

CPW MINERAL CLAIM**SPANISH LAKE AREA****CARIBOO MINING DIVISION****BRITISH COLUMBIA**

~~GEOLOGICAL BRANCH~~
ASSESSMENT REPORT**11,822**

CPW Claim : 52° 36' North Latitude
121° 28' West Longitude
7 km ESE of Likely, B.C.
N.T.S. 93A/11 - Spanish Lake

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BRITISH COLUMBIA**

INTRODUCTION AND GENERAL REMARKS

Line cutting and a soil sampling geochemical survey were conducted on the CPW Mineral Claim during the period August 29 to September 15, 1983. This report discusses the survey procedure and results obtained.

The report was written on behalf of Dale E. Wallster, the owner of the claim, and Whitecap Energy Inc., the operator of the claim.

Information in this report is based upon the author's direct participation in the field work, a review of the pertinent geological reports available, and data resulting from geochemical analyses of samples collected from the property.

PROPERTY DESCRIPTION AND OWNERSHIP

The property consists of one mineral claim, staked in accordance with the modified grid system of the Province of British Columbia, and described as follows:

Claim Name	No. of Units	Record No.	Record Date
CPW	4	4541	Nov. 1, 1982

This claim is owned by Dale E. Wallster of Vancouver, B.C. and is operated by Whitecap Energy Inc., also of Vancouver, B.C.

LOCATION AND ACCESS

The CPW Claim (Cariboo Mining Division) is located to the immediate west of Spanish Lake, approximately 7 km east-southeast of Likely, B.C. Approximate geographic coordinates are 52° 36' North latitude and 121° 28' West longitude. The pertinent map (1:50,000 scale) is the Spanish Lake Sheet - N.T.S. 93 A/11.

The all-weather Spanish Lake - Abbott Creek forest haulage road transects the northern portion of the claim. Several four-wheel drive roads and skid trails provide access to other portions of the property.

PHYSIOGRAPHY AND VEGETATION

The property is on the north slope of the western ridge of Spanish Mountain. The terrain is moderate with elevations varying from a topographic high of approximately 1,300 metres a.s.l. to a low of approximately 950 metres a.s.l. at Spanish Creek.

Although the northeast and southwest corners of the property are covered by mature stands of fir, spruce, cedar and aspen, the majority of the property has been logged. The logged section is now covered by heavy deciduous growth along water courses and at lower elevations and this grades into predominantly grasses and light deciduous growth at higher elevations. Reforestation appears to be successful only at higher elevations.

HISTORY

The great Cariboo gold rush, which first brought prospectors into the region, began in 1859 and escalated during the 1860's. Holland reports that between 1881 and 1945, 37,784 ounces of placer gold was taken from Cedar Creek, a drainage of the southern flanks of Spanish Mountain. Placer gold from Spanish Creek, taken between 1876 and 1945, amounted to 3,706 ounces.

Placer gold potential has also been recognized on Spanish Mountain. In 1925, J. Lyne discovered coarse, nugget gold on a placer lease located on a lower bench of Spanish Mountain (elevation approximately 1,000 meters). T. Oliver and N. McDiarmid held the placer lease immediately above and adjoining the Lyne lease and also claimed to have found gold.

Extensive placer operations, approximately 1 kilometer west of the CPW claim at an elevation of approximately 1,070 meters, have recently recovered gold which is integrally associated with quartz. (McConnel, personal communication, 1983).

Coarse gold and the presence of small, cubic pseudomorphic crystals of limonite after pyrite in the pay gravels of Cedar Creek and Spanish Mountain lead Littlejohn (1977) to suggest that the source of these deposits was nearby. This assumption is based upon the similarity of these characteristics with the nature of the alteration and gold mineralization in the host rocks forming Spanish Mountain.

Ambiguity concerning the exact location of original mineral occurrences on Spanish Mountain exists. After examination of the data available, it is the opinion of the author that the CPW claim covers the majority of the historic gold showings on Spanish Mountain. These showings are discussed in the Annual Reports of the Minister of Mines for the years 1933 and 1947, as well as assessment reports by Littlejohn (1977), Tribe (1979) and Stacey (1976).

The property was staked in 1933 and the claims were owned by F. Dickson and A. Bailey of Likely. Exploration of the property resulted in several quartz veins being exposed, one of which contained visible gold. Further exploration resulted in quartz veins being uncovered in 43 of 55 costeans. Many of the 12 pits which did not discover quartz veins were unsuccessful at reaching bedrock.

During 1938, Dr. Dolmage mapped the property and development work was started in an attempt to outline the nature of ore mineralization beneath the "oxidized and leached out zone". This work was supervised by R.E. Legg (Mining Engineer) and included surface exploration and development work on several quartz veins.

Sampling of surface exposures resulted in the following:

Sample	Width	Oz. Au/ton	Remarks
1.	21"	.68	Rusty quartz showing many vugs. Was formerly well mineralized. No visible gold.
2.		5.60	Sample of heavily oxidized material which was probably originally solid sulphides. This sample taken from numerous places along flat lying vein. Panning test did not show gold, but it was probably too fine to see.

3.	8"	.28	Narrow quartz vein dipping steeply. Sample very slightly mineralized. Trace of galena noted.
4.	7"	.32	Narrow quartz vein dipping steeply. Sample was barren quartz except that one piece showed a little fine pyrite.

In view of the nature of mineralization, Legg felt that much of the mineralization had been leached out.

Development work included several open cuts with underground extensions. Quartz veins exposed in this work yielded colours when panned and assay results for some samples taken are as follows:

Quartz Vein Location	Width of Sample	Oz./ton Au
Station 65	12"	.52 oz/ton
	60"	.08 oz/ton
Station 71	14"	.56 oz/ton
	15"	.58 oz/ton

During 1940, Premier Gold Mines sampled a vein on the property and got the following results:

Location Along Vein	Width	Oz. Au/ton	Oz. Ag/ton
0' NE	1.2 feet	.42	Trace
4' NE	1.35 feet	.46	Trace
7' NE	1.65 feet	.42	Trace
12' NE	1.4 feet	.16	Trace
17' NE	1.5 feet	.92	.10
22' NE	1.35 feet	.12	.08
27' NE	2.0 feet	.02	Trace
32' NE	1.6 feet	.16	Trace
37' NE	1.5 feet	.08	Trace

In 1947, El Toro B.C. Mines, Ltd. undertook a diamond drilling programme exploring quartz veins located between 3,900 and 4,000 feet on the Max group of claims, ground formerly staked as the Joe claims by E.J. Eddington. Also in 1947, the original Mariner claims were restaked (and also named the Mariner claims) by J.E. Callaghan.

In 1976, the Mariner II claim was staked by M.B. Neilson and exploration performed on his behalf included, geological reconnaissance by Stacey in 1976, a regional geological summary by Ball in 1979, and reported trenching in 1979. In 1980, the property was optioned to E. Schultz and P. Kutney who contracted N.L. Tribe to map and sample the property. In 1982, this property lapsed and was staked as the CPW claim by D.E. Wallster.

In 1977, the Peso claims were staked by R.E. Mickle and operated by Longbar Minerals Ltd. (renamed Aquarius Resources Ltd.). These valid Peso claims presently border the CPW claim on the west, south, and east. Aquarius Resources Ltd. operate the Peso B and Peso E claims whereas the Peso claim and the Don claims (which border the CPW claim to the north) have recently been explored by Lacana Mining Corporation.

During 1981, a helicopter-borne electromagnetic survey (Geonics 33-1 Electromagnetometer - Geometric 803 magnetometer instrumentation) was performed over the Peso claims and coincidentally the Mariner II claim. Sheldrake (1981), interpreted geophysical data to indicate the presence of sedimentary rocks with formational responses, probably due to graphite in shale units. No E-M conductors were considered

anomalous or targets for mineralization but two magnetic lineaments, although having no conductive responses, were considered to indicate structural distortions of host rock and therefore follow-up work was recommended.

REGIONAL GEOLOGY

Descriptions of regional geology, as presented in several of the references cited, are contradictory to the present understanding of geology in the Spanish Lake area. Many of the authors (Littlejohn, Sheldrake and Giroux) refer to the earlier mapping of Campbell (1961) and therefore describe a regional situation where middle Jurassic or Cretaceous andesites, tuffs, argillites, cherts, and conglomerates are in fault contact with Cambrian Midas Formation sedimentary lithologies. The regional northwest-trending fault zone (Spanish Creek Fault) bends slightly to the west northwest in the vicinity of Spanish Lake and where the strike change occurs Giroux and Littlejohn felt gold mineralization is possible.

Godfrey (1980) felt that gold mineralization and hydrothermal alteration were closely related to volcanic vent sources in fault zones. Godfrey identifies two volcanic centers, related to the intersection of northeast and northwest regional fault systems, in the area. One of these is at Quesnel Forks and the other, as implied by a thick pile of agglomerates and interbedded pillow lavas, is at Mount Warren (Fig. 2). However, although he describes a volcanogenic source of mineralization in a Permian-Tertiary basin of sedimentary rocks (conglomerates and silty carbonates) and volcanic flows and pyroclastic rocks, Godfrey's

regional map implies a Lower Cambrian host rock for gold mineralization on the property.

The most recent interpretations for regional geology (Campbell, 1978 and Struik, 1983) imply that the area is underlain by Upper Triassic and Lower Jurassic clastic and volcanic rocks, with no regional structural feature (i.e. Spanish Creek Fault) transecting the area.

Ball (1979) noted that a northwest trending belt of syenite, monzonite and diorite intrusive rocks might follow a major northwest trending series of faults. Some of the nepheline syenite intrusives of the region have associated copper-gold mineralization (e.g. Cariboo Bell - Mount Polley).

LOCAL GEOLOGY AND MINERALIZATION

The property has been described several times, usually in light of regional geology biases of that time. The Annual Report of the Minister of Mines for the year 1933 describes the property and workings as follows:

"While but little work has as yet been done on this property, several quartz veins have been uncovered, the outcrop of one showing free gold. It is quite possible that further prospecting will disclose additional veins showing gold values. The discovery of this property is of very informative value, because examination disclosed the existence thereon of a large stock of an igneous rock which closely resembles the pre-Mississippian intrusives of the

Barkerville area. It is in this rock that some of the quartz veins on this property occur, and its discovery already explains much that was previously difficult to understand concerning local placer occurrence. Further necessary investigation seems likely to give important information concerning lode-gold potentialities.

At 4,050 feet elevation (Quesnel Lake 2,250 feet elevation) open-cuts on this property disclose six quartz veins in a width of about 100 feet. The veins vary from a few inches up to 2 feet in width, one of them, about 8 inches in width, being well mineralized with galena and pyrite, with free gold visible at some points along its outcrop. A sample of this vein assayed: **Gold, 0.10 oz./ton; silver, 1.4 oz./ton.** Further investigation may disclose that some of the neighboring quartz veins are auriferous, and possibly additional veins will be uncovered.

These veins appear to strike in a magnetic north direction and, as far as can be ascertained from somewhat scanty exposures, they are gash-veins in a stock of alaskite. This alaskite bears many aspects of similarity to the pre-Mississippian intrusives of the Barkerville area. A thin section of this rock was kindly prepared by the Geological Survey of Canada, and a report thereon by George Hanson is appended below. This alaskite intrudes schisted argillites which outcrop in the area at the foot of Spanish Lake and on the north-western slopes of Spanish Mountain, and it seems quite likely that the boundary line between the Mesozoic and pre-Cambrian rocks in this region should be shown farther west than is indicated on Amos

Bowman's map of the Cariboo district.

At 3,600 feet elevation more immediately below the above-described veins, a trench about 5 feet deep in an area thickly covered with vegetation and timber-growth exposes a large body of considerably oxidized and shattered quartz. A sample across 13 feet at one point assayed only traces of gold and silver. Exposures do not reveal the rock in which this quartz occurs, but near by occurs an outcrop of a white-coloured siliceous rock, with brown spots - a highly altered sediment. A thin section of this rock was kindly prepared by the Geological Survey of Canada, and George Hanson's report thereon is as follows: "In this section the rock is seen to consist of small quartz grains. There are many small laths of sericite that are the result of alteration. Large pieces of carbonate, probably calcite, replace the rock, but in some instances the replacement is not complete, and in these cases the carbonate contains many small quartz grains. The carbonate alteration is later than the sericite. The thin section suggests that the rock is a fine-grained quartzose sediment."

George Hanson's report of the alaskite mentioned above is as follows: "The thin section shows large areas of limonite and large rhombs of carbonate, probably calcite, in fine-grained material consisting of quartz and sericite. The rock is traversed by narrow quartz veinlets that contain also a little feldspar. The rhombs of carbonate are the result of replacement of fine-grained rock-matter. The quartz and sericite are of hydrothermal nature and have replaced the original rock. The thin

section does not disclose the nature of the original rock, but indicates that the rock has been thoroughly replaced by minerals of hydrothermal origin at moderate to high temperatures."

It might be mentioned that the following are striking features of the pre-Mississippian intrusives of the Barkerville area: (a) They are extensively carbonated; (b) they exhibit a marked tendency to develop auriferous quartz gash-veins of various widths up to several feet; and (c) they usually develop a mariposite-like mineral of characteristic green colour.

While this property *per se* clearly warrants further investigation, the stock of alaskite discovered invests this region with a new interest, both as to lode-gold and placer occurrence. While proof is wanting as yet, nevertheless, if the rocks intruded by the alaskite prove to be of pre-Cambrian age underlying the Richfield formation, it may be pointed out that it is precisely in such an area that the presence of a large pre-Mississippian vein-belt trending parallel to the two belts already known, and extending from Spanish Mountain north-westwards close to the boundary between Mesozoic and pre-Cambrian rocks."

The 1947 Annual Report of the Minister of Mines also views the property as being Precambrian. An outline of the drilling work performed, and geology follows:

"The claims are underlain largely by black argillaceous schist, dark argillaceous quartzite, and light-colored quartzite belonging to the Precambrian Cariboo series. The rocks near the quartz showings,

between elevation of 3,900 and 4,200 feet, are intruded by sills or dykes of a white to pale biscuit-coloured rhyolite porphyry. Argillaceous schist, quartzite, and rhyolite porphyry are carbonatized in varying degrees with ankerite. An analysis of ankerite separated from a specimen containing about 20 per cent ankerite is 28.1 per cent CaO, 13.7 per cent MgO, 13.1 per cent FeO and 45.1 per cent CO₂. The fresh unweathered ankerite is white to grey in colour, but weathering produces spots and patches of various shades of orange and red brown. Ankerite in the argillaceous schist appears as porphyroblasts up to a quarter of an inch across, and in the quartzite and rhyolite porphyry as irregular areas and crystals replacing quartz grains and feldspar phenocrysts and ground-mass. In some instances the degree of ankeritization is so complete that the identity of the original rock can only be deduced by microscopic study of thin sections. For example, white ankeritized core from diamond-drill hole No. 4, at footages 50 and 125 feet, is carbonatized quartzite and carbonatized argillaceous schist, in contrast to core from drill-hole No. 1 at footages 360, 442 and 520 feet which is ankeritized porphyry, as is the outcrop near the small vein-showings 200 feet north of the cabin at elevation 4,200 feet.

A considerable number of quartz veins are exposed on the property, and, for convenience, descriptions are referred to five areas shown on the accompanying sketch-map (Fig. 14).

At elevation 3,950 feet (north-western part of Fig. 14), two quartz veins are exposed in surface cuts for

lengths of 100 to 150 feet respectively. The lower vein is about 6 feet wide in the face of two open-cuts and dips about 20 degrees southward. The other vein, about 5 feet wide in the western adit (See Fig. 14), evidently pinches on its eastern end and also dips about 20 degrees south. The quartz in both is hard and unfractured, and is sparsely mineralized with ankerite and pyrite. Work on these veins was done by the N.A. Timmins Corporation in 1938, which drove an adit 42 feet south 27 degrees west from a point on the foot-wall side of the vein. Ninety feet to the east an incline was driven down the dip of the vein for an unstated distance. The incline is now flooded and inaccessible.

The vein at the portal of the western adit lies above a fault dipping 20 degrees and also south of a fault dipping about 55 degrees south. It is thought that the two vein-outcrops represent a single, faulted vein. This belief is supported by the fact that hole No. 2, drilled at an inclination of minus 45 degrees and 192 feet deep, did not penetrate any vein-quartz at depth.

The company drilled two other holes from a set-up at the mouth of the adit, No. 1 hole being drilled flat for 709 feet and No.3 hole being drilled at an angle of 45 degrees for 548 feet. Although No. 1 began on the foot-wall side of the vein near the portal, it did not intersect any vein-quartz. It did, however, cross several white ankeritized rhyolite porphyry sills in grey ankeritic argillaceous schist.

No. 3 drill-hole did not cut any quartz vein, being

too steep to intersect the projection of the upper vein-outcrop and also being on the hanging-wall side of the fault which drops the vein down to its lower outcrop position. At depth it penetrates white, strongly ankeritized rock, some of which is quartzite and some of which may be rhyolite.

East of a depression and a small creek, between the 3,920 and 4,060 foot contours, extensive trenching has disclosed and partly stripped five veins, all more or less parallel and striking about north 30 degrees east. One vein, close to the trail, at elevation 4,040 feet, is stripped for a length of 35 feet, and two open-cuts off to the north extend its length to about 150 feet. The vein is 20 to 24 inches wide and dips 65 degrees west. The quartz is mineralized with pyrite, galena and sphalerite. The pyrite occurs in pencil-like aggregates at right angles to the walls and, on weathering, produces a honeycomb or horse-tooth structure in the quartz. This vein has visible gold in the oxidized surface quartz, and from it F.A. Dickson is said to have crushed and panned several hundred dollars' worth of gold. One sample (192F) of selected quartz, well mineralized with pyrite and galena, assayed: **Gold, 0.30 oz. per ton; silver, nil.** Another selected sample (193F) of pieces containing about 25 per cent pyrite assayed: **Gold, 1.12 oz per ton; silver, 0.4 oz. per ton.**

During July, 1947, the company put down three minus 45 degree drill-holes close to the outcrop of this vein. No. 6 drill-hole encountered 12 inches of quartz sparsely

mineralized with pyrite and galena at 32 feet, No. 7 hole encountered no quartz, nor did No. 8 drill-hole, which lies 80 feet to the southwest.

Downhill to the north, extensive trenching along a length of 500 feet and across a width of 150 feet has disclosed four sub-parallel veins up to 18 inches in width and with sparse ankerite and pyrite mineralization. No visible gold was seen, and although the vein-showings appear less attractive than the one uphill to the south, several high gold assays were obtained from them.

Sample 190F (see Fig. 14) taken from a 4 to 6 inch quartz vein mineralized with pyrite, galena and chalcopryite, assayed: **Gold, 4.43 oz. per ton.** Sample 191F (see Fig. 14), of selected honeycomb quartz containing pyrite assayed: **Gold, 0.52 oz. per ton; silver, nil.**

Also east of the creek, at elevation 4,150 feet, two narrow quartz veins are exposed in trenches in ankeritized rhyolite porphyry. The sill apparently has an outcrop-width of about 100 feet. The two veins, 4 to 12 inches wide, are parallel and 20 feet apart, strike about south 35 degrees west, and dip 50 to 65 degrees north-westward. The western vein has sparse pyrite and ankerite mineralization and contains visible gold in small specks.

South of the cabin and about elevation 4,200 (south-eastern part of Fig. 14), several short, narrow, poorly mineralized quartz veins are exposed in old open-cuts. The veins all strike between south 20 degrees and

south 40 degrees west. At the southern most exposure two open-cuts expose a strong north-easterly trending fault and irregular broken vein quartz. It is reported that from this locality two spectacular samples containing free gold have been obtained.

Diamond-drill hole No. 5 was drilled 390 feet at minus 45 degrees in this vicinity. No mineralized quartz was intersected. A 100 foot section of white, highly ankeritized rhyolite, cut between footages of 215 and 320 feet, is evidently another sill or dyke in the dark, ankeritic, argillaceous schist.

The quartz veins east of the creek are sub-parallel and lie within 350 feet to the east of a fairly straight, north trending gully. The setting strongly suggests the possibility that a north-south fault may trend along the gully and may be responsible for the fracturing now occupied by vein-quartz. There is no evidence to prove the presence of a fault that is associated with the vein fracturing. Nevertheless, if it were so, the strip of ground to the west of the gully and parallel to it would offer encouragement for further prospecting.

An outcrop of vein-quartz (south-western part of Fig. 14) is 25 to 40 feet wide and about 75 feet long. The quartz contains little mineralization, and diamond-drill hole No. 4 beneath the surface exposure intersected only 1 foot of unmineralized quartz at 56 feet depth.

Two hundred feet west of the large outcrop, on the

west side of a shallow depression, the company excavated an open-cut on a vein striking about south 35 degrees west. The vein, exposed for about 30 feet in the open-cut, is terminated at the southern end by a fault striking north 50 degrees west and dipping 50 degrees south-westward. The vein-quartz has a maximum width of 18 inches and is mineralized with pyrite, galena, chalcopyrite, and tetrahedrite. It is reported that specimen pieces of free gold have been obtained from this vein. A sample of selected quartz, well mineralized with galena and containing some sphalerite and small amounts of pyrite and chalcopyrite, assayed: **Gold, 5.88 oz. per ton; silver, 32 oz. per ton.**

During 1947 the company undertook a programme of diamond-drilling. Eight holes, totalling about 2,600 feet, were completed by July, when work on the property was suspended. The only other work was done on the open-cut on the vein at location (5).

In October 4 tons of picked ore from surface cuts were shipped to Tacoma smelter. Net contents: **Gold, 8 oz.; silver, 40 oz.; copper, 82 lb."**

Recent work has resulted in discrepancies in descriptions of local geology. Littlejohn (1977) describes the property as follows:

"The main rock type on Spanish Mountain is a dark grey, fine-grained phyllite which is interbedded with impure quartzite horizons of varying thickness and extent. The strike is parallel to the major fault and the rocks dip moderately to the south. Dolomite occurs towards the crest of Spanish Mountain ridge. A medium-grained quartz-feldspar dyke, striking NE-SW across the phyllites, was observed in a trench at 4,000 ft. elevation."

Tribe (1979) describes the property as a varying package of sedimentary rocks with a gradation from limey argillites, in the northern part of the claim, to a greywacke, arkose, trachyte "transition zone" and finally greenstones at the higher elevations. Although Tribe's description implies east-west trending lithologies with north-south gradational aspects, his mapping indicates north-south trending bands of argillite, trachyte, and andesite cut by dykes or small intrusions of syenite and felsite.

SURVEY PROCEDURES

The linecutting and soil sampling surveys were performed between August 29 and September 15, 1983.

Owing to other exploration activities in the immediate vicinity it was necessary to establish the perimeter of the CPW claim. R. Stothers and Associates (Licensed British Columbia Land Surveyors) of Suite 90 - 180 Seymour Street, Kamloops, B.C., V2C 2E2, established the precise locations for corner posts of the CPW claim and surveyed a base line.

The baseline was established along a line which has an azimuth of 360° and bisects the property, precisely from the exact site for the 1S1E identification post. East-west crosslines were established, by chain and compass method, at 100 meter intervals along the baseline. Stations located at 20 meter intervals were established along the crosslines.

Soil samples from the B horizon were collected at each station and placed in Kraft envelopes. Fluorescent flagging, with

the grid coordinates marked thereon, was placed at each station.

The samples were submitted to Min-En Laboratories Ltd. (705 West 15th Street, North Vancouver, B.C.) for gold analyses. The -40 mesh fraction of the sample was analyzed for gold utilizing fire assay preparation and atomic absorption instrumentation. Geochemical data for gold soils is appended.

DISCUSSION

The total number of soil samples collected from the CPW claim during the 1983 project was 401. In an attempt to outline anomalous zones of gold mineralization, statistical manipulation of the geochemical data has been applied. Contour or class interval maps are more meaningful if these parameters have a fundamental relationship to the statistical parameters of the data set. Applying the method outlined by Sinclair (1975) the 95th percentile of gold in soil is defined by 234 p.p.b. As such Figure 3 is contoured for those values above this value. The 900 p.p.b. contour was arbitrarily selected.

Littlejohn (1977) referred to two types of quartz veins on Spanish Mountain from which gold could be found. These were narrow discontinuous gash veins striking at right angles to major faults and massive quartz veins striking approximately parallel to major faults. Giroux and Littlejohn, on the basis of work performed on the Peso claims, state that anomalous gold values in soil indicate zones of the quartz-hosted gold mineralization. Littlejohn states that the gash veins appear to be too small and sporadic but that the larger veins should be examined.

Those anomalous areas on Figure 3 that lie above the 234 p.p.b. contour may indicate the occurrence of gold in quartz veins. The general north-south trend of these anomalies may indicate north-south trending quartz veins or they may be the downslope dispersion expression of gold mineralization at higher elevations.

Littlejohn (1977) has also noted the potential of larger tonnage lower grade gold mineralization based upon the following:

- (a) Phyllite is a suitable host rock.
- (b) A major structural break occurs in the area which may be related to the known gold showings.
- (c) Alteration is widespread, particularly the introduction of pyrite.
- (d) The phyllites appear to be geochemically anomalous with respect to gold and contain visible gold where altered adjacent to quartz veins.
- (e) Gold is associated with pyrite in the placers of Cedar Creek and Spanish Mountain. Gold was seen to be contained in (oxidized) pyrite.

Although gold values in the soil may be indicative of this style of mineralization, rock geochemistry would be a much better indicator.

CONCLUSIONS

The presence of an anomalous gold population in soils of the

CPW claim possibly indicate the presence of gold mineralization associated with quartz veins. Disseminated gold mineralization is possible and should be explored for by means of lithogeochemistry as opposed to soil geochemistry.

RECOMMENDATIONS

Complete soil sampling of the B horizon utilizing the present grid system and same analytical techniques. Analyses for other elements is warranted.

Establish exact locations of historic workings and attempt to correlate these with work listed in the references cited and geochemical anomalies.

Trenching of anomalous zones and rock geochemistry.

Geological mapping to establish correlations between lithologies, alteration zones, structural features, and mineralized zones.

Based upon results of the above work, diamond drilling may be warranted.

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STATEMENT OF QUALIFICATIONS

I, DALE EVAN WALLSTER, of the City of Vancouver, Province of British Columbia, do hereby certify:

1. THAT I am currently a self-employed consulting geologist with offices at 981 West 17th Avenue, Vancouver, British Columbia.
2. THAT I am a graduate of the University of Western Ontario, 1979, and hold a Bachelor of Science Honours degree in Geology.
3. THAT since 1977 I have pursued my profession in geology. I have been employed, as a geologist, actively involved in the search for mineral deposits in the Canadian Shield and the Western Cordillera of both the United States and Canada.
4. THAT I am the author of this report titled **Geochemical Report concerning a Soil Sampling Survey of the CPW Mineral Claim, Spanish Lake Area, Cariboo Mining Division, British Columbia**. This report is compiled from my observations and the references cited.
5. THAT I consent to the use of this report either in its entirety, or in part, only by written permission.

Dale E. Wallster
Geologist

DATED at Vancouver, British Columbia this 27th day of January, 1984.

AFFADAVIT OF EXPENSES

Expenditures itemized below were incurred on behalf of Dale E. Wallster and Whitecap Energy Inc. in connection with a geochemical exploration program performed on the CPW mineral claims, Cariboo Mining Division.

Field Work

Wages: mobilization, demobilization and geochemical reconnaissance (August 29, 1983 to September 15, 1983	\$ 6,200.00
Wages: survey crew	3,366.05

Field Crew Expenses

Vehicle and Gas	\$ 842.41
Lodging	559.15
Meals	765.23
Survey supplies and miscellaneous	162.35

Geochemical Analysis

401 Au geochem analyses @ \$9.35/sample	3,749.35
-----------------------------------------------	----------

Report

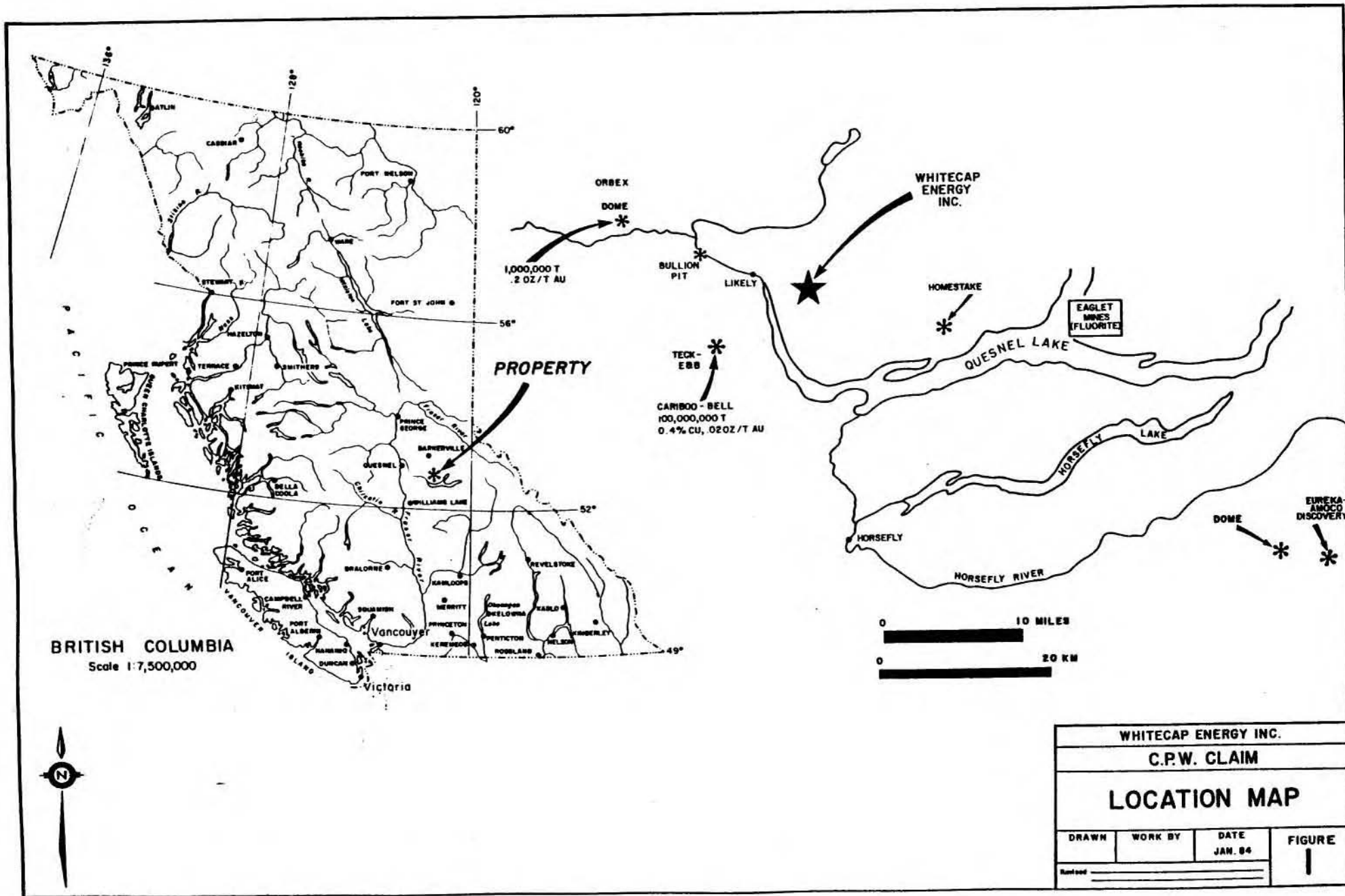
Geologist	\$ 600.00
Secretarial Services	200.00
Report preparation, drafting, map printing, photocopying and disbursement costs	200.00

TOTAL	\$16,644.54 =====
--------------	-----------------------------

Respectfully submitted,

Dale Evan Wallster

January 27, 1984



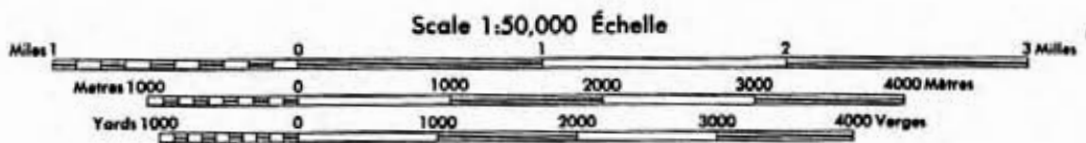
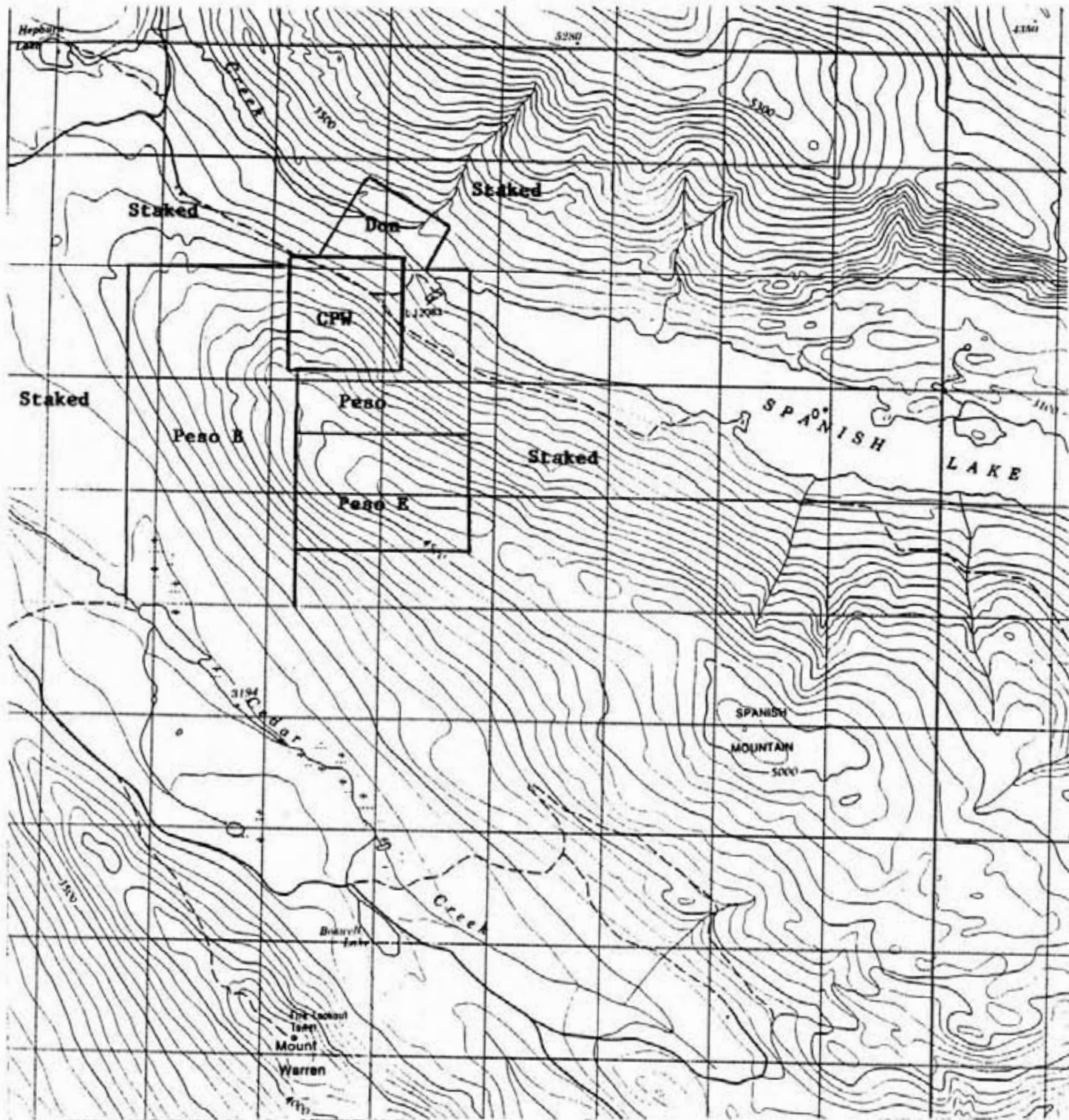


FIGURE 2: LOCATION MAP - CPW CLAIM

APPENDIX A

GEOCHEMICAL DATA FOR GOLD IN SOILS

PROJECT No.: _____

MIN - EN Laboratories Ltd.

DATE: Oct. 17
1983.

705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

ATTENTION: D. Wallster

-40 Mesh

Sample Number	6	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb				
81	86	90	95	100	105	110	115	120	125	130	135	140	150	155	160	
L000S-20E								•					33			
	40							•					48			
	60							•					61			
	80							•					40			
	100							•					70			
	120							•					182			
	140							•					75			
	160							•					21			
	180							•					35			
	200							•					119			
	220							•					45			
	240							•					9			
	260							•					38			
	280							•					22			
	300							•					34			
	320							•					16			
	340							•					15			
	400							•					4			
	420							•					18			
	440							•					16			
	460							•					1			
	480							•					6			
L000S-500E								•					243			
L100S-20E								•					31			
	40							•					15			
	60							•					no sample			
	80							•					19			
	100							•					61			
	120							•					117			
L100S-140E								•					52			

R. J. [Signature]

COMPAL (White Cap Energy)

GEOCHEMICAL ANALYSIS DATA SHEET

No. 3-1061

PROJECT No.: _____

MIN - EN Laboratories Ltd.

DATE: Oct. 17

705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

-40 mesh

1983.

ATTENTION: Dale Wallster

Sample Number	6 81	10 86	15 90	20 95	25 100	30 105	35 110	40 115	45 120	50 125	55 130	60 135	65 140	70 145	75 150	80 155	80 160
			Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb				
L100S160E													54				
180													17				
200													1				
220													11				
240													22				
260													19				
280													3				
300													55				
320													16				
340													11				
360													6				
380													17				
400													14				
420													15				
440													21				
460													75				
480													75				
L100S500E													45				
L200S20E													43				
40													40				
60													48				
80													37				
100													18				
120													30				
140													42				
160													5				
180													23				
200													103				
220													110				
L200S240E													60				

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GEOCHEMICAL ANALYSIS DATA SHEET

File No. 3-1061

PROJECT No.: _____

MIN - EN Laboratories Ltd.

DATE: Oct. 17

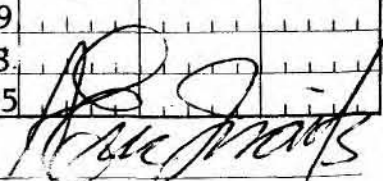
705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

-40 mesh

1983.

ATTENTION: Dale Wallster

Sample Number	6	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
	ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb				
	81	86	90	95	100	105	110	115	120	125	130	135	140	150	155	160
L200S260E													20			
280													33			
300													65			
320													55			
340													60			
350													no sample			
360													66			
380													38			
400													1			
420													24			
440													18			
460													13			
480													2			
L200S500E													44			
L300S20E													45			
40													42			
60													25			
80													148			
120													30			
140													15			
160													20			
180													20			
200													25			
220													38			
240													32			
260													71			
280													47			
300													49			
320													38			
L300S340E													25			

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GEOCHEMICAL ANALYSIS DATA SHEET

File No. 3-1061

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DATE: Oct. 17

705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

-40 mesh

1983.

ATTENTION: Dale Wallster

Sample. Number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb	70	75	80
81	86	90	95	100	105	110	115	120	125	130	135	140	150	155	160
L300S-	360E											45			
	380											41			
	400											24			
	420											3			
	440											18			
	460											74			
	480											10			
L300S-	500E											12			
L400S-	20E											34			
	40											35			
	60											13			
	80											18			
	100											10			
	120											25			
	140											78			
	160											21			
	180											100			
	200											160			
	220											48			
	240											38			
	260											28			
	280											23			
	300											42			
	320											47			
	340											44			
	360											25			
	380											6			
	400											34			
	420											18			
L400S-	440E											40			

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Dale Wallster

COMPANY White Cap Energy

GEOCHEMICAL ANALYSIS DATA SHEET

File No. 3-1061

PROJECT No.: _____

MIN - EN Laboratories Ltd.

DATE: Oct. 17

705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

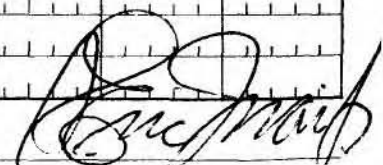
-40 mesh

1983.

ATTENTION: Dale Wallster

Sample Number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb	70	75	80
81	86	90	95	100	105	110	115	120	125	130	135	140	150	155	160
L400S-460E												39			
	480											9			
L400S-500E												95			
L500S-20E												29			
	40											40			
	60											31			
	80											19			
	100											97			
	120											81			
	140											30			
	160											40			
	180											43			
	200											82			
	220											59			
	240											81			
	260											67.5			
	280											21			
	300											43			
	320											29			
	340											74			
	360											52			
	380											11			
	400											15			
	420											30			
	440											69			
	460											19			
	480											5			
L500S-500E												61			
L600S-20E												439			
L600S-40E												19			

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GEOCHEMICAL ANALYSIS DATA SHEET

File No. 3-1061

PROJECT No.: _____

MIN - EN Laboratories Ltd.

DATE: Oct. 17

ATTENTION: Dale Wallster

705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

-40 mesh 1983.

Sample Number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb				
81	86	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160
L600S-60E												33				
	80											13				
	100											36				
	120											9				
	140											3				
	160											85				
	180											16				
	200											56				
	220											20				
	240											65				
	260											102				
	280											4750				
	300											700				
	320											49				
	340											65				
	360											15				
	380											53				
	400											29				
	420											25				
	440											16				
	460											44				
	480											13				
L600S-500E												3				
BL000												33				
L000S-20W												41				
	40											30				
	60											78				
	80											73				
	100											143				
L000S-120W												61				

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GEOCHEMICAL ANALYSIS DATA SHEET

File No. 3-1061

PROJECT No.: _____

MIN - EN Laboratories Ltd.

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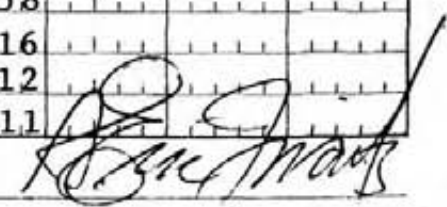
ATTENTION: Dale Wallster

-40 mesh

1983.

Sample Number	6 Mg ppm	10 Cu ppm	15 Pb ppm	20 Zn ppm	25 Ni ppm	30 Co ppm	35 Ag ppm	40 Fe ppm	45 Hg ppb	50 As ppm	55 Mn ppm	60 Au ppb	65 fire	70	75	80
81	86	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160
L000S140W													21			
160													20			
180													24			
200													63			
220													69			
240													115			
260													86			
280													70			
300													34			
320													18			
340													48			
360													11			
380													9			
400													13			
420													21			
440													23			
460													29			
480													34			
L000S500W													44			
BL00S													4			
L100S20W													9			
40													45			
60													19			
80													29			
100													12			
120													75			
140													58			
160													16			
180													12			
L100S200W													11			

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GEOCHEMICAL ANALYSIS DATA SHEET

File No. 3-1061

PROJECT No.: _____

MIN - EN Laboratories Ltd.

DATE: Oct. 17

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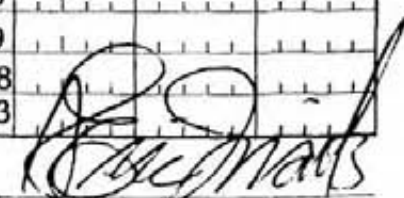
ATTENTION: Dale Wallster

-40 mesh

1983.

Sample Number	6 Ni ppm	10 Cu ppm	15 Pb ppm	20 Zn ppm	25 Ni ppm	30 Co ppm	35 Ag ppm	40 Fe ppm	45 Hg ppb	50 As ppm	55 Mn ppm	60 Au ppb	65 fire	70	75	80
81	86	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160
L100S260W													18			
280													300			
300													45			
320													53			
340													41			
360													19			
380													50			
400													24			
420													33			
440													8			
460													31			
480													21			
L100S500W													42			
BL200S													13			
L200S20W													21			
40													965			
60													30			
80													20			
100													11			
120													20			
140													35			
160													37			
180													123			
200													54			
220													44			
240													28			
260													73			
280													19			
300													38			
L200S320W													23			

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MIN - EN Laboratories Ltd.

DATE: Oct. 17

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PHONE (604) 980-5814

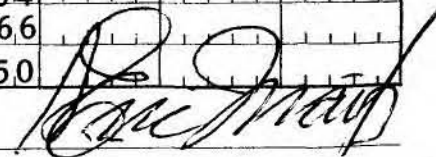
ATTENTION: Dale Wallster

-40 mesh

1983.

Sample No.	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb			
81	95	100	105	110	115	120	125	130	135	140	150	155	160	165
L200S340W						•					48			
360						•					29			
380						•					36			
400						•					25			
420						•					63			
440						•					71			
460						•					61			
480						•					77			
L200S500W						•					40			
BL300S						•					31			
L300S20W						•					49			
40						•					29			
60						•					6			
80						•					20			
100						•					34			
120						•					33			
140						•					28			
160						•					48			
180						•					29			
200						•					16			
220						•					232			
240						•					116			
260						•					98			
280						•					103			
300						•					no sample			
320						•					131			
340						•					155			
360						•					104			
380						•					66			
L300S400W						•					250			

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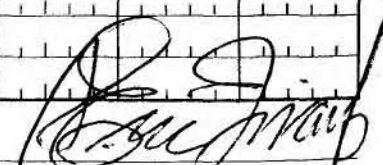
ATTENTION: Dale Wallster

-40 mesh

1983.

6	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	
Sample Number	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb					
81	86	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160
L300S420W												24				
440												45				
460												4				
480												56				
L300S500W												41				
BL400S												3				
L400S20W												1				
40												1				
60												1				
80												240				
100												112				
120												14				
140												121				
160												32				
180												6				
200												4				
220												2				
240												3				
260												16				
300												2				
320												3				
340												111				
360												9				
380												41				
400												4				
420												1				
440												3				
460												40				
480												44				
L400S500W												145				

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705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

-40 mesh

1983.

Sample Number	Mg ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb			
81	86	90	95	100	105	110	115	120	125	130	135	140	150	155	160
BL500S												19			
L500S20W												25			
40												7			
60												68			
80												21			
100												38			
120												1000			
140												895			
160												356			
180												5100			
200												675			
220												158			
240												2775			
260												264			
280												297			
300												77			
320												80			
340												125			
360												112			
380												104			
400												115			
420												95			
440												128			
460												96			
480												84			
L500S500W												81			
BL600S												23			
L600S20W												18			
40												104			
L600S60W												15			

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[Handwritten Signature]

COMPANY White Cap Energy

GEOCHEMICAL ANALYSIS DATA SHEET

File No. 3-1061

PROJECT No.: _____

MIN - EN Laboratories Ltd.

DATE: Oct. 17

ATTENTION: Dale Wallster

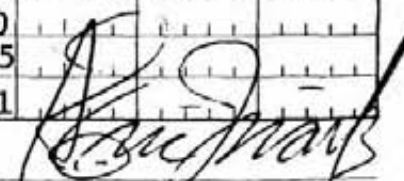
705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

-40 mesh

1983.

Sample Number	6 81	10 86	15 90	20 95	25 100	30 105	35 110	40 115	45 120	50 125	55 130	60 135	65 140	70 145	75 150	80 155	85 160
			Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb				
L600S80W													fire				
100													24				
120													39				
140													4				
160													11				
180													300				
200													23				
220													103				
240													125				
260													238				
280													588				
300													400				
320													242				
340													240				
360													219				
380													183				
400													312				
420													1325				
440													488				
460													356				
480													188				
L600S500W													394				
BL700S													744				
L700S20W													96				
40													218				
60													168				
80													122				
100													150				
120													110				
L700S140W													925				
													831				

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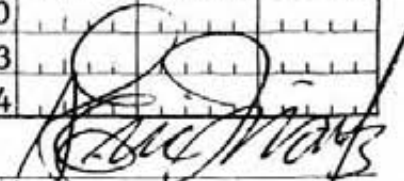
705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

-40 mesh

1983.

Sample Number	6 81	10 86	15 90	20 95	25 100	30 105	35 110	40 115	45 120	50 125	55 130	60 135	65 140	70 145	75 150	80 155	80 160
			Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb				
L700S160W													488				
180													850				
200													245				
220													1825				
240													187				
260													406				
280													170				
300													188				
320													400				
340													581				
360													140				
380													544				
400													381				
420													170				
440													400				
460													800				
480													469				
L700S500W													115				
BL800S													531				
L800S20W													178				
40													550				
60													84				
80													132				
100													155				
120													86				
140													237				
160													1700				
180													400				
200													143				
L800S220W													194				

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GEOCHEMICAL ANALYSIS DATA SHEET

File No. 3-1061

PROJECT No.: _____

MIN - EN Laboratories Ltd.

DATE: Oct. 17

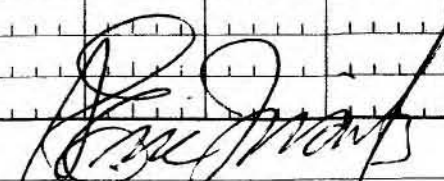
705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

-40 mesh

1983.

ATTENTION: Dale Wallster

6	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
Sample. No	Mo	Cu	Pb	Zn	Ni	Co	Ag	Fe	Hg	As	Mn	Au			
Number	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppb			
81	86	90	95	100	105	110	115	120	125	130	135	140	150	155	160
L800S240W												1150			
260												3125			
280												240			
300												172			
320												1050			
340												132			
360												215			
380												195			
400												788			
420												248			
440												168			
460												412			
480												221			
L800S500W												236			

CERTIFIED BY: 

APPENDIX B

FIGURE 14 - SKETCH MAP OF MAX GROUP, SPANISH MOUNTAIN

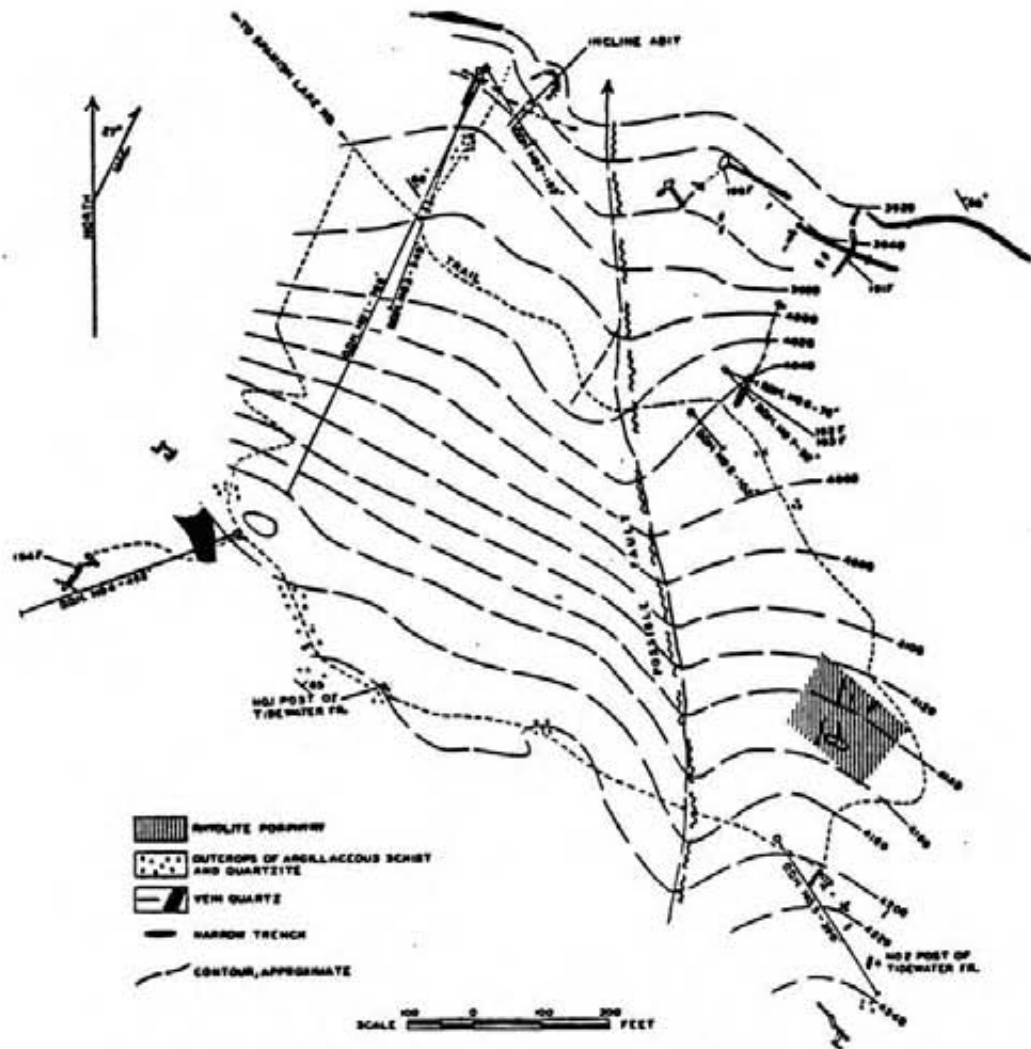


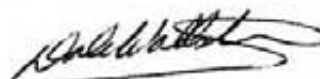
Fig. 14. Sketch-map of Max group, Spanish Mountain.

TAKEN FROM THE ANNUAL REPORT OF THE MINISTER
OF MINES FOR THE YEAR 1947

STATEMENT OF QUALIFICATIONS

I, DALE EVAN WALLSTER, of the City of Vancouver, Province of British Columbia, do hereby certify:

1. THAT I am currently a self-employed consulting geologist with offices at 981 West 17th Avenue, Vancouver, British Columbia.
2. THAT I am a graduate of the University of Western Ontario, 1979, and hold a Bachelor of Science Honours degree in Geology.
3. THAT since 1977 I have pursued my profession in geology. I have been employed, as a geologist, actively involved in the search for mineral deposits in the Canadian Shield and the Western Cordillera of both the United States and Canada.
4. THAT I am the author of this report titled **Geochemical Report concerning a Soil Sampling Survey of the CPW Mineral Claim, Spanish Lake Area, Cariboo Mining Division, British Columbia**. This report is compiled from my observations and the references cited.
5. THAT I consent to the use of this report either in its entirety, or in part, only by written permission.



Dale E. Wallster
Geologist

DATED at Vancouver, British Columbia this 27th day of January, 1984.

AFFADAVIT OF EXPENSES

Expenditures itemized below were incurred on behalf of Dale E. Wallster and Whitecap Energy Inc. in connection with a geochemical exploration program performed on the CPW mineral claims, Cariboo Mining Division.

Field Work

Wages: mobilization, demobilization and geochemical reconnaissance (August 29, 1983 to September 15, 1983	\$ 6,200.00
Wages: survey crew	3,366.05

Field Crew Expenses

Vehicle and Gas	\$ 842.41
Lodging	559.15
Meals	765.23
Survey supplies and miscellaneous	162.35

Geochemical Analysis


401 Au geochem analyses @ \$9.35/sample	3,749.35
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Report

Geologist	\$ 600.00
Secretarial Services	200.00
Report preparation, drafting, map printing, photocopying and disbursement costs	200.00

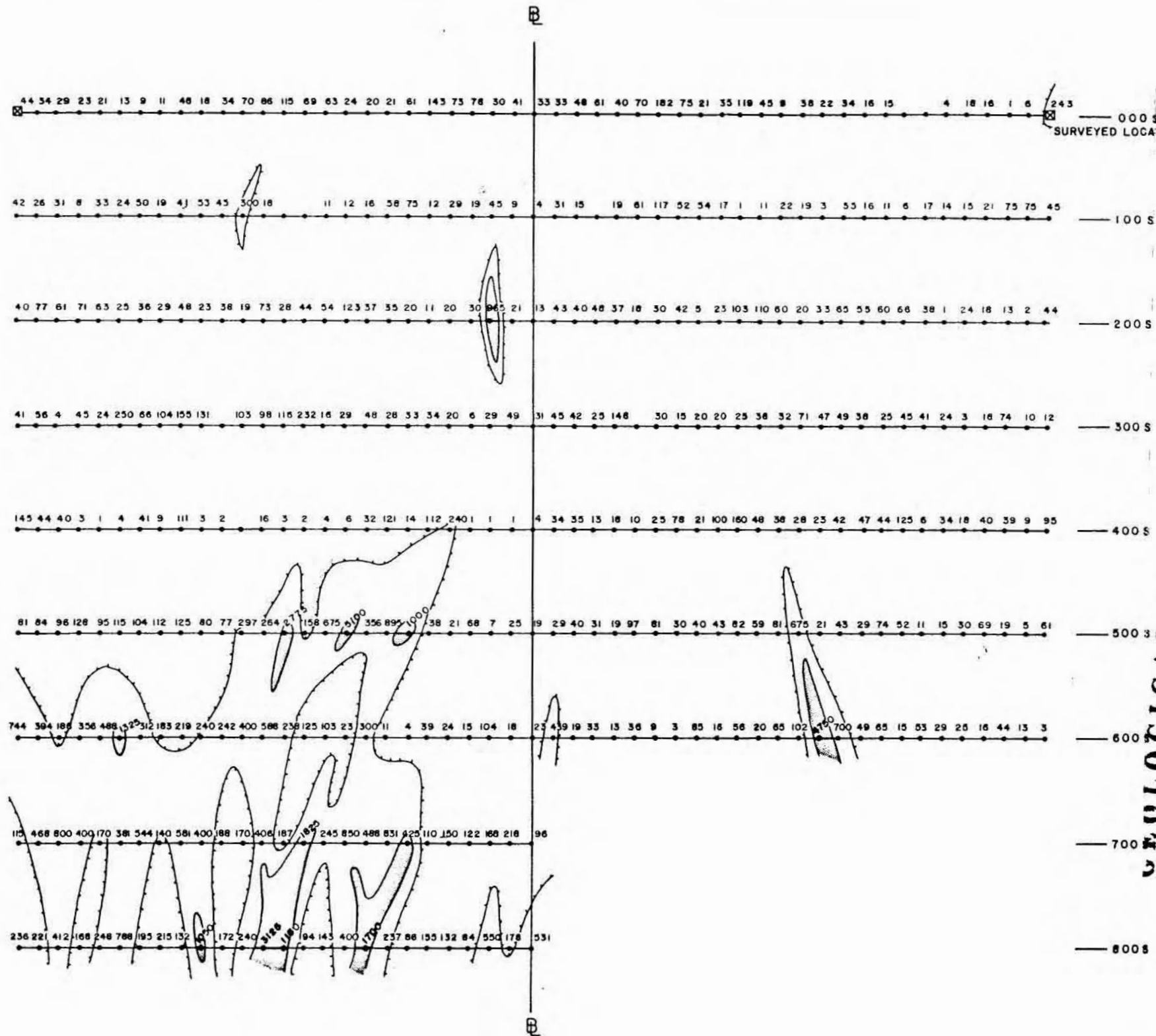
TOTAL	\$16,644.54 =====
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Respectfully submitted,


Dale Evan Wallster

January 27, 1984

LEGAL CORNER POST
CPW CLAIMS



000 S
SURVEYED LOCATION-POST 2E.

100 S

200 S

300 S

400 S

500 S

600 S

700 S

800 S

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,822



○ = 243 p.p.b.
○ = 900 p.p.b.

☐ SURVEYED LOCATION - POST 2S.

☐ SURVEYED LOCATION-POST 2E,2S.

FIGURE 3
WHITECAP ENERGY INC.
CPW CLAIMS
GOLD IN SOIL (p.p.b.)
SCALE 1:3937