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CHARLESTON - WELLINGTON - KASLO
CLAIM GROUP

SLOCAN MINING DIVISION

BRITISH COLUMBIA

PRELIMINARY MINERAL EVALUATION REPORT

BY

M.D. KIERANS B.Sc. M.A. P.Eng.

JULY 1979

SEMCO MINING CORPORATION
#713-744 West Hastings Street
Vancouver, B.C. V6C 1A5

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 CHARLESTON - WELLINGTON - KASLO CLAIM GROUP
 ZINCTON - WHITEWATER AREA
 SLOCAN MINING CAMP, B.C.

M.D. KIERANS

JULY 25th, 1979

SUMMARY

1. A structural - stratigraphic concept for the above group is outlined, which greatly enhances the potential mineral value of these sixteen (and related) claims. This concept is based, in part, on previous detailed and regional mapping in this camp by Evans B. Mayo, W.M. Sharp, others and the writer. The concept relates Ag - Pb - Zn - Au - Cu mineralization to intersection zones of axial planes of recumbently folded, favorable, competent horizons, within the very thick eugeosynclinal Triassic Slocan series, and NE trending fractures and faults.

When applied to known mineralization on these (and nearby) claims the known ore pattern conformed to the concept. There were potential ore shoots indicated during this preliminary field evaluation by using the structural - stratigraphic concept. These targets can be quickly and cheaply tested by air photo study, geochemical soil sampling, surface stripping, detailed mapping and short diamond drill holes from surface and underground.

2. On these claims there are 7 zones of favourable competent beds of siliceous argillite, limey argillite and shale. There is one additional inferred zone. Detailed geological mapping should locate others. There were over ten intersectional targets outlined during this examination. Additional detailed mapping should almost certainly disclose other readily accessible intersectional targets.
3. Descriptions of known higher grade ore shoots on these zones indicate ore bodies with strike lengths of from 100 to 600 feet and widths from 1 foot to 40 foot replacements. Depth persistence of individual "shoots" is not well documented but is approximately 200' to 600 feet. If average lengths of 300 feet, average 6 foot widths and average 300 foot depths are assumed for 10 pregnant targets then the potential tonnage of high grade to medium grade Ag, Pb, Zn ore on the claims is about 500,000 tons. The writer believes this estimate to be conservative because there is a good possibility that more producing targets will be found at depth where deeper recumbent axial planes intersect the steeply dipping NE fracture systems. Also more than 10 pregnant targets should be found.
4. Grade from previous production is very difficult to estimate because of hand sorting in the old mines by the early producers but the average grade of above tonnage could possibly exceed 10 oz/T Ag, 5% Pb and 5% Zn. Additional surface stripping sampling and drilling from surface and underground could quickly place the above guess on a firmer footing. It is quite well established that the topographically higher zones are somewhat higher in silver content.

5. On the lowest zone, the Hazel, there is a potential for an underground bulk mining project. This lower grade target could be as much as 100' thick, 500' long and 500' deep, i.e. could contain as much as 2,000,000 tons. Dimensions and grade can only be established by careful underground sampling, mapping and diamond drilling in Hazel adit, which is recommended.

Preliminary grade indications, from inadequate sampling of available exposures by others, are set at about 2 oz/T Silver, 2% Pb and 2% Zn. This potential target could be adit mined.
6. Given successful exploration results it is the writer's opinion that production of Ag, Pb, Zn material from these (and possibly nearby claims) could support a 500 Tpd mining-milling operation.
7. Surface and detailed underground mapping, sampling and geochemical work could be done for the remainder of this field season and the Matheson and Hazel adit could be rehabilitated and extended during winter months. U.G. drilling targets could be tested during the winter.
8. It is recommended that additional selected claims be acquired in the vicinity of the above group.
9. As soon as possible elements of the concept should be applied to exploration and office study of, not only rocks of the Slocan series, but the Kaslo volcanics and West Lardeau area as well.
10. The downward persistence of the above potential mineral deposits would most likely be limited by the underlying Nelson batholith. Scattered stocks and plugs of granitic rocks in the Zincton - Whitewater area indicate that the underlying batholith may not be very deep.
11. As forestry operations are presently in process road access to most parts of the claims is excellent. Elevations do not exceed 5300' above sea level. Custom mills are located nearby at Sandon, Slocan City and Ainsworth. Trail smelter is only 100 miles away.
12. There is a strong possibility that immediate production of shipping ore could start at Road, East Matheson and Slocan-Charleston showings with small initial investment.
13. Cost Estimates:

A. Field Season Work	\$ 61,000
B. Winter Season Work	\$175,000

PRELIMINARY MINERAL EVALUATION REPORT
CHARLESTON - WELLINGTON - KASLO CLAIM GROUP
ZINCTION - WHITEWATER AREA
SLOCAN MINING CAMP, B.C.

M.D. KIERANS

July 27, 1979

INTRODUCTION

Following instructions from R.B. Stokes and R.L. Kemeny of Semco Mining Corporation the writer spent July 19 to July 22 on a general reconnaissance field examination of the mineral potential of the subject 16 claim group, located near the old Whitewater Mine between New Denver and Kaslo, B.C. This group is through various legal arrangements effectively controlled by Semco and Peter Leontowicz of Hill, B.C. No attempt was made during this examination to verify either the claim ownership or legal status of the claims.

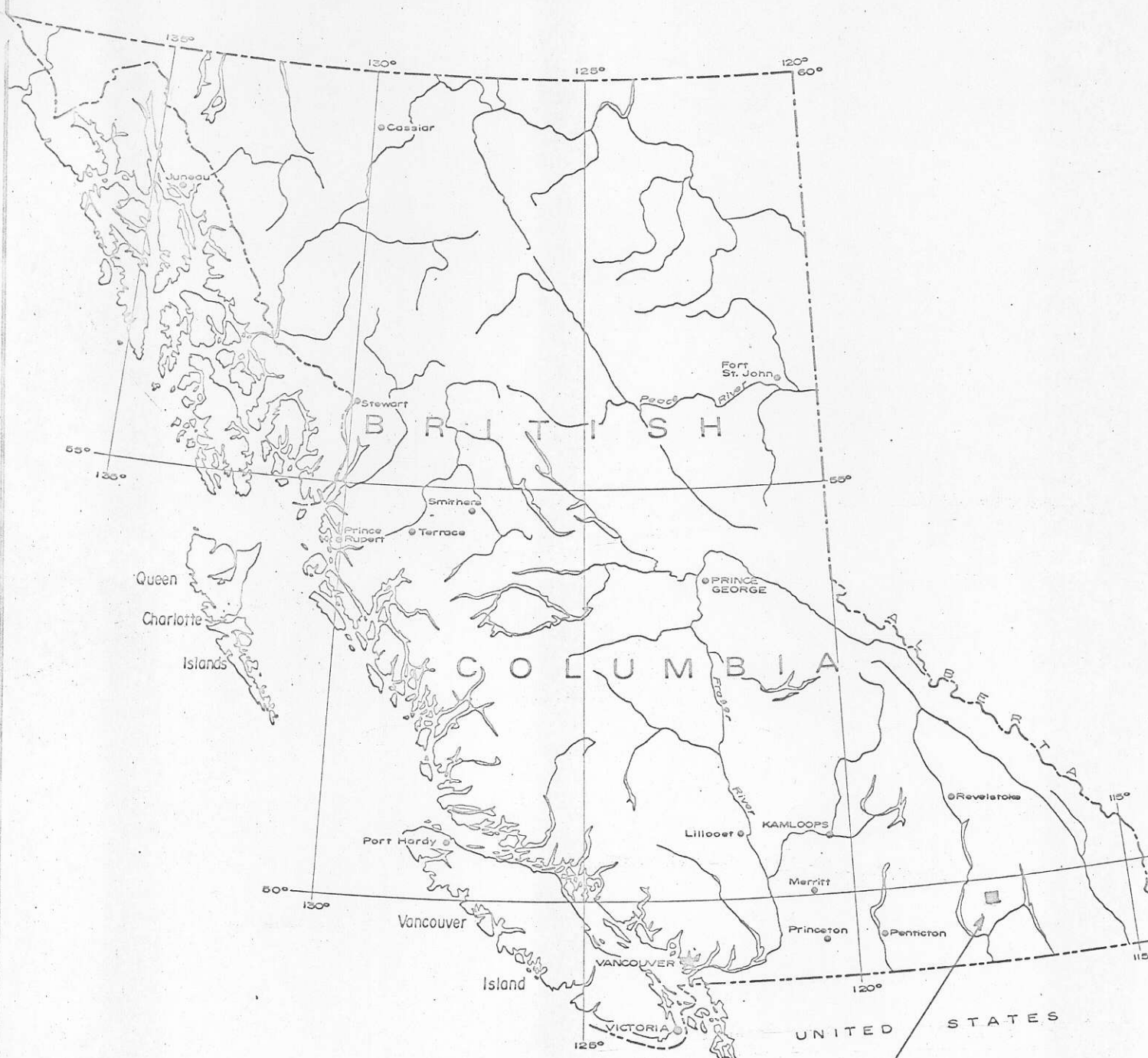
The purpose of the examination was to evaluate mineral potential by visiting showings and by sampling workings within and near the claim group. Possible exploitation of old mine dumps on the claim, as described in an appended report by W.M. Sharp (deceased) was assessed.

During the examination Mr. Peter Leontowicz's field assistance and guidance, as well as general and specific geological and prospecting information supplied by him, proved to be of great value in the property examination. He also supplied a four wheel drive vehicle for transportation from New Denver to and within the property. For all of which the writer is most grateful.

Reports by P. Vaillancourt (1979), W.M. Sharp (1975), J. Snell (1977) and maps by M.S. Hedley and other G.S.C. and BCDM geologists, as well as miscellaneous internal reports, maps and correspondence of previous property owners and optioners were used for background information. See Bibliography.

The writer also drew upon his previous experience in Slocan Series geology when he worked as a student geologist for 3 summers (1947 - 1949) with Kelowna Exploration Co. (later, Kelowna Mines Hedley Ltd.) under the direction of W.M. Sharp and Dr. Evans B. Mayo. Their regional structural concepts (and the writer's) were used freely in what follows. Copies of Sharp's report and Peter Vaillancourt's report are appended.

For additional information on details of Location, History, Past Production etc. please see those reports. Location of the claim group is shown on figures 1 and 2.



LOCATION MAP
 CHARLESTON-WELLINGTON-KASLO
 CLAIM GROUP
 SEMCO MINING CORPORATION
 M.B.M. JULY 79
 FIG. 1



HISTORY

The Slocan Camp has been profitably exploited for silver, lead and zinc since before the beginning of the century. The deposits of the Whitewater area in the camp were staked in the early 1890's. The Charleston, Keystone and Wellington deposits were mined and hand sorted to high grade shipping material (for these records please see appended reports). The Whitewater Mine operated till about 1930 on a rather substantial scale. Underground activity in the Whitewater Mine ceased about 1952. The Zincton Mine operated till about 1955. There was a brief flurry of activity about 1953 and 1962 on the Wellington property, when Blue Star Mines Ltd. drove the Matheson adit below the Wellington - Sunset Mine. Since about 1963 there has been little or no activity on these claims except for some recent front-end loader stripping by Peter Leontowicz and some activity in 1966.

OWNERSHIP

Figure 5 shows the location of Claim boundaries and geology on the 16 claims of the group. The claims are not owned by a common owner but Semco effectively controls the group at present through option agreement. For these details see Vaillancourt's report mentioned above.

REGIONAL GEOLOGY

The various reports in the bibliography present the regional geology as deduced mainly by C.E. Cairnes and M.S. Hedley. However, the writer's experience on a detailed survey of Carnation Silver Ridge area and regional mapping elsewhere in Slocan Camp, results in significantly different regional geological picture with important economic implications.

The writer's Master's thesis (in U.B.C. library) outlines the general regional, stratigraphic and structural concepts used by "Kelowna Ex." personnel for sediments of the Slocan Series. In 1946, Evans B. Mayo, Chief Geologist for Kelowna Ex. accompanied by Paul Billingsley, observed a large recumbent fold on Texas Peak above the town of Sandon. From that initial observation he went on over the years to 1950 to build up a carefully documented regional structural-stratigraphic picture which was used in most of "Kelowna Ex's" work in the Carnation area. Patterns of flexural - slip drag folding, foliation attitudes, bedding attitudes, primary and secondary sedimentary structures, and rock types sequences were mapped in detail and used to determine "tops" of beds and fold attitudes. The resulting pattern is similar to Alpine Nappe Structures rather than the rather open "tops" up synclinal and anticlinal structures of C.E. Cairnes. Unfortunately Evans B. Mayo did not, to my knowledge, present his structural-stratigraphic concepts in any published paper after the mainly unsuccessful ore search work of "Kelowna Ex" was shut down in the early 50's.

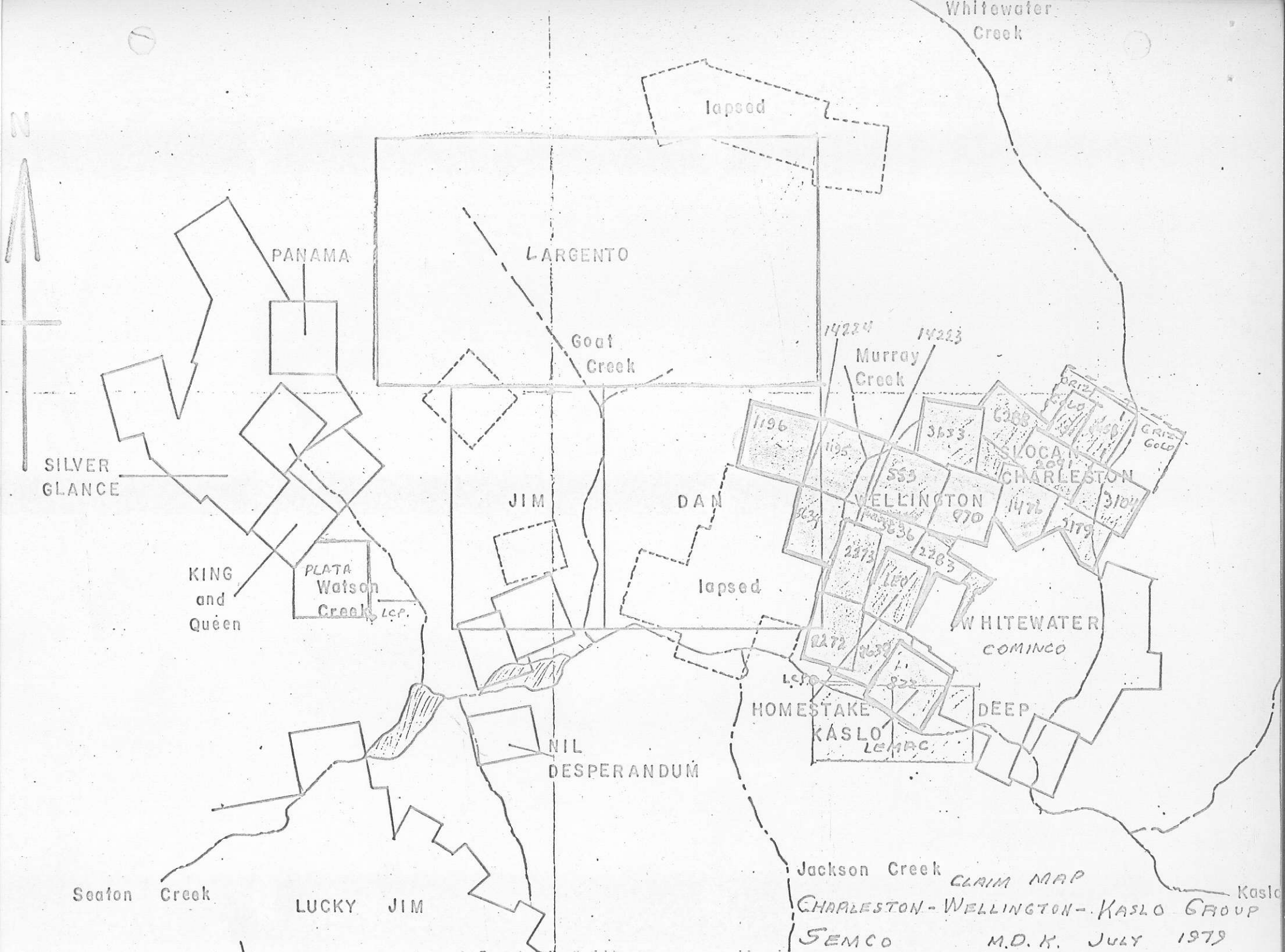


FIGURE 2

The writer presented his Master thesis in 1952. Mayo did read this work at that time, offered suggestions and stated there was no basic difference between my concepts of the geology east of Sandon and his own ideas. The subject matter of the thesis was not an economic study but a sedimentary study of rocks east of Three Forks i.e. the area of this report.

The writer interprets the Slocan Series as basically a very thick sequence of "poured-in" eugeosynclinal sediments in a long narrow rapidly subsiding basin with rapidly rising foreland. These sediments, when the sea was drained off, were uplifted and tilted into a series of vertically tilted beds and recumbent folds, usually with horizontal axial planes.

Many beds are overturned as shown mainly by truncated cross-bedding sedimentary features. Near the tops of the highest ridges the rocks are folded into a complex sequence of "pancake" overturned folds. These structures have been in places cross folded and drag-folded by strong flat thrust faults and steep transverse faults. In economic terms the result is a very complex bedding pattern cut by ore-bearing cross-faults and fractures.

Any economic structural analysis of the Zincton - Whitewater area which omits careful mapping and interpretation of bedding and fold attitudes leaves out an essential factor in the ore-control equations in Zincton - Whitewater area.

During this visit to the property detailed structural mapping was not attempted. However, by noting bedding dips and flexural slip drag folds the fold pattern that emerged is similar to that shown diagrammatically in Figure 3 and is consistent with Mayo's understanding of the Slocan regional structure.

The basic concept which was used and was verified during this surface and underground examination involves the following simple structural ore control concepts. Incidentally, the writer's general concepts agree with Sharp's observations and deductions though not stated in the same terms.

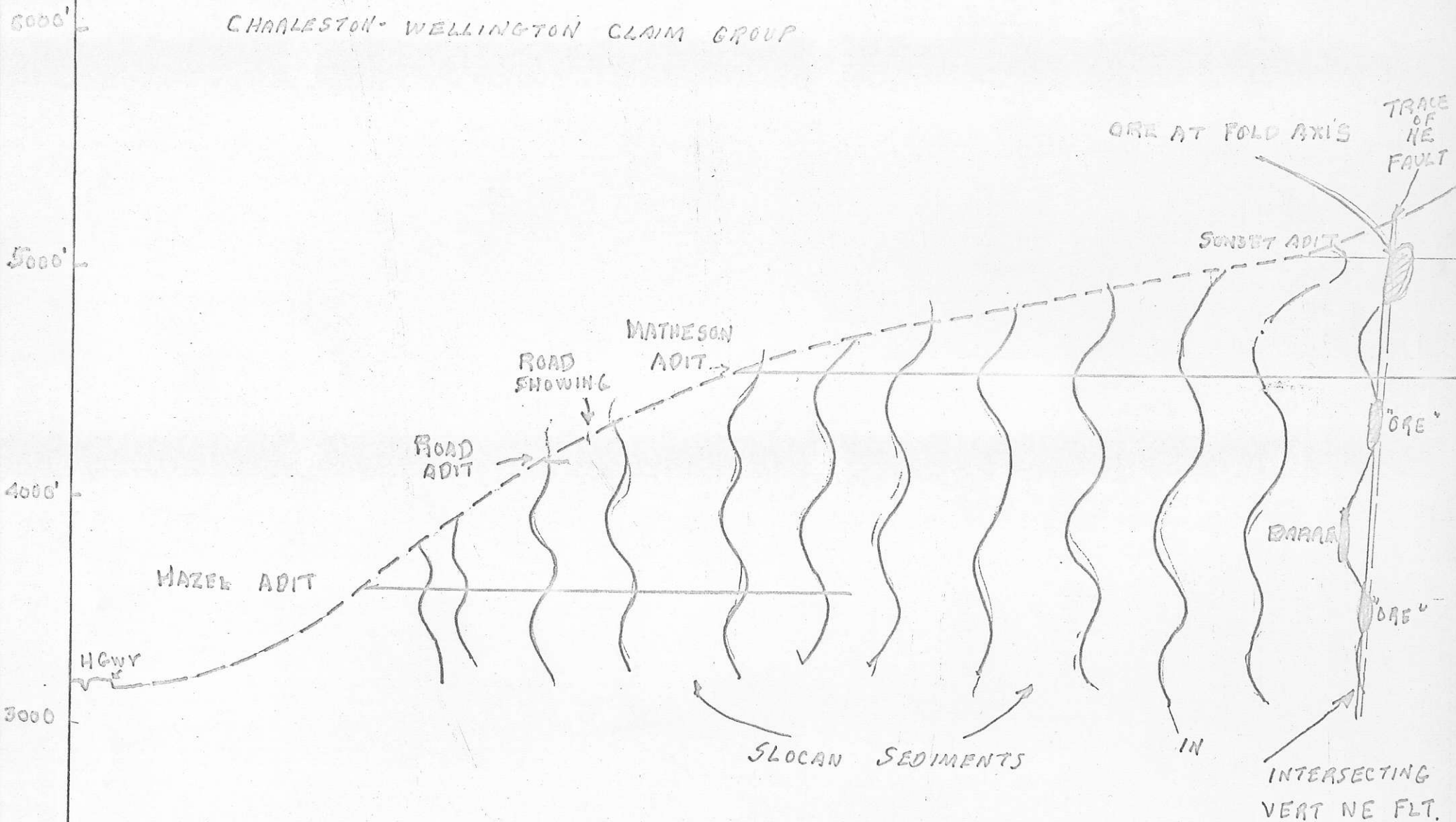
For example, when Sharp states that "mineralization within the vein/lode system relate to westerly, rather than west-northwesterly strikes, and to steep (N or S) dips, rather than to low dip angles" he is effectively stating that in these rocks ore occurs near recumbent fold axial planes. That is because it is near these dip reversals i.e. steeply dipping areas that dilatancy should be maximum. Pressure should be lowest there - and therefore ore solution deposition should occur there, especially when crossed by tensional NE fractures and faults.

The writer observed underground, at Sunset adit, actual open spaces between some of the more competent beds. That this open space had not been filled with ore minerals is most likely due to the fact that it is not on one of the favourable zones or beds and also not near a NE fracture. Dip and rake of these ore structures, localized near dip reversals, and controlled by (often inconspicuous) steep fractures and faults is bound to be variable because slight fracture dips changes could send the ore rake south instead of north or east instead of west. So in diamond drilling of such targets, no large "step-outs" should be attempted.

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N

CHARLESTON-WELLINGTON CLAIM GROUP



DIAGRAMATIC CROSS SECTION

1" = 600'

MDH JULY 1979

FIGURE 3

S

N

Any interpretation of the fold pattern at any one place should be offered as a provisional concept only because normally data are insufficient for a final fold pattern to emerge. The basic concept revolves itself to finding fold axis "overturns" and NE faults and fractures. Snell's 1977 excellent analysis of the regional fracture pattern, Whitewater area, Slocan Camp and fracture pattern details, Whitewater area, Slocan Camp is of great help in ~~assessing the importance of such an "overturn" in relation to known NE~~ fractures.

Finally it really makes little difference if the ore bearing "solutions" were derived from remobilized source beds or from fractionally crystallized residual solutions from cupolas in Nelson batholith. The result, so far as practical ore search is concerned, that is, identifying pregnant intersections, is the same.

HIGHWAY AND HAZEL ZONES

In this and following sections economic details of the seven zones so far identified on the claims are discussed. The seven zones are treated in order from topographically lowest to highest on the property.

By zone, in what follows, the writer means a tabular horizon of variable and irregular thickness within the Slocan Series within which base metal mineralization has been found. It may or may not conform to one Sedimentary horizon or time defined layer within the stratigraphic sequence. It is usually gossanized - but may not be. It may be offset by faulting. It is basically a zone or horizon of the Slocan Series which contains one or more competent members (e.g. quartzitic argillite) which having been folded and cut by transverse or thrust faults, as well as by bedding slips, has become identified in the course of the mining history of the district as one of the principal "feeders" of ore mineralization in the complex hydrothermal plumbing system of the area.

The closest term to zone used by previous writers, is lode. This term is rejected because it implies obvious structural continuity from one ore shoot to the other within the "lode". Zones are simply a series of aligned inter-sectional areas or foci within a favourable "horizon" which have a consistent topographic expression. There may be completely unmineralized sections of a zone if the intersections are spaced far enough apart.

The Highway Zone is the lowest (topographically) seen in the Zincton - Whitewater area. It may or may not be the same zone as the Hazel but is the eastern extension of a zone which could be not far (topographically) above the Hazel. For purposes of evaluating the subject claim group directly the Highway showing is not significant, because it occurs on Cominco ground, but indirectly it is significant because the elevation of the showing (3200') indicates a general regional depth persistence in the area of Pb - Zn mineralization to, at least, this depth above sea level. There is no known structural reason why depth persistence should not be a great deal deeper because rocks and structures bearing known mineralization should remain consistent to thousands of feet below the present Kaslo River - Seaton Creek Valley.

The mineralization was not sampled as it is obviously very low grade. But there are two important prospecting facts of value in this showing which occurs on the North side of Kaslo Highway and about 100 meters west of Whitewater Bridge. Firstly, apparently barren, ungoossanized grey argillites, when broken open, can contain significant amounts of Pb - Zn mineralization, secondly, the "replacement" process can act some distance from faults and fractures because none were noted near this minor showing.

The Hazel zone on the property is a potentially important one because there is a possibility that additional exploration testing on surface and underground may indicate a large tonnage of low grade Ag - Pb - Zn mineralization within this zone.

The best outcrop of the zone is in the artificial outcrops of the Hazel Adit. Cominco geologists have sampled this zone underground and sampled the soil above the adit. They have also mapped the zone in some surface detail at 1:1000. The mineralized sedimentary argillites are strongly silicified from a point about 100 meters inside the adit from the portal. Short drifts were driven east and west on this first encounter with low grade Pb - Zn mineralization in the adit. About 30 meters further north in the adit a drift was driven about 150 meters to the west and another about 100 meters to the east following the zone of mineralization cut in the main adit. As the rock is very hard it will take a well supported program of sampling to determine tenor of this mineralization.

A counter cross cut was driven south from the west drift to cross cut the mineralization in the adit. This counter cross cut is about 30 meters from the adit drive. A 3 meter stretch of this material in the cross cut ran 1.7 oz/T Ag, 0.53% Pb and 4.0% Zn. Most significantly there are a number of NE trending vertical fractures cross cutting the mineralized sediments. Judging by old maps of the Hazel adit, the west and east drifts were not aligned in the proper direction to test the zone.

Because of bad air problems the writer did not examine either drift. There is a heavy water flow in the Hazel adit. The adit continues northward some distance (about 1200') and ends under the Whitewater zone.

The surface mapping by Cominco east of the Hazel adit and observations by the writer, indicates that Hazel Zone persists at least 400 meters south easterly from the adit. There are scattered weakly to strongly mineralized boulders and outcrops in this zone and, more importantly, evidence of axial plane intersections with NE striking fracture systems. There have been some spectacularly high grade grab samples reported from this area and some very high grade specimens were collected by the writer.

There is little doubt that this zone, because of its location at low elevations (Hazel adit is 3,746' above sea level) its wide widths of mineralization, long length (over 500 meters indicated) and possible low cost underground or surface exploitation potential, warrants considerable interest.

Underground and surface detailed mapping followed by diamond drilling across the zone of axial plane and NE fracture targets could indicate very substantial tonnages of low grade ore. The following numbers are in no sense to be considered ore reserve estimates of any category. They are intended for order-of-magnitude use. If the 100' width of mineralization indicated in the underground workings persists on strike 250' east and west of the adit and if that width has 500' vertical continuity then the potential is 2,000,000 tons. This amount could be exceeded if the mineralization persists further east and west of the adit. Grade can only be guessed from present information. There is no doubt there are plums of very high grade ore with the above tonnage but most material is about 4% Pb + Zn. Silver is estimated (guessed) at 2 oz/T of Silver. The Kaslo River Valley is at about 3300 feet, so the above material can be adit mined quite cheaply right from the paved highway elevation, with a 500 meter long adit - which would give about 120 meters of backs at Hazel adit. Part of the adit could be driven within the Hazel zone and could pay part of its way - given a moderate amount of luck in the drive. There is no doubt that this prospect is very important and warrants considerable exploration expenditure.

ROAD ZONE

According to F.J. Hensworth (1962), the "Road" zone is at the contact of limestone and slate and is 12' wide, including 4' assaying 12 oz/T Ag, 14.6% Pb and 4% Zn. No sign of stripping on the road was seen but the downward extension of the zone was sought in two short adits. One tried to cut the downward extension about 200' on strike to the east and 100' lower. The rocks seen by the writer in this partly caved working (we could not reach the face) were thin bedded soft limy shales and slates. No NE fractures were seen. No sign of mineralization was seen in the dump. Taking into account uncertainty in dip and rake of these zones this adit is probably not a conclusive test.

There is another caved adit, driven due north under the road showing. Results are not known. The writer did not sample the showing but visually the Hensworth assay is probably not far from true grade across mineable widths of over 6'. There has been little or no exploration on this zone to the east or to the west. It can be considered essentially a virgin showing of major significance and is crying for exploration attention. The lower adit could be rehabilitated (and extended if need be) at modest cost. In addition to mapping, soil sampling and some trenching, this adit should be extended.

Hensworth reported in a progress report in 1962 that an old adit was rehabilitated and the road vein was examined over a drift length of 60 feet. Eight channel samples over an average width of 24 inches averaged 15.1 oz/T Ag, 13.3% Pb and 11.08% Zinc. He further reported that this was 200' on strike to the east of the road showing which he reported to average 12.9 oz/T Ag, 13.8% Pb and 5.7% Zn over 4 feet.

At today's metal prices the Road Zone is obviously important and should be explored further both east and west of the surface showing. It is considered significant for the ore control theory that on the road the mineralized slates are vertical in dip.

WHITewater ZONE

This has been the most productive zone in the Zincton - Whitewater area. Production has been reported (Snell, 1977) to total about 260,000 tons of shipping and milling ore. Production ended about 1950. Shipping started about 1890. Grade of milling ore from the Upper Mine was 20 oz/T Ag, 8.5% Pb and 10% Zn - about 70,000 tons of this material was produced. About 165,000 tons of replacement ore from the Lower mine were produced at grade of 2.2 oz/T Ag, 2% Pb and 9% Zn.

Extensions to the west of Whitewater Zone between the Matheson Adit and the Whitewater Claim boundary were not well prospected on surface by stripping and trenching methods. However, Sharp (1975) reports that surface occurrence of good ore was found about 400' east of the Matheson East Drift. Near the face of the Matheson east Drift a sample - 2' - contained 10 oz/T Ag, 12% Pb and 8.8% Zn. Outcrops are rare west of Whitewater mine.

Ore occurs in Whitewater Upper Mine as replacement on steep sections of the recumbent folds in slates. Cross fracturing is important in ore localization. In the lower mine the ore is limestone replacement type. Fracturing and folding are important but these are more intense and the ore pattern is complex.

Hensworth (May 27, 1963 progress report) wrote that "high grade ore is reported in the surface cuts and old shaft on the Whitewater vein". The writer did see the old shaft and cut on this showing. The shaft is inaccessible (caved) and some recent stripping near by did disclose some good mineralization. This showing is near the surface projection of ore in the East Whitewater Matheson drift.

Hensworth (June 26, 1963) wrote that the Whitewater vein was uncovered on the surface by a new open cut beside the road, 35 feet east of the old shaft. A sample across 3 feet of oxidized material assayed 6.4 oz/T Ag, 4.0% Pb and 2.8% Zn. Clearly this showing and the one in the adit below merit additional attention at today's metal prices. It should be noted (Figure 5) that the NE fracture zone in the Hazel adit on the Hazel Zone, if projected about 2000' NE, should cut the Whitewater Zone about 400' east of the above showing. Surface examination and possibly stripping there should provide a quick check of the ore concepts outlined here. Conversely, if the above showing is controlled by a NE fracture there should be good ore in or near the Hazel west drift about 350' west of the Hazel adit.

The projection of NE fractures in the Sunset adit and at the Wellington shaft to the SW should intersect the Whitewater Zone about 840' and 1560' west of the Matheson adit. Both loci happen to be very close to the road so testing of this concept is simple and cheap. One is very close to Murray Creek - in fact almost in Murray Creek.

WELLINGTON ZONE

This zone is also known as Colorado or Sunset Zone. This was the main target of the Matheson Crosscut Drive driven by Blue Star Mines in 1963 in order to get under the Wellington and Sunset adits.

There is an unnamed zone inferred by the writer from a note in the August 13, 1963 progress report by Hensworth. He wrote "Lately, the crosscut has passed through thicker-bedded steep dipping rocks with several quartz veinlets". This seems to be near an axial plane "turnover" but not close to NE fracture. The location of this zone cannot be certain from this description but it is probably about 1800' from the portal. If this is so then testing to east (or west) a few hundred feet should find Ag, Pb, Zn mineralization because the Sunset NE fracture should be fairly close to the adit about 1800' from the Matheson portal.

Hemsworth, following Davis, assumed a South dip to the Wellington Mine "lode". The Matheson adit did not cut the lode on its projected South dip. Hemsworth then assumed a North dip to the "lode". A heavy flow of water was cut somewhere near the projected "lode" position. Records are unclear as to the final results of the adit but available maps show no drifting so presumably no ore was cut beneath the Wellington Zone in Matheson adit.

At the East end of the Wellington Zone (about 2400' east of the Sunset adit) is The Colorado area of the Wellington Zone. The mineralization, at today's metal prices, near the Whitewater claim boundary visually is impressive. The writer cut a chip sample across 10 feet in vertically dipping gossanized slates. See Sampling. A recent assay on the vein ran 5 ounces Ag, 7.9% Pb, 7.3% Zn, 2.1% Cu, 2.7% Antimony. (Siocan-Charleston Mining Co. 1979). Bulldozer trenching has proven continuity of the zone to the west of 450'. It is considered significant that this ore is very close to the Whitewater mine which showed ore persistence of 2000' vertically.

A report by L.S. Siega (1967) states that 1000' of trenching and limited diamond drilling on the Colorado Zone gave encouraging results. No details were presented. The writer noticed the collar of a vertical hole at a point where vertical slates are well mineralized. A vertical hole would give rather uncertainly useful grade data. A 45° hole would have been much better.

KEYSTONE ZONE

This zone, as do all the others, strikes about N70W. Dip is indefinite. At the east end Ag, Pb, Zn mineralization is in a dike of andesitic composition. Values are reported to be erratic in Pb and Zn but silver values are high, varying from two to ten ounces for every % of lead. (Vaillancourt, 1979).

Not much is available from past records for assessment of the Keystone Zone, where it has been developed on its eastern end. A report by L.S. Siega dated January, 1967 summarized work carried out underground during 1966. Apparently low grade ore, about 785 tons, were milled and about 3000 tons of high grade ore blocked out. Grade is not stated. Apparently ground was heavy and mining costs would be high for this 3000 tons.

In 1966 an I.P. Survey on a 400' grid with readings at 200' intervals was completed. I.P. follow-up work consisted of one 168' diamond drill hole (vertical?) and 2 dozen cuts. In both cases results were "not encouraging". On the Keystone workings, which are now all caved at the portals, sulphide mineralization is associated with limestone throughout the entire length of the drift. Most ore shoots are thicker at drift floor than at the back.

CHARLESTON ZONE

A report by G.H. Argy P.Geol. (October 20, 1965) states that ore found in the Charleston Zone is better grade than the Keystone Zone. It has been worked from six adit levels representing about 2000' of tunnelling. A program of surface mapping and trenching is badly needed to assess the ore potential of this zone.

COREAN OR PL ZONE

The writer and P. Leontowicz noticed (about 150' south of the Kaslo Volcanics Slovan Series contact, a zone not far (400' west) from Whitewater Creek which may be the Corean Zone or a new zone we called the PL. Not much is known about the Corean except that the vein runs along a deep cut, narrow gully similar to the Charleston. It has remained relatively undeveloped. Heavy slabs of high grade were reportedly found in the slide near the vein. However, more mapping is needed to assess both Corean and PL zones. The writer took a rough grab sample of best material on the PL outcrop. It is a rusty stained, quartz-filled zone about 25' thick. No base metals were seen. This is the furthest North and highest (topographically) of the ore Zones on these claims.

OTHER PROSPECTS

Idaho - Tetra, Lyle Creek Area

A shipment in 1909 of 10.5 tons averaged 160 oz/T Ag, 2% Cu and 0.25 oz/T Au. A grab sample from above one of the 4 adits of heavily mineralized material was assayed. See Samples. This material is fairly representative of the vein across 3 feet. The rocks are vertically dipping slates with some reported limestone interbeds. Four adits were driven, spaced over a vertical range of 150'. No. 3 adit is 300' long and follows the "lode". The "lode" is up to 10' wide and composed of Crushed Slate and bands of quartz and siderite. "Mineralized lenses within the lode carry pockets, disseminations, and streaks of ore minerals comprising grey copper, pyrite, galena and conspicuous amounts of chalcopyrite. The high gold and silver values should be of considerable interest." This account is from PP 239 Memoir 184. C.E. Cairnes.

Highland Bell - Grissly 1 and 2

Within the Kaslo Volcanics the writer believes NE fractures are still "mineralizers". On a visit to Whitewater basin a very large boulder of sheared andesite showed a 5' zone of irregular white quartz filling with minor pyrite. This was sampled. To the NE in the adjoining Lyle Creek basin is the Highland Surprise prospect. The writer sampled quartz rock from the old ore bin at the base of the aerial tramline. Reported production from Highland Surprise working were 1000 tons of high grade gold-silver shipping ore.

Both of the above areas are of interest and should be investigated by field study and office research of old records. The Idaho-Tetra should be optioned if favorable terms can be arranged.

MINING ORE DUMPS

W.M. Sharp (1975) tested the possibility of shipping the reported 11,000 tons of low grade material on the Wellington - Keystone - Charleston dumps at old portals. Vaillancourt (1979) also studied this possibility. The writer does not believe that, all things considered, at this time, this project should be pursued further. The cost of milling on a custom milling basis is almost the same as the expected net smelter returns. Custom milling costs at the three neighbouring mills in Sandon, Slocan City, and Ainsworth average \$28.00, with the addition of transportation and other production costs a net loss is indicated at the expected grade of the dumps. Some of the dumps have been disturbed by logging operations currently in progress. Finally, neither the grade nor variance of the dump material can be considered to be well established. If, and when, an operation is in process on these claims then interest in this project could be renewed.

CONCLUSIONS

1. The Road showing is very important and should be investigated as soon as possible to evaluate possibility of immediate start of a shipping ore mining operation with very low initial capital investment.
2. The East Matheson is in the same category but the initial investment will be somewhat higher and production could be delayed longer than for the Road Showing.
3. The Colorado Showing sampled by the writer at the east end is as important for immediate production as the other two above but because of its proximity to Cominco ground and difficulty of access, using adits, it will require careful evaluation. Also the option agreement will, perhaps, have to be renegotiated.

4. The Hazel adit should be ventilated and mineralization carefully resampled and mapped in detail. The Road Showing could persist to this depth. There is the possibility of a low grade high tonnage ore today in Hazel adit on Hazel Zone.
5. There is the good possibility that over 10 separate high grade ore bodies, averaging about 300' long, 300' deep and 6' thick, i.e. about 50,000 tons each will be found on the claims. The search for these must be done only after detailed mapping of all accessible outcrops and workings. Scale should be no greater than 1:1000 and the structural theory outlined above should be used in evaluation of targets.
6. High Grade ore bodies will not be large but rather numerous.
7. Grade, using the Whitewater mine Upper levels production as an indication, should be about 20 oz/T Ag, 8% Pb and 10% Zn with perhaps minor copper and Cadmium. The low grade Hazel adit material could exceed 2 oz/T Ag, 2% Pb and 2% Zn.
8. Given a moderate amount of success a relatively low cost exploration and development program could find and prepare for production, with low cost adit mining systems, enough ore for a 300 - 500 tpd operation. The Zincton - Whitewater operations in the past produced over 750,000 tons of high grade and low grade ore. The wider replacement type ore bodies could be mined by lower cost methods than are traditional in the Slocan.
9. Regional evaluation of all prospects in the Slocan should continue concurrently with exploration and development on these claims.

RECOMMENDATIONS

1. Options on these claims should be retained.
2. Major and intermediate exploration companies should be approached to provide financial assistance in a joint Semco exploration - development venture on these claims.
3. The remainder of this field season should be used to start an immediate surface mapping project on these claims.
4. Semco should carefully consider (with or without major company participation) immediate production from the "Road" "Ore" body - after suitable field evaluation and cost investigation.
5. Surface stripping (after detailed mapping) should be carried out at Charleston Slocan Showing and at East Matheson.

COSTS

A. Field season mapping	\$ 45,000
"Road" showing exploration and development	10,000
Stripping of Slocan Charleston showing	3,000
East Matheson Stripping	<u>3,000</u>
	\$ 61,000
	<u><u> </u></u>
B. Winter Program (adit rehabilitation etc.)	<u><u>\$175,000</u></u>

Respectfully submitted,

M. D. Kieran

SAMPLES

NO.	ZONE	TYPE	LENGTH	REMARKS
276	Colorado-Wellington	Chip	10'	Pb, Zn min'z'n in limey shales.
277	Keystone #1	Grab	-	Grab from 2'-4' zone Higrade.
278	Keystone #1	Grab	-	Grab from 2'-4' zone Higrade.
279	Whitewater Basin	Grab	-	Grab from quartz zone in boulder not far from place. Gold?
280	P.L.	Selected Grab		20'-30' thick zone of gossan and quartz in oxidized phyllitic zone.
281	Slocan Charleston	Grab		Quartz chunks from vein.
282	Slocan Charleston	Selected Grab		Quartz zone 6'-7' thick.
283	Highland Surprise	Selected Grab		Quartz, pyrite chunks from Highland Surprise ore bin.
284	Highland Surprise	Selected Grab		Quartz, pyrite chunks.
285	Ohio	Selected Grab		Chlp, gn, sl. min'z'n in steeply dipping slates. Reported Au.
286	Ohio	Grab		Possible tetrahedrite.
287	Whitewater	Grab (best)		On Homestake claim open cut.
288	Sunset Adit	Grab		Grab from U.G. in adit near face.
289	Hazel	Grab		From 150' from portal. Short drift. Unselected grab.
290	Hazel	Grab		Sil'd argillite near drift - Xcut.
291	Plata Claim	Grab		From quartz vein at 6500' elev. (Apparently barren).

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MEMORANDUM

To: R.B. Stokes
From: M.D. Kierans
Subject: Production at Slocan Properties
Date: July 31, 1979

The assay and sampling data, as well as the physical and geological data upon which to base any decision about production of shipping ore in limited quantity from Slocan claims is clearly insufficient. However, the following calculations do serve to indicate that the investment of time and money needed to establish profitability of a small shipping ore operation on these claims is warranted. There are three areas that should be investigated.

ROAD SHOWING

The average of seven samples on the vein indicates ore averaging:

13 oz/T Ag = 13x10x.90x1.16 =	135.00	\$ Can.
10% Pb = 200x.50x.80x1.16 =	92.00	"
8% Zn = 160x.30x.75x1.16 =	42.00	"
	<u>269.00</u>	\$ Can.

Treatment, transportation etc. at smelter @ .85 of milled value.

Net Smelter returns = \$228.65 say \$225.00
- 5% Royalty (av.) = 225.00 x .94 = 211.50 say \$210.00

Costs

Custom milling	\$ 30.00	
Mining	80.00	
Transportation		
(ore)	7.00	
Administration	<u>15.00</u>	
	\$132.00	<u>\$132.00</u>
		<u>\$ 78.00</u>

Net operating profit per ton say \$75.00.

Assume 15 tpd production from 3 working places and 260 working days per year = 3900 tons per year.

Annual cash flow before Income and other taxes = \$292,500
say \$300,000 Can.

continued . . .

The same administration crew could handle production of ore from the East Matheson adit with same grade, working places and tonnage in reserve i.e. for one years production.

EAST MATHESON

Annual cash flow before income and other taxes = \$292,500
 say \$300,000 Can.

SLOCAN CHARLESTON (OPEN CUT)

Again the same administration crew could handle production of open pit ore from Slocan Charleston open pit at 40 tpd.

There is a reasonable chance for a zone 200'x20'x10'±10 = 4000 tons.

Mined at a rate of 40 tpd gives about 4 months production time. This should be given priority to complete most of project before winter snows.

Assume same NSR's as above (minus royalty) = 210.00 \$ Can.

NSR/T 210.00

Costs:

Milling \$30.00
 Mining 30.00
 Transport (ore) 10.00
 Admin. 10.00
\$80.00

80.00

130.00 \$ Can.

Annual cash flow before income and other taxes = \$520,000 Can.

Summary annual cash flow

Road \$300,000
 E. Matheson 300,000
 Slocan-Charleston 520,000

Say \$1,120,000
\$1,000,000 Can.

Investment

Vehicles, office etc. 12,000
 Buildings Mine (trailer) 10,000
 New Denver furniture etc. 2,000
 Underground equipm., lamps, tools, etc. 15,000
 Miscl. 10,000
\$49,000

say \$ 50,000 Can.

Working Capital

3 months operating costs \$500,000

500,000
\$550,000

say \$600,000 Can.

. . . . 3

Loan	\$300,000
Capital (from private investors or major company)	\$300,000

Working Capital recovered from cash flow. Capital Investment = \$50,000 Can.

INTANGIBLE BENEFITS

1. Accurate costs for mining, supplies, transportation, and accurate net smelter returns for given grade which will be most useful in planning larger scale production.
2. Assembly of operating crew and staff.
3. Knowledge of Geology, ground, ore occurrence etc.
4. A base for regional exploration.
5. Crew can plan and build up feasibility data for eventual 500 tpd operation.

M.D. Kierans
M.D. KIERANS

MEMORANDUM - Addendum

To: R.B. Stokes
From: M.D. Kierans
Subject: Production at Slocan Properties (Addendum)
Date: July 31, 1979

Cost estimates of the first phase (surface) of field check of concept outlined in the above memo are given below:

1. Field mapping Brunton-Tripod-clinometer-tape traverses (closed traverses) at 100' to inch over each of 3 areas mentioned in memo. Contours to be carried and plotted in the field. Ten field days (approx.) for each of th 3 areas. Four office days for each of the 3 areas for map and section drafting.
2. Concurrent stripping of Road showing, East Matheson and Slocan Charleston showings.
3. Concurrent sampling of above showings with chip samples across mineralized zones.
4. Assay Cost.

ESTIMATES:

1. Salary, field lodging and maintenance, geologist and helper.	
Salaries 1 month (approx.) at \$3,000 + \$30 x 30 =	\$4,000
Equipment and travel and communication	500
Misc. and contingencies	500
	<u>\$5,000</u>
Vehicle rental and operation. One month + gas, oil etc.	800
2. Stripping: 10 days @ \$300 (est.)	3,000
4. Assay Cost - 30 samples @ \$8.00 =	<u>240</u>
	Total \$9,040

Plus 10% Contingencies \$10,000

M. D. Kierans

M.D. KIERANS

WILLIAM M. SHARP, M.A.Sc., P.Eng.
CONSULTING GEOLOGICAL ENGINEER
3280 CHESTERFIELD AVENUE
NORTH VANCOUVER, B.C. V7N 3M9

September 3, 1975

REPORT: PRELIMINARY APPRAISAL
NEW WELLINGTON RESOURCES LTD.
SILVER-LEAD-ZINC PROPERTY, SLOCAN MIN. DIV., B.C.

PRELIMINARY

The writer, initially accompanied by Mr. Evans, made a general examination of the property during the period August 16 - 18, 1975. During this visit the writer inspected details of the local geology and mineralization within the currently open or accessible surface and underground workings, and measured and sampled the principal Wellington and Sunset mine dumps. During this, Mr. Peter Leontowicz supplied much helpful field guidance, assistance, and general background information.

The general terms of reference pertaining to this preliminary appraisal were contained in a letter from Mr. J.J. Crowhurst of Bacon & Crowhurst Ltd. Background data was contained in various maps, air photos, reports and summaries were kindly provided by Mr. Evans. These, along with the main reference reports.....B.C. Dept. of Mines Bull. No. 22 by M.S. Hedley and Geological Survey of Canada Mem. 184 by C.E. Cairnes provided most of the general information required by the writer for his examination and subsequent compilations.

GENERAL GEOLOGY

The property is underlain by rocks of the Triassic Slocan Series. Locally, these occur within the general 'footwall slate member' which, where associated with strong interbeds of limestone and associated quartzite, hosted the important Ag-Pb-Zn orebodies comprising the Whitewater and Lucky Jim mines. Within the Whitewater and New Wellington properties, the predominant bedding trends are westerly to west-northwesterly. Dips, as a result of the moderate to intense flexuring and drag-folding present, are flattish to steep southerly and, locally, overturned to produce a fold-related complex of flattish to steep northerly and southerly dips. Where such sections embody thick beds of limestone, quartzite and slate in rusions of lamprophyre, important orebodies have existed or may be expected to occur.

Very important

The New Wellington property, adjoining the Whitewater claim group on the west, contains the extension of the principal, or Whitewater lode and also, at least four subordinate, but generally similar structures which have produced, or have the potential to produce fair to high grade Ag-Pb-Zn ore. The veins or lodes in Wellington ground, and none of which have been comprehensively explored or developed within the property comprise, from north to south, the Keystone, Wellington, Whitewater, Homestake ('Road') and Hazel.

Like the Whitewater lode, the New Wellington vein/lode system strikes westerly to west-northwesterly and approximately parallel to general bedding trends; however, individual veins and lodes show variations of dip that locally parallel the bedding planes, or cut across them at slight to large angles.....the latter situation often relating to the development of relatively 'open' breccia zones which comprise optimum conditions for large-scale mineralization. Within the general Whitewater-Wellington structural geological setting ore bodies having strike-lengths ranging from 100 to over 600 feet occurred and widths ranging from 1 foot fracture-fillings to 40 foot replacements. From his study of the maps and air-photos, the writer has received the impression that the more significant 'spreads' of mineralization within the vein/lode system relate to westerly, rather than west-northwesterly strikes, and to steep (NorS), rather than to low dip-angles.

HISTORY

The Wellington claim was located in 1892 and 50 tons of high-grade silver-lead ore was mined and shipped from the property in 1894. In 1896, 400 tons of Wellington ore, averaging 173 oz/ton silver and 30 percent lead, was mined and shipped and two adit-crosscuts were driven. In 1928 the east Matheson adit-crosscut was started for the purpose of exploring the west extension of the productive Whitewater lode, and cross-cutting was continued on the Hazel adit. Concurrent work on the Ivanhoe adit, being driven to explore the westerly continuation of the Wellington vein-system was stopped in 1930.....probably because of falling metal prices. Recorded production, 1892 - 1915 period, is as follows:

940
251
31
1.225.727
=

At June 75 metal prices

Wellington - 787 tons containing 117,452 oz. Ag, 457,622 lbs. Pb, = 1,556 $\frac{\$}{T}$
and 100,402 lbs. Zn.

Sunset Claim - 52 tons containing 8,318 oz. Ag and 27,607 lbs Pb
and apparently other shipments of unreported size and = 1,472 $\frac{\$}{T}$
grade.

11
15
21

The above was produced by hand-sorting to eliminate as much waste and zinc content as possible. Consequently, by reason of the generally mixed (galena and sphalerite) character of the ore, much such well mineralized material was discarded.....to be left within the existing dumps and, possibly as pillars and stope fill within the old mine workings.....as was usual prior to the advent of the selective-flotation process.

SUGGESTED EXPLORATION PROGRAMPreliminary Comments

The writer would defer serious consideration of (costly) underground exploratory work until the completion of an adequate program of (low-cost) surface exploration has been accomplished. The writer's opinion is that too much effort and money have been expended in driving long crosscuts (and associated relatively short drifts) prior to evaluating the relative 'exploration probabilities' via a commensurate, adequately detailed preliminary surface-based exploration-evaluation program. Accordingly, the writer suggests that the following surface work be carried out - not necessarily in the order given, but with the actual sequence being based on economic considerations, and on the relative seasonal-accessibility of the separate veins or lodes.

- I Continue investigations relating to a determination of the economic-feasibility of mining the principal dumps and, if the results of this are favourable, carry out the indicated type of mining operation. The returns from this would probably be in excess of what is required for the following exploration:

II-a. Wellington-Sunset Lode

Carry out surface exploration via integrated geological mapping, localized soil sampling, trenching, and direct sampling of exposed vein/lode material. (Note: F.J. Hemsworth/1962 report states that the vein has been traced by open cuts and surface pits for over 1,500 feet.....also that incomplete production records for the consolidated New Wellington property show 1,961 tons mined from which was recovered 123,240 oz. Ag, 510,324 lbs. Pb, and 192,434 lbs. Zn.

b. Whitewater (Matheson) Lode Extension

Explore, by methods suggested in (a), its extensions to the east and west of the Matheson underground workings. Also note that if the magnetic type of ore that was found in the Whitewater mine is present, it may be detectable by magnetometer - excluding interference by track, pipe and other steel fixtures and equipment.

Note also previous mention (A.W. Davis, 1946) of an occurrence of good ore in an open cut located some 300 - 400 ft. east of the Matheson (E.) adit, and of a 2' sample taken near the face of the east drift, which contained 10 oz./ton Ag, 12% Pb, and 8.8% Zn.

c. Homestake ('Road') Vein

Explore, by methods suggested in (a), its surface extensions to, and west of Murray Creek. Note that a distinct lineament which approximately coincides with its projected extension west of the Haxel cross cut is revealed by stereo-examination of the air photos

provided. Similarly, the air photos also indicate that its westerly extension is offset slightly to the north by an apparent fault which coincides with Murray Creek.

According to F.J. Hemsworth (1962), the 'Road' vein occurs at the contact of limestone and slate, and is 12' wide - including 8' containing siderite and limonite (ox sulphides?) and 4' assaying 12 oz./ton Ag, 14.6% Pb, and 4% (op?) Zn. Apparently, further stripping along the strike of the showing was curtailed because such work would disrupt road access to the Matheson adit!

d. Hazel Vein

Explore its surface extensions by methods suggested in (a) - noting that its projected extension west of the Hazel crosscut nearly coincides with the course of an old road on trail crossing Murray Creek.

PRELIMINARY FEASIBILITY ESTIMATES - MINING DUMPS

a. Quantities:

New Wellington No. 0 (top) dump	1,500 tons
" " No. 1 (road) "	2,000 "
" " No. 2 (main) "	5,650 "
Sunset No. 1 (top) "	250 "
" No. 2 (main) "	1,750 "
TOTAL	11,150 tons

Prelim. tonnage - grade estimate of probable valuable portion - pending confirmation via P. Leontowicz sample results:

10,000 tons @ 4.55 oz./ton Ag., 1.08% Pb, 0.72% Zn

I Flotation-Concentration Alternative

Estim. recoveries: Ag, 4.55 oz./ton x 66% = 3.0 oz./ton milled ^{4.25 = 12.75}
 Pb, 1.08% = 21.6# x 70% = 15 lbs./" " ^{1.35}
 Zn, 0.72% = 14.4# x 60% = 8.6 lbs./" " ^{1.11}
 Cd, 0.16 lbs./" " ^{2.2}

Estim. net smelter values, F.O.B. local mills: 15.40

Ag @ \$4.25/oz. }
 Pb @ 0.09/lb. } After deducting smelter discounts & charges
 Zn @ 0.13/lb. } concentrate transport costs, handling charges,
 Cd @ 1.27/lb. } and B.C. royalty charges.

Resulting net smelter value of recov. metals - \$15.43/ton
 (A) (B)

Estimated Production Costs	Re Ainsworth Mill	Re Sandon Mill
Access prep. & loading muck	\$ 1.00 per ton	\$ 1.00 per ton
Hauling to mill	4.00 " "	2.40 " "
Milling @ probable toll charge	10.00 " "	10.00 " "
	\$15.00 per ton	\$13.40 per ton

Possible Gross Profit per (B) = 10,000 x 2.03 = \$20,300.00

II Jig - Concentration Alternative

Crush and jig 10,000 tons for 5,000 tons @

Ag, 5 oz./ton @ \$4.25 =	\$ 106,250.00	
Pb, 25 lbs @ 0.09 =	1,250.00	
Zn, 15 lbs @ 0.13 =	9,750.00	
Cd, 0.25 lbs. @ 1.27 =	1,587.00	\$128,837.00

Estimated Production Costs	Re Ainsworth Mill	Re Sandon Mill
Rent & install plant, 10,000 tons @ 0.10	\$ 1,000.00	\$ 1,000.00
Load, feed, & operate, " " @ 1.50	15,000.00	15,000.00
Sub-total	\$ 16,000.00	\$ 16,000.00
Load product, 5,000 tons @ 1.00	5,000.00	5,000.00
Truck product to mill " " @ 4.00	20,000.00 @ 2.50 =	12,500.00
Milling product " " @ 10.00	50,000.00	50,000.00
Estim. total production costs	\$ 91,000.00	\$ 83,500.00
Estim. gross profit	38,000.00	45,000.00
" " " /10,000 tons	\$3.80/ton	\$4.50/ton

Summary

Revenue resulting from implementing the above 'Jig-Concentration Alternative' should be sufficient to carry out the suggested exploratory work to a point where a sound decision regarding further underground exploration and development may be made. Hence, the writer recommends that the dump-mining feasibility investigation be continued.

Respectfully submitted,

W.M. Sharp, P. Eng.

W.M. Sharp, P. Eng.



WILLIAM M. SHARP, M.A.Sc., P.Eng.
CONSULTING GEOLOGICAL ENGINEER
3280 CHESTERFIELD AVENUE
NORTH VANCOUVER, B.C. V7N 3M9

SEPTEMBER 12, 1971

SUPPLEMENTARY TO REPORT, "PRELIMINARY APPRAISAL" 9/1/71

THE FOLLOWING ESTIMATES INCLUDE THE EXTRA RESULTS OF PETER LEONTOWICZ'S SAMPLING, SHOWN ON THE ENEL ASSAY REPORT:

BASIS: SELECTIVE MINING, TO TAKE 70% OF THE MATERIAL OF EACH DUMP WOULD PROBABLY UP-GRADE THEIR RESPECTIVE GRADES BY A FACTOR OF 1.43 (from $\frac{13}{9}$) OR:

$$11,150 - 250 = 10,900 \times 70\% = 7630 \text{ TONS @ AG} = 3.2 \times 1.43 = 4.6 \text{ OZ/TON}$$

$$\text{PB} = 0.87 \times \text{"} = 1.2 \%$$

$$\text{Zn} = 1.42 \times \text{"} = 2.0 \%$$

$$\text{CD} = 0.628 \times \text{"} = 0.04 \%$$

WITH SIG-CONCENTRATION,

ESTIMATE RATIO OF CONC. = 2.0 & METAL RECOVERY = 65%/60%

∴ 7630 TONS WOULD PRODUCE:

$$3815 \text{ TONS @ AG} = 2 \times 4.6 \times 65\% = 6.0 \text{ OZ/TON}$$

$$\text{PB} = 2 \times 1.2 \times \text{"} = 1.56 \%$$

$$\text{Zn} = 2 \times 2.0 \times 60\% = 2.4 \%$$

$$\text{CD} = 2 \times 0.04 \times \text{"} = 0.048 \%$$

} 80.0 \$/T
Rock

CURRENT NET-SMELTER VALUE OF SIG PRODUCT, F.O.B. MILL:

$$\text{AG} = 6.0 \times 4.00 = \$24.00/\text{TON}$$

$$\text{PB} = 1.56\% = 31.2 \text{ " } \times .08 = 2.50 \text{ "}$$

$$\text{Zn} = 2.4\% = 48 \text{ " } \times .125 = 6.00 \text{ "}$$

$$\text{CD} = 0.048\% = 0.96 \text{ " } \times 1.27 = 1.22 \text{ "}$$

\$ 33.72 / TON

GROSS VALUE, F.O.B. MILL = 3815 TONS \times \$33.72 = \$128,642

ESTIMATED PRODUCTION COSTS	RE. ANSWORTH MILL	RE. SANDON MILL
RENT & INSTALL PLANT	\$ 1,000	\$ 1,000
LOAN FEED, & ON - " = 7630 \times 1.50	11,445	11,445
SUB-TOTAL	\$ 12,445	\$ 12,445
LOAD SIG PRODUCT, 3815 @ 1.00	3,815	3,815
TRUCK PRODUCT TO MILL 3815 @ 4.00	15,260 @ 2.50	9,538
MILL SIG PRODUCT 3815 @ 10.00	38,150 @ 10.00	38,150
ESTIM. TOTAL PRODUCT COSTS	\$ 69,670	\$ 63,948
" GROSS PROFIT	\$ 58,972	\$ 64,694
ESTIM. UNIT GROSS GP PROFIT	\$ 7.72 / TON	\$ 8.51 / TON

PER PAGE 5 OF REPORT:

INDIC. RANGE GROSS GP PROFITS = \$3.80-7.72/TON & \$4.50-8.51/TON

Gross Profit
W.M. Sharp, P.Eng.

INTRODUCTION:

This report was compiled by Stokes Exploration Management Co. Ltd. (SEMCO).

The purpose of this report is to:

- a) Review the geology of the Charleston Mining property near Kaslo, British Columbia.
- b) Evaluate the ore deposits in context with past and present mining operations on the property.
- c) Recommend mining and exploration programs to assess the economic potential of the property.

CONCLUSIONS & RECOMMENDATIONS:

1. Mining activities have been in operation in the area since the late 1800's, particularly in the Charleston vein.
2. The ore horizon in the area is limestone of the Slocan series, which consists principally of slates and argillite. Ore in the slates is fissure filling along strong gouge zones, whereas ore in the limestone members of the Slocan series consists of both vein and replacement ore.
3. The lodes vary in thickness, but are most often several feet thick and contain lenses and more irregular bodies of silver/lead/zinc ore.
4. The deficit of silver production in the mining industry combined with the recent substantial increase in the price of silver and base metals, has stimulated interest in the silver potential of the Slocan District.
5. Some of the veins have been traced or over a mile horizontally, and they have been proven vertically for 1000 feet down the slopes to Whitewater Creek (A. St. Clair Brindley, 1937, p.12), consequently, the possibility of deep ore extraction should be seriously considered for all the existing veins.
6. Particular interest should be devoted to the relatively unexploited Colorado vein, where a recent assay ran: 5.0 oz. silver; 7.9% zinc; 7.3% lead; 2.1% copper; 2.7% antimony, plus other minor values.
7. The eventual development of the mineralized veins require significant capital investment, as well as experienced management to show a profitable return.

Continued . . .

CONCLUSIONS & RECOMMENDATIONS: (continued)

8. From the available reports, it appears that no systematic exploration was ever carried out at all the veins. More exploration activities are necessary for the Corean vein in particular to become economically attractive.
9. The Charleston claims are accessible by well-maintained roads, and by rail. Custom mills in the district are available to treat ore found and high grade can be shipped direct to the smelter at Trail, B.C., which is only 100 miles away. As a result, operating costs would be significantly lower than if the claims were located in a more remote area.

Continued . . .

GENERAL STATEMENT:

The Slocan-Charleston Mining Co. Ltd., owns a silver/lead and zinc property which consists of 5 mining claims in the Slocan area of the West Kootenay Mining District, British Columbia.

The Charleston, Kingston, Keystone, Colorado and Corean claims comprise a total of approximately 187 acres of Crown granted mineral land.

PROPERTY LOCATION, ACCESS & DESCRIPTION:

The Charleston claims are located on the south slope of the Slocan Range, about one mile north of the town of Retallack, and 14 miles east of the town of New Denver on the Denver-Kaslo Road. | 22 KE

The country is very rugged, the slope of the claims being approximately 30 degrees to the south. The mountain is heavily covered with timber. The Whitewater Creek flows south across the property. Kaslo Creek flows in an easterly direction in the valley below.

GEOLOGY:

The area is underlain by slates as well as by argillaceous limestone and quartzites of the Slocan sedimentary series, which in turn are underlain by the Kaslo volcanics just to the north of the property. The prevailing rocks are slates and are fissile and often intercalated with impure limestone. The rocks have a general northwest trend and a southwest dip. Contrary dips are common, due to local folding and faulting.

A system of parallel, northwest-trending tension shears cut the Slocan series in this area at angles roughly equal to the dip of the existing slaty fissility. On the Charleston property, these shear zones are the site of at least 3 well-defined vein lodes. These mineralized fault fissures are the loci of fairly strong and persistent silver/lead/zinc mineralization. The lode veins which vary in thickness from a few inches to many feet, contain native silver; galena, sphalerite and tetrahedrite as potential ore minerals in a gangue of quartz, calcite and siderite.

OREBODIES:

The three well-defined veins which contain the five claims, have been more or less developed, notably the Charleston, Keystone and Colorado claims. The Corean mineral claim carrying high grade ore has only been developed to a minor extent.

Continued . . .

OREBODIES: (continued)

The veins strike approximately N65W are parallel to each other, and dip southerly at angles between 50 and 70 degrees.

The Charleston vein extends from the west edge of the Kingston claim across the Corean claim. It has had the greatest amount of development. It has been worked by a series of six adit levels, representing about 2000 feet of tunnelling. Because of the continuity of mineralization, a program of more intensive development is needed to investigate at depth and prove up the large quantities of high grade ore in the Charleston vein.

The Corean vein runs along a deep cut, narrow gully similar to the Charleston, but has remained relatively undeveloped. Heavy slabs of high grade ore were reported found in the slide near the vein, however, more exploratory work is needed.

The Keystone vein matter is composed of an igneous dyke rock of andesite nature. This dyke is the host rock of zinc and lead sulphides carrying erratic, but high values in silver, varying from two to ten ounces for every % of lead. Metamorphosed limestone is closely associated with sulphide mineralization throughout the entire length of the drift, indicating a very good possibility of intersecting further ore shoots. The majority of the ore shoots found in the backs widen down dip and are thicker in the floor, pointing the probability of finding additional tonnages of ore at depth on the vein.

The vein with the best potential appears to be the Colorado vein, which is also the most undeveloped ore on the property. The Colorado vein varies from 4 to 12 feet in thickness, an exceptional thickness for veins in this area. A recent assay on the vein ran 5 oz. of silver; 7.9% zinc; 7.3% lead, 2.1% copper; 2.7% antimony, plus other minor values (Slocan-Charleston Mining Co., 1979). Bulldozer trenching on the Colorado vein has proven continuity of mineralization over a strike distance of 450' and a distance down dip of 240'. In addition, this vein is also adjacent to the Whitewater vein that produced large tonnages of ore in the past and was mined in ore down to a point about 2000 feet lower in elevation than ore of the lowest Charleston adits. More generally, as all the Charleston property vein shears are roughly parallel, and all very similar mineralogically, there is a good possibility of ore occurring at this depth on the three northerly veins held by Slocan-Charleston (Charleston, Keystone, Corean).

Continued . . .

ECONOMIC ASSESSMENT:

Considering the persistence of the vein shears in length, that the veins strike across topography and dip with it, and that mineralization occurs along the entire line of strike, it appears that this is an opportunity to profitably mine ore at a rate which will generate sufficient capital to explore the vein shears to depth. All indications point to the possibility of establishing the presence of mineable ore at depth as occurred in the adjoining Whitewater mine. The area remained unexploited to a degree as major veins of valuable orebodies run through the property.

Geological conditions are good and the veins carry ore to good depths. The district is well opened up with roads and trails, and supplies are available nearby for all standard mine necessities. From the character of the ores, and with no changes in geological conditions or the persistency of the favourable market factors, this property should develop into a good producing ore, if sufficient capital and experienced management are provided.

HISTORY:

The Charleston and Keystone claims were staked in the early 1890's and considerable work has been done on these claims since then. The most extensive work has been done on the Charleston vein. However, some important mineralization has been found and a little exploratory work has been done on the Colorado vein. The westerly extension of the Charleston vein has been explored on the Corean claim. The Slocan-Charleston Mining Co. Ltd., who owns the claims, has done work on the property over the years consisting of road building, and putting up buildings and facilities.

SIMCO Mining Corporation of Vancouver, B.C., optioned the property from Slocan-Charleston in June 1979.

PRELIMINARY REPORT ON THE NEW WELLINGTON
SILVER/LEAD/ZINC PROPERTY IN THE SLOCAN MINING
DISTRICT, BRITISH COLUMBIA

BY PIERRE VAILLANCOURT, B.A., GEOLOGIST

STOKES EXPLORATION MANAGEMENT CO. LTD.
#713 - 744 W. Hastings Street
Vancouver, B.C. V6C 1A5

JUNE, 1979

INTRODUCTION:

This report was compiled by Stokes Exploration Management Co. Ltd. (SEMCO).

The purpose of this report is to:

- a) Review the geology of the New Wellington Mine.
- b) Investigate and review the ore potential of the local deposits.
- c) Summarize the history and make recommendations accordingly for the future prospects of the Wellington Mining District.

CONCLUSIONS & RECOMMENDATIONS:

1. The New Wellington property occurs within the footwall slate member of the Slocan series, where associated with strong limestone and quartzite interbeds hosted the important Ag-Pb-Zn orebodies comprising the Whitewater and Lucky Jim Mines.
2. The New Wellington property contains the extension of the principal Whitewater lode and also at least four subordinate, but generally similar structures.
3. The lodes are strongly sheared mineralized fissure zones; the strike lengths range from 100 to 600 feet and the widths range from 1 to 40 feet.
4. In 1896, ore averaging 173.0 ounces per ton in silver, and 30% lead was mined. More recently, (1962), samples taken from the high-zinc reject material assayed: Silver 15.0 ounces per ton; lead 1.5%; and zinc 8.5%. An interesting feature of this property is that although the lead sulphides carry the higher silver values, the zinc blende also carries an appreciable amount of silver.
5. The veins or lodes have never been comprehensively explored and, therefore, hold much promise for future development, considering the proven reserves and the proximity of the Whitewater claim group.
6. Although Cominco did some geochemical work on the mine in 1978, confirming the good ore potential, a systematic geochemical and geophysical exploration program should be undertaken to make an accurate assessment of the potential reserves.
7. The area is well served by access roads and is within a reasonable distance (approximately 100 miles) of custom mill and smelter operations in Trail, B.C.

Continued . . .

CONCLUSIONS & RECOMMENDATIONS: (continued)

8. The early ore was produced by hand-sorting to eliminate as much waste and zinc content as possible. Consequently, by reason of the generally mixed character of the ore, much well-mineralized material was discarded to be left within the existing dumps. It is estimated that 11,000 tons of dumps are available immediately for treatment.

Continued . . .

GEOLOGY OF THE WELLINGTON MINE:

The area is underlain by rocks of the Triassic Slocan series. At the base of the section, they are slates and thinly laminated argillaceous beds within which are interspersed beds of quartzite and limestone, hosts of the important Ag-Pb-Zn orebodies comprising the Whitewater and Lucky Jim Mines.

The strata has a general westerly to west-northwesterly strike, and the dips are flat to steep southerly and southwesterly. The sediments are locally overturned in a series of anticlines and synclines, which are partly the result of moderate to intense flexuring and drag-folding.

The area is penetrated by a few small basic dikes, "where such sections embody thick beds of limestone, quartzite and slate in 'rusions of lamp-trophyre, important orebodies have existed or may be expected to occur" (Sharp 1975). On the property, at least three prominent lodes occur.

ORE DEPOSITS:

The New Wellington property consists of the extension of the principal Whitewater lode and at least four subordinate and generally similar structures which have produced Ag-Pb-Zn ore. The veins which remain relatively undeveloped are, from north to south, Keystone, Wellington, Whitewater, Homestake and Hazel.

Like the adjoining Whitewater claim group, the New Wellington lode strikes north to northwest, approximately parallel to several bedding trends. The lodes are all strongly sheared, mineralized fissure zones, cutting at a small angle across bedding planes of argillaceous sediments. According to Sharp (1975), variations in dip may be due to the development of open breccia zones, which provide optimum conditions for large scale mineralization.

In the Whitewater/Wellington area, the strike lengths of orebodies varies from 100 to 600 feet, and the widths range from 1 foot fracture fills to 40 foot replacements. The more significant spreads of mineralization within the vein lode relate to west rather than northwest strikes and to steep north-south rather than to low dip angles (After Sharp, 1975). The ore shoots consist of sphalerite, galena, tetrahedrite, quartz and siderite as well as crushed, slickensided wall rock. The ore on the Wellington claim carries high silver values in proportion to lead. Out of 400 tons shipped, the assays averaged 175 oz. Ag/ton at 30% Lead.

Continued . . .

HISTORY:

The Wellington claim was located in 1892. Production from 1892 to 1915 amounted to 787 tons, containing 117,452 oz. Ag, 475,652 lbs. Pb and 100,402 lb. Zn, the average grade was 150 oz. Ag per ton. In 1928, the east Matheson adit-crosscut was started for the purpose of exploring the west extension of the productive Whitewater lode, and cross-cutting was continued on the Hazel adit. However, concurrent work on the Ivanhoe adit stopped in 1930, probably due to falling metal prices.

A program of rehabilitation and development began in 1958 and lasted several years.

SEMCO Mining Corporation of Vancouver, B.C., optioned the property from Slocan-Charleston in June 1979.

PRELIMINARY REPORT ON THE PETER LEONTOWICZ PROPERTIES
NEAR KASLO, B.C.

BY

PIERRE VAILLANCOURT, B.A.
GEOLOGIST

STOKEL EXPLORATION MANAGEMENT CO. LTD.
#713 - 744 W. Hastings Street
Vancouver, B.C. V6C 1A5

JUNE 1979

INTRODUCTION:

This report was compiled by Stokes Exploration Management Co. Ltd. (SEMCO).

The purpose of this report is to:

- a) Review the geology of the Leontowicz claims.
- b) Assess the economic potential and the feasibility of developing the resources.
- c) Make recommendations on the exploration programs necessary to profitably mine the claims.

CONCLUSIONS & RECOMMENDATIONS:

1. The Peter Leontowicz claims are located in an area where several Ag-Pb-Zn operations have been carried out in the past 70 years.
2. There is an excellent potential for finding 2 to 3 foot wide veins carrying 5 - 20 ounces of silver per ton with 5 - 20% of lead and zinc combined.
3. Mining operations would not be costly in view of the fact that the orebodies would be reached through open pit mines, and that the area is well served by access roads.
4. No systematic mapping has been done on the properties, it would, therefore, be most advantageous to carry out detailed mapping surveys and conduct thorough geochemical and geophysical exploration.

Continued . . .

PETER LEONTOWICZ CLAIMS:

LOCATION & ACCESS:

The Peter Leontowicz property is located in the Whitewater Mining District, between the towns of Kaslo and New Denver, B.C. The property consists of the Homestake and Kaslo claims. They can be reached by well-cleared access roads which connect to the New Denver-Kaslo Highway.

GEOLOGY & ECONOMIC POTENTIAL:

The Peter Leontowicz properties are underlain by slates and thinly laminated argillaceous beds within which are interspersed beds of gray quartzite and impure limestone. The claims are located in a large area where several Ag-Pb-Zn operations have been carried out in the past 70 years. The Homestake claim is intersected by the Whitewater lode in its northwest corner. In addition, each claim contains several minor veins which make the area attractive for further development. Although no systematic mapping is available on the properties, it has already been determined that there is an excellent potential for finding narrow 2 to 3 foot wide veins carrying 5 to 20 ounces of silver per ton, and 5 to 20% combined lead and zinc.

In view of the location and nature of the orebodies, the deposits would lend themselves to low-cost open pit operations in some areas. Total extraction would come to between 100 and 300 tons a day.

AUTHOR'S NOTE:

Because of the proximity between the Leontowicz properties and the Slocan-Charleston Mining Co. claims, it is strongly recommended for the reader to review the reports written on the adjoining properties (Charleston-Keystone; Wellington) prepared by Pierre Vaillancourt, B.A., Geologist, in order to get a more complete appreciation of the geology and economic potential of the area.