NTS 82K/8W

ECHO BAY MINES LTD.

MIN1, MIN2, SMIN1, RED LEDGE 1 AND RED LEDGE 2 MINERAL CLAIMS

EXPLORATION - 1980

GOLDEN MINING DIVISION, BRITISH COLUMBIA

Trigg, Woollett Consulting Ltd.

December, 1980

J. G. Jansen
R. A. Olson

ECHO BAY MINES LTD.

MIN1, MIN2, SMIN1, RED LEDGE 1 AND RED LEDGE 2 MINERAL CLAIMS

EXPLORATION - 1980

GOLDEN MINING DIVISION, BRITISH COLUMBIA

CONTENTS

APPENDICES

ECHO BAY MINES LTD.

MIN1, MIN2, SMIN1, RED LEDGE 1 AND RED LEDGE 2 MINERAL CLAIMS

EXPLORATION - 1980

GOLDEN MINING DIVISION, BRITISH COLUMBIA

SUMMARY

Exploration, which included line cutting, topographic surveying, roadbuilding, trenching, geological mapping, geophysical surveys and geochemical sampling, were performed at MIN1, MIN2, SMIN1, RED LEDGE 1 and RED LEDGE 2 mineral claims between May 15 and November 4, 1980.

Folded and faulted Dutch Creek Formation, Mount Nelson Formation and Horsethief Creek Group carbonate and clastic rocks exist within the mineral claims. At least thirteen sulphide mineral occurrencs, comprising one or more of galena, tetrahedrite, sphalerite and chalcopyrite, and six iron-oxide gossans, exist in Dutch Creek Formation or in Mount Nelson Formation within or near the mineral claims. The most important sulphide mineral occurrence is 0SHM007; two chip samples collected at this occurrence give an average grade of 17.75 ounces silver per ton, 22.66 per cent lead, 2.41 per cent zinc and 0.23 per cent copper over 1.0 m. Zones in soil and stream sediment that are geochemically anomalous for lead, zinc, silver and/or cadmium exist, and locally are spatially associated with the sulphide mineral occurrences. Several induced polarization, resistivity and very low frequency electromagnetic anomalies exist; some of the geophysical anomalies are coincident with sulphide mineral occurrences and/or geochemically anomalous zones.

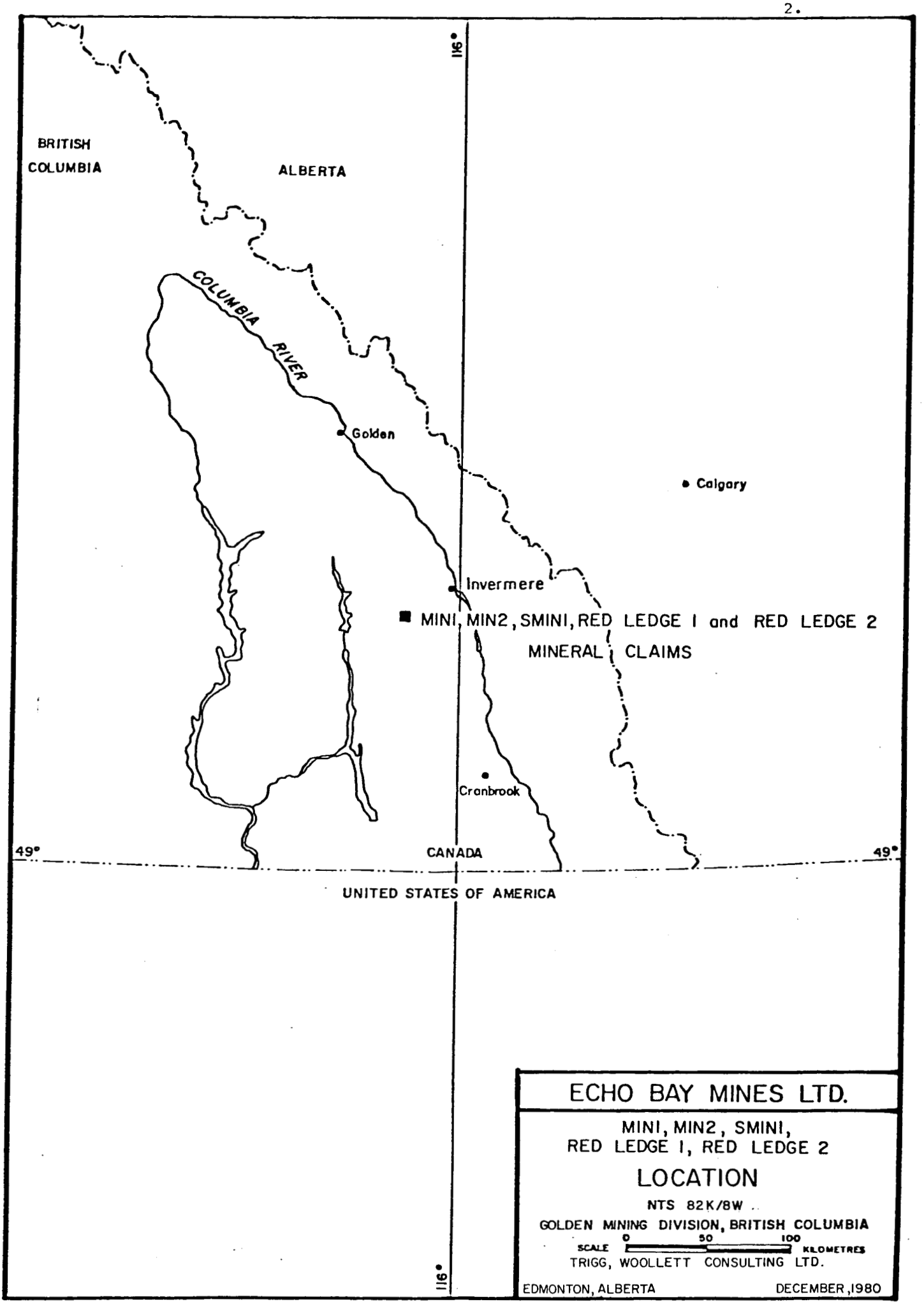
Further exploration, comprising line cutting, topographic surveying, geological mapping, geochemical soil sampling, geophysical surveys, overburden stripping, trenching, roadbuilding and diamond drilling, is required to evaluate selected sulphide mineral occurrences and geophysical and geochemical anomalies that exist within MIN1, MIN2, RED LEDGE 1 and RED LEDGE 2 mineral claims.

The preliminary estimated cost of the recommended exploration is $275,000.

INTRODUCTION

Location

The MIN1, MIN2, SMIN1, RED LEDGE 1 and RED LEDGE 2 mineral claims are in Golden Mining Division within National Topographic System (NTS) map-sheet 82K/8W, and are centered at 50°19'N latitude, 116°27'W longitude (Dwg. 0EBI-8; Appendix I). The mineral claims cover a total area of 810 hectares and are accessible by helicopter or four-wheel-drive vehicle.



ECHO BAY MINES LTD.

MINI, MIN2, SMINI,
RED LEDGE 1, RED LEDGE 2

LOCATION

NTS 82K/8W

GOLDEN MINING DIVISION, BRITISH COLUMBIA

SCALE 0 50 100 KILOMETRES

TRIGG, WOOLLETT CONSULTING LTD.

EDMONTON, ALBERTA DECEMBER, 1980

DWG. OEBI-8

History

The area has been geologically mapped at a scale of one inch equals 2 miles (Walker, 1926), at a scale of 1 cm equals 2.5 km (Reesor, 1957 and 1973) and at a scale of 1 inch equals 1,500 feet (Fyles, 1959).

In 1979, Trigg, Woollett Consulting Ltd., on behalf of Echo Bay Mines Ltd., performed reconnaissance and detailed geochemical stream sediment sampling in parts of the area now covered by MIN1 and MIN2 mineral claims. MIN1 and MIN2 mineral claims, bearing record numbers 510 and 511 respectivelly were staked on November 10 and 11, 1979 and were recorded on November 23, 1979; SMIN1 mineral claim, bearing record number 773, was staked on July 1 and 2, 1980 and was recorded on July 30, 1980. MIN1, MIN2 and SMIN1 mineral claims are held by Echo Bay Mines Ltd.

RED LEDGE 1 and RED LEDGE 2 mineral claims, bearing record numbers 192 and 193, were recorded on October 13, 1977 and October 31, 1977, respectively, and are held by Arthur Louie of Wilmer, British Columbia. RED LEDGE 1 and RED LEDGE 2 mineral claims were optioned by Echo Bay Mines Ltd. in August, 1980.

1980 Exploration

A total of 467 man-days of field work, which included line cutting, topographic surveying, geological mapping, geophysical surveys, geochemical sampling, trenching, roadbuilding and helipad construction, was performed at MIN1, MIN2, SMIN1, RED LEDGE 1 and RED LEDGE 2 mineral claims between May 15 and November 4, 1980 (Appendix II); this total does not include 41 man-days of field work performed within RED LEDGE 1 and RED LEDGE 2 mineral claims between October 13 and November 2, 1980 and between October 31 and November 5, 1980, respectively.

Exploration on the mineral claims during 1980 included: establishing a total of 31.6 line-km of grid within and near MIN1, MIN2, SMIN1, RED LEDGE 1 and RED LEDGE 2 mineral claims; topographic surveying of a 100 hectare area within MIN1 and MIN2 mineral claims; geological mapping of a 450 hectare area at a scale of 1 cm equals 50 m and/or at a scale of 1 cm equals 25 m; performing 18.2 line-km of very low frequency electromagnetic and 16.3 line-km of induced polarization/resistivity surveys, and collecting 850 geochemical soil samples and 93 geochemical stream sediment samples. In addition, a sulphide mineral occurrence within RED LEDGE 2 mineral claim was stripped of overburden, was trenched at two locales 5 m apart and two rock chip samples were collected.

The total cost of exploration performed within MIN1, MIN2 and SMIN1 mineral claims between May 15 and November 4, 1980, within RED LEDGE 1 mineral claim between June 27 and October 11, 1980 and within RED LEDGE 2 mineral claim between August 8 and October 29, 1980, is $110,630; the amount spent within each mineral claim or mineral claim group is summarized in Appendix III.

LINE CUTTING, ROADBUILDING

A total of 31.6 km of baseline, crossline and tie line were established by chain and compass or chain and transit within MIN1, MIN2, SMIN1, RED LEDGE 1 and RED LEDGE 2 mineral claims. About 8.5 km of an old road which provided access to the RED LEDGE mineral claim group were refurbished, and 2.0 km of new road which provides access to MIN1 and MIN2 mineral claims were built to four-wheel-drive standards (Dwg. 0EBI-9; Appendix I); the roads are about 3 m in width. Two D-6 caterpillar bulldozers, contracted from and operated by Dominion Creek Gold, Invermere, British Columbia and by O.W. Braisher Contracting, Parson, British Columbia, were utilized for roadbuilding.

GEOLOGY

Regional Geology

The eastern Purcell Mountains are underlain by rocks of Helikian to Cretaceous age (Reesor, 1973). At and near the MIN and RED LEDGE mineral claim groups, however, only the two upper formations within Helikian Purcell System and the Hadrynian Horsethief Creek Group of Windermere System are present.

The two upper formations of Purcell System are Dutch Creek Formation, which comprises mainly argillite, siltstone and quartzite with lesser amounts of carbonate rocks, and Mount Nelson Formation, which comprises mainly dolomite with lesser amounts of quartzite, dolomitic limestone, slate, argillite and conglomerate. The Windermere System unconformably overlies the Purcell System and comprises Toby Formation, a basal polymictic conglomerate, followed by Horsethief Creek Group, a diverse sequence of slate, argillite, phyllite, quartzite, grit, quartz-pebble conglomerate, dolomite and limestone.

The eastern Purcell Mountains have undergone at least two orogenic events. Prior to the deposition of Windermere System, Purcell System rocks were faulted and were deformed into northerly trending folds. The effects of this early orogeny have been overprinted and masked by a Mesozoic orogenic event that resulted in Paleozoic and older rocks being faulted, folded and intruded. Mesozoic deformation is characterized by northwesterly trending folds, by normal faults that strike mainly northwesterly and northerly, and by local thrust faults that dip mainly southwesterly (Reesor, 1973; Jansen and Olson, 1979).

Lithologies Within the Mineral Claims

Dutch Creek Formation, Mount Nelson Formation and Horsethief Creek Group exist within MIN1, MIN2, SMIN1, RED LEDGE 1 and RED LEDGE 2 mineral claims (Dwg. 0EBI-9). North of Toby Creek, near the north boundary of MIN1 mineral claim, Mount Nelson Formation dolomite is the host for the sulphide deposit which existed at the now closed Mineral King mine.

Dutch Creek Formation lithologies include argillite, siltstone, quartzite, calcareous argillite and dolomite. Three units of massive to finely laminated dolomite exist within and near MIN2 mineral claim. The western contact of the central dolomite is gradational through dolomite interbedded with fine grained quartzite and argillite, to argillite and siltstone; the contact relationships of the other dolomite units are uncertain.

Mount Nelson Formation quartzite, dolomite, argillaceous dolomite, argillite, grit and quartz pebble conglomerate conformably overlie Dutch Creek Formation rocks within MIN1, SMIN1, RED LEDGE 1 and RED LEDGE 2 mineral claims. The basal unit of Mount Nelson Formation is a fine- to medium-grained, thin- to thick-bedded orthoquartzite with lesser amounts of interbedded dolomite and argillite. The basal quartzite grades upward through interbedded quartzite, dolomite, and sandy dolomite into massive to finely laminated dolomite. This dolomitic unit commonly contains interbeds of argillite and argillaceous dolomite, and locally contains grit and matrix-supported pebble conglomerate comprised of quartz clasts in an argillaceous matrix. The dolomitic unit is in fault contact with Dutch Creek Formation rocks which exist to the east.

Horsethief Creek Group quartz pebble conglomerate and grit with lesser amounts of argillite and dolomitic limestone exist in the southern portion of RED LEDGE 2 and SMIN1 mineral claims. Grit and matrix-supported conglomerate are comprised mainly of quartz clasts up to 1 cm in diameter, and local argillite and dolomite clasts up to 2 m in diameter, in an argillaceous matrix. Grit and conglomerate commonly are interbedded with argillite; interbeds of dolomitic limestone exist but are rare. The contact between Horsethief Creek Group and underlying Dutch Creek Formation within the mineral claims probably is a thrust fault rather than an unconformity.

Dark green chloritic intrusive rocks exist locally in Dutch Creek Formation. The original composition of these intrusive rocks is uncertain; similar rocks which exist north of Toby Creek have been described as altered diorite by Fyles (1959). Contact metamorphic alteration, which comprises bleaching and sericitization, is present in Dutch Creek Formation argillite adjacent to the chloritic intrusive rocks. It is uncertain, because of subsequent deformation, whether the intrusive rocks were emplaced as dykes, sills and/or sheets; the large outcrop of intrusive rock which exists in the southern part of RED LEDGE 2 mineral claim may be an intrusive plug.

Quartz veins are ubiquitous within the mineral claims and exhibit a variety of attitudes. At least two ages of quartz veins exist.

Structure Within the Mineral Claims

Rocks within and near the mineral claims are folded and faulted. The structures present indicate that at least three phases of deformation exist; all three phases of deformation may, however, have occurred during the same Mesozoic orogenic event.

The earliest phase of deformation produced the thrust fault which separates Horsethief Creek Group from underlying Dutch Creek Formation. That the thrust formed early is indicated by the fact that the attitude of the tectonic fabric within Horsethief Creek Group rocks above the thrust is the same as that which exists within underlying Dutch Creek and Mount Nelson Formations; this tectonic fabric was formed during the second phase of deformation.

Within MIN1, RED LEDGE 1 and RED LEDGE 2 mineral claims, the important structure produced by the second phase of deformation is a subsidiary fold that plunges about 20 degrees north-northwesterly (Dwg. 0EBI-9). The axis of this subsidiary fold lies within the Mount Nelson Formation, and the fold is transected to the east by a subvertical, north-northwesterly fault or fault zone that has about 1,200 m downthrow on the west side (Fyles, 1959). This subsidiary fold is a dragfold that formed on the east limb of a large anticline, the axis of which exists west of the mineral claims. The east limb of this large anticline generally dips steeply east-northeasterly; locally, however, it may be overturned and dip steeply west-southwesterly. Minor structures related to the development of the north-northwesterly subsidiary fold include a pervasive north-northwesterly striking, generally vertical to steep, east-northeasterly dipping foliation; lineations and minor fold axes that commonly plunge 15 to 30 degrees north-northwesterly, and a prominent fracture and joint set which strikes east-northeasterly, perpendicular to the axis of the subsidiary fold. Locally, small lateral offset occurs along some of the northeasterly fractures.

Within MIN2 mineral claim there are no clearly definable medium- to large-scale folds; however, minor folds and the local variations in bedding and foliation attitudes indicate that such folds are present. These folds, if present, probably are tight to isoclinal due to the low competency of Dutch Creek Formation argillite. Faults have not been defined within MIN2 mineral claim. A reddish-weathering breccia comprising subangular clasts of dolomite, vein quartz and argillite in a dolomite matrix, exists near but south of MIN2 mineral claim; this breccia and the coincident topographic gully indicate a northwesterly fault may be present in the central portion of MIN2 mineral claim.

The third phase of deformation within the mineral claims occurred about a west-northwesterly axis and produced local crenulations and a west-northwesterly foliation in Dutch Creek Formation rocks, and local variations and reversals in the general northwesterly plunge of minor fold axes within Mount Nelson Formation rocks.

MINERAL OCCURRENCES

At least 13 sulphide mineral occurrences, comprising one or more of galena, tetrahedrite, sphalerite and chalcopyrite, exist within Dutch Creek

Formation dolomite and argillite and Mount Nelson Formation quartzite and dolomite within and near MIN1, MIN2, RED LEDGE 1 and RED LEDGE 2 mineral claims (Dwg. 0EBI-9). Small amounts of galena and/or tetrahedrite also are locally common in quartz veins in Mount Nelson Formation dolomite.

Within MIN2 mineral claim, sulphide mineral occurrences generally comprise small amounts of galena, sphalerite, chalcopyrite and/or tetrahedrite which exist in quartz, calcite and/or barite veins and locally along fractures. At occurrence 9SHM008, sulphide-bearing quartz veins are subvertical and strike east-southeasterly or, less commonly, are subhorizontal. At occurrence 0SHM003, coarse grained galena, sphalerite and minor tetrahedrite exist in calcite veins or in fractures.

Within MIN1, RED LEDGE 1 and RED LEDGE 2 mineral claims the majority of the sulphide mineral occurrences comprise galena, tetrahedrite and/or sphalerite in fractures or quartz veins within Mount Nelson Formation dolomite; the mineralized fractures and veins generally are subvertical and strike northerly to northeasterly. Three sulphide occurrences are not in Mount Nelson Formation dolomite: at occurrence 0SHM004 fine grained galena exists on fractures in a float boulder of Mount Nelson Formation quartzite; at occurrence 0NAM001 sphalerite and galena exist in quartz veins in Dutch Creek Formation argillite, and near the northern boundary of RED LEDGE 2 mineral claim a 5 cm diameter cobble of massive galena was discovered in float along the RED LEDGE road. The source of the galena cobble is unknown.

The most important sulphide occurrence, 0SHM007, exists in Mount Nelson Formation dolomite within RED LEDGE 2 mineral claim. Overburden stripping, trenching, rock chip sampling and geological mapping at a scale of 1 cm equals 0.5 m were performed at this occurrence (Dwg. 0EBI-10). Massive galena, locally altered to anglesite and/or cerussite, and tetrahedrite exist within an irregular, steep northerly plunging, pipe-like body with an average diameter of about 0.5 m. Minor amounts of galena exist locally in fractures and, to a lesser extent, in quartz veins that strike northeasterly and dip steeply northwesterly; galena also exists as fine- to medium-grained disseminations in the host dolomite. Pyrite is disseminated in the galena-tetrahedrite zone and in the host dolomite; limonitic iron-oxide minerals are common along fracture surfaces.

Two rock chip samples, 82K80SHM026 and 82K80SHM027, which were collected across the sulphide zone at occurrence 0SHM007, assayed, respectively, 20.60 ounces silver per ton, 27.20 per cent lead, 1.89 per cent zinc and 0.22 per cent copper over 1.0 m, and 14.90 ounces silver per ton, 18.12 per cent lead, 2.92 per cent zinc and 0.24 per cent copper over 1.0 m. A grab sample of massive galena, 82K80SHM007A, assayed 50.40 ounces silver per ton, 77.53 per cent lead, 0.58 per cent zinc and 0.03 per cent copper. Tetrahedrite occurs as disseminations in massive galena and exists locally in small pods; tetrahedrite comprises less than 2 volume per cent of the total suphides present at occurrence 0SHM007. A tetrahedrite-rich grab sample,

GEOPHYSICAL SURVEYS

Very low frequency electromagnetic (VLF-EM) and induced polarization/resistivity (IP) surveys were conducted within MIN1, MIN2, SMIN1, RED LEDGE 1 and RED LEDGE 2 mineral claims. The VLF-EM survey was performed in part by Trigg, Woollett Consulting Ltd. and in part by Phoenix Geophysics Limited; the IP survey was performed by Phoenix Geophysics Limited. The VLF-EM and IP data were interpreted by Phoenix Geophysics Limited, Vancouver, British Columbia (Cartwright and DiSpirito, 1980; Appendix V).

At least eleven VLF-EM and/or IP geophysically anomalous zones exist within the mineral claims (Dwg. 0EBI-15). A few of the geophysical anomalies are spatially coincident with fault zones or with pyritiferous Dutch Creek Formation argillite. However, several of the geophysical anomalies are spatially coincident with geochemically anomalous zones and/or with dolomite units; this includes geophysical anomalies R_1, R_2, F, G and the southern part of anomaly H within MIN1, RED LEDGE 1 and RED LEDGE 2 mineral claims, and anomalies A_1, A_2 and B within MIN2 mineral claim.

CONCLUSIONS

Dutch Creek Formation, Mount Nelson Formation and Horsethief Creek Group carbonate and clastic rocks exist within the mineral claims. These rocks are folded and faulted; at least three phases of deformation exist. Within MIN1, RED LEDGE 1 and RED LEDGE 2 mineral claims the important structures are a large north-northwesterly plunging subsidiary fold which exists in Mount Nelson Formation on the eastern limb of a major anticline, and a major north-northwesterly, subvertical fault which has the west side downthrown about 1,200 m. Establishing the attitudes of the east limb of the anticline and of the fault are important because the intersection of a southwesterly dipping anticlinal limb with a near-vertical or northeasterly dipping fault would allow the geologically favourable Mount Nelson Formation to extend southeasterly to depth within RED LEDGE 1 mineral claim and possibly within SMIN1 mineral claim.

At least thirteen sulphide mineral occurrences, comprising one or more of galena, tetrahedrite, sphalerite and chalcopyrite, exist within and near the mineral claims. Within and near MIN2 mineral claim, four sulphide mineral occurrences are in Dutch Creek Formation dolomite and two are in Dutch Creek Formation argillite. Within and near MIN1, RED LEDGE 1 and RED LEDGE 2 mineral claims, sulphide mineral occurrences comprise a float boulder of Mount Nelson Formation quartzite containing small amounts of galena, an occurrence of sphalerite and galena in quartz veins in Dutch Creek Formation argillite, a float cobble of massive galena, and four occurrences of galena and tetrahedrite in Mount Nelson Formation dolomite. The most important sulphide mineral occurrence is 0SHM007. At this occurrence two chip samples collected across the sulphide zone give an average grade of 17.75 ounces silver per ton, 22.66 per cent lead, 2.41 per cent zinc and 0.23 per cent copper over 1.0 m. Further exploration will be required to evaluate this occurrence.

At least six iron-oxide gossans exist within RED LEDGE 1 and RED LEDGE 2 mineral claims. Samples collected from the gossans contain up to 2,100 ppm zinc. The source of the iron and zinc in the gossans is unknown. It is possible that a sulphide deposit exists at depth, and that meteoric waters have leached this deposit, migrated upward along fault and fracture zones, and precipitated the metals at surface.

Several geochemically anomalous zones exist within the mineral claims. Soil and stream sediments contain up to 3,200 ppm lead, 2,600 ppm zinc, 20 ppm silver and 19 ppm cadmium. The majority of the geochemically anomalous zones are spatially coincident with or are near either Dutch Creek Formation dolomite or Mount Nelson Formation quartzite and/or dolomite. A few geochemically anomalous zones are near or down slope from sulphide mineral occurrences or from iron-oxide gossans.

At least eleven VLF-EM and/or IP geophysically anomalous zones exist within the mineral claims. A few of the geophysical anomalies are spatially coincident with fault zones or with pyritiferous Dutch Creek Formation argillite. However, geophysical anomalies R_1, R_2, F, G, the southern part of H, A_1, A_2 and B are spatially coincident with geochemically anomalous zones and/or with dolomite or quartzite units; these geophysical anomalies require further exploration.

RECOMMENDATIONS

Further exploration, comprising line cutting, topographic surveying, geological mapping, geochemical soil sampling, geophysical surveys, overburden stripping, trenching, roadbuilding and diamond drilling, is required to evaluate selected sulphide mineral occurences and geochemical and geophysical anomalies that exist within MIN1, MIN2, RED LEDGE 1 and RED LEDGE 2 mineral claims (Dwg. 0EBI-16). A crew, comprising a supervising geologist, a drill geologist, a senior geological assistant, two junior geological assistants and a cook, will be required for a period of about two and one-half field-months. In addition, a geophysical contractor will be required to perform the necessary VLF-EM and IP surveys, and a diamond drill contractor will be required to perform about 1,000 metres of drilling; further drilling may be required depending upon exploration results.

The preliminary estimated cost of the recommended exploration is $275,000; a further, more detailed, cost estimate is required.

THE ASSOCIATION OF
PROFESSIONAL ENGINEERS,
GEOLOGISTS and GEOPHYSICISTS
OF ALBERTA
PERMIT NUMBER
P 2374
TRIGG, WOOLLETT
CONSULTING LTD.

Trigg, Woollett Consulting Ltd.

J.G. Jansen, B.Sc.

R.A. Olson, Ph.D., P.Eng.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. A. OLSON

December, 1980
Edmonton, Alberta

REFERENCES

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Jansen, J.G. and Olson, R.A.	(1979)	Exploration - 1979, Invermere Project, Fort Steele and Golden Mining Divisions, British Columbia; unpublished report prepared for Echo Bay Mines Ltd. by Trigg, Woollett Consulting Ltd.
Reesor, J.E.	(1957)	Geology, Lardeau, British Columbia, Sheet 82K (east half); Geol. Surv., Canada, Map 12-1957.
_____	(1973)	Geology of the Lardeau map-area, East-Half, British Columbia; Geol. Surv., Canada, Memoir 369.
Walker, J.F.	(1926)	Geology and mineral deposits of Windermere map-area, British Columbia; Geol. Surv., Canada, Memoir 148.

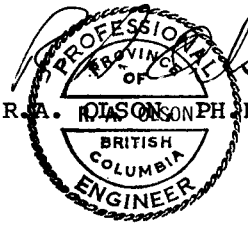
CERTIFICATION

I, R. A. OLSON OF 8727 - 181 STREET, EDMONTON, ALBERTA CERTIFY AND DECLARE THAT I AM A GRADUATE OF THE UNIVERSITY OF BRITISH COLUMBIA WITH A B.SC. DEGREE IN GEOLOGY (1968), A GRADUATE OF THE UNIVERSITY OF WESTERN ONTARIO WITH A M.SC. DEGREE IN GEOLOGY (1971) AND A GRADUATE OF THE UNIVERSITY OF BRITISH COLUMBIA WITH A PH.D. DEGREE IN GEOLOGY (1977). I AM REGISTERED AS A PROFESSIONAL ENGINEER WITH THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF BRITISH COLUMBIA AND AS A PROFESSIONAL GEOLOGIST WITH THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS AND GEOPHYSICISTS OF ALBERTA.

MY EXPERIENCE INCLUDES SERVICE AS AN EXPLORATION GEOLOGIST WITH TEXASGULF INC., VANCOUVER, BRITISH COLUMBIA. SINCE 1969 I HAVE CONDUCTED AND DIRECTED PROPERTY EXAMINATIONS, PROPERTY EVALUATIONS AND EXPLORATION PROGRAMS ON BEHALF OF COMPANIES AS A GEOLOGIST IN THE EMPLOY OF TRIGG, WOOLLETT & ASSOCIATES LTD. AND TRIGG, WOOLLETT CONSULTING LTD., EDMONTON, ALBERTA.

TRIGG, WOOLLETT CONSULTING LTD. HAS A RETAINED INTEREST IN THE INVERMERE PROJECT OF ECHO BAY MINES LTD. I AM A PARTNER IN TRIGG, WOOLLETT CONSULTING LTD.

J. G. JANSEN'S REPORT ON MIN1, MIN2, SMIN1, RED LEDGE 1 AND RED LEDGE 2 MINERAL CLAIMS IS BASED UPON FIELD WORK AND UPON STUDY OF PUBLISHED AND UNPUBLISHED DATA.



R. A. OLSON PH.D., P. ENG.

DECEMBER, 1980
EDMONTON, ALBERTA

CERTIFICATION

I, R. A. OLSON OF 8727 - 181 STREET, EDMONTON, ALBERTA CERTIFY AND DECLARE THAT I AM A GRADUATE OF THE UNIVERSITY OF BRITISH COLUMBIA WITH A B.SC. DEGREE IN GEOLOGY (1968), A GRADUATE OF THE UNIVERSITY OF WESTERN ONTARIO WITH A M.SC. DEGREE IN GEOLOGY (1971) AND A GRADUATE OF THE UNIVERSITY OF BRITISH COLUMBIA WITH A PH.D. DEGREE IN GEOLOGY (1977). I AM REGISTERED AS A PROFESSIONAL ENGINEER WITH THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF BRITISH COLUMBIA AND AS A PROFESSIONAL GEOLOGIST WITH THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS AND GEOPHYSICISTS OF ALBERTA.

MY EXPERIENCE INCLUDES SERVICE AS AN EXPLORATION GEOLOGIST WITH TEXASGULF INC., VANCOUVER, BRITISH COLUMBIA. SINCE 1969 I HAVE CONDUCTED AND DIRECTED PROPERTY EXAMINATIONS, PROPERTY EVALUATIONS AND EXPLORATION PROGRAMS ON BEHALF OF COMPANIES AS A GEOLOGIST IN THE EMPLOY OF TRIGG, WOOLLETT & ASSOCIATES LTD. AND TRIGG, WOOLLETT CONSULTING LTD., EDMONTON, ALBERTA.

TRIGG, WOOLLETT CONSULTING LTD. HAS A RETAINED INTEREST IN THE INVERMERE PROJECT OF ECHO BAY MINES LTD. I AM A PARTNER IN TRIGG, WOOLLETT CONSULTING LTD.

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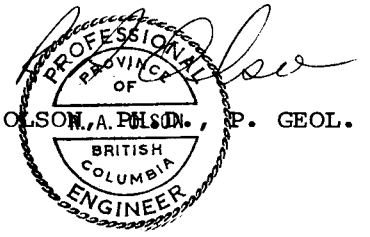


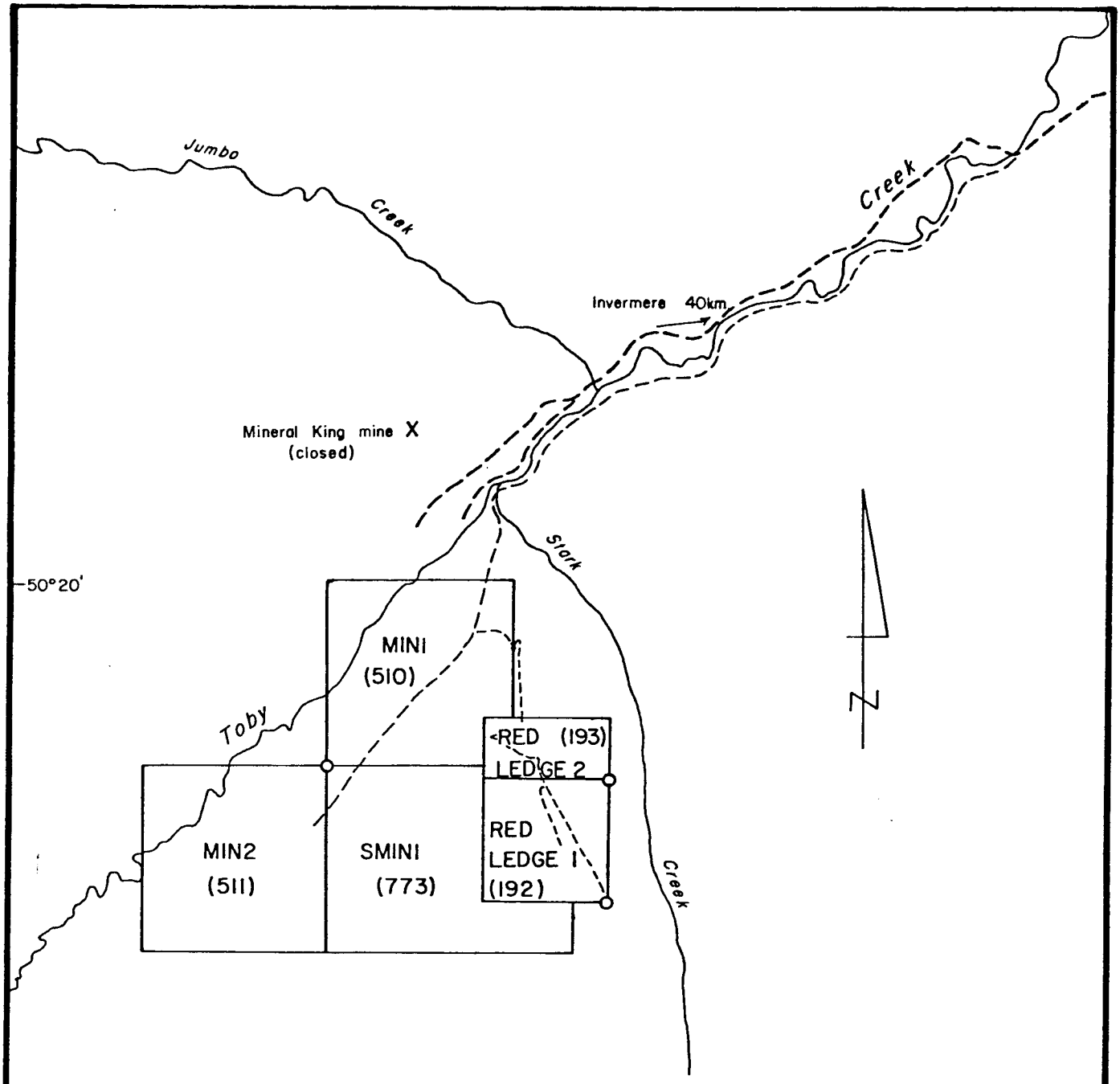
R.A. OLSON, PH.D., P. GEOL.

DECEMBER, 1980

EDMONTON, ALBERTA

APPENDIX I

LOCATION
MIN1, MIN2, SMIN1,
RED LEDGE 1, RED LEDGE 2



RED (193)
LEDGE 2

Mineral claim : name, (record number), legal corner post shown

Road : all-weather, four-wheel-drive

116°25'

ECHO BAY MINES LTD.

MINI, MIN2, SMINI,
RED LEDGE 1, RED LEDGE 2

LOCATION

NTS 82K/8W

GOLDEN MINING DIVISION, B.C.

SCALE 0 500 1000 METRES

TRIGG, WOOLLETT CONSULTING LTD.
EDMONTON, ALBERTA DECEMBER, 1980

APPENDIX II

PERSONNEL

PERSONNEL

MIN1, MIN2 AND SMIN1 MINERAL CLAIMS

Name and Address	Position	Dates in Field (1980)	Days
TRIGG, WOOLLETT CONSULTING LTD.			
Angelopoulos, N. 81 Rogers Avenue LONDON, Ontario	Geological Assistant	September 16-19,24,25,27,29,30; October 10,14,16-18	14
Foley, P. 32 Wordsworth Way WINNIPEG, Manitoba	Geologist	July 23; August 2,6,22-25	7
Hawker, S. General Delivery, URANIUM CITY, Saskatchewan	Prospector	May 15-17,20-24,26-31; June 2,5,6, 8-12,14,16-18,24,25,27; July 1,3,4,24; August 2,4; September 30	36
Hayward, D. P.O. Box 303 CANAL FLATS, British Columbia	Geological Assistant	August 9,11-14; October 15,21-23; November 3,4	11
Hislop, M. P.O. Box 745 CRANBROOK, British Columbia	Labourer	July 24-26,28-31; August 1,2, 4,5	11
Jansen, J. 10504 - 103 Street EDMONTON, Alberta	Geologist	May 15,16,22-25,27; June 12-14,18-21,24; July 3,24; August 9,21; September 11,16-19, 24,25,27,30; October 14,30	30
Johnston, K. General Delivery KIMBERLY, British Columbia	Labourer	August 9-16	8
Kilgour, R. 330 Robertson Street VICTORIA, British Columbia	Geological Assistant	October 13-16,18,19,22	7

Name and Address	Position	Dates in Field (1980)	Days
TRIGG, WOOLLETT CONSULTING LTD.			
Lynch, R. 347 Marsden Street KIMBERLY, British Columbia	Labourer	August 9,11-13; September 30; October 1,2,11,13-17	13
Neufeld, J. 827 Okenwald Avenue WINNIPEG, Manitoba	Geological Assistant	May 16,17,20-24,26-31; June 2, 4-6,8,9,11,12	21
Olson, R.A. 8727 - 181 Street EDMONTON, Alberta	Consultant	May 27,30; August 12	3
Redwood, I. 9618 - 113 Avenue GRANDE PRAIRIE, Alberta	Geological Assistant	May 28-31; June 2,4-6,8-10,27; July 3,4,7,18,28-31; August 1,2, 4,5,7-15	33
Root, A. P.O. Box 653 INVERMERE, British Columbia	Labourer	June 5	1
Root, K. P.O. Box 653 INVERMERE, British Columbia	Geologist	May 15-17,20-24,26-31; June 2,4,5, 9,12-14,16,17,20,24,28; July 1-5,16; August 2	33
Russell, C. 250 Westridge Road EDMONTON, Alberta	Geological Assistant	July 3,4,16,24-26,30; August 2,4, 5,7-16	20
Sperling, T. 5619 King's Road VANCOUVER, British Columbia	Geological Assistant	May 15-17,20-24,26-31; June 2,4, 5,9-12,27; July 1-4,7,17,18,23; August 2,8,9,11	34
Thomas, M. R.R. #2 REGINA, Saskatchewan	Geologist	July 31; August 2,4-7,21-25	11

Name and Address	Position	Dates in Field (1980)	Days
TRIGG, WOOLLETT CONSULTING LTD.			
Van Amerongen, A. P.O. Box 44 INVERMERE, British Columbia	Labourer	October 1,2,11,13-18; November 3,4	11
Yoder, C. P.O. Box 390 CANAL FLATS, British Columbia	Geological Assistant	September 27,29,30; October 1,13, 15,16,18,19,22,27	11
PHOENIX GEOPHYSICS LIMITED			
Cartwright, P. 4238 N. 11th Avenue VANCOUVER, British Columbia	Geophysicist	August 6-17	12
DiSpirito, F. 2748 Oxford Street VANCOUVER, British Columbia	Geophysicist	October 14,15,20-27	10
Oullette, G. 502 Tashereau Est. ROUYN, Quebec	Technician	October 14,15,20-27	10
Johnston, K. General Delivery KIMBERLY, British Columbia	Labourer	October 14,15,20-27	10

PERSONNEL

RED LEDGE 1 MINERAL CLAIM

Name and Address	Position	Dates in Field (1980)	Days
TRIGG, WOOLLETT CONSULTING LTD.			
Angelopoulos, N. 81 Rogers Avenue LONDON, Ontario	Geological Assistant	October 6-9	4
Foley, P. 32 Wordsworth Way WINNIPEG, Manitoba	Geologist	August 12-14	3
Hawker, S. General Delivery, URANIUM CITY, Saskatchewan	Prospector	August 11-13	3
Jansen, J. 10504 - 103 Street EDMONTON, Alberta	Geologist	June 27; July 21; August 1,27; October 6,9,11	7
Kilgour, R. 330 Robertson Street VICTORIA, British Columbia	Geological Assistant	October 7,8,11	3
Lynch, R. 347 Marsden Street KIMBERLY, British Columbia	Labourer	October 4,7,8	3
Olson, R.A. 8727 - 181 Street EDMONTON, Alberta	Consultant	June 27; July 21, 24; August 27	4
Pretty, L. 128 - 13 Avenue S. CRANBROOK, British Columbia	Labourer	October 6	1

Name and Address	Position	Dates in Field (1980)	Days
TRIGG, WOOLLETT CONSULTING LTD.			
Root, K. P.O. Box 653 INVERMERE, British Columbia	Geologist	July 24; August 12-14	4
Russell, C. 250 Westridge Road EDMONTON, Alberta	Geological Assistant	August 19	1
Sperling, T. 5619 King's Road VANCOUVER, British Columbia	Geological Assistant	August 16-19	4
Thomas, M. R.R. #2 REGINA, Saskatchewan	Geologist	August 1,11,14-20,27	10
Trigg, C.M. 10426 - 27A Avenue EDMONTON, Alberta	Consultant	July 21	1
Van Amerongen, A. P.O. Box 44 INVERMERE, British Columbia	Labourer	October 4,6-8	4
Yoder, C. P.O. Box 390 CANAL FLATS, British Columbia	Geological Assistant	October 6-8,11	4

PERSONNEL

RED LEDGE 2 MINERAL CLAIM

Name and Address	Position	Dates in Field (1980)	Days
TRIGG, WOOLLETT CONSULTING LTD.			
Angelopoulos, N. 81 Rogers Avenue LONDON, Ontario	Geological Assistant	October 1-4,15	5
Hawker, S. General Delivery URANIUM CITY, Saskatchewan	Prospector	August 14,15; October 1-4, 6	7
Hayward, D. P.O. Box 303 CANAL FLATS, British Columbia	Geological Assistant	October 18,27-29	4
Jansen, J. 10504 - 103 Street EDMONTON, Alberta	Geologist	October 3,4,7,15,22,24	6
Kilgour, R. 330 Robertson Street VICTORIA, British Columbia	Geological Assistant	October 9,23,24,28	4
Lynch, R. 347 Marsden Street KIMBERLY, British Columbia	Labourer	October 3,9	2
Olson, R.A. 8727 - 181 Street EDMONTON, Alberta	Consultant	October 22	1
Pretty, L. 128 - 13 Avenue S. CRANBROOK, British Columbia	Labourer	October 7	1

Name and Address	Position	Dates in Field (1980)	Days
TRIGG, WOOLLETT CONSULTING LTD.			
Sperling, T. 5619 King's Road VANCOUVER, British Columbia	Geological Assistant	August 14,15	2
Thomas, M. R.R. #2 REGINA, Saskatchewan	Geologist	August 8,12,13	3
Van Amerongen, A. P.O. Box 44 INVERMERE, British Columbia	Labourer	October 3,9,28	3
Yoder, C. P.O. Box 390 CANAL FLATS, British Columbia	Geological Assistant	October 2-4,9,23,24,28	7
PHOENIX GEOPHYSICS LIMITED			
DiSpirito, F. 2748 Oxford Street VANCOUVER, British Columbia	Geophysicist	October 18,28,29	3
Oullette, G. 502 Tashereau Est. ROUYN, Quebec	Technician	October 18,28,29	3
Johnston, K. General Delivery KIMBERLY, British Columbia	Labourer	October 18,28,29	3

APPENDIX III

COST STATEMENTS

COST STATEMENT

MIN1, MIN2 AND SMIN1 MINERAL CLAIMS

(1) SALARY (Includes salary, fringe benefits and related charges):

N. Angelopoulos	14 days @	$ 71/day	$ 994
P. Foley	7 days @	92/day	644
S. Hawker	36 days @	104/day	3,744
D. Hayward	5 days @	70/day	350
	6 days @	66/day	396
M. Hislop	11 days @	80/day	880
J. Jansen	30 days @	164/day	4,920
K. Johnston	3 days @	70/day	210
	5 days @	50/day	250
R. Kilgour	7 days @	60/day	420
R. Lynch	13 days @	70/day	910
J. Neufeld	21 days @	61/day	1,281
R. Olson	3 days @	350/day	1,050
I. Redwood	33 days @	57/day	1,881
A. Root	1 day @	70/day	70
K. Root	33 days @	79/day	2,607
C. Russell	20 days @	53/day	1,060
T. Sperling	34 days @	64/day	2,176
M. Thomas	11 days @	126/day	1,386
A. Van Amerongen	11 days @	70/day	770
C. Yoder	11 days @	60/day	660
			$26,659

(2) MEALS AND ACCOMMODATION (Includes accommodation, food and food preparation):

315 man-days @ $30/man-day 9,450

(3) TRANSPORTATION:

(a) Helicopter: 18.8 hrs. @ $410/hr 7,708

(b) Truck (Includes rental, kilometreage, fuel, oil, repairs):
315 man-days @ $18/man-day 5,670

13,378

(4) EQUIPMENT (Includes rental of technical and camp equipment and cost of maps, air photos, etc.):

315 man-days @ $5/man-day		1,575

(5) GEOPHYSICAL (Phoenix Geophysics Limited charges only):

August 6-17, 1980	12 days @ $361.25/day	$4,335	
October 15, 23, 24 and 27, 1980	4 days @ $715/day	2,860	
October 14, 20-22, 25 and 26, 1980	6 days @ $290/day	1,740	
Meals and accommodation	30 man-days @ $30/man-day	900	
Travel expenses, telephone		645	
			10,480

(6) GEOCHEMICAL (Includes analysis for lead, zinc, silver and cadmium, sample preparation*, shipping charges, sample bags, sample description cards and field drafting of sample location maps and geochemical results):

659 samples @ $6.60/sample		4,349

(7) ROADBUILDING:

D-6 Cat	31 hrs. @ $45/hr.	1,395	
Mobilization	4 hrs. @ $40/hr.	160	
D-6 Cat	40 hrs. @ $51.50/hr.	2,060	
Mobilization	5 hrs. @ $40/hr.	200	
			3,815

(8) REPORTING (Includes secretarial, drafting, reproduction, editing): 8,215

TOTAL COST $77,921

* Samples were oven-dried and sieved in camp in order to promote consistency in sample preparation, to avoid possible contamination or switching of samples in the lab and to hasten turn-around time between collection of samples and receipt of results.

COST STATEMENT

RED LEDGE 1 MINERAL CLAIM

(1) SALARY (Includes salary, fringe benefits and related charges):

N. Angelopoulos	4 days @ $ 71/day	$ 284	
P. Foley	3 days @ 92/day	276	
S. Hawker	3 days @ 104/day	312	
J. Jansen	7 days @ 164/day	1,148	
R. Kilgour	3 days @ 60/day	180	
R. Lynch	3 days @ 70/day	210	
R. Olson	4 days @ 350/day	1,400	
L. Pretty	1 day @ 50/day	50	
K. Root	4 days @ 79/day	316	
C. Russell	1 day @ 53/day	53	
T. Sperling	4 days @ 64/day	256	
M. Thomas	10 days @ 126/day	1,260	
C. M. Trigg	1 day @ 500/day	500	
A. Van Amerongen	4 days @ 70/day	280	
C. Yoder	4 days @ 60/day	240	
			$ 6,765

(2) MEALS AND ACCOMMODATION (Includes accommodation, food and food preparation):

56 man-days @ $30/man-day 1,680

(3) TRANSPORTATION:

(a) Helicopter: 8.9 hrs. @ $410/hr. 3,649

(b) Truck(Includes rental, kilometreage, fuel, oil, repairs):
56 man-days @ $18/man-day 1,008

4,657

(4) EQUIPMENT (Includes rental of technical and camp equipment and cost of maps, air photos, etc):

56 man-days @ $5/man-day 280

(5)	GEOCHEMICAL (Includes analysis for lead, zinc, silver and cadmium, sample preparation*, shipping charges, sample bags, field drafting of sample location maps and geochemical results):		
	160 samples @ $6.60/sample	1,056	
(6)	REPORTING (Includes secretarial, drafting, reproduction, editing):	1,200	
	TOTAL COST		$15,638

* Samples were oven-dried and sieved in camp in order to promote consistency in sample preparation, to avoid possible contamination or switching of samples in the lab and to hasten turn-around time between collection of samples and receipt of results.

COST STATEMENT

RED LEDGE 2 MINERAL CLAIM

(1) SALARY (Includes salary, fringe benefits and related charges):

N. Angelopoulos	5 days @	$ 71/day	$ 355
S. Hawker	7 days @	104/day	728
D. Hayward	4 days @	66/day	264
J. Jansen	6 days @	164/day	984
R. Kilgour	4 days @	60/day	240
R. Lynch	2 days @	70/day	140
R. Olson	1 day @	350/day	350
L. Pretty	1 day @	50/day	50
T. Sperling	2 days @	64/day	128
M. Thomas	3 days @	126 day	378
A. Van Amerongen	3 days @	70/day	210
C. Yoder	7 days @	60/day	420

$ 4,247

(2) MEALS AND ACCOMMODATION (Includes accommodation, food and food preparation):

45 man-days @$30/man-day 1,350

(3) TRANSPORTATION:

(a) Helicopter: 14.0 hrs. @ $410/hr. 5,740

(b) Truck (Includes rental, kilometreage, fuel, oil, repairs):
45 man-days @ $18/man/day 810

6,550

(4) EQUIPMENT (Includes rental of technical and camp equipment and cost of maps, air photos, etc.):

45 man-days @ $5/man-day	225
Explosives	171
Rental of Pionjar rock drill	290

686

(5) GEOPHYSICS (Phoenix Geophysics Limited charges only):

October 18, 28 and 29, 1980		
3 days @ $715/day	2,145	
Meals and accommodation		
9 man-days @ $30/man-day	270	
		2,415

(6) GEOCHEMICAL (Includes analysis for lead, zinc, silver and cadmium, sample preparation*, shipping charges, sample bags, sample description cards and field drafting of sample location maps and results):

49 samples @ $6.60/sample	323

(7) REPORTING (Includes secretarial, drafting, reproduction and editing): 1,500

TOTAL COST $17,071

* Samples were oven-dried and sieved in camp in order to promote consistency in sample preparation, to avoid possible contamination or switching of samples in the lab and to hasten turn-around time between collection of samples and receipt of results.

APPENDIX IV

ASSAY CERTIFICATE, GEOCHEMICAL LAB REPORTS

To: Trigg, Woollett Consulting Ltd.

PAGE No. 1

10504 - 103 rd Street
Edmonton, Alberta
T5H 2V4

BONDAR-CLEGG & COMPANY LTD.

CERTIFICATE OF ASSAY

REPORT NO. A20 - 1797

DATE: November 24, 1980

Samples submitted: November 10, 1980
Results completed: November 24, 1980

PROJECT: E. B. I.

I hereby certify that the following are the results of assays made by us upon the herein described ore samples.

MARKED	GOLD		SILVER		Cu	Pb	Zn	Ba				
	Ounces per Ton	Grams per Metric Ton	Ounces per Ton	Grams per Metric Ton	Percent	Percent	Percent	Percent	Percent	Percent	Percent	
82K - 80 SHM 007A			50.40		0.03	77.53	0.58	<0.01				
007B			1346.50		19.90	11.10	2.09	0.05				
026			20.60		0.22	27.20	1.89	0.02				
027			14.90		0.24	18.12	2.92	0.02				

NOTE:
Rejects retained three weeks
Pulps retained three months
unless otherwise arranged.

Registered Assayer, Province of British Columbia

BONDAR-CLEGG & COMPANY LTD.
130 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX: 04-352667

Geochemical Lab Report

Extraction _____ Report No. 20 - 842 PROJECT: EBI

Method _____ From Trigg - Woollett Consulting Ltd.

Fraction Used _____ Date June 18, 19 80

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm
82K 80 IRC					82K 80 IRS				
001	550	830	2.8	11.	027	18	16	0.2	0.2
002	75	400	0.7	4.0	028	22	21	0.2	0.2
003	34	56	0.3	0.2	029	16	26	0.2	0.2
004	7	37	0.2	0.2	030	105	690	0.5	0.5
82K 80 IRS					82K 80 JJC				
001	260	1750	1.7	16.	001	17	24	0.2	0.2
002	340	720	0.9	5.2	002	38	60	0.2	0.2
003	84	106	0.3	0.6	003	36	80	0.7	0.5
004	85	132	0.3	0.4	004	22	23	0.3	0.2
005	800	112	20.	0.2	005	30	39	0.7	0.2
006	172	470	1.2	1.0	006	110	550	0.9	5.6
007	54	112	0.3	0.2	007	108	380	0.9	2.2
008	72	96	0.6	0.8	008	35	60	0.2	0.2
009	113	91	0.8	0.2	009	18	260	0.2	0.6
010	230	55	0.8	0.2	82K 80 JJS 001	43	41	0.4	0.2
011	20	26	0.2	0.2	002	30	48	0.3	0.2
012	36	29	0.3	0.2	003	136	80	1.2	1.2
013	66	34	0.2	0.2	004	10	15	0.2	0.2
014	27	36	0.4	0.2	005	20	18	0.3	0.2
015	8	16	0.2	0.2	006	21	24	0.2	0.2
016	14	27	0.2	0.2	007	38	66	0.2	0.2
017	17	28	0.2	0.2	008	48	47	0.3	0.2
018	35	55	0.2	0.2	009	24	28	0.2	0.2
019	136	55	0.8	0.2	010	25	58	0.3	0.2
020	53	78	0.4	0.2	011	14	20	2.8	0.2
021	18	20	0.2	0.2	012	16	23	2.9	0.2
022	14	17	0.2	0.2	013	42	44	1.1	0.2
023	11	18	0.2	0.2	014	24	24	0.2	0.2
024	26	28	0.3	0.2	015	26	28	0.3	0.2
025	19	14	0.3	0.2	016	15	11	0.6	0.2
026	14	17	0.2	0.2	017	31	35	0.5	0.2

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 842

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm
82K 80 JJS					82K 80 JNS				
018	26	44	0.3	0.2	008	23	26	0.3	0.2
019	14	22	0.2	0.2	009	15	16	0.4	0.2
020	20	24	0.5	0.2	010	35	40	0.3	0.2
021	19	22	0.2	0.2	011	34	37	0.2	0.2
022	32	78	1.1	2.0	012	27	34	0.2	0.2
023	4	4	0.2	0.2	013	35	43	0.2	0.2
024	19	32	0.2	0.2	014	34	53	0.3	0.2
025	12	28	0.2	0.2	015	21	29	0.5	0.2
026	18	36	0.2	0.2	016	28	33	0.3	0.2
027	17	20	0.4	0.2	017	26	26	0.4	0.2
028	420	1630	2.1	11.	018	9	16	0.3	0.2
029	130	700	0.7	8.0	019	38	63	1.3	0.4
030	28	840	0.2	0.3	020	24	44	0.2	0.2
82K 80 JNC									
001	24	46	0.3	0.2	021	19	39	0.4	0.2
002	34	56	0.2	0.2	022	26	32	0.9	0.2
003	18	32	0.4	0.3	023	24	22	0.2	0.2
004	69	81	0.3	1.7	024	28	27	0.2	0.2
005	260	200	0.8	1.8	025	38	27	0.2	0.2
006	36	240	0.2	1.0	026	60	36	0.3	0.2
007	24	23	0.2	0.2	027	35	50	0.4	0.4
008	18	24	0.2	0.2	028	37	47	0.8	0.7
009	14	28	0.2	0.2	029	12	290	0.2	9.0
010	42	50	0.3	0.4	030	39	31	0.2	0.2
011	20	37	0.2	0.2	031	37	32	0.2	0.2
012	18	34	0.3	0.2	032	24	35	0.2	0.2
013	16	31	0.3	0.4	033	29	42	0.2	0.2
014	25	146	0.3	1.9	034	17	24	0.3	0.2
015	18	27	0.2	0.2	035	20	36	0.2	0.2
82K 80 JNS									
001	15	15	0.7	0.2	036	174	23	0.2	0.2
002	25	26	0.5	0.2	037	22	39	0.2	0.2
003	23	14	0.2	0.2	038	26	22	0.2	0.2
004	22	20	0.3	0.2	039	33	32	0.4	0.2
005	18	22	0.3	0.2	040	14	22	0.4	0.2
006	21	22	0.2	0.2	041	15	29	0.3	0.2
007	25	11	0.3	0.2	042	48	44	0.5	0.2

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 842 Page No. 3

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm
82K 80 JNS					82K 80 TSC				
043	28	86	0.2	0.2	001	9	18	0.5	0.5
044	22	58	0.2	0.4	002	17	26	0.2	0.2
045	30	400	0.2	3.5	003	290	900	1.3	1.7
046	14	24	0.2	0.2	004	7	15	0.3	0.2
047	34	14	0.2	0.2	82K 80 TSS 001	14	46	0.2	0.2
048	103	24	0.4	0.2	002	43	23	0.4	0.2
049	16	20	0.2	0.2	003	53	18	0.6	0.2
050	15	20	0.2	0.2	004	21	18	0.2	0.2
051	22	18	0.2	0.2	005	35	25	0.2	0.2
052	24	23	0.2	0.2	006	29	21	0.2	0.2
053	25	21	0.2	0.2	007	61	14	0.3	0.2
054	42	24	0.3	0.2	008	11	26	0.2	0.2
055	52	35	0.2	0.2	009	30	44	0.4	0.2
056	31	29	0.2	0.2	010	34	31	0.2	0.2
057	20	20	0.2	0.2	011	9	10	0.2	0.2
058	21	24	0.2	0.2	012	29	8	0.4	0.2
059	47	47	0.2	0.2	013	34	29	0.2	0.2
060	24	164	0.2	0.5	014	35	30	0.3	0.2
061	34	52	0.2	0.4	015	68	58	0.2	0.2
062	29	46	0.4	0.4	016	24	30	0.2	0.2
063	16	25	0.2	0.2	017	22	18	0.2	0.2
064	330	340	0.8	0.9	018	19	20	0.2	0.2
065	22	29	0.2	0.2	019	149	34	1.7	0.2
066	19	17	0.2	0.2	020	19	17	0.2	0.2
067	26	13	0.2	0.2	021	23	23	0.2	0.2
068	87	107	0.6	0.5	022	23	18	0.5	0.2
069	27	22	0.2	0.2	023	72	26	0.3	0.2
070	32	26	0.4	0.2	024	27	30	0.5	0.2
071	19	21	0.2	0.2	025	32	26	0.2	0.2
072	7	19	0.2	0.2	026	17	44	0.3	0.2
073	27	22	0.2	0.2	027	29	28	0.2	0.2
074	24	34	0.2	0.2	028	35	24	0.2	0.2
075	30	32	0.2	0.6	029	24	33	0.2	0.2
076	26	30	0.3	0.2	030	10	68	0.2	0.2
077	36	48	0.5	0.2	031	27	23	0.2	0.2

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 842 Page No. 4

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm
82K 80 TSS 032	41	41	0.7	0.4	82K 80 TSS 067	18	23	0.6	0.2
033	25	21	0.2	0.2	068	23	27	0.7	0.2
034	26	23	0.2	0.2	069	16	30	1.3	0.2
035	16	20	0.2	0.2	070	32	38	0.3	0.2
036	17	22	0.2	0.2	071	32	30	0.3	0.2
037	20	34	0.2	0.2	072	56	52	0.2	0.2
038	35	27	0.3	0.2	073	40	39	0.2	0.2
039	15	24	0.2	0.2	074	49	460	0.2	1.2
040	19	14	0.5	0.2					
041	18	14	0.5	0.2					
042	20	32	0.2	0.2					
043	69	200	0.5	1.7					
044	34	103	0.2	0.6					
045	28	18	0.3	0.2					
046	108	62	1.3	0.2					
047	19	22	0.2	0.2					
048	33	40	0.5	0.2					
049	36	40	0.4	0.2					
050	37	28	0.2	0.2					
051	26	34	0.2	0.2					
052	30	17	0.2	0.2					
053	20	18	0.2	0.2					
054	23	34	0.2	0.2					
055	25	11	0.5	0.2					
056	15	25	0.2	0.2					
057	29	26	0.3	0.2	cc Mr. J. Jansen				
058	13	9	0.2	0.2					
059	12	28	0.2	0.2					
060	22	18	0.5	0.2					
061	24	18	0.3	0.2					
062	25	50	0.3	0.2					
063	9	7	0.2	0.2					
064	29	28	0.3	0.2					
065	50	79	0.3	0.2					
066	17	19	0.6	0.2					

BONDAR-CLEGG & COMPANY LTD.
130 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX: 04-352667

Geochemical Lab Report

Extraction _____ Report No. 20 - 885 PROJECT: EBI REDWOOD

Method _____ From Trigg, Woollett Consulting Ltd.

Fraction Used _____ Date June 23, 19 80

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm
TSS - 075	22	59	0.3	0.2	TSS - 105	42	133	0.5	0.2
076	32	28	0.4	0.2	106	32	168	0.2	0.2
077	8	9	0.2	0.2	107	26	80	0.2	0.2
078	21	28	0.4	0.2	108	34	82	1.2	0.2
079	14	18	0.6	0.2	109	24	40	1.3	0.2
080	14	20	0.3	0.2	110	75	23	0.9	0.2
081	18	40	1.0	0.2	111	20	32	0.6	0.2
082	18	67	0.6	0.2	112	8	16	0.3	0.2
083	20	47	0.4	0.2	113	33	75	0.2	0.2
084	24	23	0.8	0.2	114	27	79	0.4	0.2
085	17	24	0.2	0.2	115	22	48	0.4	0.2
086	20	26	0.2	0.2	116	35	145	0.7	0.2
087	14	27	0.2	0.2	117	28	90	0.3	0.2
088	18	33	0.2	0.2	118	26	72	0.8	0.2
089	26	28	0.3	0.2	119	26	22	0.4	0.2
090	32	46	0.7	0.2	120	35	35	0.4	0.2
091	26	54	0.4	0.2	121	12	25	0.5	0.2
092	16	26	0.3	0.2	122	14	24	0.5	0.2
093	26	46	0.4	0.2	123	67	620	0.6	3.6
094	30	62	0.8	0.2	124	120	640	0.8	3.2
095	32	60	0.2	0.2	125	29	60	1.1	0.5
096	28	36	0.2	0.2	126	74	186	0.8	1.3
097	26	113	0.2	0.2	127	58	215	0.7	2.0
098	35	97	0.2	0.2	128	180	368	1.6	1.3
099	18	56	0.2	0.2	129	16	29	1.5	0.4
100	22	55	0.5	0.2	130	32	60	0.5	0.2
101	32	45	0.7	0.2	131	80	114	0.2	0.2
102	30	52	0.8	0.2	132	58	75	0.2	0.2
103	30	24	0.7	0.2	133	48	36	0.7	0.2
104	18	40	0.6	0.2	134	31	34	1.1	0.2

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 885 Page No. 2

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm
TSS - 135	32	29	0.8	0.2	TSS - 170	25	39	0.2	0.2
136	36	48	0.5	0.2	171	28	22	0.2	0.2
137	24	24	0.4	0.2	172	15	22	0.2	0.2
138	16	40	0.6	0.2	173	32	30	0.2	0.2
139	32	102	0.8	0.2	174	24	39	0.2	0.2
140	38	73	0.6	0.2	175	52	174	0.3	0.2
141	42	70	0.7	0.2	176	162	750	3.4	1.3
142	38	57	0.2	0.4	177	22	46	0.4	0.2
143	31	22	0.8	0.2	178	22	26	0.2	0.2
144	17	30	0.4	0.2	179	34	54	0.3	0.2
145	21	24	0.6	0.2	180	30	42	0.4	0.2
146	17	37	0.4	0.2	181	30	44	0.5	0.2
147	100	33	2.1	0.2	182	90	347	0.5	0.4
148	46	36	1.9	0.3	183	40	100	0.7	0.3
149	36	47	0.4	0.2	184	610	1730	2.6	10.
150	45	130	0.2	1.4	185	1700	1570	7.8	12.
151	27	46	0.8	0.2	186	13	290	0.6	8.4
152	20	16	0.7	0.2	187	68	92	0.2	0.2
153	19	64	0.2	0.2	188	23	46	0.4	0.2
154	62	72	1.0	0.3	189	43	31	0.7	0.2
155	32	69	0.2	0.2	190	31	45	0.2	0.2
156	12	66	0.2	0.4	191	215	295	5.4	1.4
157	20	68	0.2	0.3	192	53	72	0.2	0.2
158	55	64	0.2	0.2	193	23	20	0.2	0.2
159	164	355	0.7	1.0	194	26	18	0.2	0.2
160	210	335	0.8	0.6	195	26	24	0.2	0.2
161	162	285	0.4	0.5	196	38	59	0.2	0.2
162	58	229	0.6	0.4	197	22	18	0.2	0.2
163	12	18	0.2	0.2					
164	12	18	0.2	0.2					
165	20	21	0.2	0.2					
166	16	22	0.2	0.2	cc Mr. J. Jansen				
167	16	18	0.2	0.2					
168	60	40	0.2	0.2					
169	28	32	0.2	0.2					

BONDAR-CLEGG & COMPANY LTD.
130 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX: 04-352667

Geochemical Lab Report

Extraction _____ Report No. 20 - 1122 PROJECT: EBI

Method _____ From Trigg, Woollett Consulting Ltd.

Fraction Used _____ Date July 11 19 80

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm
82 K80				
82 K80 KRC 002	42	46	1.6	0.4
003	26	50	0.2	0.4
004	26	56	0.3	0.2
JJC 010	26	32	0.2	0.3
011	31	32	0.2	0.2
012	43	69	0.2	0.2
013	28	50	0.2	0.3
014	38	83	1.1	0.5
015	30	33	0.2	0.2
016	44	50	0.2	0.4
017	61	60	0.2	0.2
018	30	54	0.2	0.2
019	134	430	0.2	3.9
JJS 031	280	270	0.8	0.8
032	630	625	10.	2.0
033	26	12	0.3	0.2
034	7	1950	0.2	0.2
035	51	1200	0.2	0.2
036	17	25	0.2	0.2
KRC 001	22	42	0.2	0.5

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

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SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm	% Ba*	REMARKS
82 K80 JJC								
021	83	41	1.0	0.4	80	190	-	
022	95	84	0.5	0.4	25	380	-	

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

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SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm		REMARKS
82-K-80-IRS 048	50	75	0.2	0.3	-	-		
049	20	49	0.2	0.4	-	-		
050	300	150	0.2	0.4	-	-		
051	300	157	0.2	0.4	-	-		
052	33	63	0.2	0.2	-	-		
053	22	39	0.2	0.2	-	-		
054	54	187	0.2	0.8	-	-		
055	47	81	0.2	0.4	-	-		
056	18	37	0.2	0.2	-	-		
057	16	20	0.2	0.3	-	-		
058	10	15	0.2	0.5	-	-		
059	23	18	0.2	0.3	-	-		
060	12	23	0.2	0.3	-	-		
061	44	61	0.2	0.2	-	-		
062	66	43	0.2	0.2	-	-		
063	580	785	1.5	1.8	-	-		
064	22	61	0.2	0.2	-	-		
065	41	106	0.6	0.5	-	-		
066	42	92	0.2	0.2	-	-		
067	16	63	0.2	0.6	-	-		
068	48	80	0.2	0.5	-	-		
069	46	80	0.2	0.5	-	-		
070	43	112	0.2	0.6	-	-		
071	33	78	0.4	0.3	-	-		
072	345	274	1.7	1.3	-	-		
073	50	76	0.2	0.3	-	-		

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 1333 Page No. 4

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm		REMARKS
82-K-80-IRS 074	20	41	0.2	0.4	-	-		
075	39	44	0.2	0.4	-	-		
076	22	25	0.2	0.3	-	-		
077	29	17	0.2	0.2	-	-		
078	44	38	0.2	0.4	-	-		
079	54	42	0.2	0.4	-	-		

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

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SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm		REMARKS
82-K-80-TSS 230	33	78	0.2	0.5	-	-		
231	30	103	0.2	0.6	-	-		
232	26	56	0.2	0.6	-	-		
233	32	64	0.2	0.4	-	-		
234	24	35	0.2	0.3	-	-		
235	31	43	0.2	0.2	-	-		
236	63	145	0.5	1.0	-	-		
237	33	38	0.2	0.4	-	-		
238	16	28	0.2	0.6	-	-		
239	29	229	0.3	1.3	-	-		
240	1600	1370	13.	8.7	-	-		
241	23	306	0.6	3.4	-	-		
242	72	184	0.3	1.2	-	-		
243	126	119	1.4	1.6	-	-		
244	145	53	1.2	0.6	-	-		
245	46	57	0.6	0.3	-	-		
246	23	22	0.2	0.4	-	-		
247	22	24	0.2	0.4	-	-		
248	23	23	0.3	0.5	-	-		
249	58	45	0.5	0.3	-	-		

BONDAR-CLEGG & COMPANY LTD.
130 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX: 04-352667

Geochemical Lab Report

Extraction _____ Report No. 20 - 1463 PROJECT: E.B.I. JANSEN

Method _____ From Trigg, Woollett Consulting Ltd.

Fraction Used _____ Date July 31 19 80

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm		REMARKS
82K-80 CRS 001	65	65	0.2	0.2	-	-		
002	750	1510	2.1	3.0	-	-		
003	820	1305	4.6	7.0	-	-		
004	16	69	0.2	0.6	-	-		
005	11	15	0.2	0.2	-	-		
006	8	23	0.2	0.2	-	-		
007	43	57	0.2	0.2	-	-		
008	160	227	0.4	0.6	-	-		
009	90	257	0.2	0.4	-	-		
010	38	126	0.3	0.2	-	-		
011	41	115	0.4	0.2	-	-		
012	27	55	0.2	0.2	-	-		
013	85	113	0.4	0.4	-	-		
014	57	86	0.3	0.2	-	-		
015	22	36	0.2	0.2	-	-		
016	36	61	0.2	0.2	-	-		
017	70	106	1.4	0.8	-	-		
018	66	111	0.3	0.2	-	-		
019	1480	1395	3.6	4.6	-	-		
020	420	420	2.6	4.0	-	-		
021	118	306	1.0	0.4	-	-		
022	280	1365	2.1	2.0	-	-		
023	84	190	0.2	0.4	-	-		
024	76	174	0.4	0.8	-	-		
JJS 037	10	1135	0.2	0.2	-	-		
TSS 267	15	85	0.2	0.2	-	-		
268	9	18	0.2	0.2	-	-		
269	97	68	0.3	0.7	-	-		
270	20	28	0.2	0.2	-	-		
271	18	28	0.2	0.2	-	-		

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 1463 Page No. 2

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm		REMARKS
82K-80 TSS 272	66	207	0.6	0.5	-	-		
273	16	183	0.4	1.2	-	-		
274	26	36	0.2	0.2	-	-		
275	20	74	0.2	0.2	-	-		
276	22	67	0.2	0.2	-	-		
277	26	42	0.2	0.3	-	-		
278	35	49	0.3	0.2	-	-		
279	35	29	0.2	0.2	-	-		
280	29	56	0.2	0.2	-	-		
281	28	396	0.2	0.8	-	-		
282	62	128	1.2	1.1	-	-		
283	24	38	0.2	0.2	-	-		
284	16	31	0.2	0.2	-	-		
285	25	43	0.2	0.2	-	-		
286	30	42	0.2	0.2	-	-		
287	26	52	0.2	0.2	-	-		
288	20	59	1.1	0.2	-	-		
289	86	362	0.2	2.3	-	-		
290	82	187	0.2	1.6	-	-		
291	84	180	0.2	1.9	-	-		
292	26	55	0.2	0.2	-	-		
293	340	972	1.7	8.0	-	-		
294	76	166	0.2	0.3	-	-		
295	20	45	0.2	0.5	-	-		
296	500	2600	0.3	3.3	-	-		
297	23	140	0.2	0.4	-	-		
298	49	191	0.2	0.4	-	-		
299	45	104	0.2	0.8	-	-		
300	12	40	0.2	0.2	-	-		
301	16	45	0.2	0.2	-	-		
302	128	725	0.5	5.2	-	-		
303	15	74	0.2	0.2	-	-		
304	22	50	0.2	0.2	-	-		
305	22	30	0.2	0.2	-	-		
306	24	32	0.2	0.2	-	-		

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 1463 Page No. 3

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm		REMARKS
82K-80 TSS 307	15	32	0.2	0.2	-	-		
308	68	266	0.4	1.4	-	-		
309	25	43	0.2	0.2	-	-		
310	20	258	0.2	0.4	-	-		
311	18	38	0.2	0.2	-	-		
312	6	96	0.2	1.9	-	-		
313	14	25	0.2	0.2	-	-		
314	250	114	0.2	2.0	-	-		
315	52	54	1.0	0.8	-	-		
316	50	83	0.6	0.2	-	-		
317	33	32	0.2	0.2	-	-		
318	24	41	0.2	0.2	-	-		
319	40	53	1.0	0.2	-	-		
320	30	68	0.3	0.2	-	-		
322	35	35	0.2	0.2	-	-		
323	44	36	0.4	0.2	-	-		
324	36	39	0.5	0.2	-	-		
325	36	38	0.5	0.5	-	-		
326	65	77	1.2	0.4	-	-		
327	260	87	0.5	0.7	-	-		
328	26	185	0.2	1.4	-	-		
329	30	38	0.2	0.2	-	-		
330	20	27	0.2	0.2	-	-		
331	400	134	1.4	0.8	-	-		
332	< 2	16	0.2	0.2	-	-		
333	12	68	0.3	0.4	-	-		
334	20	67	0.3	0.2	-	-		
335	24	33	0.3	0.2	-	-		
336	23	29	0.2	0.2	-	-		
337	30	38	0.2	0.2	-	-		
338	25	54	0.3	0.2	-	-		
339	21	85	0.4	0.2	-	-		
340	34	63	0.7	0.4	-	-		
341	44	55	0.3	0.2	-	-		
342	60	76	0.4	0.8	-	-		

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 1463 Page No. 4

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm		REMARKS
82K-80 TSS 343	24	27	0.2	0.2	-	-		
344	36	68	0.4	0.2	-	-		
345	35	59	0.4	0.2	-	-		
346	106	219	0.6	0.2	-	-		
347	66	69	0.2	0.2	-	-		
348	28	196	0.2	1.2	-	-		
349	16	36	0.2	0.2	-	-		
350	17	33	0.2	0.2	-	-		
351	24	41	0.3	0.2	-	-		
352	22	43	0.3	0.2	-	-		
353	22	25	0.2	0.2	-	-		
354	23	43	0.5	0.2	-	-		
355	36	21	0.5	0.2	-	-		
356	18	26	0.4	0.2	-	-		
357	26	35	0.3	0.2	-	-		

BONDAR-CLEGG & COMPANY LTD.
130 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX: 04-352667

Geochemical Lab Report

Extraction _____ Report No. 20 - 1561 PROJECT: E.B.I. JANSEN

Method _____ From Trigg, Woollett Consulting Ltd.

Fraction Used _____ Date August 7 19 80

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm		REMARKS
82K-80-PFC								
007	55	257	0.2	0.6	-	-		
010	27	110	0.2	0.2	-	-		
011	25	149	0.2	0.2	-	-		
012	17	48	0.2	0.2	-	-		
013	42	90	0.2	0.2	-	-		
014	16	48	0.2	0.2	-	-		
015	17	48	0.2	0.2	-	-		
016	20	60	0.2	0.2	-	-		
017	21	55	0.2	0.2	-	-		
018	33	80	0.2	0.2	-	-		
019	17	47	0.2	0.2	-	-		
020	21	66	0.2	0.2	-	-		
021	19	50	0.2	0.2	-	-		
022	19	53	0.2	0.2	-	-		
023	40	75	0.2	0.2	-	-		
024	18	47	0.2	0.2	-	-		
029	29	58	0.2	0.2	-	-		
030	32	53	0.2	0.2	-	-		
031	68	90	0.4	0.3	-	-		

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 1561 Page No. 2

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm		REMARKS
82K-80-PFC 032	29	55	0.2	0.2	-	-		
033	29	56	0.2	0.2	-	-		
034	27	39	0.4	0.2	-	-		
035	27	53	0.2	0.2	-	-		
036	27	50	0.2	0.2	-	-		
037	22	45	0.2	0.2	-	-		
038	28	53	0.2	0.2	-	-		
039	15	62	0.2	0.2	-	-		
040	30	73	0.2	0.2	-	-		
041	29	58	0.2	0.2	-	-		
042	25	53	0.2	0.2	-	-		
043	26	64	0.2	0.2	-	-		
044	25	55	0.2	0.2	-	-		
045	20	44	0.2	0.2	-	-		
046	25	56	0.2	0.2	-	-		
047	24	57	0.2	0.2	-	-		
048	39	102	0.2	0.2	-	-		
049	24	50	0.2	0.2	-	-		
050	24	38	0.2	0.2	-	-		
051	25	52	0.2	0.2	-	-		
052	26	52	0.2	0.2	-	-		
053	27	50	0.2	0.2	-	-		

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 1561 Page No. 3

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm		REMARKS
82K-80-								
KRC 040	40	85	1.3	0.5	-	-		
041	54	178	1.5	1.1	-	-		
042	29	186	0.2	0.2	-	-		
043	39	149	0.2	0.2	-	-		
044	15	295	0.7	1.9	-	-		
045	3	397	0.2	0.4	-	-		
046	8	252	0.3	1.5	-	-		
KRS 039	43	84	0.4	0.2	-	-		
040	25	28	1.0	0.2	-	-		
041	23	67	0.2	0.2	-	-		
042	22	234	0.2	1.5	-	-		
043	28	32	0.2	0.2	-	-		
044	9	29	0.2	0.2	-	-		
045	32	2100	0.2	0.8	-	-		
046	25	695	0.2	0.2	-	-		
047	30	42	0.2	0.2	-	-		
048	21	84	0.2	0.2	-	-		
049	15	63	0.2	0.2	-	-		
050	50	78	0.2	0.2	-	-		
051	29	90	0.2	0.2	-	-		
052	28	640	0.2	0.2	-	-		
053	26	665	0.2	0.2	-	-		
054	26	59	0.2	0.2	-	-		
055	19	47	0.2	0.2	-	-		
056	22	47	0.2	0.2	-	-		
057	32	50	0.2	0.2	-	-		

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 1561 Page No. 4

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm		REMARKS
82K-80-KRS 058	24	39	0.2	0.2	-	-		
059	21	105	0.2	0.2	-	-		

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130 PEMBERTON AVE., NORTH VANCOUVER, B.C. PHONE: 985-0681 TELEX: 04-352667

Geochemical Lab Report

Extraction _____ Report No. 20 -1896 PROJECT: E,B,I, OLSON

Method _____ From Trigg, Woollett Consulting Ltd.

Fraction Used _____ Date August 29 1980

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Ba ppm			REMARKS
82K-80								
KRC								
092	24	94	0.2	0.2	-			
093	9	83	0.2	0.3	-			
094	28	1000	0.2	3.4	-			
095	26	1010	0.4	3.7	-			
KRS								
067	17	25	0.2	0.2	-			
068	42	110	0.2	0.2	-			
069	12	32	0.2	0.2	-			
070	14	42	0.2	0.4	-			
071	20	35	0.2	0.2	-			

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 1896 Page No. 2

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Ba ppm			REMARKS
82K-80 KRS 072	10	28	0.2	0.2	-			
073	18	27	0.2	0.2	-			
074	21	18	0.2	0.3	-			
075	22	51	0.2	0.2	-			
076	22	35	0.3	0.2	-			
077	24	19	0.3	0.2	-			
078	18	23	0.2	0.2	-			
079	18	25	0.3	0.2	-			
080	26	30	0.2	0.2	-			
081	38	50	0.3	0.2	-			
082	32	33	0.7	0.2	-			
083	28	45	0.2	0.2	-			
084	26	18	2.0	0.2	-			
085	40	47	0.2	0.2	-			
086	32	20	0.2	0.3	-			
087	32	30	0.2	0.2	-			
PFS 044	36	39	0.2	0.2	-			
045	36	96	0.2	0.2	-			
046	62	42	0.2	0.2	-			
047	34	33	0.2	0.2	-			
048	44	41	0.5	0.2	-			
049	45	31	0.2	0.2	-			
050	46	48	0.2	0.2	-			
051	50	59	0.2	0.2	-			
052	240	154	0.6	0.2	-			
053	1180	1850	2.8	6.0	-			
054	315	530	0.3	1.4	-			
055	23	42	0.2	0.4	-			
056	1250	377	0.8	0.2	-			

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

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SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Ba ppm			REMARKS
82K-80 PFS 057	103	101	0.2	0.2	-			
058	110	183	0.2	0.2	-			
059	180	197	0.9	0.3	-			
060	28	51	0.2	0.2	-			
061	26	54	0.2	0.2	-			
062	45	47	0.2	0.2	-			
063	98	325	0.3	0.2	-			
064	56	85	0.2	0.6	-			
065	70	146	0.4	0.4	-			
066	150	146	0.2	0.3	-			
067	260	530	0.4	2.4	-			
068	71	98	0.2	0.2	-			
069	74	243	0.2	0.2	-			
079	14	37	0.2	0.2	-			
080	13	29	0.2	0.2	-			
081	10	30	0.2	0.2	-			
082	7	18	0.2	0.2	-			
083	10	30	0.2	0.2	-			
084	18	29	0.2	0.2	-			
085	51	32	0.8	0.2	-			
086	460	67	2.2	0.2	-			
087	180	115	0.2	0.2	-			
088	25	23	0.2	0.2	-			
089	17	54	0.3	0.2	-			
090	47	17	0.2	0.2	-			
091	11	15	0.2	0.2	-			

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 1896 Page No. 4

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Ba ppm			REMARKS
82K-80 PFS 092	10	15	0.2	0.2	-			
093	26	36	0.8	0.2	-			
094	39	129	0.3	0.2	-			
095	14	15	0.4	0.2	-			
096	36	22	0.2	0.2	-			
097	30	20	0.2	0.2	-			
098	44	36	0.6	0.2	-			
099	27	14	0.2	0.4	-			
100	26	34	0.4	0.2	-			
101	36	39	0.4	0.2	-			
102	24	33	0.2	0.2	-			
103	14	45	0.2	0.2	-			
104	26	39	0.2	0.2	-			
105	30	34	0.2	0.2	-			
106	36	32	0.2	0.2	-			
107	30	44	0.3	0.2	-			
108	34	28	0.4	0.2	-			
109	12	19	0.4	0.2	-			
110	12	29	0.2	0.2	-			
111	17	12	0.2	0.2	-			
112	21	16	0.4	0.2	-			
113	6	740	0.2	0.9	-			
114	11	22	0.2	0.2	-			
115	16	9	1.9	0.2	-			

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

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SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Ba ppm			REMARKS
82K-80 TSS								
398	25	45	0.2	0.2	-			
399	22	41	0,2	0,2	-			
400	20	80	0.2	0.2	-			
401	22	79	0.2	0.2	-			
402	70	98	0,3	0,2	-			

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

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SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Ba ppm			REMARKS
82K-80 TSS 403	52	35	0.2	0.2	-			
404	17	88	0.2	0.2	-			
405	130	153	0.2	0.8	-			
406	26	89	0.2	0.2	-			
407	21	12	0.2	0.2	-			
408	14	28	0.2	0.2	-			
409	9	18	0.2	0.2	-			
410	28	44	0.2	0.2	-			
411	27	34	0.2	0.2	-			
412	23	72	0.4	0.2	-			
413	28	42	0.2	0.2	-			
414	48	56	0.2	0.2	-			
415	28	21	0.2	0.2	-			
416	16	28	0.2	0.2	-			
417	29	80	0.2	0.2	-			
418	36	86	0.2	0.2	-			
419	18	29	0.2	0.2	-			
420	28	57	0.2	0.2	-			
421	38	29	0.3	0.2	-			
422	48	146	0.2	0.2	-			
423	19	40	0.2	0.2	-			
424	19	39	0.2	0.2	-			
425	24	46	0.2	0.2	-			
426	30	38	0.2	0.2	-			
427	38	64	0.2	0.2	-			
428	58	68	0.3	0.2	-			
429	110	59	0.2	0.2	-			
430	12	27	0.2	0.2	-			
431	3200	2600	8.8	5.6	-			
432	22	28	0.2	0.2	-			
433	31	15	0.2	0.2	-			
434	23	17	0.2	0.2	-			
435	17	20	0.2	0.2	-			
436	28	65	0.3	0.2	-			
437	30	57	0.4	0.2	-			

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

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SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Ba ppm			REMARKS
82K-80 TSS 438	27	240	0.2	0.2	-			
439	27	37	0.2	0.2	-			
440	54	63	2.0	0.2	-			
441	42	47	0.4	0.2	-			
442	8	21	0.2	0.2	-			
443	40	47	0.2	0.2	-			
444	11	19	0.2	0.2	-			
445	40	71	0.2	0.2	-			
446	132	175	1.5	0.6	-			
447	32	18	0.2	0.2	-			
448	23	17	0.4	0.2	-			
449	27	21	0.4	0.2	-			
450	34	95	0.5	0.2	-			
451	29	27	0.2	0.2	-			
452	22	12	0.2	0.2	-			
453	18	27	0.2	0.2	-			
454	10	14	0.2	0.2	-			
455	97	203	0.2	0.2	-			
456	14	15	0.2	0.2	-			
457	220	42	9.0	0.2	-			
458	23	92	0.2	0.2	-			
459	63	49	0.2	0.2	-			
460	31	29	0.4	0.2	-			
461	24	41	0.2	0.2	-			
462	40	45	0.2	0.2	-			
463	7	124	0.2	0.2	-			
464	11	33	0.2	0.2	-			
465	17	22	0.2	0.2	-			
466	26	42	0.2	0.2	-			
467	18	23	0.2	0.2	-			
468	16	22	0.2	0.2	-			
469	22	13	0.2	0.2	-			
470	19	28	0.2	0.2	-			
471	21	28	0.2	0.2	-			
472	69	227	0.4	0.2	-			

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

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SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Ba ppm			REMARKS
82K-80 TSS 473	20	47	0.2	0.2	-			
474	36	43	0.2	0.2	-			
475	16	30	0.2	0.2	-			
476	65	190	0.2	0.4	-			
477	14	24	0.2	0.2	-			
478	17	31	0.2	0.2	-			
479	24	32	0.2	0.2	-			
480	60	40	0.2	0.2	-			
481	43	33	0.2	0.2	-			
482	17	39	0.2	0.2	-			
483	12	21	0.2	0.2	-			
484	6	19	0.2	0.2	-			
485	15	50	0.2	0.2	-			
486	38	48	0.2	0.2	-			
487	16	18	0.2	0.2	-			
488	23	39	0.2	0.2	-			
489	23	20	0.8	0.2	-			
490	12	20	0.2	0.2	-			
491	14	19	1.0	0.2	-			
492	33	42	0.2	0.2	-			
493	11	25	0.2	0.2	-			
494	5	17	0.2	0.2	-			
495	8	48	0.2	0.2	-			
496	10	44	0.2	0.2	-			
497	23	33	0.3	0.2	-			
498	16	29	0.2	0.2	-			
499	13	52	0.2	0.2	-			
500	10	17	0.2	0.2	-			
501	7	19	0.2	0.2	-			
502	10	19	0.2	0.2	-			
503	19	63	0.2	0.2	-			
504	13	44	0.2	0.2	-			
505	12	40	0.2	0.2	-			
506	41	34	0.9	0.2	-			
507	13	51	0.2	0.2	-			

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

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SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Be ppm			REMARKS
82K-80 TSS 508	6	17	0.3	0.2	-			
509	8	20	0.2	0.2	-			
510	10	28	0.2	0.2	-			
511	15	14	0.7	0.2	-			
512	8	28	0.2	0.2	-			
513	15	18	0.6	0.2	-			
514	9	12	0.6	0.2	-			
515	27	85	0.5	0.2	-			
516	21	172	0.9	0.2	-			
517	12	9	0.2	0.2	-			
518	22	38	0.2	0.2	-			
519	19	41	0.2	0.2	-			
520	10	13	0.8	0.2	-			
521	20	44	0.2	0.2	-			
522	16	25	0.2	0.2	-			
523	16	30	0.2	0.2	-			
524	15	28	1.0	0.2	-			
525	39	90	0.2	0.2	-			
526	63	35	1.5	0.2	-			
527	46	30	0.4	0.2	-			
528	26	59	0.2	0.2	-			
529	63	59	0.3	0.2	-			
530	23	27	0.2	0.2	-			
531	36	340	0.2	0.2	-			
532	16	52	0.2	0.2	-			
533	18	46	0.2	0.2	-			
534	15	9	0.8	0.2	-			
535	29	70	0.2	0.2	-			
536	26	25	0.2	0.2	-			
537	40	140	0.2	0.2	-			
538	31	34	0.4	0.2	-			
539	33	57	0.2	0.2	-			
540	15	35	0.2	0.2	-			
541	60	115	0.2	0.2	-			
542	12	53	0.2	0.2	-			

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

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SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Ba ppm			REMARKS
82K-80 TSS 543	12	22	0.3	0.2	-			
544	20	40	0.2	0.2	-			
545	63	29	0.3	0.2	-			
546	29	28	0.4	0.2	-			
547	9	13	0.3	0.2	-			
548	30	29	0.4	0.2	-			
549	33	41	0.2	0.2	-			
550	20	88	0.2	0.2	-			
551	12	46	0.2	0.2	-			
552	27	81	0.2	0.2	-			
cc Mr. J. Jansen								

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

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SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm	Ba %	REMARKS
82K80-JJC 033	270	550	2.4	2.3	-	-	-	
034	34	65	0.2	0.2	-	-	-	
035	84	241	0.8	1.1	-	-	-	
82K80-JJS 040	10	1000	0.2	0.4	-	-	-	

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 20 - 2067 Page No. 3

SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm		REMARKS
82K80-PFS 116	110	221	0.7	0.4	-	-		
117	49	36	0.2	0.2	-	-		
118	37	28	0.2	0.2	-	-		
119	23	24	0.2	0.2	-	-		
120	49	27	0.2	0.2	-	-		
121	43	33	0.2	0.2	-	-		
122	25	30	0.2	0.2	-	-		
123	46	55	0.2	0.2	-	-		

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

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SAMPLE NO.	Pb ppm	Zn ppm	Ag ppm	Cd ppm	Hg ppb	Ba ppm		REMARKS
82K80-PFS								
124	14	30	0.2	0.2	-	-		
125	87	242	0.2	1.0	-	-		
126	30	28	0.2	0.2	-	-		
127	55	39	0.5	0.2	-	-		
128	27	52	0.2	0.2	-	-		
129	23	24	0.2	0.2	-	-		
130	35	22	0.2	0.2	-	-		
131	27	31	0.2	0.2	-	-		
132	38	26	0.2	0.2	-	-		
133	20	17	0.2	0.2	-	-		
134	78	34	0.2	0.2	-	-		
135	22	97	0.2	0.2	-	-		
136	23	28	0.2	0.2	-	-		
137	128	17	0.2	0.2	-	-		
138	165	46	0.2	0.2	-	-		
139	34	22	0.2	0.2	-	-		

BONDAR-CLEGG & COMPANY LTD.
130 PEMBERTON AVENUE, NORTH VANCOUVER, B.C. (604) 985-0681 TLX: 04-352667

Geochemical Lab Report

FROM: Trigg, Woollett Consulting Ltd. REPORT NUMBER: 20 - 2776

PROJECT: E.B.I. JANSEN DATE: November 18, 1980

SAMPLE NUMBERS	Pb ppm	Zn ppm	Ag ppm	Cd ppm					
82K8OJJS - 041	16	30	0.2	0.2					
042	24	84	0.2	0.2					
043	72	154	0.2	0.2					
044	22	70	0.2	0.2					
045	40	109	0.2	0.2					
046	15	48	0.2	0.2					
047	68	124	0.2	0.2					
048	26	40	0.2	0.2					
049	15	43	0.2	0.2					
050	23	30	0.8	0.2					
051	24	51	0.2	0.2					
052	48	26	0.4	0.2					
053	44	88	0.3	0.2					
054	8	18	0.2	0.2					
055	9	17	0.2	0.2					
056	22	19	0.4	0.2					
057	20	15	0.3	0.2					
058	23	30	0.2	0.2					
059	70	47	0.3	0.2					
060	60	31	0.2	0.2					
061	20	60	0.2	0.2					
062	22	52	0.2	0.2					
063	27	34	0.2	0.2					
064	16	26	0.2	0.2					
065	24	23	0.2	0.2					
066	13	29	0.2	0.2					
067	34	40	0.2	0.2					
068	16	38	0.2	0.2					
069	18	24	0.2	0.2					
070	38	42	0.8	0.2					
071	68	131	0.2	0.2					
072	40	95	0.2	0.2					
073	92	298	1.0	0.2					
074	110	65	0.2	0.2					
075	114	253	0.2	0.2					
076	500	620	0.8	1.3					
077	65	171	0.2	0.2					
82K8ONAS - 001	18	21	0.2	0.2					
002	52	1g	0.4	0.2					
003	56	25	0.2	0.2					

FOR METHOD, EXTRACTION AND FRACTION USED – SEE ATTACHED

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

REPORT NUMBER: 20 - 2776 PAGE: 2

SAMPLE NUMBERS	Pb ppm	Zn ppm	Ag ppm	Cd ppm					
82K80NAS - 004	33	27	0.2	0.2					
005	24	30	0.2	0.2					
006	20	17	0.2	0.2					
007	30	31	0.2	0.2					
008	142	77	0.2	1.1					
009	25	20	0.2	0.2					
010	16	53	0.2	0.2					
011	16	61	0.2	0.2					
012	45	33	0.2	0.2					
013	42	46	0.2	0.2					
014	68	33	0.2	0.2					
015	17	58	0.2	0.2					
016	18	50	0.2	0.2					
017	16	61	0.2	0.2					
018	30	41	0.2	0.2					
019	28	45	0.2	0.2					
020	26	31	0.2	0.2					
021	38	78	0.4	0.2					
022	270	840	2.0	2.3					
023	39	105	0.3	0.6					
024	34	50	0.2	0.2					
025	24	49	0.2	0.2					
026	92	112	0.8	0.2					
cc - Mr. J. Jansen									

APPENDIX V

REPORT ON THE INDUCED POLARIZATION, RESISTIVITY AND VLF-EM SURVEYS ON THE MIN 1, MIN 2, S MIN 1, REDLEDGE 1 AND REDLEDGE 2 CLAIMS (PROJECT EBI), GOLDEN MINING DISTRICT

REPORT ON THE

INDUCED POLARIZATION

RESISTIVITY AND VLF-EM SURVEYS

ON THE

MIN 1, MIN 2, S MIN 1, REDLEDGE 1 AND REDLEDGE 2 CLAIMS (PROJECT EBI)

GOLDEN MINING DISTRICT

FOR

TRIGG, WOOLLETT CONSULTING LTD.

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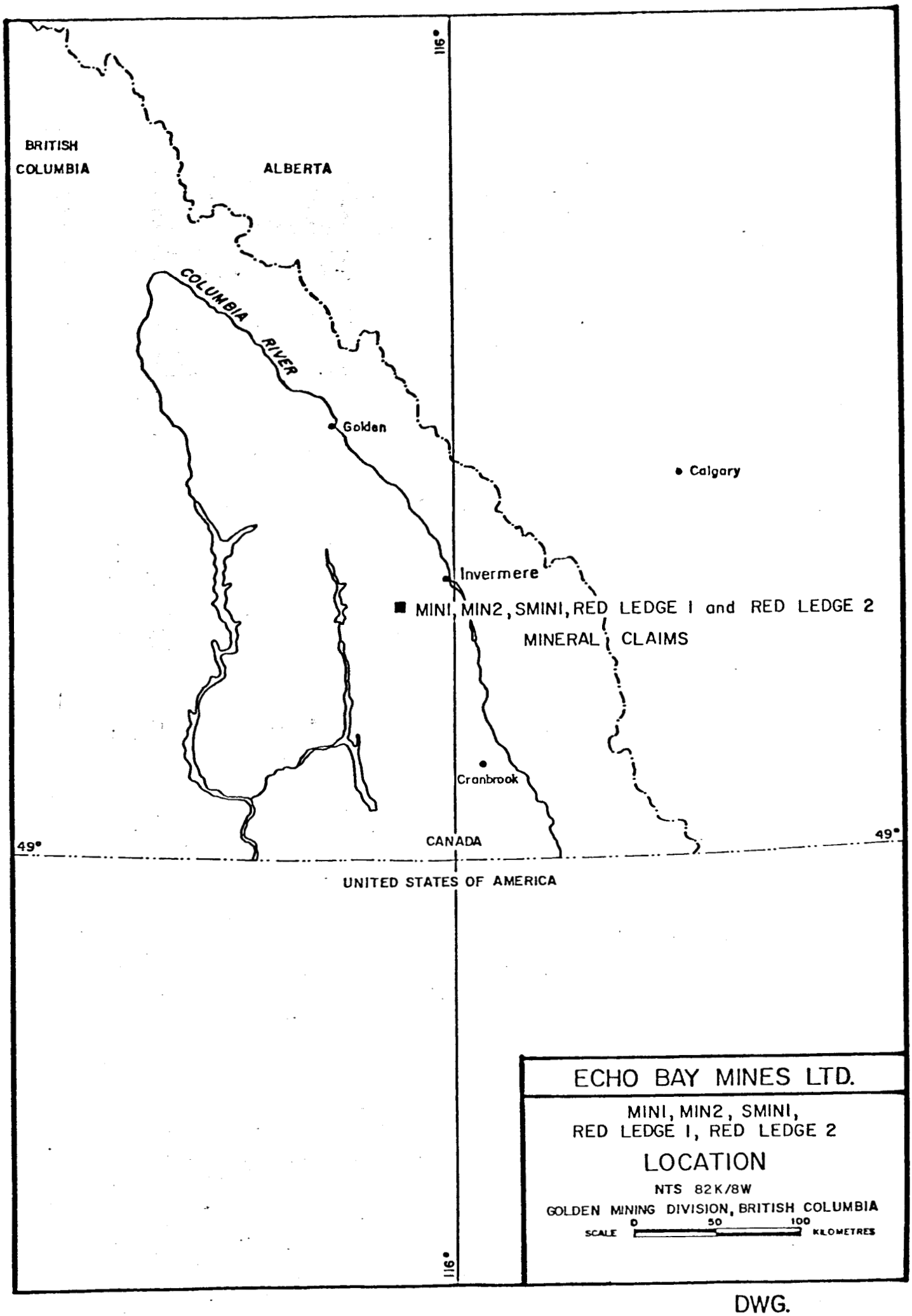


ECHO BAY MINES LTD.

MINI, MIN2, SMINI,
RED LEDGE 1, RED LEDGE 2

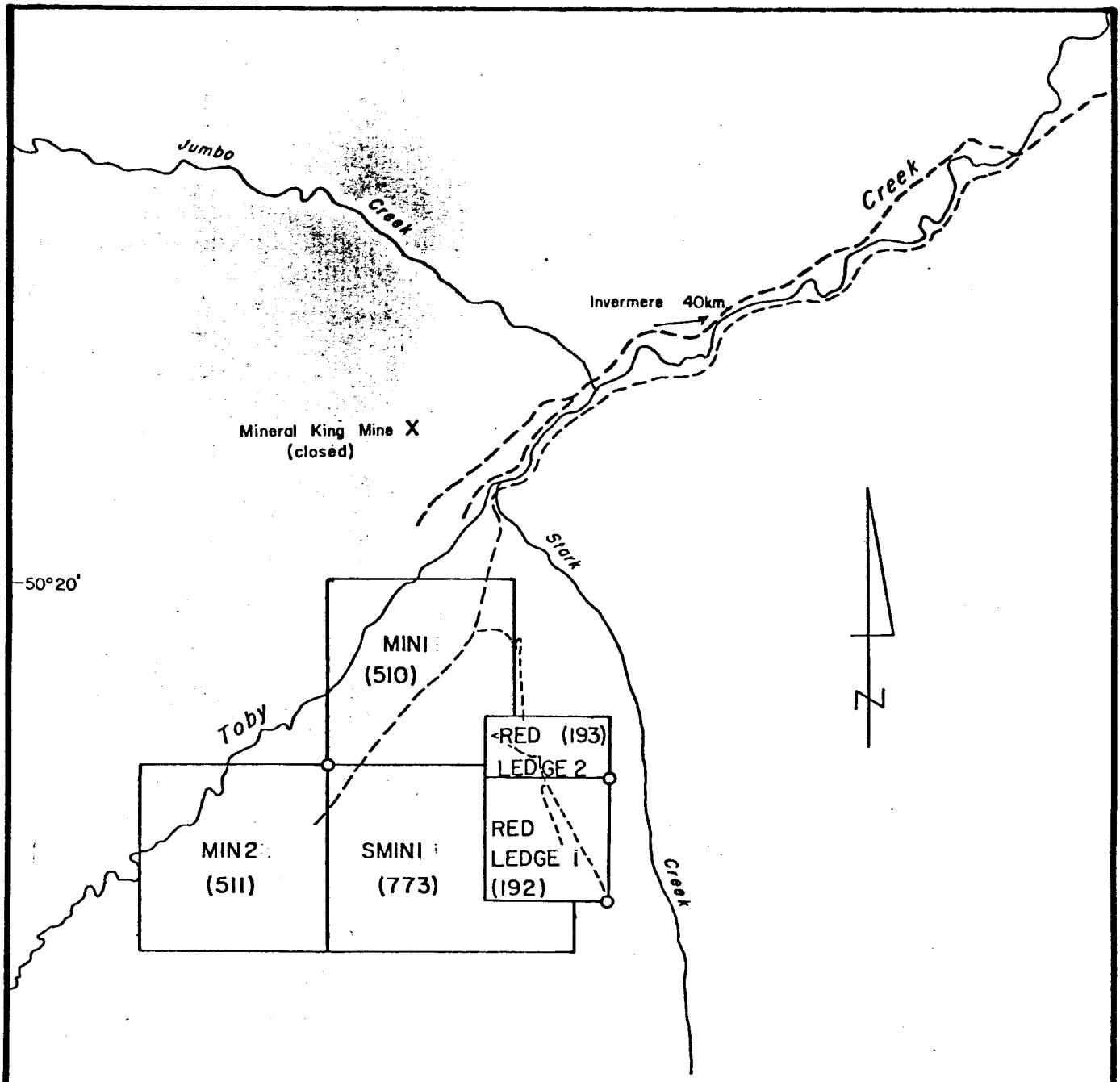
LOCATION

NTS 82K/8W

GOLDEN MINING DIVISION, BRITISH COLUMBIA

SCALE 0 50 100 KILOMETRES

DWG.



RED (193)
LEDGE 2

Mineral claim: name, (record number), legal corner post shown

Road: all-weather, four-wheel-drive

116°25'

ECHO BAY MINES LTD.

MINI, MIN2, SMINI,
RED LEDGE 1, RED LEDGE 2

LOCATION

NTS 82K/8W

GOLDEN MINING DIVISION, B.C.

SCALE 0 500 1000 METRES

1. INTRODUCTION

An Induced Polarization and Resistivity and a VLF-EM survey has been carried out on the Min 1, Min 2, S Min 1, Redledge 1 and Redledge 2 claims, Golden M.D., on behalf of Trigg, Woollett Consulting Ltd., property managers for Echo Bay Mines.

The property is located approximately 40 kilometers southwest of Invermere, B.C., at approximately $50^{o}20'$ north latitude and $116^{o}25'$ west longitude. Access is via road and/or helicopter from the town of Invermere, B.C.

IP and Resistivity Survey

Initial field work was done in August, 1980 by P.A. Cartwright. The remainder of the survey was done by F. DiSpirito in late October and early November. A dipole-dipole array with a basic inter-electrode separation of 50 meters was utilized on all the lines surveyed. In addition, a portion of one line (Line 31S, Min 2) was detailed using 25 meter dipole spacings.

Four dipole separations were recorded using a Phoenix Model IPT-1 IP and Resistivity transmitter equipped with a Phoenix TXD-2 transmitter driver, and Phoenix IPV-2 high sensitivity IP and Resistivity receiver. The IPV-2 receiver measures the amplitude in millivolts and phase angle in milliradians of the received signal relative to the transmitted signal, on two channels simultaneously. The measurements were taken at an operating frequency of 1.0 Hz.

However, on Line 32S and Line 34S of the Min 2 grid a Phoenix Model IPT-1 IP and Resistivity transmitter and a

Phoenix IPV-1 receiver were used. The IPV-1 receiver, measures the voltage in volts and polarizability in percent frequency effect between two potential electrodes.

VLF-EM Survey

The initial VLF data were collected by Trigg, Woollett personnel. Several lines of VLF data were later collected by Phoenix Geophysics in late October and early November 1980.

The VLF measurements were taken at 25 meter stations using a Phoenix VLF-2 receiver. The VLF transmitting station utilized was Cutler, Maine on all lines. On some lines Seattle, Washington was also used.

The Min 1, S Min 1, and Min 2 claims were staked to cover stream geochemical anomalies. Redledge 1 and Redledge 2 claims are both associated with a gossan. The present geophysical surveys were planned in order to evaluate the presence and extent of metallic sulphide mineralization associated with the gossans and geochemical anomalies. In addition it was hoped that the VLF-EM would help to map geologic structure.

The rocks in the area include quartzite, dolomite and pyritiferous argillite. The ore at the nearby Mineral King Mine was found primarily within the dolomite section. Assuming the geology (or at least the lithology) in the surveyed areas is similar to the Mineral King deposit, anomalies associated with the dolomite would be primary targets.

2. PRESENTATION OF RESULTS

The Induced Polarization and Resistivity results are shown on the following data plots.

Min I Grid

Line	Electrode Interval	Dwg. No.
26S	50 meters	IP 5225 - 1
27S	50 meters	IP 5225 - 2
28S	50 meters	IP 5225 - 3
29S	50 meters	IP 5225 - 4
30S	50 meters	IP 5225 - 5
31S	50 meters	IP 5225 - 6
32S	50 meters	IP 5225 - 7

Min 2 Grid

31S	50 meters	IP 5226 - 1
31S	25 meters	IP 5226 - 2
32S	50 meters	IP 5226 - 3
33S	50 meters	IP 5226 - 4
34S	50 meters	IP 5226 - 5

Redledge 1 Grid

Line	Electrode Interval	Dwg. No.
45S	50 meters	IP 5227 - 1
46S	50 meters	IP 5227 - 2
47S	50 meters	IP 5227 - 3
48S	50 meters	IP 5227 - 4
49S	50 meters	IP 5227 - 5
50S	50 meters	IP 5227 - 6
51S	50 meters	IP 5227 - 7

Redledge 2 Grid

35S	50 meters	IP 5228 - 1
36S	50 meters	IP 5228 - 2
37S	50 meters	IP 5228 - 3
38S	50 meters	IP 5228 - 4
39S	50 meters	IP 5228 - 5
40S	50 meters	IP 5228 - 6
41S	50 meters	IP 5228 - 7

Also enclosed with this report is Dwg. I.P.P.-4083, a plan map of the Min 1 and 2 and Redledge 1 and 2 grids at a scale of 1:5000. The definite, probable and possible Induced Polarization anomalies are indicated by bars, in the manner shown on the legend, on this plan map as well as on the data plots. These bars represent the surface projection of the anomalous zones interpreted from the location of the transmitter

and receiver electrodes when the anomalous values were measured. The centres of anomalous resistivity zones not associated with anomalous polarizability have also been marked on Dwg. I.P.P. 4083 by triangles.

The grid information shown on Dwg. I.P.P.-4083 has bene supplied by the staff of Trigg, Woollett Consulting Ltd.

The VLF-EM results are shown on the following data plots. The VLF data from the Min 1 and Min 2 grids were not collected by employees of Phoenix Geophysics.

Redledge 1 Grid (transmitter at Cutler, Maine)

Line	Dwg. No.
45S	OEB1-EM 5231 - 1
46S	OEB1-EM 5231 - 1
47S	OEB1-EM 5231 - 2
48S	OEB1-EM 5231 - 2
49S	OEB1-EM 5231 - 3
50S	OEB1-EM 5231 - 3
51	OEB1-EM 5231 - 4

Redledge 2 Grid (transmitter at Cutler, Maine)

Line	Dwg. No.
35S	EM 5232 - 1
36S	EM 5232 - 2
37S	EM 5232 - 2
38S	EM 5232 - 3
39S	EM 5232 - 3
40S	EM 5232 - 4
41S	EM 5232 - 4

Min 1 Grid (transmitter at Cutler, Maine)

Line	Dwg. No.
24S	OEB1-EM 5229 - 1
25S	OEB1-EM 5229 - 1
26S	OEB1-EM 5229 - 1
27S	OEB1-EM 5229 - 2
28S	OEB1-EM 5229 - 2
29S	OEB1-EM 5229 - 2
30S	OEB1-EM 5229 - 3
31S	OEB1-EM 5229 - 3

Min 1 Grid (transmitter at Seattle, Washington)

Line	Dwg. No.
26S	OEB1-EM 5229 - 4
27S	OEB1-EM 5229 - 4
28S	OEB1-EM 5229 - 4
30S	OEB1-EM 5229 - 5
31S	OEB1-EM 5229 - 5

Min 2 Grid (transmitter at Cutler, Maine)

Line	Dwg. No.
29S	OEB1-EM 5230 - 1
30S	OEB1-EM 5230 - 1
31S	OEB1-EM 5230 - 1
32S	OEB1-EM 5230 - 2
33S	OEB1-EM 5230 - 2

Min 2 Grid (transmitter at Seattle, Washington)

Line	Dwg. No.
29S	OEB1-EM 5230 - 3
30S	OEB1-EM 5230 - 3
31S	OEB1-EM 5230 - 3
33S	OEB1-EM 5230 - 4

On the plan map Dwg. I.P.P. -4083 the definite, probable and possible VLF-EM anomalies are indicated by circles, in the manner shown on the legend, on this map as well as on the data plots.

3. DISCUSSION OF RESULTS

A number of anomalous zones are outlined by the IP and Resistivity data, and by the VLF EM data, from the four Project EBI grid areas. Three of the grids involved (Min 1, Redledge 1, Redledge 2) were surveyed from a common baseline, while the fourth grid (Min 2) is located roughly 2 kilometers further to the southwest.

The results from each grid area are discussed separately below.

Min 2 Grid

i) Zone A1

Very anomalous polarizability readings, and substantially lower than background apparent resistivity values mark the center of this IP trend. In addition, a weak VLF EM conductor is seen correlating with the highest magnitude IP response.

It is almost certain that the primary source of both the IP and the VLF anomalies is pyritiferous black argillites, which are most polarizable and most conductive along the western margin of the unit, where Dutch Creek Formation dolomite is noted. The northern end of Zone A1 appears to cross over the assumed position of the contact between the argillites and more favourable Dutch Creek Formation dolomite.

However, the IP signature is quite uniform throughout the length of the zone, which suggests the interpreted location of the contact may not be correct. Additional geologic information would be required to fully assess the potential of Geophysical Zone A1.

Depth to the top of the source is indicated to be

less than 50 meters subsurface.

ii) Zone A2

This zone is outlined by the VLF EM results only, as IP coverage does not extend far enough west to effectively test the VLF conductor. Only very weakly anomalous readings are evident. No geological information is available in the area surrounding the zone.

iii) Zone B

As was the case of Zone A1, black argillites of the Dutch Creek Formation are the most probable cause of the very anomalous IP and Resistivity results interpreted to Form Zone B. Again, the western edge of the argillite unit is apparently the most polarizable and most conductive, with the northern end of the IP trend possibly extending across the contact into dolomite, although the contact position is mapped only approximately in the vicinity.

Detailed IP and resistivity measurements using 25 meter dipole lengths, were completed on Line 31S, in order to better evaluate the source of Zone B. These measurements indicate the presence of two separate, closely spaced zones of anomalous material, at a depth of less than 25 meters. The western limit of polarizable mineralization is approximately Station 41 + 00 W.

iv) Zone C

Line 31S was apparently the only IP and Resistivity line surveyed far enough to the east to encounter this zone. Argillites are probably the cause of this response.

Min 1 Grid

i) Zone D

This feature is encountered on the western ends of Line 26S through to Line 29S. Strongly anomalous IP and Resistivity signatures are noted coincident with the most anomalous VLF EM conductor recorded during the present survey program. Unfortunately, the zone is located within a region mapped as black argillite. Pyrite within the argillite is the most likely cause of the geophysical responses.

ii) Zone E

Dutch Creek Formation argillite is mapped as underlying this zone of anomalous IP, Resistivity and VLF EM responses. The region between Zone D and Zone E is apparently occupied by a much less polarizable, and more resistive rock type, such as dolomite, rather than black argillites.

iii) Zone R1, Zone R2

Both of these zones consist primarily of lower than background apparent resistivity values, without accompanying anomalous polarizability readings. In some instances, weak VLF EM anomalies appear to be associated with the zones.

The sources of Zone R1 and Zone R2 are indicated to be non-metallic, and could be water-filled shear zones, or

other area of weakness. Non-polarizable minerals such as sphalerite could also be present.

While this type of signature would normally receive very little, if any, priority for additional work, the presence of dolomite rock underlying the area of the zones does allow one to upgrade the priority of these zones somewhat.

iv) Zone H

This zone of anomalous IP effects and lower than normal apparent resistivity values is interpreted to strike across the eastern ends of all of the lines of the Min 1 grid, as well as being seen on all lines of the Redledge 2 grid, which is located immeidately south of the former area.

Within the Min 1 grid area, the source of the zone appears to be Dutch Creek black argillites, with the most polarizable and the most conductive material being indicated close to the contact with argillaceous dolomite on the west.

Depth to the source does not exceed 50 meters subsurface, in the case of Line 30S, the only line extended far enough east to determine the depth to the source.

Redledge 2 Grid

i) Zone F

Quartzite is mapped as underlying this moderately anomalous IP and Resistivity trend, although the western margin of the zone is completly undefined at present, as is the position of the zone between Line 36S and Line 40S. The possibility exists that Zone F is the southern continuation of Zone E or

Zone R2, with the former being the more likely choice, because of its higher magnitude IP effects.

ii) Zone G

This short narrow zone is outlined on the Redledge 2 grid just to the east of Zone F. While its source is indicated to be of limited size, Zone G is located within the dolomite unit, which provides some encouragement. Detail IP and Resistivity surveying is required to further investigate the cause of this response.

iii) Zone H

As mentioned previously, Zone H is characterized by highly anomalous polarizability measurements and low apparent resistivity values. The center of the zone strikes across the contact from black argillite into an area mapped as dolomite, in the southern part of the Redledge 2 grid area. However, the anomaly signatures suggest that a less polarizable, more resistive rock such as dolomite may be overlying much more anomalous material, such as pyritiferous argillite. Detail surveying would confirm the signature.

Line 38S and Line 39S were extended to the east in order to test the area around a large gossan. In both cases, moderately anomalous effects are noted correlating with the gossan. In fact, this oxidized material is along strike from Zone I, which is considered below.

iv) Zone I

Very high magnitude polarizability measurements together with low apparent resistivity values, mark Zone I, on the southernmost line of Redledge 2 grid. The zone is

interpreted as striking southward to Redledge 1 grid. Black argillite appears to be the primary source of this geophysical trend in the vicinity of the Redledge 2 grid.

Redledge 1 Grid

i) Zone I

This is the only anomalous geophysical feature noted on this grid area, however, a very large, highly polarizable, and quite conductive source is apparently present. Moderately anomalous VLF EM responses correlate reasonably well with the IP zone on Line 47S and Line 48S.

Virtually all of the anomalous IP response is contained within a region marked as black argillite, which must be the main cause of the geophysical response.

A number of areas of gossan material occur within the extent of Zone I, with the largest being noted near the eastern ends of Line 50S and Line 51S. This area lies just east of the center of the most anomalous IP and resistivity readings. Weakly anomalous VLF EM indications are marked near the eastern ends of both lines as well.

4. SUMMARY AND RECOMMENDATIONS

A combined program of Induced Polarization and Resistivity, and VLF Electro-Magnetic surveying has been completed on four different grid areas on the EBl Project.

Generally, it can be said that the most anomalous geophysical responses are due to pyritiferous black argillite which underlies much of the Project area. Also, in the case of the VLF EM work, all of the available transmitting stations are located almost perpendicular to the geological strike of the region, which greatly reduces the effectiveness of the method.

However, on all of the grids, the possibility exists that some of the geophysical response arises from within the more favourable dolomite rock unit. In these cases, further work is definitely recommended as outlined below.

Min 2 Grid

The northern ends of both Zone Al and Zone B are noted striking into dolomite in the vicinity of Line 31S. Therefore, further work to investigate the sources of these geophysical zones should be initially concentrated on Line 31S, near the western edge of the marked IP response. No additional geophysical work is necessary at this time.

Zine C is only crossed by one survey line, in an area of argillite. Additional surveying is required before physical testing could be considered.

Min 1 Grid

Zone D and Zone E are most probably caused by pyrite contained in the argillite, and no further geophysical surveying work should be considered at this stage.

Zone R1 and Zone R2 are outlined in an area of favourable geology (dolomite); however, the lack of any polarization response downgrades the priority for further work. At this stage, it is felt that detailed IP surveying, using 25 meter dipoles, should be completed across both zones on Line 30S. This would allow the possible significance of the sources involved to be better assessed.

On the Min 1 grid area, Zone H appears to be confined to the black argillites, and no further geophysical work is recommended at this time.

Redledge 2 Grid

Zone F and Zone G are both of interest due to their location within quartzite and dolomite rocks respectively.

In the case of Zone F, additional IP surveying is required to define the western margin of the zone.

Detailed IP surveying is definitely recommended over the vicinity of Zone G, on Line 36S, in order to better locate the center and depth of the source of the anomaly.

The southern end of Zone H trends into an area mapped as dolomite. However, there is some suggestion in the IP and Resistivity results that the dolomite may be overlying more

polarizable, and more conductive argillite in this region. Detailed 25 meter dipole IP surveying is suggested on Line 39S, Line 40S, and Line 41S, as the best way to further investigate this area.

Shorter dipole IP coverage would also be necessary on the eastern ends of Line 38S and Line 39S, in the area of a gossan, in order to more accurately define the possible area of interest.

Redledge 1 Grid

The most promising area on this grid area is in the region of the eastern ends of Line 50S and Line 51S, where moderately anomalous IP and Resistivity results are noted near a large gossan. Again, 25 meter detail IP surveying should be completed in the area of the gossan to better outline any mineralization associated with the oxide zone.

PHOENIX GEOPHYSICS LTD.

Paul A. Cartwright, B.Sc.
Geophysicist

Frank DiSpirito, B.A.Sc., P.Eng.
Geophysicist

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
F. DISPIRITO

Dated December 5, 1980

5. ASSESSMENT DETAILS

Property: Min 1, Min 2, S Min 1, Redledge 1 & Redledge 2 claims

Mining Division: Golden

Sponsor: Trigg, Woollett Consulting Ltd.

Province: British Columbia

Location: Toby Creek Area

Types of Surveys: Induced Polarization and Resistivity and VLF-EM

Operating Man Days: 40.0

Equivalent 8 hr. man days: 60.0

Consulting Man Days: 7.0

Drafting Man Days: 10.0

Total Man Days: 77.0

Date Started: August 6, 1980

Date Finished: November 3, 1980

Number of Stations:
VLF-EM - 254
IP and Resistivity - 340

Number of Readings:
VLF-EM - 508
IP and Resistivity - 1874

Km. of Line surveyed:
VLF-EM - 6.4 Km.
IP and Resistivity - 16.7 Km.

Consultants:

P.A. Cartwright, 4238 W. 11th Ave., Vancouver, B.C.

F. DiSpirito, 2748 Oxford St., Vancouver, B.C.

Field Technicians:

P.A. Cartwright, 4238 W. 11th Ave., Vancouver, B.C.

F. DiSpirito, 2748 Oxford St., Vancouver, B.C.

G. Ouellette, 502 Taschereau Est., Rouyn, P.Q.

Plus Extra Labourer:

K. Johnston, General Delivery, Kimberly, B.C.

Draughtsman:

R.C. Norris, 1204 - 45 Sunrise Avenue, Toronto, Ontario

PHOENIX GEOPHYSICS LIMITED

F. DiSpirito, B.A.Sc., P.Eng.
Geophysicist

6. STATEMENT OF COST

Trigg, Woollett Consulting Ltd.
Geophysical Survey, Min 1, S Min 1,
Min 2, Redledge 1 and Redledge 2 Claims
Golden M.D., British Columbia

Crew: P.A. Cartwright - F. DiSpirito
G. Ouellette - K. Johnston

Period: August 6 - November 3, 1980

7	operating days	@ $615.00/day	$ 4,305.00
11	operating days	@ 715.00/day	7,865.00
1/2	bad weather day	@ 250.00/day	125.00
5	bad weather days	@ 290.00/day	1,450.00
1	travel day	@ 250.00/day	250.00
2	travel days	@ 290.00/day	580.00
1	day organization	@ 250.00/day	250.00
	Air fare		99.35
	Freight Charges		249.20
	Vehicle Charges (including fuel and mileage)		879.70
	Miscellaneous charges		158.33
	Plus 15% of expense charges		209.79
			$16,421.37

PHOENIX GEOPHYSICS LIMITED

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
F. DISPIRITO

F. DiSpirito, B.A.Sc., P.Eng.
Geophysicist.

CERTIFICATE

I, Paul A. Cartwright, of the City of Vancouver, Province of British Columbia, do hereby certify that:

1. I am a geophysicist residing at 4238 West 11th Avenue, Vancouver, B.C.

2. I am a graduate of the University of British Columbia, B.C. with a B.Sc. Degree.

3. I am a member of the Society of Exploration Geophysicists.

4. I have been practising my profession about 10 years.

5. I have no direct or indirect interest, nor do I expect to receive any interest directly or indirectly, in the property or securities of Trigg, Woollett Consulting Ltd. or any affiliate.

6. The statements made in this report are based on a study of published geological literature and unpublished private reports.

7. Permission is granted to use in whole or in part for assessment and qualification requirements but not for advertising purposes.

Dated at Vancouver

this 5th day of December 1980

Paul A. Cartwright

Paul A. Cartwright, B.Sc.

CERTIFICATE

I, Frank DiSpirito, of the City of Vancouver, Province of British Columbia, do hereby certify that:

1. I am a geophysicist residing at 2748 Oxford Street, Vancouver, B.C.

2. I am a graduate of the University of British Columbia, B.C. with a B.A.Sc. Degree in Geological Engineering.

3. I have been practising my profession about 6 years.

4. I have no direct or indirect interest, nor do I expect to receive any interest directly or indirectly, in the property or securities of Trigg, Woollett Consulting Ltd. or any affiliate.

5. The statements made in this report are based on a study of published geological literature and unpublished private reports.

6. Permission is granted to use in whole or in part for assessment and qualification requirements but not for advertising purposes.

Dated at Vancouver

This 5th day of December 1980.

Frank DiSpirito, P.Eng.

LEGEND

PROTEROZOIC

HADRYNIAN

Windermere System

8 — HORSETHIEF CREEK GROUP: quartz pebble conglomerate, grit, argillite and minor dolomitic limestone

HELIKIAN

Purcell System

6 — MOUNT NELSON FORMATION: 6a, massive and thin- to thick-bedded, fine- to medium-grained white and pale green quartzite; 6b, massive and laminated, medium- to thick-bedded, buff- to brown-weathering grey dolomite; 6c, green, grey and black argillite, and dolomitic argillite; 6d, grit and quartz pebble conglomerate

5 — DUNCH CREEK FORMATION: 5a, thin bedded, grey, green, black and white argillite, siltstone, fine grained quartzite and calcareous argillite; 5b, massive and finely laminated, buff weathering cream dolomite

Intrusive Rocks

Dark green chloritic intrusive rock (diorite?)

SYMBOLS

- Outcrop or area of outcrop
- △ ❄ Frost heaved rock, float
- Geological boundary (defined, approximate, assumed, gradational)
- Fault (defined, assumed)
- Thrust fault (approximate, assumed): teeth indicate upthrust side
- Bedding, tops unknown (inclined, vertical)
- Foliation (inclined, vertical, dip unknown)
- Lineation (inclined)
- Minor fold axis (inclined, horizontal)
- Joint or fracture (dip unknown)
- OSHMOOS X (X) GLEN, SPHL — Mineral occurrence (location defined, approximate; identifier: GLEN denotes galena, SPHL denotes sphalerite, TTHD denotes tetrahedrite, CLCP denotes chalcopyrite, BART denotes barite)
- Float mineral occurrence
- Gossan
- Trench or tunnel
- Road
- 45+00S — Grid established by transit or compass, and chain (line identifier)
- MINI — Mineral claim boundary: claim name, legal corner post shown
- 5000 (1524) — Topographic contour after 1:50,000 NTS map sheet 82K/8: elevation in feet (metres)

Checked GPH

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF ALBERTA
PERMIT NUMBER P 2374
TRIGG, WOOLLETT CONSULTING LTD.

Part 3 of 3

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 8639

ECHO BAY MINES LTD.

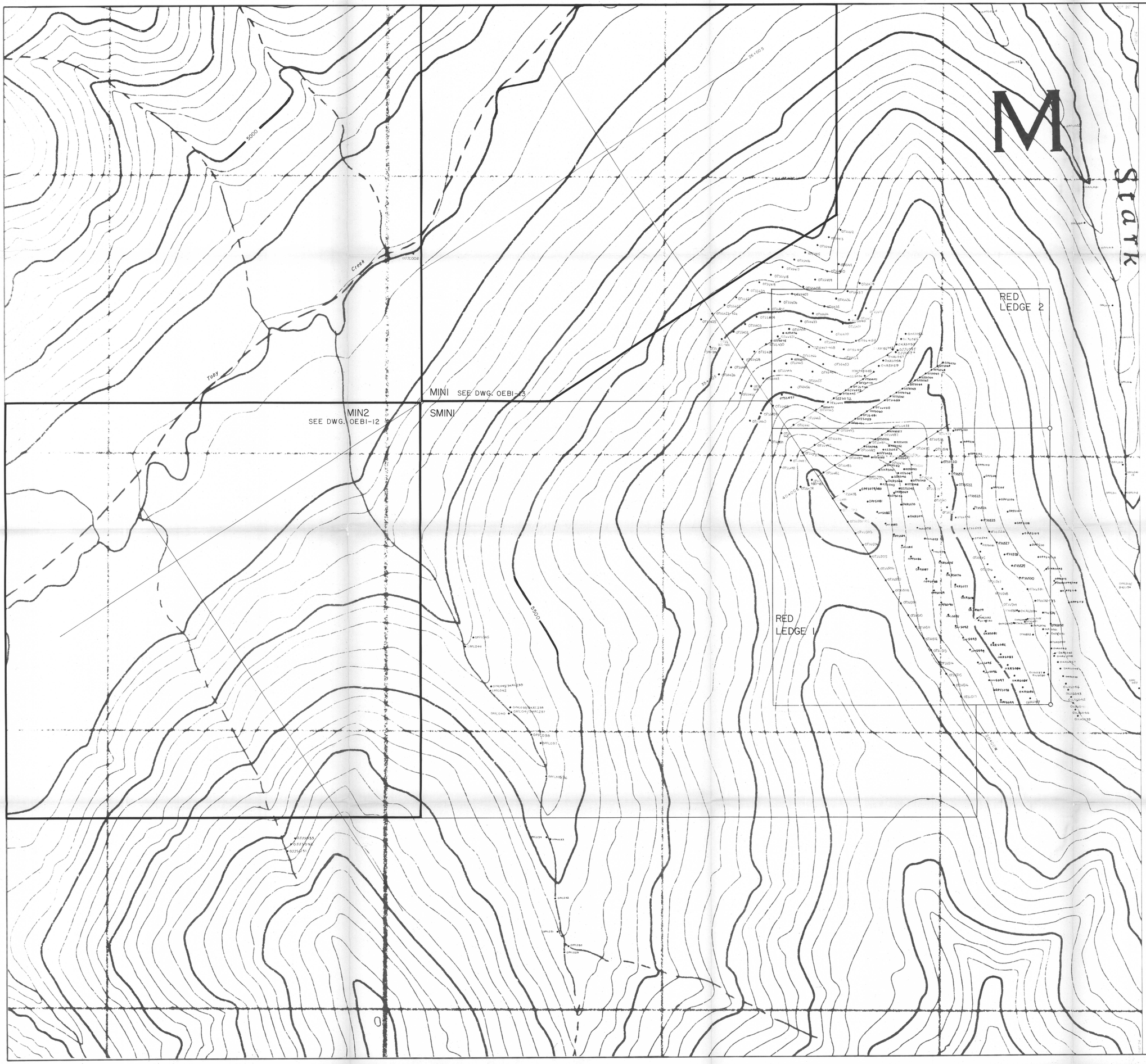
MINI, MIN2, SMINI, RED LEDGE 1, RED LEDGE 2

GEOLOGY, MINERAL OCCURRENCES

NTS 82K/8W
GOLDEN MINING DIVISION, BRITISH COLUMBIA
SCALE 0 50 100 200 METRES

TRIGG, WOOLLETT CONSULTING LTD.
EDMONTON, ALBERTA
DECEMBER, 1980

DWG. OEBI - 9



SYMBOLS

- OTS5516 — Sample site identifier (prefix B2K7 or B2KB omitted); S or 4th digit from right denotes a soil sample, C denotes a stream sediment sample. Note: All soil samples collected from B soil horizon unless otherwise indicated
- SEE DWG. OEBI-13 — Sample locations within this area are plotted at 1:2500 scale; drawing number is shown
- 28+00S / 32+00W — Grid line identifiers shown
- RED LEDGE 1 — Mineral claim boundary; name, legal corner post shown
- 5000 — Topographic contour after 1:50,000 NTS map sheet B2K/8; elevation in feet

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8639
NO.

part 3 of 3

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF ALBERTA
PERMIT NUMBER P 2374
TRIGG, WOOLLETT CONSULTING LTD.

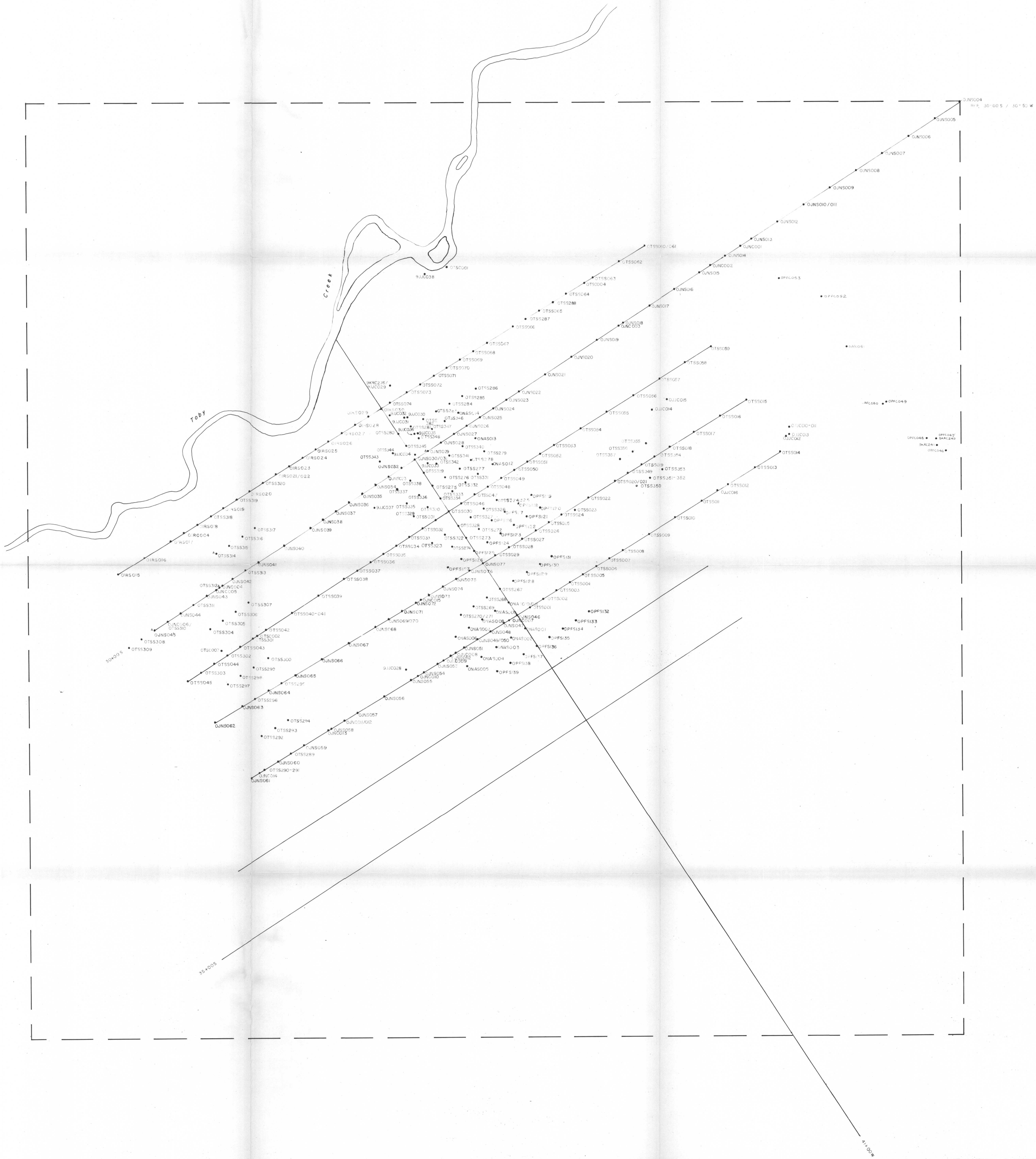
ECHO BAY MINES LTD.

MINI, MIN2, SMINI, RED LEDGE 1, RED LEDGE 2

SAMPLE LOCATION AND NUMBER

NTS 82K/8W
GOLDEN MINING DIVISION, BRITISH COLUMBIA
SCALE 1:2500 — 200 METRES
TRIGG, WOOLLETT CONSULTING LTD.
EDMONTON, ALBERTA
DECEMBER, 1980

DWG. OEBI - 11



SYMBOLS

A
• OPFS127 — Sample site: Identifier (prefix 82K7 or 82K8 omitted);
A denotes soil sample collected from A horizon;
S in 4th digit from right denotes a soil sample,
C denotes a stream sediment sample

35+00S / 41+00W — Grid: line identifiers shown

part 3 of 3

ECHO BAY MINES LTD.

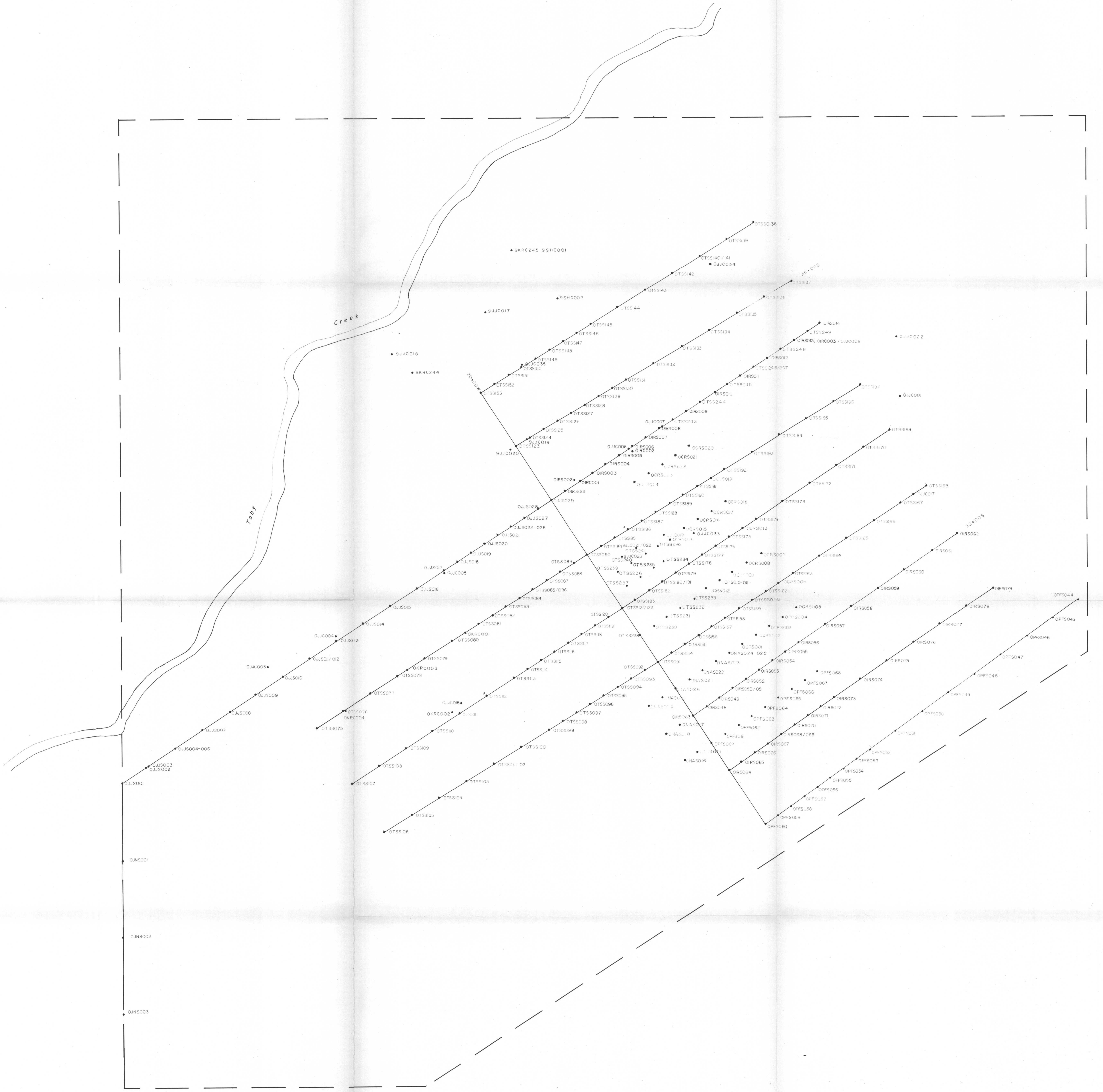
MIN2 GRID

SAMPLE LOCATION AND NUMBER

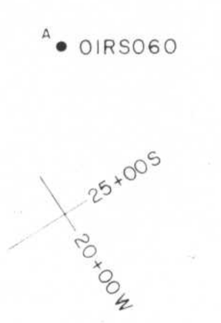
NTS 82K/8W
GOLDEN MINING DIVISION, BRITISH COLUMBIA
SCALE 0 25 50 75 100 Metres
TRIGG, WOOLLETT CONSULTING LTD.

EDMONTON, ALBERTA — DECEMBER, 1980

DWG. OEBI - 12



SYMBOLS



Sample site identifier (prefix 82K7 or 82K8 omitted);
A denotes soil sample collected from A horizon;
S in 4th digit from right denotes a soil sample,
C denotes a stream sediment sample

Grid line identifiers shown

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8639
NO.

part 3 of 3

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. A. OLSON

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF ALBERTA
PERMIT NUMBER
P 2374
TRIGG, WOOLLETT CONSULTING LTD.

ECHO BAY MINES LTD.

MINI GRID

SAMPLE LOCATION AND NUMBER

NTS 82K/8W
GOLDEN MINING DIVISION, BRITISH COLUMBIA

SCALE 0 25 50 100 METRES

TRIGG, WOOLLETT CONSULTING LTD.

EDMONTON, ALBERTA

DECEMBER, 1980

DWG. OEBI - 13

50°20'

118°24'

MINI

MIN2

SMINI

RED LEDGE 2

RED LEDGE I

Creek

Toby

Stark

6000 (1829)

5500 (1676)

5000 (1524)

4500 (1372)

6500 (1981)

7000 (2134)

7500 (2287)

35+00 S

40+00 S

45+00 S

50+00 S

55+00 W

41+00 W

SYMBOLS

Sample site

BACKGROUND. Geochemical soil or stream sediment sample in which Pb, Zn, Ag and Cd are less than the following concentrations:

Soil		Stream Sediment	
Pb	50 ppm	Pb	50 ppm
Zn	50 ppm	Zn	100 ppm
Ag	0.5 ppm	Ag	0.5 ppm
Cd	>0.2 ppm	Cd	>0.2 ppm

POSSIBLY ANOMALOUS. Geochemical soil or stream sediment sample in which two or more of Pb, Zn, Ag and Cd are within the following concentration ranges, or one of these elements is above the following concentrations:

Soil		Stream Sediment	
Pb	50 - <100 ppm	Pb	50 - <100 ppm
Zn	50 - <100 ppm	Zn	100 - <200 ppm
Ag	0.5 - <1.0 ppm	Ag	0.5 - <1.0 ppm
Cd	>0.2 - <0.5 ppm	Cd	>0.2 - <0.5 ppm

PROBABLY ANOMALOUS. Geochemical soil or stream sediment sample in which two or more of Pb, Zn, Ag and Cd are within the following concentration ranges:

Soil		Stream Sediment	
Pb	100 - <500 ppm	Pb	100 - <500 ppm
Zn	100 - <500 ppm	Zn	200 - <1,000 ppm
Ag	1.0 - <2.0 ppm	Ag	1.0 - <2.0 ppm
Cd	0.5 - <2.0 ppm	Cd	0.5 - <2.0 ppm

ANOMALOUS. Geochemical soil or stream sediment sample in which one or more of Pb, Zn, Ag and Cd are greater than or equal to the following concentrations:

Soil		Stream Sediment	
Pb	500 ppm	Pb	500 ppm
Zn	500 ppm	Zn	1,000 ppm
Ag	2.0 ppm	Ag	2.0 ppm
Cd	2.0 ppm	Cd	2.0 ppm

NOTE: c denotes a stream sediment sample
Pb denotes lead
Zn denotes zinc
Ag denotes silver
Cd denotes cadmium
ppm denotes parts per million
> denotes greater than
< denotes less than

Grid line identifiers shown

MINI — Mineral claim boundary - claim name, legal corner post shown

5000 (1524) — Topographic contour after 1:50,000 NTS map sheet 82K/8 elevation in feet (metres)

ECHO BAY MINES LTD.

MINI, MIN2, SMINI, RED LEDGE I, RED LEDGE 2

LEAD, ZINC, SILVER AND CADMIUM IN SOIL AND STREAM SEDIMENT

NTS 82K/8W

GOLDEN MINING DIVISION, BRITISH COLUMBIA

SCALE 0 50 100 200 METRES

EDMONTON, ALBERTA — DECEMBER, 1980

DWG. OEBI - 14

50°20'

118°24'

MINI

SMINI

MIN2

RED LEDGE 2

RED LEDGE 1

Creek

Toby

Stark

5000 (1524)

5500 (1676)

6000 (1829)

6500 (1981)

7000 (2134)

7500 (2287)

30+00 S

35+00 S

40+00 S

45+00 S

50+00 S

55+00 S

30+00 W

35+00 W

40+00 W

25+00 S

A

A1

A2

B

C

D

E

F

G

H

I

R1

R2

SYMBOLS

GEOPHYSICAL ANOMALIES

INDUCED POLARIZATION (50m dipole spacing unless otherwise noted)

- Definite
- Probable
- Possible

RESISTIVITY

VLF-EM

- Definite Seattle TX, Cutler TX
- Probable Seattle TX, Cutler TX
- Possible Seattle TX, Cutler TX

CENTRE OF ANOMALOUS ZONE IDENTIFIER (A)

Note: Geophysical anomalies are taken from Cartwright and DiSpirito (1980)

Grid line identifiers shown

MINI — Mineral claim boundary, claim name, legal corner post shown

5000 (1524) — Topographic contour after 1:50,000 NTS map sheet 82K/8, elevation in feet (metres)

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 8639

Part 3 of 3

PROFESSIONAL ENGINEERS PROVINCE OF BRITISH COLUMBIA

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF ALBERTA
PERMIT NUMBER P 2374
TRIGG, WOOLLETT CONSULTING LTD.

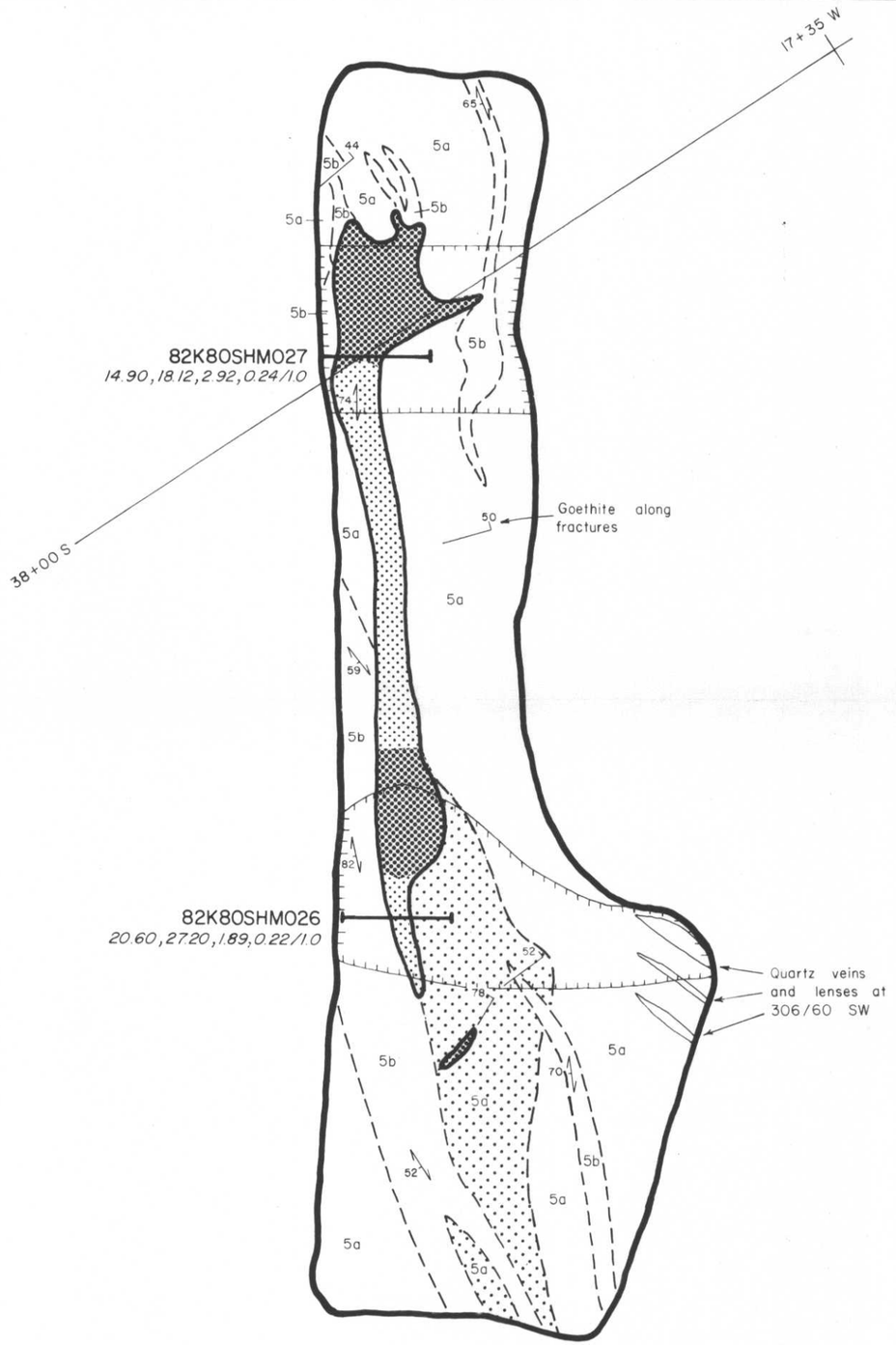
ECHO BAY MINES LTD.

MINI, MIN2, SMINI, RED LEDGE 1, RED LEDGE 2

GEOPHYSICAL ANOMALIES

NTS 82K/8W
GOLDEN MINING DIVISION, BRITISH COLUMBIA
SCALE 0 50 100 200 METRES
TRIGG, WOOLLETT CONSULTING LTD.
EDMONTON, ALBERTA DECEMBER, 1981

DWG. OEBI - 15



LEGEND

5 — MOUNT NELSON FORMATION: 5a, massive dolomite; 5b, sheared dolomite and argillaceous dolomite

SYMBOLS

Geological boundary (defined, approximate)

74 — Foliation (inclined)

50 — Joint, fracture (inclined)

Massive galena, anglesite and/or cerrusite and tetrahedrite

Pods of massive galena, anglesite and/or cerussite and tetrahedrite

Disseminated galena or galena on fractures

82K80SHM027 — 14.90,18.12,2.92,0.24/10 — Rock chip sample location (sample identifier; ounces silver per ton, per cent lead, per cent zinc, per cent copper/sampled width in metres)

Boundary of overburden stripped area

Boundary of rock trench

38+00S — Grid: line identifier

Part 3 of 3

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8639
NO.

NOTE: The rock chip samples were collected across the massive sulphide mineralized zone prior to rock trenching; this drawing shows the massive zone as it exists at the bottom of the trenches.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. A. OLSON

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RED LEDGE 2 MINERAL CLAIM

MINERAL OCCURRENCE OSHM007

NTS 82K/8W
GOLDEN MINING DIVISION, B.C.

SCALE 0 .5 1.0 2.0 METRES

TRIGG, WOOLLETT CONSULTING LTD.
EDMONTON, ALBERTA — DECEMBER, 1980

DWG. OEBI-10

50°20'

118°24'

Toby Creek

Stark Creek

6000 (1829)

5500 (1676)

5000 (1524)

4500 (1372)

25+00 S

30+00 S

35+00 S

40+00 S

45+00 S

50+00 S

30+00 W

35+00 W

40+00 W

MINI

SMINI

MIN2

RED LEDGE 2

RED LEDGE 1

150

80

200

70

20

200

15

150

100

50

SYMBOLS

PROPOSED GEOPHYSICAL SURVEYS

Very low frequency electromagnetic

Induced polarization/resistivity

50m dipole spacing

25m dipole spacing

PROPOSED GEOCHEMICAL SURVEY

15 — Boundary of area where geochemical soil sampling is required approximate number of samples to be collected

PROPOSED DIAMOND DRILLING

150 — Area in which drilling is required minimum metreage to be drilled

Area	Metres
MINI	150
MIN2	150
RED LEDGE 1	200
RED LEDGE 2	200
Discretionary drilling	300
TOTAL	1000

35+00 S / 30+00 W — Grid line identifiers shown

MINI — Mineral claim boundary : claim name, legal corner post shown

5000 (1524) — Topographic contour after 1:50,000 NTS map sheet 82K/8 : elevation in feet (metres)

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
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Part 3 of 3

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MINI , MIN2 , SMINI, RED LEDGE 1, RED LEDGE 2

PROPOSED EXPLORATION

NTS 82K/8W
GOLDEN MINING DIVISION, BRITISH COLUMBIA

SCALE 0 50 100 200 METRES

TRIGG, WOOLLETT CONSULTING LTD.
EDMONTON, ALBERTA — DECEMBER, 1980

DWG. OEBI - 16