GEOLOGICAL REPORT ON SILVER CHIEF CLAIMS
TROUT LAKE AREA, REVELSTOKE MINING DISTRICT
BRITISH COLUMBIA

For

Alberta Silver Mines Ltd.

By

Angus G. MacKenzie Mining Consultants Ltd.

April, 1971

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(LAT 50° 41' N LONG 117° 17' W)

Prepared For

Alberta Silver Mines Ltd.

Calgary, Alberta

THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF ALBERTA
PERMIT NUMBER
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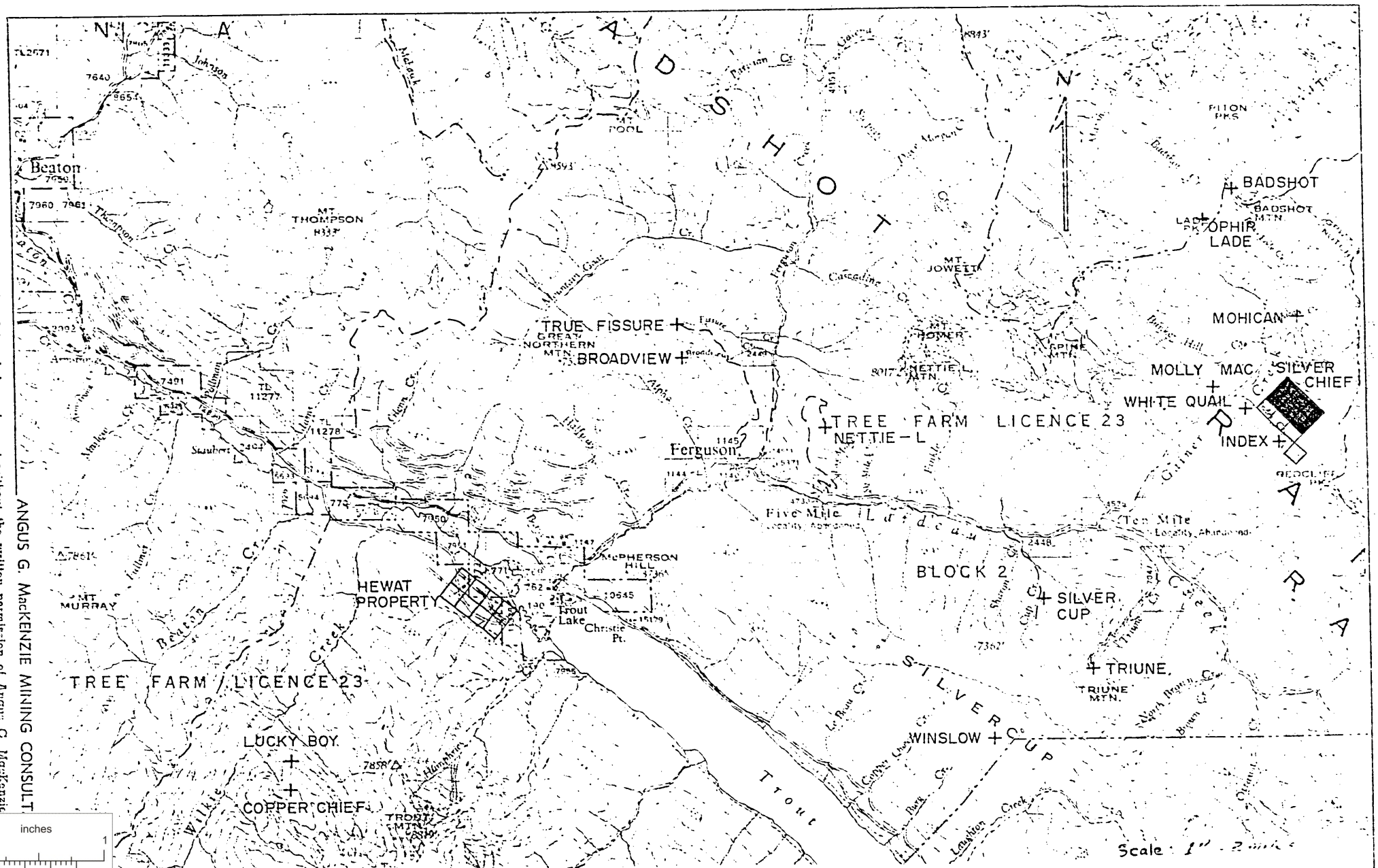
AUTHORITY AND GENERAL STATEMENT

Authority to conduct a preliminary investigation on properties of Alberta Silver Mines Ltd. was given by Mr. Dennis Beardsley, President. The Silver Chief property in the Trout Lake area, Revelstoke Mining District, Province of British Columbia was examined by E.R.L. Kintanar, Mining Geologist, and an assistant in October, 1970.

This report covers a site visit to mineralized showings on the above-mentioned property of Alberta Silver Mines Ltd. In addition to the field investigations, all available, pertinent, published reports were reviewed, and information about the property and the general area was utilized in the compilation of this report.

Actual ownership and property status of the property discussed in this report have not been checked by us at the office of the Mining Recorder of British Columbia. The list of mineral claims was supplied by Mr. Richard D. Tingle of the law firm Moore, Lougheed, Atkinson, McMahon & Tingle (the solicitors for Alberta Silver Mines Ltd.) and is assumed to be correct as to title and good standing.



URE 1 INDEX MAP SHOWING LOCATION OF ALBERTA SILVER MINES LTD. PROPERTIES IN RELATION TO OTHER IMPORTANT PROPERTIES, TROUT LAKE AREA, BRITISH COLUMBIA.

INTRODUCTION

The Silver Chief Property consists of six mineral claims originally acquired from the Crown by virtue of staking.

The following mineral claims are presently held by Alberta Silver Mines Ltd. These six claims were purchased by Alberta Silver Mines Ltd. under agreement of September 3, 1970 from Egion A. Bone and Ernest Simmons:

FILING LIST OF CLAIMS

CLAIM	RECORDED NUMBER	RENEWAL DATE
Silver Chief 1	6191E	May, 1971
Silver Chief 2	6192E	May, 1971
Silver Chief 3	9876H	May, 1971
Silver Chief 4	9877H	May, 1971
Silver Chief 5	9878H	May, 1971
Silver Chief 6	9879H	May, 1971

LOCATION

The Silver Chief property as described above is located in the Ferguson-Trout Lake area. The mineral claims are on the southeast side of Gainer Creek, a tributary of Lardeau Creek, and on the northeast side of Index Creek. The area is within the Revelstoke Mining District, British Columbia.

ACCESSIBILITY

The Silver Chief property is accessible by road from Revelstoke on the Trans Canada Highway; then via Provincial Highway 23 south to Arrowhead; across the Upper Arrow Lake by ferry to Galena; and from Galena to Beaton, Trout Lake and the ghost town of Ferguson. It is also accessible from Nelson or Creston via Provincial Highway 3A, north along the west side of Kootenay Lake and Lardeau River to Trout Lake and the town of Ferguson. The Silver Chief property can also be reached from Vernon in the Okanagan Valley via Highway 6, east to Needles, across the Lower Arrow Lake to Fauquier, north to Nakusp and Beaton and south to Trout Lake and Ferguson.

From Ferguson, a forestry access road follows the north side of Lardeau Creek to Tenmile. Here the road splits; one goes south up the Silver Cup range as access to the Triune property and the other goes northeast up Gainer Creek as access to the Molly Mac property. From the Molly Mac property a cat-road has been started along Index Creek towards the Silver

Chief (See Figure 1). The cat-road stops about 1,500 feet below the showings of the Silver Chief property but it is within the additional claims taken south of the original Silver Chief group.

From the end of the cat-road a trail leads to the showings above.

It is a distance of about 3½ miles from Tenmile Junction to Molly Mac. The road is in fair condition and can be made safely passable by clearing a few slides and reinforcing a few small bridges and culverts. The cat-road could also be cleared easily. The cat-road may be extended along Index Creek up to the lower showing at little cost.

HISTORY

Silver Chief was the original name for a group of claims in the area and was first mentioned in the B. C. Minister of Mines Report of 1897. In 1898 an exploratory adit was driven for 80 feet. After this very little work was done for over 50 years. In 1953 Samson Mining Corporation built a jeep road into Index Basin and did some test pitting on the Silver Chief Claims. The claims lapsed during a dispute over ownership in 1955. In 1957 R. Zielenski staked six (May 1 to 6) claims in the area. The ownership passed briefly to Foundation Mines Ltd. and then to L.B. York and Lloyd York of Vancouver. Some road and trail work and some stripping and prospecting was done. Since 1957 no work has been recorded although the property has been staked and re-staked year after year. No reports of any work done by these various companies are available.

G.E.P. Eastwood conducted a geological study of the Ferguson area (inclusing the Silver Chief property) in the summers of 1953 to 1958. J.T. Fyles joined the study group in 1957 and 1958. The results of this work and our examination are the basis of this report.

The area was re-staked by Egion A. Bone and the claims were purchased by Alberta Silver Mines Ltd. under an agreement dated September 3, 1970 from Egion Bone and Ernest Simmons.

PROPERTY SETTING - TOPOGRAPHIC

The property is at timberline on the southwest slope of Index Basin at an elevation between 5,000 and 7,500 feet A.S.L. The valley floor on which

Gainer Creek flows is about 4,200 feet A.S.L. The face of the slope on which the property is located is rugged; however, a bench is present for setting up camp facilities. Most of the showings are in or close to a draw, a shallow but marked gully bisecting the slope. Bedrock is well exposed and overburden is generally thin.

Old workings include three adits (one was located and examined during our investigation), a small cut in bedrock and a dozen or more small pits and trenches which were not investigated because of snow cover. The upper adit (which we could not find) was apparently driven in the centre of the draw at 7,000 feet A.S.L. and a cut, examined and referred to as the upper showing, was made on bedrock about 20 feet east of it. A second adit (which we did examine) was also driven in the draw at 6,730 feet A.S.L. To the south of the second adit is a bench at elevation 6,700 feet A.S.L. A third adit had been driven about 75 feet lower down the draw.

CLIMATE, TIMBER, WATER POWER

The following data on climate, timber and water power are quoted verbatim from the report on the Lardeau Map-area by Walker and Bancroft, G. S. C. Memoir 161, 1929:

QUOTE: "The mean annual precipitation at Revelstoke is about 42 inches and the mean annual temperature is 43.4 degrees. At Ferguson the precipitation is about 48 inches. Snowfall accounts for a third or more of the precipitation and amounts to about 12 feet at Revelstoke and 24 feet at Ferguson. Precipitation on the summits is naturally much greater. At Glacier, not far east of the map-area, the snowfall is 34 feet and this figure may be taken as about average for the higher ground in the Lardeau map-area. (Author notes that "feet" should possibly read as "inches")

Such conditions allow only a very short prospecting season at higher altitudes. About two months (Authors Note: we disagree; we calculate possibly five months) of fairly good prospecting conditions above timberline may be taken as average. Though the winters are long the valley temperatures are not extreme.

Electric storms are of common occurrence during summer months and they are the cause of numerous forest fires..... Large areas of good timber, however, have been destroyed. Except for the burnt areas, the district is well timbered.

Sufficient water power is available in the Lardeau district to meet local requirements....." END QUOTE

Bancroft and Walter (1929) show a table indicating the possibilities of hydro power development for various creeks and rivers in the area. The Lardeau Creek was listed as being capable of generating 2,000 Horsepower and the Five Mile Creek (south fork of Lardeau Creek) is capable of generating 625 Horsepower.

Water supply for about a 300 ton per day mill could be supplied from Gainer Creek at the base of the property.

We believe that a year round operation is feasible in the area if winterized facilities are provided.

COMMUNICATION AND POWER SUPPLY

Telephone and electric power are available at Trout Lake which is within 20 miles of the property. If three-phase power was required on the property, the relative cost of generating your own power as against B. C. Hydro costs would have to be closely assessed.

GENERAL GEOLOGY

Table I shows the formations exposed in the general area of Silver Chief as mapped and sub-divided by J. T. Fyles and G. E. P. Eastwood, 1962.

TABLE I

TABLE OF FORMATIONS

Group	Formation	Lithology
Mafic Intrusive		Mainly diorite
Milford		Slate, Argillite, Chert, Limestone and pebble conglomerate
Stratigraphy not established within map-area		
Lardeau	Broadview	Grey and green grit and phyllites; minor pebble conglomerate and pyroclastics
	Jowett	Mafic lavas, pyroclastics, argillite, minor limestone
	Sharon Creek	Dark grey to black siliceous argillite, slate, phyllite and minor grit
	Ajax	Massive grey quartzite
	Triune	Grey to black siliceous argillite
	Index	Dark grey and green phyllite; dark grey argillite, minor limestone and volcanics
Probable Conformity - relationship uncertain in map-area		
	Badshot	Grey limestone
	(Lade Peak)	(Grey limestone and argillaceous limestone)

Group	Formation	Lithology
	Apparent Conformity - relationship uncertain in map-area	
Hamill	Mohican	Dark grey and green phyllite; minor limestone
	Marsh-Adams	Grey, brown and white quartzite; micaceous quartzite, minor phyllite
	Mount Gainer	White to pinkish quartzite
	Base not exposed	

The rocks discussed below are mainly those formations belonging to the Lardeau Group because they are the rocks exposed in the immediate vicinity of the property.

An excellent description of the lithology is given by Fyles and Eastwood in their 1962 report and is quoted as follows:

QUOTE: "The Badshot formation is succeeded by a thick sequence of phyllites containing a few beds of limestone. These rocks make up the Index formation, the oldest in the Lardeau group. Parts of the Index formation are repeated several times by isoclinal folds in a belt about 2½ miles wide, southwest of Badshot and Mohican Mountains. The rocks are greatly deformed, and correlation of rock units from one fold to the next is hampered by the deformation and by the fact that sedimentary facies appear to change across the strike. The exact stratigraphic relationship between the Index and the Badshot formations is not entirely certain, but the Index is the younger. Anticlines within the Index expose a limestone called the Lade Peak formation beneath the Index phyllites that probably is equivalent to the Badshot formation. Green phyllitic volcanic rock a few hundred feet thick forms the upper-

most member of the Index formation and is conformably overlain by the Triune formation.

The Triune formation consists of dark-grey thin-bedded cherty slates and argillites. It is overlain by a lighter-grey, somewhat coarser-grained quartzite named the Ajax formation. The Ajax quartzite in turn is overlain by a dark-grey to black siliceous argillite and phyllite named the Sharon Creek formation. These three formations constitute a distinctive stratigraphic succession a few thousand feet thick. The Ajax quartzite is a particularly useful marker.

Volcanic rocks of the Jowett formation conformably overlie the Sharon Creek formation in the northeastern part of the map-area. The Jowett formation includes a few thousand feet of mafic volcanic rocks with a predominance of amygdaloids and pillow lavas near the base and pyroclastic rocks toward the top.

The Jowett formation is overlain by a thick succession of grey and green grits and phyllites known as the Broadview formation. The formation occurs between the Jowett formation and the Cup Creek fault zone in the northeastern part of the area and between the Sharon Creek formation and Trout Lake on the southwestern limb of the Silvercup anticline. Very few distinctive lithologic units are found within the formation, and only a general stratigraphic sequence is recognized.....

.....The Broadview formation is overlain by the Milford group on the northeast side of the Lardeau Valley. It is uncertain from evidence within the Ferguson area whether the contact between the Broadview at the top of the

Lardeau group and the Milford group is one of conformity or disconformity. The Milford group consists mainly of grey and black argillite and slate and grey, pink, or green chert. Argillaceous limestone near the base contains Mississippian fossils." END QUOTE

Local Geology

Because the examination of the property was limited, a considerable part of our geological and structural detail has been extracted from the study of Fyles and Eastwood. Outcrops and showings on the Silver Chief property have been examined by us but the extent and continuity could not be examined because of snow cover and lack of time. Air photos of the area have been studied to check structural and lithologic extensions.

Three bands of brown and grey limestone with green phyllite between each band are the main lithologic units for this area. These limestones have been designated as the Lade Peak formation by Fyles et al. They have been correlated as equivalent to the Badshot limestone. Outcrops of the Lade Peak formation in the area are mostly at cores of tight isoclinal folds. The three bands seen on the property are cores of three tight anticlines known as the Silver Chief anticlines. (See Figure 2)

The Lade Peak formation consists of limestone, argillaceous limestone and limy phyllites. The limy phyllites are generally very thinly bedded and occur as very thin interbeds of the thinly to medium bedded limestone and argillaceous limestone. Lenses of marbalized white limestone have been noted in the upper showing. Pods of siderite, which contain sulphides, are associated with contorted Lade Peak limestone at the axis of the Silver Chief anticlines.

The phyllites noted between the Lade Peak formation in the Silver Chief anticlines belong to the Index formation of the Lardeau Group. The Index formation is the oldest of the Lardeau Group. The formation consists of a thick sequence of grey and green phyllites and dark grey argillite together with thin bands of limestone, argillaceous limestone and volcanic rocks.

The Index formation is isoclinally folded and exhibits a northwesterly axis with a low-angle plunge. They are repeated several times across the Silver Chief anticline in the intervening synclines.

The thin limestone interlayers and lenses of the Index formation are the horizons of interest. Outcrops of this limestone on the Molly Mac property, across Gainer Creek from the Silver Chief, show sulphide mineralization associated with siderite replacement. Similar limestones with mineralization have also been noted on the White Quail property and the Index property. This limestone is thinly banded, grey to dark grey, with dark grey argillaceous partings at the basal portion. At Molly Mac it is reported to be about 40 to 100 feet thick and at the Index property it is reported to be about 50 to 60 feet thick.

Metamorphism and Alteration

The rocks in the area are strongly deformed and highly sheared, especially near contacts between more competent beds (limestone) and the less competent, fine clastics. Most rocks in the area could be considered to be in a low grade of regional metamorphism. The non-calcareous rocks contain principally muscovite, chlorite and quartz.

Limestones in the Index formation (where highly sheared, as along contacts with phyllitic rocks) are bleached and re-crystallized to white marble. Apparent variation in the stratigraphy of the Index formation may be caused in part by bleaching of dark-grey phyllite to light-grey or green phyllite.

Siderite has replaced rocks of the Index formation extensively and parts of the Triune and Jowett formations locally. The siderite weathers to rusty red and often shows as large surface gossan. The middle showing examined on the Silver Chief is mainly weathered siderite with a few pods and streaks of sulphides. The Lade Peak limestone contains lenses of massive siderite which contains pods of galena as noted in the upper showing examined. Limestone lenses (Molly Mac limestone) in the Index formation noted on the Molly Mac property and Index property also contain siderite replacements in which there are disseminated sulphides. Siderite was also reported as scattered, rhombohedral grains in a brown quartzite of the Index formation, east of Lade Peak.

STRUCTURAL GEOLOGY

Regional Structures

The Ferguson area is in the northwesterly trending part of the Kootenay Arc, which is a belt of highly deformed, sedimentary rocks extending southeast from Revelstoke, south along Kootenay Lake and southwest across the 49th Parallel.

The structure of the Ferguson area is dominated by complex folds. The significant folds are mainly composite and are aggregates of smaller folds of various sizes. The largest folds are an anticline and a complimentary syncline known as the Silver Cup Anticline and Finkle Creek Syncline. The anticline is southwest of the syncline and separated from it by a series of strike faults named the Cup Creek Fault Zone. Other major folds are smaller than the above. Regionally, they produce an apparent dip to the southwest due to slight overturning of the southwest side over the northeast side.

Northeast of the Silver Chief towards Badshot Mountain, Walker and Bancroft (1929) in their study, interpreted a major synclinorium trending northwest-southeast across the area.

Local Structures

Fyles and Eastwood did a fairly detailed study of the immediate vicinity of the Silver Chief property. Their interpretation of the local geology has been corroborated by our field work and by photo-geology. We quote the following from their report:

QUOTE: "Structure in the upper part of Gainer Creek is characterized by isoclinal folding and strong shearing. The nature of folding is such as to indicate a relative movement of the southwest side upward in relation to the northeast. The pattern is the same as it is to the southwest, but individual folds are much more highly attenuated and shearing and flowage are more pronounced. Axial planes of the folds dip 75 to 80 degrees to the southwest and axes plunge away from Gainer Creek, to the northwest at 5 to 10 degrees and to the southeast at 10 to 15 degrees.

Phyllites and calcareous rocks forming the Index and Lade Peak formations have a pronounced foliation dipping steeply and relatively uniformly to the southwest. Bedding is rarely seen in the phyllites and is well defined only in argillaceous limestones. Casual observations suggest that the rocks form a homoclinal succession, but isoclinal anticlines, spectacularly displayed locally by the Lade Peak limestones, indicate that the whole succession is isoclinally folded, and close studies show that parts of the succession are repeated many times. The structure is displayed best on the northwest side of Gainer Creek. Five anticlines are exposed, each with Lade Peak limestone in the core. The structure of the intervening phyllites in general is synclinal, but structural details within the phyllites are uncertain and the synclines appear to be complex.

Three closely spaced anticlines known as the Silver Chief anticlines cross Gainer and the lower part of Bunker Hill Creeks between 3 and 3½ miles northeast of Tenmile. The southwesternmost anticline is well displayed in smooth cliffs of limestone and argillaceous limestone on the northwest side

of Griner Creek and can be seen from a distance. Beds are repeated more or less symmetrically across the axial plane of the anticline, although in detail they are complexly contorted, sheared, and locally broken. Dragfolds have opposing shapes on either side of the axial plane, and, near the axis, beds on either limb diverge by several degrees in dip. The two anticlines to the northeast are broken on the northeast limb by strike faults. Where exposed, the faults are marked by a relatively inconspicuous zone of shearing, and the presence of the faults is indicated only by dragfolds and by stratigraphic relationships that show the anticlines to be incomplete. Dragfolds at the lowest elevations show that the faults transect the northeast limbs and are thought to pass upward into the overlying phyllites. At low elevations the upper, non-argillaceous part of the Lade Peak limestone is cut out by the faults, but up the dip the non-argillaceous limestone is present on the northeast limbs and passes over the crests of the anticlines. These relationships are deduced from a number of observations at various places along the formational strike. The topography and attenuation of the folds is such that the limestone at the core of the northeasternmost anticline plunges beneath the overlying phyllites on Silver Chief ridge and the limestone in the central anticline plunges beneath the phyllite northwest of Bunker Hill Creek. The limestone at the core of the southwestern anticline plunges beneath the phyllite in the Index basin and on the northwest side of Bunker Hill Creek. Hence limestone in the core of the northeastern anticline continues beyond the map-area to the southeast. The faults on the northeastern and central anticlines cannot be recognized in the phyllites. The small synclines between

the three anticlines of limestone contain mainly green phyllite and appear to be more highly attenuated than the anticlines. Within the phyllites, bedding is rarely seen and the detailed shapes of the folds are uncertain." END QUOTE

The anticlines described above extend from the Silver Chief property northwestward to the Molly Mac property and across Bunker Hill Creek where they start to plunge northwest. South of the Silver Chief property, they plunge southeastward. Figure 3 is a Geological Cross-section along Line A-A' across the Silver Chief property where showings have been noted. The cross-section illustrates one interpretation of the structural relationship of mineralization as well as possible lithologic association. Three minor faults cut across the Silver Chief anticline on the property. One of these faults is along the draw where most of the showings have been noted. (See Plate I)

ECONOMIC GEOLOGY

The principal mineral deposits of the Ferguson area contain silver, lead and zinc. Small amounts of copper were found and several properties have been prospected for gold and tungsten. Most of the deposits were discovered before the turn of the century but most of the exploration and "pre-development" work was done before 1920. Table II shows the recorded production of the various properties in the general area around Ferguson. (Table II taken from Fyles and Eastwood's report)

TABLE II

Total Production from Mines in the Ferguson Map-area

Mine	Year	Tons	Oz. Gold	Oz. Silver	Lb. Copper	Lb. Lead	Lb. Zinc
Badshot	1904	23	—	3,859	—	24,200	—
Black Prince	1904	30	—	4,643	—	8,532	—
Mohican	1903	9	1	459	—	4,894	—
Ophir-Lade	1932	13	13	—	—	—	—
Broadview	1900-1906	238	19	8,668	1,145	169,042	—
True Fissure	1908-1918 1937-1944	5,076	198	42,148	—	533,019	268,570
St. Elmo	1899	6	1	624	—	2,420	—
Ajax	1912-1914	539	13	18,901	—	552,696	—
Hettie L	1899-1904 1912-1922	12,820	781	459,255	—	1,309,868	28,239
Silver Cup	1895-1921 1937-1941	22,544	4,978	1,419,339	—	5,684,204	110,447
Towser	1917	25	5	1,400	—	20,117	—
Triune	1900-1905 1916-1918	653	335	144,928	—	494,867	9,749
Winslow	1934-1941	1,788	596	312	—	477	28
Copper Chief	1905, 1917	14	—	1,956	—	2,672	—
Lucky Boy (including Horseshoe)	1902-1906	467	1	97,467	4,294	247,481	—
Ruffled Grouse	1901-1902	9	—	1,446	—	1,685	—
TOTALS		44,259	6,941	2,205,383	5,439	9,056,174	435,033

As early as 1903, it was recognized that mineralization in the Lardeau area occurred in three parallel belts which follow the general trend of the formational strike to the northwest. These three belts are as follows: the southwest mineral belt represented by the Lucky Boy and Copper Chief mineral deposits; the central mineral belt represented by the Silver Cup, Triune, Towser, Nettie L and Ajax, to mention a few; and the lime dyke mineral belt represented by the Molly Mac, Index, White Quail and Silver Chief mineral properties.

In Table II, the first four are in the lime dyke mineral belt; the succeeding nine are in the central mineral belt and the last three are in the southwest mineral belt. (See Figure 1)

Figure 2 shows most of the lime dyke mineral belt we are presently interested in. The "lime dyke" name of the belt is believed to have been derived from the bands of limestone (Lade Peak limestone) which look like "dykes" but in reality are cores of the Silver Chief anticlines.

The most common deposit in the "lime dyke" mineral belt is a galena-siderite replacement of limestone. More than a dozen of these deposits are known, but the best known are those mentioned above. The deposits are in Lade Peak and Molly Mac limestone (Index formation) and in other limestone lenses in the Index formation; they are apparently not restricted to one horizon. In the Silver Chief they consist of lenses of siderite which have replaced the limestone along the crest of folds and in sheared zones, and which contain massive pods or a poorly defined dissemination of galena. The siderite lenses noted on the surface vary in size from a few feet to 50 feet

wide and up to more than 100 feet long. Galena occurs as small pods and/or disseminated in the siderite. Galena and pyrite are the most common minerals but silver and minor sphalerite are also present. A generalization by Fyles and Eastwood, based on few samples assayed in the belt, indicates a one-to-five silver-lead ratio.

Galena streaks and veinlets along fractures, sheared zones and beds of limestone are present in the Silver Chief without associated siderite. Mineralization occurs as streaks from less than one inch long in the limestone to replacements up to a few inches thick and from 10 to 20 feet long along fractures and vein material along sheared zones up to 2 feet thick and up to 100 feet long.

Mineralization, no doubt, is controlled by folding and related shearing. Siderite replacement preceeded galena. Galena mineralization often occurs in the sheared, folded or fractured siderite and/or adjacent limestone.

PROPERTY SHOWINGS AND WORKINGS

Fyles and Eastwood describe the showings as follows:

QUOTE: "The showings are in Lede Peak limestone, and all but one are in the northeast Silver Chief anticlinal band. The exception is galena sparsely disseminated in rusty phyllitic limestone of the middle band near its faulted northeast contact. For convenience in reference and description, the showings have been numbered in sequence downhill from the crest of Silver Chief ridge:-

1. A line of pits and trenches angling across the crest of the ridge between 7,300 and 7,325 feet elevation exposes a zone, 1 to 3 feet wide, of siderite replacing limestone near its northeast contact and containing sparsely disseminated galena. The total indicated length of the zone is 300 feet, but not enough pits have been opened on it to prove continuity. It is offset on at least one small cross-fault and may be shifted to the right as a result of dragfolding of replaced limestone beds. A small trench exposes a 3-inch bedded vein or lens of massive galena in unaltered limestone at about 7,290 feet elevation, halfway between zones 1 and 2.

2. Pits and trenches along a 100-foot line at 7,250 feet elevation expose galena sparsely disseminated in limestone over a width of about 2 feet. The zone appears to be bedded.

3. Close pitting and trenching over a length of 400 feet at 7,200 feet elevation has exposed as many as three nearly parallel bands of massive galena, 3 to 4 inches thick, in unaltered limestone. For most of this length, only one band is exposed, but 50 feet from the southeast end of trenching a second band appears 4 feet southwest of the first and toward the southeast diverges to a separation of 10 feet. The third band is exposed for a few feet at the southeast end, 6 feet southwest of the second. All three bands strike nearly parallel to bedding and dip almost vertically.

4. Pits and trenches over a length of 30 feet at 7,150 feet elevation expose about 6 inches of nearly massive galena in limestone. The galena appears to pinch in the end pits and is probably a lens. A sample across 15

inches of galena and barren limestone assayed: Gold, nil; silver, 4.9 oz. per ton; lead, 26.29 per cent; zinc, not detected.

5. The small cut east of the upper adit exposes highly contorted limestone seemingly interbedded with green phyllite at the northeast contact of the northeast band of Lade Peak limestone. Galena, quartz, and some siderite have replaced the limestone beds rather raggedly, more intensely in the cores of the folds. The mineralization does not extend to the top of the cut and cannot be traced to the southeast. The most concentrated galena was noted in a band 10 inches thick passing through the trough of a syncline. A little chalcopyrite and sphalerite were noted on the northeast limb of a small anticline appearing on the northeast. A sample across 40 inches of the largest section of galena mineralization assayed: Gold, nil; silver, 2.8 ounces per ton; lead, 16.16 per cent; zinc, 0.02 per cent. The mineralization is evidently controlled by dragfolds at the northeast contact of the limestone, plunging 15 degrees southeast. The adit just below is at least 100 feet long but was accessible only for 25 feet. It follows a shear 1 to 2½ feet wide, believed to be a continuation of a fault in Silver Chief draw, which strikes north 50 degrees east and dips 70 degrees northwest. Much coarse-grained calcite appears on the footwall of the fault, but no galena was seen; any continuation of the ore seen in the cut probably lies beyond the accessible part of the adit.

6. The second adit, at an elevation of 6,730 feet, is in the centre of the draw and has been driven northeast about 10 feet. It is in limestone

near a contact with green phyllite on the southwest limb of the northeastern-most Silver Chief anticline. A lens of siderite on the northwest wall of the adit contains clusters of galena. The Silver Chief fault, which is 10 to 15 feet northwest of the draw, strikes north 75 to 80 degrees east, dips 70 degrees to the north, and offsets the limestone-phyllite contact 20 feet to the left. Northwest of the fault a lens of siderite well mineralized with pyrite and galena lies along the contact. As exposed in trenches, it is as much as 2 feet thick and 20 to 30 feet long.

7. On a small bench at 6,700 feet elevation south of Silver Chief draw, galena is sparsely disseminated through about 10 feet of rusty phyllitic limestone at the faulted northeast contact of the middle band of Lade Peak limestone. This mineralization was not seen to continue to the southeast." END QUOTE

Of the seven showings examined by Fyles and Eastwood, only the last three were examined by us.

The Number 5 showing of Fyles has been referred to by us as the upper showing. Two grab samples were taken from the cut. One sample was fine to medium crystalline galena from various pods in the siderite. This was taken mainly to determine the silver content that might be expected with the galena. An assay of this sample gave 11.28 oz. silver, 64.02% lead, .01% zinc and .01% copper. (See Appendix II) From this sample the generalization of Fyles and Eastwood of one ounce of silver for every five per cent of lead comes fairly close.

Another sample was taken from the same cut representing the margin of the galena pods where the galena is disseminated in the altered limestone. An assay of this sample gave 2.68 oz. silver, 17.98% lead, .01% zinc and .005% copper. (See Appendix II) The ratio between silver and lead is about 1 to 6.7.

As mentioned by Fyles and Eastwood, the cut is on limestone where siderite has replaced the calcium carbonate in the axis of a tightly folded anticline and syncline. This cut is about 10 feet wide and mineralization was noted in most of the face occurring as both galena in pods and disseminated in the siderite and limestone. It appears that mineralization is controlled by tight folds.

The adit mentioned by Fyles has not been located. It could have been covered by talus and/or snow.

Showing No. 6 of Fyles and Eastwood was examined and is referred to as the lower showing.

The adit and the galena mentioned by Fyles were examined. A veinlet of pure galena, occurring in a fracture or bedding plane filling about 1½ inches thick, was also seen on the southeast side of the portal. This veinlet appears to parallel the larger vein to the northwest of the adit.

Northwest of the adit a galena vein has been stripped for 20 to 30 feet. The vein is at the fault contact between the Lode Peak limestone and the Index formation phyllites. This contact zone has been intensely sheared. The vein consists of finely crystalline galena, two inches wide on the southeast end of the stripped portion, broadening out to 18 to 24 inches where it

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is again covered by overburden to the northwest. (See Plate II) This vein should be stripped. An assay of this vein material gave 5.26 oz. silver, 41.89% lead, .01% zinc and .01% copper. (See Appendix II)

Showing No. 7 of Fyles and Eastwood was examined. The showing is mainly weathered siderite with occasional streaks, pods, and traces of galena and pyrite. The west edge of the bench at 6,700 feet and the slope to the southwest appears to be a gossan. The area has been well leached so that little or no evidence of the galena or pyrite is left. An assay of the weathered material gave .10 oz. silver, .12% lead, .01% zinc and .01% copper. (See Appendix II) This mineralization justifies our recommendation that the slope to the southwest from the bench be stripped and trenched so that fresh samples of the siderite, which is associated with sulphide everywhere else, can be assayed and studied.

The first four showings of Fyles were not examined because of heavy snow cover.

No ore reserve estimate can be made. Future work recommended should be aimed towards extending the present showings and grading them.

There are no buildings or equipment on the property.

CONCLUSIONS

The Silver Chief property is located in an area known to be favourable to mineralization. Numerous showings are present on the property.

Old workings in the area have been limited to opening surface showings and insufficient work has been done in following the extension of known

showings on the surface and underground. The two longer adits have not been examined by any recent workers and data are not available as to what was encountered during the driving of the tunnels. The adits are presently inaccessible. Apparently, the property has not been thoroughly explored and a systematic exploration program is essential.

RECOMMENDATIONS

Because of the numerous showings on the Silver Chief property, a planned program of exploration is recommended. This would involve detailed geological mapping, general prospecting, stripping, trenching and diamond drilling.

At this stage, we hesitate to recommend any geophysical survey for two reasons: first, topography and secondly, the mineralization is not understood well enough to determine the most efficient geophysical method to use.

The access road to the property should be repaired and extended at least as far as the bench south of the lower showing (see Plate III) to facilitate moving of equipment on the property.

The older workings (adits) should be re-opened and examined and all older trenches should be cleaned and re-sampled.

Detailed Geological Mapping and Prospecting

A geologist should map the area in detail. An experienced prospector should be employed to locate and open up all mineralization for examination and sampling.

Stripping and Trenching

Concurrent with the geological mapping, stripping and trenching should be done on presently known showings to delineate them. The topography is such that mechanized stripping and trenching with a bulldozer is neither practical nor economical.

All trenches should be channel sampled for assay.

Our proposed stripping and trenching program is shown in Figure 2.

Diamond Drilling

Diamond drilling should be done in the upper showing along the plunge of the folds both to the northwest and southeast. Four holes drilled along the axis of the fold, about 200 feet apart, should tell whether the mineralization extends in the sub-surface. These holes could be laid out when sufficient detail has been mapped.

Diamond drilling should also be done in the lower showing to check the extension of the vein galena along the contact of limestone and phyllite in the sub-surface. These holes should, however, be deep enough to test the axis of the anticline for possible replacement of limestone by siderite. Four holes about 200 feet apart and 100 feet below the showing, drilled at a -45 degree angle into the slope of the ridge, would adequately test this horizon. The approximate locations of these proposed holes are shown in Figure 2. Two other holes would be spotted based on the results of work done. All ten holes would average about 100 feet each for a total of 1,000 feet for the drilling program.

COST ESTIMATE

OF

RECOMMENDED PROGRAM

GEOLOGICAL MAPPING AND PROSPECTING		
1 Geologist @ $150.00/day for 30 days	$ 4,500.00	
1 Geological Assistant-Prospector @ $85.00/day for 30 days	2,550.00	
Total	7,150.00	$ 7,150.00
STRIPPING, TRENCHING AND SAMPLING		
2 Helpers @ $15.00/day each for 30 days	900.00	
Rental of 2 Cobra Drills at $180.00/month each for 30 days	360.00	
Drill Steel - 6 pieces @ $20.00 each	120.00	
Powder, 40% caps, fuses (5 cases @ $40.00/case)	200.00	
Total	1,580.00	1,580.00
DIAMOND DRILLING		
1,000 feet A.Q. Wireline @ $12.00/foot	12,000.00	
Mobilization and Demobilization	2,000.00	
Total	14,000.00	14,000.00
CAMP EXPENSES AND TRANSPORTATION		
Rentals and purchases of camp facilities, equipment and supplies	1,000.00	
Rental of one 4x4 vehicle for 1 month	750.00	
Meals for 4 men @ $10.00/man/day for 30 days	1,200.00	
Total	2,950.00	2,950.00

Total Field Expenses	$25,680.00
Add: Contingencies	3,850.00
Assays - 150 samples @ $10.00 each	1,500.00
Report Compilation and Consulting Fee	2,500.00
TOTAL COST OF PROGRAM	$33,530.00

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PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. G. MACKENZIE

Angus G. MacKenzie, P. Eng., MCIM
Consulting Mining Engineer & Mining Geologist

Calgary, Alberta.
April 13, 1971.

Expiry Date: September 26, 1971

THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF ALBERTA
PERMIT NUMBER
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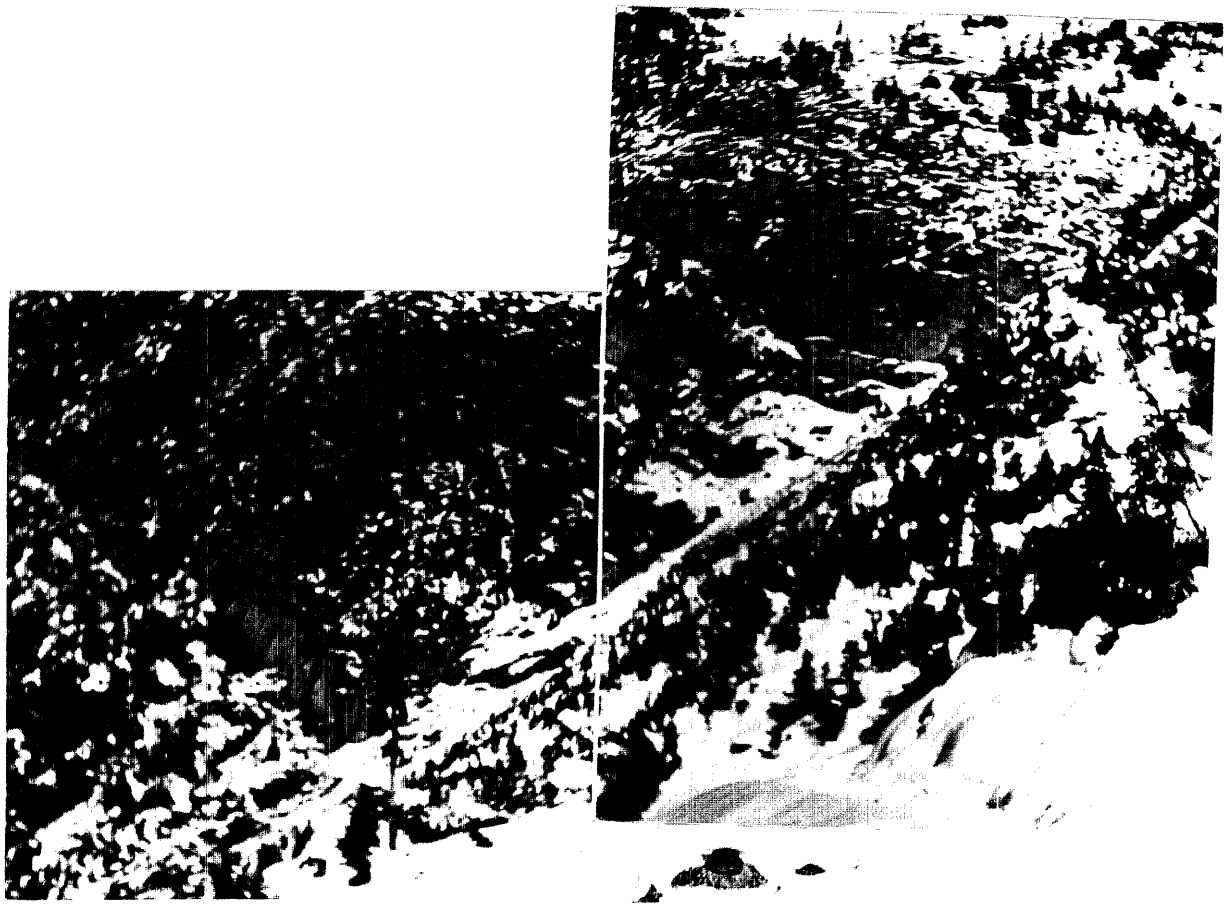
PLATE I

SILVER CHIEF PROPERTY

TROUT LAKE AREA, BRITISH COLUMBIA



PHOTOGRAPH OF MAIN DRAW IN THE SILVER CHIEF PROPERTY TAKEN FROM BENCH SHOWN IN PLATE III. NOTE PARTLY-OPENED LOWER SHOWING AT "X". UPPER SHOWING IS HIGHER AND OFF THE PHOTOGRAPH UP THE SAME DRAW.

PLATE II

PHOTOGRAPH OF LOWER SHOWING. GALENA VEIN IS ALONG A SHEARED ZONE BETWEEN INDEX FORMATION PHYLLITE AND LADE PEAK LIMESTONE. THE VEIN IS ABOUT 2 FEET THICK AND ASSAYS 5.26 OZ. SILVER, 41.89% LEAD, .01% ZINC AND .01% COPPER AT THIS LOCATION.

PLATE III

PHOTOGRAPH OF BENCH TO THE SOUTH OF DRAW AT 6,700 FEET A.S.L. BENCH COULD BE USED FOR CAMPSITE. ROAD SHOULD BE EXTENDED AT LEAST UP TO THIS BENCH.

LIST OF REFERENCES

Fyles, James T. and Eastwood, G. E. P.: Geology of the Ferguson Area, Lardeau District, British Columbia; B.C. Department of Mines and Petroleum Resources, Bulletin 45, 1962

Walker, J. F. and Bancroft, M. F.: Lardeau Map-area of British Columbia; Geological Survey of Canada Memoir 161, 1930

B. C. Minister of Mines Report, 1953

B. C. Minister of Mines Report, 1957

To: ANGUS McKENZIE MINING CONSULTANTS LIMITED
703 - 5th Street S.W.
Calgary 2, Alberta.

File No. 3414
Date October 16th 1970
Samples Grab

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	OZ./TON SILVER	Pb %	Zn %	Cu %
18951	11.28	64.02	.01	.01
18952	5.26	41.89	.01	.01
18953	2.68	17.98	.01	.005
18954	.10	.12	.01	.01

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Alta. Silver
70-32-3

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

Licensed Assayer of British Columbia

APPENDIX III

DETAILED BREAKDOWN OF COSTS INCURRED IN THE COMPILATION OF THIS REPORT

FIELD WORK		
1 Senior Geologist (3 days)	$ 450.00	
1 Geological Assistant (3 days)	255.00	
Room and Board (2 men) for 3 days	150.00	
4x4 Truck rental @ $15.00/day plus mileage	146.42	
Helicopter rental	450.00	
Assays	62.00	
Total Cost of Field Work	1,513.42	$1,513.42
PHOTO-GEOLOGY		
Acquisition of photographs	67.94	
Geological Air-photo interpretation 1 Senior Geologist @ $150.00/day	150.00	
Total Cost of Photo-Geology	217.94	217.94
REPORT COMPILATION		2,420.00
TOTAL COST OF WORK		$4,151.36

APPENDIX IV

LIST OF EMPLOYEES

E. R. L. Kintanar - Senior Geologist

October 13, 1970 - Photo-geology

October 14-16, 1970 - Field Work

October 19-23 and 26-30, 1970 - Report Writing

Total of 14 days @ $150.00/day $2,100.00

A. G. MacKenzie - Consultant

November 2-3, 1970 - Report Compilation

Total of 2 days @ $200.00/day $ 400.00

V. Weideman - Field Assistant

October 14-16, 1970

Total of 3 days @ $85.00/day $ 255.00

D. Randall - Draftsman

November 3-6, 1970

Total of 4 days @ $100.00/day $ 400.00

C. Pearson - Stenographer

November 3-6, 1970

Total of 4 days @ $30.00/day $ 120.00

DECLARATION OF QUALIFICATIONS

OF

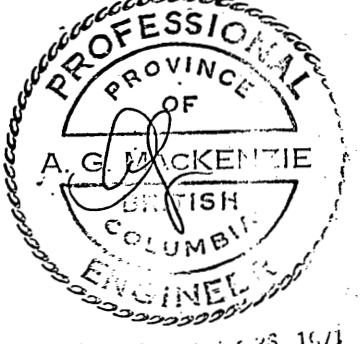
ANGUS G. MACKENZIE, P. ENG., MCIM

1. I, Angus G. MacKenzie, hereby certify that I am a Consulting Mining Engineer - Mining Geologist. I am a graduate (B. E.) in Mining and Metallurgy of Nova Scotia Technical College, Halifax, N. S. and I have taken post-graduate economic geology at Dalhousie University.

2. I have spent the past thirty years in the Mineral Industries as a Mining Engineer and/or Mining Geologist and have maintained responsible positions in these fields at mining properties in Newfoundland, Nova Scotia, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, the Yukon and Northwest Territories. I have also had considerable experience in the U. S. A. and Mexico.

3. I am a Registered Professional Engineer in the Provinces of Alberta and Manitoba and the Yukon Territory and am licensed to practise in Saskatchewan and British Columbia. I have been registered in Nova Scotia, Quebec and in the State of Colorado, U. S. A.

4. I have no personal interest directly or indirectly in the properties herein reported on, nor in the securities of Alberta Silver Mines Ltd. or any of its associated companies, nor do I expect to receive any such interest.



Expiry Date: September 28, 1971

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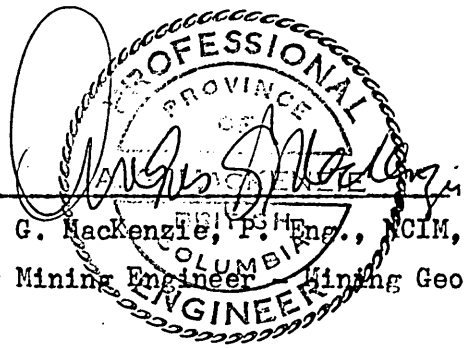
5. This report is the direct result of an examination by Angus G. MacKenzie Mining Consultants Ltd. over a period of about four days on the Silver Chief Property, and a review of all pertinent literature for this area.

6. I have made this report at the request of Mr. Dennis Beardsley, President of Alberta Silver Mines Ltd., the registered offices of which company are at the law firm of Moore, Lougheed, Atkinson, McMahon & Tingle, 7th Floor, 606 - 4th Street S. W., Calgary, Alberta.



Angus G. MacKenzie, P. Eng., MCIM,
Consulting Mining Engineer and Mining Geologist

Calgary, Alberta.
April 13, 1971.

Expiry Date: September 26, 1971

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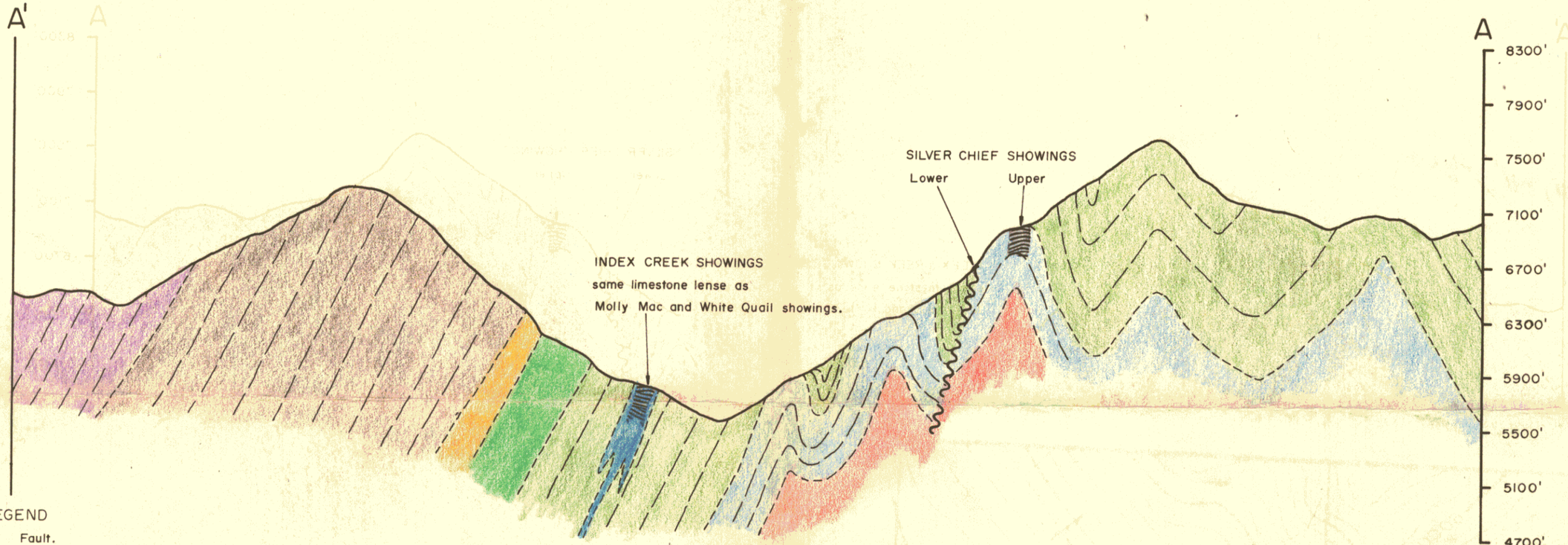

LEGEND

- Fault.
- Formational contact.
- Form lines.
- Lade peak formation.
- Index formation.
- Truine formation.
- Ajax formation.
- Sharon creek formation.
- Jowett formation.
- Hamill group.
- Siderite replacement with associated sulphides.

HORIZONTAL SCALE: 1"= 845'

VERTICAL SCALE: 1"= 800'

PROFESSIONAL ENGINEER
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A. G. MACKENZIE

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FIG. 3

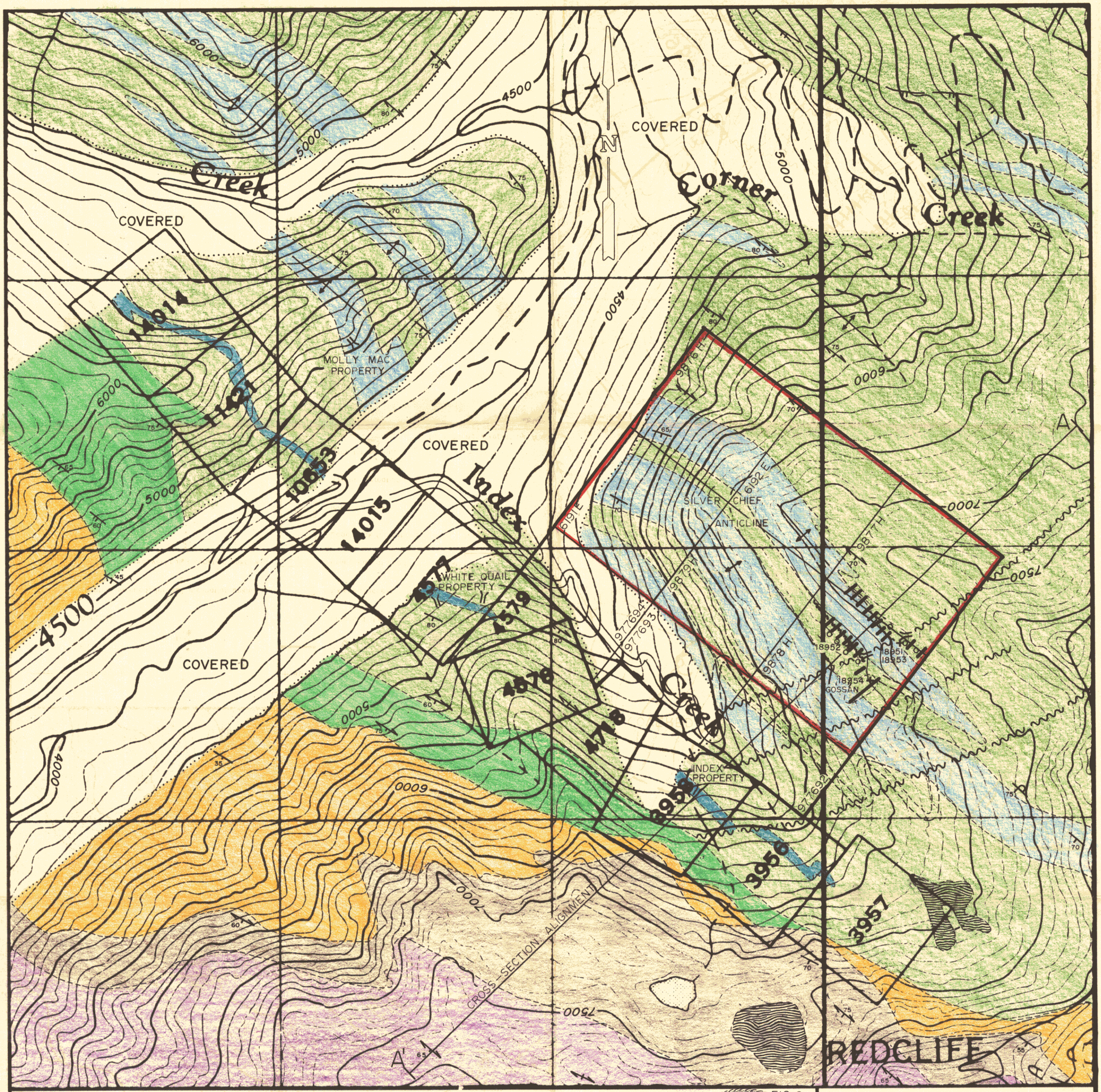
ANGUS G. MACKENZIE
MINING CONSULTANTS LIMITED.
703, 5th St, CALGARY 2, ALBERTA.

FOR
ALBERTA SILVER MINES LIMITED

GEOLOGICAL CROSS-SECTION ALONG A — A'

DATE: NOV, 1970 | APPV'D:
DWG NO: 153 | SCALE:

To accompany report by A G MACKENZIE MINING CONSULTANTS LTD



inches 0 1 0 1 2 centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

LEGEND

- Fault scarp.
- Fault.
- Anticline.
- Foliation inclined, vertical, inclination unknown.
- Bedding inclined, vertical, inclination unknown.
- Overturned bedding.
- Geological contact defined.
- Geological contact inferred.
- Adit.
- +18953 Sample location and number.
- Proposed trenches.
- Proposed diamond drill holes.
- Existing access road.
- Proposed cat road.
- Lade peak formation.
- Index formation.
- Triune formation.
- Ajax formation.
- Sharon creek formation.
- Jowett formation.
- Glacier
- 3957 Crown granted claim of Alberta Silver.
- Staked claims.

Note. Contour interval 100'

Geology after Fyles and Eastwood, 1962.

To accompany report by A.G MACKENZIE MINING CONSULTANTS LTD.

FIG. 2

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. G. MacKENZIE

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ANGUS G MACKENZIE
MINING CONSULTANTS LIMITED
703, 5th St, CALGARY 2, ALBERTA

FOR
ALBERTA SILVER MINES LIMITED

GEOLOGICAL MAP OF SILVER CHIEF PROPERTY TROUT LAKE AREA B.C.

Date: November, 1970	Drawn By: D.J.R	Appv'd:
Rev Date:	Scale: 1"= 845'	Drawing No: 152

Base map enlarged from National Topographic sheet 82K/11W.

FIGURE 2 Geological Map of Silver Chief Property, Trout Lake area, B. C.

FIGURE 3 Geological Cross-Section along A-A^1