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PYRAMID MNG. CO.

EMIGRANT DISTRICT, Park Co., Montana

Ernie Ahrens saw much of this area for Anaconda and was not very impressed. It is a big pyritized zone with little smells of molydenite that I saw, and apparently some weak copper.

May not be worth a special trip, but could include with more reconnaissance in the Northwest next Summer.

Ken Aug 30, 1971

PYRAMID MINING COMPANY

COPPER PORPHYRY DEPOSITS

EMIGRANT DISTRICT
PARK COUNTY, MONTANA

PRELIMINARY EXAMINATION

Robert M. Kaseweter, B. Sc. - Geologist Portland, Oregon December 22, 1969

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I. INTRODUCTION

A. PURPOSE AND SCOPE

This examination was made for Mr. M. D. Saunders, 4778 Elm Street, Vancouver, 8, British Columbia, Canada, who requested the writer to make an on the ground examination and write a geological report with respect to the Pyramid lode mining claims on the North Fork Six Mile Creek and to formulate a plan to stake and to explore additional claims in the Emigrant District, Park County, Montana.

The chief purpose of this examination was to perform the assessment work requirement for the assessment year ending September 1, 1969. The assessment work affidavit for the year ending September 1, 1969, was filed based upon geological work performed by the writer. The writer went on the claims, surveyed them, prepared a map of the claims, traversed the claims, observed the metallization, the gossanized areas, and the geological and mineralogical data exposed.

In addition, a regional reconnaissance and analysis of the Emigrant District was made to evaluate the prospects of discovering large, low-grade copper porphyry deposits. No attempt was made to evaluate the high-grade vein-type deposits in the district.

B. LEGAL DESCRIPTION OF THE PYRAMID CLAIMS

The Pyramid block of claims are chiefly in Section 11, Township 7 S, Range 8E, PMM, Park County, Montana. The claims are approximately one and one-third miles south of Emigrant Peak. The Pyramid claims are as follows: Silver Metal #6, Silver Metal #7, Silver Metal #8, Silver Metal #9, Silver Metal #10, Silver Coin #6, Silver Coin #7, Silver Coin #8, Silver Coin #9 and Silver Coin #10. Certificates of Location on Silver Metal #6 to Silver Metal #10, inclusively, are recorded in Book 19, at pages 455-456, 457-458, 459-460, 461-462 and 463-464 respectively, bearing Instrument Nos. 110443,

110444, 110445, 110446 and 110447 respectively. Certificates of Location on Silver Coin #6 to Silver Coin #10, inclusively, are recorded in Book 19, at pages 445-446, 447-448, 449-450, 451-452 and 453-454 respectively, bearing Instrument Nos. 110438, 110439, 110440, 110441 and 110442 respectively.

C. LOCATION AND ACCESSIBILITY

The Emigrant District is in South Central Park County, 24 miles by U.S. Highway 89 south of Livingston, Montana. Chico, Emigrant, Pray and Wan-i-gan are small settlements in the Yellowstone River Valley at the west margin of the district. Emigrant is on the Gardiner Branch of the Northern Pacific Railroad which joins the main line at Livingston. Access to the district's interior is by county roads along Mill Creek, Emigrant Creek and by jeep road up the North Fork of Six Mile Creek. These roads are usually closed in winter by heavy snowfall. The district's mines and prospects are accessible by the secondary roads and by jeep trails and Forest Service fire trails.

The Pyramid group of claims is accessible from the Wan-i-gan camp south a mile and a quarter to Emigrant Creek. At that point the Six Mile Creek road proceeds easterly. This road branches, one road going to Emigrant Gulch and the other going to Blakesley Angus Ranch. Stay on the main road and proceed to Dailey Lake Junction. At this point there are three roads. The right fork goes to Dailey Lake and the other two meet by forming a loop and lead towards the Pyramid claims. At Gold Prize Creek Road Junction stay on the main road. At this point there is a fenced gate. Proceed from this point with a four-wheel drive vehicle and follow the jeep trail up the North Fork of Six Mile Creek. There is an abandoned cabin at this point and there is a small creek crossing the road. From this point the southwest corner of Silver Metal #6 is about 2,140 feet N 40° E.

Supplies can be obtained at Livingston and the Northwest Airlines has regular air service at Boseman near Livingston. The principal copper smelter

in Montana is the Anaconda Smelter at Anaconda. The American Smelting and Refining Company has a lead smelter at East Helena and a zinc smelter in Great Falls, Montana.

D. ACKNOWLEDGEMENTS

The report of October 20, 1967, of Lee C. Armstrong, Ph.D., Chief Geologist and Mining Engineer for E. J. Longyear Company; the report of Norman L. Degner, Geologist on the geological staff of the Anaconda Mining Company, of July 12, 1967; the preliminary map of the geology of the Emigrant and other areas, Montana, prepared by W. J. McMannis, Ph.D., Montana State University (1963-64-65); the map of Areal Geology, Livingston Sheet, by Hague, Iddings and Weed, USGS (1890); Map of Structure Sections, Livingston Sheet, by Hague, Iddings and Weed, USGS (1890); and the report written by Glen C. Reed, 1950, Information Circular 7546, U.S. Bureau of Mines have been most helpful in evaluating the Pyramid claims and the surrounding areas in the Emigrant District.

II. SUMMARY ABSTRACT

The Pyramid claims and other areas in the Emigrant District offer the prospect of being developed into one or more large low-grade copper porphyry mines, which can be mined by open pit methods.

There is little overburden, since the process of gradation has exposed sulfide minerals on and near the surface. Copper in trace amounts was found widespread in the abundant gossans on the Pyramid claims and elsewhere throughout the district. The copper values found on the surface should increase in value, at least through the supergene zones.

Acidic porphyrite, andesite and dacite of Tertiary age extend over an area some six miles from east to west and about three miles from north to south. Igneous intrusive structures which extend north and south are intersected by others which run from east to west. The intersection of these

structures is the most likely area for the discovery of commercial copper.

The samples taken by Dr. Armstrong at intervals of fifty feet for a distance of fifteen hundred feet average 0.44% Cu. They illustrate widespread copper mineralization in the district. These surface samples have been leached and do not represent the concentrations of copper below.

The cut-off grade at Bingham Canyon is 0.50% Cu.

As the price of copper goes higher, the cut-off grade for mineable ore goes down. Average annual copper prices in the United States have ranged from 5.67 cents per pound in 1932 to 41.88 cents in 1956. From February 1942 to June 1947, the price was 14.3 cents per pound.[1] The price in December 1969 was 52.25 cents per pound. The steadily increasing demand for copper indicates that prices will continue to rise.

III. RECOMMENDATIONS

A. COLORED AIR PHOTOGRAPHS

The acidic porphyrite area some eighteen miles square should be photographed in color from 14,000 feet elevation. These photographs show the ground in three dimensions. They can be used to map the geology of the area. The faults, intersections and hydrothermal altered zones can be determined from the photographs. Clear acetate topographic and claim maps on a uniform scale, such as 1:24,000, can be overlaid on a geologic map of the same scale. From this data, the most favorable areas can be selected.

B. GEOCHEMISTRY

Take samples of stream sediments at intervals of 400 feet upstream and downstream from the areas selected, the intersecting structures in the hydrothermal altered zones. These samples should be taken in accordance with the following instructions:

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[1]U.S. Bureau of Mines, Bulletin 630, Mineral Facts and Problems (1965) Washington, D.C.

1. Care must be exercised continually to make sure the sample location is marked on the bag and topographic map is correct.

2. Take two samples - Labeled A and B:

(A) - For active channel. Can be wet or dry but make sure there is enough material to get about an ounce of fine-grained -60 sediment.

(B) - For bank sample. The important thing here is to make sure the sample represents the material carried by the stream and not the adjacent bank. The old flood plain, away from an actively eroding bank is the best place to take this sample.

3. Always make sure you are not sampling an actively eroding bank, but that the sample you take represents the drainage system of the stream.

4. On a tributary stream, sample far enough upstream so you can be certain the sample does not represent the flood plain of the main one, but represents the tributary.

5. If you sieve in the field (and it saves carrying a lot of excess sample), make a sieve using plastic refrigerator cups with a nylon hose for the screen.

6. Get enough fines to fill the sample envelopes up 1/2 inch from the bottom, minimum. The more sample the better because if it contains something run several tests on it.

7. When you take a wet sample, keep that bag away from the others and let it air dry, in the same bag, at camp before packing it in with the other samples.

8. Don't sieve wet samples, let them dry first.

9. Don't pan the samples as you lose much of the light and the fine fraction. Sometimes a large spoon works good for getting the fines out of the cracks and crevices.

10. Write the location on the bag along with any other comments you have regarding possible contamination, mine dumps, etc., and mark down

a corresponding number on the map.

11. Put down the width of the active stream channel, whether it is dry or not.

C. ATOMIC ABSORPTION TESTING

The stream sediment samples collected should be assayed by atomic absorption methods for copper, silver, molybdenum, lead and zinc. One out of twenty of these samples should be checked by a fire assay for copper, as a control measure.

D. GEOCOM STUDIES

Geocom studies should be made by ordinary computer to determine the anomalous areas.[1]

The following metals in parts per million would be considered anomalous:

Element	Anomalous values for stream sediment samples (ppm)
Ag	1
Cu	150
Mo	10
Pb	100
Zn	300

E. LOCATION OF ADDITIONAL CLAIMS

A claim map should be prepared covering the favorable areas. Permanent monuments such as mountain peaks should be used to fix the location of the claims. This map on clear acetate on the same scale as the geologic map can be laid over the geologic map and the geology and anomalies of each claim can be ascertained.

[1]Andrew B. Vistelius, Studies in Mathematical Geology (Translated from the Russian) Consultants Bureau, New York (1967).

The Montana laws governing location of quartz lode mining claims, Act of February 18, 1907, Ch. 16, provides as follows: Section c. 1 provides that the locator shall post at the point of discovery a written notice of location. Section 2 provides that within 30 days after posting the notice the locator shall distinctly mark the location on the ground: a tree at least 8 inches in diameter and blazed on four sides, or a post at least four inches square by four feet six inches in length set one foot into the ground, or a squared stump of the requisite size, or a stone at least six inches square by eighteen inches in length set two-thirds of its length in the ground, with a mound of earth or stone alongside, at least four feet in diameter by two feet in height, or a boulder at least three feet above the natural surface of the ground on the upper side. A copy of the location notice posted on the claim should be filed with the county recorder. After the discovery work is done, a certificate of location must be filed.

Section III provides within sixty days after posting the location notice the locator shall sink a shaft upon the vein, lode or deposit at or near the point of discovery. This discovery shaft shall be sunk to a depth of at least ten feet vertically below the lowest part of the rim of such shaft, or deeper if necessary to disclose the deposit located. The cubical contents of such shaft shall be no less than 150 cubic feet, provided that any cut or tunnel which discloses the deposit located at a vertical depth of at least ten feet below the natural surface of the ground and which constitutes 150 cubic feet of excavation shall be deemed the equivalent of such shaft. And provided also that where the deposit located is disclosed at a less vertical depth than ten feet, any deficiency in the depth of the discovery shaft, cut or tunnel may be compensated for by any horizontal extension of such working or by any excavation done elsewhere upon the claim, equalling in cubic content the cubical extent of such deficiency; but in every case at least 75 feet of excavation shall be made at the point of discovery. Within sixty

days after posting the notice of location, the locator shall record his location in the office of the County Clerk. The certificate of location must be verified before some officer authorized to administer oaths and must show compliance with the discovery requirements of the statute.

F. DOZING AND TRENCHING

Where the ground is not too steep, the discovery work can best be done by bulldozing. Where the ground is too steep and inaccessible, it is necessary to have horses transport gasoline jackhammers and explosives to do the discovery work. A jeep, pickup truck, bulldozer, gasoline hammer drills, horses or mules, camping equipment and location stakes will be required to stake additional claims.

The location and elevation of each discovery pit should be entered on the claim map accurately. Samples should be taken from each pit, assayed and results posted on the map.

G. COST ESTIMATE

A.	COLORED AIR PHOTOGRAPHS - Photogrammetry (including cost of new flying 20 square miles at $300 per square mile) in color, scale 1:14,000, geological map and overlays showing anomalies to be prepared from the photographs	$ 6,000
B.	GEOCHEMISTRY - 1,000 samples at $5 per sample including record of each sample and posting of the sample on a topographic map to be done under the direction of a junior geologist.	5,000
C.	ATOMIC ABSORPTION TESTING - 1,000 samples minimum at $4 per sample (determinations for copper, silver, molybdenum, lead and zinc total 5,000 determinations)	4,000
D.	GEOCOM STUDIES - Detailed analysis by ordinary computer, preparation of acetate anomaly overlay maps, evaluation of anomalous areas @ $100 per square mile for 20 square miles	2,000
E.	LOCATION OF ADDITIONAL CLAIMS - Staking additional claims in contiguous groups of not less than 30 claims, survey the claims with transit and Brunton survey, posting notices, marking boundaries and recording notices, $100 per claim for 150 claims	15,000

F.	BULLDOZING AND TRENCHING - File discovery certificates plus performing discovery work (150 cubic feet of excavation, shafts or trenches @ $100 per claim)	$ 15,000
	Fire Assays - two samples from 150 discovery pits at $5 each	750
G.	GEOLOGISTS - Junior Geologist @ $800 per month for four months	3,200
	Senior Geologist of national reputation to make final geological report - $150 per day for 20 days	3,000
H.	SUPERVISION - Management, accounting, legal and evaluation work - 10% of the above items	5,400
I.	BUDGET VARIABLE - 15% of the above items	8,900
	TOTAL COST ESTIMATE	$ 68,250

The program should commence May 15, 1970 and should be completed by August 15th. It may be wise to contract the performance of as much of the work as possible. Color air photographs could be contracted for with Knox, Bergman and Shearer, 1600 Ogden Street, Denver, Colorado. The soil samples could be collected under a junior geologist with the assistance of college students. The atomic absorption testing could be done by a reputable laboratory equipped with an ordinary computer. This work could be contracted and bids should be obtained. The location and discovery work on the claims also could be contracted with mining contractors, possibly from the Butte, Montana area. A senior geologist of the caliber of Dr. Lee C. Armstrong or Dr. Neil Campbell should be retained to evaluate and write the final report for the season's work. See W. C. Peters, "The Economics of Mineral Exploration", Geophysics, Vol. 34, No. 4 (Aug. 1969) p. 638, for further discussion of exploration costs.

IV. HISTORY

A. MINERAL DISTRICT

The Emigrant District was investigated at the turn of the century primarily for high grade vein type deposits. The district was not considered of importance for large low grade disseminated deposits of copper until the

substantial increase in the price of copper in recent years. The early efforts to mine the high grade precious metal ores in this district have not met with economic success. The principal high grade deposits are discussed for their historical as well as their geological interest.

ALICE C (Pb, Ag)

The Alice C group contains one patented and two unpatented lode claims in Sec. 23, T. 6 S., R. 9 E., owned by H. P. Stuart, Pray, Montana. Access to the area from Pray is over 10 miles of county and Forest Service roads eastward up the West Fork of Mill Creek. The property is on Bulldozer Creek about one mile above its confluence with the West Fork of Mill Creek.

According to Stuart, the deposit was discovered and opened in the 1890's. Underground exploration, consisting of two adits totaling 750 feet in length and a 130-foot raise to surface, was accomplished before the prospect was abandoned in 1904. No shipments have been made. All equipment has been removed.

The workings explore a narrow fracture zone in pre-Cambrian biotite schist over a strike length of about 100 feet. The fracture, ranging from 1 to 3 inches in width, strikes N. 75° W. and dips 35° N. It closely follows the foliation of the enclosing schist. Small quartz stringers and lenses containing galena, sphalerite and pyrite occur sporadically throughout the structure.

A large composite sample taken at intervals along the vein was assayed by the International Smelting & Refining Co. as follows:

	Percent
Lead	27.0
Zinc	3.5
	Oz. per ton
Silver	12.0
Gold	0.12

BARBARA ANNE (Ag-Pb)

The Barbara Anne prospect was discovered in the early days and opened on one of four contiguous unpatented lode claims in Sec. 35, T. 6 S., R. 9 E. Access to the property from Pray, Montana is by 9 miles of county road along Mill Creek, then 8 miles of steep, rough, truck trail that follows the West Fork of Mill Creek and Arrastra Creek.

The claims, held by Kester Counts, Livingston, Montana, were being developed under a leasing agreement in 1947 and 1948. Test shipments totaling 53 tons were made to the A. S. & R. smelter at East Helena, Montana. Development was suspended, and all equipment was removed from the property in the fall of 1948.

A 25-foot single-compartment shaft was sunk on the outcrop at an altitude of 8,300 feet. A 20-foot drift on the vein was driven from the shaft bottom. A crosscut adit 150 feet lower than the shaft collar was started in July 1948. The planned length of this adit was 210 feet to intersect the downward extension of the Barbara Anne vein.

The prospect is in an area of basic andesites on the northeast flank of Mineral Mountain. These andesites overlie pre-Cambrian and Paleozoic strata and, in turn, are partly covered by rhyolite flows. Occasional islands or xenoliths of quartzite, shale, and limestone occur in the andesite. Several isolated patches of these Paleozoic rocks are exposed within a few hundred yards of the Barbara Anne outcrop.

Two narrow quartz-filled fractures in a zone about 4 feet wide have been exposed by a 30-foot prospect shaft and several hundred feet of bulldozer trenching. This structure strikes N. 17° E. and dips 68° W. Its explored length is about 40 feet. Intermittent exposures made during trenching and road construction indicate a length of about 750 feet. Continuity, however, has not been established. A narrow footwall stringer about 25 feet east of

and parallel to the main vein also was found during road construction. Its length has not been determined.

The ore consists of fine-grained galena, copper sulfides, and occasional blebs of sphalerite in a quartz-pyrite gangue. The tenor of the ore as mined is indicated by the following average smelter returns:

	Oz. per ton
Gold	0.8
Silver	12.1
	Percent
Lead	0.9
Copper	.3
Zinc	.3
Bismuth[1/]	.26

1/ Determined on one lot only.

Two Bureau of Mines channel samples of the structure taken at one surface exposure assayed as follows:

Sample	Ounces		Percent	
	Gold	Silver	Lead	Copper
Full width (4.3 feet)	0.05	2.25	0.6	0.7
Richer footwall portion (2.3 feet)	.13	11.13	1.3	1.8

EMIGRANT GULCH MOLYBDENITE (Mo)

The Emigrant Gulch Molybdenite prospect is in sec. 6, T. 7 S., R. 9 E. The deposit is on one of a group of six unpatented lode claims held by W. L. Kearns, Livingston, Montana. Access to the area is by 2 miles of truck trail and 4 miles of pack trail south from Chico along Emigrant Creek. Chico is 31 miles south of Livingston, Montana, by U. S. Highway 89.

The deposit was explored in 1947 by the Hodges Mining Co. of Los Angeles, California. No ore is known to have been shipped from the property. The principal mineralized area has been explored over a vertical range of 215 feet by two adit workings totaling about 800 feet in length. The lower adit is at an altitude of 7,000 feet. All equipment has been removed from the property. The underground workings explore a pipelike zone of brecciated and fractured trachyte porphyry about 150 feet in diameter. The fracturing diminishes in intensity and fades outward from the central part. Openings

in the breccia and fractures are filled with pyrite, molybdenite, and traces of gold and silver.

The central brecciated zone contains 0.3 to 1.1 percent MoS_2. Channel and core samples taken from the fractured zone during development averaged about 0.07 percent MoS_2, up to 0.03 ounce gold and traces to 0.8 ounce silver a ton.

GALENA QUEEN (Pb)

The Galena Queen group which contains two unpatented lode claims held by Kester Counts, Livingston, Montana, is in sec. 4, T. 7 S., R. 9 E. The property is reached by a 2-mile foot trail along Arrastra Creek from the Barbara Anne access road.

An unknown but presumably small amount of gold-bearing ore was produced from the property in the 1870's. Underground workings consist of a 55-foot single-compartment shaft and a 180-foot adit driven on the vein structure. The ruins of a small arrastra lie a short distance below the adit portal. Although the adit is accessible, the walls and back are obscured by a thick deposit of iron oxides. The shaft is flooded to the collar.

The adit has exposed a small gash vein within a wide sheeted zone in rhyolite. The gash structure strikes N. 75° E., dips 79° S., and ranges in width from 2 inches to 1 foot. The sheeted zone strikes N. 65 E., dips vertically and exceeds 400 feet in width.

The gash structures contain pyrite and coarse galena with minor amounts of sphalerite and chalcopyrite in a quartz gangue. The sheeted zone locally contains particles of finely disseminated galena mainly confined to areas of local silicification. A 100-foot chip sample taken from a stream bed exposure of this sheeted zone contained 0.1 percent lead and traces of gold and silver.

Several lenticular bog manganese deposits have been found perched on the lower flanks of Arrastra Creek near the Galena Queen adit. These de-

posits are evidently remnants of larger basin deposits formed by interruption of the Arrastra Creek drainage. The individual lenses appear to have a plan area of less than 5,000 square feet and range in thickness from 3 to 6 feet. In places, sand, gravel, and cobbles have been cemented by manganese oxides into dense, conglomerate-like masses. Less frequently, the manganese oxides alone have built up spongy masses in which occasional organic remains are found. Samples containing up to 40 percent manganese are said to have been taken from the deposits.

MT. COWAN MOLYBDENUM (Mo)

The Mt. Cowan molybdenum prospect is in sec. 22, T. 5 S., R. 10 E. It is on one of a group of 12 contiguous unpatented lode claims held by Kester Counts, Livingston, Montana. Access to the property from Pray, Montana, is by 12 miles of county road along Mill Creek to the Snowy Range Ranch, thence by 7 miles of rough pack trail north to Frozen Lake on the south flank of Mt. Cowan. Frozen Lake is about 9,000 feet in altitude.

No workings other than shallow location cuts have been opened. However, bedrock exposures resulting from deep glacial carvings are abundant in the area. The pre-Cambrian gneisses, schists, and quartzites have been cut by aplites, quartz-feldspar pegmatites, and several unusually persistent, fine-grained basic dikes. These dikes strike northeast and dip steeply to the northwest. They may be traced along the strike for several miles and generally exceed 150 feet in width.

Scattered molybdenite crystals of small size occasionally are seen in the pegmatites and enclosing gneiss. Sampling of several basic dikes, pegmatite masses, and the adjoining gneisses showed them to contain up to 0.02 percent MoS_2 with traces of gold and silver.

NANCY (Au)

The Nancy is an unpatented lode claim in sec. 24, T. 6 S., R. 9 E., held by M. J. Pomajbo, Pray, Montana. Access to the property from Pray is over

11 miles of county and Forest Service roads eastward along the West Fork of Mill Creek.

The claim is reported to have been prospected for a short time during the search for outlying placer and lode deposits in the 1880's. A small placer working about 200 years upstream from the Nancy is one of several along the West Fork reputedly opened and worked by Chinese before the turn of the century. No statistics of production from either placer or lode deposits along the West Fork are available. The property was unequipped and dormant in 1948.

A 30-foot adit and two shallow prospect pits have been opened on the Nancy claim a few feet above stream level. The adit has been driven into interbedded pre-Cambrian schists and quartzites containing small lenses of glassy, pegmatic quartz. These quartz lenses range from 2 to 8 inches in thickness. They strike N. 25° E. and dip 60° to 70° W., closely following the foliation of the enclosing schists.

B. PROPERTY UNDER EXAMINATION

The Pyramid group of ten claims are virgin ground and there is no known history on these claims.

V. GEOLOGY

A. REGIONAL GEOLOGY

The earliest comprehensive geological map of the area, Montana Livingston Sheet, (Now out of print) was prepared by Arnold Hague, Joseph Paxon Iddings, and Walter Harvey Weed, 1890-91, published by the United States Geologic Survey, Figure 3. A structure section map was prepared at the same time by the same persons (now out of print) which is Figure 4.

W. J. McMannis, Ph.D., Montana State University, made a preliminary map, 1963-64-65, and made this map available, Figure 5.

The rocks exposed in the Emigrant District range from Archean to Tertiary. The Archean rocks are similar to those in the Jardine district.

The Paleozoic strata, represented by formations assigned to the Cambrian, Ordovician, Devonian and Lower Mississippian periods, conform in general with the series in the New World District.

Tertiary rocks occupying about half of the district include basic andesites, rhyolites, intrusive acidic andesites and related granitics. The remaining area is covered mainly by Archean crystallines, minor Paleozoic outcrops and Quarternary deposits along the Yellowstone River.

The district is on the west flank of the Absaroka-Beartooth uplift. This uplift has been split into two blocks by an extended east-west zone of high-angle faulting along Mill Creek. The south block, which contains most of the district's known mines and prospects, has been depressed several thousand feet stratigraphically below the adjoining north block.

The principal geological unit of interest is the so-called acid porphyrite of andesitic-dacitic composition, and of Tertiary age. Large bodies of this porphyry exist in the Emigrant Creek-North Fork area and these bodies are intrusive into older rocks, which are comprised of volcanic flows, tuffs and breccias, probably of Tertiary age.

Both the porphyry and the volcanics are locally rusty and somewhat bleached, due in part to the action of hydrothermal water, and in part to the weathering of contained pyrite. Silicification and disseminated pyrite were seen in many places, and locally diligent use of the hand lens revealed some minor small grains of chalcopyrite and possibly of bornite.

The three principal areas are between Arrastra Creek and Emigrant Creek[1], in the Mineral Mountain Drainage, and the North Fork of Six Mile Creek drainage. Undoubtedly, there are other areas worthy of exploration, but the writer has not had an opportunity to study them.

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[1]Norman L. Degner thought that "...The Kv, Td contacts in Sections 14, 15, 21, 22, 27, 28, 33, 34 in T. 6 S., R. 9 E., and Sections 3, 4, 9, 10 in T. 7 S., R. 9 E., should take priority." Written Communication July 12, 1967.

B. LOCAL GEOLOGY

Numerous samples were examined from the Pyramid claims. The traces of copper on the surface are not discouraging.

In precipitous areas such as this, with a relief of from 5200 feet to 10,200 feet, weathering is quite pronounced, readily oxidizing sulfides to sulfates. The resulting metal sulfates are carried away in solution, except for iron (oxidation of iron sulfate leads to the precipitation of ferric oxides, and coupled with the relatively insoluble quartz, gossans are formed). The metal-bearing solutions may not travel very far, however, before reprecipitation occurs. In this way the metal content may be concentrated and rich ore formed.

If the metal-bearing solutions are carried down into the zone of groundwater, conditions alter sharply from oxidizing to reducing, since groundwater is generally deficient in oxygen. Secondary enrichment now takes place, which is controlled by the affinity of the different metals for sulfide. Copper has a strong affinity for sulfur, and copper-bearing solutions react with pre-existing sulfides such as pyrite and chalcopyrite to give a secondary sulfides richer in copper, such as covellite and chalcocite.

In summary, extremely rugged country, such as this, with its pronounced weathering, would yield few rich sulfides on the surface. Therefore, one must look for indications of ore at greater depths, by observing gossans or slightly mineralized areas. Further examination by geochemistry and by drilling would reveal the degree and extent of mineralization.

C. MINERALOGY

In general, the rocks consist of fine-grained andesitic-dacitic porphyries, ranging in color from beige to a greenish grey. The phenocrysts consist of anhedral to euhedral crystals of hornblende, orthoclase, and plagioclase. In many cases deuteric alteration has taken place, making some

minerals recognizable only by their shape, as in the characteristic laths of plagioclase. Some rocks show an unidentifiable green mineral. In altered rocks these green blebs are partly dissolved into the rock, while in fresh specimens the green mineral takes on an acicular shape. Quartz and calcite are seen in some rocks. Mineralization appears to be chiefly pyrite, ranging from extremely fine-grained to cubic crystals about 1mm. across. Many of these rocks are rusty, due to oxidation of the pyrite.

Other rocks appear to be a light grey to pale purplish green silicified felsite with fine-grained mineralization (pyrite?). Fresh plagioclase laths are seen in many samples.

The other main type of rock is granitic to schistose in nature. Mineralization is not seen in this type of rock.

VI. SAMPLING RESULTS

Ten samples of representative rocks were sent to Northwest Testing Laboratories, in Portland, Oregon, to be tested for copper, silver, and gold. Low values were obtained, but undoubtedly, higher values would be encountered at greater depths. The traces of copper found on the leached surface and gossanized areas is encouraging.

Robert C. Kaseweter (1969), assays by Northwest Testing Laboratories Portland, Oregon. Atomic absorption testing is more accurate in the lower ranges of value than the fire assays discussed as follows:

No. 1 - Fresh sample from outcrop. It is a fine-grained greenish grey porphyry with crystals of hornblende and orthoclase (?). Mineralization appears to be chiefly pyrite. Rusty spots are seen - probably due to weathering of pyrite. Cu, Au and Ag - nil.

No. 2 - This sample is a fine-grained greenish grey porphyry with anhedral green blebs (mineral unknown) and phenocrysts of what appears to be orthoclase. Mineralization is seen and appears to be mostly pyrite. Cu-Trace (indicates less than 0.01); Au & Ag - nil.

No. 3 - This light grey porphyry was taken from near a roadcut. Mineralization (mostly pyrite) is seen. The sample weathers to a light tannish beige colored rock. The white phenocrysts are euhedral to anhedral crystals of feldspar. Cu-T; Au-0.02 oz/ton, Ag-nil.

No. 4 - This sample is a piece of float taken from a talus slope on the north side of the North Fork of Six Mile Creek. It is a mineralized andesite or dacite with cubic crystals of pyrite less than 1mm across. Cu-T; Au & Ag-nil.

No. 5 - This was taken from an outcrop on the north side of the creek downstream from the cabin. It is a felsite in gossanized material. Fresh plagioclase laths are seen and there is slight mineralization. Cu-T; Au & Ag-nil.

No. 6 - This came from the same place as No. 5. It is a buff colored porphyry with white euhedral to anhedral crystals, which have undergone deuteric alteration. They were probably plagioclase. Blebs of quartz are present, along with slight mineralization. Cu-T; Au & Ag-nil.

No. 7 - This rock was a grab sample from a talus slope below a gossanized outcrop. It is a light grey porphyritic felsite with white anhedral blebs resulting from deuteric alteration. The sample is covered by limonite and other iron oxides. Many small (less than 1mm) cubic crystals of pyrite are seen. Cu-0.05%; Au & Ag-T.

No. 8 - This was taken from the same area as No. 7. It is a pale purplish green felsite with laths of plagioclase and anhedral green blebs, which are partially dissolved. However, some green minerals are fresh in fresh surfaces and are acicular in shape. Cu-0.05%, Au & Ag-nil.

No. 9 - Taken from the same area as No. 7, this sample resembles that of sample No. 7, but more weathered, with abundant limonite and magnetite (?) throughout. Mineralization is fine-grained and calcite crystals (about 3mms across) are present. Cu-T; Au & Ag-nil.

No. 10 - This sample was also taken from the same area as the previous three. It is a pinkish grey fine-grained porphyritic rock with brown weathered laths, which appear to have been plagioclase. Mineralization is fine-grained and scattered throughout. Limonite covers the rock. Cu-0.10%; Au & Ag-T.

Lee C. Armstrong (1967), Fire assays by Crimson & Nichols, Salt Lake City, Utah:

Nine bags of chip samples were taken and submitted to Crismon and Nichols, Assayers of Salt Lake City, with the following results:

Sample No.	Copper %	Lead %	Ozs. Per Ton	
			Gold	Silver
1	0.08	0.15	0.01	2.00
2	0.08	Nil	0.01	Trace
3	0.38	Nil	Trace	Trace
4	0.44	Nil	Trace	Trace
5	0.55	2.05	Trace	Trace
6	0.38	Nil	Trace	Trace
7	0.38	Nil	Trace	Trace
8	0.38	Nil	Trace	Trace
9	0.44	Nil	Trace	Trace

No. 1. - Composite of chips taken from outcrops and/or rubble at 50 foot intervals for a distance of 1500 feet along and near the end of dozer-cut trail, on October 9, 1967. Chips were largely of porphyry intrusive, although some rubble of volcanic rocks and possibly vein float were collected in this random sampling. The relatively high silver value of 2 oz./ton suggests that at least one of the chips taken from the rubble along the road cut was from a vein in the vicinity.

Nos. 2 & 3 - These were taken from small cuts recently blasted by Harvey Count in the bank of North Fork Creek upstream from end of dozer-cut trail. Both are from more-or-less altered exposures of the intrusive porphyry. It is puzzling why No. 2 shows 0.08% copper while No. 3 shows 0.38%, although the chips of No. 3 were somewhat more silicified and carried a little more disseminated pyrite grains, some of which may have been copper - or chalcopyrite-bearing.

No. 4. - Random chips over an area of perhaps several hundred square feet of rubble and outcrop of intrusive rock and volcanics. Rocks here are slightly altered and have minor fine pyrite. The 0.38% copper value, as well as hand lens studies, indicate some chalcopyrite and possibly some bornite, which were in grains too small to be positively identified by hand lens. An old adit driven on a narrow vein of lead and probably silver mineralization exists a few hundred yards north of this sample area. Wall rock of the vein has disseminated pyrite and some bornite and chalcopyrite.

No. 5. - Chips of vein material taken from dump of old working on a small vein. Galena was seen here in small, scattered areas.

No. 6. - Chips taken from slightly gossanized outcrops and float of porphyry intrusive. Minor disseminated pyrite seen.

No. 7. - Pieces of float with perhaps 5% fine pyrite. This silicified rock may be an altered part of the porphyry intrusive.

No. 8. - Chips from a 6-foot wide, iron stained shear zone in porphyry. With exception of this narrow, small shear zone, the rest of the porphyry in this vicinity is fresh and unmineralized.

No. 9. - Chips taken for a few hundred feet along a high ridge top, which ridge looks quite brown and iron-stained from the air. The ridge is made up of the intrusive porphyry. No pyrite or other sulphides were seen, but the rock has disseminated limonite grains and castes left by the weathering out of pyrite and probably some copper sulphides, as well. The assay value of 0.44 is encouraging. Perhaps, further work in this and adjoining parts of Section 6 could indicate a target area deserving of a drill test.

Glen Smart (prospector 1966), assays by Abbot Hanks, San Francisco, California:

Six samples were taken. Sample No. 1 was taken from the upper dump on the Galena Queen claim. Sample No. 2 was taken from the bottom dump on the Galena Queen. Sample No. 3 (D-1) was taken on Six Mile Creek about 1800 feet southwest of the Mortor No. 3 claim from a dump of an old adit. Sample No. 4 (D-2) was taken about 2100 feet southwest of Mortor No. 3 claim from a dump of an old adit. Sample No. 5 (J-1) was taken from the discovery cut of Mortor No. 1. Sample No. 6 (Y-2) was taken at the discovery cut of Mortor No. 3 claim. The assay results of the samples taken by the writer, as assayed by Abbot Hanks, are as follows:

No.	Mark	au oz		ag oz	pb%	cu%
1	Upper Dump	.05	$ 1.75	2.05	2.60	0.03
2	Bottom Dump	.10	3.50	43.20	12.00	0.63
3	D - #1	.06	2.10	.65	0.60	0.12
4	D - #2	.05	1.75	.45	0.80	0.04
5	J - #1	.01	0.35	.10	0.25	0.03
6	Y - #2	.01	0.35	Less than .05	0.50	0.06

Norman L. Degner, Geologist for Anaconda Mining Company, (1967) took four samples which were assayed by Black & Deason, Salt Lake City, Utah, as follows:

Name	au oz	ag oz	pb%	cu%
# Talus	Trace	Trace	None	None
# Tunnel	0.12	4.0	13.5	1.30
# S-4324	Trace	Trace	1.2	None
# Mac D	Trace	Trace	None	None

Mr. Degner's samples were taken from the Talus slope of the Carmo claim. His tunnel sample was taken in the adit of the Carmo claim. His sample S-4324 was taken from the surface of the Carmo claim. His sample #Mac D was taken from the MacAdow claim.

VII. ORE RESERVE

There are no known ore reserves in the Emigrant district. The USGS definition of measured, indicated and inferred ore are as follows:

MEASURED ORE - is ore for which tonnage is computed from dimensions revealed in outcrops, trenches, workings, and drill holes, and for which the grade is computed from the results of detailed sampling. The sites for inspection, sampling and measurements are so closely spaced, and the geologic character is defined so well, that the size, shape, and mineral content are well established. The computed tonnage and grade are judged to be accurate within limits which are stated, and no such limit is judged to differ from the computed tonnage or grade by more than 20 per cent.

INDICATED ORE - is ore for which tonnage and grade are computed partly from specific measurements, samples, or production data, and partly from projection for a reasonable distance on geologic evidence. The sites available for inspection, measurement, and sampling are too widely or otherwise inappropriately spaced to outling the ore completely or to establish its grade throughout.

INFERRED ORE - is ore for which quantitative estimates are based largely on broad knowledge of the geologic character of the deposit and for which there are few, if any, samples or measurements. The estimates are based on an assumed continuity or repetition for which there is geologic evidence; this evidence may include comparison with deposits of similar type. Bodies that are completely concealed may be included if there is specific geologic evidence of their presence. Estimates of inferred ore should include a statement of the spacial limits within which the inferred ore may lie.

Stephen E. Quayle, P. Eng., Province of Ontario, Canada, wrote in his report of January 24, 1967:

I state unequivocally, that the area contains more than one possibility of "making mines", however, the "Carmel" is particularly intriguing in that there are literally millions of yards of ore already mined. I use this terminology to indicate that -- through the pressures of the snows, the attrition thereof and the downwards percolation of the rains with a concentrating action at depth, etc., large areas of ore bearing rhyolites-dacites have slabbed off and have been broken into crusher size material on the surface and with the fines drifting downwards to the bedrock.

Norman L. Degner[1] also mentioned large talus deposits and wide-spread sulphide mineralizations which might be of ore grade. But these deposits

[1]Norman L. Degner, B.Sc. June 12, 1967

have not been sampled nor sufficiently measured to establish their quantity and quality necessary to calculate tonnage of measured, indicated or inferred ore.

VIII. PHYSIOGRAPHY

A. TOPOGRAPHY AND DRAINAGE

The Emigrant district has been deeply carved by glacial action; consequently, it is extremely rugged. It is entirely above 6,000 feet in altitude. Unbroken slopes rise abruptly from the narrow valley floors. They culminate in ridges and spires 10,000 feet or more in altitude.

The region drains northwest into the Yellowstone River by a series of mountain torrents that race along the canyons and gorges of Emigrant, Mill and Six Mile Creeks and their tributaries. The rugged terrain[1] may be an advantage, rather than a disadvantage, to open pit or combined open pit and underground mining.

B. TIMBER AND WATER SUPPLY

The area generally is heavily forested with lodgepole pine, fir and spruce up to an altitude of 9,000 feet. The forest cover above this level rapidly diminishes to scattered clumps of gnarled cedar and fir. Deciduous species are common along the main streams at the lower altitudes. Most of the forest areas contain stands of commercial timber suitable for mine-support and general construction.

The region's water resources are adequate to meet any anticipated combination of industrial, agricultural and domestic demands. Only a small part of the persistent year-round stream flow currently is used for irrigation of the lower bench lands bordering the Yellowstone River Valley.

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[1]John B. Cook, "Open Pit Mining in Mountainous Terrain", Case Studies of Surface Mining, p. 116, A.I.M.E. (N.Y. 1969)

X. CONCLUSION

It is the writer's considered opinion that the expenditures for exploration recommended are fully justified and more likely than not will delineate one or more copper porphyry mines in the Emigrant district.

Dated this 22nd day of December, 1969.

Respectfully submitted,

Robert M. Kaseweter

Robert M. Kaseweter
B. Sc. - Geologist

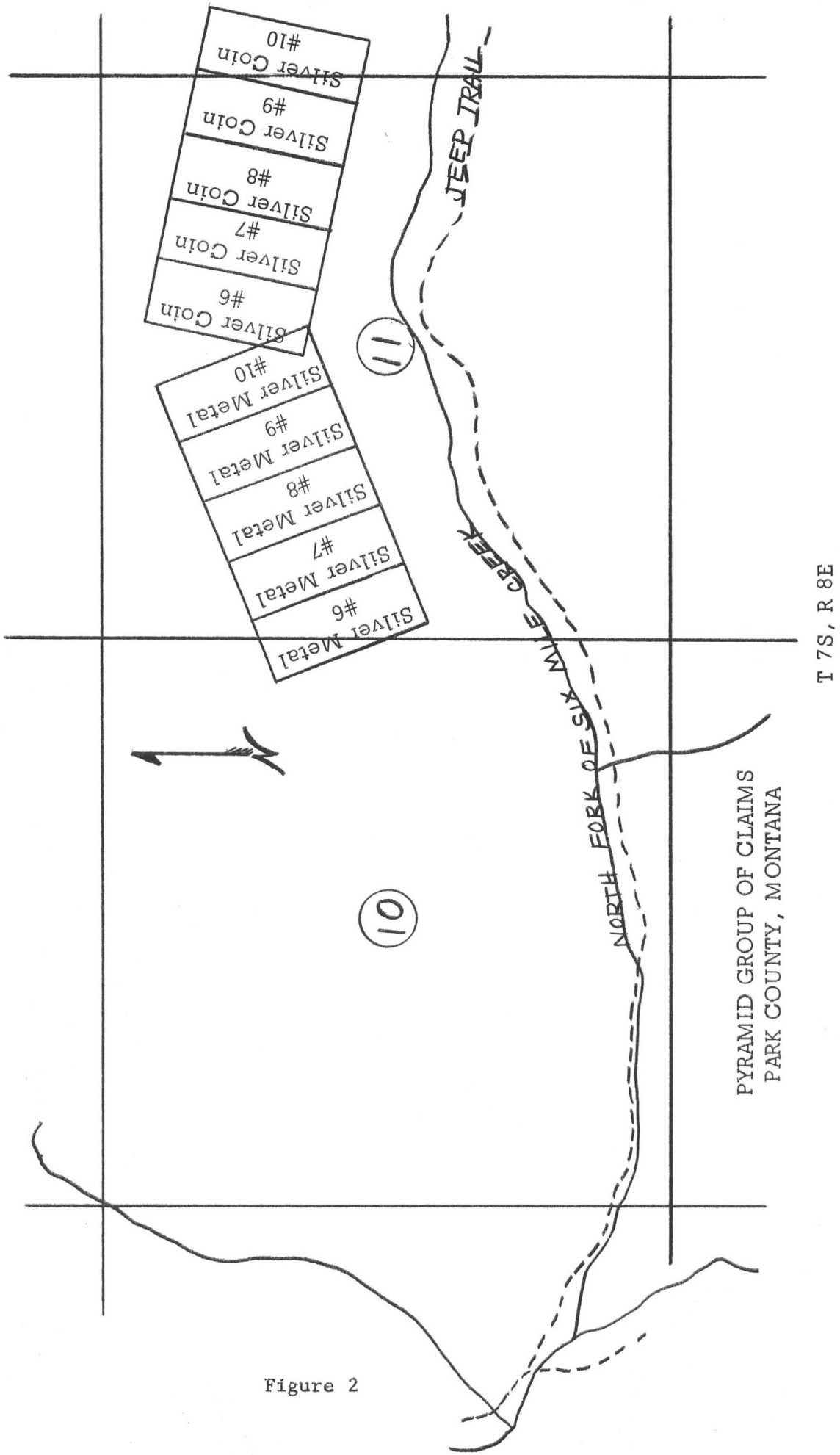
Silver Coin #10
Silver Coin #9
Silver Coin #8
Silver Coin #7
Silver Coin #6
Silver Metal #10
Silver Metal #9
Silver Metal #8
Silver Metal #7
Silver Metal #6
JEEP TRAIL
NORTH FORK OF SIX MILE CREEK
11
10
N
PYRAMID GROUP OF CLAIMS
PARK COUNTY, MONTANA
T 7S, R 8E

Figure 2

APPENDIX I

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APPENDIX II

REPORT ON EXAMINING GEOLOGIST

Robert M. Kaseweter, age 29, unmarried, 4215 SE 100th Avenue, Portland, Oregon 97266. Telephone 503-760-2738.

Graduate in geology and chemistry, Portland State University, Portland, Oregon. Received B. Sc. degree 1966. Graduate studies and instructor at McMaster University, Hamilton, Ontario, Canada, 1966.

Geologist for Geological Exploration Company, Portland, Oregon, 1967. Geologist for The Alaskamin Company, Alaska, 1968. Presently employed by Crown Zellerbach Corporation, Portland, Oregon as research scientist in applied research, since November 1968.

EXXON COMPANY, U.S.A.

November 7, 1973

Re: Emigrant Gulch Prospect
Park County, Montana
Project No. 3454

EXPLORATION REPORT

Summary and Conclusions

The Emigrant Gulch prospect was mapped at a scale of 1" = 500' and 255 rock chip samples were analyzed for copper, molybdenum, lead and zinc. Mapping, sampling and examination of all previous records and drill core delineated two possible areas of interest:

1. Noble breccia pipe (T6S, R8E, sec. 36, elev. 6800')
Basic Metals and Noble Resources have drilled 14 holes in and around the pipe. Based on all work to date, the pipe contains an estimated 1,700,000 tons of .41% Cu, .81 oz/ton Ag, .39% Zn, and .18% Pb. A possibility exists for similarly mineralized rock at depth.

2. Color anomaly (T6S, R8E, sec. 36; T7S, R8E, sec. 1)
This area may have potential as a porphyry copper target. However the deposit would be deep and would have to be mined by underground methods. In addition, the grade would probably be less than .5% copper, which is too low to support an underground operation. The target appears to be too deep and too low grade to merit further work at this time.

Introduction

The Emigrant Gulch prospect was submitted to us by Noble Resources who had entered into an agreement on the property with Basic Metals, Inc. Prior to beginning summer field work, the drill core of Basic Metals was examined in Salt Lake City and the prospect reviewed with Fred Reisbick, a consultant for Noble Resources and former project geologist for Basic Metals at Emigrant Gulch. Reisbick and Exxon geologist visited the property during May and examined the mineralized areas.

Exxon's examination of the area included the following work:

1. The Emigrant Gulch prospect was mapped at a scale of 1" = 500' and 255 rock chip samples were obtained and analyzed for copper, molybdenum, lead, and zinc.

2. The area around the Emigrant prospect (primarily the Mill Creek and Six Mile Creek drainages) was examined in reconnaissance fashion.

Duval personnel requested that Exxon do no work on their claims and, therefore, detailed information was not developed on this portion of the prospective area.

3. Thirty-seven stream sediment samples were taken in the Emigrant Gulch area and in the Gallatin Range to the northwest.

This report is a summary of work performed by Exxon Company, U. S. A. and supplements the detailed report of J. P. Rogowski of Noble Resources covering the Emigrant Gulch area.

Location

The Emigrant Gulch prospect is located in Park County, Montana, about thirty-five miles by road south of Livingston. The prospect area is 4 miles up Emigrant Gulch from the town of Chico via a road that leads to the breccia pipe at 6800 feet and continues up valley to the Duval claim group.

Regional Geology

The Emigrant Gulch prospect occurs near the northern end of the Beartooth Mountains, an elevated crustal block of PreCambrian crystalline rocks (see index map.) Early Tertiary volcanic rocks, known as the Absaroka volcanic field, cover a large area in northwestern Wyoming and southern Montana, including the southwestern part of the Beartooth uplift. The volcanic rocks were extruded from many small vents and fissures and a few larger volcanoes. Several vents with a number of small intrusive bodies are commonly clustered together to form large extrusive-intrusive centers. Intrusive bodies include small stocks, necks, laccoliths, dike swarms and sills.

The eruptive centers trend northwesterly and comprise two distinct belts (index map). The Eastern Absaroka belt includes intrusive centers in Sunlight Basin, Crandall, Cooke City, Independence, and Emigrant Gulch. These rocks were intruded along the Cooke City lineament, a prevolcanic zone of faulting and downwarping. The Western Absaroka belt comprises a similar belt of igneous activity southwest of the Cooke City zone and passes through intrusive centers at Kirwin, Ishawood-Stinkingwater, and Sylvan Pass.

The Emigrant stock is the largest exposed intrusive along the Cooke City zone. Major structures which converge in the vicinity of the Emigrant stock include the westerly trending Mill Creek-Stillwater fault zone, the Cooke City lineament, and the northeasterly-trending Deep Creek fault which has downdropped the Gallatin Range northwest of Emigrant Gulch. The exposed intrusive centers of the Gallatin Range are smaller and less numerous than those of the Beartooth Range, although others may be buried under lavas.

The Emigrant stock intrudes PreCambrian schists and gneiss in lower Emigrant Gulch and Paleozoic-Mesozoic sediments are exposed by faulting in the Chico Hot Springs area. Only Tertiary volcanic and intrusive rocks are present

at the Emigrant Gulch prospect.

Local Geology

The Emigrant prospect is characterized by steep, knife-edge ridges and talus covered slopes. The area is an intrusive center and the rocks are a complex mixture of hypabyssal intrusions, welded tuffs, and flows. Even the same rock type varies texturally from one outcrop to another. The approach in mapping was to divide the rocks into several general types and it is recognized that textural and perhaps compositional variations exist within each category. Each of the rock types is described in the legend accompanying the geologic map. A brief summary of the geology is included below.

The oldest rocks in the map area are andesite flow rocks and fragmentals which cap Emigrant Peak and form the steep cliffs east of the breccia pipe in section 31. The rocks are often interbedded with fine-grained sediments and show signs of water modification. Andesite fragmental rocks within and adjacent to the color anomaly east of Emigrant Peak locally carry pyrite along fractures but are massive and unmineralized elsewhere.

Several varieties of latites and dacites postdate the andesite flow rocks and fragmentals. These rocks are extremely variable in texture and composition and occur as shallow intrusives, flows and welded tuffs. The latites and dacites contain only minor pyrite except in the color anomaly on Noble ground (T6S, R8E, sec. 36; T7S, R8E, sec. 1).

The most important rocks from an economic standpoint are quartz monzonite dikes and intrusive rocks (QMP, QMP_B). A coarse grained quartz monzonite stock crops out on Duval ground and was intersected less than one half mile to the northwest in AMAX drill hole 1 at a depth of 1293 feet and continued to bottom at 1505 feet. Both the drill core and outcrop contain widely spaced fractures coated with secondary biotite and chalcopyrite. The quartz monzonite in AMAX hole 1 is estimated to average less than .1% Cu over the interval 1293-1505. Some small orthoclase veinlets and associated chalcopyrite were noted in outcrop. In the Noble claim block no quartz monzonite intrusive is present but several quartz-eye monzonite porphyry dikes (QMP) contain chalcopyrite on widely spaced fractures (<.1% Cu.) These dikes could be offshoots of a buried intrusive.

Geochemistry

Stream Sediment Survey. Thirty-seven samples were taken from drainages in and around Emigrant Gulch and in the Gallatin Range to the northwest. The data show that the Emigrant Gulch drainage is by far the most prospective area for copper mineralization in the general vicinity. The best values were registered in the creek draining the Duval claim block (1930 ppm Cu, 27 ppm Mo).

Rock Chip Sampling. Two hundred fifty-five rock chip samples were analyzed

for Cu, Mo, Pb, and Zn. Maps included with this report show sample locations, geochem values, and geochemical anomalies. The best anomaly in the Noble claim block is just east of Emigrant Peak in a very conspicuous color anomaly. Copper values run as high as 5050 ppm and Mo values range up to 305 ppm. A crude zonation is present with central copper and molybdenum and peripheral lead-zinc mineralization. This crude zoning pattern is present at the stock on Duval ground and around the color anomaly on Noble claims.

Geophysics

Two I.P. surveys were run by Hewitt Enterprises of Salt Lake City. The first survey in 1969 consisted of three lines with 100 foot dipoles run across the breccia pipe. Good anomalies were registered on the two lines over the pipe but line 3 over the proposed western extension did not show an anomaly. There is a possibility that the I.P. did not penetrate the overburden but more likely indicates that the western boundary of the pipe does not extend far beyond holes GW 5, 7 and 8.

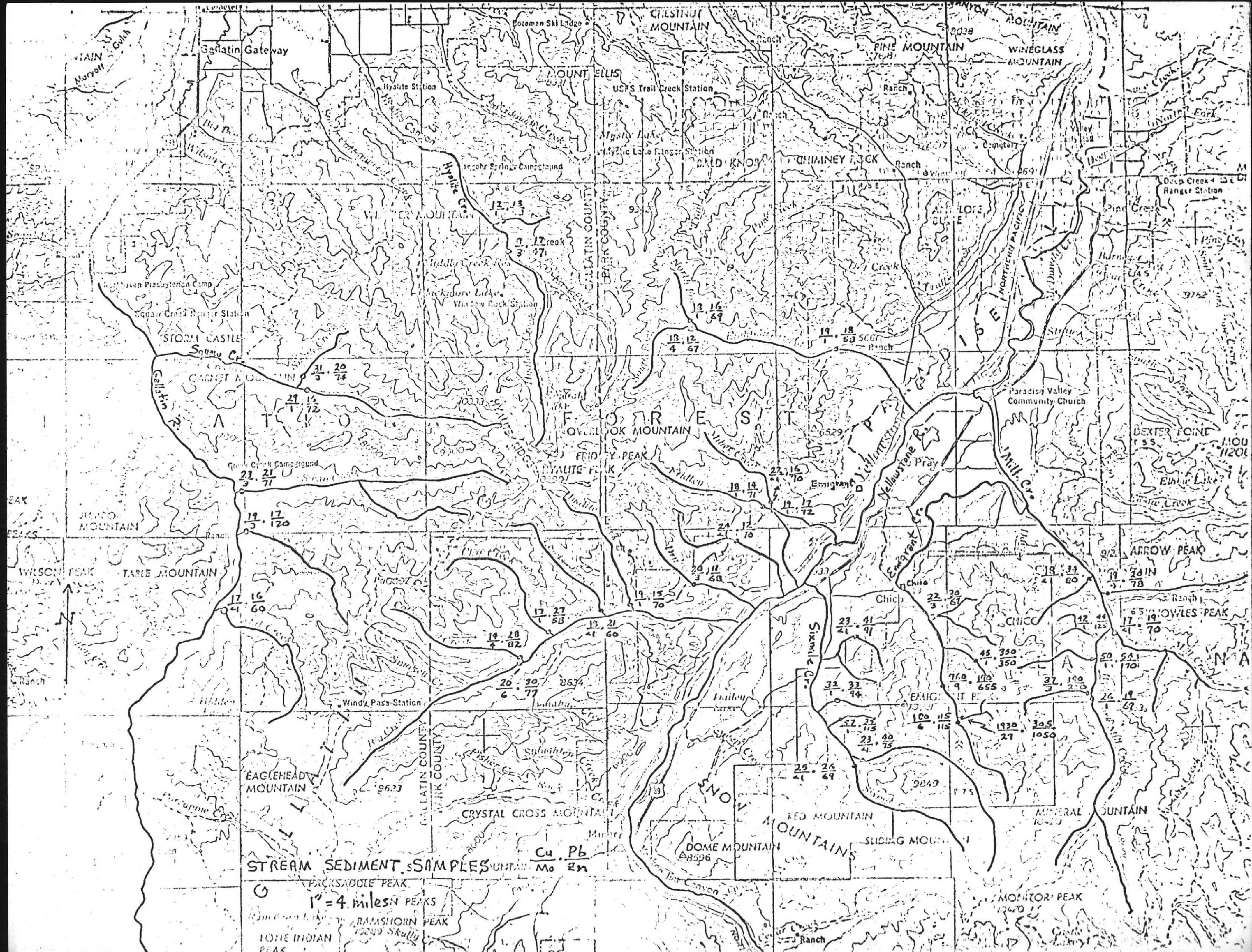
During 1972 Hewitt ran one 8000 foot line of I.P. along Emigrant Creek using 1000 foot dipole spacings. The best anomaly is located about 1500' south of the breccia pipe and Hewitt estimates 1.5%-2.0% sulfides in the anomalous zone. Several quartz monzonite dikes are located in the vicinity of the anomaly and contain up to 2% sulfides, mostly as pyrite on fractures.

Additional I.P. is not warranted at this time as geophysics would not significantly improve a drill location. Also, ubiquitous pyrite and deep talus in the area make it difficult to interpret the data. If drilling produced encouraging results, deep I.P. might be useful to delineate extensions of the mineralized zone.

Mineralization and Alteration

Breccia Pipe. Almost all previous work on the prospect has been done on a breccia pipe located at the bottom of Emigrant Gulch in T6S, R8E, sec. 36. Basic Metals and Noble Resources have drilled a total of 14 holes in and around the pipe. A summary of drill hole data and a plan view and cross sections of the pipe are included as part of this report.

The breccia consists of silicified, sericitized and locally argillized fragments of latite surrounded by a vuggy matrix of quartz, sulfides, carbonates, and rock flour. The upper 300 feet of the pipe is the best mineralized and contains mostly flat breccia fragments aligned at an angle of 45° to the core axis. Fragments are usually less than two inches in the upper part of the pipe but become increasingly larger at depth in the less well mineralized parts of the pipe. The flat, aligned fragments suggest a collapse origin for the pipe. Total sulfides average about 5% in the upper 300 feet of the pipe and include pyrite, chalcopyrite, sphalerite, and galena. Brown carbonate (manganosiderite ?) is very abundant throughout the pipe.



Gallatin Gateway
CHESTNUT MOUNTAIN
Bozeman Ski Lodge
PINE MOUNTAIN
WINEGLASS MOUNTAIN
MOUNT ELLIS
Hyalite Station
USFS Trail Creek Station
Mystic Lake Ranger Station
BALD KNOB
CHIMNEY ROCK
WINTER MOUNTAIN
Hyalite Cr.
GALLATIN COUNTY
PARK COUNTY
ANTELOPE BUTTE
NORTHERN PACIFIC
Deep Creek Ranger Station
Pine Creek
Westhaven Presbyterian Camp
Window Rock Station
Squaw Creek Ranger Station
STORM CASTLE
Squaw Cr.
GARNET MOUNTAIN
Gallatin R.
F O R E S T
OVERLOOK MOUNTAIN
FRIDLEY PEAK
HYALITE PEAK
Paradise Valley Community Church
DEXTER POINT
Yellowstone R.
Pray
Emigrant
Mill Cr.
Greek Creek Campground
JUNCO MOUNTAIN
WILSON PEAK
TABLE MOUNTAIN
ARROW PEAK
Chico
CHICO
Sixmile Cr.
EMIGRANT PEAK
Windy Pass Station
EAGLEHEAD MOUNTAIN
CRYSTAL CROSS MOUNTAIN
SNOWY MOUNTAINS
RED MOUNTAIN
DOME MOUNTAIN
MINERAL MOUNTAIN
MONITOR PEAK
RAMSHORN PEAK
PACKSADDLE PEAK
LONE INDIAN PEAK
N
STREAM SEDIMENT SAMPLES Cu/Mo . Pb/Zn
1" = 4 miles

The tonnage potential of the pipe was reviewed using the following assumptions:

1. The only well defined pipe contacts are located on surface just south of hole GE-1 and in angle hole EGN-2 at 297 feet.
2. The north contact was arbitrarily drawn through hole EGN-3 because the lower grade mineralization indicates close proximity to the contact.
3. Holes EGN-5, GW-4 and GE-3 are outside the breccia pipe. Contacts adjacent to these holes were drawn midway between barren holes and the nearest hole in the breccia pipe.
4. Because the grade is variable, all assays were averaged in the upper portion of the pipe (see drill hole summary.) Holes GW 5, 7, and 8 are so close together that the average grade may not be representative of the entire pipe. The surface area of the pipe as shown in the sketch map is approximately 64,000 square feet. The average depth of the mineralized zone is 333 feet (average of intercepts in GE-2, GW-8, EGN-3). These figures indicate the presence of approximately 1,700,000 tons of mineralized rock averaging .41% Cu, .81 oz/ton Ag, .39% Zn and .18% Pb. This is an estimate and a shift of the breccia outline based on more data could significantly increase or decrease the tonnage. Drill hole EGN-3 intersected .13% Cu from 1130-1143 and more well mineralized rock may be present at depth.

The Peter Pear breccia pipe (T6S, R9E, sec. 31) is similar to the Noble pipe but has more sphalerite and galena and less chalcopyrite. All the breccia pipes are peripheral and northeast of the quartz monzonite intrusive on the Duval claims and the color anomaly on Noble ground.

Color Anomaly. The color anomaly in the southwest corner of the Noble claim block is a permissive porphyry copper target. The area is the center of a previously described copper-molybdenum anomaly and at the present level of exposure is approximately 2500 feet long and 1200 feet wide. The zone contains pyritized latite, dacite, and andesite with prominent iron staining which is mostly jarosite. The volcanics are silicified and argillized and locally contain mineralized quartz veins and fractures (2-3/foot) with chalcopyrite and minor molybdenite mineralization. These mineralized zones which cut the altered volcanics are narrow (<30 feet wide) and would average less than .3% Cu over any given ten foot interval. Secondary covellite is often observed coating pyrite or chalcopyrite in the vuggy, altered volcanic rocks. Orthoclase alteration occurs locally adjacent to chalcopyrite veinlets.

The area may have potential as a deep porphyry target. Favorable factors include 1) Cu-Mo geochem anomaly 2) peripheral breccia pipes with Pb-Zn-carbonate-cpy mineralization 3) Possibility of a quartz monzonite intrusive at depth is indicated by quartz veining, chalcopyrite-molybdenite mineralization, orthoclase alteration, and numerous quartz eye monzonite porphyry dikes in the area. Alteration and mineralization are similar to published descriptions of the Kirwim deposit in Wyoming.

Several negative factors make the prospect marginal:

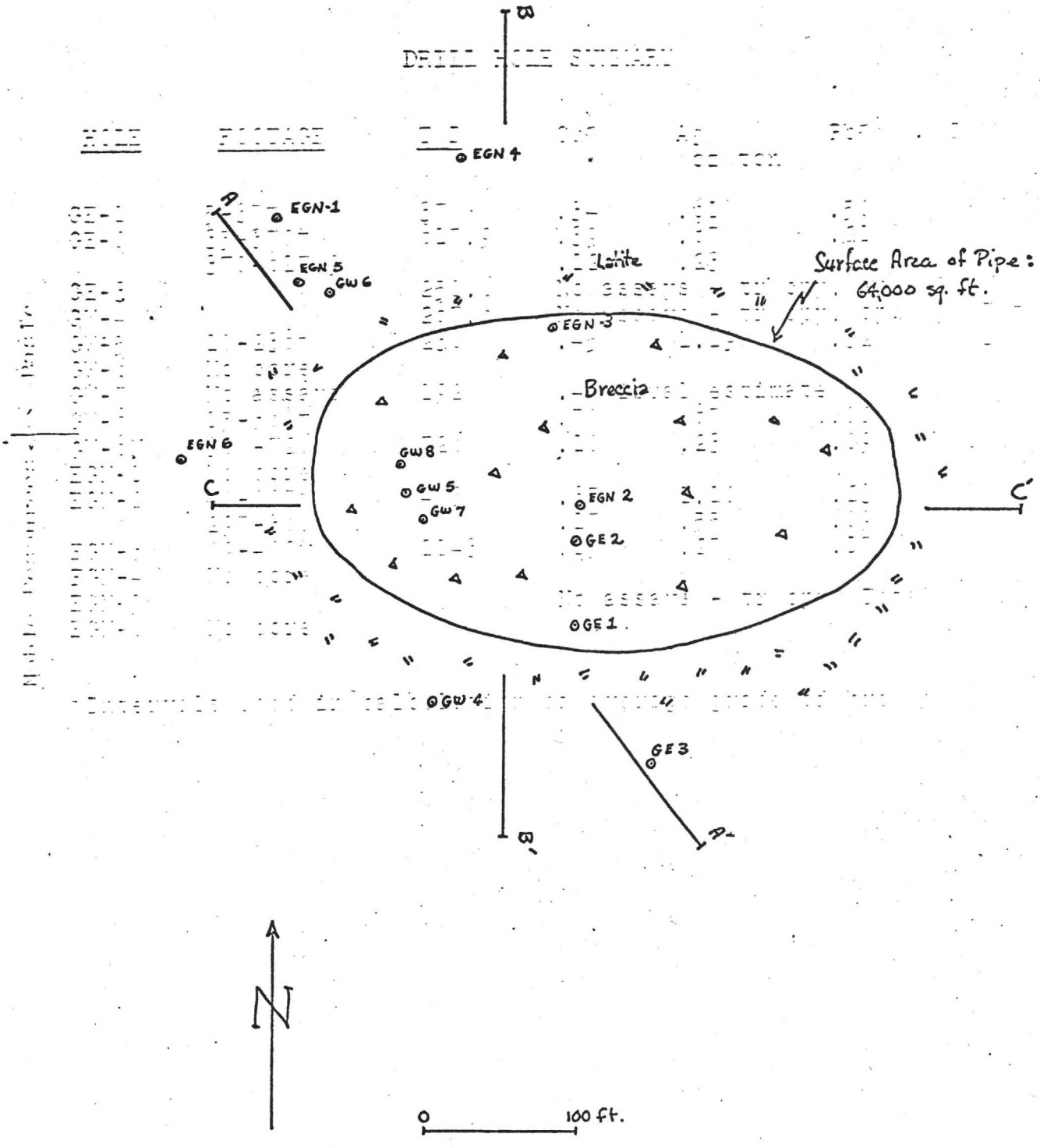
1. No chance appears to exist for a zone of supergene enrichment.
2. The steep walled canyon would necessitate an underground mining operation.
3. Based on our observations the grade would be low.
4. Copper values in AMAX drill hole 1 (<.1) do not enhance the grade potential of the inferred intrusive beneath the color anomaly. Amax drill hole 2 tested the periphery of the color anomaly (S30W, -50°, 1582') but intersected only trace amounts of chalcopyrite-molybdenite. The hole bottomed at an elevation of 6800'. If a large pervasive zone of mineralization does underlie the color anomaly, it must be 2000-3000 feet deep.

DRILL HOLE SUMMARY

HOLE	FOOTAGE	T D	Cu%	Ag (oz/ton)	Pb%	Zn%
GE-1	5-37*	37	.34	.61	.50	.33
GE-2	35-370*	817.9	.39	.87	.21	.26
	370-817.9		.12	.23	.04	.12
GE-3		250.6	No assays - tr cpy, sph Total S= .5%			
GW-4		287.6	No assays - tr cpy, sph, gl Total S= 1%			
GW-5	10-238*	238	.45	1.19	.32	.62
GW-6	No core					
GW-7	No assays	192	.4 visual estimate			
GW-8	15-360*		.70	.87	.02	.70
GW-8N	360-726	726	.10	.23	.09	.14
EGN-1	No core					
EGN-2	40-297*	403	.37	1.10	.23	.15
	297-360*		.17	.55	.09	.09
EGN-3	29-400*	1143	.15	.27	.17	.22
EGN-4	No core					
EGN-5			No assays - tr cpy Total S= 1%			
EGN-6	No core					

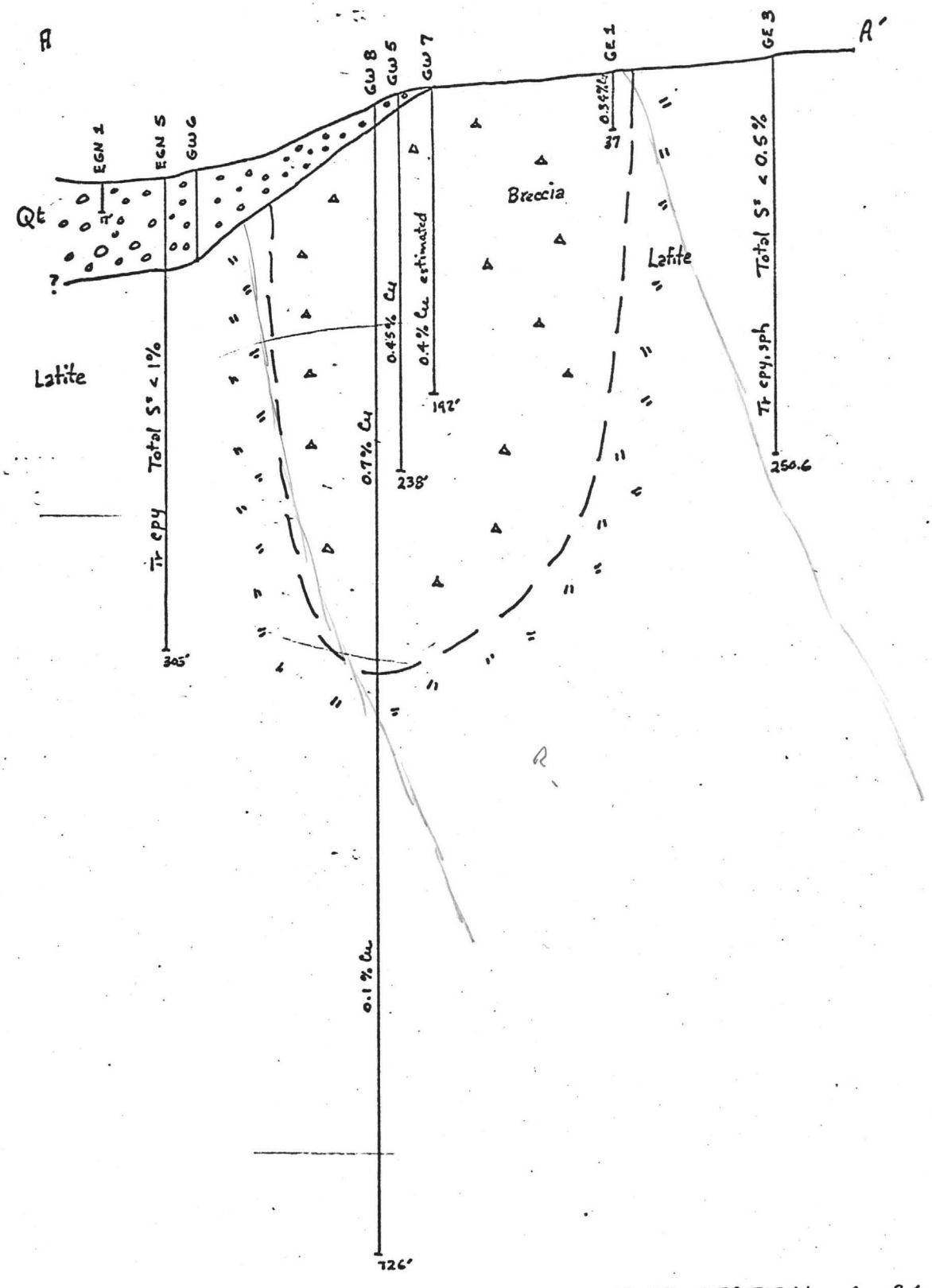
Noble Resources ↓ ↑ Basic

*Intervals used in calculation of average grade of breccia pipe.



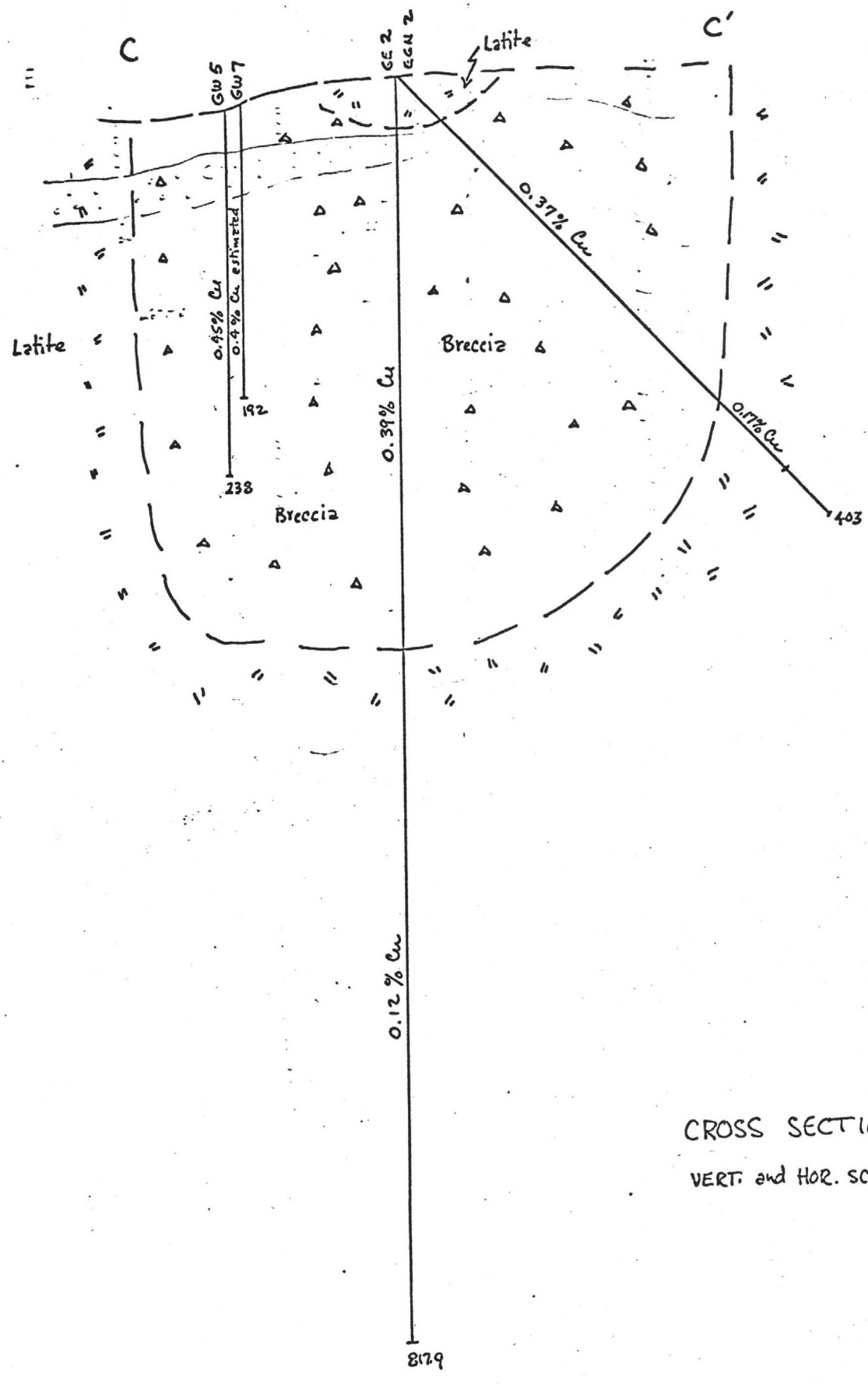
PLAN MAP OF NOBLE RESOURCES

BRECCIA PIPE



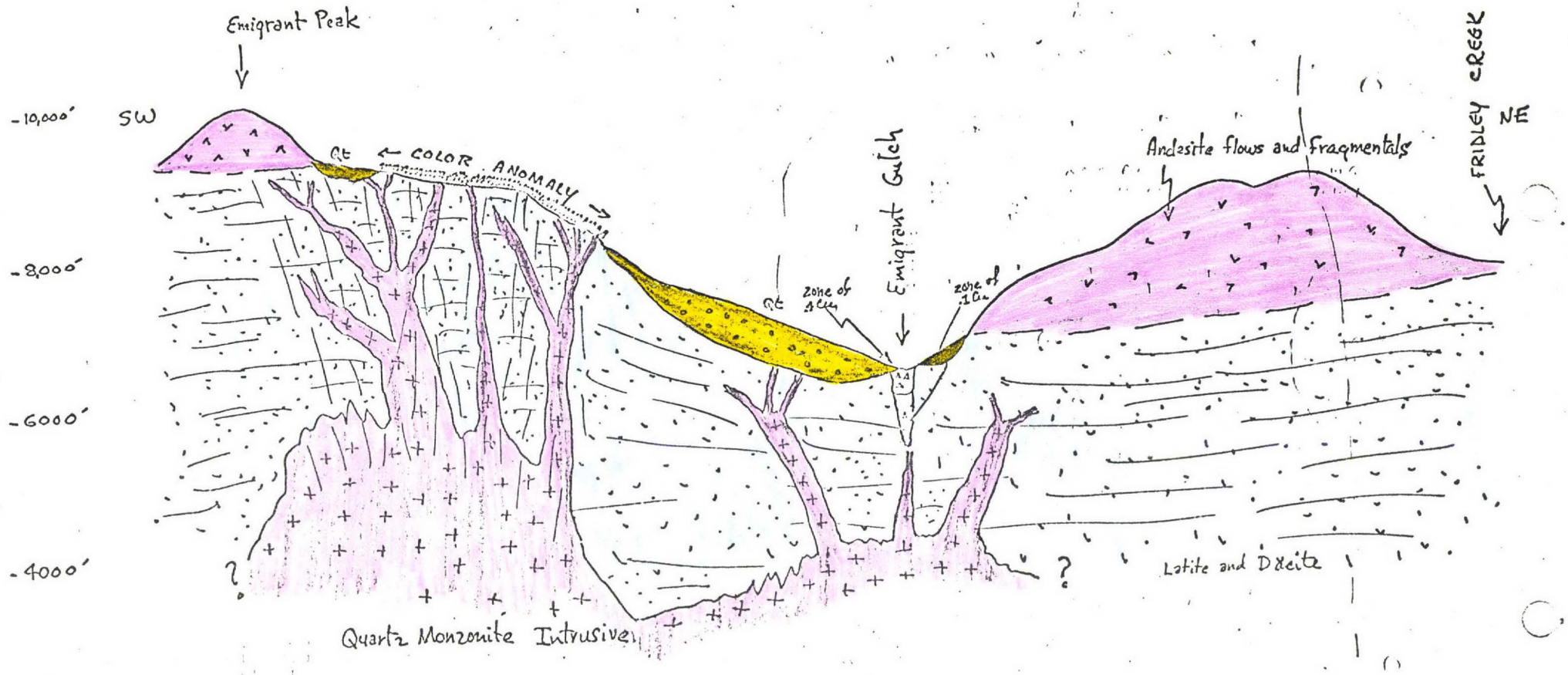
CROSS SECTION A-A'

VERT. and HOR. SCALE 1"=100'



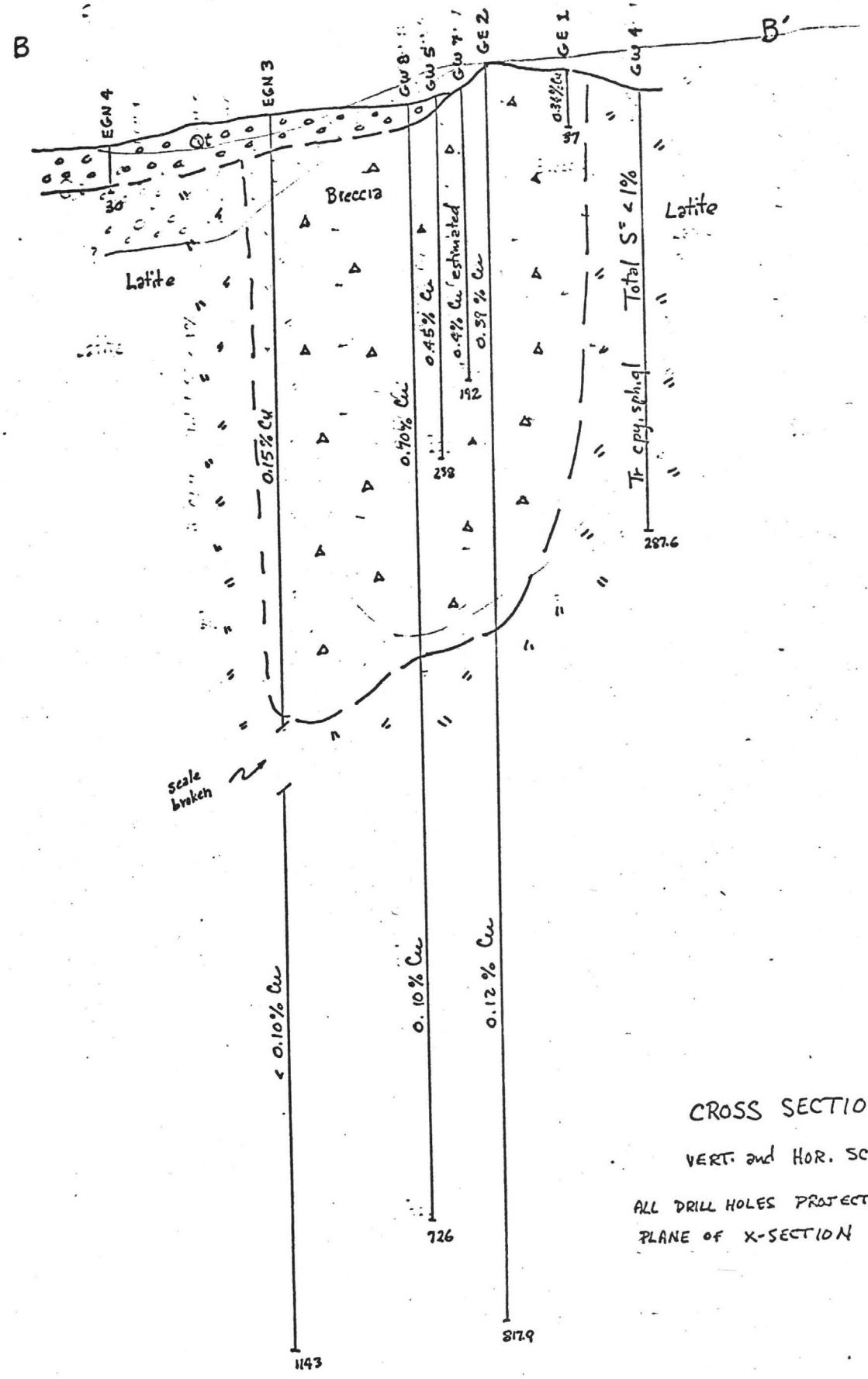
CROSS SECTION C-C'

VERT. and HOR. SCALE 1"=100'



SCHEMATIC CROSS SECTION SW-NE THRU COLOR ANOMALY AND NOBLE PIPE

HOR. and VERT. SCALE 1"=2000'



CROSS SECTION B-B'

VERT. and HOR. SCALE 1"=100'

ALL DRILL HOLES PROJECTED INTO PLANE OF X-SECTION

A G R E E M E N T

THIS AGREEMENT, made and entered into as of this _____ day of _____, 1979, by and between NATIONAL TREASURE MINES COMPANY, a Utah corporation, hereinafter designated and referred to as "Seller," and [redacted], a [redacted] corporation, hereinafter designated and referred to as "Buyer."

W I T N E S S E T H:

WHEREAS, Seller owns or has under lease approximately 4,000 (four thousand) acres in Juab County, Utah, hereinafter referred to as the "Property" more particularly described in Exhibit A hereto which by this reference is made part hereof, and

WHEREAS, Seller is desirous of granting to Buyer the exclusive right and option to purchase an interest in the Property, upon the terms and conditions hereinafter provided,

NOW THEREFORE, in consideration of the sum of Ten Dollars ($10.00) and other good and valuable consideration and the mutual promises, conditions, and covenants herein contained, it is agreed as follows:

I

GRANT OF OPTION

A. Seller hereby grants to Buyer the exclusive right, for a period of 6 (six) months commencing _____ and ending _____, hereinafter referred to as the "Initial Exploration Period," to enter upon the Property and conduct thereon an exploration program including, but not necessarily limited to, mapping, geochemical and geophysical surveys, and age dating. It is expressly understood that the right to conduct said exploration program does include the right to drill, mine, or sink shafts on the Property.

B. Seller grants to Buyer an option to purchase an interest in the Property,

said option to be exercised within the Initial Exploration Period provided for above, on the terms and conditions hereinafter set forth.

II

TITLE TO THE SUBJECT LANDS

A. Representations and Warranties.

1. To the best of Seller's knowledge, information, and belief, it owns a good and marketable title in and to the property interests described in Exhibit A hereto, subject only to the paramount title of the United States in and to the unpatented mining claims, and Seller's title thereto is free and clear of all liens, charges, claims, rights, and encumbrances except as may be specifically set forth in said Exhibit A.

2. The acts of location performed by the Seller (and to the best of its knowledge, information, and belief, those performed by their predecessors in interest) on the unpatented mining claims described in Exhibit A have been performed and completed in compliance with the laws of the State of Utah and of the United States of America. Assessment work on each of said unpatented mining claims is current and the requisite proof of performance of such work for the period ending September 1, 1972, has been recorded by the Seller, and Seller has the full right, power, and capacity to enter into this Agreement upon the terms set forth herein.

B. Survival of Warranties. It is expressly understood and is agreed that the representations, warranties, and covenants of the Seller under this Agreement as set forth hereinabove shall survive the exercise of the Option herein granted and the closing and transfer of title pursuant thereto, and shall be in full force and effect between the parties hereto and their respective heirs, successors, and assigns.

C. Title Defects. If, in the opinion of Buyer's counsel, reasonably exercised, the Seller's title to any of the Property is defective or less than as hereinabove represented and warranted, Buyer may deliver to Seller written notice stating Buyer's objections to the title and if Seller is unable or unwilling to promptly correct the defects in title, Buyer may attempt to perfect said title. In that event, Seller shall

execute all documents and shall take such other actions as are reasonably necessary to assist Buyer in its efforts to correct the defects in title. All costs and expenses of perfecting title, including but not necessarily limited to, the cost of attorney's fees, and the cost of releasing or satisfying mortgages, liens, and encumbrances shall be borne and paid as follows:

1. During the Development Period. If such costs and expenses are incurred during the Development Period, as that term is hereinafter defined, they will be paid by Buyer and will be part of the costs and expenses that Buyer may recover, as provided herein.

2. After the Development Period. If said costs and expenses are incurred after the Development Period, they will be paid by Buyer and will receive the same treatment as other operational costs, as provided herein.

3. Defects previously created by Seller. If a defect arises by virtue of any conveyance or assignment by Seller heretofore made and which reduces or diminishes the interest they purport to own and to convey to Buyer by this Agreement, and there are valid claims arising from such assignment or conveyance, then the interest of Seller under this Agreement will be reduced in an amount equal to the amount represented by such valid claim or claims arising from such conveyance or assignment by Seller and Buyer may thereafter account directly to such claimants.

4. Defects subsequently created by Seller. Seller specifically agrees not to encumber the rights and titles granted hereunder to Buyer while this Agreement is in effect.

5. Right to terminate. Nothing herein contained shall limit or detract from Buyer's right to terminate this Agreement at any time as hereinafter provided.

D. Delivery of Title Documents. Upon written request by Buyer at any time during the term hereof, Seller shall promptly deliver to Buyer any abstracts of title, certified copies of all title documents, plats and field notes of surveys affecting the Property which Seller has in its possession. In addition, Buyer may obtain such additional certified copies of title documents affecting the Property as Buyer deems advisable. Costs of obtaining such additional abstracts and copies during the Development Period shall be borne by Buyer and may be recovered as provided herein.

Costs of obtaining such additional abstracts and copies following the Development Period shall be treated the same as other operational costs, as provided herein.

E. Escrow of Title Documents. Immediately upon the exercise of the Option by Buyer, Seller shall forthwith execute, make, and deliver into escrow with the _____, hereinafter referred to as Escrow Agent, good and sufficient deeds and assignments conveying a ___ percent interest in the Property to Buyer. Said deeds and assignments shall be in a form acceptable to Buyer. Buyer and Seller shall execute and deliver to said Escrow Agent instructions setting forth the terms of the escrow consistent with the terms and conditions hereof. The costs of said escrow shall be paid one-half by Buyer and one-half by Seller.

F. Boundary Interests. For the purpose of this Agreement, the term Boundary Interests shall mean any and all mining claims or interests therein, and other rights or interests in lands, owned or hereafter acquired, by either party hereto, in addition to the Property described in Exhibit A, any part or parts of which are within the area described in Exhibit B hereto, which by this reference is made a part hereof. If any Boundary Interests are owned by either party or are located or acquired by either party at any time during the term of this Agreement, such party shall forthwith notify the other party in writing, describing each such Boundary Interest, whereupon the other party shall have the right at its option to elect to have any or all of the Boundary Interests made a part of the Property as though specifically described in Exhibit A. If such election is made, it is understood that any party's out-of-pocket costs of acquisition, exploration, and other work on the Boundary Interests prior to or after the exercise of such election shall be deemed to be a cost of development and exploration of the Property, and said party shall be entitled to recover said costs prior to any distribution of Net Profit. If any party elects to have any Boundary Interests made a part of the Property, such party shall mail to the other party written notice of the existence of such Boundary Interests.

G. Amendment, Relocation, or Patent of Claims. Buyer shall have the right to amend or relocate any of the unpatented mining claims described in Exhibit A which Buyer, in its sole discretion, deems advisable to amend or relocate. Upon request by Buyer, Seller shall apply for a patent to any of the said unpatented lode mining claims so designated by Buyer and shall execute all necessary applications and documents in connection therewith, and shall cooperate with Buyer in securing such patents. All expenses incurred or authorized by Buyer in connection with such patent proceedings shall be borne by Buyer and, if incurred during the Development Period, may be recovered by Buyer, as provided herein. If said expenses are incurred after the Development Period, they shall be treated the same as other operational costs, as provided herein.

H. Title Protection.

1. Liens and Claims. Buyer shall pay all expenses incurred by it in its operations on the Property during the Initial Exploration Period and shall allow no liens arising from any act of Buyer to remain upon the Property. In the event of exercise of the Option, Buyer shall pay thereafter all expenses incurred by it in its operation of the Property subject to the right of Seller to participate in said expenses following the Development Period as provided herein, and shall allow no liens arising from any act of Buyer to remain upon the Property. Buyer shall indemnify Seller against and hold them harmless from any liability to third persons for personal injury or property damage arising from Buyer's negligence or liability imposed upon it by law in its operations hereunder.

2. Assessment Work. In the event of exercise of the Option, Buyer agrees to perform on all unpatented claims the annual assessment work required to maintain said claims and to record affidavits of such performance for any assessment year for those unpatented claims as to which the term of this Agreement has not expired or been terminated prior to 60 days before the end of any annual assessment work year. In the event the Option is not exercised, Buyer will furnish Seller with Affidavits of Work Done as to any work done on the Property during the Initial Exploration Period.

3. Taxes. Buyer shall pay all taxes, assessments, and other governmental charges imposed upon the Property following the exercise of the Option. The Seller agrees to promptly transmit to Buyer all notices pertaining to such taxes, assessments, and charges which Seller may receive. If the term of this Agreement is in effect for only a portion of any tax period, Buyer shall be liable for only the applicable pro rata share of such taxes, assessments, and charges. Buyer shall have the right to contest in the courts or otherwise in its own name or in the name of Seller the validity or amount of any such taxes or assessments if it deems the same unlawful, unjust, unequal, or excessive or to take such other steps or proceedings as it may deem necessary to secure cancellation, reduction, readjustment, or equalization thereof before it shall be required to pay the same.

III

TIME, MANNER, AND EFFECT OF EXERCISE OF PURCHASE OPTION

A. Buyer shall have the Option to purchase a 60% interest in the Property in consideration of the sum of $200,000 to be paid in annual installments of $50,000 and the promises, conditions and covenents herein contained. Said Option may be exercised by Buyer by giving Seller written notice of Buyer's decision to exercise the Option at any time during the Initial Exploration Period, together with cash payment to Seller in the amount of $50,000. The effective date of such exercise shall be deemed to be the date the notice of said exercise is mailed to Seller. Immediately upon the exercise of the Option by Buyer, Seller shall forthwith execute, make and deliver to the Escrow Agent good and sufficient deeds and assignments conveying a 60% interest in the Property to Buyer.

B. Buyer will make payment to Seller of the remaining $50,000 installments on the first, second, and third anniversary dates of the exercise of the Option. The period from exercise of the Option until payment of the final installment is referred to herein as the "Development Period." The right of Seller following payment to it of the final installment shall consist of the right to receive a share of "Net Profits" as granted to them pursuant to the terms and conditions of Paragraphs III E and III F of this Agreement, which terms and conditions shall survive the exercise of the Option, and to

receive a quit claim of portions of the Property as to which Buyer wishes to permanently discontinue its operations as provided in Paragraph IV D.

C. Upon exercise of the Option, Buyer will commence forthwith a full exploration and development program including a drilling program on the Property. Buyer will be operator of the Property and will have exclusive control over all exploration, development, mining, and marketing operations. During the Development Period Buyer will present Seller with quarterly financial statements detailing expenditures on the Property. At the conclusion of the Development Period, Buyer will present to Seller, in writing, an outline of Buyer's program for development and operation of the Property, a summary of Buyer's expenditures to date and a detailed estimate of the additional expenditures Buyer deems necessary to develop the Property. Seller shall have 30 days following the receipt of said outline and summaries of expenditures in which to elect to participate or not to participate in capital expenditures pursuant to the terms and conditions of Paragraphs III E and III F of this Agreement. At the same time that Seller makes said election, Seller will notify the Escrow Agent to deliver to Buyer the instruments of conveyance and assignment being held by said Escrow Agent.

D. Net Profits. For purposes of this Agreement, "Net Profits" shall be the gross income received by Buyer during a particular calendar quarter from ore mined and sold from the Property less all costs and expenses incurred after the Development Period for the development, exploration, and operation of the Property. Said costs and expenses include, but are not limited to, costs and expenses relating to leasing, exploration, development, exploitation, payments under Paragraphs II C, II D, and II G, salaries, wages, plant construction costs, equipment costs, fringe benefits, taxes of all kinds relating to the operation of the Property (other than taxes imposed on income), royalties payable on the Property, and all other costs and expenses reasonably incurred and attributable to the exploration, development, exploitation, and operation of the Property but not including depreciation and depletion, determined in accordance with generally accepted accounting principles.

E. Interest of Seller with Capital Participation. Seller may elect to share in Net Profits to the extent of 40% thereof realized from the sale of ores mined from the Property and to contribute 40% of the total expenditures determined to be necessary and actually incurred by Buyer following the conclusion of the Development Period for the development, exploitation, and operation of the Property. Seller's election to participate in capital expenditures as provided in this Paragraph III E shall be irrevocable.

1. Manner of Participation. Buyer shall prepare quarterly summaries of the total expenditures necessary to develop the Property and shall furnish Seller with a copy thereof. Seller shall have 30 days following receipt of such quarterly statements in which to pay to Buyer an amount equaling 40% of said total expenditures, which shall be Seller's total share of said expenditures.

2. Recovery of Certain Costs and Expenses by Buyer. At such time as Net Profits, as defined above, are generated from the sale of ores mined from the Property, Buyer shall be entitled to receive an extra 20% of Net Profits until such time as the total amount recovered by Buyer from said extra 20% of Net Profits equals 100% of the costs and expenses advanced by Buyer for exploration, development, and exploitation of the Property during the Development Period. During the time it takes for Buyer to recover said costs and expenses, therefore, Seller will receive only 20% of Net Profits and Buyer will receive 80%. Thereafter, Seller will be entitled to receive 40% of Net Profits and Buyer 60%.

F. Interest of Seller Without Capital Participation. Sellers may elect to receive 40% of Net Profits without participating in capital expenditures subject, however, to the right of Buyer to recover costs and expenses advanced during the Development Period and an additional amount as provided hereinafter.

1. All Operating Costs to be Borne by Buyer. All costs and expenses relating to the development, exploitation, and operation of the Property following the Development Period shall be borne by Buyer. Buyer shall submit to Seller quarterly summaries of the total expenditures necessary to develop the Property but Seller shall not be obligated to pay any portion of said expenditures.

2. Recovery of Certain Costs and Expenses by Buyer. At such time as Net Profits, as defined above, are generated from the sale of ores mined from the

Property, Buyer shall be entitled to receive an extra 20% of Net Profits until such time as the total amount recovered by Buyer from said extra 20% of Net Profits equals _____% of the costs and expenses advanced by Buyer for exploration, development, and exploitation of the Property during the Development Period. During the time it takes for Buyer to recover said costs and expenses, therefore, Seller will receive only 20% of Net Profits and Buyer will receive 80%. Thereafter, Seller will be entitled to receive 40% of Net Profits and Buyer 60%.

C. Manner of Distributing Seller's Share of Net Profits. The portion of Net Profits to be paid to Seller hereunder shall be paid within 30 days following the end of each calendar quarter. Seller shall have the right to inspect the books and records of Buyer relating to the operation of the Property at reasonable times.

IV

MINING OPERATIONS

A. Use of Property; Cross Mining; Commingling. Buyer shall have the right to use the Property and any facilities thereon in connection with any exploration, mining, milling, or treatment operations (including, but not limited to, the right to use, cave or destroy the surface in such operations and to use the Property for waste dumps, stockpiles, leaching facilities, tailings and other surface uses) conducted by Buyer on the Property or on adjacent or nearby lands in which Buyer shall have an interest. Buyer shall have the right to remove, prior to any payment to Seller, ores, minerals, wastes, and other material from the Property with ores, minerals, wastes, and other material produced from any other such lands. No payments shall be due or payable to Seller on account of the deposition on or removal from the Property of wastes, tailings, or residue, it being expressly agreed that the payments specified to be payable to Seller hereunder shall constitute full consideration for removal from, or deposit on, the Property of such material and for any destruction of, or any use of, the surface and subsurface of the Property by Buyer in exercise of the rights granted to it under this Agreement. Any wastes, tailings, or residue remaining on the Property

for a period of one (1) year after the date on which this Agreement has expired or has been terminated, shall be deemed abandoned by Buyer.

B. Inspection by Seller. Seller and it's authorized agents, at its sole risk and expense, may enter upon the Property to inspect the same at reasonable intervals, provided that Seller shall not unreasonably or unnecessarily hinder or interrupt the operations of the Buyer.

C. Disputes Not to Interrupt Operations. Disputes or differences between the parties hereto shall not interrupt performance of this Agreement or the continuation of operations hereunder. In the event of any dispute or difference, operations may be continued, and settlements and payments may be made hereunder, in the same manner as prior to such dispute or difference, until the matters in dispute have been finally determined between the parties, and thereupon such payments or restitutions shall be made as may be required under the terms of the settlement of final determination of the dispute.

D. Discontinuance of Operations. Whenever Buyer deems it necessary or advisable during the initial term of this Agreement or during any renewal thereof, it may discontinue or resume exploration, development, mining and production operations from time to time, so long as it meets its obligations hereunder. If at any time subsequent to the exercise of the Option, Buyer elects permanently to discontinue its operations on all or any portion of the Property, it shall tender a quitclaim to such portion of the Property to Seller at least thirty (30) days prior to September 1 of the then assessment year, and thereafter Buyer shall have no further liability or responsibility with regard to the portion of the Property so tendered. Until such time as Buyer tenders such quitclaim Buyer shall perform all assessment work required to maintain in good standing the claims pertaining to such portion of the Property and perform all actions required to maintain the claim in good standing.

E. Force Majeure. If Buyer is delayed or interrupted in or prevented from performing its obligations, as herein provided, by acts of God, wars, fires, floods, windstorms, or other damage from the elements, strikes, or labor troubles, insurrection or mob violence, inability to obtain labor, supplies or necessary equipment, injunction, unavailability of transportation, litigation, regulations, orders or requirements of

government, or other disabling causes beyond its reasonable control, or if prevailing levels of costs in relation to prevailing levels of prices make it economically impractical to operate the Property, then and in all such cases Buyer shall be excused, without liability, from performance of its obligations hereunder, during the period of each such delay, prevention, disability, or condition. The term of this Agreement shall be extended for a period equal to the period for which performance is suspended by reason of force majeure. All periods of force majeure shall be deemed to begin at the time Buyer stops performance hereunder by reason of force majeure. Buyer shall notify Seller promptly in writing of the beginning and ending date of each such period and shall specify therein the particular factual occurrence upon which Buyer bases its suspension of performance; and shall also deliver to Lessor copies of assessment affidavits which Buyer intends to record and such additional details concerning its performance of assessment work as are necessary to inform Seller of the type, value, and nature of work performed during the applicable assessment year and prior to suspension. Upon receipt of such affidavits and details, Seller may enter upon the Property and cause to be performed whatever additional work in his sole judgment is required to complete the fulfillment of annual assessment work requirements for the assessment year or years during which Buyer's obligations are suspended. Buyer agrees to pay for having assessment work performed under this paragraph IV E; provided that Buyer's liability shall not exceed the lesser of: (1) the charges incurred by Seller to complete such assessment work; or (2) the difference between the total minimum assessment work requirement and the amount expended by Buyer prior to suspension (as evidenced by affidavits and details furnished Seller with the notice of suspension of performance.)

F. Default. In the event of default by Buyer in the performance of its obligations hereunder, Seller shall give to Buyer written notice specifying the default. If within sixty (60) days after Buyer has received such notice, Buyer has not begun appropriate action to cure the default and does not thereafter diligently prosecute such action to completion, Seller may terminate this Agreement by delivering to Buyer

of every nature and description are left, placed, or situated thereon, except supports placed in shafts, drifts, or openings in the Property. Any property of Buyer's not so removed at the end of the said one (1) year shall be deemed abandoned.

D. Delivery of Data. If this Agreement is terminated, Buyer, upon request given by Seller on or before sixty (60) days after said termination, shall furnish Seller within a reasonable time thereafter copies of all available factual maps, drill logs, and other factual data pertaining to the Property, or portion thereof to which such termination applies, in Buyer's possession. Buyer agrees that as to any core, or rotary drill sample, from the Property retained by Buyer after termination of this Agreement, it shall allow Seller or its agents to examine such core or sample at the place of storage and Buyer further agrees that it shall notify Seller if Buyer chooses to discard any core or sample, whereupon Seller shall have thirty (30) days within which to remove, at Seller's cost, such core or sample as they choose to remove. Buyer shall, in no event, be liable to Seller for the loss or destruction of any core or sample from the Property.

VI

ASSIGNMENT AND TRANSFER

A. Right of First Refusal. If, at any time during the term hereof, Seller intends in good faith to sell, assign, transfer, or convey their interest retained in the Property, or any of their interests arising out of this Agreement, Seller shall deliver to Buyer at least sixty (60) days' prior written notice, describing all of the terms of the proposed sale, assignment, transfer, or conveyance. Buyer shall have the exclusive right during the above sixty (60) day period, at its election, to purchase the interest described in said notice, for a consideration equal in value to the consideration which would be received by Lessor under the terms set forth in the written notice. If Buyer elects to purchase the interest described in the notice, Buyer shall so notify

Seller within the sixty (60) day period. If Buyer has not notified Seller of its election within the sixty (60) day period, Seller shall have the right to sell, assign, transfer or convey the interest as described in said notice, upon the terms and conditions set forth in said notice, but all subject, however, to this Agreement. Upon expiration of thirty (30) days after the end of the above-described sixty (60) day period, any subsequent sale, assignment, transfer, or conveyance of any of Seller's retained interest in the Property, or interests under this Agreement shall be subject to Buyer's foregoing right of first refusal, all upon the terms and conditions set forth above.

B. Assignment. Subject to Buyer's right of first refusal set forth in paragraph VI.A, this Agreement and the terms and conditions thereof shall be binding upon and extend to the successors, heirs, and assigns of the parties hereto; provided, however, that no transfer, assignment, or division of the monies payable to Seller, or Seller's rights, hereunder, however accomplished, shall operate to enlarge the obligations or diminish the rights of the parties hereto.

VII

NOTICES, CONSTRUCTION, MEMORANDUM, INTEGRATED AGREEMENT

A. Notices. Any notice or communication required or permitted hereunder shall be effective when personally delivered or shall be effective when addressed:

National Treasure Mines Company
525 Atlas Building
Salt Lake City, Utah 84101

American Smelting and Refining Company
120 Broadway
New York City, New York

and deposited, postage prepaid, certified, or registered, in the United States Mail. Either party may, by notice to the other given as aforesaid, change its mailing address for future notices hereunder.

B. Construction. This Agreement, and the rights and obligations of the parties hereto, shall be governed by the laws of the State of Utah. Paragraph headings in this Agreement are for convenience only, and shall not be considered a part of this Agreement or used in its interpretation.

written notice of such termination. Seller shall have no right to terminate this Agreement except as set forth in this paragraph.

V

TERMINATION AND PARTIAL TERMINATION

A. Termination by Buyer. Buyer shall have the right to terminate this Agreement at any time upon written notice to Seller, which termination shall become effective thirty (30) days from the date such notice is mailed; provided, however, that if such notice is effective less than sixty (60) days before the end of any assessment year Buyer shall either perform its covenants with respect to such assessment work for said assessment year as provided in paragraph _____ hereof, or shall, as a condition to such termination, pay the Seller an amount equal to the amount required to fulfill such covenants with respect to assessment work. Upon the termination date, all right, title, and interest of Buyer under this Agreement shall terminate and Buyer shall not make any further payments, or to perform any further obligations hereunder concerning the Property, except as to payments or obligations, if any, which have accrued prior to the termination date.

B. Partial Termination. Buyer shall also have the right to release any part of the Property upon thirty (30) days' written notice delivered to Seller of Buyer's election so to do, which notice shall specify the portions of the Property to be released. Upon such release this Agreement shall automatically terminate as to such part of the Property so released without further obligations with respect to any such part of the Property which Buyer released, except as to payments or obligations, if any, which have accrued prior to the termination date. This Agreement shall continue in full force and effect as to the remainder of the Property, and such partial release shall not result in reduction of the payments due Seller hereunder.

C. Removal of Property. Upon any termination or expiration of this Agreement in whole or in part, Buyer shall have, a period of one (1) year from and after the effective date of termination in which to remove from the Property all of its machinery, buildings, structures, facilities, equipment, material, and other property

C. Memorandum. If requested by either party, the parties hereto shall join in the execution of a memorandum or short recording counterpart of this Agreement in a form sufficient to constitute notice of this Agreement to third parties under the laws of the State of Utah.

D. Integrated Agreement. The entire Agreement of the parties concerning the Property is integrated and embodied herein, and all rights and liabilities arising by virtue of any and all statements or agreements (whether oral or written) heretofore made or entered into with respect to the Property are hereby cancelled and superseded by this instrument.

IN WITNESS WHEREOF, this Agreement has been executed as of the date first above set forth.

SELLER: NATIONAL TREASURE MINES COMPANY

By: _____
Its President

ATTEST:

_____
Its Secretary

BUYER: _____

By: _____
Its

ATTEST:

_____
Its Secretary