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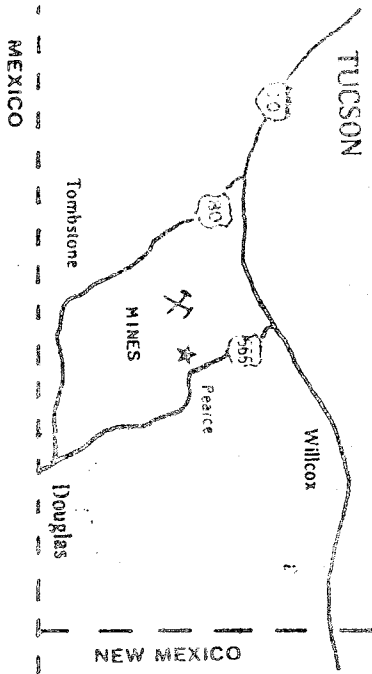
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320 CONTIGUOUS CLAIMS
GOLD - SILVER - ZINC - COPPER



LLOYD RICHARDS

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602-824-3576

GOLD - SILVER - ZINC - COPPER

320 Contiguous Mining Claims

LOCATION

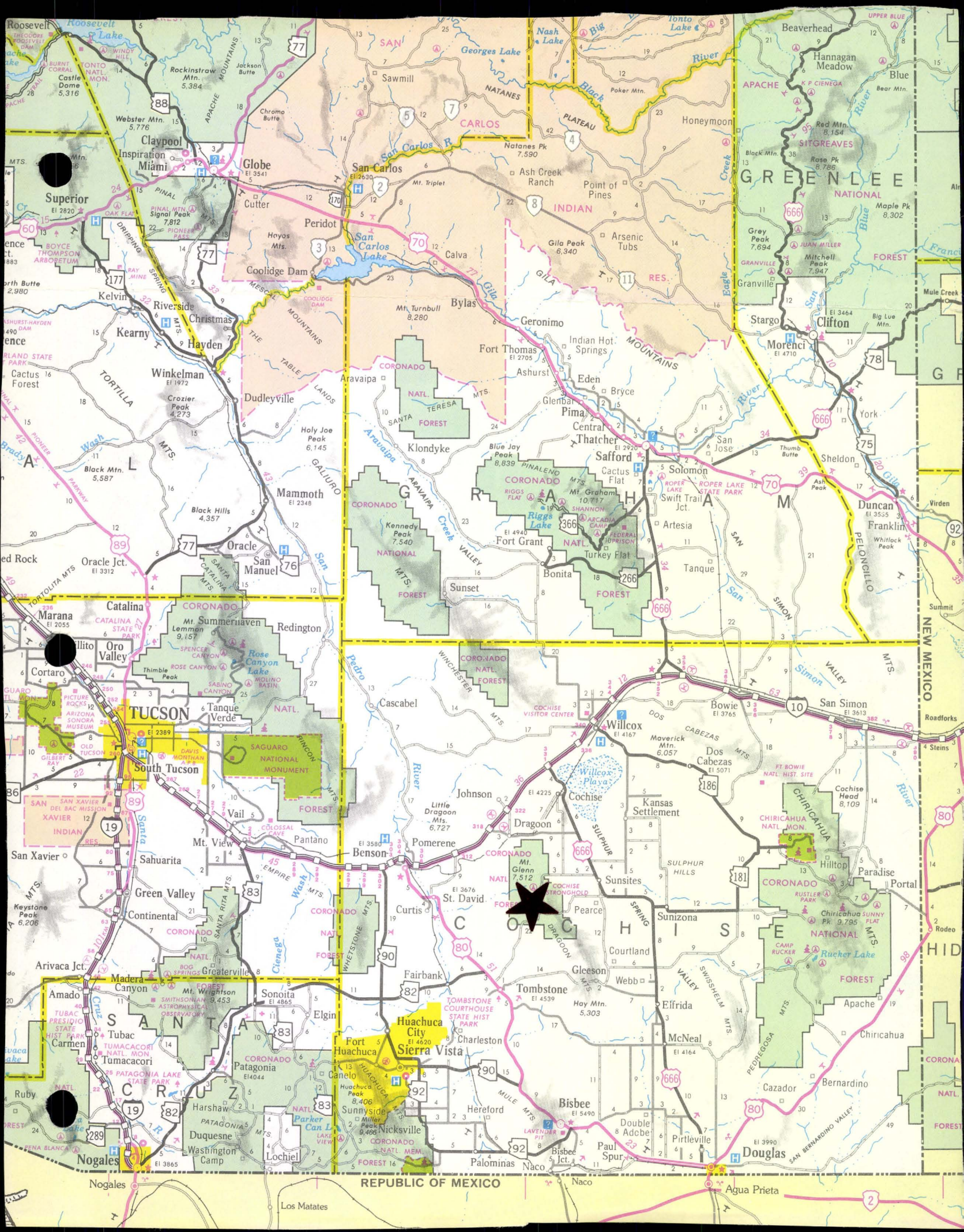
Middlemarch Pass in Dragoon Mountains

Elevation 5,200 feet

80 miles SE of Tucson / 15 miles east of Tombstone

ADVANTAGES

- * **Easy Access**
8 miles of good road to Highway 666
- * **Nearby Transportation Facilities**
22 miles from railroad
- * **Water Rights / Ample Water**
- * **Electric Power Near Property**
- * **Operable 365 Days Per Year**
- * **Existing Mine Shafts**



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STRIKE RICH ORE ON PROPERTIES OF MIDDLEMARCH CO

Jan - 1912 - 2/2 8/21
ACCORDING TO WORD BROUGHT
TO TOMBSTONE IMMENSE
BODY OF SULPHIDE ORE HAS
BEEN ENCOUNTERED ON THE
800 LEVEL OF THE WORKINGS;
CROSS-CUTTING IN ORE BODY.

A report of another big strike of sulphide-copper ore at the Middlemarch mine was brought to Tombstone today by Elvin Brown one of the employes of the Middlemarch Copper company, which is operating the property.

Mr. Brown reports that a short time ago a solid body of sulphide ore carrying high copper values as well as enough silver and gold to pay for the treatment charges, was discovered in the main shaft at the 800 level. Cross-cutting in four directions for hundreds of feet has failed to cut through the ore, he states and it is the belief of all who know the mine that Middlemarch will be coming mining camp of the county as enough development work is done to warrant a large force of men. About fifty men are now at work under superintendent Porter, who has been in charge for over a year and the entire output of the mine is being first handled through the mill erected by the company on the property and the concentrates shipped to the Douglas smelters.

The Middlemarch mine is an old property in Cochise county, but company difficulties and legal controversies have held back development work for the past twenty years. Several years ago, however, it was settled in the courts and the company reorganized as the Middlemarch Copper company by a California syndicate. Development work has been in progress for some time, mostly sinking the shaft to a depth where the owners felt the ore lies and the uncovering of the large body as reported no doubt means that the future of the camp is assured.

The mine is nine miles from Pearce in the northern end of the Dragon mountains.

The L. L. L. Co. 2/12/1910

Middlemarch Mine Will Soon Be On Producing Basis

General Manager George Brown, of the Middlemarch properties at Middlemarch, near Pearce, was in Tombstone last night, accompanied by Mrs. Brown and her sister, Miss Sweeney, teacher in the high school at Pearce. Mr. Brown reports that at present there are in the neighborhood of 20 men at work developing more water for use in operating the mill. Following the completion of exhaustive tests whereby a flotation method has been worked out for separating the zinc ores from copper, the mill was closed down owing to the short water supply. The shaft was sunk 130 feet further and drifting is now in progress two ways, valuable ore bodies having been cut during the process. As soon as sufficient water is developed, Mr. Brown states, work on a larger scale will be started and a large number of men will be employed. The mill is of 150-ton capacity and through the flotation process copper concentrates will be shipped regularly to the Douglas smelter. The zinc will be shipped to Oklahoma. This is the first successful method developed for separating zinc from copper by flotation, according to Mr. Brown.

The Middlemarch Copper company has finished sinking its shaft and now plans drifting on the lower levels to the contact where ore occurs on the upper levels. The shaft was sunk both for development of ore and to bring in a water supply for the mill, a lack of which has been felt keenly heretofore. Fine results in recovery of values in the ore have been attained in the company's flotation mill. E. L. Elson is manager of the Middlemarch. J-2-4-191

PEARCE.—George Brown, general manager for the Middlemarch properties has reported that 20 men are employed developing more water for the mill. The shaft has been sunk 130 ft. deeper and drifting is in progress. Recent differential-flotation tests on the copper-zinc ore are reported as successful and operations will commence as soon as sufficient water is developed. 9-16-20

PEARCE.—The 150-ton mill on the Middlemarch property, near Pearce, has been temporarily shut down on account of shortage of water. Work is now under way to develop more water. After exhaustive tests, a method has been perfected for separating zinc from copper concentrates by flotation. 10-9-20

MIDDLEMARCH SOON TO PRODUCE LARGE AMOUNT OF COPPER

AUG 14 1917
**Dragoon Property Operated
 by California People, Starts
 Mill With Big Extraction
 Record—Work Is Rushed.**

Developments at the Middlemarch copper company's property, located nine miles from Pearce, indicate an enlarged production from the mine and also in the recently installed mill, according to Ed Massey, assistant mine inspector, who has just returned to his headquarters in Bisbee after a trip through the northern part of the county.

Three per cent ore is being mined by the Middlemarch. The ore is being taken from the tunnel level of the property and the development work consists of the unwatering of a winze off this level. When this is completed the company expects to sink the winze further and anticipates the uncovering of a still larger and higher grade body of ore.

The 100-ton mill is running nearly at capacity. It is a modified flotation plant, capable of concentrating to about a ratio of eight to one. The first run extracted 94 per cent of the metallic content. When the mill gets into good running shape and fully limbered up the company expects to run 140 tons of ore per day through it.

Middlemarch Copper company is owned and operated by Los Angeles capitalists. It has, according to many mining men who have investigated the property, great prospects and may be the opening of a big copper district in the Dragoon mountains.

The Middlemarch as well as the Black Diamond are doing considerable work. The Middlemarch has quite a few men on their pay roll.

SABOTS SHUT ARIZONA

SEP 17
MINE

The Middlemarch Copper mine, situated in the Dragoon mountains, 60 miles from here, has been forced to suspend operations indefinitely as the result of sabotage alleged to have been practiced by striking miners, according to reports brought here today.

More than a month ago a strike was declared, and, when the demands of the miners were refused, the mine was temporarily closed down. Several days ago, it is stated by arrivals from Middlemarch, officers of the company attempted to start the mining machinery themselves only to find that almost the entire mechanical equipment had been "treated" with carborundum, and was badly damaged. Blame for this is attached to a few transients who were working at the Middlemarch at the time of the strike, it is reported, and no suspicion placed on the majority of the men who have been employed by the company for many years. The strike was accompanied by no violence.

Middlemarch Copper Suspends Operations

DOUGLAS.—The Middlemarch copper mine, situated in the Dragoon mountains, 60 miles from here, has been forced to suspend operations indefinitely as the result of sabotage alleged to have been practiced by striking miners, according to reports brought here today.

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THE MIDDLEMARCH MINE IS ONE OF OLDEST, IN STATE

B. M. Snyder
Operated Since 1898; Is Big
Asset in Cochise County
Copper Mining

By B. M. SNYDER

(Mining Engineer, Los Angeles)

The Middlemarch copper mine is one of the old discoveries of Cochise county, Arizona. It was located some years prior to its operation in 1898-99 by the Girds and O'Gorman. They erected a small water jacket furnace and smelted several thousand tons of the rich oxidized ores, but at shallow depth encountered primary sulphides, which were below smelting grade. A small concentrating mill was erected later, but the high specific gravity of the gangue minerals make gravity concentration out of the question, and this mill was a failure. Until flotation of copper ores became a success, the treatment of the ore remained a problem, as it was too low-grade to stand shipment to smelters.

The property is located in the Dragoon mountains, nine miles west of Pearce, Arizona, the railroad point, with which place it is connected by a good auto road. There are altogether 860 acres in the property, covering the best showings of the Middlemarch district.

Cont. on next page

The Middlemarch Copper Co. has finished sinking its new shaft, according to arrivals at Bisbee, who say the present intention is to drive on the lower levels to the contact where ore has been developed on upper levels. The shaft was sunk both to develop ore and bring in a supply of water, if possible, for the mill. A lack of water has been felt keenly in the past. The flotation mill has operated with unusual success, as far as recovery is concerned, it is reported. E. L. Elson is manager. The mill was described in the 'Press' of February 8, 1919. *2-22-19*

Pearce.—High-grade silver ore has been found on the seventh level of the Middlemarch mine, 9 miles west of Pearce. This ore carries 4% copper and 12% zinc, with silver up to 50 oz. per ton. The ore is different from that on the levels above, and much higher grade. On the eighth level there is now 10 ft. of ore running from 5 to 10% copper, as shown in the cross-cut, with high-grade ore still in the face. This ore carries 2 oz. of silver also. The strike is considered important, as showing improved value at depth. The district has had very little development below 300 ft. in depth. *5-3-14*

G E O L O G I C A L R E P O R T

ON

**THE MIDDLEMARCH PROPERTY
COCHISE COUNTY, ARIZONA**

by

D. G. INNES AND ASSOCIATES LTD.

MARCH, 1982

dbl

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dbl

I N T R O D U C T I O N

During March, 1982, the writer carried out a field investigation of the Middlemarch copper - lead - zinc - silver property in Cochise County, southeastern Arizona. The results of this field examination together with a review of Government (State and Federal) and mining company data is herein presented.

The economic potential of this property is considered and recommendations for testing this potential are also given.

This report is considered part of a preliminary phase of exploration and additional, more detailed and specific work is planned for the immediate future.

SB

Property Location and Access

The Middlemarch Property is located in the southeast part of the State of Arizona, approximately 12kms west of the Town of Pearce (fig. 1). Located in Cochise County, the property consists of ~~180~~ contiguous claims in townships; 18 South, Range 23 East (of the Gila and Salt River Meridian), Sections 1, 2, 11, 12, 13, 14 and 24; 18 South, Range 24 East (of the Gila and Salt River Meridian), Sections 6, 7, 8, 17, 18, 19, and 20; and the northeast tip of Silver Rule Claim No. 70, enters Township 17, (fig. 2).

The claim block covers most of Middlemarch Canyon on the eastern slopes of the Dragoon Mountains. Good secondary roads leading from Highway 666 provide the principal access to the property, (Middlemarch Canyon Road and the Old Tombstone Road). Numerous other roads have been developed to access most of the known mineral showings.

Physical Environment

The Property is situated along the eastern slopes of the Dragoon Mountain Range which separates two great intermountain plains; the San Pedro Valley to the west; and the Sulphur Springs

DL

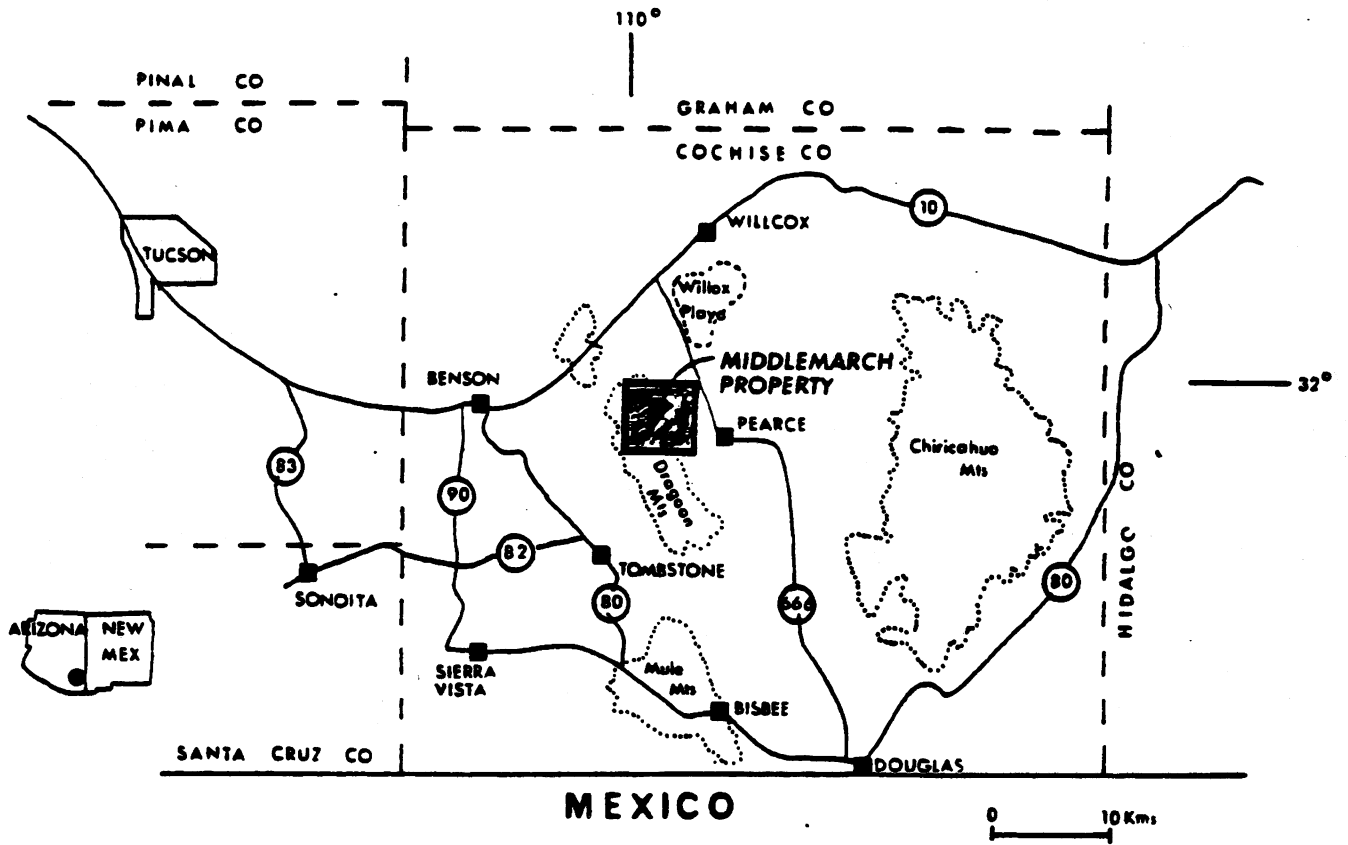


Figure 2 : Geographical location of the Middlemarch Property, Cochise County, Arizona.

DL

Valley to the east. The Dragoon Mountains form a northwest trending Range approximately 32kms in length and up to several kms in width. In the vicinity of the Middlemarch Property the topography can be described as being rugged and Mount Glenn just to the north of Cochise Peak reaches an altitude of 2,284 meters. The topographic relief of this area is illustrated by the Pearce Quadrangle Topographic Sheet (1:62,500).

The climate is generally dry with precipitation varying with altitude; 25cm/yr in Benson (elevation 1,057m in the San Pedro Valley); to over 50cm/yr at Bisbee (elevation 1,628m in the southern Dragoon Mountains). Rainfall is concentrated during the period July to September. Temperatures range from 75°F to 90°F in the summer season and to 50°F during the winter months.

Vegetation varies as well with altitude and water availability. In the higher reaches, scattered growth of yellow pine, juniper, oaks, cedars and cottonwoods are common. Along the lower slopes, Yucca, Spanish-Bayonet, ^{Sotol} ~~Stal~~ and other scrub brush are common. Mesquite is the common cover of the lower flat country.

Water is available on the property; two waterfilled ponds occur near the pit area; the Missouri Mine workings are flooded to the third level; water wells have been dug near the Missouri Mine workings; local ranchers have established that an ample water table lies between 60m and 120m below the valley floor.

12/1

History

The Middlemarch Property has been variously described as being part of the Middle Pass, Dragoon, Pearce or Turquoise mining districts. The Arizona Bureau of Mines considers the property as being part of the Middle Pass Mining District, (Keith, 1973). Between the late 1800's and 1970 the whole district produced about 76,000 tons of ore containing 1,005 tons of copper, 137 tons of lead, 4,626 tons of zinc, 337 ounces of gold and 147,000 ounces of silver, for a total value of about 1.725 million dollars (Keith, 1973). In addition, minor production of tungsten, barite and limestone are recorded.

Much of the following history of the Middlemarch deposit is taken from Kirwin, (1975) and Arizona Bureau of Mines file data.

The Middlemarch deposit was discovered in the late 1800's by Messrs. Gird and O'Gorman who extracted and smelted shallow oxide ores. A flotation mill was set up in 1917 by the Arizona Middlemarch Copper Company. Between 1900 and the 1950's various companies explored the deposit to the 800 ft. level from an inclined shaft at the end of a 250 ft. adit. Considerable drifting is reported by Kirwin (1975) and more than 5,000 tons of ore was produced (ABM file data). The Cobre Loma Mine produced in excess of 5,000 tons of ore from adit workings between 1915 and 1920.

Only limited exploration has been carried out on the property since the 1950's. Kerr McGee put down 3 diamond drill holes and apparently one of these holes intersected high grade mineralization at depth in the area of the Missouri shaft. Core from this drilling

WBE

has been dumped and is not available for inspection. The pit area was developed in the 1970's and exposed considerable high-grade ore. Limited prospecting and testing by Big Sky Mining Company was carried out between 1980 and the present.

As far as can be determined the mineralized zones have never been drilled nor tested at depth. The deposit(s) must be considered to be open along strike and at depth.

The area was regionally mapped between 1936 and 1940 (Gilluly, 1956) and the structural geology of the Middle Pass area was studied by Cederstrom (1946). Reconnaissance mapping was carried out over the Dragoon Mountains by Darton, (1925) and Dumble, (1902). A statistical summary of mining production for the State of Arizona is given by Elsing et al (1936). Gilluly, (1956) offers an extensive bibliography of geological research in the area generally.

Regional Geological Setting

The Middlemarch Property lies within the Pearce-Benson Quadrangles of the Geological Survey's Topographical Atlas of the United States. Cochise County is located in the southeast corner of the State and embraces a part of the Mexican Highland section of the Basin and Range Province. The Property lies along the Middlemarch Canyon on the eastern slopes of the Dragoon Mountains. The Sulphur Springs and San Pedro intermountain valleys flank the Dragoon Mountains to the east and west respectively.

Rock formations of the area, range in age from the Precambrian

DBL

(Proterozoic) to Recent, (Plate 5, in Gilluly, 1956). The oldest rocks exposed are Precambrian age Pinal Schists locally present as thrust slices along the east slope of the Middlemarch Canyon. This unit strikes generally east, dips vertically and consists of thinly laminated chlorite - albite - quartz schists and amphibolitic schists of probable volcanic origin, (ie. basalt, andesite). The formation also contains several small intrusive masses of albite granite, quartz-diorite and gneissic granite.

Unconformably overlying the Pinal Schists are the Cambrian age Bolsa Quartzite and Abrigo limestones. The Bolsa quartzite has a basal unit of quartz pebble conglomerate which grades upward to pebbly rusty-brown weathering quartzite. The Bolsa grades conformably into well bedded micaceous sandstones through thin bedded limestones.

The Abrigo Limestone is overlain by Late Devonian limestones of the Martin Fm. These rocks are characterized by a few feet of basal dolomitic cobble conglomerate grading upwards into calcareous sandstones, limestones, dolostones and some shaley units. This stratigraphy is overlain by the thick bedded Mississippian Escabrosa limestone-dolostone. Limestones and dolostones of Pennsylvanian age are also represented. Between the Carboniferous and Permian Eras, limestones, dolostones, shales and lesser calcareous sandstones of the Naco Group were deposited.

At least five intrusive events during post-Paleozoic pre-Cretaceous time are represented by granitic, quartz monzonitic and alaskite to monzonite porphyry intrusions. There is also a

1951

volcanic event referable to this age; the Sugarloaf quartz latite and andesitic rocks of Tertiary age outcrop in the southern part of the Dragoon Mountains, (S. O. Volcanics). During the Triassic-Jurassic eras, the Cochise Peak quartz-monzonite body was implaced in a belt extending from Cochise Peak southeast for approximately 4.5 kms to the divide at Middle Pass. Smaller equivalent intrusive dikes and sills are found in the thrust slivers near the head of Middlemarch Canyon (eg. Cowpatch).

During the Cretaceous, sediments of the Bisbee Fm., (Comanche Series) were laid down over much of the Middlemarch area. The base of the formation is marked by a series of limestone conglomerates (Glance Conglomerate) with the bulk of the formation represented by mudstones, sandstones, quartzites and thin beds of limestones. Near the Cobre Loma adit, rocks of the Bisbee Fm., are strongly hornfelsed, (calc-hornfels: wollastonite, diopside, calcite, quartz, epidote, tremolite and grossularite). As well, a 130m section of highly carbonaceous black shales overly the banded hornfels and may represent a younger stratigraphy.

The Stronghold Granite which was emplaced permissively during Tertiary time, forms domes and spires that rise above the canyons. This granite represents the youngest major intrusion of the region and cuts the Dragoon thrust sheets in many places. The intrusion consists of three facies; main, porphyritic and aplitic facies. The difference being mainly grain size. Contact metamorphic effects are represented by hornfels development. Related dikes of granite porphyry, quartz porphyry and rhyolite porphyry are abundant in the

Ob!

Middlemarch Canyon area where they form a swarm trending northwest approximately parallel to the strike of the Bisbee Fm. A northwest trending coarse grained pyroxenitic dike (or sill) and a fine diabase dike were observed near the Cobre Loma Mine and may be part of the Tertiary intrusive episode. A spessartite-type lamprophyre dike trending north-northwest was observed near Cobre Loma Mine and cuts all rocks including the Stronghold Granite.

Flat lying sandstones, siltstones, clays, volcanic ash, fanglomerates of the Gila Conglomerate and alluvium of Quaternary age cover the floor of the Middlemarch Canyon and the Sulphur Springs Valley.

Regional Structural Setting

The dominant structural elements affecting the region are Basin and Range tectonics. The uplifted Dragoon Mountain block consists mainly of sedimentary and intrusive rocks cut by many thrust faults of north to northwest strike and later invaded by the Stronghold Granite.

Along its trend the range is divided into six structural segments of which the segment between Cochise Stronghold and Middle Pass is of primary interest to the Middlemarch Prospect. In the north part of this segment the stronghold granite causes broad gentle doming. Southward to the Gleeson Area, the dominant structural features are folded and imbricate low angle thrust sheets, many of which dip eastward, cut by the major Dragoon thrust which

abl

dips steeply west.

Structurally significant, older steep dipping, north-northwest trending normal faults are mapped along the trace of Middlemarch Canyon. These structures are accompanied by significant zones of fault breccia as illustrated by Gilluly, Plate 5 (1956). Considerable offset (downthrow to the east) of up to 500m is postulated by Gilluly (1956). For example, near the mouth of the Middlemarch Canyon, limestone conglomerate of the Bisbee Fm., lies in fault contact with the Pinal Schist. This fault dips about 40° SW and strikes NW.

These structures are of importance with respect to localizing mineralization in the Dragoon Mountains generally and on the Middlemarch Property specifically.

Geology of the Middlemarch Mineralization

Keith (1973) classified the Cobre Loma mineralization as a pyrometamorphic tactite zone in limy hornfels of Cretaceous Bisbee Group along the contact with a porphyritic intrusive. The Missouri deposit is considered to be an oval shaped breccia pipe (chimney-type orebody) associated with lime silicates in a fault zone cutting Paleozoic and Cretaceous limestone beds. Kirwin (1975) considered all of the Middlemarch deposits to be of contact-metamorphic-type located at the contact of felsic intrusive rocks (to the west) and Cambrian metasediments (to the east).

Having examined the main Middlemarch deposits, the writer

would agree that at least some of the metal concentrations are of the contact-metasomatic or skarn-type and that the Missouri Glory Hole deposit occurs associated in part with a rather obvious diatreme breccia pipe. Further, the writer favours the Cretaceous Bisbee Group as the main host rocks for this mineralization as suggested by Kieth (1973). However, there is strong evidence to suggest that variations in deposit type are due to metal source and tectonic control. This aspect and its implications to the economic viability of the Middlemarch Property will be addressed at the close of this section.

An irregular oxidized and gossanous alteration zone trending 135° is traceable from the old Copper Glance Property northwest of the Cobre Loma adit to the Missouri Glory Hole for a potential strike length of 2,400m, (fig. 2). Recent explorations and excavations including; Bill's Cut, McDaniel's Cut, The Pit and Shaft, have verified the presence of mineralization along this strike length between the Cobre Loma and the Missouri Mine. Field work by the writer has shown that the surface gossan zone continues for at least 120m southeast of the Missouri Mine. In this area, an old pit was discovered and copper carbonate gossan observed. Another gossan zone was spotted approximately 350m further to the southeast and may be on the same structure. This gossan was not investigated. The NW and SE extensions of this mineralized zone have not been tested and are considered to be open.

This mineralized zone parallels a zone of intense structural deformation, mainly thin shallow angle imbricate thrust sheets

10/21

tilted more steeply against the major Dragoon thrust. Near verticle to 45° W dipping normal faults are also evidenced and probably served as conduits for the numerous intrusive rocks present in this area (mainly felsic intrusions). As well these faults were probably active over a considerable period of time and played a role in localizing diatreme breccia pipes and initiating hydrothermal activity.

The principal metals associated with this zone are sulphides, oxides, carbonates and silicates of copper, zinc, lead and silver. The near surface mineralization is variably oxidized and commonly shows white zinc and blue-green copper secondary mineral gossans. Below the oxidized zone (to 23m, Kirwan, 1975) sulphide minerals including chalcopyrite, bornite, sphalerite, galena and pyrite are easily identified. Interestingly, the copper and zinc are strongly partitioned suggesting a partitioning in the source of these metals.

More recent explorations by Big Sky Mining and Mr. E. J. Blanchard have resulted in the discovery of a different type of mineralization mainly to the east of the Cobre Loma - Missouri Zone. This mineralization (Cowpatch, Silver Hill and Lloyd and Lavern) is very inconspicuous occurring in Bisbee type limestones and dolostones. Here, mineralization consists of minor disseminated sphalerite and galena and some pyrite. On assay the mineralization consists of 3 to 4% Pb + Zn, very high silver (6 to 12oz /ton), and virtually no copper. This potential is only now being recognized and has never been explored.

Qbl

All of the known areas of mineralization were reviewed either directly in the field or from various government reports and company files. The following observations are given for each of the deposits examined directly in the field.

Missouri Mine

Access to the Missouri deposit is gained through a 250 foot adit entering the ore body on the third level and via the Missouri Glory Hole above the adit. The mine workings are confined mainly to the upper oxidized zone but are reported to extend to the 800 foot level (Kirwan, 1975). At present everything below the third level is flooded and not accessible. The mineralization occurs in three environments; skarn-limestone host; a circular breccia pipe structure; in dark green (volcanic ?) host below the meta-sediments at depth (ie. below the 6th level). The "ore zone" is reported to dip 40° to the southwest, however the writers observations would suggest that a 40° to 45° southeast dip is more probable at least for the upper levels of limestone-skarn mineralization. The low angle thrust faulting together with associated tight folding could give the impression of a southwest dip. The breccia pipe structure appears to be nearly vertical cutting the metasediments. Large sub-angular blocks and smaller fragments within the structure have a distinctly vertical attitude supporting the vertical nature of the intrusive breccia. One section of drill core from below the sixth level shows a crude layering of the mafic host to the massive

DBL

sulphide mineralization at a high angle to the core axis suggesting a fairly steep dip to these rocks. SW-dipping normal faulting is also evidenced in the mine workings and probably controlled the emplacement of the breccia structure. There is a good possibility that this faulting resulted in an upthrusting of the Pinal Schist which is now unconformably overlain by the Bisbee Fm., lithologies as is the case near the mouth of the Middlemarch Canyon (Gilluly, 1956).

No information was found detailing the underground geology of the Missouri deposit. However, some highly mineralized sections were observed up to 150 feet in width. Underground workings are reported to be extensive suggesting a significant strike length. Mining company reports suggest that the mineralization both widened and increased in grade with depth. Kelly, (1913) reported that to the sixth level, between 125,000 to 200,000 tons of ore was available, grading from 2% to 4% Cu plus minor Au and Ag. It is interesting to note that Zn values are not reported, and that copper extraction was the primary objective as large sections of very high-grade (10 to 15% Zn) sphalerite mineralization was left untouched. In the skarn-type mineralization the zinc and copper mineralization is strongly partitioned, while the breccia pipe hosts primarily copper mineralization. The deeper mafic rock hosts an intimate association of chalcopyrite, galena and sphalerite. Au values are reported to 0.05 oz/ton but have not as yet been confirmed. Late carbonate + quartz filled veins striking NS and dipping vertically may provide the site for gold concentration. Ag values from both the skarn and breccia pipe zones commonly fall in the

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range from 1oz to 2oz/ton. Substantially higher Ag values (to 50oz/ton, newspaper clipping) are reported from the deeper massive sulphide zones. Samples of this material discovered in a small ore pile near the campsite are currently being assayed.

It is quite remarkable that this ore body has not been explored to any degree. Mineralization is open on both ends and at depth.

Shaft Area

An old shaft northwest of the Missouri Mine was briefly examined. This shaft was reportedly put down 100 feet. Examination of dump material showed minor copper carbonate gossan in limestone skarn. Abundant fine grained quartz-feldspar porphyry material was also observed.

The Pit Area

The general geology of the pit area mineralization is illustrated by figure 3. The area was surveyed by pace and compass methods and is not reported as a precise survey.

Here, conglomerates (Glance Conglomerate), limestones, dolostones, calcareous sandstones and shales are intruded by medium grained quartz monzonite. The rocks strike 135° SE and dip 45° E. Mineralization at this location is essentially the same as the skarn-type observed at the Missouri Mine. In the pit area, the quartz monzonite forms the footwall of the mineralized

She

zone but is absent to the northwest in the Cut area. From the Cut, the epidote skarn is from 3m to 4m in width increasing to approximately 12m in width at the entrance to the adits in the Pit. Surface exposures and adit exposures suggest that the mineralized zone widens rapidly southeastward and may swing to the east as illustrated on Figure 4. Flat-lying dolomitic conglomerates and dolomite have been thrust over the pit ore zone effectively "hiding" the zone. Normal and strike-slip faulting is also evidenced in the Pit and Cut. Large blocks and horsts of quartz-monzonite occur in high grade skarn along the footwall in the Pit adit. A thin wedge-shaped unit of fine grained cherty fragmental lies along the fault plane in the Pit and may be intrusive. The unit which is mineralized with pyrite appears to have a chilled contact.

As was the case in the Missouri Mine, copper and zinc mineralization is strongly partitioned (fig. 4). As well, some of the clasts in the conglomeratic units are strongly mineralized with chalcopyrite suggesting that these sediments might have hosted syngenetic mineralization prior to their erosion.

The Pit showing has never been explored and the deposit must be considered open to depth and along strike. Surface exposures would suggest that the zone thins to the NW and thickens rapidly to the SE.

Ella's Pit and Shaft

According to Kelly (1913) the Ella shaft was put down on a thin zone of mineralization to a depth of 187 feet where " a large body of low-grade ore was encountered". Both copper and zinc rich skarn-type mineralization was observed in the dump material and in a small pit and in the opening to the inclined shaft. The mineralized skarn occurs at the contact with a fine-grained quartz-feldspar porphyry dike and dips steeply to the east. This felsite is crudely layered and resembles a fine-grained felsic crystal tuff. The felsite contains abundant pyrite disseminated throughout.

This same mineralization was followed to the southeast along strike (135°) for about 300m. The zone is marked by a very pronounced rusty gossan and by brecciation of the metasediment. To the southeast (over the hill towards the Pit area) the zone is up to 25m wide and the quartz-feldspar porphyry (1m thick) occurs in the centre of the skarn zone (dipping 60° E). Medium-grained to fine-grained quartz monzonite occurs on both the hanging wall and footwall areas of this skarn zone.

This skarn zone has never been tested along strike nor at depth and is considered to be open.

McDaniels Cut

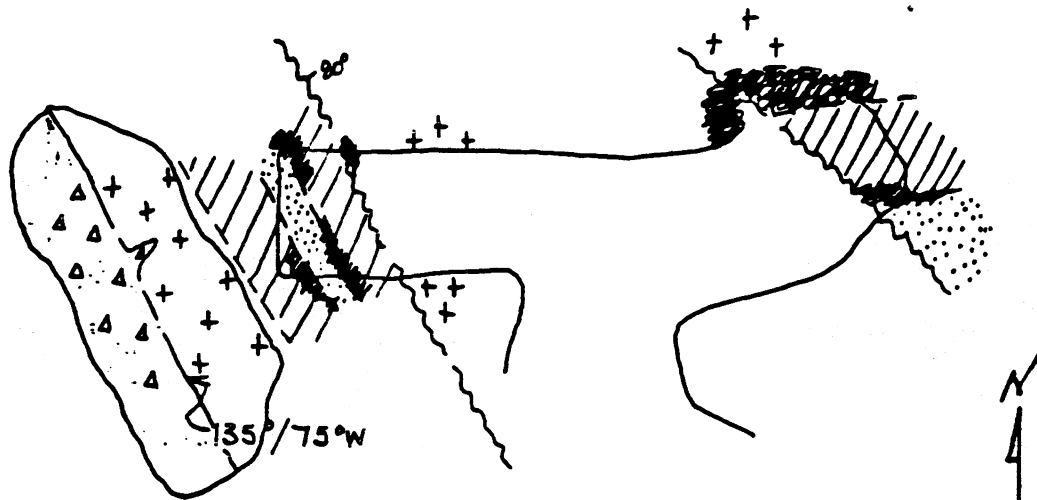
At this location a recent cut along the side of a steep slope by Big Sky Mining has exposed a narrow zone of copper rich skarn

along the contact with the fine-grained quartz-feldspar porphyry. The zone trends 130° and dips steeply to the east. The meta-sediment skarn carries mostly copper sulphides and carbonates but some sphalerite and galena was observed.

Bill's Cut

Bill's Cut is located southeast of the Cobre Loma adit on strike with McDaniels Cut. Fig. 6 illustrates some of the geological features of this location. At this showing, a complex series of intrusives cut limestones and shales resulting in thin mineralized skarn development. The mineralized zones contain chalcopyrite, pyrite with lesser sphalerite and galena. Zones of quite massive earthy to radiating black-brown material thought to be manganite (or iron-siderite) occur marginal to a very coarse grained pyroxenitic intrusion. This is the first recognized pyroxenite on the property and this rock type is not described in any of the literature reviewed by the writer. Good contact and age relationships between the fine-grained quartz-feldspar porphyry and the coarse-grained quartz monzonite-granodiorite can be seen at this location. The porphyry clearly is intrusive (and invades) into the granodiorite. The pyroxenite apparently cuts the granodiorite as well. The shale facies is quite prominent at this location and represents a significant facies change in the Bisbee Fm. Gilluly, (1956) suggests that this unit might represent a younger formation. In the Cut area proper, the granitic rock is

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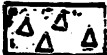
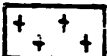


-  Coarse grained pyroxenite
-  Fine grained quartz-feldspar porphyry
-  Medium to coarse grained granodiorite
-  Thin bedded shales
-  Mineralized skarn

Figure 6 : Bill's Cut, general geology.

Abel

intensely altered and somewhat brecciated along the NW fault shown on fig. 6.

Mineralization appears to be of low grade and rather narrow (to 1m) and broken up. However, the zone has not been tested along strike, nor at depth.

Cobre Loma

The following description of the Cobre Loma workings is taken from Kelly (1913).

"Several hundred feet beyond the Ella Shaft, in a north-western direction, the vein as outlined on the surface by the iron croppings, turns slightly towards the north. Here, on the Cobreloma the out-croppings are quite pronounced, and a tunnel was started to cut the vein. This tunnel continued until it reached the Lacima claim, where the ore was finally cross-cut. After the ore was cross-cut, a drift on the ore was started and continued for a total of almost 200 feet. There is ore all the way. A cross-section of the ore in this drift may be likened to an inverted V. The ore pitches slightly towards the northeast, and from a width of one or two feet in the roof, it widened to four or five feet in the floor. The end of this drift is now all in ore. The assays varied from 2% to 11%, with an average of about 7% copper, and carrying some gold and silver. It also contains much black iron and fluorspar."

The mineralization at the Cobre Loma is quite different from that of the Missouri and Pit areas. There are some similarities to that found in the McDaniels and Bills Cuts. The dominant lithology is thinly laminated, highly carbonaceous shales with only minor thin dolostone intercalations. Grey-black chert beds



were also observed in outcrop. A fine-grained diabase dike cuts the shales at a shallow angle near the entrance to the adit. Immediately west of the adit, are outcrops of coarse-grained granodiorite cut by small lamphyrophyre dikes. Thin felsic dikes cut the shales east of the adit.

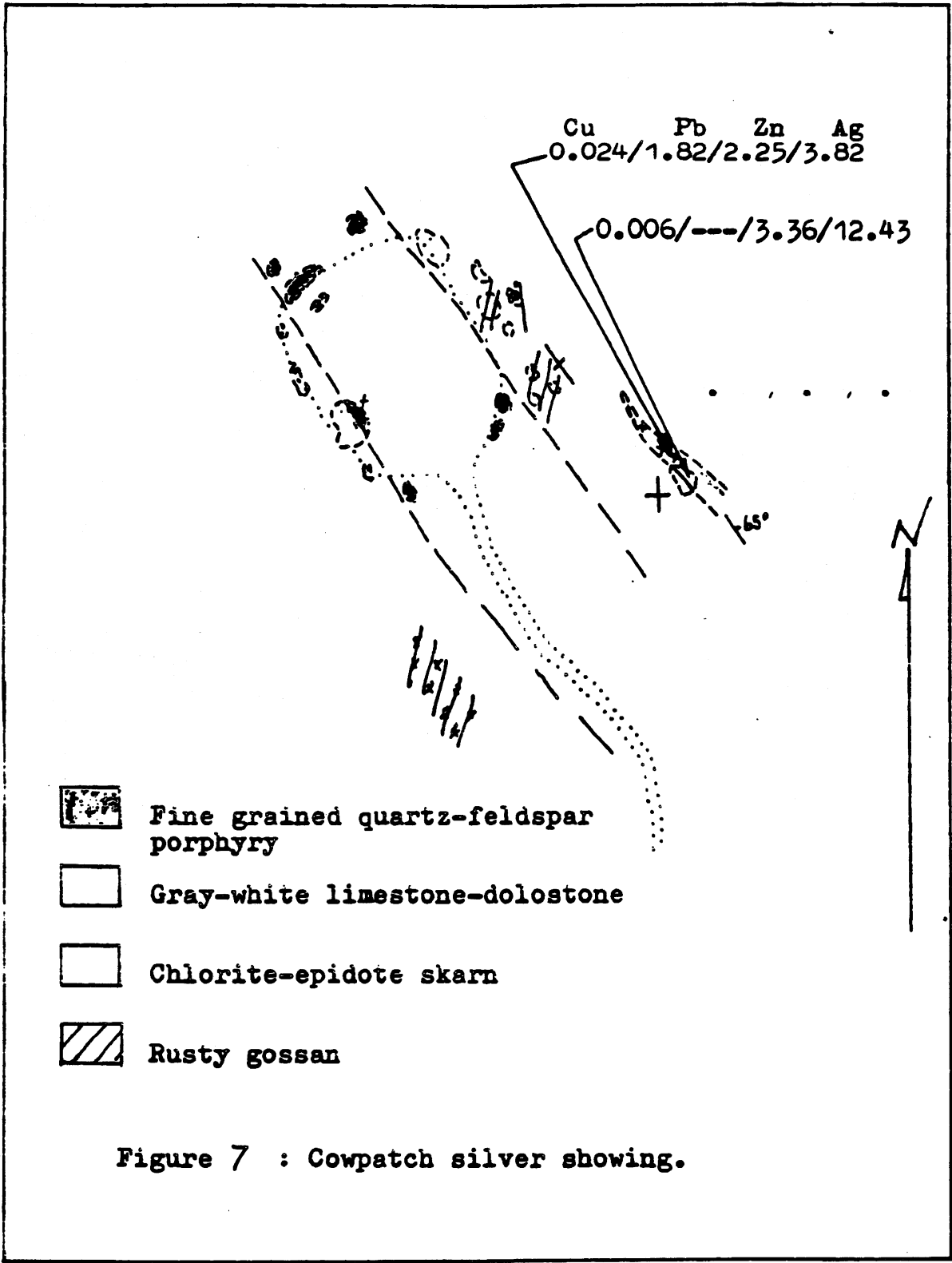
From dump material examined the metasediments have been strongly hornfelsed (calc-hornfels) and diopside-wollastonite minerals are identified. The mineralization appears to be mainly chalcopryrite with abundant hematite. Only minor sphalerite and galena were identified.

Previous work would suggest that this mineralization is pod or lense-like, and these zones apparently continue along the northwest structural trend to the old Copper Glance showing. There has been very little exploration of this zone and the existence of other high-grade copper lenses is quite possible. The zone has never been tested at depth.

Cowpatch

The Cowpatch zone has only just been found and little is known about the extent of mineralization. The local geology is illustrated by fig. 7 and as can be seen on fig. 2 the showing lies well to the east of the Missouri-Cobre Loma zone.

Folded thin to thick-bedded limestone-dolostones cut by felsite porphyry (135°) are hosts to this mineralization. The showing occurs some distance from the felsite and there is no obvious skarn



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developed along the contact of the felsite. The mineralized zone is skarn-type being heavily chloritized and epidote rich. There is some silisification within the zone and thin quartz + carbonate veins cut the host limestones at right angles to the mineralized zone. Pyrite, sphalerite and galena are observed in the skarn with only minor copper carbonate gossan. The zone trends 135° and dips 65° to 70° E. The west contact is exposed and shows a 7m wide zone of intense brecciation and secondary quartz carbonate veining. From the assay values shown on fig. 7, silver is apparently quite high and there does not appear to be enough sulphide to carry these values of silver. It is possible that the silver is present as silver chloride and silver manganese compounds. This possibility is currently being investigated.

The zone has not as yet been opened up but from surface exposures the mineralization thins to the northwest and widens along strike to the southeast (3m plus).

Silver Hill

This showing is similar to the Cowpatch showing being east of the Missouri-Cobre Loma zone and occurring in skarn limestone-dolostones. Again, this showing is newly discovered and its boundaries have not as yet been defined. Samples of limestone carrying minor disseminated sphalerite and galena gave silver values from ^{(2) 20} to 6 oz/ton and lead + zinc values of 2 to 4%. Neither the Cowpatch nor the Silver Hill showings carry any copper mineralization.

Other showings known on the Middlemarch Property including the Emma, Lloyd and Lavern's pit and the Copper Gance were not visited. The reader is referred to the bibliography for information on these showings.

Other Economic Considerations

A small amount of ore-grade material is stockpiled at various locations on the Middlemarch Property. During the field investigation, a conservative estimate of available material was made;

Camp-Missouri Mine Area: 1,500 tons with the possibility of an additional 1,000 tons possible between the adit and leach basin areas.

Pit Area: Approximately 5,000 tons.

All Other Areas: Approximately 100 tons.

This material is somewhat leached due to exposure and the average grade is estimated to be 1.5% Cu + 6% lead + zinc and 1.5 to 2oz Ag/ton. Significant tonnages of ore-grade material could easily be realized from the Missouri Glory Hole area and from the Pit area both by open pit methods.

The nature of mineralization on the Middlemarch Property is favourable for good recoveries and metal extraction. Lower grade oxidized ores are suitable to leaching methods. Most of the mineralization is fairly coarse grained allowing for good flotation separation and recovery. The apparent partitioning of the copper

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and zinc mineralization would also allow for some selection during both the mining and milling procedures.

A potentially significant deposit of gypsum is present on the Middlemarch Property and occurs on the east slope of Middlemarch Canyon, southeast of the Cobre Loma adit. This deposit was observed at only one locality and not examined in any detail. The deposit may be rather large being quite obvious as an extensive white area as seen from the Cowpatch hill. There is reported to be in excess of 1.8 million tons of high purity gypsum (K. McDaniels, per comm.). In hand specimen, the gypsum is a light amber brown in colour, coarse grained and massive. It weathers to a dull white standing out prominently along the hillside. The potential for this material as a major ingredient in fertilizer products remains to be tested.

Conclusions

The potential of the Middlemarch Property to host significant economically viable deposits of Cu, Pb, Zn and Ag must be considered to be high. Both the Pit and Missouri deposits have significant indicated tonnages and both are open at depth and along strike. The total zone from the Cobre Loma to the Missouri has never been drilled and other deposits like that found in the Pit and Missouri Mine areas are indicated.

The most promising environment in the writer's opinion is the "deep" zone underlying the skarn and breccia hosted ore at the

Missouri Mine. Samples of this mineralization closely resemble massive sulphide in a volcanic host. This mineralization might prove to be the source for much of the metals in the overlying sediments. The fact that metals are; partitioned in the ore zones; present away from the main mineralized zone (eg. Cowpatch and Silver Hill); and present in the clasts of some conglomerate beds would also suggest that the overlying sediments may well host significant syngenetic deposits of Cu and Pb + Zn + Ag. The Cowpatch and Silver Hill showings have potential for significant silver (lead and zinc) deposits and remains to be explored. Mineralization is far from obvious in this environment and deposits could easily have been missed.

Recommendations

The following recommendations are given with the objective of further defining the property's potential overall and also to assess the grade and tonnage of both the Missouri and Pit area deposits.

1. Two surveyed control baselines should be established on the property. The east baseline should be run NW from the NE corner of Helena Claim No. 40 to the NE corner of Silver Rule Claim No. 8. A parallel west baseline should be established from the NE corner of HH No. 4 claim to the NE corner of Silver Rule Claim No. 30. These control lines will allow for ground control and also help to tie in the claim boundaries. As well, the baselines will remain

Del

outside of the main development area. A cross line grid should be established at 200' intervals.

2. A base map should be established to cover this grid initially and expanded to cover the total property at a later date. The base should include all access routes, topographic contours and mineral showings and workings.

3. A drilling program should commence immediately on the Pit showing. The projected mineral zone outlined on fig. 4 should be tested with a grid of verticle holes using air track drilling methods equipped with a sampling device. Samples should be taken at a minimum of 5' intervals. At least 3 angled diamond drill holes should be put down in the same area to establish geological control (fig. 5). Stripping of the Pit area is also recommended to expose more of the mineralized zone.

4. A series of diamond drill holes should be considered to test the Missouri mineralization especially that below the 6th level. The existing accessible workings should be surveyed and mapped.

5. Following this initial exploration, the total property should be mapped and sampled in detail.

ASL

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1975: Engineering geology report on the Middlemarch Property.

DL

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Maps

1. Geologic Map of Cochise County, Arizona; Ariz. Bur. of Mines and Univ. of Arizona, 1959, scale 1:375,000.
2. Arizona Highway Geological Map; Arizona Geol. Soc., 1967, scale 1:1,000,000.
3. Geologic Cross Sections of Arizona, Sheets 1, 2, and 3. Arizona Bur. Mines, 1967, scale 1 inch = 3 miles.
4. Topographic map: Pearce, Arizona Quadrangle; scale 1:62,500.

120

BUDGET

1.	Surveyed baselines (3 miles)	\$ 3,600.00
	Flagged grid (15 miles)	\$ 1,800.00
2.	Preparation of Basemaps	\$ 3,500.00
	Air photo coverage	\$ 1,500.00
3.	Power stripping	\$ 25,000.00
	Diamond drilling, Pit Area	
	3 holes x 500 feet x \$30.00/foot	\$ 45,000.00
	(includes assaying and supervision)	
	Air Track drilling, Pit Area	
	24 holes x 50 feet x \$6.00/foot	\$ 7,200.00
	(includes supervision)	
	Sampling: shipping & assaying	\$ 6,000.00
	Preparation of drill sections and assay plans ...	\$ 1,500.00
4.	Diamond Drilling, Missouri Mine	
	10 holes x 500 feet x \$30.00/foot	\$150,000.00
	(includes assaying and supervision)	
	Survey of Mine Workings	\$ 3,500.00
	Dewatering and clean-up	\$ 6,000.00
	Mapping of Mine workings	\$ 4,500.00
	Preparation of drill sections	\$ 1,500.00
5.	Detailed geological survey over grid	\$ 15,000.00
	Reconnaissance mapping over rest of Property	\$ 6,000.00
	Sampling: preparation, shipping, assaying	\$ 6,000.00
		<hr/>
	TOTAL	\$287,600.00
		=====

MSL

C E R T I F I C A T E

I, DANIEL GRANT INNES, of the City of Sudbury, in the District of Sudbury, in the Province of Ontario, hereby certify as follows:

1. That I am a consulting geologist and reside at 8 Thorncliffe Court, Sudbury, Ontario.
2. That I hold a Master of Science degree in Geology from Laurentian University, Sudbury, Ontario.
3. That I am a Fellow of the Geological Association of Canada.
4. That I have been practising in my profession since 1968 in Canada.
5. That my report dated March 31, 1982 on the Middlemarch Property, Cochise County, State of Arizona, is based on personal examination, published government and University geological reports and maps and mining company files.
6. That the examination and field work on the property was made by me on March 23, 24 and 25, 1982 in my capacity as President, D. G. Innes and Associates Ltd.
7. That I have no interest or equity in the Middlemarch Property or adjoining lands or lands in the vicinity relative to this property.



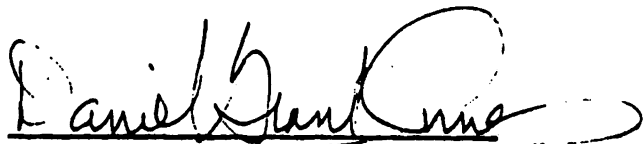
D. G. Innes
H. B. Sc., M. Sc., F.G.A.C.
March 31, 1982



C O N S E N T

I, DANIEL GRANT INNES, do hereby consent to the use by Stralak Resources Ltd., of my report on the MIDDLEMARCH PROPERTY, Cochise County, State of Arizona, March 31, 1982, in any statement of material facts or prospectus of Stralak Resources Ltd., and the filing of such report with the Vancouver Stock Exchange and/or Superintendent of Brokers for British Columbia.

Dated this 31st day of March, 1982.



Daniel Grant Innes
H.B. Sc., M. Sc., F.G.A.C.



GEOLOGICAL STUDY
ON
MIDDLEMARCH PROPERTY
COCHISE COUNTY
ARIZONA

STRALAK RESOURCES LTD.

DECEMBER 5, 1982

L.D.S. Winter
B.A.Sc., M.Sc., F.G.A.C.

1. INTRODUCTION

The Middlemarch or Big Sky property of Stralak Resources Limited is located in Cochise County in the southeastern part of Arizona on the eastern slopes of the Dragoon Mountains.

The property was visited on November 16 and 17, 1982 with Mr. E. Blanchard. At that time the general outline of the workings and the ore contacts were mapped in the Missouri mine and the Pit area was also visited. At the time of the visit the water in the Missouri mine had risen to just above the 7 Level so only those workings above the 7 were mapped by the writer. Mr. E. Blanchard supplied sketch maps of the lower levels.

The objectives of the visit were threefold.

- 1) Map the workings as a basis for a map to determine the general trend; strike, dip and plunge, of the Missouri mine mineralization.
- 2) From the mapping produce an isometric diagram of the workings and the mineralized zone.
- 3) Lay out some drill holes to intersect the mineralized zone at and below the 8 Level horizon.

2. RESULTS

Accompanying this report are two maps and five figures.

- 1) Composite Level Plan and Ore Section
Missouri Mine: Scale 1"=20'.
- 2) Isometric Diagram, Missouri Mine: Scale 1"=20'

- 3) Figure 1: Proposed drill holes with 4 accompanying sections.

3. COMPOSITE LEVEL PLAN AND ORE SECTION

As can be seen from this map the general trend or strike of the mineralized zone is 284° or $N66^{\circ}W$ with a plunge of 45° to 50° at $N66^{\circ}W$. When one looks at the outlines of the stoped ore and visible contacts from level to level the general overall dip is close to vertical. In the upper levels the dip appears to be steeply south rolling over to steeply north on the lower levels. Due to the irregular nature of the ore on the levels above the adit level the dip on the lower levels is considered to be more typical.

From the limited amount of work done by the writer, the size of the orezone appears to be increasing with depth. From the relative locations of the stoped areas the orezone appears to be a pipe-like body plunging 45° at $N66^{\circ}W$. Since the east and west contacts of the ore were not observed it is suggested that the zone may have a more lens-like or tabular shape with only the larger more central core having been mined to date.

4. ISOMETRIC DIAGRAM - MISSOURI MINE

This diagram is self explanatory and attempts to show in a three-dimensional fashion the general trend of the mined and mineralized areas at the Missouri mine from just below the glory hole to the 650 Level.

5. PROPOSED DRILLING

Four drill holes have been laid out to intersect the projected down-plunge extension of the Missouri mineralization at the 8 Level and the 9 Level horizon.

All the relevant information for the proposed drill holes is shown in Figures 1 to 5. It is suggested that holes 1, 2 and 3 be drilled initially and hole 4 be drilled only if it is considered necessary after the results of the other three holes are available.

Holes 1, 2 and 3 would require a total of 2,000 feet and hole 4 would require an additional 700 feet of drilling.

6. GENERAL DISCUSSION

6.1 MINERALIZATION TREND

As can be seen in Figure 1 the general strike of the Missouri mine mineralization is directly on line with the old shaft area and also very close to the Pit area mineralization. The mineralization in the lower levels of the mine dips steeply north while that in the Pit area dips $45^{\circ} \pm$ north. This would suggest that these zones of mineralization are on the same trend with there being a flattening of the dip in the Pit area. This would suggest that the area between the Missouri mine and the Pit should be carefully explored.

6.2 MISSOURI MINE - 8 LEVEL MINERALIZATION

The following old newspaper reports in the Tombstone Review give some indication of the work done and the ore encountered on the 7 and 8 Levels in the Missouri mine.

May 3, 1919. "High grade silver ore has been found on the seventh level of the Middlemarch mine. This carries 4% copper and 12% zinc with silver up to 50 oz per ton.

The ore is different from that on the levels above and much higher grade. On the 8 level there is now 10 feet of ore running 2 - 16% copper as shown in the cross-cut with high grade ore still in the face. This ore carries 2 oz of silver also. The strike length is showing improved value at depth"

February 28, 1920. "A solid body of sulphide ore carrying high copper values as well as enough silver and gold to pay for the treatment charges was discovered in the mine shaft at the 800 level. Cross-cutting in four directions for hundreds of feet has failed to cut through the ore"

From the above information it would appear that the proposed drilling should encounter favourable results.

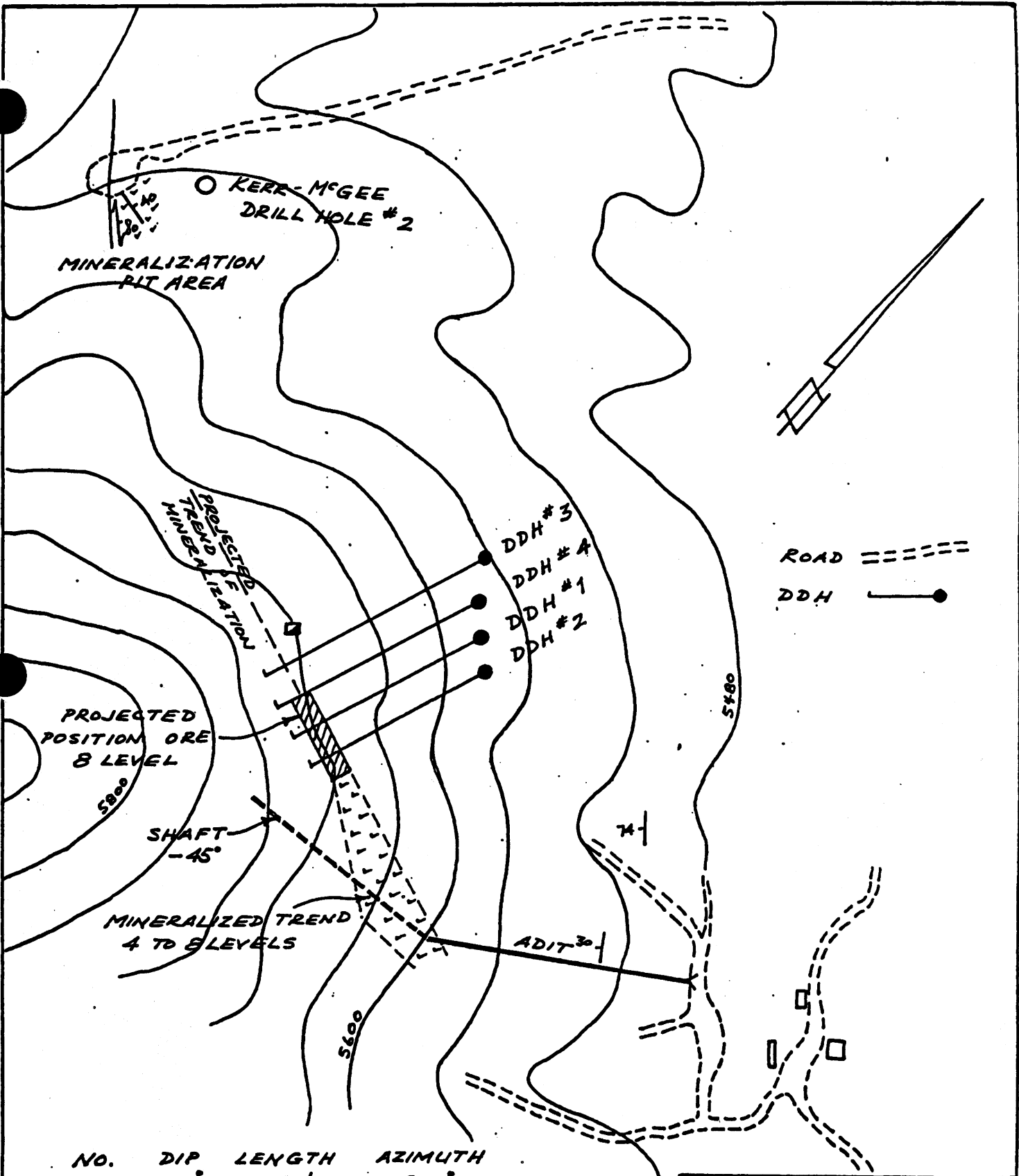
Respectfully submitted

L. D. S. Winter

L.D.S. Winter,
B.A.Sc., M.Sc., F.G.A.C.



December 5, 1982



NO.	DIP	LENGTH	AZIMUTH
1	-60°	650'	200°
2	-60°	600'	200°
3	-60°	750'	200°
4	-60°	700'	200° (IF NECESSARY)

STRALAK RESOURCES LTD.
MIDDLEMARCH PTY.
PROPOSED DRILLING
FIGURE 1
1 IN. = 200 FT. DEC 3, 82 AW.

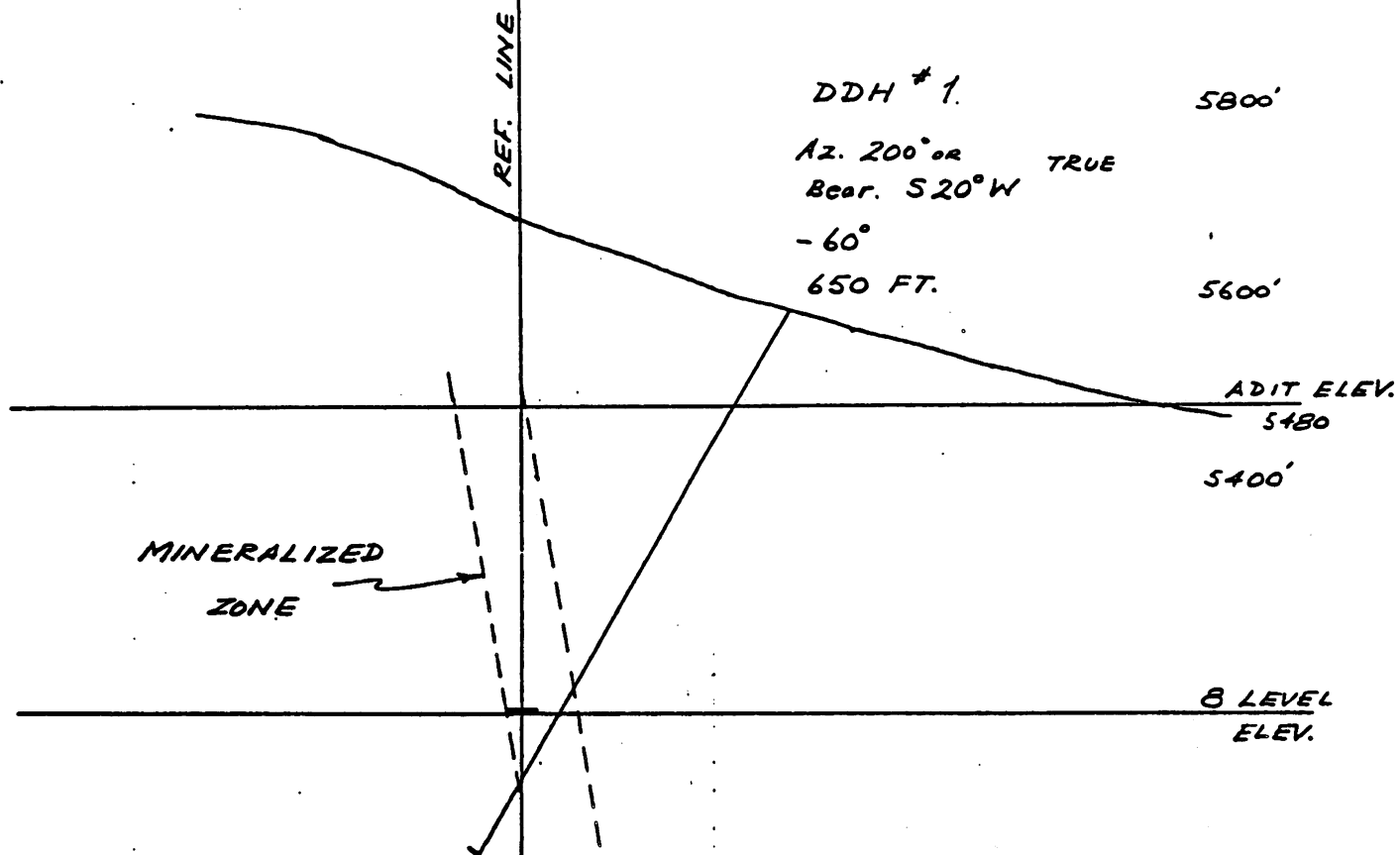


FIGURE 2
 DRILL SECTION
 MIDDLEMARCH PTY

1" = 200'

sw

SW

REF. LINE

DDH # 2

5800'

NE

Az. 200° or
Bear. S20°W TRUE

-60°
600 FT.

5600'

ADIT ELEV
5480'

5400'

MINERALIZED
ZONE

B LEVEL
ELEV.

FIGURE 3
DRILL SECTION
MIDDLEMARCH PROPERTY
1" = 200'

dw

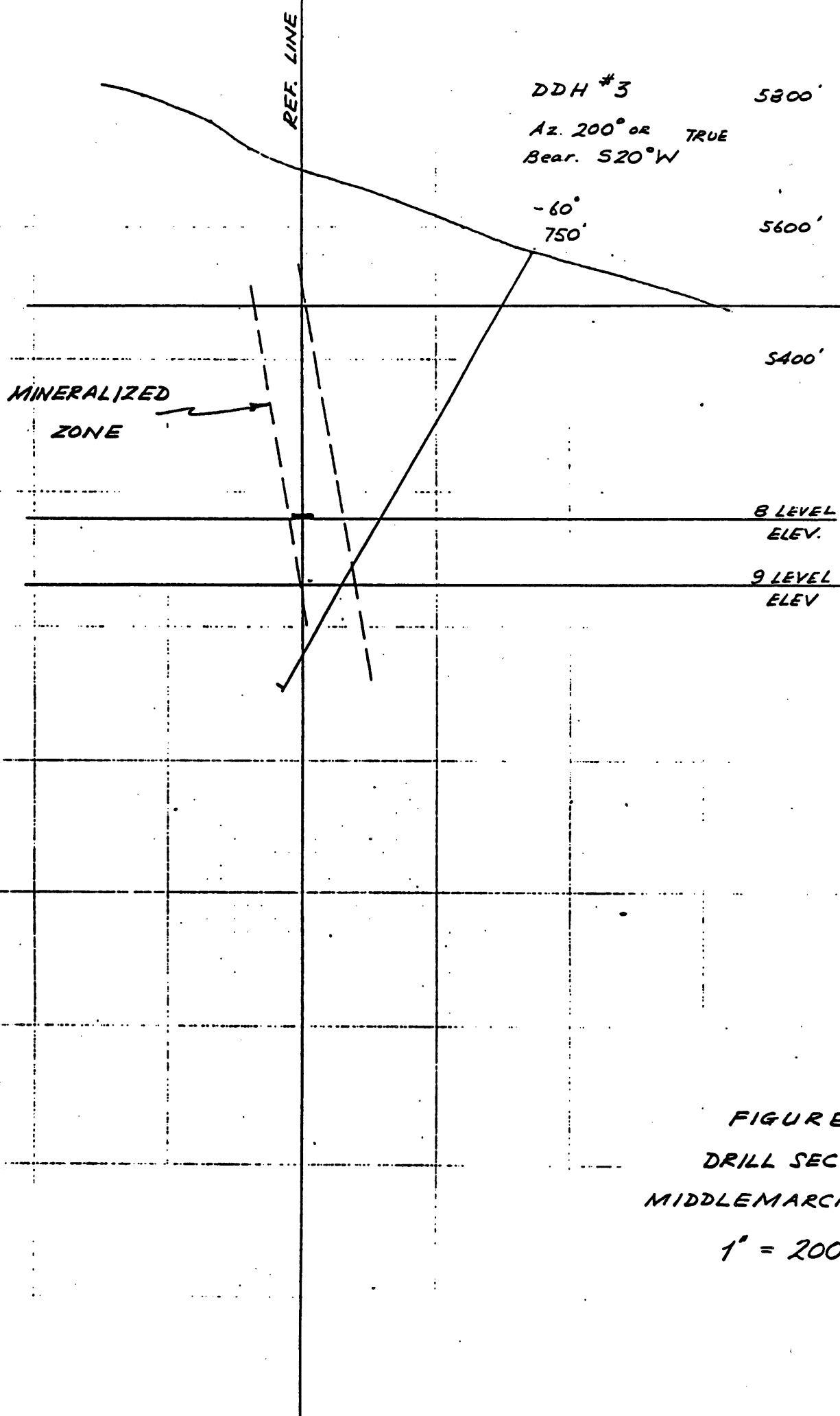
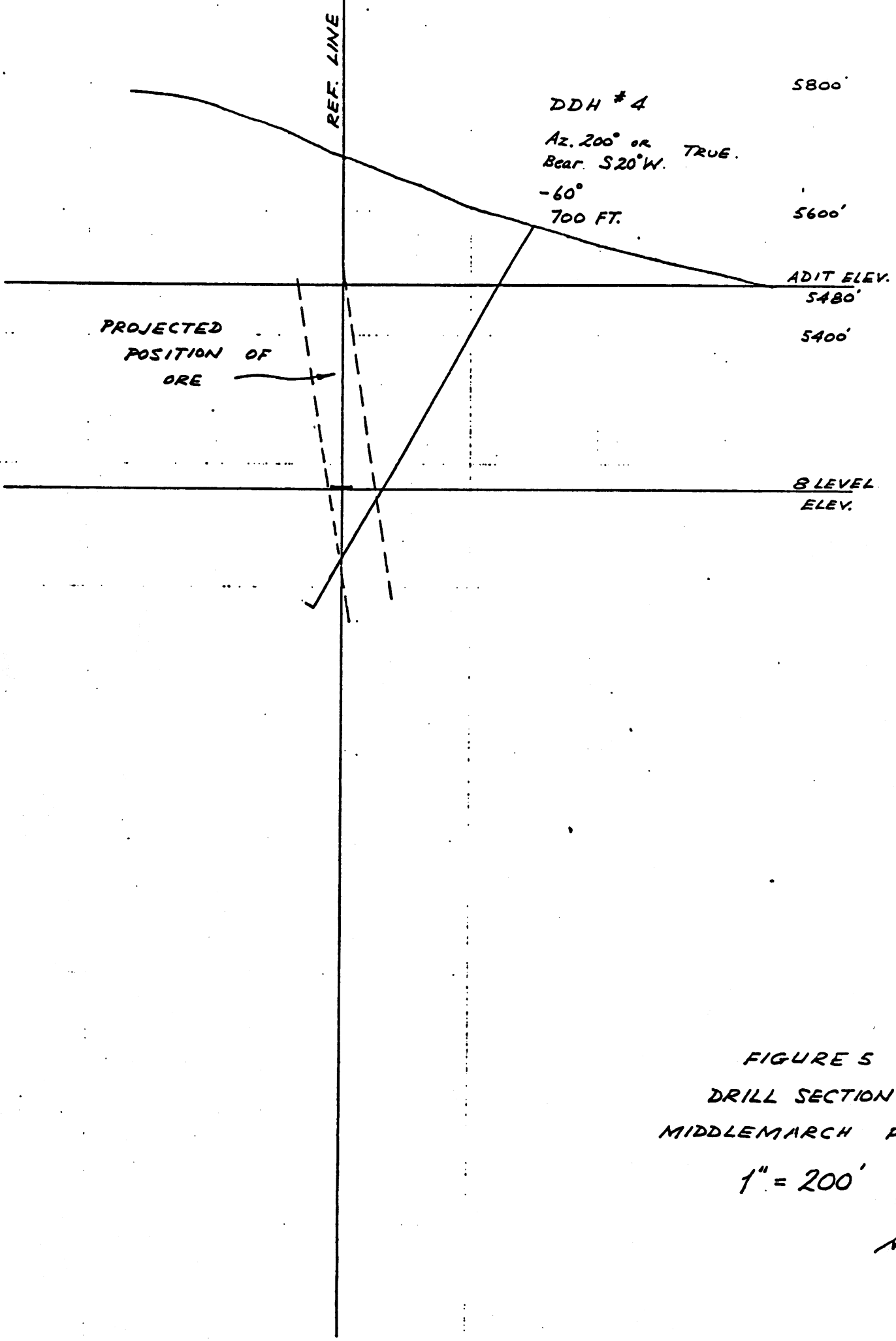


FIGURE 4
 DRILL SECTION
 MIDDLEMARCH PTY.

1" = 200'

kw



DDH # 4
 Az. 200° or TRUE.
 Bear. S20°W.
 -60°
 700 FT.

5800'

5600'

ADIT ELEV.
 5480'

5400'

B LEVEL
 ELEV.

PROJECTED
 POSITION OF
 ORE

FIGURE 5
 DRILL SECTION
 MIDDLEMARCH PTY
 1" = 200'

sw

611 W. Gibraltar Ln.
Phoenix, Arizona 85023
(602) 993-1852

CONSULTING
EXPLORATION
ENGINEERING



MARCH 17, 1976

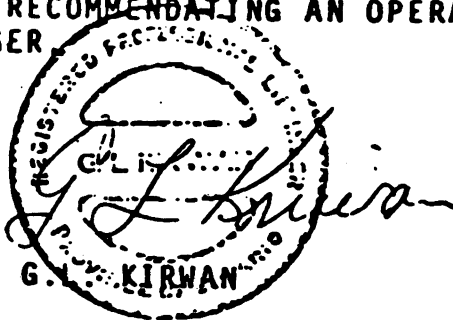
ADDENDUM TO MY REPORT DATED OCTOBER 20, 1975

MIDDLE MARCH PROPERTY

STUDY OF RECORDS SINCE MY REPORT OF OCTOBER 20, 1975, NOT AVAILABLE TO ME AT THAT TIME, SHOW THAT THE ORE ON THE MIDDLEMARCH INCREASE IN VALUE WITH DEPTH. THIS IS PARTICULARLY TRUE WITH REGARDS TO THE MAIN MISSOURI SHAFT WHERE SINKING HAS BEEN PLRFORMED TO THE 8th LEVEL. MR. EDWARD J. KELLEY, FORMER MINE SUPERINTENDANT, IN HIS REPORT DATED OCTOBER 1, 1913, STATES THAT BELOW THE 6TH LEVEL COPPER APPROACHED 7%. I WOULD ASSUME THAT THE PRECIOUS METALS VALUES AS WELL AS ZINC SIMILARLY IMPROVED. COPY OF A PRESS PUBLICATION DATED MARCH 3, 1914 SUBSTANTIATES THESE FIGURES STATING "THIS ORE CARRIES 4% COPPER AND 12% ZINC, WITH SILVER UP TO 50 OUNCES PER TON". 12% - 16% COPPER IS REPORTED IN OTHER PUBLICATIONS.

WITH REGARDS TO RECOMMENDATIONS, IF AN ADIT WERE COLLARED AT A LOCATION SOME 2500' NORTHWEST OF THE MISSOURI SHAFT, DRIFTING UPON THE STRUCTURE WOULD ALMOST CERTAINLY PRODUCE INSTANT ORE FOR MILLING GENERATING A CASH FLOW IMMEDIATELY. SLOPE OF GROUND IN THIS AREA IS ABOUT 40 DEGREES, THUS A 500 FT. ADIT WOULD GIVE SOME 400 FT. OF ORE BACKS REPRESENTING SOME 100,000 TONS OF ORE. IF ORE GRADE IS ONLY 75% OF KNOWN VALUES ELSEWHERE ON PROPERTY, OR \$75.00 PER TON, TONNAGE EQUATES TO OVER \$7 MILLION.

I HAVE NO HESITATION IN RECOMMENDING AN OPERATION OF 500 TONS PER DAY OR LARGER



3

GERALD L. KIRWAN, B.Sc., P.Eng.

CONSULTING GEOLOGICAL ENGINEER

611 W. Gibraltar Ln.
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CONSULTING
EXPLORATION
ENGINEERING



May 25, 1976

RESULTS OF TEST ON MIDDLEMARCH GOLD-SILVER-PLATINATE ORES

PURPOSE: On the Middlemarch mineral property located some 20 miles east of Tombstone, Arizona, is an ore dump containing some 2,000 tons of precious metals.

Initial tests by fire assay methods indicated some 0.33 ounces gold per ton with some 2 ounces silver for total in place value of \$50.00, worth treating only if plant on property. Some ores are non amenable to fire assay determinations.

A processing plant utilizing polarity of both mercury as cathode and metallic particles which adhere to the mercury in an environment of various chemical elements exists in Scottsdale, Arizona, and the purpose of the test was to determine amenability of process to ore.

On a previous run, subject ore ran 6.7 ounces gold and one ounce silver/ton = \$842.00. Standard test was employed.

RESULTS: An assay ton of material was run in mercury solution for one hour, retorted, and residue fire assayed producing a button equating to 10.083 ounces gold/ton and 0.18 ounces silver = \$1,260.72 per raw ton of ore. Platinate family was strongly represented by 43.34 ounces @ \$125.00/oz. = \$5417.50 (total value per ton raw ore = \$6,678.22). It is noted the gold button disintegrated on the cupell with loss of some gold, perhaps as much as 30%. Fire assay results were 2.13 total.

A deviation from standard test was employed accounting for higher values than previous run.

QUALITY CONTROL: The dump was methodically sampled by Mr. Eual Britton, optionor, accountant, who has a good working

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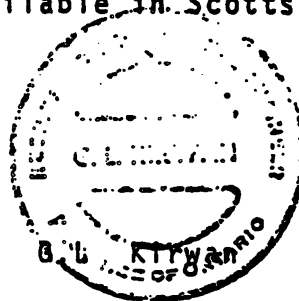


knowledge of mining procedure, a person known to the writer to be of good repute. It is likely the dump was sampled properly.

Utmost precaution was taken in all phases of the subject test to avoid contamination either through natural causes or purposely. The collected ore was given first to the writer who pulverized the material in clean equipment. All equipment to be used was thoroughly checked for cleanliness. The solution mixture was sampled in its entirety including the mercury and assayed for gold-silver and found to be pure. The operator of the procedure test was Mr. Fred Finel, who was closely supervised by Messrs. Dave Bixler, Eual Britton, myself, and later Mr. Robert M. Peterson. It was unanimately concluded that the test was performed with the utmost professionalism, a credit to all persons involved.

CONCLUSIONS: Both tests, especially the latter, exceeded all expectations of gold recovery, with platinate values an unexpected surprise. Tests appear to be valid in all respects, and represent gold-silver-platinate products that would be recoverable on production run.

RECOMMENDATIONS: Recommendations are for immediate production utilizing equipment available in Scottsdale.



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MIDDLEMARCH PROPERTY

COCHISE COUNTY

STATE OF ARIZONA

Phoenix, Arizona,
October 20, 1975

M I D D L E M A R C H P R O P E R T Y

C O C H I S E C O U N T Y

S T A T E O F A R I Z O N A

INTRODUCTION:

REPORT HEREIN IS RELEVANT TO THE ECONOMIC VIABILITY OF THE IMPRESSIVE MIDDLEMARCH COPPER, ZINC, SILVER AND GOLD DEPOSIT LOCATED IN THE SOUTH-EASTERN PORTION OF THE STATE OF ARIZONA.

AN APPRAISAL OF THE MINERAL POTENTIAL OF THE SUBJECT PROPERTY IS PRESENTED AND, BASED UPON THIS POTENTIAL, RECOMMENDATIONS ARE FOR IMMEDIATE PRODUCTION FROM THE MIDDLEMARCH PROPERTY.

PROPERTY, LOCATION, ACCESS:

THE MIDDLEMARCH MINE CONSISTS OF A TOTAL OF 144 CONTIGUOUS LOCATED OR LODE MINING CLAIMS, SOME 2,880 ACRES IN ALL, SITUATED IN COCHISE COUNTY AND COVER ALL OR PORTIONS OF SECTIONS 1, 2, 11, 12, 13, and 24, TOWNSHIP 18 S, RANGE 23 E C&SR B&M, AND A SMALL PORTION OF TOWNSHIP 17. THE ENTIRE PROPERTY HAS BEEN RECENTLY PROFESSIONALLY SURVEYED AND POSTS MOUNDED.

SITUATED IN THE EASTERN SLOPES OF THE DRAGON MOUNTAINS EIGHT MILES WEST OF THE TOWNSITE OF PEARCE OVER GOOD SECONDARY ROADS, THE PROPERTY IS ACCESSIBLE FROM DOUGLAS, 60 MILES SOUTH BY U.S. HIGHWAY 66 AND FROM TUCSON SOME 130 MILES NORTHWEST OVER INTERSTATE 10 FREEWAY, THENCE ROUTE 66.

HISTORY:

THE MIDDLEMARCH ORE DEPOSIT WAS DISCOVERED SOME FEW YEARS PRIOR TO ITS OPERATION IN 1898-9 BY MESSRS. GIRD AND O'CORMAN WHO SMELTED RICH OXIDE ORE FROM SHALLOW DEPTHS, LATER ENCOUNTERING SULPHIDE ORES BELOW SMELTING GRADE. ATTEMPTS WERE MADE TO CONCENTRATE BUT FAILED DUE TO HIGH SPECIFIC GRAVITY OF GANGUE MATERIAL.

IN 1917 A GROUP OF LOS ANGELES BUSINESSMEN TOOK OVER OPERATION OF THE MINE UNDER ARIZONA MIDDLEMARCH COPPER COMPANY ERECTING A FLOATATION MILL, A NEW EXTRACTIVE AND CONCENTRATING METHOD AT THAT TIME, SUCCESSFULLY TREATING SULPHIDE COPPER ORES.

SOURCE OF THE RICH COPPER ORES WAS FROM THE MISSOURI PORTION OF THE MAIN OREZONE FROM A BRECCIA PIPE WHICH WAS EXPLORED TO THE 800 FT. LEVEL FROM AN INCLINE SHAFT AT THE END OF A 250 FT. ADIT, ALL OF WHICH APPEARS TO BE IN EXCELLENT CONDITION TODAY.

THERE IS A REPORTED 3.5 MILES OF DRIFTING AND SHAFTS ALONG THE OREZONE. LARGE GLORY HOLES, EQUATING SOMEWHAT TO PRESENT DAY SHRINKAGE MINING, WAS EMPLOYED AS THE METHOD OF MINING. HOIST AND SKIP BROUGHT ORE TO ADIT LEVEL WHICH WAS THEN TRAMMED TO THE FLOATATION MILL ON PROPERTY.

IT IS ECONOMICALLY SIGNIFICANT TODAY THAT THE FLOATATION MILL WAS INEFFICIENT UNDER PRESENT STANDARDS, AND THERE IS A REPORTED 130,000 TONS OF TAILINGS AVERAGING 0.6% COPPER WITH HEAVY AMOUNTS OF ZINC ON GROUND ON THE SUBJECT PROPERTY.

GEOLOGY:

METASEDIMENTARY SEQUENCES, ESSENTIALLY CONSISTING OF SILICEOUS CRYSTALLINE LIMESTONES ALONG WITH PHYLLITES, SCHISTS, SLATE, AND QUARTZITES COMPRISE THE AREA NORTHEAST OF THE KNOWN OREZONE, WHILE ACID INTRUSIVES REPRESENTED BY GRANITE AND RELATED ROCK TYPES CHARACTERIZE THE GEOLOGY SOUTHWEST OF THE OREZONE. THUS THE MINERALIZED AREA IS ESSENTIALLY ON THE CONTACT OF THE METASEDIMENTARY AND INTRUSIVE ROCK TYPES. THE ENTIRE METAMORPHIC SEQUENCE, DIPPING SOUTHWEST 40° TO 60° IS CONSIDERED CAMBRIAN IN AGE, WITH INTRUSIVES LATER.

THE MIDDLEMARCH OREZONE IS A CLASSICAL EXAMPLE OF CONTACT-METAMORPHIC DEPOSIT CONTAINING METALS OF ECONOMIC IMPORTANCE IN ALTERED ZONES SANDWICHED BETWEEN THREE LARGE AND PERSISTENT PORPHYRY DIKES, ALL BETWEEN THE TWO MAIN ROCK TYPES. ACID INTRUSIVES MAY BE REGARDED AS THE MINERALIZERS FROM WHICH SUPERHEATED VAPORS AND SOLUTIONS CONTAINING METALS OBTAINED IN TRAVELLING FROM DEPTH INTRUDED AREAS OF LEAST RESISTENCE AS FRACTURES, FAULTS, BRECCIA ZONES, AND SOFTER LIMESTONE, COOLING AND THUS DEPOSITING COPPER, ZINC, SILVER, AND GOLD IN CURRENT CONDITIONS.

ON SURFACE, THE MAIN METAL ENRICHED ZONE IS CHARACTERIZED BY AN IMPRESSIVE 8,000 FT. LONG IRREGULARLY ALTERED ZONE VARYING IN WIDTH FROM 30 FT. TO

OVER 150 FT.

SURFACE MATERIAL ALONG TREND OF OREZONE IS CHARACTERIZED BY OXIDE AND CARBONATE MINERALS ALONG WITH SULPHIDE MATERIAL TO A DEPTH OF 75 FT. AT THIS POINT A THIN SECTION OF SECONDARY ENRICHMENT EXISTS, FOLLOWED BY THE MAIN SULPHIDE PRIMARY ZONE TO DEPTH.

CHALCOPYRITE, PYRITE, ZINCLENDE, AND SILVER WITH GOLD ARE THE CHIEF ORE MINERALS, THE PRECIOUS METALS LIKELY ASSOCIATED WITH PYRITE.

AS DETERMINED FROM SMELTER RECEIPTS, RECORDS OF FORMER OPERATORS, SAMPLE ASSAY SHEETS, GOVERNMENT RECORDS, ENGINEERING REPORTS, AND PRESS PUBLICATIONS, THE AVERAGE ORE GRADES ARE CONSERVATIVELY TABULATED AT 1.5% COPPER, 10% ZINC, 2 OUNCES SILVER, AND 0.05 OUNCES GOLD PER TON FOR TOTAL METAL VALUE AT CURRENT MARKETS OF \$110.30 PER TON, ALL AS BEING REPRESENTATIVE OF THE ENTIRE 8,000 FT. STRIKELENGTH OF THE MIDDLEMARCH OREBODY.

DETERMINATION AS WELL AS SUBSTANTIATION OF ABOVE FIGURES HAVE BEEN ASCERTAINED FROM THE FOLLOWING DEVELOPMENT WORK ALONG THE ENTIRE 8,000 FT. STRIKE LENGTH: 1) MISSOURI AREA, OR MAIN ZONE, 250 FT. OF ADIT CROSSCUT TERMINATED BY 45° INCLINE SHAFT TO THE 800 FT. LEVEL. EIGHT LEVELS FEED ORE FROM STOPES AND ORE POCKETS. DEVELOPMENT DRIVEN IN BRECCIA PIPE, ALL IN CLAIM CK 1. GLORY HOLE IS SURFACE EXPRESSION OF OREZONE FROM WHICH A LENGTHLY DRIFT EXISTS. 2) IN CLAIM SR 19 SOME 800 FT. ALONG STRIKE NORTHWESTWARD, TUNNELLING HAS INTERSECTED ORE VALUES OVER 100 FT. IN WIDTH, WHILE 3) 2,800 FT. ALONG STRIKE FROM 2) IS ANOTHER ORE CUT OF 100 FT. WIDE IN CLAIM SR 24. 4) 500 FT. FROM 3) IS A 300 FT. INCLINE SHAFT CROSSCUTTING 100 FT. OF GOOD ORE VALUES, ALSO IN CLAIM SR 24. 5) ON

CLAIM SR 28, 2,300 FT. ALONG STRIKE FROM 4) IS THE 200 FT. COBRA LOMA INCLINE CUTTING OVER 80 FT. OF OREZONE, AND IN CLAIM SR 6, 1,600 FT. FURTHER ALONG ORE TREND IS AN 80 FT. SHAFT CUTTING 95 FT. OF ORE.

STRONG INDICATIONS EXIST THAT ORE VALUES INCREASE SUBSTANTIALLY WITH DEPTH.

TONNAGE POTENTIAL, DOLLAR VALUE, ECONOMIC CONSIDERATIONS:

CONSIDERING DIMENSIONAL PARAMETERS OF THE MIDDLEMARCH OREZONE FROM WORK COMPLETED TO DATE, INCLUDING FURTHER SUBSTANTIATION FROM POSITIVE RESULTS OF THE WELL RESPECTED GEOPHYSICAL TOOL INDUCED POLARIZATION, TO BE 8,000 FT. IN LENGTH, 100 FT. IN WIDTH, TAKEN ONLY TO KNOWN DEPTH OF 800 FT., THIS ORE BLOCK WOULD EQUATE TO SIXTY-FOUR MILLIONS TONS. FURTHER CONSIDERING THAT TOTAL METAL VALUE REMAINS CONSTANT RATHER THAN INCREASING WITH DEPTH, OR THAT MARKET VALUES DO NOT INCREASE, VALUE OF ORE IN PLACE IS WELL OVER SIX BILLION DOLLARS.

THERE IS EVERY GEOLOGIC REASON TO FIRMLY BELIEVE THAT THE KNOWN OREZONE PERSISTS SUBSTANTIALLY FURTHER DOWNDIP INTO THE GROUND THAN THE 800 FT. REALIZED FROM THE MISSOURI SHAFT. FURTHER, THE OREZONE HAS NOT BEEN DELIMITED LENGTHWISE, AND THUS POTENTIAL EXISTS FOR FURTHER TONNAGES TO EXIST IN BOTH OF THESE DIRECTIONS.

IT IS OBVIOUS THAT, SINCE PROCESSING HAS BEEN ACCOMPLISHED ON THE PROPERTY EMPLOYING A 125 TON FLOATATION MILL, THAT NO METALLURGICAL PROBLEM EXISTS WITH THE ORE AND THUS ESSENTIALLY ALL METALS ARE RECOVERABLE.

ORE MINED TO SURFACE MAY BE SOLD IN PLACE STOCKPILED AT TODAY'S MARKET PRICES

LESS COSTS OF TRANSPORTATION AND MILLING FOR CASH FLOW IN HAND, SUCH FUNDS TO BE USED FOR ADDITIONAL ORE HAULAGE ONTO SURFACE. THUS, UNDER THESE CONDITIONS, THE MINE IS SELF-SUSTAINING ONCE A CERTAIN TONNAGE OF ORE HAS BEEN STOCKPILED, AND PROFIT FROM THIS POINT FORWARD IS REALIZED.

AN ALTERNATIVE OF SELLING ORE FUTURES IS CUSTOM MILLING WHICH MAY BE DONE AT TONTO BASIN, ARIZONA, 150 MILES NORTH OF PROPERTY FOR \$25.00 PER TON PLUS 5¢ PER MILE HAULAGE PER TON. MIDDLEMARCH ORE IS APPARANTLY AMENABLE TO THE TONTO BASIS MILL.

FURTHER PROCESSING OPTIONS OF ORE MAY BE PERFORMED THROUGH CUSTOM MILLING AT CUSTER OR DEMMING, NEW MEXICO, FOR CERTAIN COSTS, TRANSPORTATION BY RAIL FROM SOUTHER PACIFIC SIDING AT COCHISE, 25 MILES FROM SUBJECT PROPERTY.

A 100 TON FLOAT MILL EXISTS AT PEARCE EIGHT MILES FROM THE MIDDLEMARCH PROPERTY, AND THIS EQUIPMENT AND SITE WITH ABUNDANT WATER MAY BE UTILIZED UNDER A LEASE-PURCHASE AGREEMENT.

THE MIDDLEMARCH COPPER, ZINC, SILVER, AND GOLD PROPERTY, LOCATED UNDER EASY ACCESS EIGHT MILES FROM PEARCE, ARIZONA, HAS PRESENT UNDERGROUND ESSENTIALLY READY FOR MINING AFTER DEWATERING AND PIPE INSTALLATION MAKING AVAILABLE CURRENTLY FOR MINING SOME 200,000 TONS OF READILY ACCESSIBLE ORE FROM PRESENT STOFES. THERE IS REPUTED TO BE A FURTHER 50,000 TONS OF ORE ON GROUND IN STOFES. IT IS NOTEWORTHY THAT ALTHOUGH MARKET PRICES OF METALS IN ORE AT THE MIDDLEMARCH PROPERTY ARE INCREASING IN VALUE, AND THUS FUTURES OF ALL METALS ARE CONSIDERED EXCELIENT, COSTS OF MINING ARE REMAINING RELATIVELY CONSTANT DUE TO ADVANCED TECHNOLOGY PRACTICED TODAY.

THE SUBJECT PROPERTY IS CHARACTERIZED BY BEING LOCATED IN AN AREA OF ALMOST

PERFECT WEATHER CONDITIONS, CLOSE TO TRANSPORTATION FACILITIES, ADJACENT TO CUSTOM MILLING FACILITIES IN THE REGION, AS WELL AS BEING SITUATED IN A MINING BELT THUS LABOR AND COMMODITY ARE READILY PROCURABLE. ELECTRIC POWER EXISTS 1.3 MILES FROM MISSOURI SHAFT.

A LEACH PAD EXISTS ON THE PROPERTY FOR PROCESSING NEAR SURFACE OXIDE ORES.

CONCLUSIONS

ALL MINING, DEVELOPMENT, GEOCHEMICAL, GEOPHYSICAL AND RELATED ENDEVOURS RELATIVE TO THE MIDDLEMARCH OREZONE HAVE CUMMULATIVELY ENHANCED THE PROPERTY GEOLOGICALLY INDICATING SOME 64 MILLIONS OF TONS OF COPPER, ZINC, SILVER, AND GOLD ORE WITH AN IN-PLACE VALUE OF OVER 6 BILLION DOLLARS.

THE ACCEPTED DIMENSIONAL PARAMATERS OF THE OREBODY TO DAY IS SOME 8,000 FT. IN LENGTH, 100 FT. IN WIDTH, AND A MINIMUM 800 FT. IN DEPTH. AT TODAY'S MARKET, EACH TON OF ORE EQUATES TO OVER \$100.00.

THE MORE SALIENT FEATURES OF THE MIDDLEMARCH PROPERTY ARE THE FOLLOWING:

1. ABUNDANT ORE READILY ACCESSIBLE FROM 800 FT. SHAFT AFTER DEWATERING.
2. HIGH GRADE MARKETABLE COMMODITIES.
3. EXCELLENT FUTURE VALUES FOR METALS CONTAINED IN ORE.
4. AVAILABLE FUNDS TO PURCHASE ORE STOCKPILED.
5. CUSTOM MILLING FACILITIES IN REGION.
6. PROBABLE LEASE-PURCHASE ARRANGEMENT CAN BE MADE ON MILL AT FEARCE.
7. NEARBY SOURCE OF LABOR AND COMMODITY.
8. ELECTRIC POWER NEAR PROPERTY.
9. EASY ACCESS: NEARBY GOOD TRANSPORTATION FACILITIES.

10. NEAR PERFECT WEATHER CONDITIONS.
11. BASIC LEACH PLANT ON PROPERTY FOR OXIDE ORES.
12. 130,000 TONS OF TAILINGS ON SURFACE REPUTED GOOD COPPER AND HIGH ZINC.
13. ABUNDANT WATER RESOURCES.
14. POSSIBLE 50,000 TONS BROKEN ORE UNDERGROUND.
15. 200,000 TONS ORE READILY AVAILABLE FOR MINING FROM 800 FT. SHAFT.
16. UNDERGROUND DEVELOPMENT OF SHAFT, HOIST, SKIP, DRIFTS, CROSSCUTS REPRESENTS DEVELOPMENT COSTS SAVINGS OF WELL OVER A MILLION DOLLARS.
17. NO METALLURGICAL PROBLEMS EXIST IN ORE.
18. POSSIBLE OPEN PIT MINING TO 50 FT. OR MORE OF OXIDE ORE ON SURFACE
19. WIDE OREZONE ALLOWS MUCH CHEAPER MINING METHODS AS SHRINKAGE MINING.
20. OREZONE APPARENTLY CONTINUOUS AND NOT DISRUPTED BY FAULTING.
21. 45° DIP OF OREZONE ALLOWS RELATIVELY EASY MINING.
22. TREMENDOUS SIZE OVERALL OF OREZONE.
23. COMPETENT ROCK AVOIDS USE OF TIMBERING IN MINING SAVING FUNDS AND THUS INCREASES PROFITS.
24. MULTIMETAL CONTRIBUTION IN ORE HEDGES AGAINST SINGLE METAL DOWN MARKET.
25. INITIAL CAPITAL OUTLAY SMALL IN ORDER TO INITIATE PRODUCTION.
26. ORE VALUES APPARENTLY INCREASE SUBSTANTIALLY WITH DEPTH.
27. HIGH RECOVERABILITY OF ALL METALS THROUGH FLOATATION.
28. RAIL SIDING AVAILABLE FOR TRANSPORTATION FOR CUSTOM MILLING.
29. FURTHER ORE POTENTIAL ALONG STRIKE IN BOTH DIRECTIONS, AND AT DEPTH.
30. MINE IS SELF-SUSTAINING CAPITALWISE UPON SALE OF ORE BROUGHT TO SURFACE, WHILE PROFIT IS DETERMINED FROM MINED ORE FROM THIS POINT FORWARD.

RECOMMENDATIONS:

CONSIDERING THE NUMEROUS OPTIONS AND ALTERNATIVES WITH RESPECT TO PLACING THE MIDDLEMARCH OREZONE INTO IMMEDIATE PRODUCTION, IT IS JUDGED BEST POLICY TO CONCENTRATE WHERE MOST ORE IS KNOWN TO BE CURRENTLY AVAILABLE, WITH THE LEAST AMOUNT OF WORK AND EXPENSE TO ACQUIRE, WITH THE HIGHEST GRADE, TAKING FULL ADVANTAGE OF THE AREA OF MAXIMUM MINE DEVELOPMENT, ALL IN THE ZONE OF GREATEST METAL POTENTIAL.

IT IS RECOMMENDED THAT THE MISSOURI OR BRECCIA PIPE AREA EXISTING ON THE EXTREME SOUTHEAST PORTION OF THE 8,000 FT. LONG OREZONE BE DEWATERED TO BOTTOM OR 8TH LEVEL, AND BE REHABILITATED ALONG WITH WATER AND AIR PIPING IN ORDER TO IMMEDIATELY COMMENCE HOISTING BROKEN ORE ON STOFE FLOORS. ONE OF THE MAIN ADVANTAGES OF THIS PROGRAM IS TO INITIATE AN INSTANT FLOW OF CAPITAL, WHILE AT THE SAME TIME PERPETUATING THIS FLOW THROUGH THE MINING OF HIGH GRADE ORE EXISTING IN STOFES.

IT IS ESTIMATED THE ABOVE NOTED WORK PROGRAM SHOULD COST APPROXIMATELY \$150,000.00.

UPON THE MIDDLEMARCH MINE BEING SELF-SUSTAINING CAPITALWISE FROM PROCEEDS FROM MISSOURI SHAFT PRODUCTION, CONSIDERATION CAN BE GIVEN TO EXPANDING PRODUCTION FROM ELSEWHERE ALONG THE 8,000 FT. LONG ORE BODY.

RESPECTFULLY SUBMITTED,

G. L. Kirwan

G.L. KIRWAN, B.Sc., P.E.
CONSULTANT



C E R T I F I C A T E

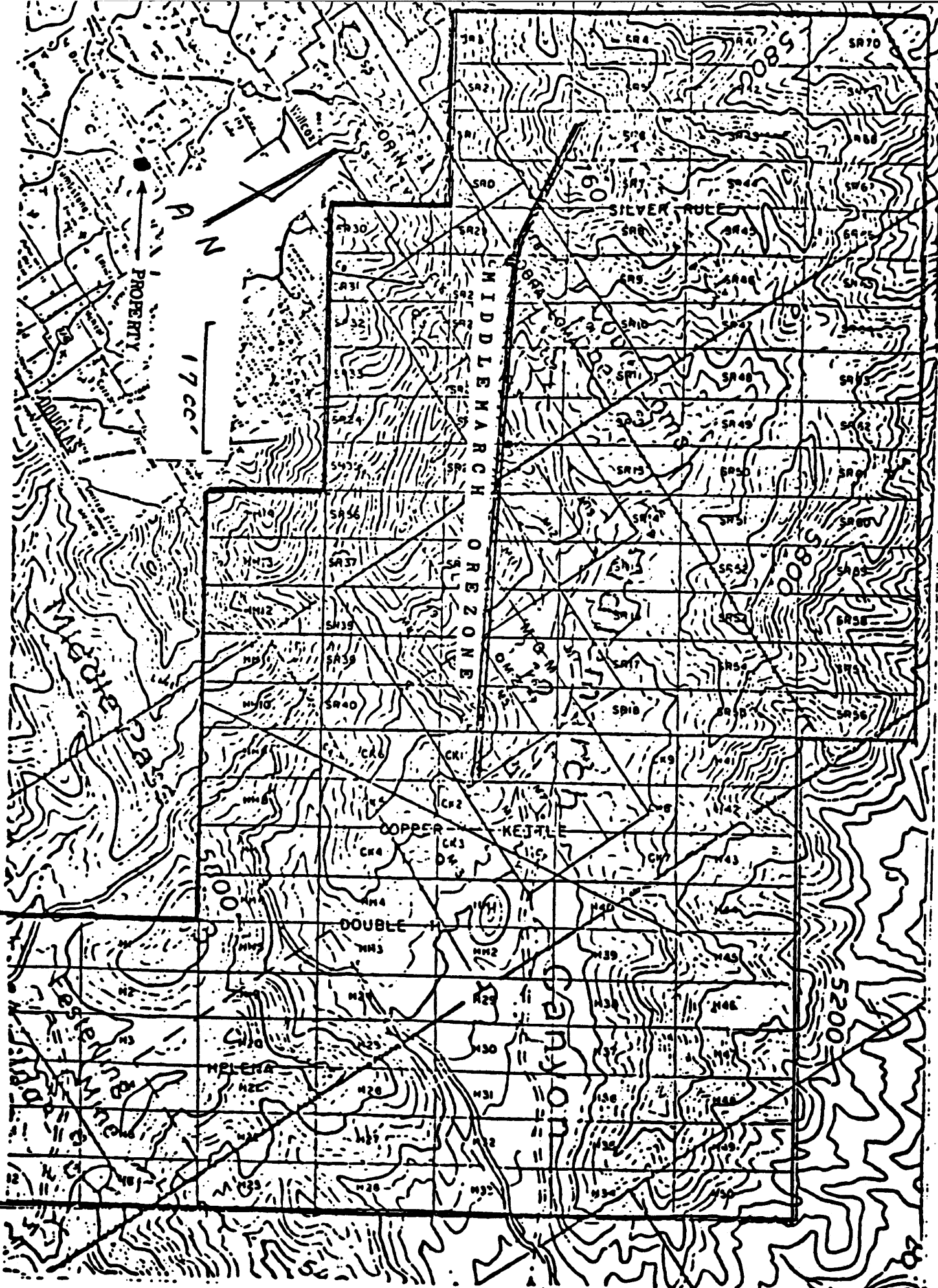
I, GERALD. L. KIRWAN OF THE CITIES OF TORONTO, CANADA, AND PHOENIX, ARIZONA,
CERTIFY AS FOLLOWS:

1. THAT I AM A CONSULTING GEOLOGICAL ENGINEER MAINTAINING OFFICES AT SUITE 2901-95 THORNECLIFFE PARK DRIVE, TORONTO, ONTARIO, AND 611 WEST GIBRALTER LN., PHOENIX, ARIZONA, 85023.
2. THAT I HAVE BEEN GRADUATED FROM CARLETON UNIVERSITY, B.SC., 1957, AND THAT I HAVE PRACTISED MY PROFESSION CONTINUOUSLY. A MINOR AMOUNT OF STUDYING AND TEACHING WAS PERFORMED IN 1958 AT THE STATE UNIVERSITY OF MISSOURI.
3. THAT I AM REGISTERED WITH THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF THE PROVINCE OF ONTARIO AS A PROFESSIONAL ENGINEER. I AM A FELLOW OF THE GEOLOGICAL ASSOCIATION OF CANADA, AND A MEMBER OF THE CANADIAN INSTITUTE OF MINING AND METALLURGY.
4. THAT I RECEIVED PROFESSIONAL EXPERIENCE AND KNOWLEDGE WITH UNITED STATES STEEL CORP., NEWMONT MINING CORP., BRITISH PETROLEUM CORP., AND NORANDA MINES LTD., THE LATTER IN DEVELOPMENT OF UNDERGROUND GOLD ORE BODIES, ALL RELATIVE TO MOST PHASES OF EXPLORING-DEVELOPING-MINING.
5. THAT I HAVE BEEN A CONSULTANT FOR THE PAST 15 YEARS BOTH IN CANADA AND UNITED STATES.
6. THAT REPORT HEREIN HAS BEEN PREPARED BY MYSELF BASED UPON STUDY OF RELATIVE ENGINEERING DOCUMENTS AS PROFESSIONAL REPORTS, MAPS, DRILL LOGS, SURVEYS, AS WELL AS A STUDY OF PERTINENT DOCUMENTS CONTAINED IN THE FILES OF FEDERAL AND STATE GOVERNMENT OFFICES.
7. THAT I HAVE NO INTEREST OR EQUITY IN THE SUBJECT MIDDLEMARCH PROPERTY, OR ADJOINING LANDS OR LANDS IN THE VICINITY RELATIVE TO THIS PROPERTY.
8. THAT I PERSONALLY DID FIELD EXAMINE THE PROPERTY ON TWO SEPERATE OCCASSIONS, NAMELY AUGUST 20-21, AND SEPT. 2, 1975.

DATED AT PHOENIX, ARIZONA, THIS 20th DAY OF OCTOBER, 1975.


G.L. KIRWAN





Due to the poor copy quality of the original Russell Report, the photocopy is difficult to read. Therefore, the report has been reconstructed.

The photocopy of the original Russell Report follows the reconstruction.

Note: There are a number of typographical errors and run-on sentences in the original report. Because this is a reconstruction, not intending to change or alter the authors account, the errors have not been corrected.

* Those notes in [] are not on the original report. Those words underlined were questionable and/or unintelligible on the original.

A Preliminary Report

on the

BOB BARBER HOLDINGS

Cobra Loma, Middle March & Sorin Camp

Mines

Compiled and Prepared

by

G. A. RUSSELL & ASSOCIATES

**Those notes in [] are not on the original report.
Those words underlined were questionable and/or
unintelligible on the original report.*

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APPENDIX:

Maps-

Location (State Map)

Area

Claim

Assay Sheets Exhibit

Spectograph Exhibit

[The appendix items are not available]

SUMMARY

The Middle March and related properties, Cobra Loma and the Sorin Camp Mines, are held by right of location by Mr. Bob Barber, and are located in the old Pearce Mining District. (The Pearce Mine was one of the largest silver producers in the state before excessive water shut down the operations.) The area has been recognized over the past century as being a productive mineral belt and, due to the fluctuation of the metal market over the past years, has only worked when metal prices were high.

The Middle March property appears to be a breccia pipe and has certain characteristics of the Phelps Dodge open pit at Bisbee.

Enough of the old workings are open to inspection so that the tremendous size of this property can be readily grasped.

The 26 claims cover enough land to insure a large operation.

The availability of water, power and economical transportation helps to add to the value of this area.

CONCLUSIONS

The Middle March mine area is worthy of spending money on. I believe it has passed the prospect stage and has, with proper management, the possibilities of making a mine of merit.

All indications are that a large body of mineralized material did exist there, and that the old work done on this property has only increased the value and not depleted the reserves, as present day mining methods have made possible the extraction of lower grade ores at a larger profit than was possible a few years ago, while mining higher grade ores with large equipment, open pit methods, new technics on the extraction of copper from oxide ores, and the higher prices now being enjoyed by the metal mining industries, all help to enhance the value of this property

RECOMMENDATIONS

That this property be acquired and a preliminary exploration program be instituted, more geological work done, mapping of the underground workings, a sampling program be set up and if possible, a few diamond drill holes be drilled and block out additional tonnages of high grade ores.

A leaching plant could be instituted without too much cost, as there is a partial plant now on the property.

A small leaching plant would help defray development costs and could possibly make a fair profit for the owners.

Workings: The San Juan mine workings are chiefly from adit levels.

The silver adit extends northward and connects with the sulfide adit which extends west and southward. These two tunnels, together with their drifts and stopes, are distributed through an area approximately 330 feet long by 100 feet wide. In addition, there is the Mistletoe adit (Fig. 4) with approximately 200 feet of workings, and several shorter adits.

Ore deposits: Replacing the impure shaly limestone beds beneath the conglomeratic limestone in the San Juan mine are irregular masses of contact silicates, chiefly garnet, hedenburgite, and epidote. The ore minerals, which consist of sphalerite and subordinate galena together with erratically distributed silver in unrecognized form, occur associated with the contact silicate minerals, hematite, and calcite.

The known ore bodies occur beneath the low-angle fault shown on Figure 4, along zones of northeast fissures. The principal stope extended northeastward with a length of 180 feet, a maximum width of 90 feet, and a height of 3 to 20 feet. In March, 1949, ore was being mined from the Mann adit, 30 feet east and 37 feet below the Silver adit.

ABRIL MINE

Situation: The Abril mine is 2 miles in air line north of the San Juan mine or 21 miles from Tombstone via the Middlemarch road and Sorens Canyon. During winter, this road may be blocked by snow for short periods.

A lower haulage route via Slavin Gulch, branches north from the Middlemarch road near Sala's ranch and terminates at the ore bins and tramway a few hundred feet down the slope west of the camp.

History: In 1943 the Abril was an undeveloped prospect, held by the Abril Brothers and H. W. Smith, of Tombstone. During that year W. Sim and Mrs. H. Miller, lessees, obtained an R.F.C. loan of \$15,000 upon the property. In 1944 it was operated in a small way by Adrion Skinner and Dan Lewis, lessees. During part of 1945, the mine was worked under lease by Bargain Mines, Inc., which shipped 1,614 tons¹¹ of zinc ore to the Shattuck Denn mill at Bisbee.

In December, 1945, the property was taken over under option by Shattuck Denn Mining Corporation, which subsequently carried on extensive underground development, together with core drilling, and maintained intermittent production until the drop of metal prices in 1949. Early in 1951 the mine was being worked under lease by Sherwood Owens.

Production: The zinc output of the Abril mine, as reported in the U.S. Minerals Yearbooks, has been as follows:

Years	Zinc			Value
	Ore Tons	Lb. contained	Lb. recovered	
1945	1,614	no data	500,000	\$ 57,500
1946	7,123	no data	1,523,000	185,806
1947	9,990	2,435,910	no data	no data
1948	1,214	no data	no data	no data

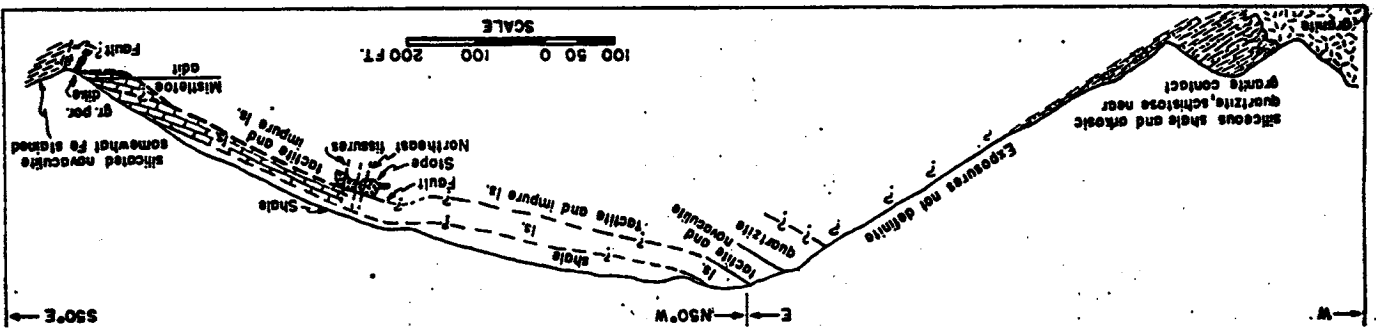


Figure 4.—Cross section of ridge at San Juan mine, looking north.

03/17/86

S OH

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: MUHEIM MINE

ALTERNATE NAMES:

ZINC BASIN
WHITE METAL

COCHISE COUNTY MILS NUMBER: 103

LOCATION: TOWNSHIP 18 S RANGE 23 E SECTION 10 QTR. E2
LATITUDE: N 31DEG 52MIN 58SEC LONGITUDE: W 109DEG 58MIN 41SEC
TOPO MAP NAME: PEARCE - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

LEAD-COPRODUCT
ZINC-(M) SILICATE-COPRODUCT
SILVER-COPRODUCT
BISMUTH-(M) BYPROD.-AFF. MARKET

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KEITH, S.B., 1973, AZBM BULL. 187, P. 69
ADMMP SAN JUAN FILE - SEE 1948 REPORT
~~AZBM BULL. 158, P. 28~~
USGS GEOL. SURVEY MAP MR-22

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine San Juan Mine

Date Aug. 15, 1952.

District Tombstone Dist., Cochise Co.

Engineer Axel L. Johnson

Subject: Mine Report

For details of this mine---- see report under date of June 8, 1952.

This mine was closed down on Aug. 7, 1952. The reason for its closing was the drop in the price of zinc.

The operators are planning on resuming operations again, when the price of zinc comes back to at least 17 cents per lb.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine San Juan Mine

Date June 4, 1952.

District Tombstone Dist., Cochise Co.

Engineer Axel L. Johnson

Subject: Mine Report -- Personal Visit

Location 16 miles NE of Tombstone. Go north 2 miles on Highway 80. Turn right and go 14 miles east on dirt road. Road in fair condition.

Number of Claims 14 unpatented claims.

Owner Jonathan Gordon, Box 516, Tombstone, Ariz.

Leaser and Operator William F. Shaw, Tombstone, Ariz. 15 % Royalty.

Metals Mined Zinc, with a small amount of Lead.

Men Employed 2 men-- day shift only.

Production Rate About 2 1/2 tons per day. Shipped 8 carloads (430 tons) in 7 mos.

Marketing Facilities Shipping the ore to the A. S. & R. Mill at Deming, N. Mex.

Geology Replacements in limestone. Ore is mostly sphalerite, with a small amount of galena, which contain fairly high silver values.

Ore Values Shipments so far have averaged about 19 % Zinc, about 1 % Lead, and about 2.25 oz. of Silver.

Mine Workings Ore is mined out by tunnels into the mountain on 3 different levels. There is about 2000 ft. of drifting on these 3 levels.

Past Production Considerable past production.

Proposed Plans To increase production by putting on more men.

Gordon, Jonathan & Jan
Tombstone, Arizona

Box 516

5-19-42

Cochise Co.

See G File

Re - zinc property

Small amount of Lead 6-4-52

See SAN JUAN ZINC -- Re requesting M.O.R. on mine -- 10/2/42

See Leaser and Operator - William F. Shaw, Tombstone, Ariz. 15%
6-4-52 Royalty.

SHAW, WILLIAM F. - Leaser and Operator, Cochise Co. 6-4-52

SAN JUAN MINE - Zinc, with small amount of Lead
15% Royalty

Owner- JONATHAN GORDON, Box 516, Tombstone, Ariz.

ZONA DEPARTMENT OF MINES & RESOURCES
Mineral Building, Fairgrounds
Phoenix, Arizona

1. Information from: R. H. Pichard
- Address: 244 W. Osborn Road - Phoenix
2. Mine: San Juan 3. No. of Claims - Patented _____
Unpatented _____
4. Location: China Camp - Dragoon Mountains
5. Sec. 10 Tp 18S Range 23E 6. Mining District Pearce-Dragoon
7. Owner: Howard Birchfield Sr. & Jr.
8. Address: _____
9. Operating Co.: _____
10. Address: _____
11. President: _____ 12. Gen. Mgr.: _____
13. Principal Metals: _____ 14. No. Employed: 2
15. Mill, Type & Capacity: _____
16. Present Operations: (a) Down (b) Assessment work (c) Exploration
(d) Production (e) Rate _____ tpd.
17. New Work Planned: _____
- _____
- _____
18. Miscl. Notes: F. E. visited camp on 1-3-68 & talked with watchman.
- _____
- Planning on shipping to N.J. Zinc at Hanover 150# sample ran - 38% Zn, .1 Pb
1.7 Ag, .16 Cu. Thinks they can ship 25% Zn, 5-6 Pb, & 8-10 Ag by truck to
Fairbank & rail to Hanover. Would like to have engineer stop in camp.
- _____
- _____
- _____
- _____

Date: 1-15-68

G. W. Irvin
(Signature)

G. W. Irvin
(Field Engineer)

CARLOS ROCHIN
MANAGER
REGISTERED ASSAYER
ARIZONA REG. No. 7126

HECTOR C. ROCHIN
FOUNDER
ARIZONA REG. No. 4073
FRANCISCO GONZALEZ, ASSOCIATE

HECTOR A. ROCHIN.
MINING ENGINEER AND
LAND SURVEYOR
ARIZONA REG. No. 2473

Rochin Assay Office, Inc.

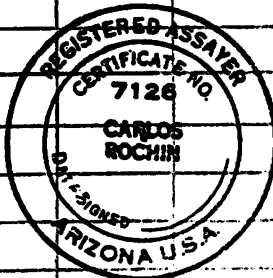
P. O. DR. 3507 - PHONE (AC 602) 364-8092

DOUGLAS, ARIZONA - 85607

ASSAYERS & METALLURGICAL CHEMISTS
CERTIFICATE OF ASSAY

Name: Big Sky Mining Co. Box 143 Pearce, Az. 85625

	GOLD (OZ)	SILVER (OZ)	COPPER (%)	LEAD (%)	ZINC (%)				
48341	0.44	0.56				Back of Missouri Shaft			
48342	0.14	0.12				Shaft #5			
48343	Tr	0.68				Pit Core			



REMARKS: _____ DATE: **November 9, 1982** CHARGES: _____

FLOW SHEETS

MILL DESIGN

BOISE ASSAYING & METALLURGY

1819 MAIN STREET

BOISE, IDAHO 83702 83705

509 345-6336

PH. (208) 345-6336

FIRE ASSAYS

CHEMICAL ASSAYS

SPECTROGRAPHS

FINENESS TESTING

CLIENT: OWYITE CALCIUM

ASSAY REPORT

DATE: 8/21/81

NO OR IDENT	AU OZ/Ton GOLD	AG OZ/Ton SILVER	CU % COPPER	PB % LEAD	ZN % ZINC		
10	.005	.925				Arizona #3	
	.004	49.846				" #4	
	.003	.067				Durkee	
11	TR	ND				Arizona #5	
12	ND	ND				Arizona #6	

CHARGES: \$75.00

ASSAYER: *[Signature]*

GREG VALENTIN

FLOW SHEETS
MILL DESIGN

BOISE ASSAYING & METALLURGY

1519 MAIN STREET BOISE, IDAHO 83702 83705
650 E. AMITY PH. (208) 345-6336

FIRE ASSAYS
CHEMICAL ASSAYS
SPECTROGRAPHS
FINENESS TESTING

CLIENT: OWYHEE CALCIUM

ASSAY REPORT

DATE: 8/17/81

NO. OR IDENT	AU OZ/Ton GOLD	AG OZ/Ton SILVER	CU % COPPER	PB % LEAD	ZN % ZINC	
2768	ND	.59	to follow	to follow	to follow	ARIZONA
2769	TR	3.62				" #1
2770	TR	37.44				" #2

CHARGES: \$45.00

ASSAYER: [Signature]
GREG VALENTIN

FLOW SHEETS
MILL DESIGN

BOISE ASSAYING & METALLURGY

1519 MAIN STREET BOISE, IDAHO 83702 83705
650 E. AMITY PH. (208) 345-6336

FIRE ASSAYS
CHEMICAL ASSAYS
SPECTROGRAPHS
FINENESS TESTING

CLIENT: OWYHEE CALCIUM

ASSAY REPORT

DATE: 8/21/81

NO. OR IDENT	AU OZ/Ton GOLD	AG OZ/Ton SILVER	CU % COPPER	PB % LEAD	ZN % ZINC	
2769	TR	3.62	(DUPLICATE)			ARIZONA 1st Run
	.002	4.558				" 2nd Run
	.001	4.298				" 3rd Run

CHARGES:

ASSAYER: [Signature]

INTRODUCTION

The Middle March Mine, Cobra Loma Mine and the Sorin Camp Mines are located in the southern part of the Dragoon Mountains, Cochise County, Arizona approximately 6-1/2 miles west of the old silver mining town of Pearce, Arizona.

The property is held by right of location by Mr. Bob Barber of Tucson, Arizona and is recorded in the Cochise County Court House.

I did not personally check the validity of the claims, or see if there were liens of record against this property.

The Middle March Mine at one time had a mill and a small smelter on the site, evidence of this is still visible, tailings ponds and slag piles are much in evidence.

When activities stopped on these properties is not known. I have had little time to do the research that should have been done before a full report is written.

The Cobra Loma and Sorin Camp Mines are reportedly an extension of the Middle March mineralized zone. These two properties were not examined by me, but all verbal reports from other reliable people, have been very favorable and should not be overlooked.

LOCATION & ACCESS

The property consists of 26 claims and is in the southern part of the Dragoon Mountains, Cochise County, Arizona, at an altitude of 5200 ft. to 6720 ft., and is located in Sections 1, 2, 11, 12, Township 18 South, Range 23 East, S.G.R. Base and Meridian.

The town of Pearce, Arizona is the closest settlement, and is accessible from the mine by 6-1/2 miles of dirt road. At Pearce, State Highway 666 connects to Bisbee to the south and Willcox to the east.

A Southern Pacific railhead at Dragoon, 24 miles north of the mine, is the closest rail shipping point.

The climate is mild, both winter and summer.

Water is plentiful from the old mine workings and from wells in the area.

Electric power is within 1 3/10 miles of the property.

The area is of gently rolling hills and small mesas. Oak brush, scrub cedar and juniper cover the hillsides. Ideal camp sites are available.

GENERAL GEOLOGY

Sediments, shale, sandstones and limestone metamorphosed to phyllite and schists, in areas cut by granitic and related crystalline intrusive rocks, make up the overall area in this part of the Dragon Mountains.

A Breccia zone of post paleozoic pre-cretaceous igneous rocks, can be divided into two geologic classifications on the basis of hydrothermal activity. The first group is not appreciably altered, the second group includes the underground porphyries and is intensely altered and intimately associated with mineralization.

This latter group appears to be about 1/4 of a mile in diameter, and could be classed as a feldspar quartz porphyry and is a soft green to greenish gray thoroughly altered rock with scattered disseminated pyrites, occurring in and around mineralized limestone areas as irregular stock or dikes and, in some instances, sills.

PREVIOUS WORK - HISTORY OF DEVELOPMENT

The area was first mined in the 1890s. A smelter and a mill were at one time on the property and, from the looks of the tailings dump and the slagg dump, the property produced a substantial amount of finished material. A record of the production from this area is not available at this time.

There is a reported 3-1/4 miles of drifting and incline shafts on the three properties. I have personally seen only about 1000 ft. of this.

Large glory holes (for the most part filled with water) apparently were the method of mining shrink stope. Very little timber was used.

A very good description of the underground workings, written by O. H. Smith, is attached herewith.

PREVIOUS WORK -

(From the main tunnel at the Middlemarch mine they went in 300 feet where, at this point they sank an incline shaft to the 7th level, from the incline shaft the main tunnel was driven in a southerly direction for an additional 88 feet, this drift could possibly be much longer, but now ends as an underground lake, 50 feet wide and 90 feet long, and full of water, one place where the glory hole could be measured, the depth was 38 feet. A drift driven in a westerly direction from the glory hole lake and also full of water is of an unknown length. West of the incline shaft is a raise, or possibly a winz, this is also full of water. A drift driven in an easterly direction from the incline shaft is closed by a cave in 65 feet from the incline shaft. At this point a raise to the hoist room, in excellent condition, (the steam hoist there gives one the impression that this property was shut down only yesterday) from the hoist room at 140 foot raise was driven on a near 60 degree incline to the surface, at this opening the large glory hole on the surface, 36 feet wide and 47 feet long tops out to the easterly side of the mountain. About 3 feet down from the top of the glory hole, a drift was driven in a westerly direction in the ore body, length of this drift is not known at this time.

There is a reported 3 1/2 miles of workings on these Properties.)

The above inserts from additions report dated October 7, 1966.

ECONOMIC GEOLOGY

Calchocite, azurite, covelite, calcopyrite, and bornite are the main copper minerals.

Gold, silver and zink are present in commercial grades.

The surface and near-surface ores show very small amounts of pyrites. The sulfides gradually increase with depth, large concentrations of which were noted at water level.

ORE RESERVES

A true width of 300 ft. and length of 3500 ft., exposed by drifts and shafts to 300 ft. below the surface and cut by numerous raises, prove the extent of this mineralization, indicating a very large body of mineralized material. Due to the extent of old workings, I have not given an estimate of the expected tonnages, grades of which would have to be sampled. It has been reported that nearly 300 assays taken on the Middle March property have averaged over 1.5% copper, 10% zink, 3 oz. of silver and 0.05 oz. of gold per ton.

An estimate of the tailings pile which had been sampled with a value of 0.6% copper and very heavy in zink, is in excess of 130,000 tons.

This report is based on an examination made of the Middlemarch Mine, November 15, 1966 and from verbal conversation with Mr. O. H. Smith, who was resident Engineer on the property at the time of my examination.

I found Mr. Smith to be a capable and conservative individual who extended to me all help and information possible.

I have no interest in this property, nor do I expect to receive any;

This Report dated March 18, 1967.

Respectfully Submitted by

G. A. Russell E. M.

of

G. A. Russell & Associates

Mining Consultants & Geologists

A Preliminary Report

on the

EGG BARBER HOLDINGS

~~Other Items, Middle March & Set in Case~~
~~March~~

Compiled and Prepared

by

G. A. RUSSELL & ASSOCIATES

[Handwritten signature]

TABLE OF CONTENTS

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CONCLUSIONS	2
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LOCATION AND ACCESS	5
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ECONOMIC GEOLOGY	8
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APPENDIX:

Maps-

Location (State Map)
Area
Claim

Assay Sheets Exhibit

Spectograph Exhibit

SUMMARY

The Middle March and related properties, Cobra Loma and the Sorin Camp Mines, are held by right of location by Mr. John Barber, and are located in the old Pearce Mining District. (The Pearce mine was one of the largest silver producers in the state before excessive water shut down the operations.) The area has been recognized over the past century as being a productive mineral belt and, due to the fluctuation of the metal market over the past years, has only worked when metal prices were high.

The Middle March property appears to be a breccia pipe and has certain characteristics of the Phelps Dodge open pit at Bisbee.

Enough of the old workings are open to inspection so that the tremendous size of this property can be readily grasped.

The 26 claims cover enough ground to insure a large operation.

The availability of water, power and economical transportation helps to add to the value of this area.

CONCLUSIONS

The Middle March mine area is worth spending money on. I believe it has passed the prospect stage and has, with proper management, the possibilities of making a mine of merit.

All indications are that a large body of mineralized material did exist there, and that the old work done on this property has only increased the value and not depleted the reserves, as present day mining methods have made possible the extraction of lower grade ores at a larger profit than was possible a few years ago, while mining higher grade ores with large equipment, open pit methods, new techniques on the extraction of copper from oxide ores, and the higher prices now being enjoyed by the metal mining industries, all help to enhance the value of this property.

RECOMMENDATIONS

That this property be acquired, and a preliminary exploration program be instituted, the geological work done, mapping of the underground workings, a sampling program be set up and, if possible, a few diamond drill holes be drilled to find out additional tonnage of high grade ores.

A leaching plant could be installed at about too much cost, as there is a partial plant now on the property.

A small leaching plant would help pay development costs and could possibly make a small profit for the owners.

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The above inserts from J. I. ... report dated October 7, 1956.

ECONOMIC GEOLOGY

Chalcocite, azurite, covellite, calcopyrite, and bornite are the main copper minerals.

Gold, silver and zinc are present in commercial grades.

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This report dated March 18, 1967.

Respectfully Submitted by

G. A. Russell E. M.
of

G. A. Russell & Associates
Mining Consultants & Geologists

(3)

a large hill, or small mountain, which apexes on the Washington. The ore of the Missouri and the Emma dip towards the center of this hill.

Continuing in a northwest direction to the Ella mine, there is a shaft that was started on a small bunch of ore, and then continued down on a stringer. At a depth of 137 feet a large body of low grade ore was encountered. This shaft followed the stringer, and it was necessary to incline the shaft slightly, and also to make several small twists, or changes in the pitch of the incline. This made the shaft uneven and impaired the air circulation, so that after sinking a few feet in the ore, it became necessary to cease until better air was provided. Nothing further has been done at this point.

Several hundred feet beyond the Ella shaft, in a northwestern direction, the vein as outlined on the surface by the iron croppings, turns slightly towards the north. Here, on the Cobreloma the out-croppings are quite pronounced, and a tunnel was started to cut the vein. This tunnel continued until it reached the Lacima claim, where the ore was finally cross-cut. After the ore was cross-cut, a drift on the ore was started and continued for a total of almost two hundred feet. There is ore all the way. A cross-section of the ore in this drift, may be likened to an inverted V. The ore pitches slightly towards the northeast, and from a width of one or two feet in the roof, it widened to four or five feet in the floor. The end of this drift is now all in ore. The assays have varied from 2% to 11%, with an average of about 7% copper, and carrying some gold and silver. It also contains much black iron and fluorspar. This drift appears to be just on the top of the ore body, and had it been started fifteen feet higher on the mountain side, it would probably have missed the ore entirely. There are now on the dump of this Cobreloma several RR car loads of good ore, the amount being less from the fact that the drift was along the wall and not in the body of the ore.

Beyond the Lacima, in a northwesterly direction, is the Copper Glance. This claim has the usual iron out-croppings, and the several small shafts show a little ore. This claim is high up on the mountain side, and as the workings in the Lacima ore body are headed directly towards this ore on the Copper Glance, it is deemed easiest to tap the Copper Glance ore from the Lacima workings.

The Democratic Lobby No. 1, has a small amount of very good carbonates, that assay well, but the small amount of work done there does not show what the extent of the ore may be. It is a distance vein from the Missouri, Washington, Emma, Ella, Cobreloma, Lacima and Copper Glance mines. All these last could probably be better worked from a central shaft sunk on either the Cobreloma or Lacima.

The property is quite well equipped with office buildings, bunk house, dining room and kitchen furnished, assay office, store, boiler house, mill buildings, blacksmith shops and all amoutenances. At the mill building there are several boilers and engines of various sizes, rock crushers, Huntington mills, and smelters, besides all kinds of minor equipment, such as drills, pipe, pumps, etc. At the present time, there is also more than a car load of timber, a carload of coke, a tank of fuel oil and a large quantity of wood.

The distance from Middlemarch to Pearce is eight miles, and the hauling rate is \$1.75 per ton, and when there is a return.

(1) To the Board of Directors of the Middlemarch Copper Co.

In compliance with your request for a full statement of the present development and condition of the mines of the company, I report as follows:

The company is incorporated under the laws of the State of California, with a capital stock of \$3,000,000, represented by 30,000 shares of the par value of \$100 each. Of these 19,995 shares are issued and in the hands of the stockholders, and the remainder in the treasury. There is no preferred stock, and no mortgages or other incumbrances upon the property.

Middlemarch is situated near the center of Chocoma County, Arizona, about 14 miles northeast of Tombstone, the county seat, and eight miles west of Pearce, the nearest railroad point. The Arizona Eastern, a branch of the Southern Pacific, runs through Pearce.

The property now consists of thirty-five claims, situated on the east slope of the Driest Mountains. The claims are all adjoining, and comprise a tract over two miles long, and half a mile wide.

The formation is limestone lying between several almost parallel dykes of granite-porphry. The ore is found at the contact between the lime and the granite-porphry.

Every claim has more or less work done on it, and all show more or less mineral, but those showing most values, and having the most development work are the Missouri, Ella, Cobreloma and Lacima. The work on the Lacima is reached through the Cobreloma tunnel, which opens on the Cobreloma claim.

A line drawn between the extreme ends of the Middlemarch and the Copper Glance claims, and embracing the Missouri on the northeast and the Emma on the southwest would represent the most highly mineralized and also the best developed part of the property. Here there are several veins with varying amounts of ore in view. All these veins run northwest and southeast, and the known ore deposits are quite well indicated on the surface by iron stain and iron out-croppings.

The Missouri is the principal mine, from the point of development, in the camp. Ore was found on the surface of this claim, and has continued downward as far as the work has gone, a total distance of over four hundred feet from the surface. The surface ores were a good quality of carbonates, being azurite and malachite, with some bornite interspersed through it. With depth, water was reached and the ore turned to sulfide, chalcocite predominating. After water was reached, and for a distance of about one hundred and fifty feet, the ore was of a leached-out low grade character, the assays varying from two and one-half to five percent in what was considered ore. After passing through this leached section, the ores gradually improved until they approached seven per cent or better in the neighborhood of station 6.

In the early days of the camp, or before water was reached, a small furnace of about fifty tons capacity was erected, under the mistaken belief that the surface values continued downward.

This furnace was operated successfully for a time, as the surface ores carried fair values of gold and silver as well as being high in copper. The leached out section was too low grade for the capacity of the smelter, as well as being high in silica and deficient in lime and iron; however, the smelter was operated

(4)

cargo, the rate is considerably reduced. The road is good and a gentle downgrade. A large proportion of the fuel used is wood hauled from the neighboring hills, and costing from \$3.50 to \$4.50 per cord delivered. There are also coal bins, and a fuel oil tank. The boilers are fitted with oil burners, and California fuel oil is obtained at a low price. The furnaces are so constructed as to use either oil or wood fuel.

Respectfully,

Oct. 1, 1913

Edward J. Kelley,
Superintendent.

(2)

for a time, lime being taken from the immediate neighborhood and used as a flux.

At this time, two Bartlett concentrating tables were installed, and the low grade sulphide ores tested with a view of removing some of the silica and thus make the concentrates available to assist in smelting the other ore. The experiment was a success, but, as the ore in the lower part of the Missouri, which was being steadily developed during the installation of the concentrators, changed for the better, the proposition to increase the concentrating plant was abandoned as unnecessary. The ore from near the No. 6 level was richer in copper, contained more iron, and far less silica.

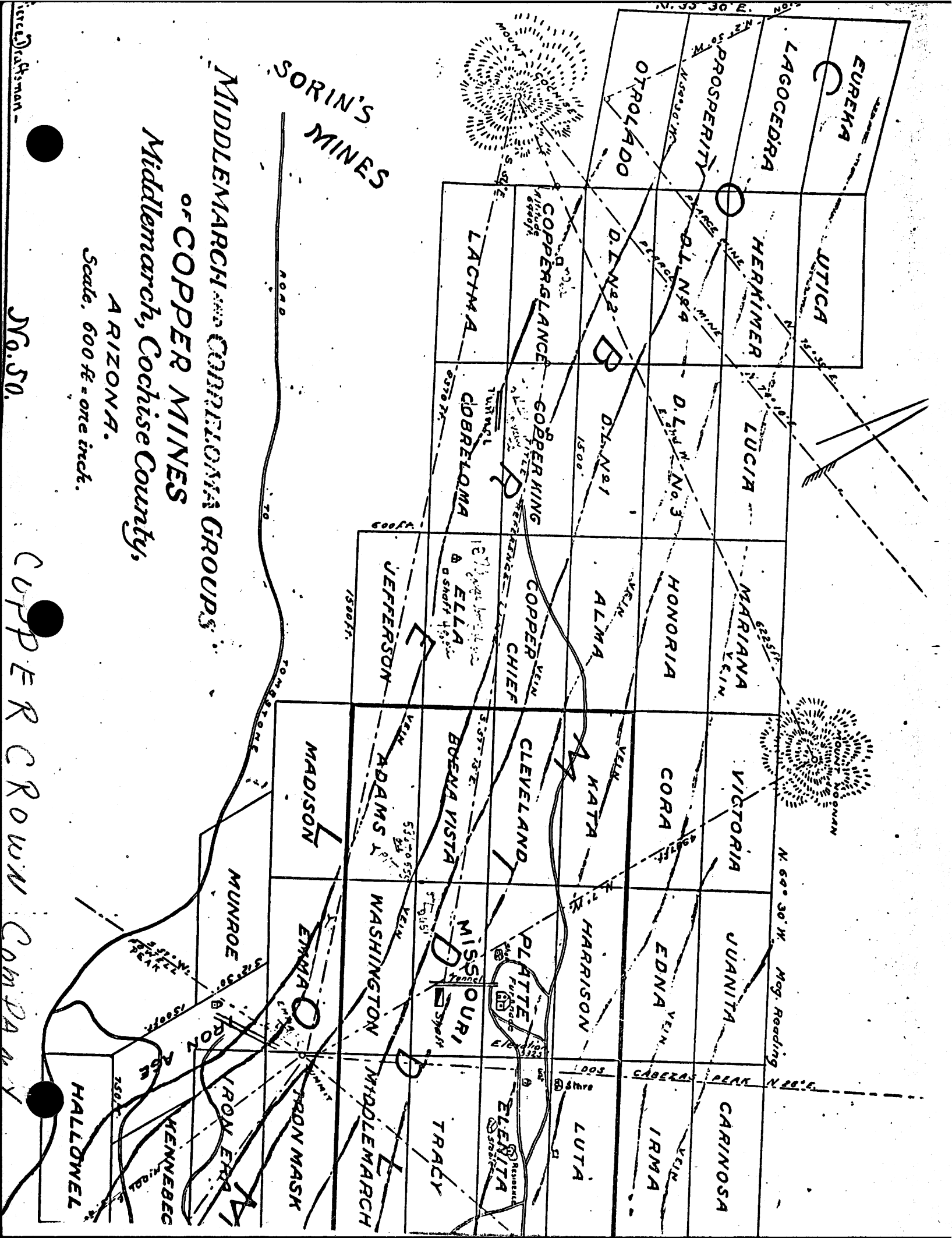
The ore body of the Missouri dips at an angle of about 45 degrees, and the lower workings are reached by an incline shaft or winze sunk in the footwall. This incline extended to station #6. When work stopped here a few years ago, the water acted on the lime in the rock, and caused an extensive cavein. The shaft was afterwards recovered and timbered, but station #6 was found in such condition that it was decided to continue the incline and cut a new station beyond the old one in better ground. Only a little work was done when the work was stopped for lack of funds.

The Missouri has numerous levels and winzes. The drifts that encircle the ore body make the measuring for tonnage fairly accurate. With depth each level shows the ore bodies to be slightly larger than on the level immediately above. Some engineers have estimated more than 200,000 tons of ore in sight, with more than 100,000 tons blocked out. I am of the opinion that such estimate is too high, but think it safe to say that there is 125,000 tons in sight or accessible. This will assay from 2% to 4% copper, with a little gold and silver. Some will go below 2% and some much better than 4%. Unless the ore is roasted, the wet assay will be from 1% to 2% less than the true values. Fifty-two engineer's samples assayed in Phoenix, averaged about 3-1/2% copper. No estimate is made for level #5, as it is inaccessible for present examination on account of water, and unknown condition, although what was apparently a large body of sulphide ore was reached there.

The Missouri mine is quite well equipped with boilers, hoisting engine, station pumps, air-compressor, machine drills, sinking pump, cars and other necessary equipment. It has over three thousand feet of underground work done, and is in shape with little preparation to start work sinking and cutting out a new No. 6 station, if it is thought best to prosecute work in that direction.

The ore body in the Missouri pitches about 45 degrees to the southwest, or towards the Emma claim. Between these claims lies the Washington claim, which has several small shafts and some ore exposed to view. During the smelting period, large quantities of high grade carbonates were mined from the Washington, and smelted. This ore body narrowed to a mere stringer, and development was stopped, as it was decided that this contact could be better explored at a lower depth by a drift on the No. 5 level of the Missouri, which was being run in a southwesterly direction.

On the Emma there are several small shafts each of which show azurite and malachite. The work done here serves to demonstrate that the ore here pitches northeast towards the Missouri. Work was stopped here, as it was decided that this ore body could also be better explored by the southwest drift on level No. 5 of the Missouri. The Missouri and Emma are on opposite sides of



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COPPER CROWN COMPANY

MIDDLEMARCH COPPER GROUPS

OF COPPER MINES
Middlemarch, Cochise County,
ARIZONA.

Scale, 600 ft. = one inch.

beneath the northward-dipping low-angle slip, associated with tight northeast fissures.

LAST CHANCE OR 1907 MINE

The Last Chance mine, formerly known as the 1907, is on the northern slope of Casey Hill, approximately ½ mile northwest of Courtland.

Work in this area was started many years ago, and some oxidized zinc ore from the 1907 mine is reported to have been shipped to Kansas for paint manufacture. In 1949 the Last Chance claim was held by A. G. Stevenson and leased by D. F. Morris⁹ who shipped from it nine carloads of sulfide ore that contained an average of 19 per cent zinc and 7 per cent lead, together with a little gold and silver.

In this portion of Casey Hill, the principal rock is medium-bedded gray Naco limestone which in places includes lenses of chert and layers of shale or hornfels. Monzonite porphyry irregularly intrudes the limestone.

The beds dip prevailingly eastward but locally are deformed by flexures, low-angle faults, and steeply dipping faults.

An old shaft, reported to be 100 feet deep and with approximately 75 feet of southwesterly drift, passed from limestone into porphyry at a depth of 30 feet. Stopes beginning near the surface immediately west of this shaft extend southward in limestone beneath a low-angle fault or bedding slip which dips irregularly but locally forms a low anticlinal structure. These workings are limited on the north and south by steeply dipping faults of eastward trend.

The ore body stoped in 1949 occurred near the south boundary fault and ranged in thickness from 1½ feet on the north to 10 feet on the south. It contained sphalerite together with pyrite and subordinate galena.

CENTRAL DRAGON MOUNTAINS AREA

GORDON MINE

Situation: The San Juan or Gordon group of fourteen claims is the west-central part of the Dragoon Range, about half a mile south of China Peak. This area is accessible by 3 miles of road that branches north from the Middlemarch or Abril road at a point 14 miles northeast of Tombstone.

History: The San Juan property has been held for many years by Jonathan Gordon. Development prior to 1947 included more than 1,000 feet of workings, largely within the Sulphide and Silver connecting adits. Some zinc ore was shipped during 1913-15 and 1925.

In 1947 Operations, Inc., leased the ground, constructed 3 miles of access road, and erected at Tombstone a concentration plant of 100 tons daily capacity. This company suspended production before the end of that year. Billingsley Machinery Company bought the mill and in September, 1948, reopened the mine. When visited in March, 1949, more than 15,000 tons of ore had been mined and milled in the preceding six months. The property closed down in

May, 1949, owing to the drop in the price of zinc.¹¹ In June, 1951, Mr. Gordon was reported to have resumed work at the mine, and Lomelino Mineral Development Company had purchased the mill at Tombstone.¹²

Production: Available production figures, as compiled from the U.S. Minerals Resources volumes and U.S. Minerals Yearbooks, are as follows:

Years	Tons of ore	Pounds of zinc	Value
1913	?	36,503	\$ 2,044
1914	?	39,324	2,006
1915	?	63,386	7,860
1925	48	32,592	2,477
1947	4,000	639,800	77,416
1913-47		811,605	\$91,803
1948	2,584	?	?

Figures regarding the amount of zinc recovered in 1948 and 1949 are not reported.¹¹

Ore shipped in 1915 carried 40 per cent zinc and 8.5 ounces of silver per ton.¹³ The 1947 output of zinc ore is reported to have contained less than 1 per cent lead and less than 2 ounces of silver per ton. According to W. M. Shaw, mine superintendent in 1949, several thousand tons of ore mined immediately prior to March of that year averaged about 1 per cent lead.⁹

Geology: The San Juan mine is on the west side of a south-eastward-trending gulch, at an altitude of approximately 6,400 feet. Some of the geologic relations are shown in Figure 4.

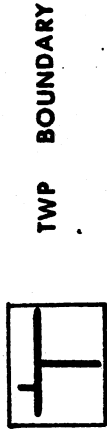
In the ridge at the mine, the following succession of rocks, from lowest to highest, is exposed: Quartzite, light-colored and fine grained, of Permian aspect, approximately 60 feet thick; gray shale, in part siliceous or novaculitic, with some impure limestone beds, locally metamorphosed to epidote, garnet, and other silicates (tactite), approximately 40 feet; bluish-gray limestone conglomerate and limestone, separated from underlying beds by low-angle fault, approximately 30 feet; thin-bedded dark to brownish shale, in part sandy, caps eastern slope of ridge. Presumably the conglomeratic limestone and overlying shale are Cretaceous.

In the mine workings, the prevailing southeastward dip of the beds is modified by broad, low flexures. Also, faults which trend N. 30 degrees W. and N. 70 degrees E. have effected relatively small displacements.

The side gulch immediately south of the mine apparently marks the location of a fault trending N. 65 to 70 degrees W. and with its northern side downthrown. South of it is exposed siliceous gray shale interbedded with cherty gray limestone and capped by fine-grained light-colored quartzite. Near the supposed fault in the side gulch, these beds dip steeply north, but within a short distance southward they flatten to low dips.

The main gulch east of the mine presumably marks a fault of northward trend, with its west side downthrown as indicated in Figure 4.

Granite invades the sedimentary series on the west (Fig. 4).



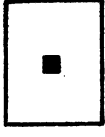
TWP BOUNDARY



TWP SECTIONS



MIDDLEMARCH PROPERTY BOUNDARY
APPROXIMATE - UNSURVEYED



PAST MINING SITES - SHOWINGS
POSITION APPROXIMATE



MAIN ACCESS ROADS
POSITION APPROXIMATE

MIDDLEMARCH PROPERTY

SCALE: 1" = 2000'

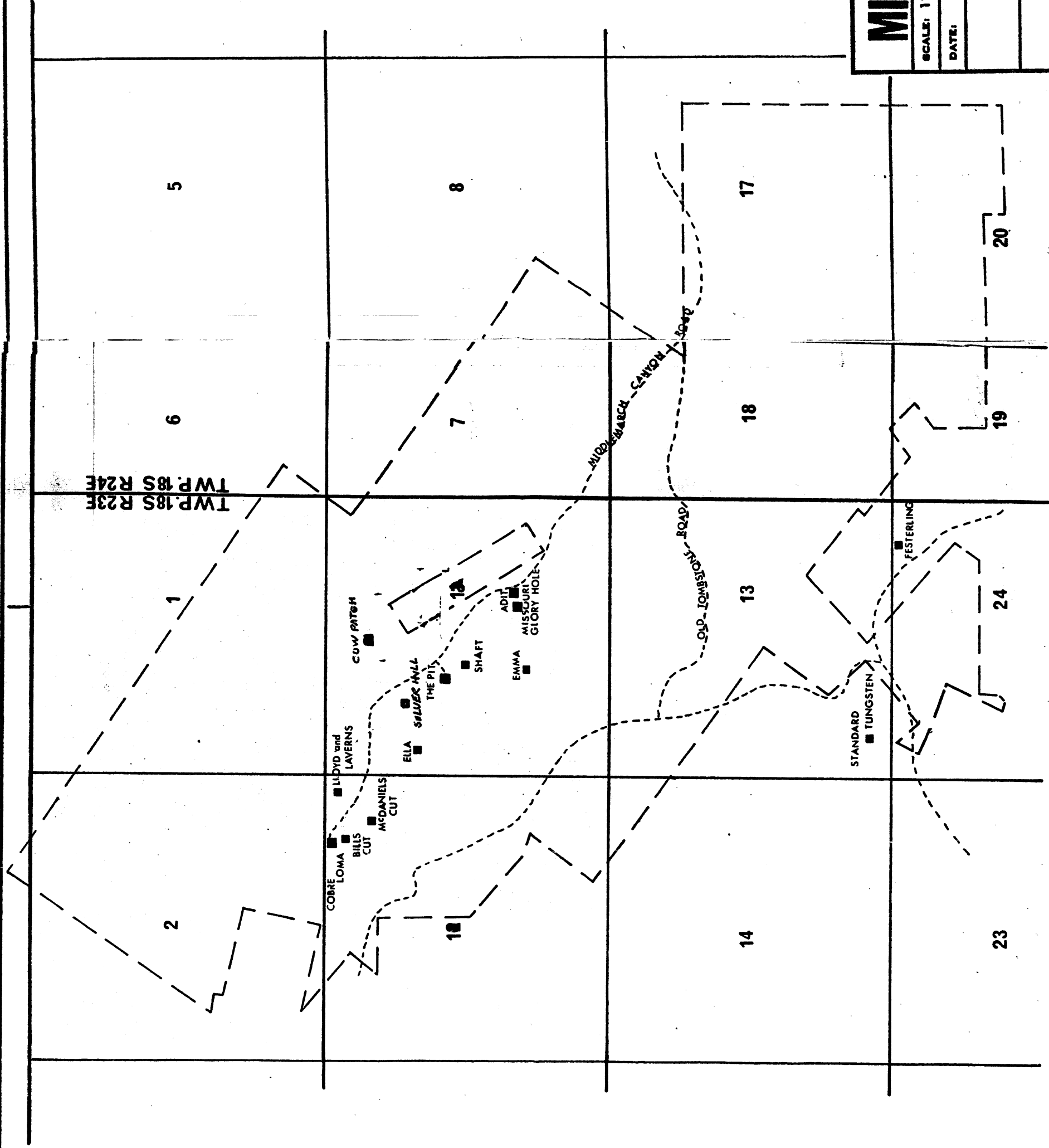
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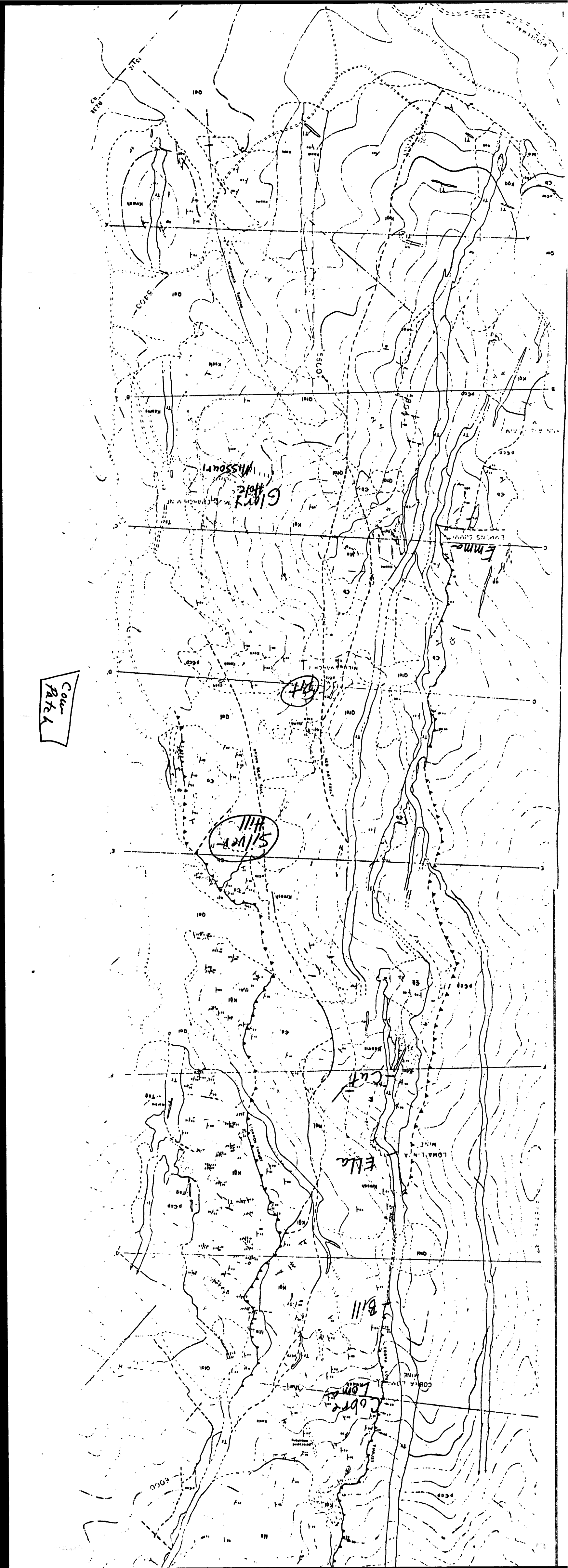
DATE:

CLAIM BOUNDARY

DRAWING NUMBER



TWP. 18S R23E
TWP. 18S R24E



Cow Path

Silver Hill

Cott

Ella

Bill

Loma

Emme

Glarv
Missouri