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ASARCO

JDS

Sec. 15-16, T6N, R18W

Exploration Department
Southwestern United States Division

James D. Sell
Manager

December 6, 1988

Mr. Franklin Mack
8655 East Phillips Avenue
Englewood, CO 80112

Dear Franklin:

Your letter arrived concerning the availability of the mine-preliminary geological report on Mr. Meriwether, Sr., claim group in the Plomosa Mountains, has arrived. Thank you for contacting Asarco Exploration.

The area is within our Winter Projects area and we would appreciate receiving the information on the property prior to making a visit to the area.

How are your properties in the Ludlow-Barstow area coming along, since we last had contact?

Thanks again for the information and I look forward to a visit.

Sincerely,

James D. Sell

JDS:mek

ASARCO Incorporated P. O. Box 5747 Tucson, Az 85703
1150 North 7th Avenue (602) 792-3010

November 28, 1988
8655 East Phillips Avenue
Englewood, CO 80112
Phone:(303)799-6620

SARCO Incorporated
DEC 1 1988
SW Exploration

Exploration Manager
ASARCO
P. O. Box 5747
Tucson, AZ 85703

Dear Sir:

For your information and possible interest, I would like to briefly describe a mineral property in the Plomosa Mountains of West Central Arizona that is currently available for lease. I have been asked by the claim owners to bring this potentially significant gold property to the attention of a number of mining company representatives.

The property is within an area of extensional tectonism not far from the Cyprus Minerals Company Copperstone gold mine. The Plomosa Mountains in the vicinity of the claims may be underlain by a metamorphic core complex. A definite structural framework is not complete at this time but more geologic mapping is planned to gain a better understanding.

A number of mostly shallow exploration test pits and shafts were sunk on mostly high angle northwest striking quartz vein structures mineralized with copper oxides and gold. Accessory mineralization includes manganese, barite and earthy-specular hematite. Gold values up to 0.145 opt were encountered. Low angle mineralized structures are also present.

I believe that copper-gold mineralization hosted in deeper low dipping breccia zone was the primary source for the mineralization which migrated upward and deposited into the high angle fault zones. A late phase of hot spring activity appears to have occurred after the primary mineralizing event.

Geochemically, the prospect has high manganese and barite values with moderately significant uranium. The Copperstone orebody has anomalous values in the preceeding elements. This suite of elements is significant for the Plomosa Mining District and warrants additional attention.

A preliminary geologic report is available for this property upon your request to me. An onsite examination can be arranged by

by calling either Mr. Jim Meriwether,Sr. in Quartzite, Arizona at (602)927-4264 or myself at (303)799-6620.

Very truly yours,

Franklin Mack

JDS

FILE

Meriwether Claims
Sec. 15-16, T6N, R18W
Plomosa Mining Dist
La Paz Co., AZ

December 9, 1988
8655 E. Phillips Ave.
Englewood, CO 80112
Phone:(303)799-6620

Mr. James D. Sell
Manager
Exploration Department
ASARCO
Box 5747
Tucson, AZ 85703

Dear Jim:

Please find enclosed for your information a geologic report for the Plomosa Meriwether claim block. It is still available for leasing as of this date.

Since your last visit to the Cady Mountain claims near Ludlow, additional geologic work in the area indicates that we are dealing with a potentially mineralized upper plate block, the andesite, overlying a low angle detachment fault. In light of the newly generated information, a renewed interest has been taken by several mining companies. The Bagdad Chase mining property south of our prospect is a "look alike" Copperstone Mine(detachment fault hosted gold-copper property).

Thank you for your in erest in the Plomosa Property.

Very truly yours,

Frank Mack

FILE

ASARCO Incorporated
DEC 12 1988
SW Exploration

PRELIMINARY GEOLOGIC REPORT

MERIWETHER CLAIM GROUP

Sec. 15-16, T6N, R18W

PLOMOSA MOUNTAINS

PLOMOSA MINING DISTRICT

LA PAZ COUNTY-ARIZONA

REPORT BY: F. W. MACK

CONSULTING GEOLOGIST

PRELIMINARY GEOLOGIC REPORT FOR THE MERIWETHER CLAIM GROUP-PLOMOSA MOUNTAINS-LA PAZ COUNTY-ARIZONA

INTRODUCTION

The Meriwether property is on the western flank of the Northern Plomosa Mountains, Plomosa Mining District, La Paz County, Arizona. Cyprus Minerals Company Copperstone open pit gold mine is about ten miles westerly of the claim group in the Northern Dome Rock Mountains.

ACCESS

Portions of the prospect area can be reached by two wheel drive vehicles but most of the area is only accessible by four wheel drive transportation.

SIZE OF AREA

The claim block has 262 unpatented lode mining claims with an area of ±8.0 square miles. Several owners are involved however Mr. Jim Meriwether, Sr. holds a power of attorney for the entire group.

GEOGRAPHY

Relief and Elevation

Topographically, the property area ranges from a relatively level area of alluvium on the west to low rounded NE-SW linear ridges. Eastward, the topography becomes increasingly rugged.

The elevations of the western area are ±1000 feet increasing up to ±1400 feet above sea level on the eastern boundary of the claims.

Drainage

Intermittent drainage patterns usually follow a southwest to westward direction of flow. Most of the rainfall occurs during the summer months as flash flooding.

Vegetation

Typical desert vegetation is found throughout the area. Mesquite, palo verde and ironwood trees are found mostly along drainage areas. Cactus are represented by saguaro, cholla, barrel etc. Brush is dominated by creosote and a variety of grasses etc.

MINING AND EXPLORATION HISTORY

Only small scale and limited amounts of mining and exploration work has been carried out on the claims. The early day miners explored by means of shallow prospect pits or trenches. Exploitation was carried out by means by sinking slightly dipping shafts on veins and drifting along high grade levels of high grade gold-copper mineralization. The deepest workings are about 75'. Open cut mining was observed locally. Mr. Meriwether, Sr. has opened some prospect pits, trenches and open cuts as well as drilling some shallow rotary holes with a portable drilling machine.

Most recently, Homestake Mining Company drilled two shallow holes on the subject property only to comply with a contractural assessment requirement. The holes were drilled in alluvium along a road. Homestake also took about twelve rock chip samples from old workings.

Homestake Drilling Summary *

Hole EC-4

Overburden	0 - 147'
Schist	147- 165'(T.D.)

No significant gold values were encountered.
140-145 0.05 opt Ag
155-160 0.02 opt Ag

Hole EC-5

Overburden	0-200'(T.D.)	
35-40	0.002 opt Au	0.02 opt Ag
55-60		0.04 opt Ag
115-120		0.03 opt Ag
135-140		0.06 opt Ag

Soft ground conditions(surface) did not permit mobilizing the drill off the main access road to the planned testing area. This work was performed during the month of August 1988. The preceeding drill holes were drilled off the Meriwether property.

*See later report when all 5 holes/assays listed.

About a year ago, FMC collected seventeen rock chip samples. Multi-element analyses were determined for eighteen elements.

No comprehensive geologic evaluation or mapping of this property has been performed to date.

REGIONAL GEOLOGY

The north trending northern Plomosa Mountains are composed of mostly Mesozoic metamorphic rocks of sedimentary and possibly volcanic origin. Locally small outcrops of Precambrian metamorphic rock is present. Tertiary granitic stocks and volcanics intrude the older rock types. The Plomosa Range in this area may be underlain by a metamorphic core complex.

The Plomosa Mountains are within an area affected by Mid-Tertiary detachment faulting. The low angle extensional thrust faulting predates the Basin and Range faulting.

Along the western border of the range, a gently sloping alluvium covered pediment partially cover small outlying hills composed of gneiss. This alluvial valley is called La Posa Plain.

GEOLOGY OF THE CLAIMS

To date, only a preliminary overview of the claim block geology has been performed by the author. Additional geologic mapping is planned for the near future.

Most of the rock observed is a thinly laminated, banded biotite gneiss. Although no petrographic work has been performed on this rock, it is assumed to be of sedimentary origin with possibly local volcanic zones. Locally, within the westward dipping foliate sequence are bands of biotite rich gneiss, also zones of gabbroic composition. Most of the epithermal Cu-Au mineralized zones are hosted in this mafic lithology.

The gneiss has undergone varying degrees of alteration. The biotite has been weakly to strongly chloritized. Locally bands of bleaching resulting from argillization and sericitization alteration. Some epidote was observed.

Mineralization

The small mineral deposits found on the claims are of epithermal origin. Possibly overprinted on this may be a later phase of hot spring mineral deposition.

All of the sulphide mineralization has been oxidized to massive and cellular limonite. No sulphide mineralization was observed.

Associated with the gold-copper oxide(chrysocolla) mineralization are varying amounts of barite, hemitite(both specular and earthy), manganese, calcite(locally iron and manganese stained) and quartz. Some chalcedony and aragonite were observed.

GEOLOGIC MAPPING

Geologic mapping by the author has been performed at three sites of the property. Sites mapped on a scale of 1"-100' were of old mine workings, prospect pits and trenches. Other sites were visited, notes taken and location noted. These sites will be mapped in the near future.

GEOCHEMICAL ROCK CHIP SAMPLING

About thirty rock samples were collected by FMC and Homestake Mining Company. Most samples were collected from the vicinity of old workings and prospect diggings. The following is a brief discussion of the more significant element values:

1. Gold

About half of the samples analyzed are geochemically significant. Values range from 10 ppb up to 0.145 ounces per ton of gold.

2. Copper

Copper values range from ten parts per million up to a high of two percent. About two thirds of the copper values are geochemically significant.

3. Manganese

Most of the manganese values are anomalous. Values ranged from 260 ppm up to 0.90%. Only thirteen samples were analyzed by

Homestake for manganese.

4. Uranium

About one third of the thirteen samples taken by Homestake were anomalous in uranium. The values ranging from 5 ppm up to 8 ppm are not considered strongly anomalous.

5. Barium

Two thirds of the barium samples were significantly anomalous with values ranging from 710 ppm up to 1.12%.

Geochemical Summary

Although other element values were determined by FMC and Homestake, the preceeding are the most significant for the Plomosa Mining District. The Copperstone gold deposit is characterized by significant amounts of barium, manganese and uranium.

Homestake did not supply a map showing their sample locations but they did tag and flag some sites. FMC located nine sites on a 1"-2000' map but did not mark the samples in the field.

MINERAL POTENTIAL OF MERIWETHER CLAIMS

At this point in time, the author has not determined with certainity if any hanging wall or upper plate rock units overlie the lower plate lithology.

Two areas of observation, one at the Red Top claims and the other at the Cactus Rat claims have exposures of a rock type that appears to be lithologically dissimilar to the thinly laminated gneiss which is commonly found throughout the area. This other rock type is more highly deformed, more basic and fractured. Breccia is locally exposed. Fault plane dips are low angle. Abundant amounts of red earthy hematite and chlorite are present. Some areas have abundant amounts of barite and specularite as well as lesser amounts of copper and manganese. High angle faulting is also observed. Hot spring sinter deposits locally coat rock surfaces and fill fault zones. The highly broken nature of this formation

suggests typical brittle upper plate or hanging wall rock but additional mapping will have to be completed.

The scattered mineralized areas of this claim group represent in my opinion an upward leakage of mineralization into the mostly high angle fault zones from underlying mineralized source structures. I feel that at a reasonable depth there may be low angle fault breccia host structures with potentially significant gold mineralization.

RECOMMENDED EXPLORATION PROGRAM

A geochemical approach toward locating drill targets would be to sample rock on a 100' to 200' grid pattern and determine the distribution of significant elements in the vicinity of gold-copper-manganese-barite-iron leakage halos.

Certain geophysical surveys, such as I.P., may prove useful not only over covered areas but over rock exposures as well.

DATA AVAILABLE FOR REVIEW

The Homestake drill data and geochemical results as well as the FMC work is included in this report.

Franklin W. Mack

FRANKLIN MACK

CONSULTING GEOLOGIST

BRIEF GEOLOGIC COMMENTS

FOR

SITE AREAS I II AND IV

MERIWETHER CLAIM BLOCK

GEOLOGY OF SITE I AREA

LOCATION

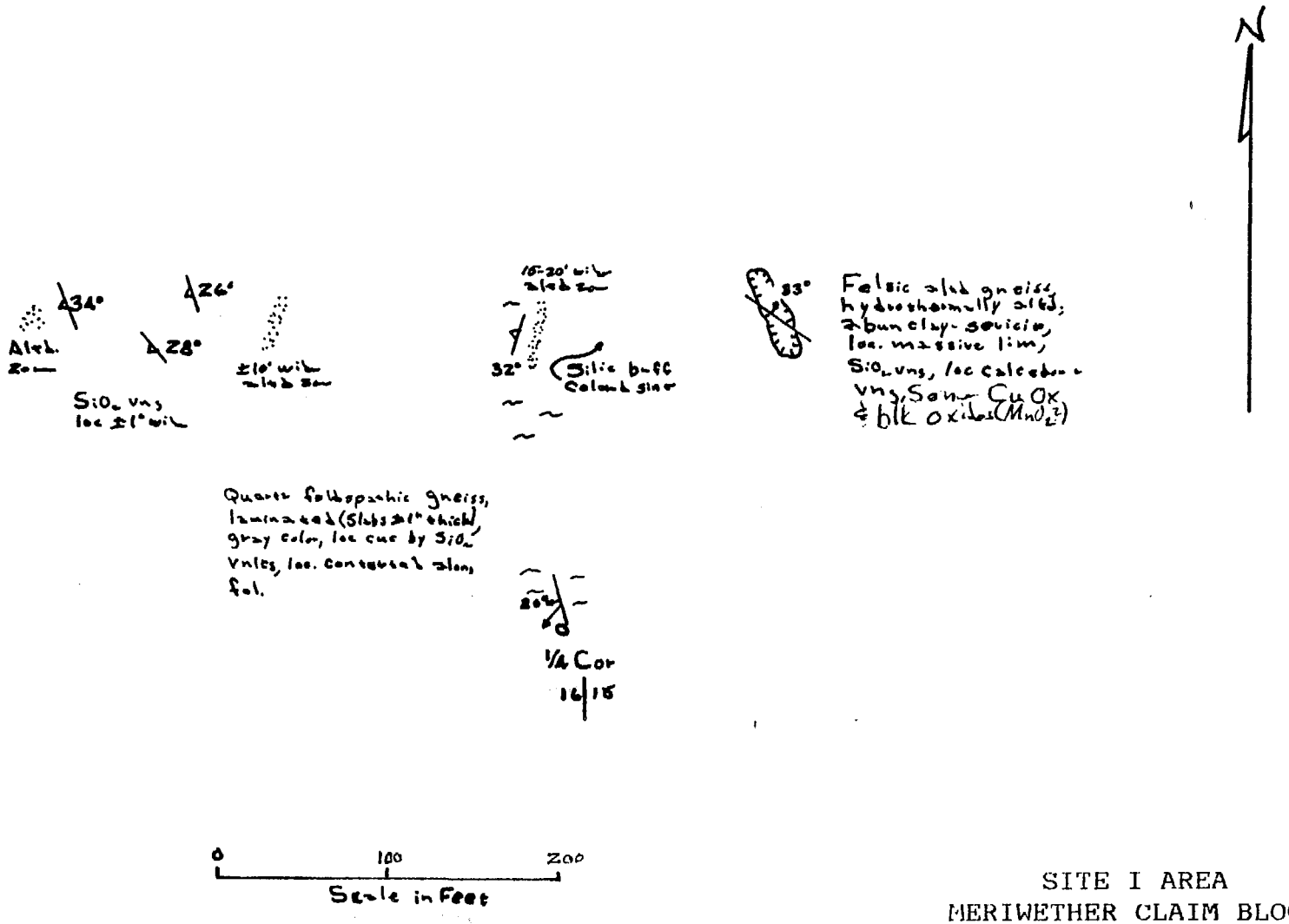
This east-west linear ridge about 40' high is first encountered after crossing the wide E*W sandy wash not far from the Meriwether Camp.

GEOLOGY

The ridge is mostly composed of a low to moderately westward dipping foliate gneiss. Dips range from 20° to locally 34° west to southwestward.

Locally along the ridge mostly north-south altered bands 10 - 20' wide have been bleached by alteration. Some approximately 1" wide quartz veining is also present with pegmatite veining locally.

The open cut consists of a zone within the felsic gneiss with a band of biotite-basic gneiss that has been subjected to moderate amounts of hot spring hydrothermal fluid. The rock is altered to clay-sericite-chlorite. Locally massive limonite after sulphides is present. Quartz(vuggy & drusy) veining with lesser calcedonic veining is found within the main vein. Chrysocolla, an unidentified black oxide(possibly MnO_2) & hematite staining are found throughout the cut. The vein strikes N 57° W and dips 33° NE. Homestake sampled this working but the tag is missing.



SITE I AREA
MERIWETHER CLAIM BLOCK
PLOMOSA MOUNTAINS
PLOMOSA MINING DISTRICT
LA PAZ COUNTY-ARIZONA
MAP & GEOLOGY BY: F. W. MACK
SCALE 1" = 100'

GEOLOGY OF SITE II AREA

LOCATION

Site II is about 2000' northeast of Site I.

GEOLOGY

The country rock is composed of the same rock as Site I, a thinly laminated, foliate gneiss. Strike directions of foliations vary(see map). Dips range from a low of 10° west up to 36° northwest.

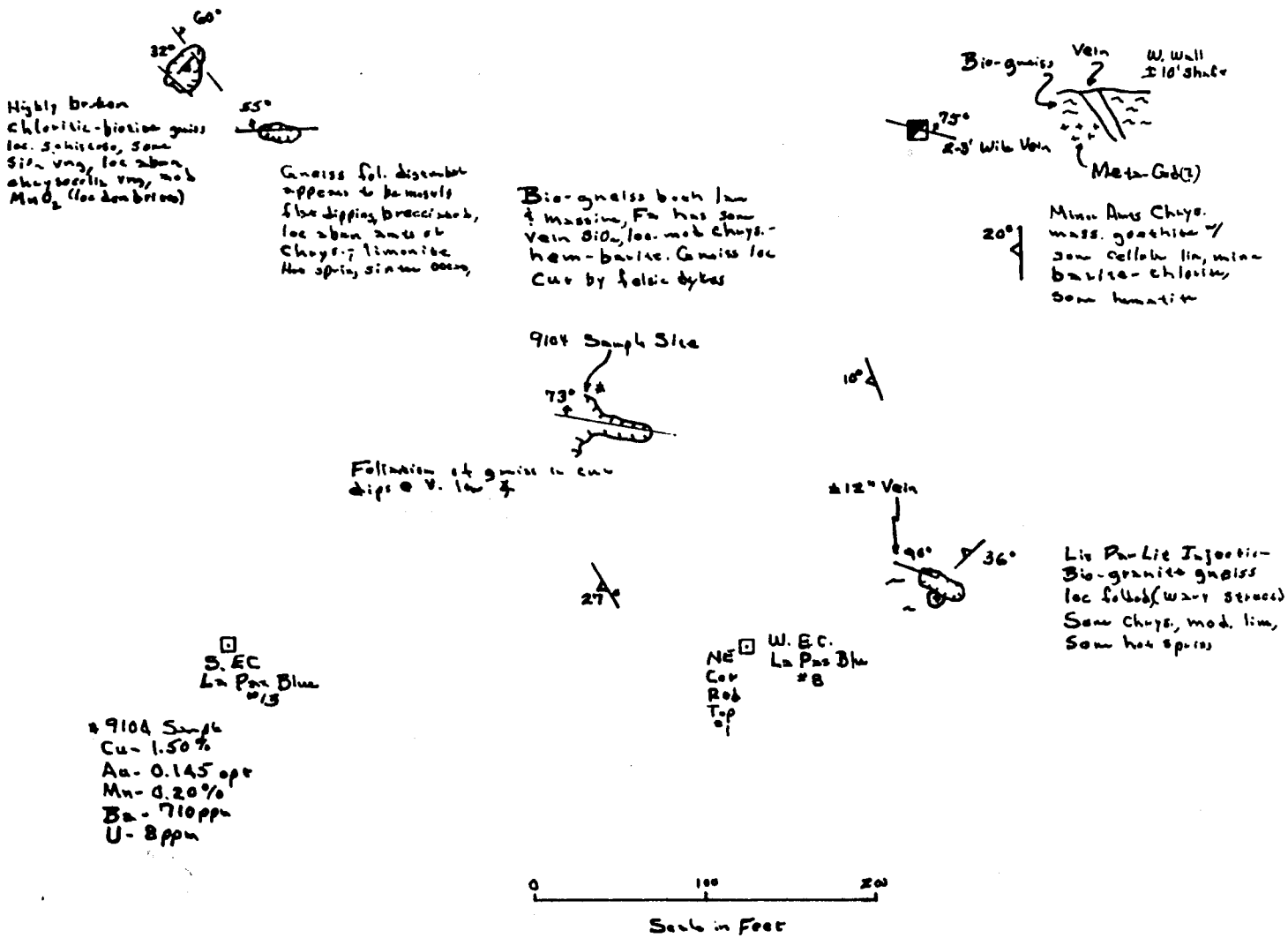
The most northwesterly prospect pit has mineralization hosted in a highly altered, strongly fractured chloritic-locally schistose gneiss. Some quartz veining, locally abundant amounts of chrysocolla, and locally dendritic manganese. The vein strikes N 40° W and dips 60° NE.

The next prospect pit southeast is also in gneiss, appears to be dipping at a very low angle, brecciated with locally abundant amounts of chrysocolla and some limonite. Occasional hot spring sinter. The vein strikes N 88° W and dips 55° northward.

Continuing southeastward, anotner cut in both banded and massive gneiss is found. The vein strikes N 81° W and dips 73° NE. Vein on fault has quartz, locally moderate chrosocolla-hematite-barite. Gneiss locally cut by felsic dykes. Foliation has a low dip angle.

The furthermost prospect pit has a 12" vein striking N 70° W and is dipping vertically. The gneiss has lit par lit injection, the banding is goiced with a wavy structure. The vein is mineralized with chrysocolla and moderate limonite. There is some hot spring sinter.

The approximately 10' deep shaft has been sunk on a 2-3' wide vein striking N 75° W and dips 75° NE. The vein is mineralized with massive and cellular limonite, minor barite, chlorite and some hematite. There appears to be intrusive meta-granodiorite(?) in the gneiss.



SITE II AREA
MERIWETHER CLAIM BLOCK
PLOMOSA MOUNTAINS
PLOMOSA MINING DISTRICT
LA PAZ COUNTY-ARIZONA
MAP & GEOLOGY BY: F. W. MACK

GEOLOGY OF SITE IV

LOCATION

This site is about 2000' southeast of Site II.

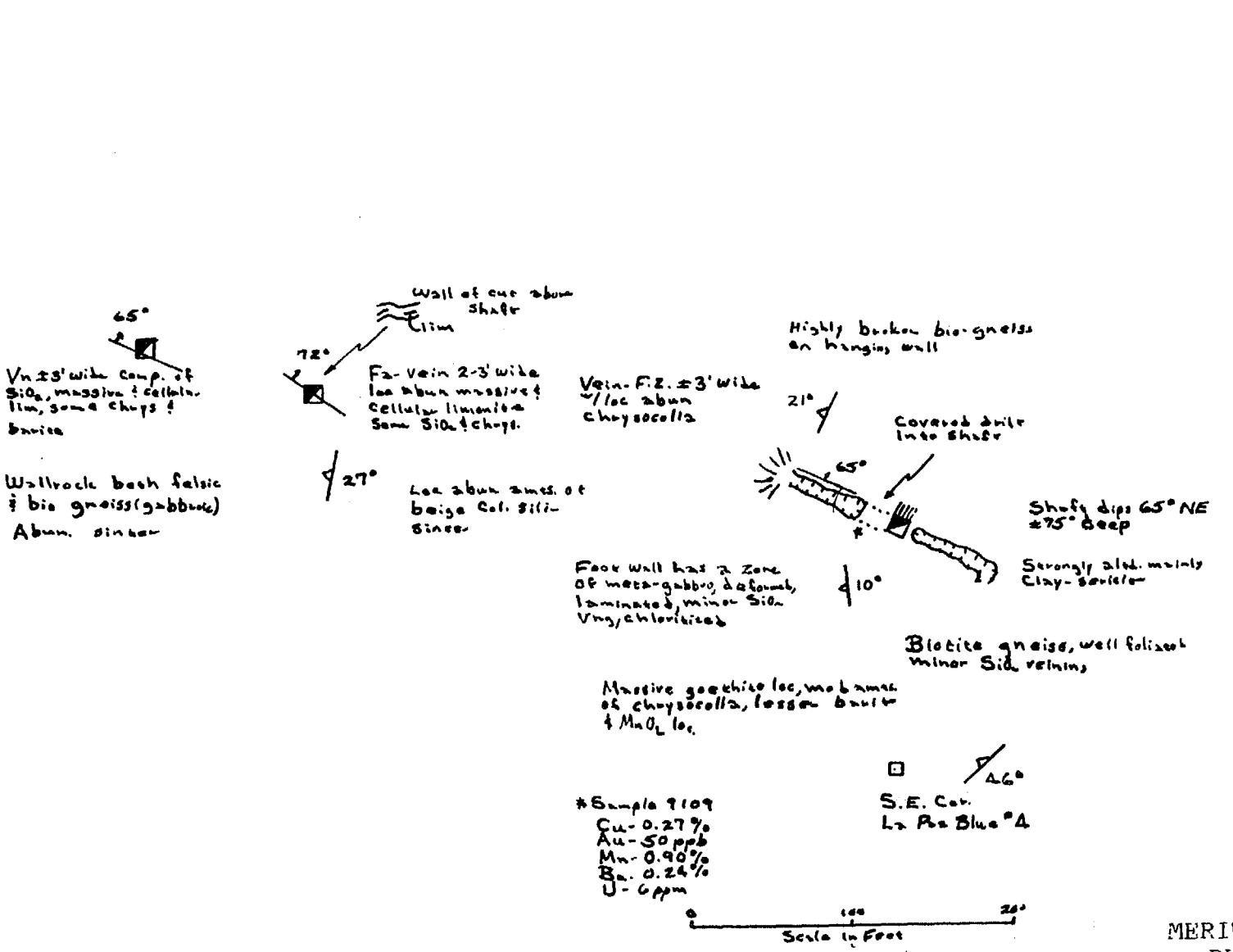
GEOLOGY

The site IV Area was exploited by means of slightly inclined (65°) dipping shafts. Probably several thousand tons of ore was mined and shipped from these workings.

The country rock is the same as the other areas. The eastern vein strikes N 68° W and dips 65° NE. The shaft was sunk down the dip of the vein to a depth of about 75'. The vein is about three feet wide. The hanging wall is composed of a highly broken biotite gneiss. The foot wall is a zone of meta-gabbro, laminated, minor quartz veining, and chloritized. Vein material is composed of massive goethite, locally moderate amounts of chrysocolla, lesser barite and manganese locally.

The two western shafts are possibly an extension of the eastern workingsbut the possibility that there are several sub-parallel vein zones may exist. The mapping however seems to indicate that an extension of the same vein is the more likely case.

The vein in the two western shafts are striking essentially northwesterly and dip 65° and 72° northeasterly. The veins are composed of quartz and mineralized with varying amounts of chrysocolla and barite. Abundant amounts of hot spring sinter are found locally.



SITE IV AREA
MERIWETHER CLAIM BLOCK
PLOMOSA MOUNTAINS
PLOMOSA MINING DISTRICT
LA PAZ COUNTY-ARIZONA
MAP & GEOLOGY BY: E. H. MACK

TWO GEOLOGIC FIELD TRIP GUIDES

FOR

CYPRUS MINERALS COMPANY

COPPERSTONE GOLD MINE

Arizona Bureau of Geology and Mineral Technology
FIELDNOTES
Vol. 18, No. 2 Summer 1988

The Copperstone Mine: Arizona's New Gold Producer

by Jon E. Spencer
and John T. Duncan
Arizona Geological Survey

and William D. Burton
Cyprus Minerals Company
P.O. Box 3299
Englewood, CO 80155

Arizona's annual gold output will almost double in 1988 as a result of production from Cyprus Minerals Company's Copperstone gold deposit in La Paz County, west-central Arizona. During 6 years of expected mine life, the deposit is predicted to yield approximately 510,000 troy ounces of gold worth $230 million, based on a value of $450 per ounce. Unlike many recent gold discoveries in the Southwest, Copperstone is a new discovery in an area not previously identified as a mineral district. In this article, the geology and regional setting of the Copperstone deposit are described. Although the deposit is still not completely understood, enough is known to warrant reassessment of estimates of mineral-resource potential in west-central Arizona.

Regional Geologic Setting

West-central Arizona and adjacent areas of California and southern Nevada contain some of the most spectacularly exposed detachment faults in the world. The term "detachment fault" is commonly applied to large-displacement, gently dipping (inclined) normal faults. In this region, hanging-wall rocks, or rocks overlying the detachment faults, were displaced northeastward relative to footwall rocks, rocks that underlie the faults. The faults originally dipped to the northeast, but are now rotated and warped to form undulating surfaces that are nearly horizontal over large areas.

The north- to northeast-dipping Moon Mountains detachment fault, exposed at the northern tip of the eastern Moon Mountains, separates two large, geologically distinct areas: to the northeast lie numerous detachment faults, such as those in the Buckskin, Rawhide, and northern Plomosa Mountains; to the south, in the Dome Rock, southern Plomosa, and most of the Moon Mountains, detachment faults are absent. The Copperstone gold deposit lies within the hanging wall of the Moon Mountains detachment fault and flanks the area of pervasive faulting.

Miocene (5- to 24-million-year [m.y.]-old) detachment faults in west-central Arizona are associated with numerous copper, iron, and gold deposits, especially in the Buckskin and Rawhide Mountains, that have yielded metals worth many millions of dollars (Figure 1; Table 1; Wilkins and Heidrick, 1982; Spencer and Welty, 1986). Copper-gold deposits associated with detachment faults typically lie along or within a few tens of meters of the faults; a few, however, are hundreds of meters above the faults. Detachment-fault deposits contain fractures and thick, irregular zones that are commonly filled with the minerals specular hematite, chrysocolla, quartz, barite, fluorite, calcite, and manganese oxides. Pyrite and chalcopyrite, which are commonly oxidized, are also present in many deposits.

The northeastern tip of the Moon Mountains is primarily composed of Mesozoic (63- to 240-m.y.-old) granitic rocks that form the footwall of the Moon Mountains detachment fault. Hanging-wall rocks are mostly metamorphosed Jurassic (138- to 205-m.y.-old) volcanic rocks. Older (Paleozoic; 240- to 570-m.y.-old) metamorphosed sedimentary rocks that are brecciated (composed of

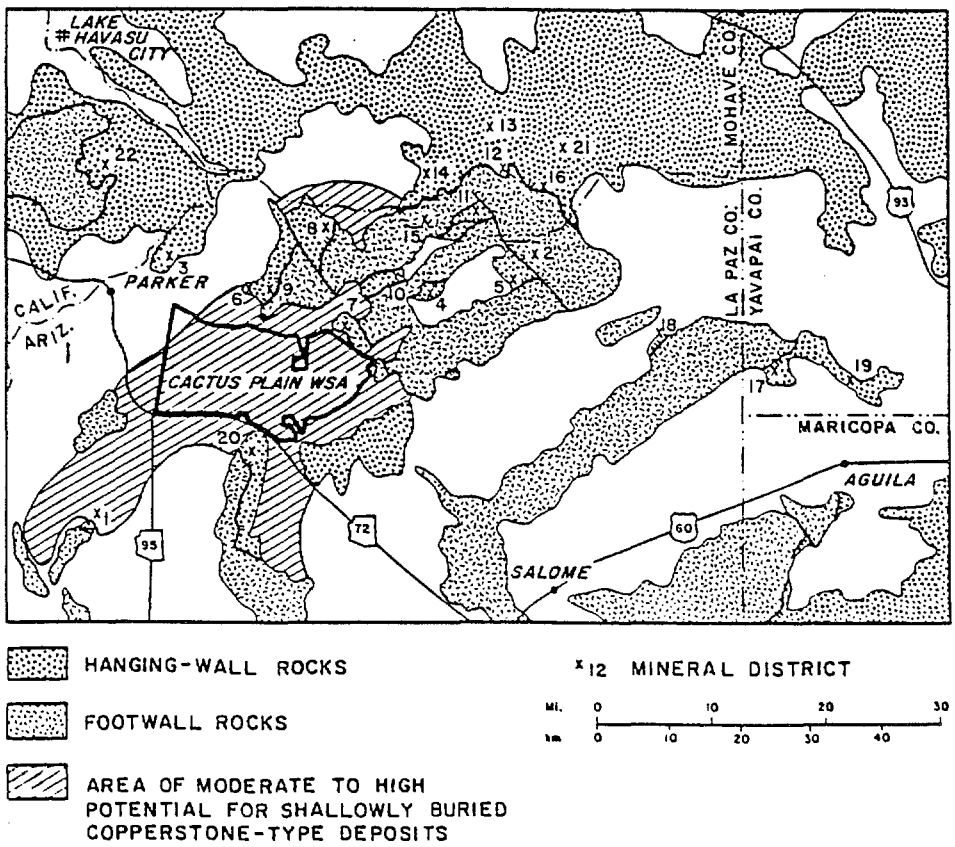


Figure 1. Map of part of west-central Arizona showing mineral districts where mineral deposits are known or suspected to be related to detachment faults. Middle Tertiary and older rocks are divided into hanging wall and footwall rocks, which lie above and below, respectively, regionally northeast-dipping detachment faults. Also shown is the outline of the Cactus Plain and Cactus Plain East Wilderness Study Areas. Numbers refer to mineral districts listed in Table 1.

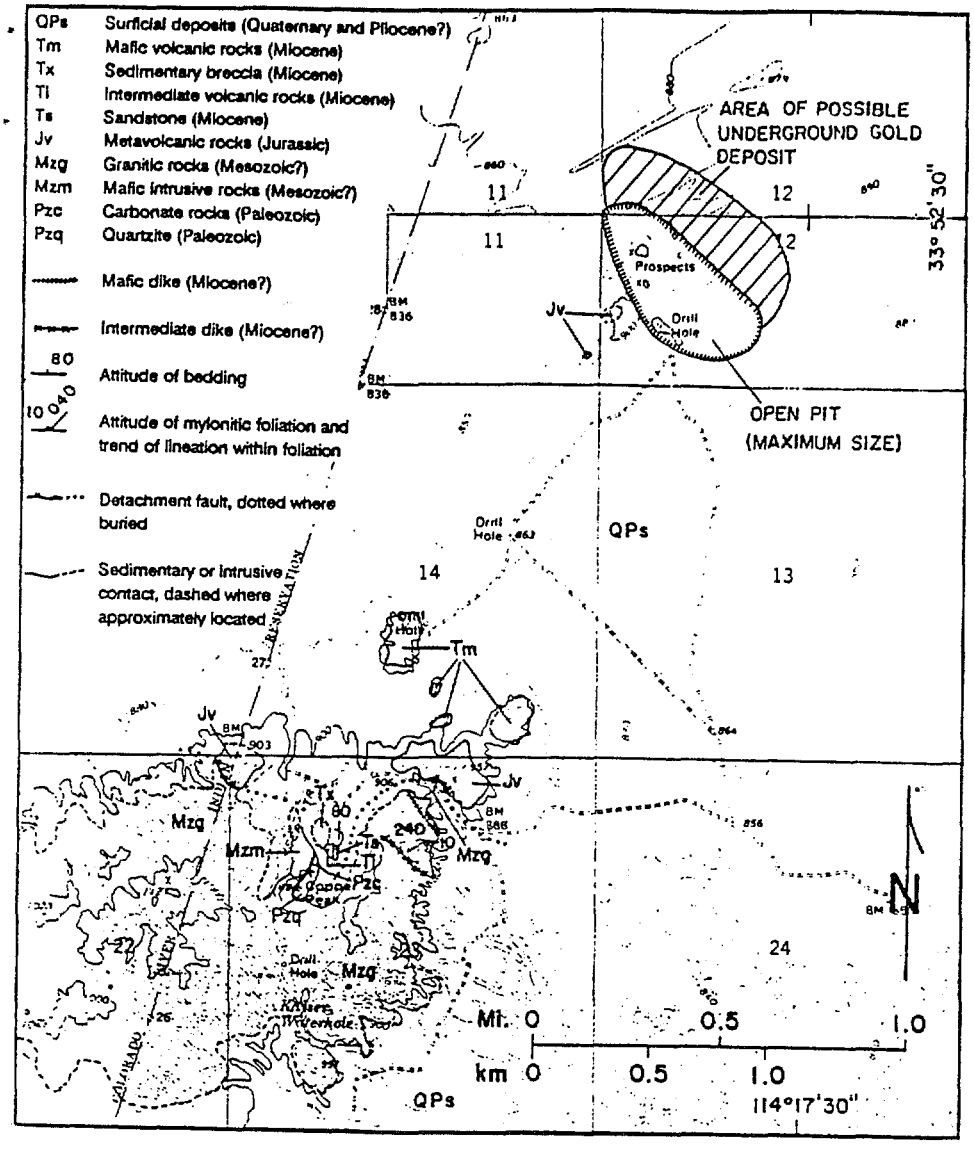


Figure 2. Geologic map of northeastern Moon Mountains showing location of Copperstone mine.

broken rock fragments) underlie Copper Peak; steeply dipping, younger (Miocene) volcanic and sedimentary rocks, including sedimentary breccias derived from the Jurassic volcanic rocks, are also present adjacent to Copper Peak (Figure 2). The copper-iron mineralization that characterizes detachment-fault deposits elsewhere in west-central Arizona is also evident in brecciated rocks along the Moon Mountains detachment fault at Copper Peak and at the edge of the Colorado River Indian Reservation.

Geology

The Copperstone mine is approximately 1½ miles northeast of exposed bedrock in the northeastern Moon Mountains (Figure 2). Bedrock exposures in several very small hills surrounded by alluvium contain evidence of gold mineralization and led to the discovery of the Copperstone deposit. Mineral deposits are present above and along a gently dipping contact that is probably a fault; the contact separates Jurassic metamorphosed volcanic rocks and overlying sedimentary breccias derived from them. The mineralized contact zone dips approximately 30° to the northeast, extends horizontally for 3,000 feet and at least 1,000 feet down dip, and is generally several tens of feet thick. The sedimentary breccia and a volcanic rock that contains vesicles (relict gas bubbles) are almost certainly Miocene in age and are mineralized, indicating that mineralization is Miocene or younger.

Drill-core samples reveal that some brecciation occurred after quartz veins were formed; however, numerous northwest-trending quartz-amethyst veins exposed in the mine pit are not brecciated. Steeply dipping, northwest-striking fractures and narrow shear zones exposed in the mine pit locally cut quartz-amethyst veins and contain subhorizontal slickenside lineations, which are smooth and polished striations that result from friction along a fault plane.

Gold is present where quartz and specular hematite are abundant in the breccia zone and locally within veins in the metamorphosed volcanic rocks. Chrysocolla, barite, earthy red hematite, and malachite are also common in the gold-mineralized zone. Fluorite, adularia, magnetite, calcite, chalcopyrite, pyrite, and manganese oxides are present in smaller quantities. Gold, however, is rarely visible. The presence of quartz, hematite, and chrysocolla is a good indicator of gold mineralization.

Fluid-Inclusion Characteristics

Fluid inclusions are bubbles of liquid and gas that are commonly trapped inside minerals during mineral formation. The composition of fluid inclusions in mineral deposits reflects the composition of the aqueous fluids that formed the deposits. One can determine the salinity of the inclusions by determining the freezing temperature of the fluid within them. The minimum temperature of the fluid at the time it was trapped can be determined by heating the sample until the two phases (liquid and gas) in the inclusion become one. Fluid inclusions in quartz-amethyst from the Copperstone mine contain between 16 and 22 percent sodium-chloride equivalent (by weight) and were trapped at minimum temperatures between 200° and 260° C. These characteristics are similar to those of other mineral deposits along Miocene detachment faults in west-central Arizona, but are substantially different from those of most other types of deposits, such as epithermal-vein gold deposits (Figure 3; Wilkins and others, 1986).

Origin

The following characteristics of the Copperstone deposit suggest that it originated from the same processes that formed mineral deposits along numerous other Miocene detachment faults: (1) fluid-inclusion salinities and temperatures of entrapment; (2) abundant specular hematite with less abundant copper minerals such as chrysocolla, malachite, and chalcopyrite; (3) geographic proximity to a detachment fault; and (4) probable Miocene age. Two characteristics of the Copperstone deposit, however, differ from those of other detachment-fault deposits: abundance of quartz-amethyst veins and abundance of gold. These authors believe that most evidence at the Copperstone deposit supports a relationship between mineralization and detachment faulting.

A working model for the origin of the Copperstone deposit is as follows: hot, saline, aqueous fluids containing dissolved gold, copper, iron, and other elements moved up-dip along the north- to northeast-dipping Moon Mountain detachment fault. These fluids encountered highly porous and permeable sedimentary breccias in the hanging wall of the detachment fault and began ascending through the breccia zone. As a result of cooling or mixing with more oxygen-rich, shallow-level ground water, largely within the sedimentary breccias, gold and

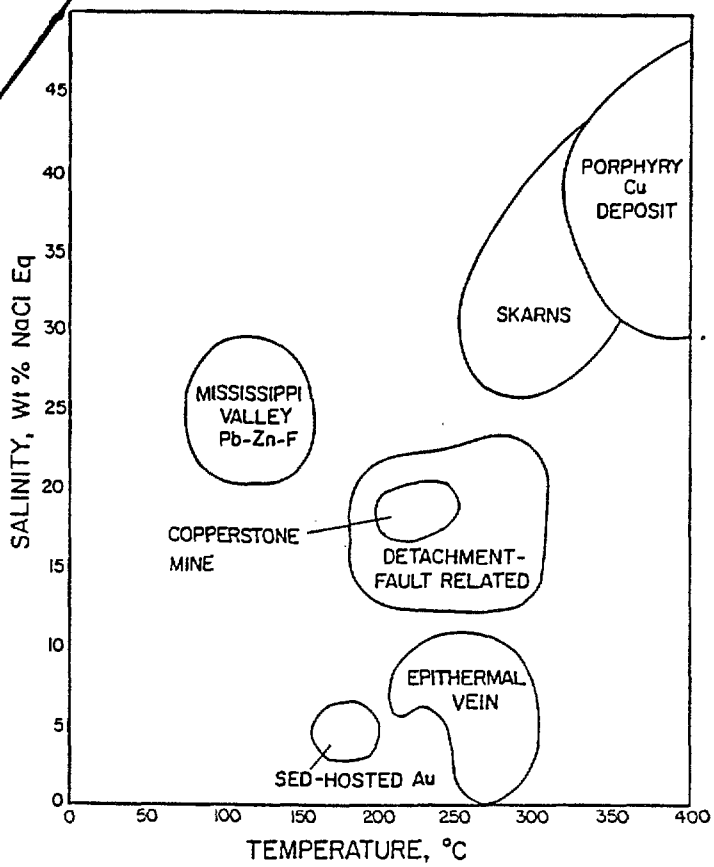


Figure 3. Diagram of salinity and homogenization temperature fields for fluid inclusions from several major mineral deposits, including those associated with detachment faults. Fluid inclusions from the Copperstone deposit clearly fall within the field of other detachment-fault-related deposits. Many geologists suspected that the Copperstone deposit was an epithermal-vein deposit, as are many other gold deposits in the Southwest; fluid-inclusion data, however, strongly suggest otherwise. Modified from Wilkins and others (1986), with additional data from the Copperstone mine.

Table 1. Value of production for commodities from mineral districts in west-central Arizona that are known or suspected to be related to detachment faults. Manganese mineral deposits, although not clearly understood, are suspected to be related to detachment faults. District locations are shown on Figure 1.

District	Commodities*	1986 Value**
1. Copperstone	Au (reserves)	$189,306,900
2. Alamo	Cu, Pb, Ag, Au	72,303
3. Cienega	Cu, Ag, Au	5,571,167
4. Clara	Cu, Ag, Au	3,066,661
5. Lincoln Ranch	Mn	18,960,000
6. Mammon	Cu, Ag, Au	93,913
7. Midway	Cu, Ag, Au	43,743
8. Planet	Cu, Ag, Au	12,771,828
9. Pride	Cu, Ag, Au	37,679
10. Swansea	Cu, Ag, Au	17,471,085
11. Black Burro	Mn	261,490
12. Cleopatra	Cu, Pb, Ag, Au	1,118,459
13. Lead Pill	Cu, Pb, Ag, Au	303,365
14. Mesa	Mn	47,400
15. Owen	Cu, Pb, Zn, Ag	107,561
16. Rawhide	Cu, Pb, Zn, Ag	116,573
17. Bullard	Cu, Ag, Au	1,763,481
18. Burnt Well	(unknown)	(minor)
19. Harris	Mn	79,395
20. Northern Plomosa	Cu, Pb, Ag, Au	2,123,413
21. Artillery	Mn	75,135,320
22. Whipple	Cu, Pb, Zn, Ag, Au	683,550
TOTAL		$329,135,287

* Ag = silver; Au = gold; Cu = copper; Mn = manganese; Pb = lead; Zn = zinc.

** Values do not add to total because of rounding.

other elements precipitated from the fluids to form the Copperstone deposit.

Implications for Land-Use Planning and Management

The presence of the Copperstone gold deposit in a geologic setting that is characteristic of large areas of west-central Arizona indicates that the mineral-resource potential of this area in the State is greater than previously suspected.

The Copperstone deposit was probably not discovered until recently because it was almost entirely concealed by young surficial deposits. Undiscovered mineral deposits similar to Copperstone may also be concealed beneath other surficial deposits, such as those covering nearby Cactus Plain (Figure 1). Application of more sophisticated geophysical techniques may eventually result in discovery of such deposits. Many areas in west-central Arizona, such as the Cactus Plain and Cactus Plain East Wilderness Study Areas, are presently under consideration for Federal wilderness-area status. If designated to be managed as wilderness, these areas would no longer be open to mineral exploration or mining activity.

Mineral deposits associated with detachment faults have only been recognized as a distinct deposit type during the past 10 years. The recent discovery of the Copperstone deposit and recognition of its association with a detachment fault are generating renewed interest in detachment-fault-related deposits and in areas where such deposits might be located. Future improvements in our understanding of Arizona geology and future mineral-deposit discoveries will undoubtedly lead to renewed interest in areas that presently receive little attention from research or exploration geologists.

References

Spencer, J.E., and Welty, J.W., 1986, Possible controls of base- and precious-metal mineralization associated with Tertiary detachment faults in the lower Colorado River trough, Arizona and California: Geology, v. 14, p. 195-198.

Wilkins, Joe, Jr., Beane, R.E., and Heidrick, T.L., 1986, Mineralization related to detachment faults; a model, *in* Beatty, Barbara, and Wilkinson, P.A.K., eds., Frontiers in geology and ore deposits of Arizona and the Southwest: Arizona Geological Society Digest, v. 16, p. 108-117.

Wilkins, Joe, Jr., and Heidrick, T.L., 1982, Base and precious metal mineralization related to low-angle tectonic features in the Whipple Mountains, California and Buckskin Mountains, Arizona, *in* Frost, E.G., and Martin, D.L., eds., Mesozoic-Cenozoic tectonic evolution of the Colorado River region, California, Arizona, and Nevada: San Diego, Cordilleran Publishers, p. 182-203.

GSA Centennial Field Guides

The Geological Society of America (GSA) has published two Centennial Field Guides that include areas in Arizona: the Cordilleran Section and the Rocky Mountain Section (volumes 1 and 2, respectively). The first volume contains field-guide articles and maps to 100 outstanding geologic locations in Alaska, British Columbia, California, Hawaii, Nevada, Oregon, and Washington, as well as Arizona. The second volume contains 100 guides for Alberta, Arizona, Colorado, Idaho, Montana, New Mexico, South Dakota, Utah, and Wyoming. These two volumes are part of the 71-item GSA publishing project, the Decade of North American Geology (DNAG). To obtain copies, send $43.50 for each volume to The Geological Society of America, Publication Sales, P.O. Box 9140, Boulder, CO 80301; tel: (800) 472-1988.

Frank

COPPERSTONE
GEOLOGIC SUMMARY

The Copperstone gold deposit is located in an area of flat, dry, sandy terrain with several small knolls about 40 feet high and prominent longitudinal sand dunes. Only 17 outcrops with a total surface area of approximately one acre are exposed. At the southern end of the Copperstone claim block and beyond is exposed an igneous and metamorphic outlier of the Dome Rock Mountains. These rocks include granite, gneiss, schist, quartzite and amphibolite of uncertain age - Precambrian to Jurassic. A low angle fault (detachment?) separates these rocks from an upper plate consisting of a thick sequence of Jurassic age quartz latite welded tuffs (qlt). The upper plate sequence has been affected by weak green schist facics metamorphism in Cretaceous time. This fault probably extends beneath the Copperstone gold deposit, but drilling failed to confirm its presence.

No early prospect pits, shafts or adits were found at Copperstone. Prospecting began in 1968 with bulldozer trenching by a prospector to better expose weak copper mineralization. The property was submitted to Cyprus in 1980, and a lease was signed after initial field evaluation and sampling indicated 0.02 to 0.09 ounce per ton gold in a few small breccia outcrops. During 1981 through 1983 conventional percussion drilling in a 140 foot grid by Cyprus (Amoco Mineral Company) tested the limits of the Copperstone mineralization. Extensive induced polarization and ground magnetic surveys were run. Anomalous frequency effects outlined the gold deposit with considerable accuracy. Drilling from 1984 through 1986 further defined the deposit.

The Copperstone gold deposit is hosted by a thick sequence of foliated to massive and brecciated quartz latite tuffs. These rocks are correlated regionally with the Jurassic volcanics exposed in the Dome Rock Mountains to the south and throughout west-central Arizona. In the deposit area the quartz latite tuffs are at least 900 feet thick based on drilling formation. The tuffs are characterized by variable degrees of foliation defined by segregated bands of quartz - feldspar and sericite, probably developed along original primary laminations in the tuff. The foliations exposed in surface outcrops in the deposit area all dip 30-50° to the southwest. The indurated breccia dike that hosts the main gold zone within the deposit strikes approximately N45W and dips on an average of 30° to the northeast. These breccias continue along strike at least 2,500 feet and down-dip 1,500 feet. The breccias range in thickness from 50 to 200 feet and contain variably altered fragments of quartz latite in a hematite matrix. The main ore zone within the deposit generally occurs along the basal contact of these breccias with the underlying foliated quartz latite tuff. This mineralized zone is defined by an extensive multi-stage hydrothermal breccia zone. Fragments of quartz vein material, quartz latite tuff and earlier developed breccia are contained within a hematite - specularite matrix. Gold mineralization occurs primarily within this hydrothermal breccia zone and in quartz - amethyst veins cutting through the adjacent latite tuffs. Specular hematite, chrysocolla, minor malachite, and barite are the most common accessory minerals with lesser amounts of calcite, siderite, manganese oxide, flourite, adularia, magnetite,

chalcopyrite and pyrite. Multiple episodes of mineralizing hydrothermal events and brecciation occurred at Copperstone.

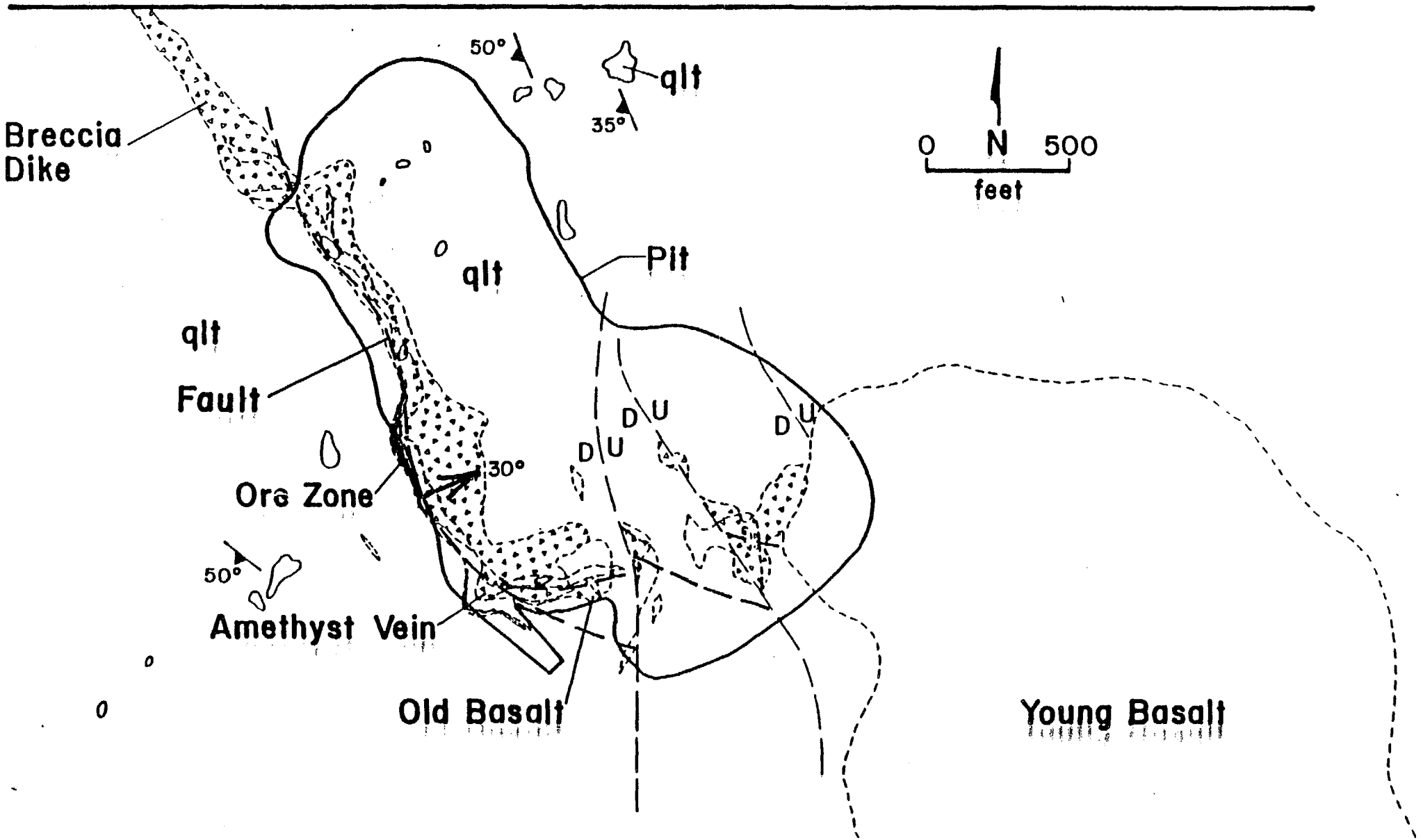
Mineralizing solutions also formed local zones of alteration in and near the ore zones. Bleaching effects are caused by argillization and sericitization. Local secondary gray-green chlorite as wispy veining and minor chalcedonic silicification with small patches of chalcopyrite, pyrite and native gold have been seen. Microscopic examination of a gravity concentrate was made from a floatation concentrate of the ore. About 80 percent of the gold occurs in small flakes ranging between 4 and 40 microns. Coarse gold plates range from 50 to 150 microns. Most gold is free, but a small amount is locked within quartz and iron hydroxides.

The few mineralized outcrops at Copperstone contain highly anomalous gold, silver and copper. Initial sampling found subore and ore grade gold values that led directly to drilling. Several early core holes and a large suite of surface samples were analyzed for a broad spectrum of trace elements in an effort to characterize the deposit.

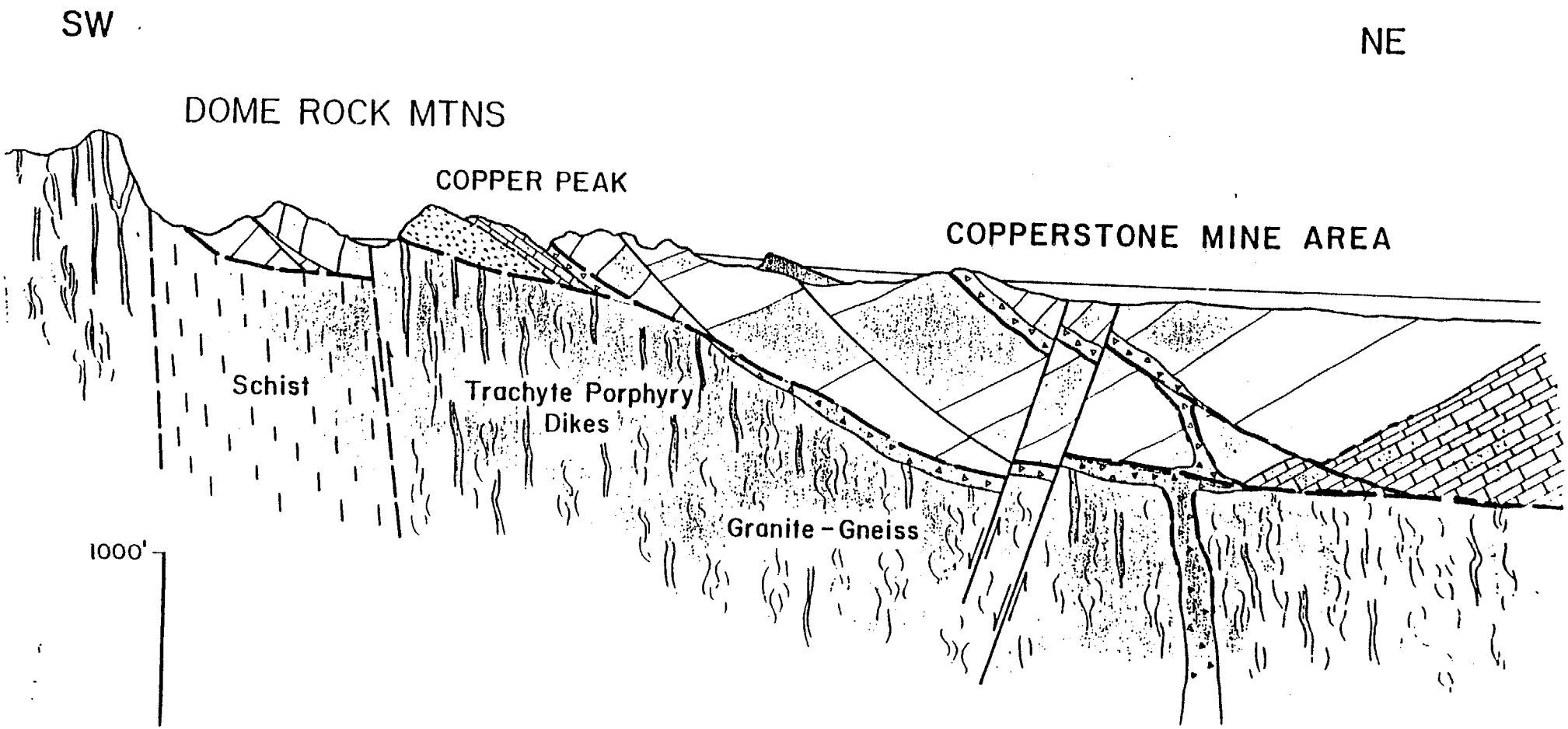
Copperstone is characterized by high barium, manganese, uranium and low arsenic, antimony, thallium and mercury. Barite and flourite are most abundant in the extreme southeastern end of the deposit where they occur in massive 4-5 foot veins.

Generally, gold mineralization is sharply defined within the mineralized breccia zone. It markedly decreases over a few tens of feet into hanging wall and footwall rocks where often no gold is detected by atomic absorption analysis. In higher gold grade zones within the deposit, silver values are higher and may provide some recoverable value. Copper ranges up to several percent within the gold zone, mostly as chrysocolla.

SUBSURFACE GEOLOGY



SCHEMATIC GEOLOGIC SECTION



HOMESTAKE MINING COMPANY

DRILL RESULTS FOR HOLES EC-4 & EC-5

MERIWETHER CLAIM BLOCK

E A S T C O P P E R S T O N E D R I L L I N G.

D.H. #	Sample #	From	To	Au (opt)	Ag (opt)	Int	Geology
EC-1	2501	0	5	-0.001	-0.01	5	0-104 Overburden
	2502	5	10	-0.010	-0.01	5	
	2503	10	15	0.002	-0.01	5	
	2504	15	20	-0.001	-0.01	5	
	2505	20	25	0.001	-0.01	5	
	2506	25	30	-0.001	-0.01	5	
	2507	30	35	0.019	-0.01	5	
	2508	35	40	0.002	-0.01	5	
	2509	40	45	0.004	0.01	5	
	2510	45	50	0.007	-0.01	5	
	2511	50	55	-0.001	0.02	5	
	2512	55	60	-0.001	0.05	5	
	2513	60	65	-0.001	-0.01	5	
	2514	65	70	-0.001	0.07	5	
	2515	70	75	-0.001	-0.01	5	
	2516	75	80	-0.001	-0.01	5	
	2517	80	85	-0.001	0.02	5	
	2518	85	90	-0.001	-0.01	5	
	2519	90	95	-0.001	-0.01	5	
	2520	95	100	-0.001	0.09	5	
	2521	100	105	-0.001	-0.01	5	104-120(TD) Schist.
	2522	105	110	-0.001	-0.01	5	
	2523	110	115	-0.001	0.08	5	
	2524	115	120	-0.001	-0.01	5	

D.H. #	Sample #	From	To	Au	Ag	Int	Geology
EC-2	2525	0	5			5	0-300 Overburden
	2526	5	10			5	
	2527	10	15			5	
	2528	15	20	0.001	0.01	5	
	2529	20	25			5	
	2530	25	30			5	
	2531	30	35			5	
	2532	35	40	-0.001		5	
	2533	40	45			5	
	2534	45	50			5	
	2535	50	55			5	
	2536	55	60	-0.001		5	
	2537	60	65			5	
	2538	65	70			5	
	2539	70	75			5	
	2540	75	80	0.001		5	
	2541	80	85			5	
	2542	85	90			5	
	2543	90	95			5	
	2544	95	100	-0.001		5	
	2545	100	105			5	
	2546	105	110			5	
	2547	110	115			5	
	2548	115	120	-0.001		5	
	2549	120	125			5	
	2550	125	130			5	

	2551	130	135			5	
	2552	135	140	0.001		5	
	2553	140	145			5	
	2554	145	150			5	
	2555	150	155			5	
	2556	155	160	-0.001		5	
	2557	160	165			5	
	2558	165	170			5	
	2559	170	175			5	
	2560	175	180	0.002		5	
	2561	180	185			5	
	2562	185	190			5	
	2563	190	195			5	
	2564	195	200	-0.001		5	
	2565	200	205			5	
	2566	205	210			5	
	2567	210	215			5	
	2568	215	220	-0.001		5	
	2569	220	225			5	
	2570	225	230			5	
	2571	230	235			5	
	2572	235	240	-0.001		5	
	2573	240	245			5	
	2574	245	250			5	
	2575	250	255			5	
	2576	255	260	-0.001		5	
	2577	260	265			5	
	2578	265	270			5	
	2579	270	275			5	
	2580	275	280	-0.001		5	
	2581	280	285			5	
	2582	285	290			5	
	2583	290	295			5	
	2584	295	300	-0.001		5	Overburden to 300'
D.H. #	Sample #	From	To	Au	Ag	Int	Geology
EC-3	2585	0	5			5	0-235 Overburden
	2586	5	10			5	
	2587	10	15			5	
	2588	15	20	-0.001		5	
	2589	20	25			5	
	2590	25	30			5	
	2591	30	35			5	
	2592	35	40	-0.001		5	
	2593	40	45			5	
	2594	45	50			5	
	2595	50	55			5	
	2596	55	60	-0.001		5	
	2597	60	65			5	
	2598	65	70			5	
	2599	70	75			5	
	2600	75	80	-0.001		5	
	2601	80	85			5	
	2602	85	90			5	
	2603	90	95			5	
	2604	95	100	-0.001		5	
	2605	100	105			5	

	2606	105	110			5	
	2607	110	115			5	
	2608	115	120	-0.001		5	
	2609	120	125			5	
	2610	125	130			5	
	2611	130	135			5	
	2612	135	140	-0.001		5	
	2613	140	145			5	
	2614	145	150			5	
	2615	150	155			5	
	2616	155	160	-0.001		5	
	2617	160	165			5	
	2618	165	170			5	
	2619	170	175			5	
	2620	175	180	-0.001		5	
	2621	180	185			5	
	2622	185	190			5	
	2623	190	195			5	
	2624	195	200	-0.001		5	
	2625	200	205			5	
	2626	205	210			5	
	2627	210	215			5	
	2628	215	220	-0.001		5	
	2629	220	225			5	
	2630	225	230			5	
	2631	230	235			5	
	2632	235	240	0.001	0.02	5	235-249 Volcanics
	2633	240	245	-0.001	-0.01	5	
	2634	245	250	0.001	-0.01	5	
	2635	250	255	-0.001	-0.01	5	249-270(TD) Schist.
	2636	255	260	-0.001	-0.01	5	
	2637	260	265	-0.001	-0.01	5	
	2638	265	270	-0.001	-0.01	5	
D.H. #	Sample #	From	To	Au	Ag	Int	Geology
EC-4	2639	0	5			5	0-147 Overburden
On Meriwether Claim area	2640	5	10			5	
	2641	10	15			5	
	2642	15	20	-0.001		5	
	2643	20	25			5	
	2644	25	30			5	
	2645	30	35			5	
	2646	35	40	-0.001		5	
	2647	40	45			5	
	2648	45	50			5	
	2649	50	55			5	
	2650	55	60	-0.001		5	
	2651	60	65			5	
	2652	65	70			5	
	2653	70	75			5	
	2654	75	80	-0.001		5	
	2655	80	85			5	
	2656	85	90			5	
	2657	90	95			5	
	2658	95	100	-0.001		5	
	2659	100	105			5	
	2660	105	110			5	

	2661	110	115			5	
	2662	115	120	-0.001		5	
	2663	120	125			5	
	2664	125	130			5	
	2665	130	135		As opt	5	
	2666	135	140	-0.001		5	
	2667	140	145	-0.001	0.05	5	
	2668	145	150	-0.001		5	147-165(TD) Schist
	2669	150	155	-0.001		5	
	2670	155	160	-0.001	0.02	5	
	2671	160	165	-0.001		5	
D.H. #	Sample #	From	To	Au	Ag	Int	Geology
EC-5	2672	0	5			5	0-200 Overburden
On Meriwether Claim area	2673	5	10			5	
	2674	10	15			5	
	2675	15	20	-0.011		5	
	2676	20	25			5	
	2677	25	30			5	
	2678	30	35			5	
	2679	35	40	0.002	0.02	5	
	2680	40	45			5	
	2681	45	50			5	
	2682	50	55			5	
	2683	55	60	-0.001	0.04	5	
	2684	60	65			5	
	2685	65	70			5	
	2686	70	75			5	
	2687	75	80	-0.001		5	
	2688	80	85			5	
	2689	85	90			5	
	2690	90	95			5	
	2691	95	100	-0.001		5	
	2692	100	105			5	
	2693	105	110			5	
	2694	110	115			5	
	2695	115	120	-0.001	0.03	5	
	2696	120	125			5	
	2697	125	130			5	
	2698	130	135			5	
	2699	135	140	-0.001	0.06	5	
	2700	140	145			5	
	2701	145	150			5	
	2702	150	155			5	
	2703	155	160	-0.001		5	
	2704	160	165			5	
	2705	165	170			5	
	2706	170	175			5	
	2707	175	180	-0.001		5	
	2708	180	185			5	
	2709	185	190			5	
	2710	190	195			5	
	2711	195	200	-0.001		5	Overburden to 200'

HOMESTAKE
CORPORATION SHALL BE
AND RESPONSIBLE

HUNTER MINING LABORATORY, INC.

NANCY

994 GLENDALE AVENUE • SPARKS, NEVADA 89431 • TELEPHONE: (702) 358-6227

REPORT OF ANALYSIS

Galantine
Johnson
Kern

CONFIDENTIAL
HOMESTAKE MINING COMPANY
REPRESENTATION OF
ANY KIND
ACCURACY
INFORMATION
INFORMATION
CORPORATION SHALL BE AT HIS
ACCEPTANCE OF LIABILITY.

Submitted by:

HOMESTAKE MINING COMPANY
330 CONEY ISLAND DRIVE
SPARKS, NEVADA 89431

Date: September 23, 1988

Laboratory number: 35045

Analytical Method: Fire AT

Your Order Number: 9602-1

JOHNSON, KERN, GALANTINE LAPAZ, AZ. EAST COPPERSTONE RECONN. DC. (2973)

Report on: 84 Samples, pulp

Sample Mark	Gold oz/ton	Silver oz/ton	Sample Mark	Gold oz/ton	Silver oz/ton
2501AX	-0.001	-0.01	2516	-0.001	-0.01
2502	-0.001	-0.01	2517	-0.001	0.02
2503	0.002	-0.01	2518	-0.001	-0.01
2503*	0.002	-0.01	2519 EC#1	-0.001	-0.01
2504	-0.001	-0.01	2519*	-0.001	-0.01
2505	0.001	-0.01	2520 8848AX	-0.001	0.09
2506	-0.001	-0.01	2521	-0.001	-0.01
2507	0.019	-0.01	2522	-0.001	-0.01
2508	0.002	-0.01	2523	-0.001	0.08
2508*	0.002	-0.01	2524	-0.001	-0.01
2509	0.004	0.01	2528	0.001	0.01
2509*	0.002	-0.01	2532	-0.001	-0.01
2510	0.007	-0.01	2536	-0.001	-0.01
2510*	0.003	-0.01	2540	0.002	-0.01
2511	-0.001	0.02	2544	-0.001	0.02
2512	-0.001	0.05	2548	-0.001	-0.01
2513	-0.001	-0.01	2552	0.001	-0.01
2514	-0.001	0.07	2556	-0.001	-0.01
2515	-0.001	-0.01	2560	0.002	-0.01

ppm = parts per million. **oz/ton** = troy ounces per ton of 2000 pounds avoirdupois. **percent** = parts per hundred. **fineness** = parts per thou. **ppb** = 0.001 ppm. Read — as "less than". 1 oz/ton = 34.286 ppm. 1 ppm = 0.0001% = 0.029167 oz/ton. 1.0% = 20 pounds/ton.

HUNTER MINING LABORATORY, INC.
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HOMESTAKE MINING COMPANY

Laboratory No: 35045

Sample Mark	Gold oz/ton	Silver oz/ton
2564	-0.001	0.01
2568	-0.001	-0.01
2572	-0.001	-0.01
2572*	-0.001	-0.01
2576	-0.001	0.06
2580	-0.001	-0.01
2584	-0.001	-0.01
2588 8849AX	-0.001	-0.01
2592	-0.001	0.03
2596	-0.001	0.01
2600	-0.001	-0.01
2604	-0.001	-0.01
2608	-0.001	-0.01
2612	-0.001	0.01
2616	-0.001	-0.01
2620	-0.001	-0.01
2624	-0.001	0.06
2628	-0.001	-0.01
2632	0.001	0.02
2633	-0.001	-0.01
2634	0.001	-0.01
2635	-0.001	-0.01
2636	-0.001	-0.01
2637	-0.001	-0.01
2638	-0.001	-0.01
2638*	-0.001	-0.01
2642	-0.001	-0.01

EC#2

EC#3

Sample Mark	Gold oz/ton	Silver oz/ton
2646	-0.001	0.01
2650 8850AX	-0.001	-0.01
2654	-0.001	-0.01
2658	-0.001	-0.01
2662	-0.001	-0.01
2666	-0.001	-0.01
2667 ✓	-0.001	0.05
2668	-0.001	-0.01
2669	-0.001	-0.01
2669*	-0.001	-0.01
2670 ✓	-0.001	0.02
2671	-0.001	-0.01
2675	-0.001	-0.01
2679 ✓	0.002	0.02
2683 ✓	-0.001	0.04
2687	-0.001	-0.01
2691	-0.001	-0.01
2691*	-0.001	-0.01
2695 ✓	-0.001	0.03
2699 ✓	-0.001	0.06
2703	-0.001	-0.01
2707	-0.001	-0.01
2707*	-0.001	-0.01
2711	-0.001	-0.01
8848 REPEAT ASSAYS	-0.001	-0.01
8849	-0.001	-0.01
8850	-0.001	-0.01

EC#4

EC#5

OK

ppm = parts per million. oz/ton = troy ounces per ton of 2000 pounds avoirdupois. percent = parts per hundred. fineness = parts per thousand. ppb = 0.001 ppm. Read — as "less than". 1 oz/ton = 34.286 ppm. 1 ppm = 0.0001% = 0.029167 oz/ton. 1.0% = 20 pounds/ton.

HUNTER MINING LABORATORY, INC.

994 GLENDALE AVENUE • SPARKS, NEVADA 89431 • TELEPHONE: (702) 358-6227

HOMESTAKE MINING COMPANY

Laboratory No: 35045

Sample Mark		Gold oz/ton		Silver oz/ton	Sample Mark		Gold oz/ton		Silver oz/ton
8851	0.0270	0.026	0.3000	0.25	8852AX	0.0270	0.028	0.3000	0.26
* in house checks				OK					OK

HUNTER MINING LABORATORY, INC.

H. H. Scales

H. H. Scales

CONFIDENTIAL

ppm = parts per million. oz/ton = troy ounces per ton of 2000 pounds avoirdupois. percent = parts per hundred. fineness = parts per thousar
ppb = 0.001 ppm. Read — as "less than". 1 oz/ton = 34.286 ppm. 1 ppm = 0.0001% = 0.029167 oz/ton. 1.0% = 20 pounds/ton.

HOMESTAKE MINING COMPANY

GEOCHEMICAL SAMPLING RESULTS

HUNTER MINING LABORATORY, INC.

994 GLENDALE AVENUE • SPARKS, NEVADA 89431 • TELEPHONE:(702) 358-6227

RECEIVED FEB 04 1988 NANCY

REPORT OF ANALYSIS

Johnson
Kern

Submitted by:

HOMESTAKE MINING COMPANY
330 CONEY ISLAND DRIVE
SPARKS, NEVADA 89431

Date: February 03, 1988

Laboratory number: 33151

Analytical Method: AA
Colorimetri
Fire AT

Your Order Number: 8107-1

JOHNSON, KERN LA PAZ, AZ. E. COPPERSTONE RECONN.

Report on: 13 Samples, pulp (2922)

* Sample Mark	Copper ppm	Molybdenum ppm	Manganese ppm	Gold ppm	Silver ppm
9102AS	0.45%	7	470	* 2.14	-0.1
9103	0.32%	7	0.41%	0.02	-0.1
9104 Same Sat #1	1.50%	5	0.20%	* 3.96	-0.1
9105 5607 AI	20	10	0.40%	-0.01	-0.1
9106	105	-1	870	-0.01	-0.1
9107	1.35%	12	260	-0.01	0.2
9108	15	13	0.80%	-0.01	0.1
9109	0.27%	20	0.90%	0.05	-0.1
9110	15	12	310	-0.01	-0.1
9111	0.17%	13	0.35%	* 0.83	-0.1
9112AS	1.70%	12	0.19%	0.01	1.2
5607AI	20	15	0.44%	-0.01	-0.1
5608AI				0.8200 0.81	8.5000 7.1

Sample Mark	Arsenic ppm	Antimony ppm	Barium ppm	Uranium ppm	Fluorine ppm
9102AS	-5	-1	680	5	254
9103	8	-1	460	6	366

* No location map available.
Sample sites locally marked
in the field on Al tags.

ppm = parts per million. oz/ton = troy ounces per ton of 2000 pounds avoirdupois. percent = parts per hundred. fineness = parts per thousa
ppb = 0.001 ppm. Read — as "less than". 1 oz/ton = 34.286 ppm. 1 ppm = 0.0001% = 0.029167 oz/ton. 1.0% = 20 pounds/ton.

HUNTER MINING LABORATORY, INC.

994 GLENDALE AVENUE • SPARKS, NEVADA 89431 • TELEPHONE: (702) 358-6227

HOMESTAKE MINING COMPANY Page: 2 Laboratory No: 33151

Sample Mark	Arsenic ppm	Antimony ppm	Barium ppm	Uranium ppm	Fluorine ppm
9104	5	-1	* 710	8	189
9105	-5	-1	*0.19%	-1	289
9106	-5	-1	*0.15%	1	216
9107	-5	-1	510	2	614
9108	17	1	*1.12%	-1	*1.73%
9109	-5	-1	*0.24%	6	0.11%
9110	-5	-1	* 960	-1	246
9111	-5	-1	*0.11%	2	351
9112AS	5	-1	620	4	317
5607AI	5	-1	*0.50%	-1	447

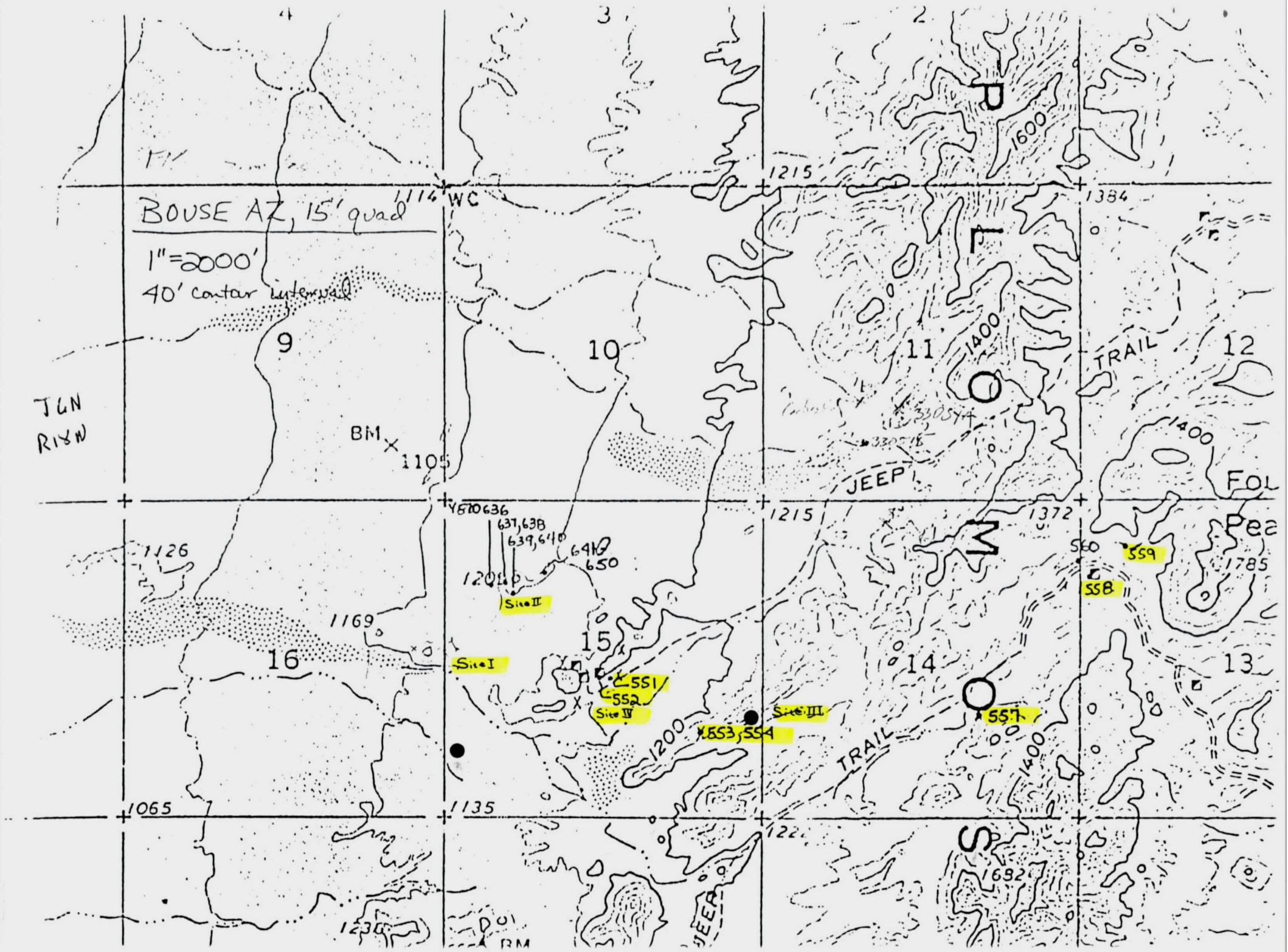
Sample Mark	Gold oz/ton	Silver oz/ton
9102AS	0.084	-0.01
9104AS	0.145	0.03

HUNTER MINING LABORATORY, INC.

H. H. Scales

H. H. Scales

ppm = parts per million. oz/ton = troy ounces per ton of 2000 pounds avoirdupois. percent = parts per hundred. fineness = parts per thous. ppb = 0.001 ppm. Read — as "less than". 1 oz/ton = 34.286 ppm. 1 ppm = 0.0001% = 0.029167 oz/ton. 1.0% = 20 pounds/ton.


BOUSE AZ, 15' quad
1"=2000'
40' contour interval
T6N
R15W
9
10
11
12
13
14
15
16
BM
1105
1114
WC
1215
1384
1600
1400
TRAIL
JEEP
1372
560
559
558
1785
1126
1169
1065
1135
1200
1232
1682
636
637,638
639,640
641
650
Site II
Site I
551
552
Site IV
Site III
553,554
557
JEEP
TRAIL

F M C

GEOCHEMICAL SAMPLING RESULTS

GEOCHEMICAL SERVICES INC.

GEOCHEMICAL ANALYSIS REPORT

LOT ID: FMA-70917G

SAMPLE ID	#	Ag ppm	As ppm	Au ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Tl ppm	Zn ppm	Bi ppm	Cd ppm	Ga ppm	Pd ppm	Pt ppm	Se ppm	Sn ppm	Te ppm
Y870636	1	.176	30.2	.178	20.8K	<.098	8.31	4.66	<.246	<.492	13.8	.636	<.246	<.492	.554	<.246	<2.06	<.492	<.492
Y870637	2	.032	14.4	.276	1575	<.097	10.2	1.80	.384	<.486	8.91	<.243	<.243	2.97	<.097	<.243	<.973	<.486	<.486
Y870638	3	<.015	8.18	.183	89.0	<.098	1.05	.905	.384	<.491	6.47	<.246	<.246	3.08	<.098	<.246	<2.66	<.491	<.491
Y870639	4	.198	6.82	.458	6208	<.098	4.96	1.86	<.263	<.489	6.80	.581	<.244	.504	.207	<.244	<5.00	<.489	<.489
Y870640	5	<.015	3.61	.022	76.6	<.1	.474	.548	.354	<.498	17.3	<.249	<.249	4.12	<.1	<.249	<1.59	<.498	<.498
Y870641	6	<.015	10.6	.005	15.0	<.097	1.36	1.48	.380	<.485	7.77	<.243	<.243	1.96	<.097	<.243	<3.35	<.485	<.485
• Y870642	7	<.015	4.64	.006	14.3	<.097	.355	.319	<.243	<.486	1.21	<.243	<.243	<.486	<.097	<.243	<4.09	<.486	<.486
• Y870643	8	<.015	6.10	.038	51.8	<.098	1.09	1.34	<.245	<.510	9.57	<.245	<.245	2.49	<.098	<.245	<2.46	<.49	<.49
• Y870644	9	<.015	4.01	.003	29.5	<.098	.365	.753	<.246	<.492	7.92	<.246	<.246	4.08	<.098	<.246	<1.72	<.492	<.492
• Y870645	10	<.015	2.95	.001	52.6	<.097	.223	.366	<.243	<.485	7.89	<.243	<.243	5.28	<.097	<.243	<2.22	<.485	<.485
• Y870646	11	<.015	3.73	.006	14.0	<.098	.407	1.07	<.244	<.489	7.90	<.244	<.244	4.05	<.098	<.244	<1.53	<.489	<.489
• Y870647	12	<.015	5.07	.003	10.3	<.098	.199	.566	<.385	<.491	3.75	<.246	<.246	.905	<.098	<.246	<1.00	<.491	<.491
• Y870648	13	.024	7.34	.003	46.5	<.098	1.14	1.38	.304	<.49	6.30	<.245	<.245	<.49	<.098	<.245	<1.45	<.49	<.49
• Y870649	14	<.015	7.29	.003	14.5	<.1	3.33	1.14	.254	<.568	6.62	<.25	<.25	.596	<.1	<.25	<.998	<.499	<.499
Y870650	15	<.015	7.62	.018	20.3	<.099	11.8	8.13	.280	<.493	35.0	.460	.286	<.493	<.099	<.247	<3.53	<.493	<.493
Y870551	16	.027	7.22	.006	537.	<.106	10.6	.713	<.248	<.499	2.26	<.248	<.248	<.496	<.099	<.248	<2.83	<.496	<.496
Y870552	17	.082	7.33	2.06	16.7K	<.097	45.2	2.48	<.242	<.484	8.68	38.6	<.242	<.484	.411	<.242	<4.04	<.484	<.484
* Y870553	18	.062	5.57	.01	377.	<.099	1.96	6.33	<.248	<.495	43.1	<.248	<.248	<.495	<.099	<.248	<.991	<.495	<.495
* Y870554	19	<.015	3.38	.013	58.4	<.098	.720	1.26	.280	<.489	4.52	<.245	<.245	<.489	<.098	<.245	<1.45	<.489	<.489
* Y870555	20	.314	9.84	.102	5211	<.181	4.12	42.9	1.63	<.632	31.6	<.245	<.245	<.49	.288	<.245	<3.21	<.49	<.49
* Y870556	21	<.015	362.	.003	173.	.226	127.	403.	41.9	6.[illegible]	117.	<.248	<.248	6.54	<.099	<.248	<.993	<.497	<.497
* Y870557	22	.026	8.37	.006	29.0	<.097	1.51	6.04	.508	<.484	13.7	<.242	<.242	3.90	<.097	<.242	<2.44	<.484	<.484
* Y870558	23	.214	229.	.001	131.	.405	18.7	33.4	2.45	10.8	10.3	5.15	<.244	.666	<.098	<.244	<1.44	<.488	<.488
* Y870559	24	.997	68.5	.003	2480	<.098	12.0	11.2	2.85	1.79	31.2	15.6	<.245	3.34	.128	<.245	<.982	<.491	<.491
* Y870560	25	.153	269.	.003	389.	<.097	20.8	39.1	4.25	3.06	20.8	53.9	<.242	2.16	<.097	<.242	<2.03	<.484	<.484

• Not located on sample map
* Off Meriwether Claim Block

2741 Toledo Street Suite 211 • Torrance, California 90503 • Telephone 213/320-3680

ANALYSIS SHEET

District Pacific Area Curless submittal, Plomosa Mts, AZ Project No. Y001

GSI lab 15gm digestion Date 9-13-87 Geologist S Powers

SAMPLE NO.	TYPE	ROCK TYPE	DESCRIPTION: ALTERATION - MINERALIZATION	SAMPLE LENGTH	ppm Au	Ag	As	Sb	Hg	Ba	Cu	Pb	Zn	TQ	Bi		Au oz/t	
Y870636	D	Sugary-clear Qtz vn	Cu-ox (chrys, malach) w/ gth + hem boxwks, live lim, bx frags. Fr gr silic	small pit high g'd.	.178	.176	30	<.25	<.1		20,800	45	14	<.5	<1		.005	
637	O	Host rock = chl myl gn	1' wide N20W/40NW fract zone w/ gth + hem on fracts, vnlts, minor Cuox / some bx	small trench	.276	.032	14	.38			1575	2	9				.008	
638	O	mylonite gneiss	unalt, sl → mod broken same trench as 637	trench grab	.183	<.015	8	.38			89	<1	6				.005	
639	O	IQtz vn Cu-ox zone	Cu-ox zone N85W/80W, mod → abt hem, minor gth	composite trench 40'	.458	.198	7	<.25			6208	2	7				.0135	
640	O	Chloritic myl gneiss	4-6' in H.W. of 639 struct, selected most hem areas (sl.) sl-mod fract	composite in H.W.	.022	<.015	4	.35			77	<1	17					
641	O	Chloritic bt gneiss	unalt, sl broken	trench	.005		11	.38			15	1.5	8					
642	O	leucogn	Sl. blchd, tr Fe-ox, wk chl	" 5' from 641	.006		5	<.25			14	<1	1					
643	O	leucogn	local mod fract, local minor gth, blchd	" 5' from 642	.038		6	<.25			52	1.3	10					
644	O	Chloritic myl gn	Immed H.W. of N70W/20N gth-ank zone (650)	" 5' from 643	.003		4				29.5	<1	8					
645	O	Chloritic microdio	V. narrow low-angle fract w/ ankerite-gth (minor)	" 5' from 644	.001		3				53	<1	7					
646	O	Microdio leucogn	" "	" 5' from 645	.006		4				14	1.1	8					
647	O	leucogn chl-bt gn	unalt, wk-mod broken	" 5' from 646	.003		5	<.38			10	<1	4					
648	O	leucogneiss	mod broken, feld → clay, sl Fe-ox	" 5' from 647	.003	.024	7	.30			46.5	1.4	6					
649	O	N45W/15NW fol. leucogn	upper N85W/34N struct w/ gth + ank n.s. / lower ill-defined gth, feld → clay	" 5' from 648	.003	<.015	7	.25			14.5	1.1	7					
Y870650	O	Ankerite zone	high grade of orng-brown ank, brown-black ank, wht calcite	" adj to 644	.018	<.015 ~~.027~~	8	.28			20	8.1	35					
Y870651	O	Mylonite Leucogn	Blchd, saussuritized w/ gth vnlts, btwn 2 Cu-ox struct (n.s.)	composite 10'	.006	.027 ~~.082~~	7	<.25			537	<1	2					
652	D	Cu-ox Qtz vn	Chrysocolla in wht-clear qtz w/ hem-gth boxwks (frags), Mn-ox	high grade decline	2.06	.082 ~~.062~~	7				16,700	2.5	9		38.6		.061	
553	O	Leuco myl	N68E/15NW fol, N55E lin, fract, hem, blchd, lim-py in F.W. of N75W/45NE q.v	small pit 5'	.010	.062 ~~<.015~~	6				377	6.3	43		<1			
554	O	Leucomyl	H.W. of same QV as 553, hem, fract, blchd, wht qtz vnlts w/ bxwks, gr vnlts	same pit " 5-6'	.013	<.015 ~~.314~~	3	.28			58	1.3	4.5					
555	D	Spec. hem.	Selected Fe-rich w/ spec hem from N65W/30N QV w/ Cu-ox, gth-hem bxwks	decline selected	102	.314 ~~<.015~~	10	1.6			5211	42.9	32				.003	

O - Outcrop F - Float D - Dump S - Soil C - Core R - Rotary Cuttings

Page of

ANALYSIS SHEET

District Pacific Area Cerbless Submittal, Plomosa Mts AZ Project No. Y001

Date 9-16-87 Geologist SL Powers

SAMPLE NO.	TYPE	ROCK TYPE	DESCRIPTION: ALTERATION - MINERALIZATION	SAMPLE LENGTH	Au	Ag	As	Sb	Hg	Ba	Cu	Pb	Zn	TQ	Bi			
Y870556	D	Flt bx	hem-spec bx, minor mt, N45E/60-90E flt, 5-6' wide, cuts rhy dike, myl	random trench	.003	<.015	362	41.9	.226		173	403	117	6.64	<1			
557	O	chloritic bt gneiss (myl)	4-5 v.narrow (<1') N55E/85SW fract w/ Mn-ox, spec (n.s.)/minor hem	composite trench wall	.006	.026	8	.51	<.1		29	6.0	14	<.5	1			
558	D	Tert. volcanics	Fe-ox, Mn-ox rich, dipping volcs & volc-clastics above ditch flt	shaft random	.001	.214	229	2.5	.405		131	33.4	10	10.8	5.15			
559	D	volcs, volc-clastics	Hydrotk bx (cracide) w/ hem-Mnox matrix hem-Mnox replace., spec, barite, malachite	several small pits random	.003	.997	69	29	<.1		2480	11.2	31	1.79	15.6			
560	D	Tv, Tvs	some: hematized, Mn-ox, specularite	small pit random	.003	.153	269	4.2	<.1		389	39.1	21	3.06	53.9			

O – Outcrop E – Float D – Dump S – Soil C – Core R – Rotary Cuttings

ASARCO

Exploration Department
Southwestern United States Division

January 17, 1989

Mr. Frank Mack
8655 E. Phillips Ave.
Englewood, CO 80112

Dear Mr. Mack:

Thank you for the submittal on your Meriwether claim block. After our on-site visit we have decided not to do any work at this time. Thank you for considering Asarco. If you obtain additional data on the property, please keep us informed.

Respectfully,

Mark A. Miller
Geologist

MAM:mek

cc: J. D. Sell

ASARCO Incorporated P. O. Box 5747 Tucson, Az 85703-0747
1150 North 7th Avenue (602) 792-3010

VISTA FINANCIAL
LIMITED LIABILITY COMPANY
8101 EAST PRENTICE AVENUE, SUITE 220
ENGLEWOOD, COLORADO 80111-2909
(303) 694-3388

June 27, 1991

ASARCO Incorp.

JUN 27 1991

SW Exploration

Mr. James Sell
ASARCO S.W.E.D.

Via Fax

Dear Mr. Sell:

Attached please find the information on the Meriwether Claims that are located approximately eight miles east of the Copperstone Mine.

Let me know if you would have an interest in this property.

Sincerely,

VISTA FINANCIAL
LIMITED LIABILITY COMPANY

R. G. Talley

RGT/jm
Attachments

NGC:SELL.LTR

7/1/91 telephoned Talley - he will talk with Mr. Wiley & see if further data can be released for integration/evaluation.

To James Sell	From R.G. Talley
Co. ASARCO S.W.E.D.	Co. Vista Financial
Dept.	Phone # 303-694-3388
Fax # 602-792-9934	Fax #

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 7

BOB TALLEY
303-694 3388

SUMMARY OF THE MERIWETHER CLAIM BLOCK
LA PAZ COUNTY, ARIZONA

LOCATION:

The Meriwether Claim Block contains more than five square miles of unpatented mining claims in one contiguous block. This prospectable unit is located approximately 10 miles north of Quartzsite, Arizona on the east side of the La Posa Plain and west of the Four Peaks area of the northern Plomosa mountains. Cyprus Minerals Company's Copperstone gold mine is located 10 miles due west of the claims.

OWNERSHIP:

The claims are on BLM land (both surface and mineral) in Township 6 North, Range 18 West within the Plomosa Mining District. Ownership includes several individual claimants, all represented by Mr. Jim Meriwether, Sr. The block of claims are currently optioned to Wiley Engineering, Inc. (9137 E. Mineral Circle, Suite 380, Englewood, Colorado 80112).

REGIONAL GEOLOGY:

The north trending Plomosa Mountains are composed primarily of Mesozoic metamorphic rocks of sedimentary and volcanic origin. Locally, small outcrops of Precambrian metamorphic rock are present, as well as intrusions of Tertiary granitic stocks and volcanics. The area was affected by Mid-Tertiary detachment faulting. The low angle extensional thrust faulting predates the Basin and Range faulting. Along the western edge of the range, a gently sloping alluvium covered pediment partially cover small outlying hills composed mostly of gneiss. This alluvial valley is called the La Posa Plain.

GEOLOGY OF THE CLAIMS:

A majority of the rocks on the claims are a thinly laminated, banded biotite gneiss. The mineral deposits found on the claims appear to be of epithermal origin and a later phase of hot mineral spring deposition. [redacted] suphide mineralization was observed. Some mineralization occurs in areas of brecciated low angle fault zones. Associated with the gold-copper oxide (chrysocolla) mineralization are varying amounts of barite, hemitite (both specular and earthy), manganese, calcite and quartz. Mineralized veins ranging from a few inches to several feet thick trend in an east-west direction. Other veins trending in a northwest direction appear to intersect the mineralized veins in areas of the La Posa Plain overlain with alluvium. Outcropping mineralization closely resembles Copperstone's elements and mineral types.

GEOCHEMICAL ROCK CHIP SAMPLING:

Approximately thirty rock samples were collected and analyzed by FMC and Homestake mining companies. The following is a summary of the more significant elements:

Gold - about half of the samples are significant, with values ranging from 10 ppb to 0.145 ounces per ton.

Copper - about two thirds of the samples are significant, with values ranging from 10 ppm to 2.0 percent.

Manganese - only thirteen samples were analyzed, with values ranging from 260 ppm to 0.9 percent.

Uranium - about one third of the thirteen samples above showed uranium values ranging from 5 ppm to 8 ppm.

Barium - two thirds of the barium samples were significant, with values ranging from 710 ppm to 1.12 percent.

Other elements were observed, but it is intriguing to note that the Copperstone gold deposit is characterized by significant amounts of barium, manganese and uranium with stains of copper.

WORK BY OTHERS:

The occurrence of elements and mineral types similar to Copperstone has been confirmed by both FMC and Homestake through geochemical analysis of rock samples, but a detailed analysis of the property has never been undertaken. Callahan Mining Corp. determined areas of interest by conducting an induced polarization (IP) survey and identifyed pediment covered anomalies which have not yet been drilled.

MINERAL POTENTIAL:

The scattered mineralized areas of this claim block, along with the low and high angle faulting, hot spring deposits, exposed breccia, abundant amounts of red earthy hematite, barite, specularite and chlorite and lesser amounts of copper and manganese, indicate an upward leakage of mineralization from an underlying mineralized source structure. At reasonable depth, there may be a low angle fault breccia host structure with potentially significant gold mineralization.

A Geological Summary Of The Meriwether Claims,
Northern Plomosa Mts., La Paz Co., Arizona

The Meriwether claim block encompasses all or parts of sec. 2, 3, 4, 8, 9, 10, 11, 14, 15, 16, 17, 22, and 23 in T6N, R18W on the western slopes of the Plomosa Mts., La Paz Co., Arizona and can be located on the Bouse Quadrangle, 15 minute topographic map. Cyprus' Copperstone Au-deposit is visible approximately 10 miles west of the property.

The claim block contains exposures of bedrock along the eastern portion while alluvial fan deposits and aeolian dune deposits largely cover the rest of the area, although occasional outcrops are exposed above these deposits.

In order to investigate the geological potential of the property possibly containing a Au deposit, a two-day reconnaissance of the property was conducted and available reports and literature were researched. The following table is an effort to incorporate data observed in the field and denoted in the literature concerning the Meriwether claims, and is a comparison to data from the literature concerning the Copperstone Au deposit.

TABLE I
Comparative Geology

	Copperstone Au-Deposit	Meriwether Claim Block
A. Structural Setting	1. Hanging wall of low angle detachment fault contains Au ore body	1. Evidence of low angle brecciated structures throughout areas of outcrops
	2. Qtz latite welded tuffs comprise hanging wall	2. Drill hole E.C.-3 encountered 14 ft. of volcanics overlying Pc schists

	Copperstone Au-Deposit	Meriwether Claim Block
	3. Structural orientation of breccia dike hosting Au zone is: strike N45°W dip (ave.) 30°NE	3. The average attitude of veins and prevailing joint direction is: strike N50°W dip 45°NE
	4. Footwall rocks consists of Precambrian to Jurassic aged granite, gneiss, schist, quartzite, amphibolite	4. Outcrops in area thought to be exclusively in footwall of Plomosa detachment fault to the east and consist primarily of amphibolite grade gneiss of Precambrian age
B. Mineralogy	Qtz -amethyst veins-contain Au specular hematite* chrysocolla* malachite* barite* calcite siderite MnO2 fluorite adularia magnetite chalcopyrite pyrite	Qtz veins-amethyst relatively minor specular hematite earthy hematite chrysocolla malachite (from chrysocolla) barite black calcite aragonite? siderite &/or ankerite MnO2 carnotite? limonite after pyrite?
	* most common accessory minerals	
C. Geochemistry	Significant amounts of F, Ba, Mn, U, Cu	Significant amounts Cu, Mn, Ba
	Trace amounts of As, Sb, Tl, Hg	Anomalous U
		Trace amounts of Sb, Hg Tl, As to Au
D. Geophysics	IP & ground magnetic surveys outlined the deposit	At least one IP anomaly identified & possibly 2 other anomalies (buried by alluvium)

	Copperstone Au-deposit	Meriwether Claim Block
E. Alteration	argillization sericitization local chloritization minor chalcedony silicification	chalcedony silicification chloritization minor sericitization
F. Other		siliceous sinter from hot springs & calcite veining w/possible pipe-like centers of hydrothermal activity indicate a possible deep magma chamber-intrusive. Volcanics are known in the extreme N. Plomosa Mts.
G. Exploration		5 drill holes by Homestake collared in alluvium and on main roads due to difficult access conditions - assessment work only. No holes drilled in area of IP anomalies or in areas of workings or areas of favorable geology.

Rock Descriptions - Meriwether Claims

Cactus Rat #1 - from vein in low angle structure
chrysocolla, cuprite?, pyrite → limonite, hematite, goethite
qtz. veinlets & crystal pockets - vugs
sericitic alteration
silicification
malachite after chrysocolla

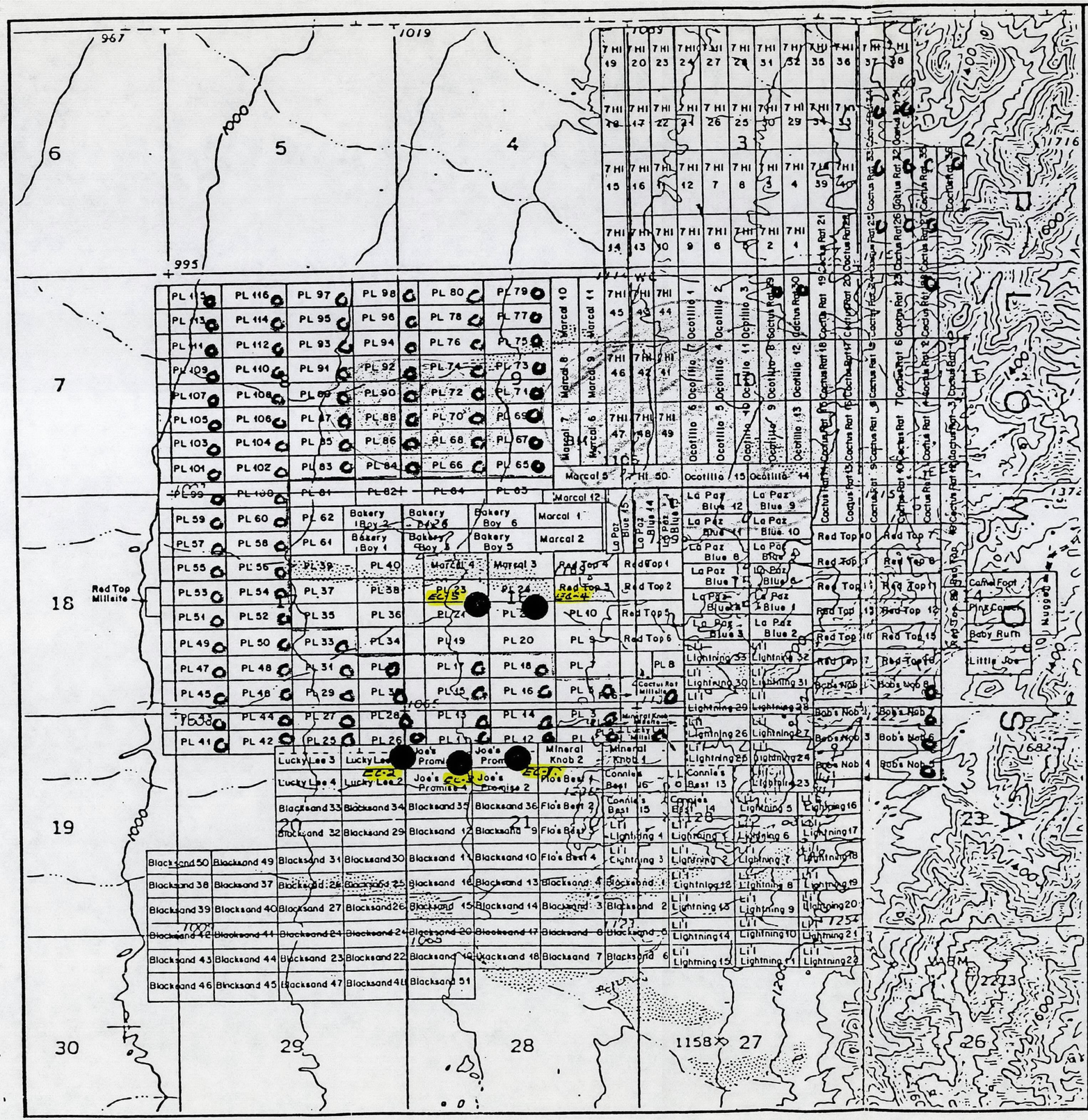
Cactus Rat #2 - from mod-high angle vein system
brecciated calcite w/earthy red hematite & magnetite w/poss. MnO_2 coatings

La Paz Blue #11 - from mod-high angle vein
limonitic boxwork w/hematite, chrysocolla, cuprite?
chalcedony & qtz crystals in vugs

Red Top #15 - prospect pit in low angle structure
specular hematite breccia w/carbonate & siliceous coatings and vug fillings, limonitic coatings & possible pseudomorphs after pyrite

Red Top #16 - low angle structure in dry wash
brecciated hematitic zone w/siderite-ankerite-calcite veinlets

7 Hi #33 - quartz vein system
fractured qtz vein w/FeOx on fx, specular hematite? coatings



Explanation

MT PLAT DATA:

Sections 2, 16: PHX 077471 SX Waiver All Min

Li'l Lightning claims 11 through 22 believed accurate but unsupported by maps or location notices in BLM lead file

Mineral Knob and Lucky Lee Millsites have same location description. Map locations used.

Unnumbered Li'l Lightning claims replace Connie's Best claimblock and are believed numbered 23 to 38. Claim map not available.

MINE SITE PROPOSED BY HOMESTAKE. FIVE BLACK DOTS ARE TEST HOLES DRILLED BY HOMESTAKE, EC-

SUSPECTED ORE BODY. MANY VEINS CRISS CROSSING IN THIS AREA

CLAIMS THAT HAVE BEEN DROPPED

PRELIMINARY LAND STATUS

HOMESTAKE MINING COMPANY

EAST COPPERSTONE PROJECT

LA PAZ COUNTY, ARIZONA

T6N, R18W

DATA: P. O'MALLEY
DRAFTED BY: P.O'M.

DATE: 3/88
REVISIONS: 5/88

HOMESTAKE

PLATE 1

Homestake Mining Drill Holes
Meriwethes - Reese Claim Block, La Paz Co., AZ

Hole No.	From	From	Section	Township	Range
EC-1	1250 FNL,	2600 FWL,	21	T6N	R18W
EC-2	1200 FNL,	100 FEL,	20	T6N	R18W
EC-3	1400 FNL,	1400 FWL,	21	T6N	R18W
EC-4	2450 FSL,	2200 FEL,	16	T6N	R18W
EC-5	2550 FSL,	1600 FWL,	16	T6N	R18W

JDS

REPORT ON
GEOLOGIC RECONNAISSANCE OF THE
MERIWETHER CLAIM BLOCK,
LA PAZ CO., ARIZONA

For:

Bruce A. Bouley
Chief Geologist
CALLAHAN MINING CORP.

By:

Don C. White, C.P.G.

March, 1989

SUMMARY:

The Meriwether claim block covers about eight square miles of prospectable terrain on the east side of La Posa plain, opposite and ten miles east from Cyprus' Copperstone open pit-underground mine. Outcropping mineralization at Meriwether bears an uncanny resemblance to Copperstone in terms of element and mineral assemblages. Both FMC and Homestake recognized this and confirmed it with geochemical analyses of rock samples but never pursued it further.

Their concerns may have been for the key differences of Meriwether from Copperstone. Meriwether is within the lower plate of the detachment tectonic regime and hosted by Precambrian, amphibolite grade rocks. All the showings are shear-zone-confined and shears are generally joint controlled.

This finding, coupled with the realization that the Plomosa fault is host to most of the same gangue minerals as Copperstone and that it used to overlie Meriwether by just a few hundred feet, leads to a worry. The worry is that the Meriwether showings may have a supergene origin. If so, they aren't expected to be any better at depth or beneath cover than the subeconomic showings prospected to date.

I.P. surveys now in progress will tell whether anomalies attributable to disseminated sulfides or specular hematite exist beneath the pediment. If so, they will have to be evaluated carefully as targets for magnetic or soil gas surveys and/or drill-testing.

INTRODUCTION AND PURPOSE:

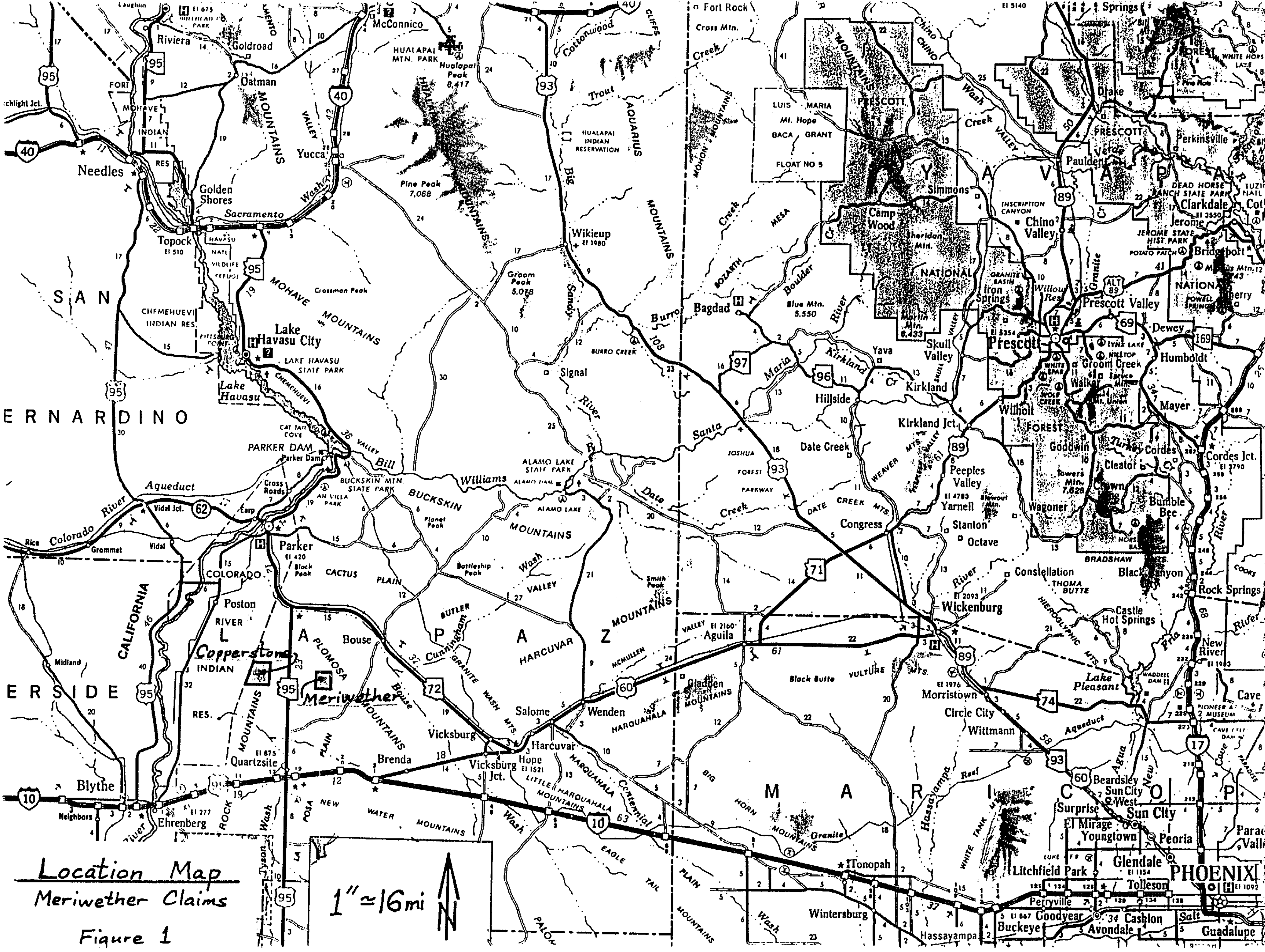
Callahan has leased the Meriwether claim block for the purpose of exploring for gold lode deposits. The claims include shows akin to those at the nearby Copperstone Mine of Cyprus Gold Corp. The property is relatively unexplored except by a few early prospect workings and some recent pits and trenches on surface by the claimants.

The purpose of this report is to relate the findings of geologic reconnaissance of the property and suggest how to apply them to ongoing exploration. The data herein result from eight field days for each of two geologists, Don White and Curt Wheat, during January-February, 1989. Those sixteen man days allowed traverses of virtually all ridges and washes in or adjacent to the claim block. Twelve stream sediment samples and fifty three rock samples were collected.

LOCATION, OWNERSHIP, AND ACCESS:

The Meriwether claim block comprises about eight square miles of unpatented claims in a contiguous block. The claims lie at the western margin of the Four Peaks area of the northern Plomosa Mtns. and extend out three miles across the pediment of La Posa Plain. They are centered ten miles due east of the Cyprus Copperstone Gold Mine in La Paz County, Arizona (figure 1).

The claims are all on BLM lands (surface and minerals administration) in Township 6 North, Range 18 West within the Plomosa Mining District. They include a number of separate individual claimants, all represented by Mr. Jim Meriwether Sr. (P.O. Box 2667, Quartzsite, AZ 85346).



Location Map
Meriwether Claims
Figure 1

The easiest road access is by ungraded (but two-wheel driveable) dirt road east from State Highway 95 at a point opposite the access road to the Copperstone Mine. Within the claims, numerous four-wheel drive roads branch off to various prospects and sites. Many of them have been improved in the course of the claim staking effort but those crossing either dry washes or dunes are prone to be soft and two-wheel drive vehicles can bog down. Other roads come in from north and south parallel to the western Plomosa range front. They are much longer and rougher approaches. The roads due east into the Plomosas are generally washed out and impassable as of this writing.

GENERAL INFORMATION:

Topography over most of the claim block is quite minimal. It is the gently sloping surface of the pediment derived from the Plomosa Mtns. and tilting 1°-2° westward to the center of La Posa Plain. Local knobs of bedrock jut through the pediment sands and gravels and rise up to 150 feet above the pediment surface. The east edge of the claim block laps on to the steep and highly dissected western slopes of the Plomosas. There slopes of 30° are common and near vertical scarps also occur. Local relief is about 600 feet to ridge tops just east of the claim boundary. The west margin of the claims, lowest on the pediment, lies at 1,000 feet elevation.

All of La Pax County is very arid. A few inches of rain fall each year, mainly as a few summer thunderstorms. Such storms create flash floods that scour the braided desert washes issueing from the mouths of canyons and ravines of the Plomosa Mtns. The lack of rain coupled with the infertility of the pediment make for sparse desert vegetation. The dominant species is creosote bush ("greasewood"). There is also sage and a variety of cacti including staghorn, cholla, and prickly pear. Mesquite and palo verde trees mark the courses of washes. Temperatures vary from near freezing on winter nights to about 120°F on summer days.

There is no water now available within the property. Water wells have been drilled by Cyprus Corporation five miles to the west, near highway 95, for piping to their plant site and use in their leaching operation. Those wells are reportedly 650 feet deep.

Electric power is the same distance from the claims. It could be tapped from the lines along highway 95 as Cyprus has done. Five miles of cable would need to be strung to the claim area.

WORK BY OTHERS:

There are a number of prospect pits, shallow inclined shafts (less than 75 feet) and short adits and drifts believed dating back to about 1900. Most were sunk or driven on outcropping mineralized shears. There is no evidence of any stoping or production.

The only known geologic mapping in the area was through the Arizona Geological Survey (Scarborough & Meader, 1983) and/or university theses (Jemmett, 1966 and Stoneman, 1985). All of them focused on large areas and have virtually no detailed information of use to Callahan's program or specific to the claim area.

Two major metals firms have had cursory looks at the claims in the last couple years. FMC never got past some multi-element geochemistry on as many as 25 samples in 1987.

Homestake, in 1988, did about the same but also drilled two rotary holes through pediment near the southwest corner of the claims. They were assessment work and fulfilled lease work requirements rather than testing any specific geologic, geochemical, or geophysical targets. They indicate little other than depth to bedrock. Homestake had another three square miles adjacent to the south side of Meriwether under lease. That is the block known as the Reese property for its principal claimant. Together, Meriwether and Reese blocks constituted Homestake's "East Copperstone" project. Three holes were drilled on the Reese side of the boundary, again mainly blind and revealing only depth to and lithology of the bedrock.

The Meriwether claimants have done some backhoe and dozer trenching to better expose surface shows. They also retained Frank Mack, a Denver consulting geologist and ex-Copperstone explorationist, to compile a property report. His report (Mack, 1988) includes all the available Homestake and FMC geochem. and drilling results (also included in the appendix to this report) and his own sketch maps of three small areas of workings.

GEOLOGIC SETTING:

The Meriwether claims lie strictly within the Precambrian gneiss terrain of a structural block beneath a known major detachment fault. The main detachment is known as the Plomosa fault and its surface trace parallels the east boundary of the Meriwether claims, about one mile east of the boundary. The Meriwether area lies entirely within the so-called Bighorn plate or structural block (figure 14, from Scarborough & Meader, 1983).

The exclusively Proterozoic rocks of the Bighorn block are amphibolite grade gneisses. They exhibit intense internal deformation that resulted from Precambrian metamorphism and tectonism. Above the Plomosa fault there are Paleozoic and Mesozoic greenschist facies metasediments.

Most mineralization of the northern Plomosa Mtns. occurs east of the detachment and within the Phanerozoic rocks. Base and precious metal mines, iron and manganese mines, and barite mines all occur east of the Plomosa fault. Some of each type had documented production, mostly before WWII. The Plomosa fault plane itself is mineralized. It varies up to a several hundred foot thick zone of brecciation. Much of it is rich in hematite and calcite with local manganese, barite, silicification, and traces of fluorine, uranium, and base metals, particularly copper as chrysocolla. None of these are known to be economic in the fault setting.

CLAIM BLOCK GEOLOGY:

*PRECAMBRIAN ROCKS: The Meriwether claims and surrounding area lie completely within the Bighorn plate and are comprised exclusively of Proterozoic gneisses. They vary from white to green, gray, and black, thinly laminated to massive, and variously display foliation. They have been subject to multiple Precambrian metamorphic and tectonic events, metamorphosed to amphibolite grade, and deformed isoclinally. Recumbent folding is evidenced but only poorly documented because it,

in turn, has been overprinted by Phanerozoic events.

Protoliths too, are only speculative. Certainly the dark and light compositionally banded gneisses are metasediments and/or metavolcanics. The more massive units seem to be metaplutonic rocks as indicated by texture and areal distribution. They were probably a series of mafic and intermediate plugs and sills of irregular shape and local extent.

*STRUCTURE: The Precambrian deformation events have already been mentioned. Thrust faulting is attributed to the Laramide orogeny (Cretaceous) with subsequent Eocene and then Miocene activity. The latter was a detachment faulting or gravity sliding event with its most local manifestation the Plomosa fault, outside the claim block.

Within the claim block one can recognize a number of warps in the Proterozoic rocks (see figure 16). They are a sequence of northeast striking and gently northeast plunging folds (strikes about N50°E, plunges 10° to 30° NE). They are gentle folds with dips on limbs rarely exceeding 45°. That fold set is crossed amost perpendicularly by a set of northwest striking, northwest plunging folds (N30°W, 10°-30°NW). It may be that some of the knobbiness of the local topography results from the egg-crate-like pattern of these two intersecting fold sets.

The metamorphic foliation is quite a persistent, through-going feature. It is about N20°-40°E and very nearly vertical. It displays a mineral lineation which varies from gently NE plunging in the eastern portion of the claim block to gently SW plunging elsewhere, as a function of the Southern Cross anticline.

Jointing is generally N50°W and dips NE from 30° to 80° (figure 15). Thus the jointing strikes 90° from the foliation and crosswise to the NE set of folds. The variance in joint dips seems to be systematic by area and could probably be related to folding by more abundant careful observations. The importance of jointing as a control on later shearing and mineralization will become clear in the following discussion.

*MINERALIZATION: An intriguingly Copperstone-like suite of minerals are displayed within and near the Meriwether claims. The best shows are in sections 14, 15, and 22 (figure 16). They are generally shear-zone-hosted and/or joint filling assemblages of hematite, barite, calcite, manganese, with or without siderite, quartz, chrysocolla, and carnotite. The Fe-Mn-SiO_2-Cu-U suite is associated with gold zones at Copperstone.

Hematite is the most pervasive mineral to fill fractures and shears in the claim area. It is generally red and earthy though occassionally specular as is common at Copperstone. Color attributed to hematite is sometimes hard to discriminate from that attributed to manganese as MnO_2. Similarly, the calcite is often stained and black calcite is common.

Barite is usually as coarse white or beige lathes. It can occur as nearly pure narrow veins (up to 6 inches thick) or as a major accessory in multi-mineral veins. It is often intimately intergrown with black,

botryoidal manganese.

Only a small portion of the veins contain a quartz core. If they do, it is often accompanied by minor chrysocolla which locally weathers to malachite on fractures. It is these quartz-copper zones that invariably carry the best gold grades. Amethystine quartz was found locally but with no associated gold.

While fluorite was not recognized visually nor spotted by ultraviolet-lamping sample bags, the fluorine analyses by Homestake (100 ppm-2%) suggest fluorite probably occurs. Similarly, though there are no radiometric anomalies detectable with a scintillometer, analyses up to 8 ppm suggest some uranium minerals may occur as independent species. Indeed, some canary yellow crusts lining fractures in or adjacent to quartz-chrysocolla veins are probably carnotite.

The dominant orientation of veins is N50°W, 45°NE as seen in figure 15. That is the mean of twenty three measured vein attitudes, including mostly crosscutting but some conformable veins. The crosscutting veins are shear zones. The conformable veins can be either shear zones or simple dilated bedding planes. The dominant crosscutting veins, hosted by shears, parallel or actually correspond to the jointing.

Gold values are mostly very low (undetectable to barely detectable) though about one quarter of all the veins sampled carried 0.02 oz/t or greater gold. The highest values, 0.2 to 0.4 oz/t Au are from quartz-chrysocolla selections made from vein cores or prospect dumps (see table I).

Gold anomalies are paralleled by arsenic and copper and more crudely by molybdenum, lead, and zinc (see table II). Silver values are generally undetectable (high Au to Ag ratio) as are mercury, antimony, bismuth, thallium, cadmium, platinum, palladium, tellurium, selenium, and tin. The work by FMC revealed that the Plomosa fault is quite anomalous in As, Sb, Mo, Pb, Zn, Tl, Bi, and Ga but that those elements occur in much lesser amounts in the Bighorn block Precambrian rocks. Certain other elements, notably barium, manganese, uranium, and fluorine, are locally anomalous in the Precambrian rocks but not necessarily in proportion or direct realtionship to gold. These relationships are summarized in table II.

DISCUSSION:

On the positive side, we see an elemental and mineralogic suite at Meriwether that very closely matches that at Copperstone. On the negative side, that suite occurs only as narrow fracture filling along the prevailing joint direction in the Precambrian rock with benign alteration. A very serious ~~work~~ worry is that the Meriwether mineralization could fathomably be all supergene rather than hypogene.

Consider that the Plomosa fault plays host to the same mineral suite in even greater abundance than that of the Precambrian rocks. The eroded trace of the Plomosa fault was right over the present Meriwether claim block, perhaps as little as a couple hundred feet above the present ground surface. It seems probably that down-going meteoric waters would carry and reprecipitate that assemblage of elements in structurally controlled settings. Those are

the joint-controlled shear zones of the Precambrian rocks. The overall lack of porosity and permeability of the Precambrian rocks has restricted mineralization to those settings.

CONCLUSIONS:

The geologic reconnaissance at Meriwether has produced a more detailed and better documented but fundamentally unchanged understanding of the Meriwether mineral potential. The mineral showings akin to those at Copperstone remain intriguing. The differences from Copperstone, however, may be crucial. The lower plate setting of Meriwether, the Precambrian host rock, and the joint control of mineralization are all permissive of supergene rather than hypogene mineralization.

While the geologic work has not yielded specific targets for geophysical or drill testing, it has at least limited the area of focus. A crescent-shaped zone at the southeast extreme of the claim block contains all the auriferous shows and the greatest abundance of associated metals. This spurs interest in the adjacent pediment-covered sections. Those sections are already being surveyed with induced polarization (I.P.) with results expected soon.

RECOMMENDATIONS:

A careful review of the combined geologic (this report) and I.P. findings will determine whether any pediment-covered anomalies justify followup testing. If so, alternatives include more detailed I.P., ground magnetics, geochemistry (such as CO_2 soil gas) and drilling. The size, strength, depth, and orientation of any anomaly will be factors in choosing the appropriate followup work.

Figure 2: Don White at a typical Meriwether outcrop of Precambrian gneiss with low ridges of similar rocks to the south, as well as pediment gravels and sand dunes.

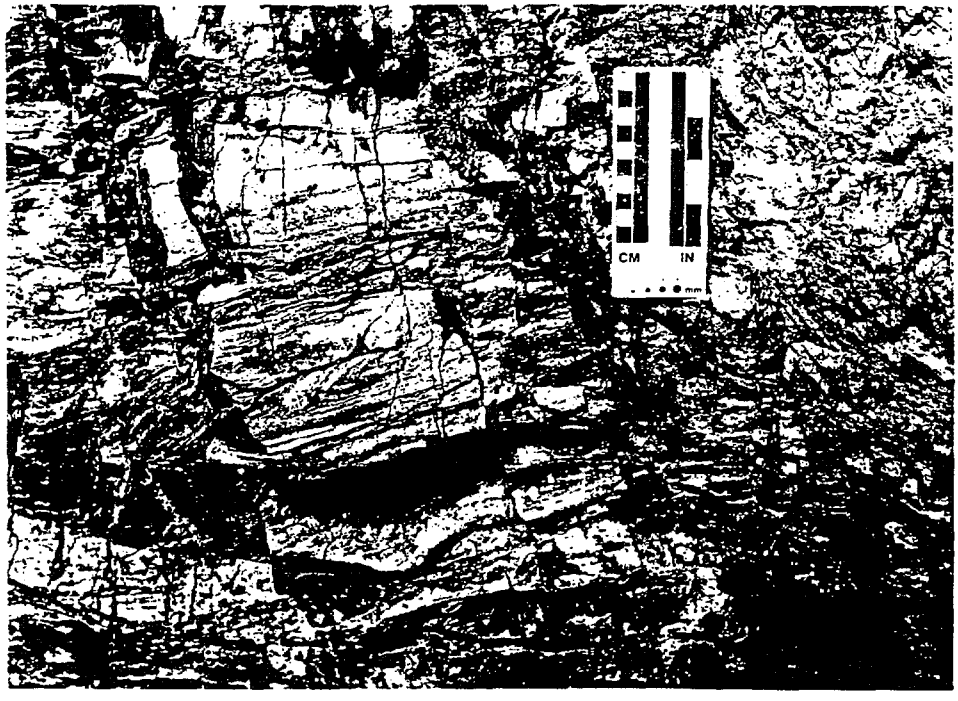


Figure 3: Intense deformation evidenced in the Precambrian gneiss by isoclinal folding.

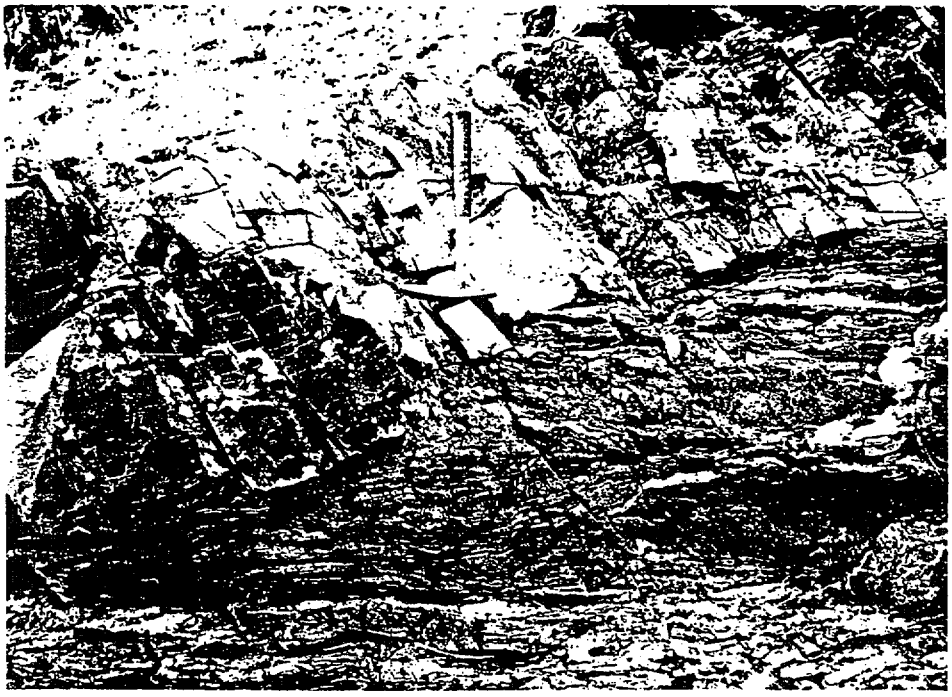


Figure 4: The Precambrian stratigraphy includes thin-bedded and massive units, unconformities, and varied styles of deformation as a function of rock competency.

Figure 5: Thin-bedded and color-contrasting units of the Precambrian gneiss. Probable intrabed drag-folding at top.

Figure 6: View southeast from the northeast corner of Meriwether's claims. "Four Peaks" are just right of center. They are notably redder than the tan p€ gneiss in the foreground. The structural break at their base is the trace of the Plomosa detachment fault, a zone over 100 ft. thick with abundant Fe, CO_3, quartz, CuOx, MnO_2, $BaSO_4$, etc.

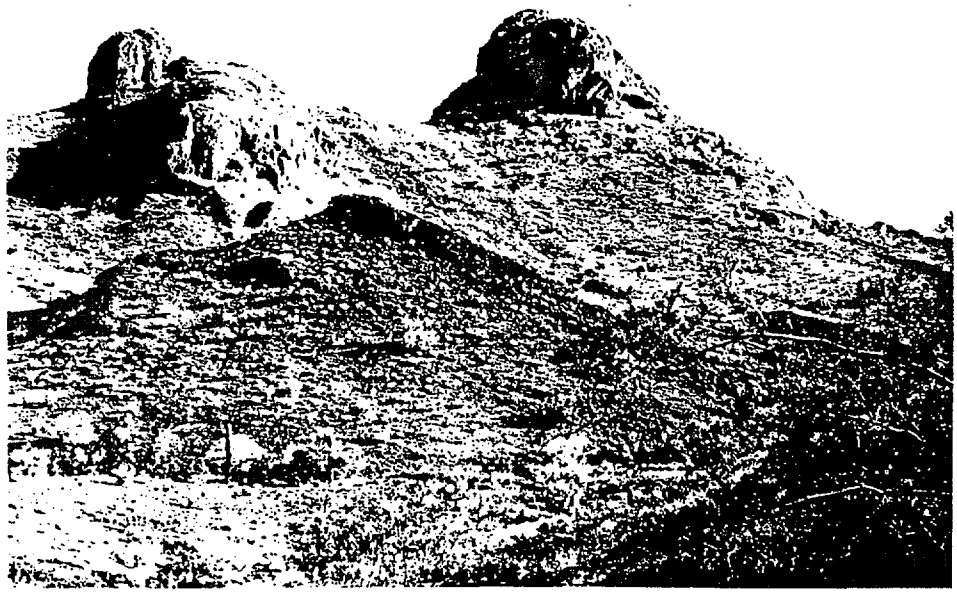


Figure 7: Central "Four Peaks" area showing bedded sediments cut by diagonal iron-stained structures.

Figure 8:

High-angle northwest trending shear zone with matrix-supported breccia of pЄ clasts in hematite, calcite, barite, MnO_2-laced gouge. This is site of samples M-112, 113 in NW¼ Sec 14. The more barite-rich zone runs 0.07 oz/t Au here.

Figure 9:

Typical narrow NW striking shear (perpendicular to bedding and fold axis strikes) with massive and cellular limonite, manganese, barite, quartz, trace chrysocolla, and some wall rock bleaching. This is site of sample M-206 in SW¼SE¼ Sec 15. Au and Ag are at the detection limit here (.001 oz/t Au, 0.1 oz/t Ag)

Figure 10:

Curt Wheat in an old prospect hole at "Site II" in the NW¼ Sec 15 and site of Homestake's sample 9103 (.3% Cu, .4% Mn, trace Au, slightly anomalous As, Ba, Fl, U). Zone is 18 inches thick, high angle fault filling with abundant caliche impregnation.

Figure 11:

Quartz lenses ringed by chysocolla within a NW-trending, steeply NE dipping shear zone at "Site 4" (NE¼SW¼ Sec 15). Note discontinuity of mineralization within bleached zone.

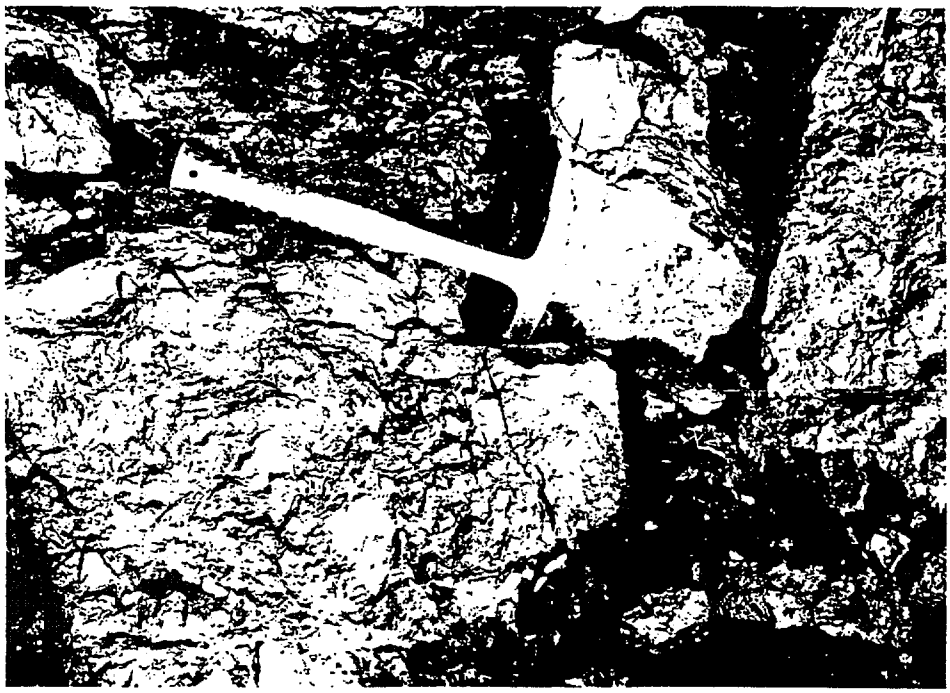


Figure 12: Coarse white barite lathes in massive red-brown manganiferous quartz-hematite rock filling a fault zone at sample site M-203 (trace Au) in the NE¼ Sec 2.

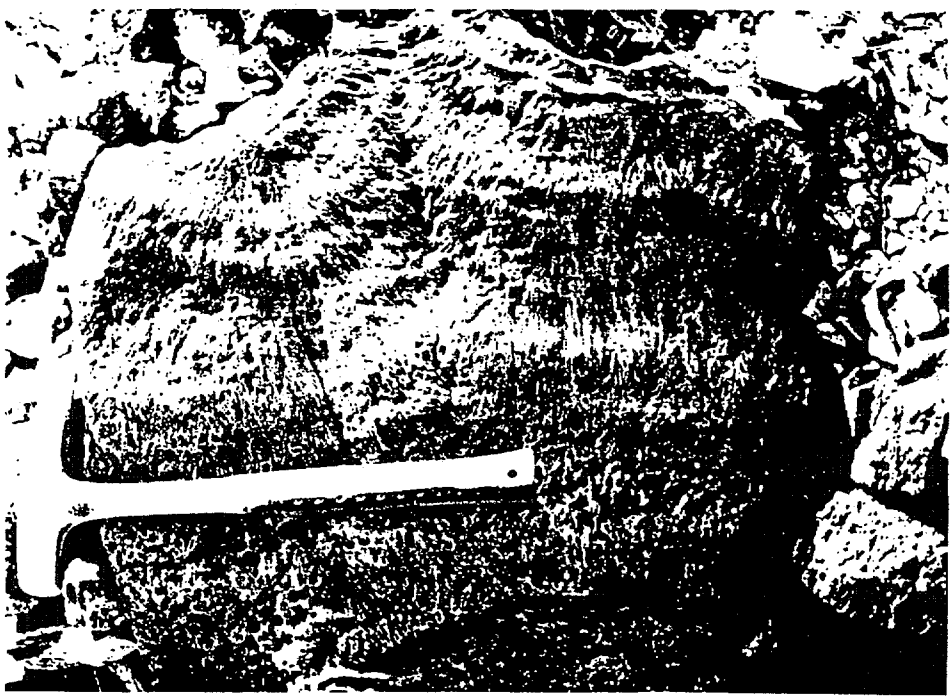


Figure 13: Sparry carbonate stained by traces of Fe and Mn near to the site of Figure 12.

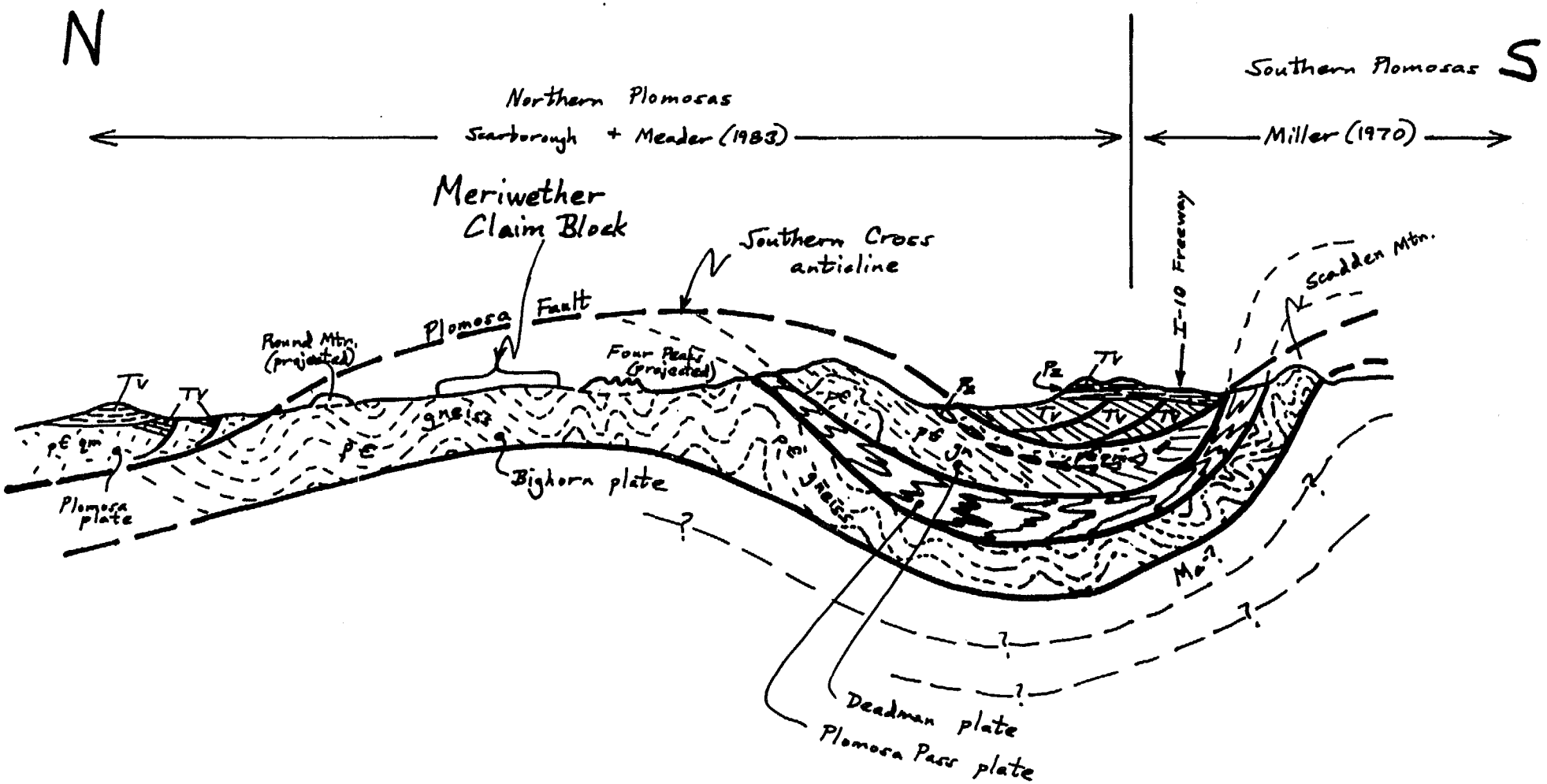


Figure 14 - Geologic sketch cross section of Plomosa Mtns. looking E — from Scarborough + Meader, 1983

Note setting of Meriwether claim block exclusively within the Precambrian gneisses of the Bighorn block. Don White - March, 1989

TABLE I

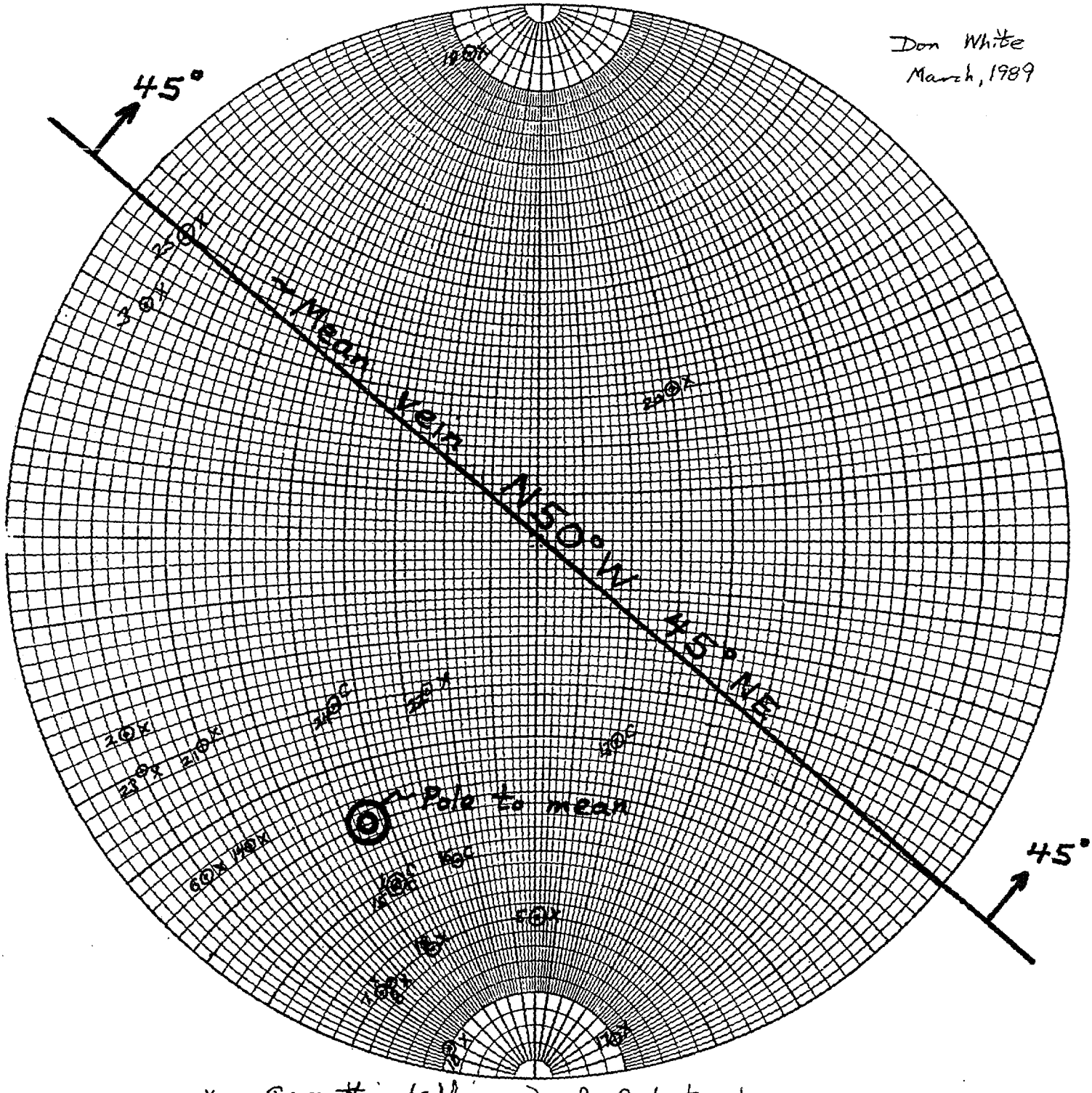
Summary of 200-series Meriwether Samples

Sample #	Thickness (ft)	Vein orientation Strike	Dip	Hem	Bar	Cal	Mn	Qtz	Cu	Other	Assay (oz/t) Au	Corresponding Homestake sample # (Al tag)
M-201	1.5	N60°W	45°NE	+	++						.001	
M-202	9.0	N25W	80NE	+							.001	
M-203	40.0	N30E	80SE	+	+	++	+				.001	
204	≤5.	Metamorphic segregation on frax.				+		+	+		.001	
205	0.5	N90E	70N	++	+		+				.002	
206	0.5	N45W	80NE	+	+		+	Tr.	Tr.	sid. + lim.	.001	
207	0.5	N70W	70NE	+	+		+	Tr.	Tr.	sid.	.006	
208	0.3	N70W	65NE	+				++	+		.226	(9109)
209	1.0	bleached + sericitized wall rock to sample 208									.002	
210	0.4	N80W	75N	+	+	+		++			.361	(9104)
211	1.0	bleached + sericitized wall rock to sample 210									.018	
212	2.0	unaltered bl. + st. pt wall rock beyond sample 211									.007	
213	3.0	N40E	20NW	+	+		+	+	Tr.		.005	
214	2.0	N45W	70NE	+	++	+	+	+		lim.	.001	(9139)
215	0.5	N60W	45NE	+	+	+	+		Tr.		.011	
216	1.0	N60W	25NE	+	+	+	+	+	Tr.		.410	(9111)
217	2.0	N80E	70N	+	+	+	+	+		bl. cal. + amethyst	.001	
218	3.0	N70W	45N	+	++	+	+	+		bl. cal. + amethyst	.001	(9141)
219	≤0.5	N80E	60S	+	++	+	+				.001	
220	≤0.5	N30W	30SW	+	++	+	+				.001	(9140)
221	≤0.5	N30W	70NE	++	+	+	+	+			.058	
222	≤0.5	N30W	25NE		+	+	+	+	Tr.		.070	
223	9.0	N30W	80NE	+	+			+		carnotite	.001	
224	3.0	N30W	45NE	+				+			.002	
M-225	4.0	N40E	Vert.	+	+	+	++				.004	

Don C. White
March, 1989

Figure 15 : Stereonet plot of poles to sampled veins

Meriwether property



X = Crosscutting bedding
C = Conformable with bedding } of pts host rock

Mean of 22 points is indicative of a mean vein attitude N50°W 45°NE which corresponds to the prevailing joint direction

Don C. White
March, 1989

TABLE II

Meriwether Geochemistry Summary

(based upon F.M.C., Homestake, + Callahan work)

Element	Range of concentration/abundance	Remarks
Au	.001 ppm – 8 ppm (~.25 oz/t)	Higher assays from select lithologies only.
Ag	< .015 ppm – 1.0 ppm (~.03 oz/t	Generally very low. Low Ag/Au ratio. Not ∞ Au.
As	< 5 ppm – 30. ppm	Proportional to Au
Sb	< .2 ppm – .4 ppm	Generally undetectable. Anomalous in Plomosa fault (2–5 ppm).
Hg	All < .1 ppm	Undetectable
Mo	< 1 ppm – 10. ppm	Crudely ∞ Au
Cu	10 ppm – 20,000 ppm (2%)	Proportional to Au
Pb	< 1 ppm – 5 ppm	Crudely ∞ Au. 10–30 ppm in Plom. Flt
Zn	~1 ppm – 20 ppm	Proportional to Au. 10–30 ppm in Plomosa Fault
Ba	400 ppm – 10,000 ppm (1%)	Not necessarily ∞ Au. May rep. separate event +/or supergene.
Mn	200 ppm – 10,000 ppm (1%)	Not necessarily ∞ Au
U	< 1 ppm – 8 ppm	Not necessarily ∞ Au
Fl	100 ppm – 20,000 ppm (2%)	Not necessarily ∞ Au

Elements anomalous in Plomosa Fault but not in pit outcrop:
As, Sb, Mo, Pb, Zn, Tl, Bi, Ga.

Elements not generally detectable in pit outcrop:
Ag, Sb, Hg, Tl, Bi, Cd, Pt, Pd, Se, Sn, Te.

Elements useful to Meriwether gold program: Au, As, Cu, Pb, Zn.

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Stoneman, Deborah A., 1985; Geologic map of the Plomosa Pass area, northern Plomosa Mountains, La Paz Co., Arizona. Univ. of Arizona M.Sc. thesis with map available as AZ Geol. Survey MM-85-B. 1:12,000.

APPENDIX

- CMC sample listings
- CMC assays
- CMC stream sediment analyses
- FMC's geochemistry
- Homestake's geochemistry

1

Meriwether Property Assay Samples by Curt Wheat (101-12 c)

Sample	Description	Assays (oz/t) Au	Ag
M-101	(Sec. 2, T6N, R1W) From ± 2' thick hem. / coarse barite / ± colloform si filled vein @ 305° for >200' intermittent exposure with ? dip except where exposed by small caved adit in creek showing ± 30° NE dip. Minor slickensiding.	.001	<.10
M-102	(Sec. 2) Small qtz-veined, slickensided zone ⊥ to and ? vertically cutting coarse grained, variably foliated (parallel surrounding (at 30°) gneiss) local meta-granitoid exposure in main creek which underlies variable biotite / felsic gneiss. Exposure cut off at SW end by qtz-veined zone which appears pre-metamorphism.	.001	<.10
M-103	(Sec. 10) Thin, short (2-3" x ± 20') barite / less hem. vn'let parallel main biotite rich gneiss foliation at generally 40°, and ? sub-vertical. About 7-800' exposure of this gneiss along a low ridge ⊥ to foliation, and ? bedding ?, but " not enough to determine definite bedding attitudes.	.001	<.10
M-104	(Sec. 11) From ± 10' creek exposed zone of low ▽, hem. stained shears within a locally well exposed area of variably felsic / biotite gneiss, showing ± vertical, plunging foliation, good bedding dips, and several frac. / shear / joint orientations although main jointing remains mostly vertical and ⊥ to foliation / bedding strike.	.001	<.10
M-105	(Sec 11) From hem / ± MN / minor barite vn'lets (1-2"), ± shears, within a 5-10' wide, variably hem. stained zone exposed along a 40° strike by 4 small gullys. A 1" MN / hem. vn'let is vertical in 2 gullys. Barite stringers upslope in 2 ".	.001	<.10

Meriwether Property Assay Samples

Sample	Description	Assay (oz/t) Au	Ag
M-106	(Sec 11) From creek exposure of very fe. stained, highly fractured/± sheared felsic gneiss with bedding/most foliation destroyed by brittle fracturing. Minor slickensiding w/o preferred orientation. More massive, more disturbed and ? generally flatter bedding in this creek - perhaps along anticlinal axis(?).	<.001	<.10
M-107	(Sec 11) From 10-15' shaft in a ± 10' wide (locally) CO_2-Mn-Fe-± barite (vertical at 35°) vein generally parallel foliation orientation. No trace of cu or si in this vein although cu-si-±U in low ≯, ? " vn'lets just ±200' to E.	<.001	<.10
M-108	(Sec 11) Select chy.-si. sample from dozer exposed, low ≯, ? folded? generally NW/SE orientated cu-si-±U vn'lets (± veins to 4") which in the dozer cut appear to dip toward the SW. Several small pits some 3-400 NW of this sample were dug on thin hem-si-ba-cu-±CO_2 vn'lets (#222) along the same general orientation. (108 is same sample site as Homestakes #9107)	.001	<.10
M-109	(Sec. 15) From ±1.5', hem. stained, silicified pod at top of pit just E over ridge from dozer cut. Bx'd, silic'd., hem/tr cu stained shear below pod quickly thins to ±6" at base of 5-6' pit. Shear strikes ± 280° with a 70° NE dip.	.003	.12
M-110	(Sec. 15) From dozer and side cuts along/in Fe-Si-±CO_2-± cu filled/stained 290° shear zone dipping 70°+ to NE sharply cutting variable felsic/biotite gneiss. Short adit below dozer work shows biotite gneiss dipping 10-20° to NW	.021	.11

Meriwether Property Assay Samples

Sample	Description	Assay (oz/t)	
M-111	(Sec. 15) From ± 3" hem - CO_2 - ± ba - ± si ? shear? parallel strike and dip of bedding, with dark "clustered" amp/bio unit above and very variable lithologic units below - quickly changing along strike. No cross-cutting vn/shear.	.001	<.10
M-112	(Sec 14) Chip sample across 3' shear/vn + 10' hem. stained/coated broken bio-gneiss beneath shear/vn - well exposed by ridge-top cut. A hem - ba ± CO_2 shear/vn.	.002	.11
M-113	(Sec 14) From 3-4" basite bx core of above 3' shear zone. The intermittently outcropping zone (with 3 pits over ridge along 2-300' strike length) strikes 310° with a 40° NE dip where pit exposed. Cuts amp/bio-rich gneiss.	.066	.12
M-114	(Sec 14) From 1-2" hematitic gouge, with cu staining, along frac/shear at 300° w/70° NE dip near creek exposed anticlinal fold. (Very representative of thin, scattered hem - ± ba rubble strewn ridge "saddles" w/o vn exposure except for cu stained hem gouge w/o basite sampled here.)	.017	.11
M-115	(Sec 14) From 3-4" hem - ± ba vn/shear, near vertical? with 60° strike - in poorly exposed o/c - similar to above rep. "saddle" shears/vns except most of them are 300-320° orientated across 30-40° gneiss strike ridges.	.001	<.10
M-116	(Sec 14) From >5' thick, ± vertical, Fe - CO_2 - ± ba vn in ? fault/shear zone parallel 40° gneiss strike. A seperate more (? silicated?) jasperoidal hem. vn " to above w/1-2' frac'd, fe std. bio-gneiss between, appears to dip slightly SE.	.001	.12

Meriwether Property Assay Samples

Sample	Description	Assay (oz/t) Au	Ag
M-117	(Sec. 14) Select sample, hem-CO_2-si-ba-cu from most cu stained top few inches of a 30' long x 3' x 3-5' cut parallel a 310°, steeply NE dipping, ±5' shear zone which appears to be an extension of #'s 112/113 shear/vein some 1000' to the NW. Cut exposes a very variably, thinly, cu-stained shear at top with a thin biotite "cap" right at top contact. Variable CO_2/si within shear zone with a spidery hem ± si/CO_2 frac./shear network at all ∡'s - no clear "base exposed.	.015	.17
M-118	(Sec. 14) Select sample, hem-mn-ba-CO_2-± si-± minor cu from top of shear beside main ±30' shaft. Shear much like #117 which it parallels at 310° but dips less steeply at ±70° with more distinct shear contact, more mn/less cu. A ±20' hem. stained zone beneath main shear top with thin ba-±cu-±si stringers randomly within	.008	<.10
M-119	(Sec. 14) Select, hem. stained/coated, variably slickensided, locally bx'd, bleached gneiss from beneath main veins of #118. Hem. stained zone appears to splay out into less affected biotite gneiss toward SE along shear zone.	.001	<.10
M-120	(Sec 14) Very select cu stained, siliceous, hem-± mn-± CO_2-± ba(?) from 8-10" chrysocolla rich shear at 310°/30° NE dipping SE extension of the above shear zone, exposed by small cut which (along with gully just SE of it) shows this to be the base of the above, quickly thinning, shear zone, with a sharp bottom, cu-stained, contact with underlying biotite gneiss.	.112	<.10

Meriwether Property Assay Samples

Sample	Description	Assay (oz/t)	
M-121	(Sec 23) From 6-8" vertical hem-MN-CO_2 vein parallel 30° strike of foliation/bedding where it crosses large creek within massive biotite/± amp. gneiss. Deep creek ⊥ foliation/bedding strike well exposes 10-30' less foliated, more mafic gneiss with sharp contacts with thinly bedded more felsic gneiss — far more distinctively (ex-sedimentary?) interbedded gneisses here than toward N end of property where gneiss gradationally becomes more uniform and homogenous — ? massive ex-volcanics ?.	.002	.14
M-122	(Sec. 23) From series of ba-± si stringers to 6" veins within ± 20' hem. stained gneiss, with thickest ba veins at 310° with vertical to slightly NE dip. (Common epidote coated jointing, ± bleached selvedges, ⊥ strike of gneiss exposed in creek in this area — particularly in more biotite, more felsic gneiss.)	.002	.16
M-123	(Sec. 23) From 8-10" very calcareous, red hem-± ba shear fill in an isolated, steep gully exposure. Strikes 30° with (?) slight dip to SE — perhaps concordant with gneiss ?.	.002	.16
M-124	(Sec. 14) From 6-8" MN-hem-ba-± CO_2 lens concordant with 30° at 5-10° NW dip of variably foliated biotite gneiss, except for small offsets and bulges along thin vertical to NE dipping shears/frac's. Local 300°/vertical diabase dike (1') also cut by gneiss bedding concordant mn-hem-ba lenses/shears which pinch and swell along bank exposed strike — from 3-4" to nothing. Numerous such lenses/pods/shears within this ± 10' x 150' exposure.	.003	<.16

Meriwether Property Assay Samples

Sample	Description	Assay (oz/t) Au	Ag
M-125	(Sec. 22) From larger of common 2-4" hem-±mn-±ba-±si-±CO_2 veinlets along SE side of ridge striking toward "Haystack Hill" from NE. All strike from 300-320° and are (?) near vertical to NE dipping, and occur at fairly consistent 1-200' intervals.	.001	<.10
M-126	(Sec 11) From along 2-5' (minor 10') wide calcite-hem-±barite vein persisting for some 200' with very variable thickness/exposure along a 30°, host concordant, strike at vertical to 70-80° NE dip. Parallels similar vein of sample # 107.	.001	.11
M-127	(Sec. 2) From creek exposed, very fractured, fe-stained, meta-morphosed, felsic ?dike/plug? — exposed for ±150' in creek cut beneath surrounding ridges of massively homogenous, slightly foliated, variably schistose "dull" intermediate (?ex-volcanic?) gneiss - locally dipping some 20-30° to the NW from a common 30-40° strike.	.001	.12
M-128	(Sec 2) From widely spaced grabs of a dozen + locations of the most pronounced o/c's of metamorphic qtz "veins" which occasionally persist for 1-200', generally concordant to bedding (or as "pods"), with slight foliation — especially at tops of "veins", which are commonly intensely shattered by closed spaced jointing ⊥ to strike. This barren-looking qtz may be associated with underlying felsic, pre-metamorphism intrusives (#127) + (more common here than elsewhere in property) but 'looks' like just metamorphic qtz.	.003	.11

Meriwether Assay Samples

by Don White (201-225)

Sample #	Location + description	Assay (oz/t) Au	Ag
M-201	NW NW Sec 11 / Old prospect hole on N side ward above Sed. #3 18-inch thick vein ~50% c.gr. barite filling N60°W 45°NE shear conformable with pt bedding (b. + w. rock comp. bands) Also much red hem. + pale green chl(?) or ep.(?)	.001	.16
M-202	NENE Sec 10 - Just downstream from Sed-3 Red-stained, FeOx-rich zone up to 9-ft. thick within shear zone (N25°W 80°NE) X-cutting much-disturbed pt rocks. Some earthy hem.	.001	<.10
M-203	NE Sec 2 ; outside NE corner claim block 40-50-foot thick fault healed by massive xln CO_3 (black, Mn-stained calcite) hem, botryoidal MnO_2 growths, and some barite. Zone is N30°E 80° SE and cut by a number of small adits and prospects. ~50% pt greiss clasts	.001	<.10
204	NW NW Sec 16 Backhoe pit on E side of hill 1126' CuOx, $CuCO_3$, + SiO_2 on frax ~N50°E ~Vert. X-cutting pt bedding ~N40°W 45°SW in black, chloritic, shaley (shinglay) beds. Suspected metamorphic segregation from bio., etc.	.001	<.01
205	SW Sec 15 - site 4 area. 2" to 8" thick black + brown vein of hematite - barite running due E-W, 70°N across lower hillside. Unworked, unprospected. Host rock bedding N-S, 30°W Vein traceable ~100 ft., vuggy core	.002	<.10

Sample	Location / description	Assay (oz/t) Au	Ag
M-206	SW SE Sec 15 - Site 3 area "Massive + cellular" limonite with MnO_2, $BaSO_4$, SiO_2, and trace $CuSiO_x$ in < 1 ft thick shear (N45°W 80°NE) parallel to jointing. Some bleaching of wall rocks. Two prospect pits on strike, 200 ft. apart, on opposite sides of ridge.	.001	.12
207	SE Sec 15 — Prospect on N. side of ridge. Vein 2" - 8" thick. Same mineralogy as 206 Shear 1' - 3' wide N 70°W 70°NE	.006	<.10
208	NE SW Sec 15 - Site 4's Main shaft Same site as Homestakes # 9109 Selected qtz. up to 4" thick with cockscombs, some chrysocolla, FeO_x. Vein N70W 65°N within shear zone x-cutting pt bedding.	.226	.17
209	Bleached + sericitized wall rock to 208 Alt'd zone ~1 ft thick on each wall.	.002	.13
210	NW Sec 15 - Site 2 - main cut Same site as Homestakes 9104 Quartz selections with hem, chry, barr, cal. from 6-inch thick vein N 80°W 75°N	.361	<.10
211	Bleached + slightly sericitized walls to 210 (2 ft thick; 1 ft. each wall)	.018	<.10
212	Black + dark gray unaltered pt gneiss adjacents to sample 211 (eg. wall rock beyond zone of bleaching, etc.). Some disseminated calcite + fracture-filling caliche.	.007	<.10

Sample	Location / description	Assay (oz/t) Au	Ag
M-213	SW Sec 14, in creek bottom Veins of sericitized, bleached pt rock with hem. stain, coarse barite, vugs with microxln qtz., MnO_2, tr. Cu. Bedding ~ N40°E 20°NW Foliation ~ N40°E Vert. (Axial plane fol.) Joints N30°W 80°NE with bleaching + mineralization, as above	.005	<.10
214	SESE Sec 15 — Prospect pit on shear Coarse barite, yellow , calcite, microcrystalline quartz, MnO_2 Same site as Homestaker 9139 Shear — hosted N45°W. 70°NE X-cutting bedding, N40°E 30°NW ≤ 2-ft. thick alt'd zone w/ mineral core.	.001	<.10
215	SW NW Sec. 22 (Reece claims) ≤ 8-inch thick hem-bar-cal-MnO_2 with tr. Cu filling N60°W 45°NE shear with ~ 8 inches bleached gge on each wall. Shear parallels pt gneiss bedding.	.011	.13
216	SW NW Sec 22 (Reece claims) Adit symbol on topo sheet; actually an inclined shaft — 80 ft deep, on vein. Vein is ~ 1 ft thick in shear N60°W 25°NE Same site as Homestaker 9111 sample from dump. Vein is hem-bar.-cal-qtz-MnO_2 ± Cu. High-graded qtz. w/ Cu stain	.410	.11
217	NE SW Sec 22 (Reece claims) Just W. of hill 1300' summit. - Shear N80°E 70°N with 2-ft thick zone black calcite, hem., MnO_2, local amethyst, cut off on ridge by mafic dike but resumes on other (NE) side. Unprospected.	.001	.15

Sample	Location / description	Assay (oz/t) Au	Ag
M-218	NE SW Sec 22 - NE flank of hill 1300 same site as Homestake's 9141 ~ 3-ft thick "ribboned" barite-hem-black calcite, tr. amethyst, clear qtz, + MnO_2 filled shear N 70° W 45° N	.001	.22
219	SW NE Sec 22 saddle on S side of "Haystack"-shaped hill ≤ 6-inch thick $BaSO_4$, $CaCO_3$, hem-MnO_2 vein N 80° E 60° S x-cutting bedding (N-S, 20° W)	.001	<.10
220	SW NE Sec 22 S side of "Haystack Hill" Barite-dominated (large wt. xls) vein with hem-cal.-MnO_2 in shear, N 30° W 30° SW (same site as Homestake's 9140) pf bedding N 20° E 20° W but very deformed/distorted locally	.001	.14
221	NW NE Sec. 22 ≤ 8-inch thick vein N 30° W 70° NE with hem-cal-qtz-bar.-MnO_2 filling shear X-cutting bedding N 70° E 10° N Two old prospect pits and a new trench	.058	<.10
222	W ½ Sec 11 - Old pair prospect pits on N slope of low ridge. Veins ≤ 6 inch thick qtz-Cu-bar.-cal-MnO_2 are N 30° W 25° NE x-cutting distorted pf bedding	.070	.47

Sample	Location / description	Assay (oz/t) Au	Ag
M-223	NE Sec 2 – Dump of old prospect pit. 9-ft thick FeOx-stained shear zone N30°W 80°NE. Some qtz, barite, yellow-stained att'n (carnotite-?)	.001	<.10
224	SE NW Sec 2 – Old prospect pit ~3 ft. thick zone of which center 1 ft is best mineralized hem-qtz-siderite-chrysocolla,-calcite-MnO_2 conformable with pt bedding N30°W 45°NE	.002	<.10
M-225	NW NW Sec 26 – Prospect with road access on topo sheet. ~4 ft thick fault-filling black manganese-barite vein with hem-cal. X-cutting pt gneiss and incorporating large, angular pt bx clasts and dike clasts. Dike is N50°W, Vert. mafic (andesite-?) cross-cutting pt bedding (N60°W 20°S) Apparently worked for MnO_2 and may have shipped a very small amount. Looks like supergene healing of Cenozoic, range-front fault.	.004	<.10

IRON KING ASSAY INC.

07
/:

LAB JOB #: CAL03675

Client name: Callahan Mining Corp.

Billing address: 11811 N. Tatum Blvd.
Suite 4055
Phoenix, AZ 85028

Phone number: 778-3140

No. Samples:
Date Received: 01-27
Submitted by: D. Wh

INVOICE ATTACHED

ANALYTICAL REPORT

Client ID CAL03675	Lab ID	FA/AA Au oz/ton	Fire Assay Ag oz/ton
M-101	3675- 1	0.001	<.10
M-102	3675- 2	0.001	<.10
M-103	3675- 3	0.001	<.10
M-104	3675- 4	0.001	<.10
M-105	3675- 5	0.001	<.10
M-106	3675- 6	<.001	<.10
M-107	3675- 7	<.001	<.10
M-108	3675- 8	0.001	<.10
Break			
M-201	3675- 9	0.001	0.16
M-202	3675- 10	0.001	<.10
M-203	3675- 11	0.001	<.10
M-204	3675- 12	0.001	<.10
M-205	3675- 13	0.002	<.10
M-206	3675- 14	0.001	0.12
M-207	3675- 15	0.006	<.10

REGISTERED ASSAYER
CERTIFICATE NO.
14315
ROBERT C. CROOK
Date Signed

IRON KING ASSAY INC.

06-Mar-

LAB JOB #: CAL03721

Batch #7

Client name: Callahan Mining Corp.

No. Samples: 38
Date Received: 02-10-89
Submitted by: D. White

Billing address: 11811 N. Tatum Blvd.
Suite 4055
Phoenix, AZ 85028

Phone number: 778-3140

INVOICE ATTACHED

ANALYTICAL REPORT

Client ID CAL03721	Lab ID	FA/AA Au oz/ton	Fire Assay Ag oz/ton
M-109	3721- 1	0.003	0.12
M-110	3721- 2	0.021	0.11
M-111	3721- 3	0.001	<.10
M-112	3721- 4	0.002	0.11
M-113	3721- 5	0.066	0.12
M-114	3721- 6	0.017	0.11
M-115	3721- 7	0.001	<.10
M-116	3721- 8	0.001	0.12
M-117	3721- 9	0.015	0.17
M-118	3721- 10	0.008	<.10
M-119	3721- 11	0.001	<.10
M-120	3721- 12	0.112	<.10
M-121	3721- 13	0.002	0.14
M-122	3721- 14	0.002	0.16
M-123	3721- 15	0.002	0.16
M-124	3721- 16	0.003	<.10
M-125	3721- 17	0.001	<.10

P.O. Box 56 • Humboldt, Arizona 86329 • Phone (602) 632-7410

CAL03721

Client ID	Lab ID	FA/AA Au oz/ton	Fire Assay Ag oz/ton
M-126	3721- 18	0.001	0.11
M-127	3721- 19	0.001	0.12
M-128	3721- 20	0.003	0.11
	Break		
M-208	3721- 21	0.226	0.17
M-209	3721- 22	0.002	0.13
M-210	3721- 23	0.361	<.10
M-211	3721- 24	0.018	<.10
M-212	3721- 25	0.007	<.10
M-213	3721- 26	0.005	<.10
M-214	3721- 27	0.001	<.10
M-215	3721- 28	0.011	0.13
M-216	3721- 29	0.410	0.11
M-217	3721- 30	0.001	0.15
M-218	3721- 31	0.001	0.22
M-219	3721- 32	0.001	<.10
M-220	3721- 33	0.001	0.14
M-221	3721- 34	0.058	<.10
M-222	3721- 35	0.070	0.47
M-223	3721- 36	0.001	<.10
M-224	3721- 37	0.002	<.10
M-225	3721- 38	0.004	<.10

Bondar-Clegg, Inc.
12980 West Cedar Dr.
Lakewood, Colorado 80228
(303) 989-1404

BONDAR-CLEGG

Geochemical Lab Report

REPORT: 099-0150 (COMPLETE)

REFERENCE INFO: NONE LISTED

CLIENT: CALLAHAN MINING CORP.
PROJECT: NONE LISTED

SUBMITTED BY: D. WHITE
DATE PRINTED: 21-FEB-89

ORDER	ELEMENT		NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Au	Gold/Cyanide Leach	12	20 PPB	Cyanide Leach	Atomic Absorption

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
T STREAM SEDS	12	4 AS REC'D	12	As Received	12

REMARKS: 50% SOLIDS
5G/L NaCN
pH)10
24 HOUR LEACH
(ENTIRE SAMPLE USED FOR ANALYSES AS REQUESTED.)

RESULTS OF (20 PPB SAMPLES ARE AS FOLLOWS:
M-SED-6 10 PPB
M-SED-7 15 PPB
M-SED-11 15 PPB

REPORT COPIES TO: BRUCE A. BOULEY
MR. DON WHITE

INVOICE TO: BRUCE A. BOULEY

Bondar-Clegg, Inc.
12980 West Cedar Dr.
Lakewood, Colorado 80228
(303) 989-1404

BONDAR-CLEGG

Geochemical Lab Report

REPORT: 099-0150

PROJECT: NONE LISTED

SAMPLE NUMBER	ELEMENT UNITS	Au PPB	
T4 M-SED-01		35	
T4 M-SED-02		25	
T4 M-SED-03		30	
T4 M-SED-04		20	
T4 M-SED-05		80	$> \bar{X} + 3\sigma$
T4 M-SED-06		<20	10
T4 M-SED-07		<20	15
T4 M-SED-08		25	
T4 M-SED-09		20	
T4 M-SED-10		20	
T4 M-SED-11		<20	15
T4 M-SED-12		30	

Statistics

$n = 12$ samples

$\bar{X} = 27.5$ ppb Au

$\sigma_n = 17.$ ppb

$\bar{X} + \sigma = 45$ ppb

$\bar{X} + 2\sigma = 62$ ppb

$\bar{X} + 3\sigma = 79$ ppb

All results within $\bar{X} + \sigma$ except M-Sed 5 which is 80 ppb or $\bar{X} + 3\sigma$

GEOCHEMICAL SERVICES INC.

GEOCHEMICAL ANALYSIS REPORT

for S.C. Power's sampling at Meriwether + Reese claims
for F.M.C. - Sept. 1987

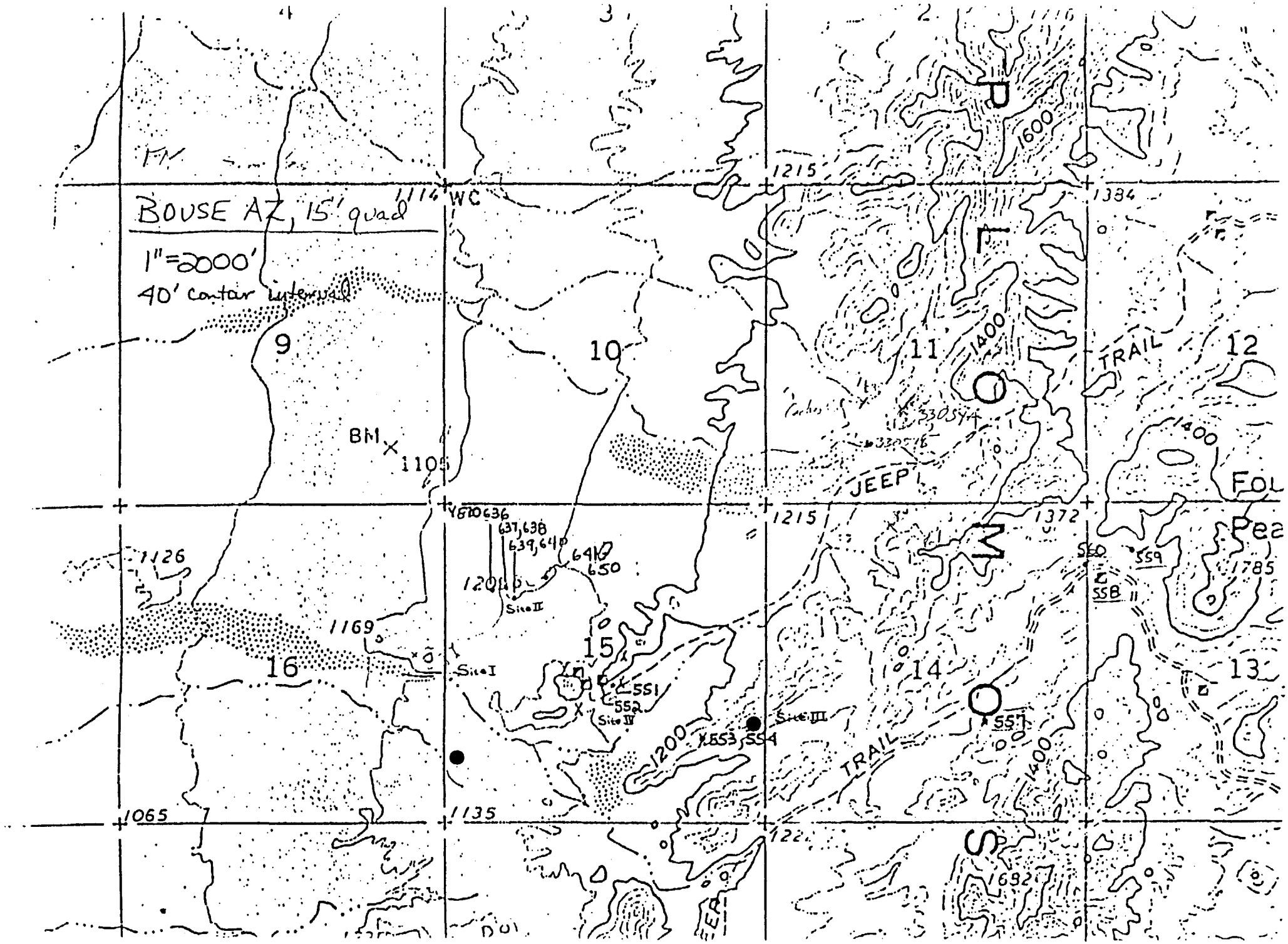
LOT ID: FMA-70917G

SAMPLE ID	#	Ag ppm	As ppm	Au ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Tl ppm	Zn ppm	Bi ppm	Cd ppm	Ga ppm	Pd ppm	Pt ppm	Se ppm	Sn ppm	Te ppm
Y870636	1	.176	30.2	.178	20.8K	<.098	8.31	4.66	<.246	<.492	13.8	.636	<.246	<.492	.554	<.246	<2.06	<.492	<.492
Y870637	2	.032	14.4	.276	1575	<.097	10.2	1.80	.384	<.486	8.91	<.243	<.243	2.97	<.097	<.243	<.973	<.486	<.486
Y870638	3	<.015	8.18	.183	89.0	<.098	1.05	.905	.384	<.491	6.47	<.246	<.246	3.08	<.098	<.246	<2.66	<.491	<.491
Y870639	4	.198	6.82	.458	6208	<.098	4.96	1.86	<.263	<.489	6.80	.581	<.244	.504	.207	<.244	<5.00	<.489	<.489
Y870640	5	<.015	3.61	.022	76.6	<.1	.474	.548	.354	<.498	17.3	<.249	<.249	4.12	<.1	<.249	<1.59	<.498	<.498
Y870641	6	<.015	10.6	.005	15.0	<.097	1.36	1.48	.380	<.485	7.77	<.243	<.243	1.96	<.097	<.243	<3.35	<.485	<.485
Y870642	7	<.015	4.64	.006	14.3	<.097	.355	.319	<.243	<.486	1.21	<.243	<.243	<.486	<.097	<.243	<4.09	<.486	<.486
Y870643	8	<.015	6.10	.038	51.8	<.098	1.09	1.34	<.245	<.510	9.57	<.245	<.245	2.49	<.098	<.245	<2.46	<.49	<.49
Y870644	9	<.015	4.01	.003	29.5	<.098	.365	.753	<.246	<.492	7.92	<.246	<.246	4.08	<.098	<.246	<1.72	<.492	<.492
Y870645	10	<.015	2.95	.001	52.6	<.097	.223	.366	<.243	<.485	7.89	<.243	<.243	5.28	<.097	<.243	<2.22	<.485	<.485
Y870646	11	<.015	3.73	.006	14.0	<.098	.407	1.07	<.244	<.489	7.90	<.244	<.244	4.05	<.098	<.244	<1.53	<.489	<.489
Y870647	12	<.015	5.07	.003	10.3	<.098	.199	.566	<.385	<.491	3.75	<.246	<.246	.905	<.098	<.246	<1.00	<.491	<.491
Y870648	13	.024	7.34	.003	46.5	<.098	1.14	1.38	.304	<.49	6.30	<.245	<.245	<.49	<.098	<.245	<1.45	<.49	<.49
Y870649	14	<.015	7.29	.003	14.5	<.1	3.33	1.14	.254	<.568	6.62	<.25	<.25	.596	<.1	<.25	<.998	<.499	<.499
Y870650	15	<.015	7.62	.018	20.3	<.099	11.8	8.13	.280	<.493	35.0	.460	.286	<.493	<.099	<.247	<3.53	<.493	<.493
Y870551	16	.027	7.22	.006	537.	<.106	10.6	.713	<.248	<.499	2.26	<.248	<.248	<.496	<.099	<.248	<2.83	<.496	<.496
Y870552	17	.082	7.33	2.06	16.7K	<.097	45.2	2.48	<.242	<.484	8.68	38.6	<.242	<.484	.411	<.242	<4.04	<.484	<.484
Y870553	18	.062	5.57	.01	377.	<.099	1.96	6.33	<.248	<.495	43.1	<.248	<.248	<.495	<.099	<.248	<.991	<.495	<.495
Y870554	19	<.015	3.38	.013	58.4	<.098	.720	1.26	.280	<.489	4.52	<.245	<.245	<.489	<.098	<.245	<1.45	<.489	<.489
Y870555	20	.314	9.84	.102	5211	<.181	4.12	42.9	1.63	<.632	31.6	<.245	<.245	<.49	.288	<.245	<3.21	<.49	<.49
Y870556	21	<.015	362.	.003	173.	.226	127.	403.	41.9	6.[illegible]	117.	<.248	<.248	6.54	<.099	<.248	<.993	<.497	<.497
Y870557	22	.026	8.37	.006	29.0	<.097	1.51	6.04	.508	<.484	13.7	<.242	<.242	3.90	<.097	<.242	<2.44	<.484	<.484
Y870558	23	.214	229.	.001	131.	.405	18.7	33.4	2.45	10.8	10.3	5.15	<.244	.666	<.098	<.244	<1.44	<.488	<.488
Y870559	24	.997	68.5	.003	2480	<.098	12.0	11.2	2.85	1.79	31.2	15.6	<.245	3.34	.128	<.245	<.982	<.491	<.491
Y870560	25	.153	269.	.003	389.	<.097	20.8	39.1	4.25	3.06	20.8	53.9	<.242	2.16	<.097	<.242	<2.03	<.484	<.484

Site 2 (#1–#5)
5-ft intervals from E41 (Site 2) (#6–#13)
Site 2 (#14)
Break in sequence (#15)
Site 4 (#16–#17)
Site 3 (#18–#19)
Reese claims (#20–#22)
Within Mimosa Fault (#23–#25)

• Not located on sample map
x Off Meriwether Claim Block

2741 Toledo Street Suite 211 • Torrance, California 90503 • Telephone 213/320-3600
55 Glen Carran Circle • Sparks, Nevada 89431 • Telephone 702/359-6600


BOUSE AZ, 15' quad
1"=2000'
40' contour interval
9
10
11
12
13
14
15
16
BM
1105
1126
1169
1065
1135
1215
1384
1372
1785
1692
1600
1400
1200
WC
JEEP
TRAIL
Site I
Site II
Site III
Site IV
637,638
639,640
650
551
552
553,554
557
559
560
558

ANALYSIS SHEET

District Pacific Area Curless submittal, Plomosa Mts, AZ Project No. Y001

GSI lab 15gm digestion Date 9-13-87 Geologist S. Powers

SAMPLE NO.	TYPE	ROCK TYPE	DESCRIPTION: ALTERATION - MINERALIZATION	SAMPLE LENGTH	ppm Au	Ag	As	Sb	Hg	Ba	Cu	Pb	Zn	TQ	Bi		Au oz/t	
Y870636	D	Sugary-clear Qtz vn	Cu-ox (chrys, malach) w/ gth + hem boxwks, live lim, bx frags. Fine silic	small pit high grade	.178	.176	30	<.25	<.1		20,000	45	14	<.5	<1		.005	
637	O	Host rock = chl mylgn	1' wide N20W/40NW fract zone w/ gth + hem on fracts, vnlts, minor Cu-ox / some bx	small trench	.276	.032	14	.38			1575	2	9				.008	
638	O	mylonite gneiss	unalt, sl → mod broken same trench as 637	trench grab	.183	<.015	8	.38			89	<1	6				.005	
639	O	IQtz vn Cu-ox zone	Cu-ox zone N85W/80N, mod → abt hem, minor gth	composite trench 40'	.458	.198	7	<.25			6208	2	7				.0135	
640	O	Chloritic mylgneiss	4-6' in HW of 639 struct, selected most hem areas (sl.) sl-mod fract	composite in H.W.	.022	<.015	4	.35			77	<1	17					
641	O	Chloritic bt gneiss	unalt, sl broken	trench	.005		11	.38			15	1.5	8					
642	O	leucogn	sl. blchd, tr Fe-ox, wk chl	" 5' from 641	.006		5	<.25			14	<1	1					
643	O	leucogn	local mod fract, local minor gth, blchd	" 5' from 642	.038		6	<.25			52	1.3	10					
644	O	Chloritic mylgn	Immed H.W. of N70W/20N gth-ank zone (650)	" 5' from 643	.003		4				29.5	<1	8					
645	O	Chloritic microdio	V. narrow low-angle fract w/ ankerite-gth (minor)	" 5' from 644	.001		3				53	<1	8					
646	O	Microdio leucogn	" "	" 5' from 645	.006		4				14	1.1	8					
647	O	leucogn chl + bt gn	unalt, wk-mod broken	" 5' from 646	.003		5	<.38			10	<1	4					
648	O	leucogneiss	mod broken, feld → clay, sl Fe-ox	" 5' from 647	.003	.024	7	.30			46.5	1.4	6					
649	O	N45W/15NW fol leucogn	upper N85W/34N struct w/ gth + ank n.s. / lower ill-defined gth, felt-x clay	" 5' from 648	.003	<.015	7	.25			14.5	1.1	7					
Y870650	O	Ankerite zone	high grade of orng-brown ank, brown-black ank, wht calcite	" adj to 644	.018	<.015 ~~.027~~	8	.28			20	8.1	35					
Y870651	O	Mylonite Leucogn	Blchd, saussentized w/ gth vnlts, btwn 2 Cu-ox struct (n.s.)	composite 10'	.006	.027 ~~.082~~	7	<.25			537	<1	2					
652	D	Cu-ox Qtz vn	Chrysocolla in wht-clear qtz w/ hem-gth boxwks (frags), Mn-ox	high grade decline	2.06	.082 ~~.062~~	7				16,700	2.5	9		38.6		.061	
653	O	Leuco myl	N65E/15NW fol, N55E lin, fract, hem, blchd, lim-py in F.W. of N75W/45SW q.v	small pit 5'	.010	.062 ~~<.015~~	6				377	6.3	43		<1			
654	O	Leuco myl	H.W. of same QV as 653, hem, fract, clear, blchd, wht qtz vnlts w/ bxwks, gravel	same pit " 5-6'	.013	<.015 ~~.314~~	3	.28			58	1.3	4.5					
655	D	Spec. hem.	Selected Fe-rich w/ spec hem from N65W/30N QV w/ Cu-ox, gth-hem bxwks	decline selected	102	.314 ~~<.015~~	10	1.6			5211	42.9	32				.003	

O - Outcrop F - Float D - Dump S - Soil C - Core R - Rotary Cuttings

Page ____ of ____

ANALYSIS SHEET

District Pacific Area Cerbless Subpreittal, Plomosa Mts AZ Project No. V001

Date 9-16-87 Geologist S.L. Powers

SAMPLE NO.	TYPE	ROCK TYPE	DESCRIPTION: ALTERATION - MINERALIZATION	SAMPLE LENGTH	Au	Ag	As	Sb	Hg	Ba	Cu	Pb	Zn	TQ	Bi			
Y870556	D	Flt bx	hem-spec bx, minor mt, N45E/60-90E flt, 5-6' wide, cuts rhy dike, myl	random trench	.003	<.015	362	41.9	.226		173	403	117	6.64	<1			
557	O	chloritic bt gneiss(myl)	4-5 v. narrow (<1') N55E/85SW frac w/ Mn-ox, spec (n.s.)/minor hem	composite trench wall	.006	.026	8	.51	<.1		29	6.0	14	<.5	1			
558	D	Tert. volcanics	Fe-ox, Mn-ox rich, dipping volcs/ volc-clastics above ditch flt	shaft random	.001	.214	229	2.5	.405		131	33.4	10	10.8	5.15			
559	D	volcs, volc-clastics	Hydrotl bx (cracklde) w/ hem-Mnox matrix hem-Mnox replace., spec, barit, malach	several small pits random	.003	.997	69	29	<.1		2480	11.2	31	1.79	15.6			
560	D	Tv, Tvs	some: hematized, Mn-ox, specularite	small pit random	.003	.153	269	4.2	<.1		389	39.1	21	3.06	53.9			

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HUNTER MINING LABORATORY, INC.

994 GLENDALE AVENUE • SPARKS, NEVADA 89431 • TELEPHONE:(702) 358-6227

REPORT OF ANALYSIS

Johnson
Kern

Submitted by:

HOMESTAKE MINING COMPANY
330 CONEY ISLAND DRIVE
SPARKS, NEVADA 89431

Date: February 03, 1988

Laboratory number: 33151

Analytical Method: AA Colorimetri Fire AT

Your Order Number: 8107-1

JOHNSON, KERN LA PAZ, AZ. E. COPPERSTONE RECONN. (2922)

Report on: 13 Samples, pulp

* Sample Mark	Copper ppm	Molybdenum ppm	Manganese ppm	Gold ppm	Silver ppm
9102AS	0.45%	7	470	* 2.14	-0.1
9103	0.32%	7	0.41%	0.02	-0.1
9104 Cactus Rat #1	1.50%	5	0.20%	* 3.96	-0.1
9105 5607AI	20	10	0.40%	-0.01	-0.1
9106	105	-1	870	-0.01	-0.1
9107	1.35%	12	260	-0.01	0.2
9108	15	13	0.80%	-0.01	0.1
9109	0.27%	20	0.90%	0.05	-0.1
9110	15	12	310	-0.01	-0.1
9111	0.17%	13	0.35%	* 0.83	-0.1
9112AS	1.70%	12	0.19%	0.01	1.2
5607AI	20	15	0.44%	-0.01	-0.1
5608AI				0.8200 0.81	8.5000 7.1

Sample Mark	Arsenic ppm	Antimony ppm	Barium ppm	Uranium ppm	Fluorine ppm
9102AS	-5	-1	680	5	254
9103	8	-1	460	6	366

* No location map available. Sample sites locally marked in the field on Al tags.

ppm = parts per million. oz/ton = troy ounces per ton of 2000 pounds avoirdupois. percent = parts per hundred. fineness = parts per thousa
ppb = 0.001 ppm. Read — as "less than". 1 oz/ton = 34.286 ppm. 1 ppm = 0.0001% = 0.029167 oz/ton. 1.0% = 20 pounds/ton.

HUNTER MINING LABORATORY, INC.

994 GLENDALE AVENUE • SPARKS, NEVADA 89431 • TELEPHONE:(702) 358-6227

HOMESTAKE MINING COMPANY Page: 2 Laboratory No: 33151

Sample Mark	Arsenic ppm	Antimony ppm	Barium ppm	Uranium ppm	Fluorine ppm
9104	5	-1	* 710	8	189
9105	-5	-1	*0.19%	-1	289
9106	-5	-1	*0.15%	1	216
9107	-5	-1	510	2	614
9108	17	1	*1.12%	-1	*1.73%
9109	-5	-1	*0.24%	6	0.11%
9110	-5	-1	* 960	-1	246
9111	-5	-1	*0.11%	2	351
9112AS	5	-1	620	4	317
5607AI	5	-1	*0.50%	-1	447

Sample Mark	Gold oz/ton	Silver oz/ton
9102AS	0.084	-0.01
9104AS	0.145	0.03

HUNTER MINING LABORATORY, INC.

H. H. Scales

H. H. Scales

ppm = parts per million. oz/ton = troy ounces per ton of 2000 pounds avoirdupois. percent = parts per hundred. fineness = parts per thousa
ppb = 0.001 ppm. Read — as "less than". 1 oz/ton = 34.286 ppm. 1 ppm = 0.0001% = 0.029167 oz/ton. 1.0% = 20 pounds/ton.

E A S T C O P P E R S T O N E D R I L L I N G.

D.H. #	Sample #	From	To	Au	Ag	Int	Geology
EC-1	2501	0	5	-0.001	-0.01	5	0-104 Overburden
	2502	5	10	-0.010	-0.01	5	
	2503	10	15	0.002	-0.01	5	
	2504	15	20	-0.001	-0.01	5	
	2505	20	25	0.001	-0.01	5	
	2506	25	30	-0.001	-0.01	5	
	2507	30	35	0.019	-0.01	5	
	2508	35	40	0.002	-0.01	5	
	2509	40	45	0.004	0.01	5	
	2510	45	50	0.007	-0.01	5	
	2511	50	55	-0.001	0.02	5	
	2512	55	60	-0.001	0.05	5	
	2513	60	65	-0.001	-0.01	5	
	2514	65	70	-0.001	0.07	5	
	2515	70	75	-0.001	-0.01	5	
	2516	75	80	-0.001	-0.01	5	
	2517	80	85	-0.001	0.02	5	
	2518	85	90	-0.001	-0.01	5	
	2519	90	95	-0.001	-0.01	5	
	2520	95	100	-0.001	0.09	5	
	2521	100	105	-0.001	-0.01	5	104-120(TD) Schist.
	2522	105	110	-0.001	-0.01	5	
	2523	110	115	-0.001	0.08	5	
	2524	115	120	-0.001	-0.01	5	

D.H. #	Sample #	From	To	Au	Ag	Int	Geology
EC-2	2525	0	5			5	0-300 Overburden
	2526	5	10			5	
	2527	10	15			5	
	2528	15	20	0.001	0.01	5	
	2529	20	25			5	
	2530	25	30			5	
	2531	30	35			5	
	2532	35	40	-0.001		5	
	2533	40	45			5	
	2534	45	50			5	
	2535	50	55			5	
	2536	55	60	-0.001		5	
	2537	60	65			5	
	2538	65	70			5	
	2539	70	75			5	
	2540	75	80	0.001		5	
	2541	80	85			5	
	2542	85	90			5	
	2543	90	95			5	
	2544	95	100	-0.001		5	
	2545	100	105			5	
	2546	105	110			5	
	2547	110	115			5	
	2548	115	120	-0.001		5	
	2549	120	125			5	
	2550	125	130			5	

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RESOURCES

	2551	130	135			5	
	2552	135	140	0.001		5	
	2553	140	145			5	
	2554	145	150			5	
	2555	150	155			5	
	2556	155	160	-0.001		5	
	2557	160	165			5	
	2558	165	170			5	
	2559	170	175			5	
	2560	175	180	0.002		5	
	2561	180	185			5	
	2562	185	190			5	
	2563	190	195			5	
	2564	195	200	-0.001		5	
	2565	200	205			5	
	2566	205	210			5	
	2567	210	215			5	
	2568	215	220	-0.001		5	
	2569	220	225			5	
	2570	225	230			5	
	2571	230	235			5	
	2572	235	240	-0.001		5	
	2573	240	245			5	
	2574	245	250			5	
	2575	250	255			5	
	2576	255	260	-0.001		5	
	2577	260	265			5	
	2578	265	270			5	
	2579	270	275			5	
	2580	275	280	-0.001		5	
	2581	280	285			5	
	2582	285	290			5	
	2583	290	295			5	
	2584	295	300	-0.001		5	
D.H. #	Sample #	From	To	Au	Ag	Int	Geology
EC-3	2585	0	5			5	0-235 Overburden
	2586	5	10			5	
	2587	10	15			5	
	2588	15	20	-0.001		5	
	2589	20	25			5	
	2590	25	30			5	
	2591	30	35			5	
	2592	35	40	-0.001		5	
	2593	40	45			5	
	2594	45	50			5	
	2595	50	55			5	
	2596	55	60	-0.001		5	
	2597	60	65			5	
	2598	65	70			5	
	2599	70	75			5	
	2600	75	80	-0.001		5	
	2601	80	85			5	
	2602	85	90			5	
	2603	90	95			5	
	2604	95	100	-0.001		5	
	2605	100	105			5	

	2606	105	110		5	
	2607	110	115		5	
	2608	115	120	-0.001	5	
	2609	120	125		5	
	2610	125	130		5	
	2611	130	135		5	
	2612	135	140	-0.001	5	
	2613	140	145		5	
	2614	145	150		5	
	2615	150	155		5	
	2616	155	160	-0.001	5	
	2617	160	165		5	
	2618	165	170		5	
	2619	170	175		5	
	2620	175	180	-0.001	5	
	2621	180	185		5	
	2622	185	190		5	
	2623	190	195		5	
	2624	195	200	-0.001	5	
	2625	200	205		5	
	2626	205	210		5	
	2627	210	215		5	
	2628	215	220	-0.001	5	
	2629	220	225		5	
	2630	225	230		5	
	2631	230	235		5	
	2632	235	240	0.001	0.02	5 235-249 Volcanics
	2633	240	245	-0.001	-0.01	5
	2634	245	250	0.001	-0.01	5
	2635	250	255	-0.001	-0.01	5 249-270(TD) Schist.
	2636	255	260	-0.001	-0.01	5
	2637	260	265	-0.001	-0.01	5
	2638	265	270	-0.001	-0.01	5
D.H. #	Sample #	From	To	Au	Ag	Int Geology
EC-4	2639	0	5			5 0-147 Overburden
	2640	5	10			5
	2641	10	15			5
	2642	15	20	-0.001		5
	2643	20	25			5
	2644	25	30			5
	2645	30	35			5
	2646	35	40	-0.001		5
	2647	40	45			5
	2648	45	50			5
	2649	50	55			5
	2650	55	60	-0.001		5
	2651	60	65			5
	2652	65	70			5
	2653	70	75			5
	2654	75	80	-0.001		5
	2655	80	85			5
	2656	85	90			5
	2657	90	95			5
	2658	95	100	-0.001		5
	2659	100	105			5
	2660	105	110			5

n Meriwether
lain area

	2661	110	115			5	
	2662	115	120	-0.001		5	
	2663	120	125			5	
	2664	125	130			5	
	2665	130	135			5	
	2666	135	140	-0.001		5	
	2667	140	145	-0.001		5	
	2668	145	150	-0.001		5	147-165(TD) Schist
	2669	150	155	-0.001		5	
	2670	155	160	-0.001		5	
	2671	160	165	-0.001		5	
D.H. #	Sample #	From	To	Au	Ag	Int	Geology
EC-5	2672	0	5			5	0-200 Overburden
	2673	5	10			5	
	2674	10	15			5	
	2675	15	20	-0.011		5	
	2676	20	25			5	
	2677	25	30			5	
	2678	30	35			5	
	2679	35	40	0.002		5	
	2680	40	45			5	
	2681	45	50			5	
	2682	50	55			5	
	2683	55	60	-0.001		5	
	2684	60	65			5	
	2685	65	70			5	
	2686	70	75			5	
	2687	75	80	-0.001		5	
	2688	80	85			5	
	2689	85	90			5	
	2690	90	95			5	
	2691	95	100	-0.001		5	
	2692	100	105			5	
	2693	105	110			5	
	2694	110	115			5	
	2695	115	120	-0.001		5	
	2696	120	125			5	
	2697	125	130			5	
	2698	130	135			5	
	2699	135	140	-0.001		5	
	2700	140	145			5	
	2701	145	150			5	
	2702	150	155			5	
	2703	155	160	-0.001		5	
	2704	160	165			5	
	2705	165	170			5	
	2706	170	175			5	
	2707	175	180	-0.001		5	
	2708	180	185			5	
	2709	185	190			5	
	2710	190	195			5	
	2711	195	200	-0.001		5	

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HOMESTAKE [illegible]
[illegible]
OF ANY [illegible]
THE ACCURACY [illegible]
INFORMATION [illegible]
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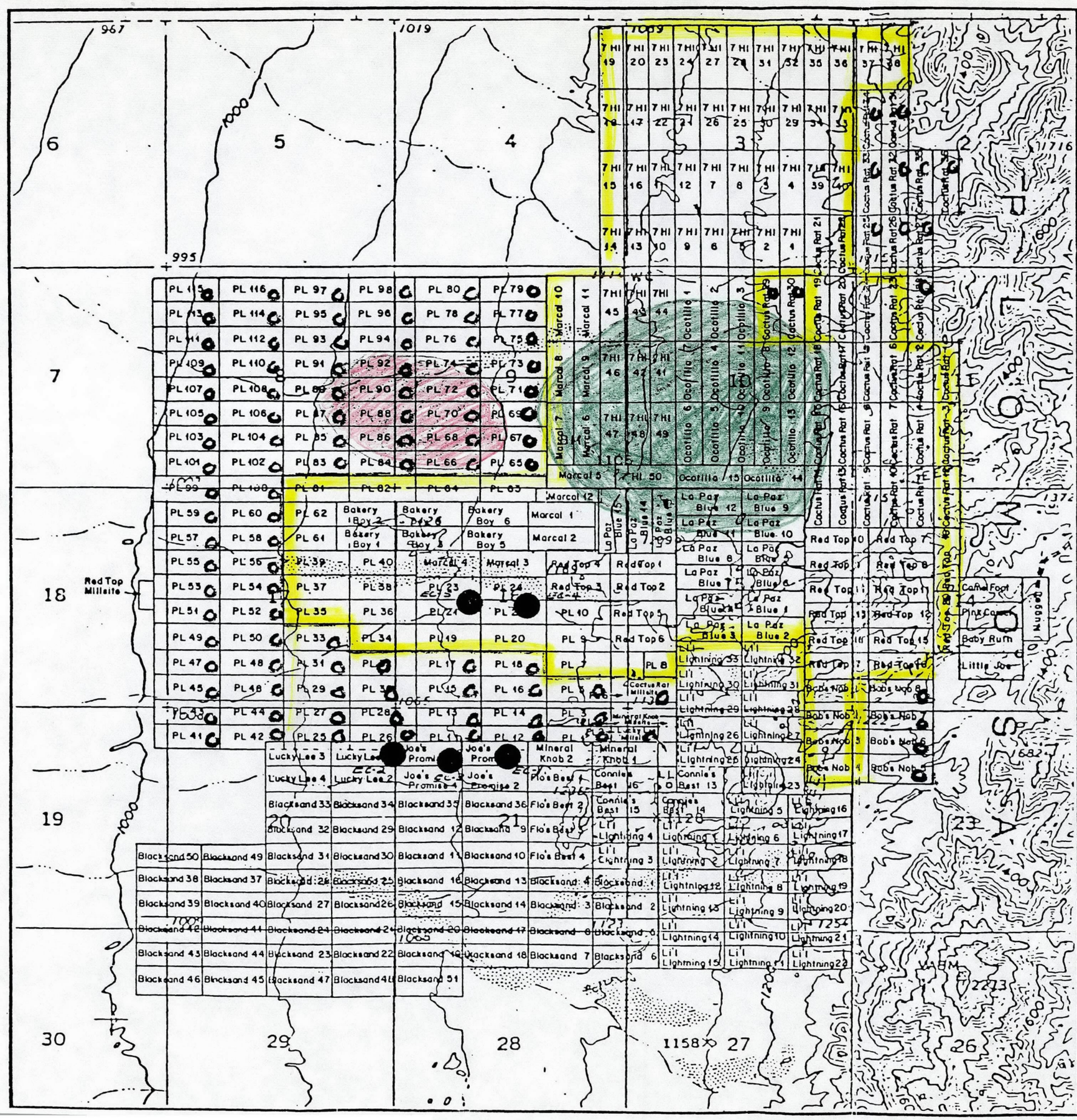
CORPORATION SHALL BE [illegible] SOLE RISK, LIABILITY
AND RESPONSIBILITY.


Red Top Millsite
Mineral Knob Wedge
Lucky Lee Millsite
Joe's Promise Millsite
Cactus Rat Millsite
Marcal 1
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Marcal 10
Marcal 11
Marcal 12
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Bakery Boy 2
Bakery Boy 3
Bakery Boy 5
Bakery Boy 6
Red Top 1
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Red Top 5
Red Top 6
Red Top 7
Red Top 8
Red Top 10
Red Top 11
Red Top 12
Red Top 13
Red Top 15
Camel Foot
Pink Cone
Baby Rum
Little Joe
Bob's Nob 1
Bob's Nob 2
Bob's Nob 3
Bob's Nob 4
Bob's Nob 5
Bob's Nob 6
Bob's Nob 8
Mineral Knob 1
Mineral Knob 2
Connie's Best 13
Connie's Best 14
Connie's Best 15
Connie's Best 16
Flo's Best 1
Flo's Best 2
Flo's Best 3
Flo's Best 4
Joe's Promise 2
Joe's Promise 4
Lucky Lee 2
Lucky Lee 3
Lucky Lee 4
Blacksand 1
Blacksand 2
Blacksand 3
Blacksand 4
Blacksand 6
Blacksand 7
Blacksand 9
Blacksand 10
Blacksand 11
Blacksand 12
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Blacksand 49
Blacksand 50
Blacksand 51
Ocotillo 1
Ocotillo 2
Ocotillo 3
Ocotillo 4
Ocotillo 5
Ocotillo 6
Ocotillo 7
Ocotillo 9
Ocotillo 10
Ocotillo 11
Ocotillo 12
Ocotillo 13
Ocotillo 14
Ocotillo 15
La Paz Blue 1
La Paz Blue 2
La Paz Blue 3
La Paz Blue 4
La Paz Blue 5
La Paz Blue 6
La Paz Blue 7
La Paz Blue 8
La Paz Blue 9
La Paz Blue 10
La Paz Blue 11
La Paz Blue 12
La Paz Blue 14
La Paz Blue 15
Li'l Lightning 1
Li'l Lightning 2
Li'l Lightning 3
Li'l Lightning 4
Li'l Lightning 5
Li'l Lightning 6
Li'l Lightning 7
Li'l Lightning 8
Li'l Lightning 9
Li'l Lightning 10
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Li'l Lightning 27
Li'l Lightning 28
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Li'l Lightning 31
Li'l Lightning 32
Li'l Lightning 33
Cactus Rat 1
Cactus Rat 2
Cactus Rat 3
Cactus Rat 4
Cactus Rat 5
Cactus Rat 6
Cactus Rat 7
Cactus Rat 8
Cactus Rat 9
Cactus Rat 10
Cactus Rat 11
Cactus Rat 12
Cactus Rat 13
Cactus Rat

MERIWETHER CLAIM AREA

Geology & Geochemistry

Showing outcrops, bedding (if compositional banding) foliation, mineral lineation, jointing, shears, faults, & fold axes. Also sample sites (stream sediments 1-12 and rock samples 101-128, 201-225) and gold assays greater than — equal to 0.01 oz/t Au.

Don C. White - March, 1989

T6N R18W W. of Four Peaks

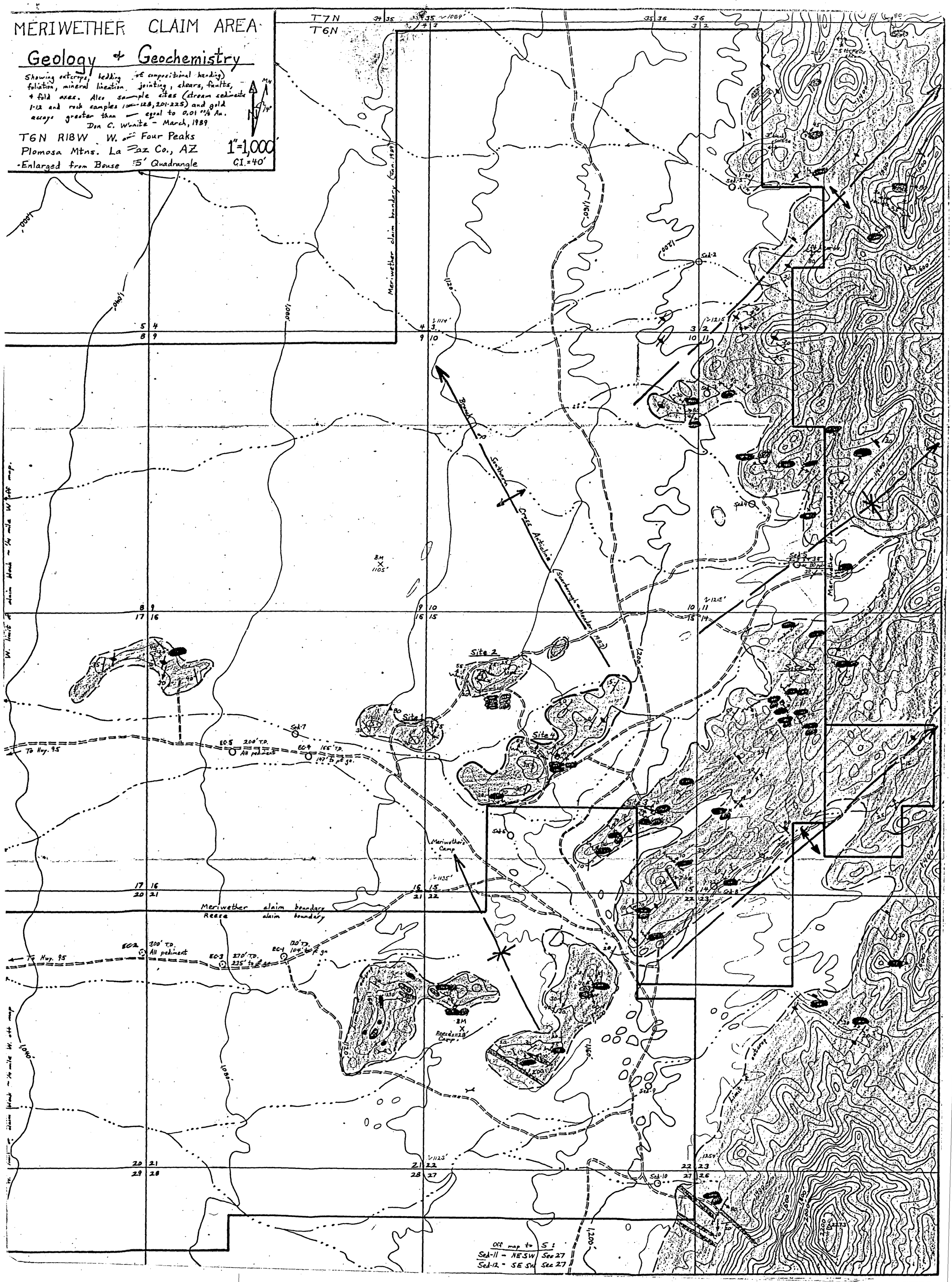
Plomosa Mtns. La Paz Co., AZ

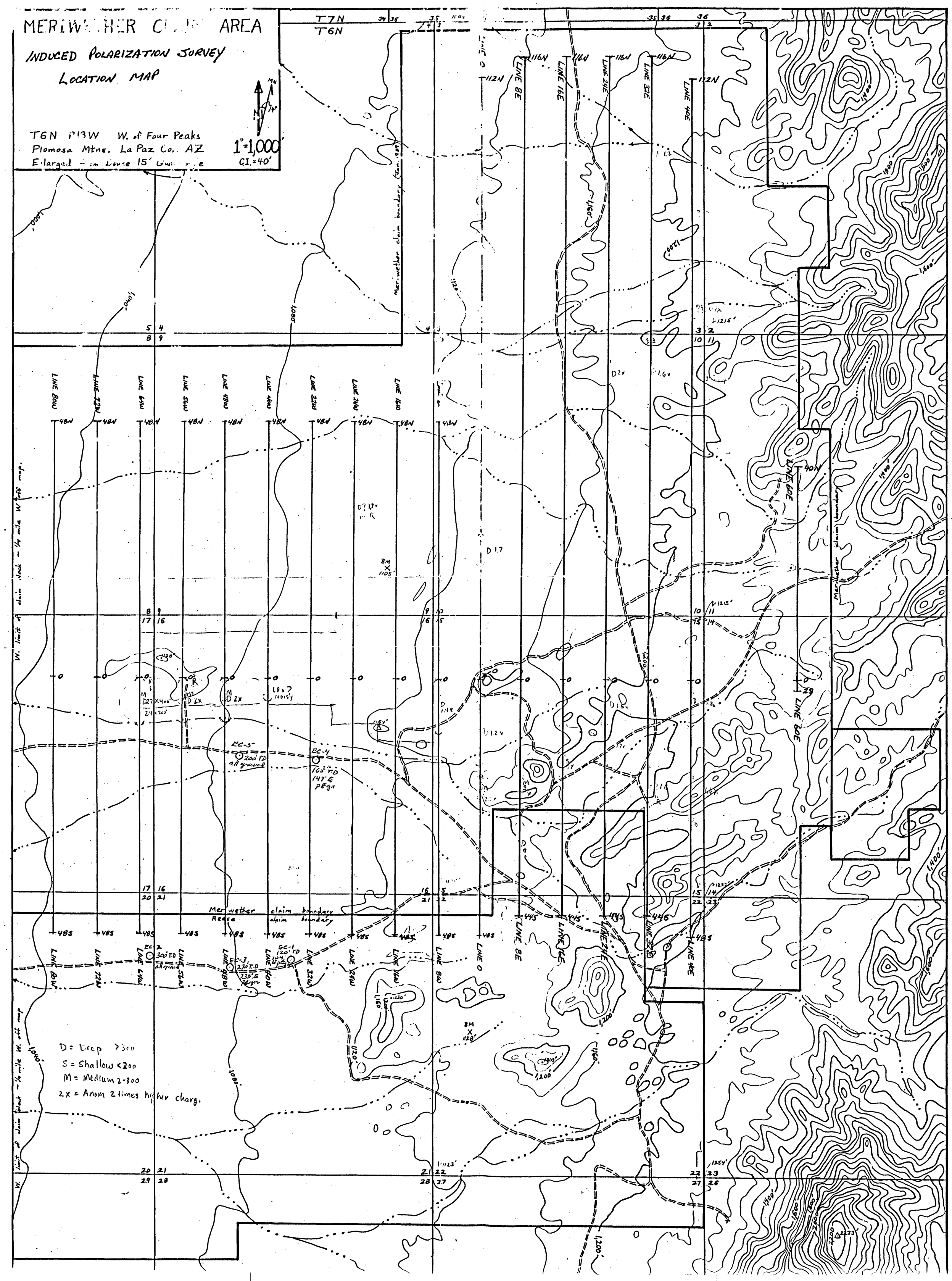
Enlarged from Bouse 5' Quadrangle

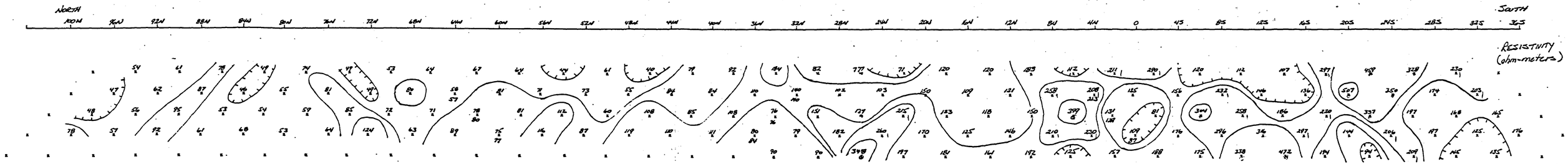
1"=1,000'

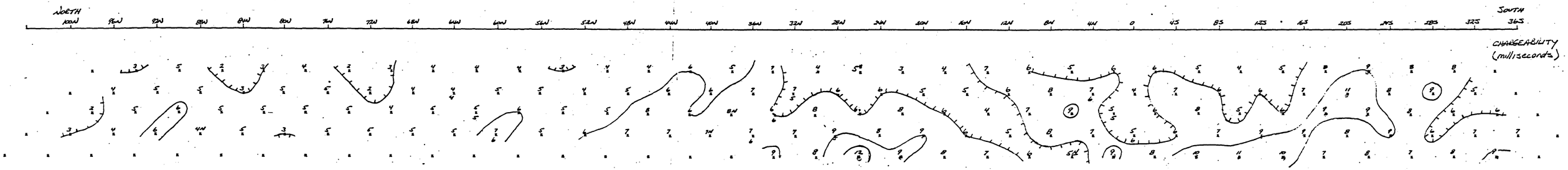
CI.=40'

MN




MERIWETHER CLAIM AREA
INDUCED POLARIZATION SURVEY
LOCATION MAP
T6N R13W W. of Four Peaks
Plomosa Mtns. La Paz Co. AZ
Enlarged from Rease 15' Quadrangle
1"=1,000'
CI.=40'
MN
14°
T7N
T6N
Meriwether claim boundary (Jan 1989)
LINE 8E
LINE 16E
LINE 24E
LINE 32E
LINE 40E
LINE 48E
LINE 8W
LINE 16W
LINE 24W
LINE 32W
LINE 40W
LINE 48W
LINE 56W
LINE 64W
LINE 72W
LINE 80W
LINE 0
Meriwether claim boundary
Rease claim boundary
EC-5 200' TD all gravel
EC-4 165' TD 147' to PEgn
EC-2 300' TD all gravel
EC-3 270' TD 235' to PEgn
EC-1 120' TD 104' to PEgn
D= Deep >300
S= Shallow <200
M= Medium 2-300
2X = Anom 2 times higher charg.
W. limit of claim block ~1/4 mile W. off map.
W. limit of claim block ~1/4 mile W. off map.





RESISTIVITY: logarithmic: 1, 1.5, 2, 3, 5, 7.5, 10, etc
CHARGEABILITY: 3, 6, 9, 12, 15, 20, 25, 30, 40, 50, etc

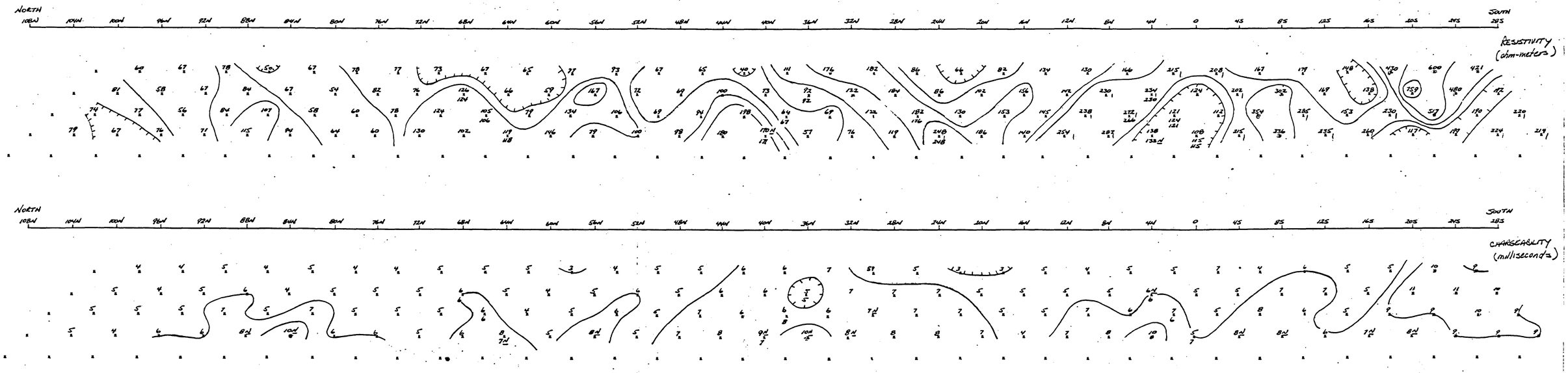
CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA
INDUCED POLARIZATION SURVEY
LINE 0

FEBRUARY 21-22, 1989
MARCH 11-12, 1989
400-foot dipoles

N. NORSY

400

Line 0



CONTOURS

Resistivity: logarithmic: 1, 1.5, 2, 3, 5, 7.5, 10, etc

chargeability: 3, 6, 9, 12, 15, 20, 25, 30, 40, 50, etc

N: noisy

CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA

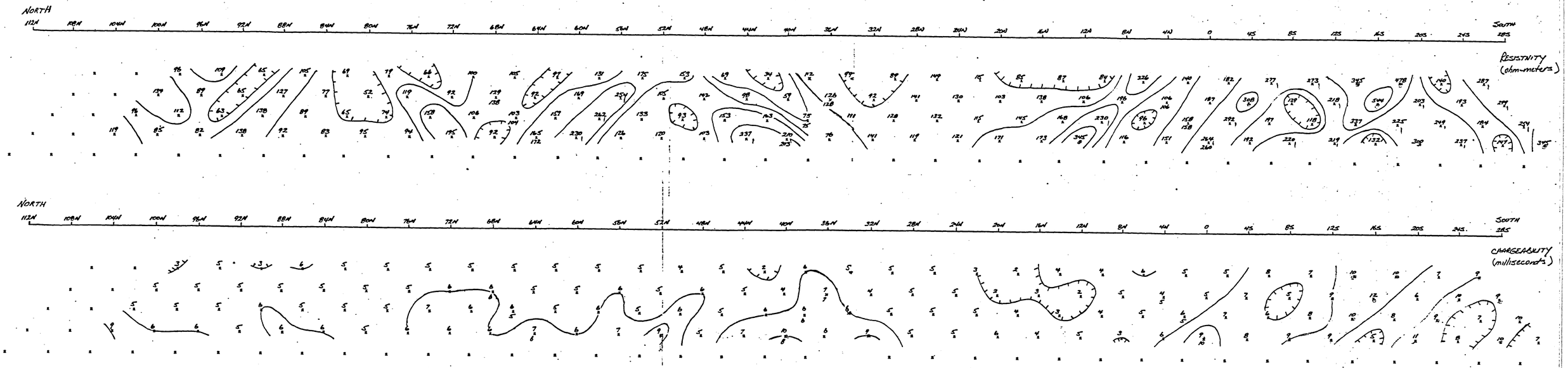
INDUCED POLARIZATION SURVEY

LINE 8E

MARCH 14-16, 1989
400-foot dipoles

400'

8E



CONTOURS

Resistivity: logarithmic: 1, 1.5, 2, 3, 5, 7.5, 10, etc

Chargeability: 3, 6, 9, 12, 15, 20, 25, 30, 40, 50, etc

CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA

INDUCED POLARIZATION SURVEY

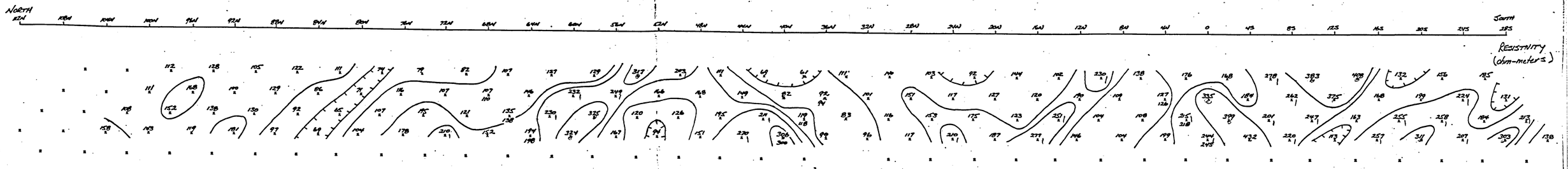
LINE 16E

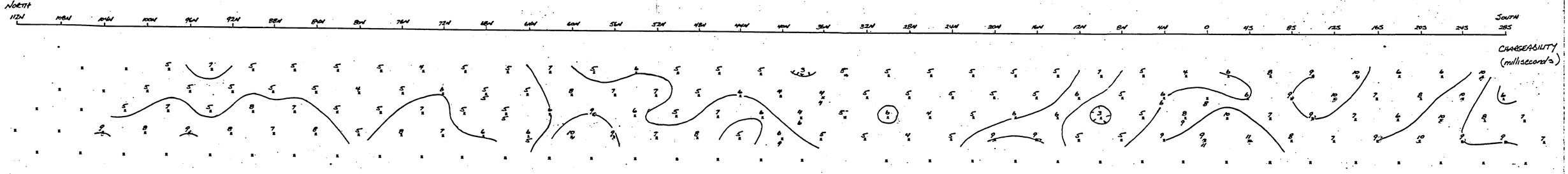
MARCH 17, 19

400-foot dipoles

400'

16E

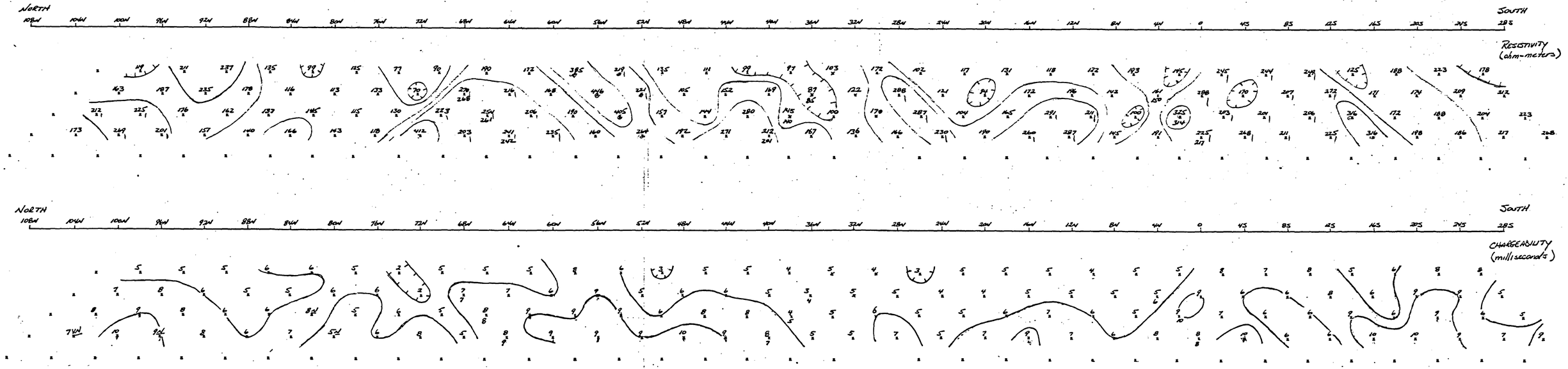




CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS.
LA PAZ COUNTY, ARIZONA
INDUCED POLARIZATION SURVEY
LINE 24E

MARCH 20-23, 1989
1" = 100'
Line Cut Scale

400'
24E

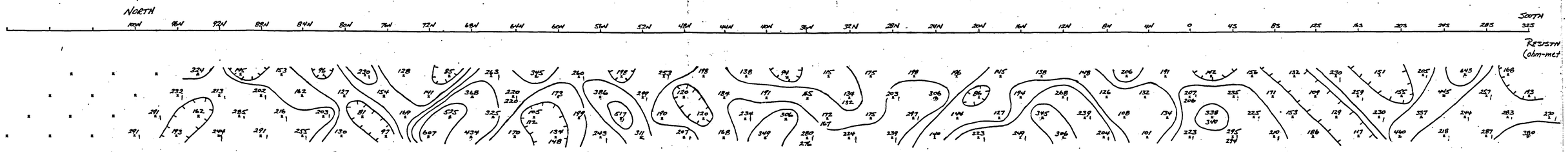


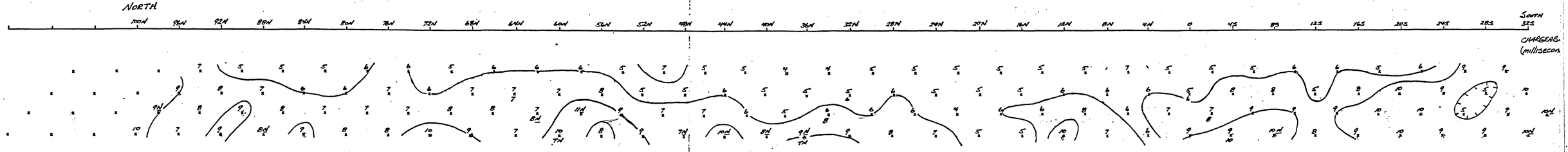
CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, CLAIMS
INDUCED POLARIZATION CLAIMS
LINE 32E

MARCH 24, 27-28, 1989
400' dipole

400'

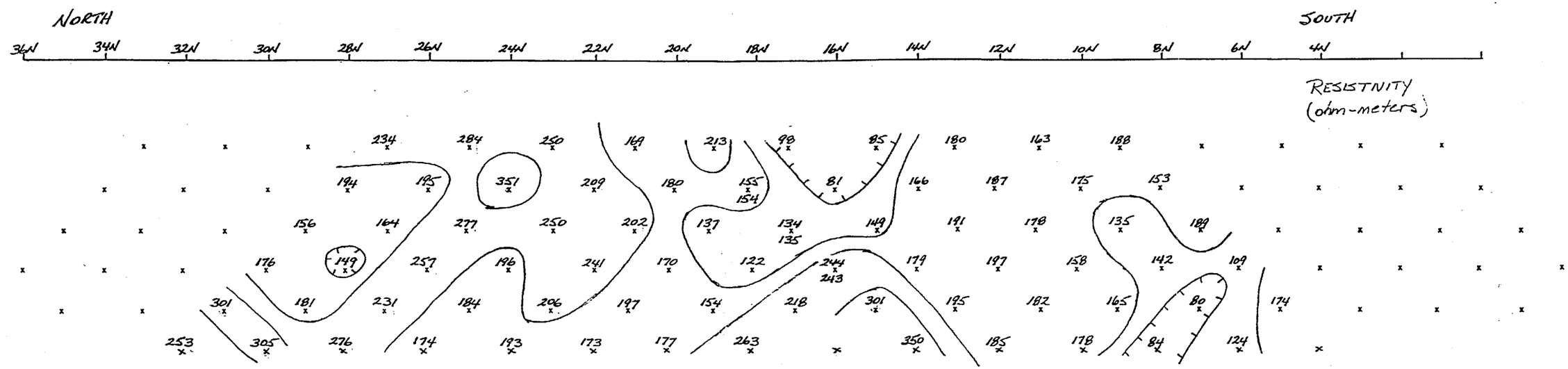
32E

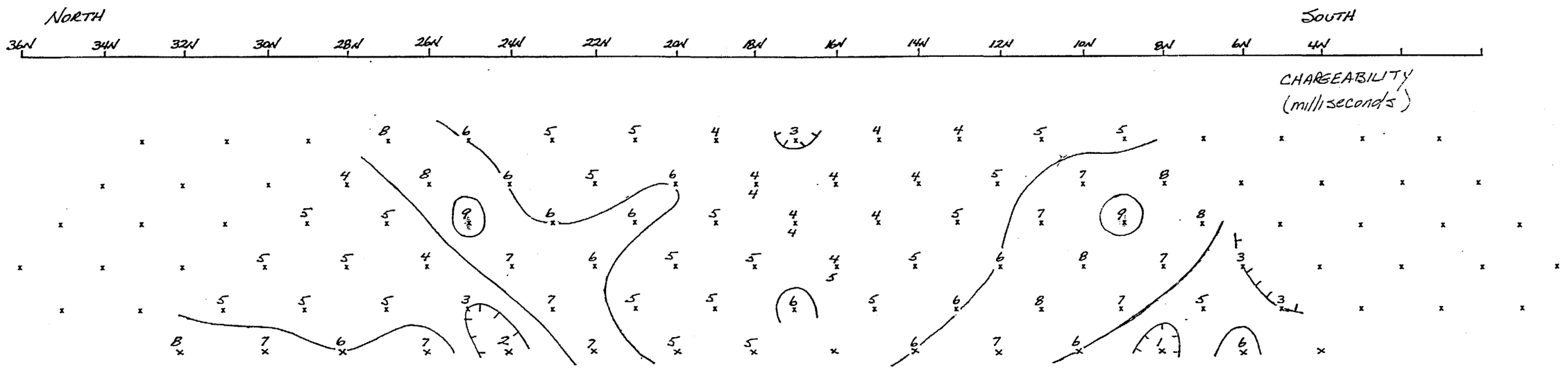




CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA
INDUCED POLARIZATION SURVEY
LINE 40E
MARCH 28-31, 1989
400-FOOT DIPOLES

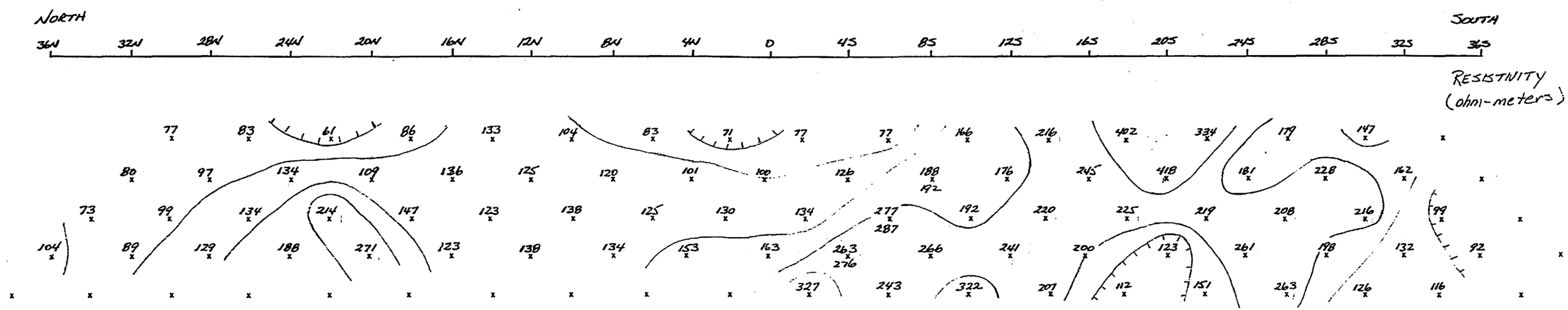
400'
40E

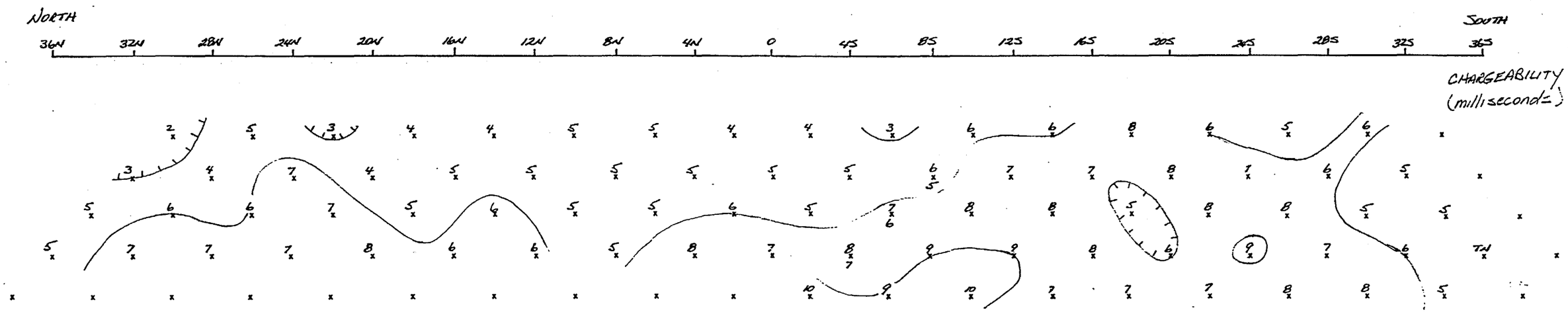




CALLAHAN MINING CORPORATION
HERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA
INDUCED POLARIZATION SURVEY
LINE 60E
APRIL 1, 1989
200-FOOT DIPOLES

200'
60E

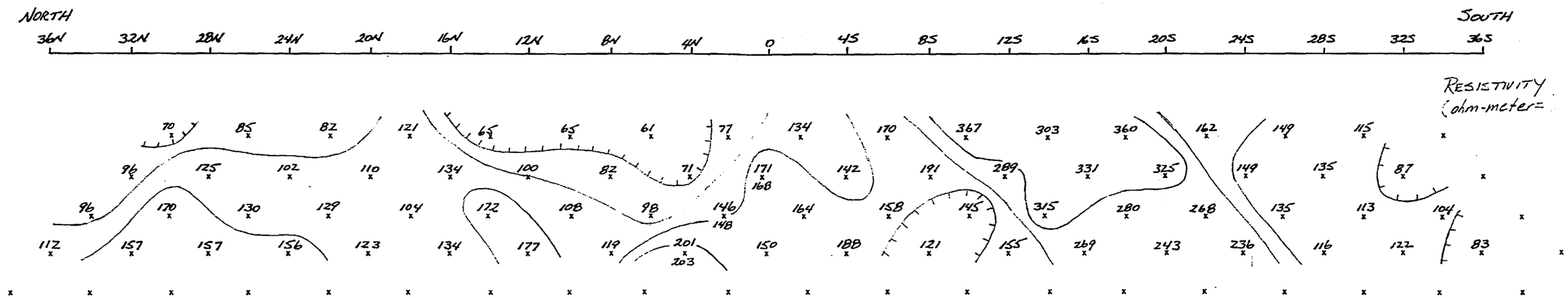


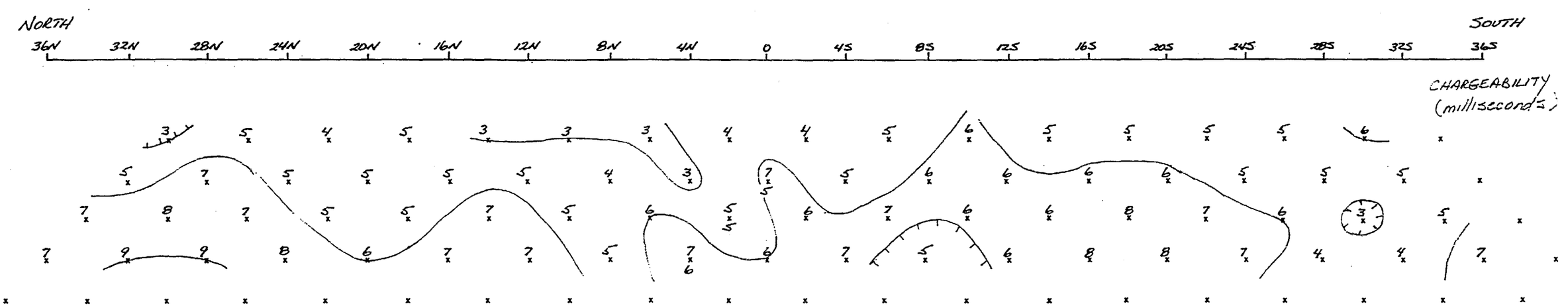


TN: Too Noisy

CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA
INDUCED POLARIZATION SURVEY
LINE 8W
FEBRUARY 23-24, 1989
400-foot dipoles

400'
8W





CONTOURS

Resistivity: logarithmic: 1, 1.5, 2, 3, 5, 7.5, 10, etc

Chargeability: 3, 6, 9, 12, 15, 20, 25, 30, 40, 50, etc

CALLAHAN MINING CORPORATION

MERIWETHER CLAIMS

LA PAZ COUNTY, ARIZONA

INDUCED POLARIZATION SURVEY

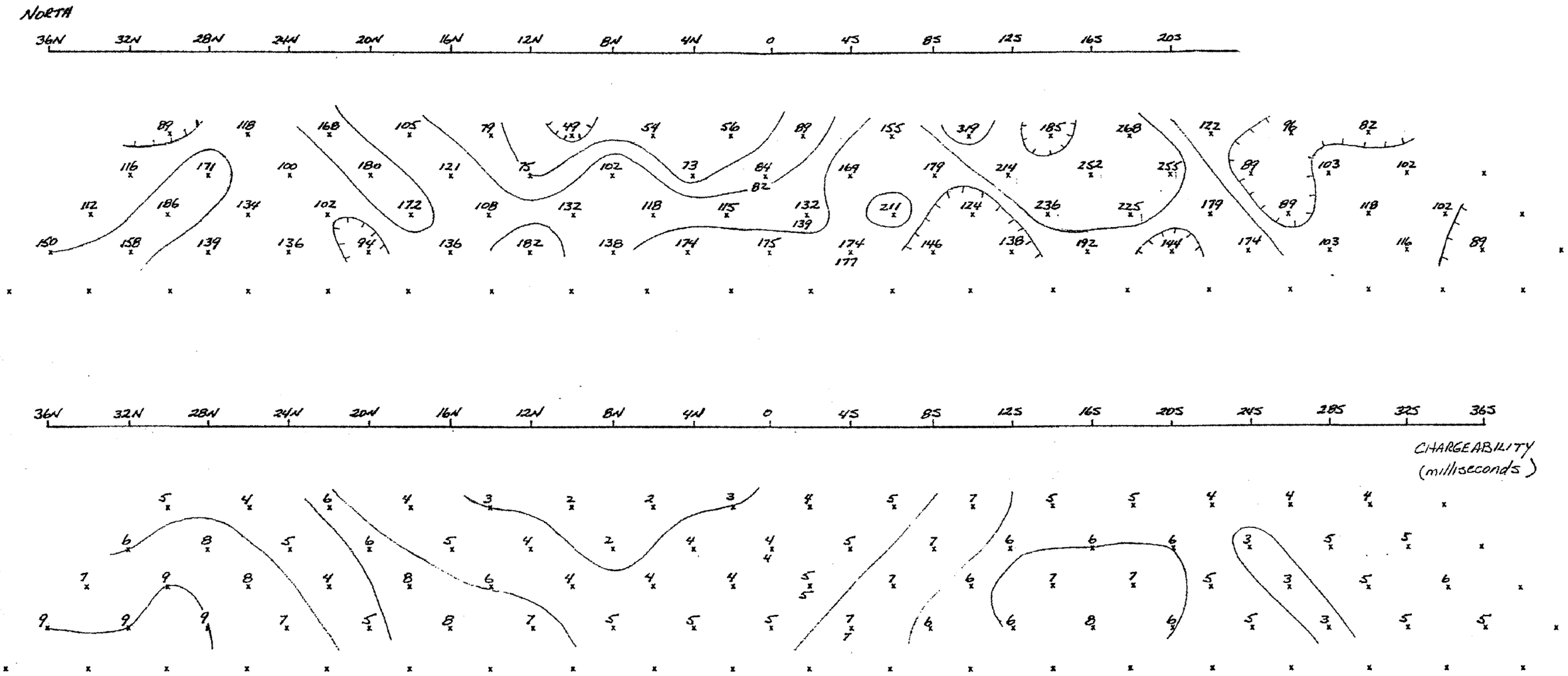
LINE 16W

FEBRUARY 25, 1989

400-foot dipoles

400'

16W



CONTOURS

tivity: logarithmic: 1, 1.5, 2, 3, 5, 7.5, 10, etc

3, 6, 9, 12, 15, 20, 25, 30, 40, 50, etc

CALLAHAN MINING CORPORATION

MERIWETHER CLAIMS

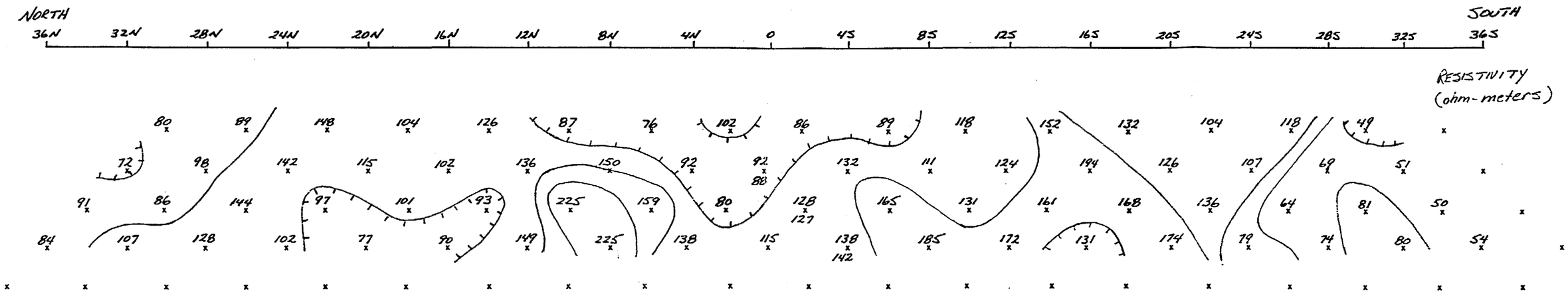
LA PAZ COUNTY, ARIZONA

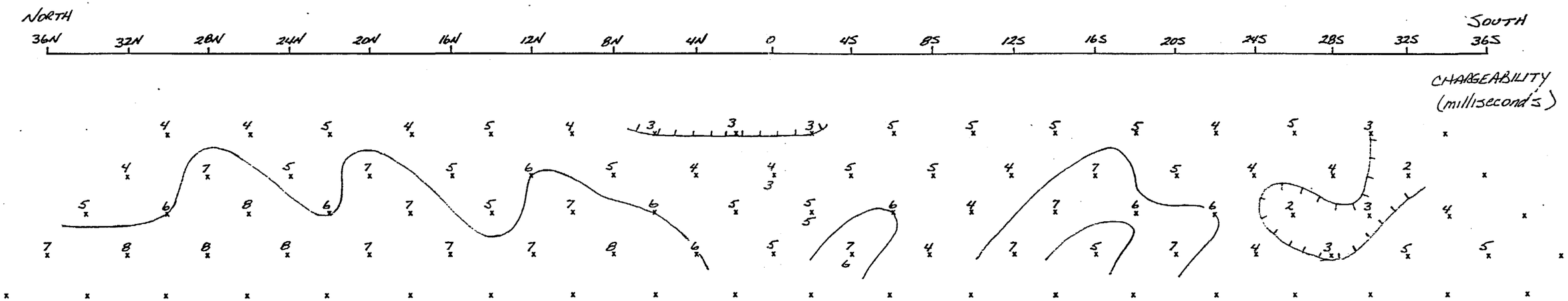
INDUCED POLARIZATION SURVEY

LINE 24W

FEBRUARY 26–27, 1989

400-foot dipoles

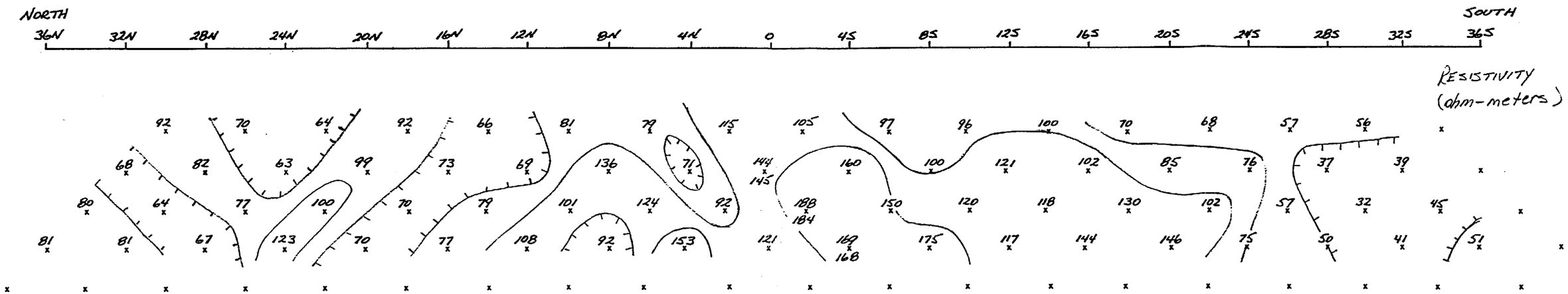


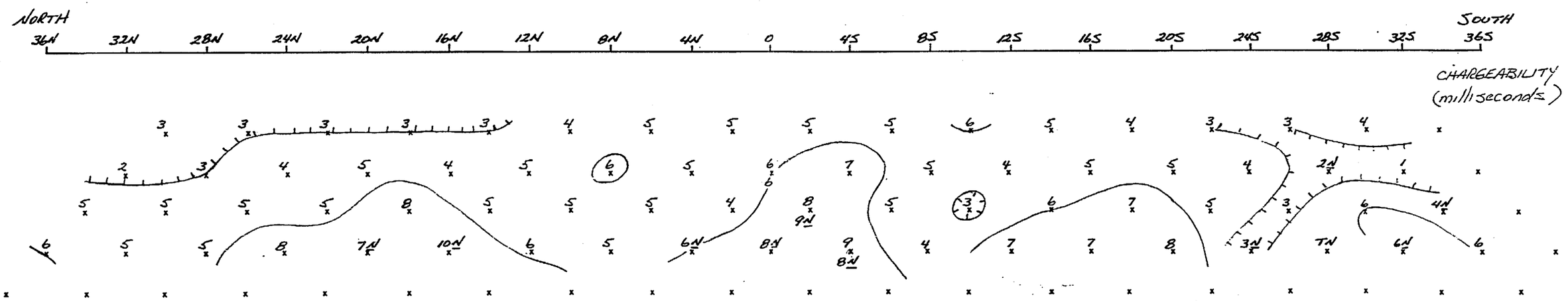


CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA
INDUCED POLARIZATION SURVEY
LINE 32W

FEBRUARY 27-28, 1989
400-foot dipoles

400'
32W





N: noisy
TN: too noisy

CONTOURS

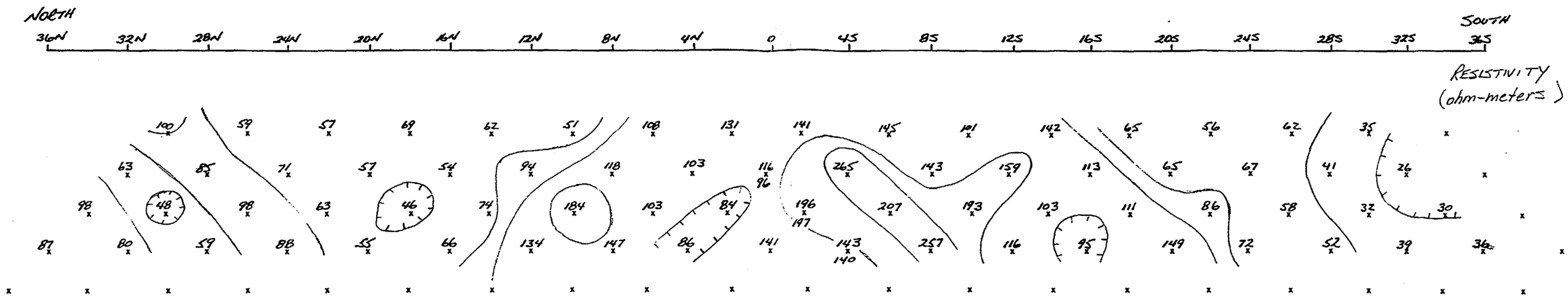
Resistivity: logarithmic: 1, 1.5, 2, 3, 5, 7.5, 10, etc

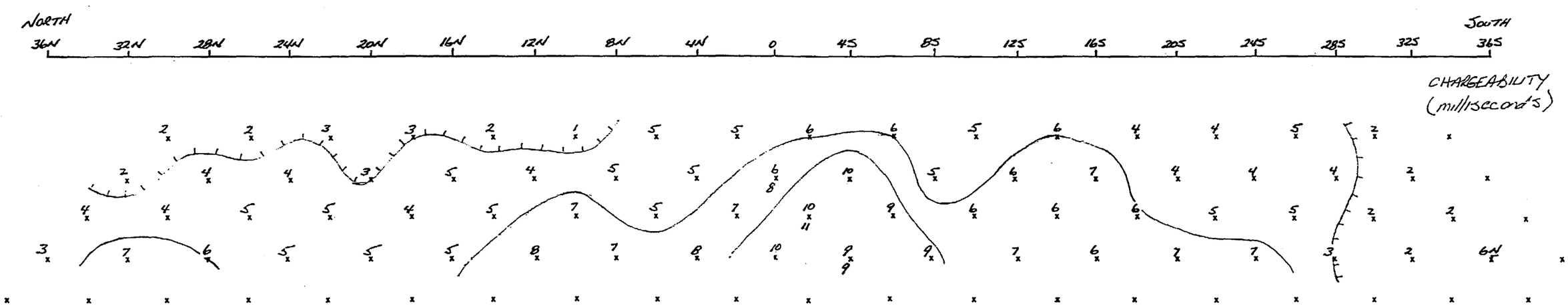
Chargeability: 3, 6, 9, 12, 15, 20, 25, 30, 40, 50, etc

CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA
INDUCED POLARIZATION SURVEY
LINE 40W

MARCH 2-3, 1989
400-foot dipoles

400'
40W





CONTOURS

Resistivity: logarithmic: 1, 1.5, 2, 3, 5, 7.5, 10, etc

Chargeability: 3, 6, 9, 12, 15, 20, 25, 30, 40, 50, etc

N: Noisy

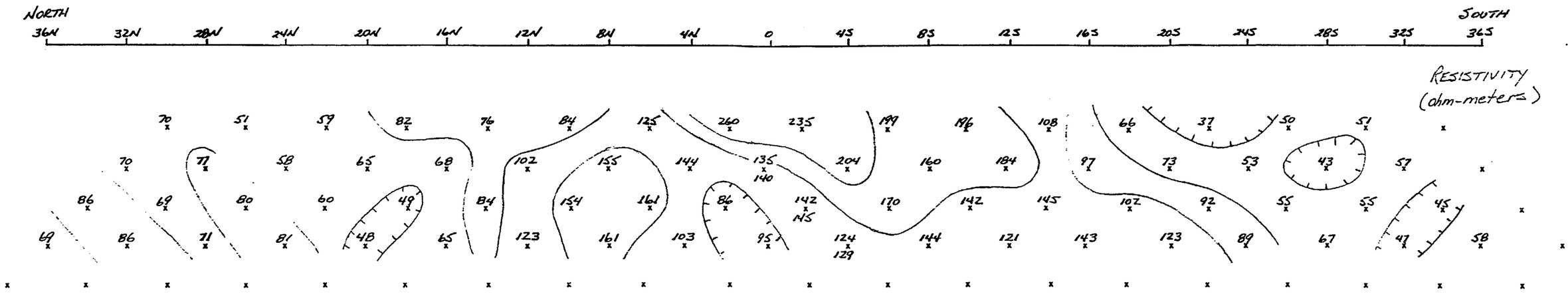
CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA

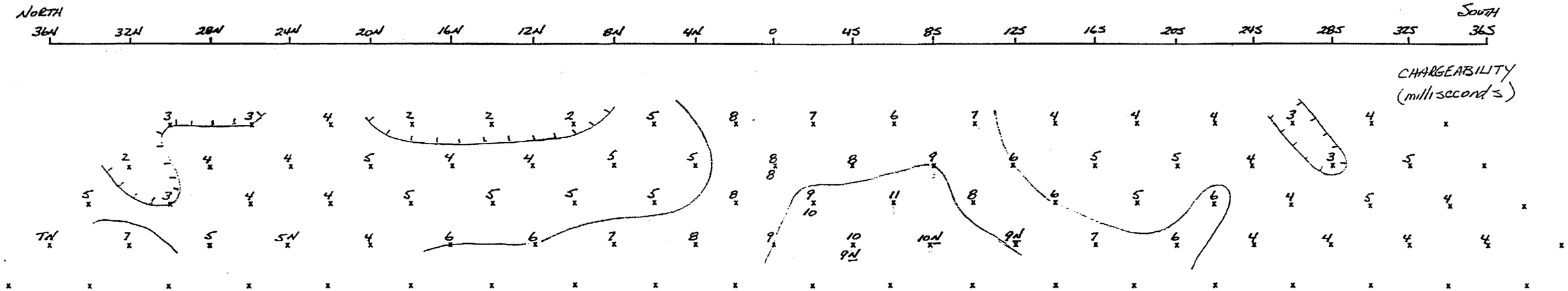
INDUCED POLARIZATION SURVEY
LINE 48W

MARCH 4, 1989
400-foot dipoles

400'

48W





CONTOURS

Resistivity: logarithmic: 1, 1.5, 2, 3, 5, 7.5, 10, etc

Chargeability: 3, 6, 9, 12, 15, 20, 25, 30, 40, 50, etc

N: noisy

TN: too noisy

CALLAHAN MINING CORPORATION

MERIWETHER CLAIMS

LA PAZ COUNTY, ARIZONA

INDUCED POLARIZATION SURVEY

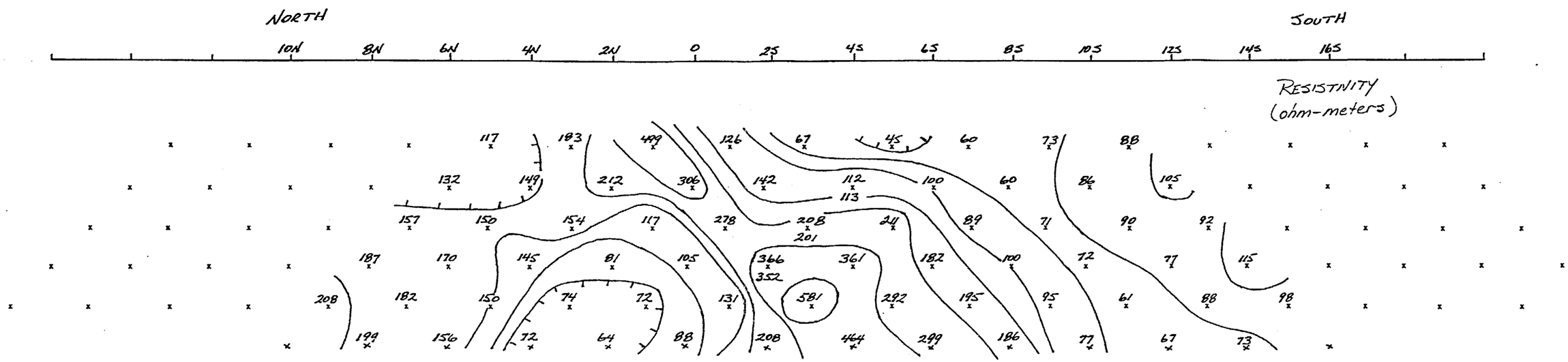
LINE 56W

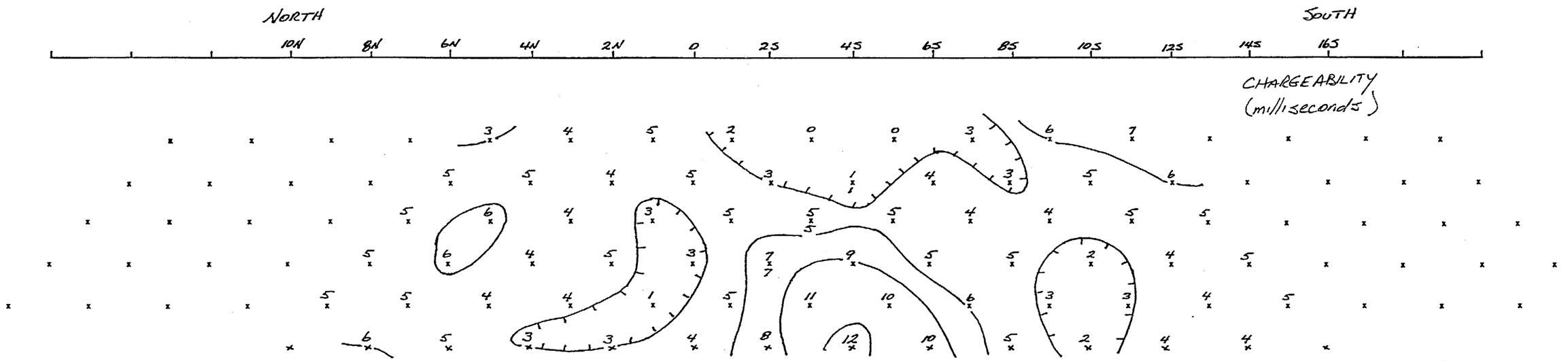
MARCH 5, 1989

400-foot dipoles

400'

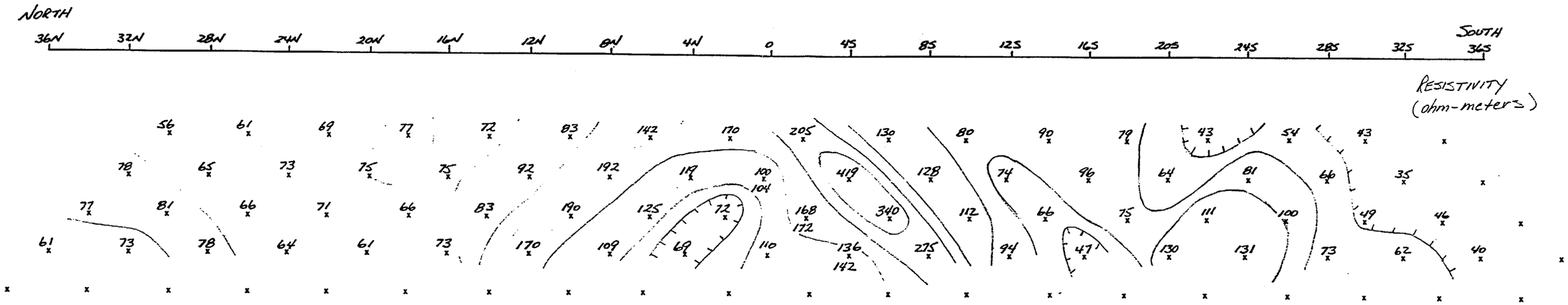
56W

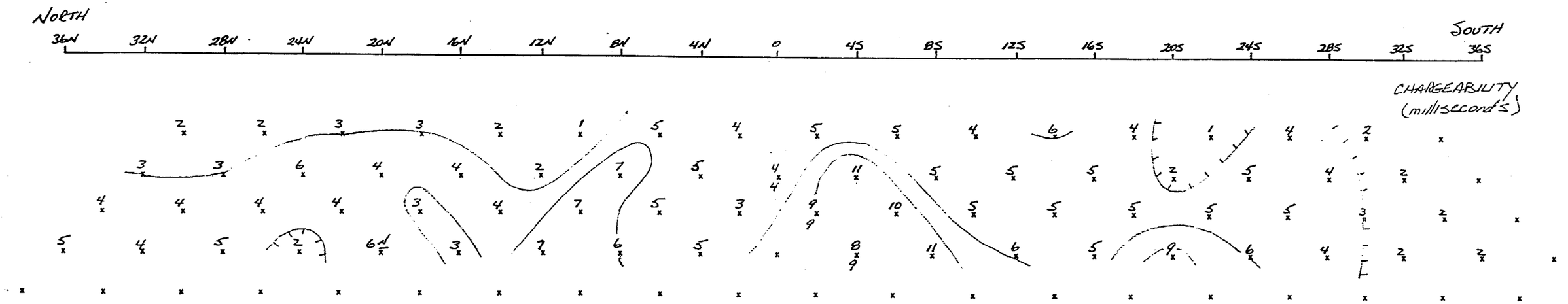




CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA
INDUCED POLARIZATION SURVEY
LINE 64W
APRIL 3, 1989
200-FOOT DIPOLES

200'
64W



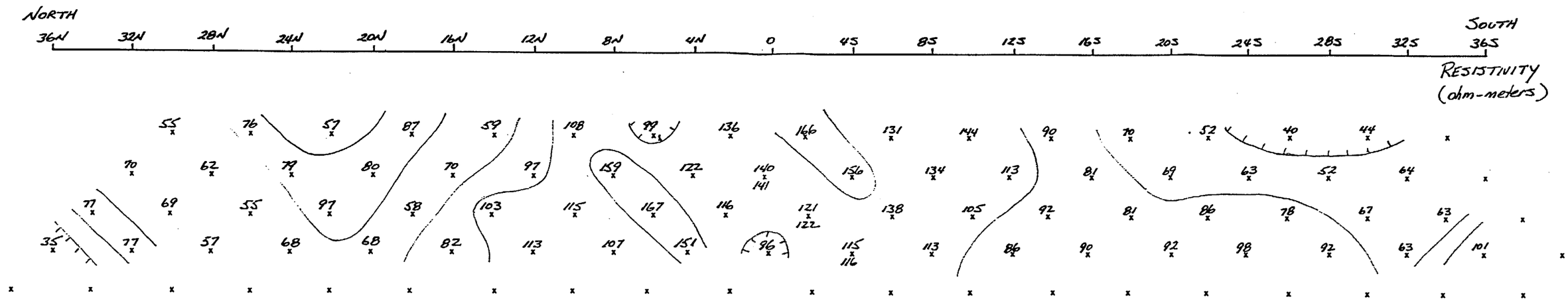


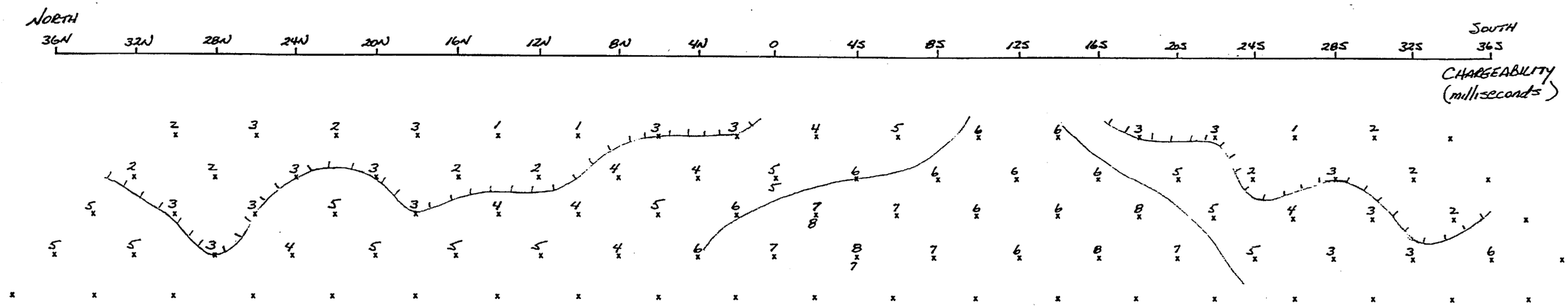
CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA

INDUCED POLARIZATION SURVEY
LINE 64W

MARCH 6-7, 1989
400-foot dipoles

400'
64W





CALLAHAN MINING CORPORATION

MERIWETHER CLAIMS

LA PAZ COUNTY, ARIZONA

INDUCED POLARIZATION SURVEY

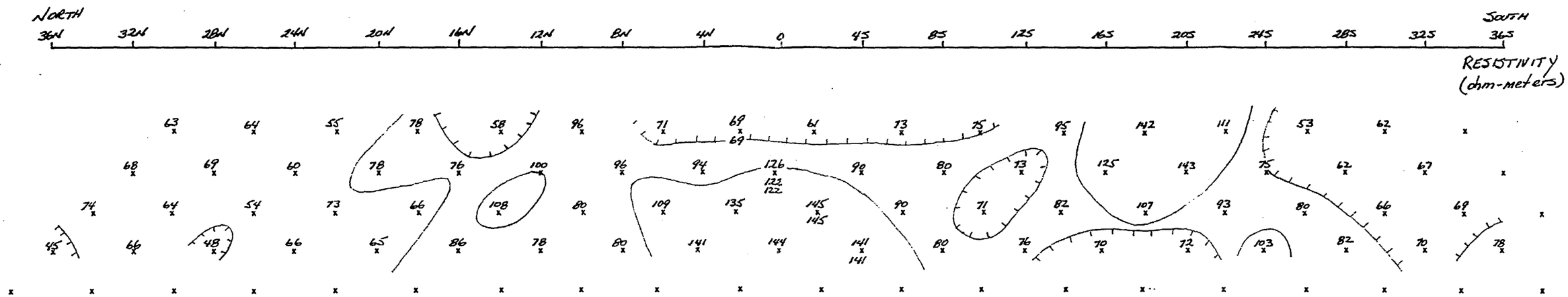
LINE 72W

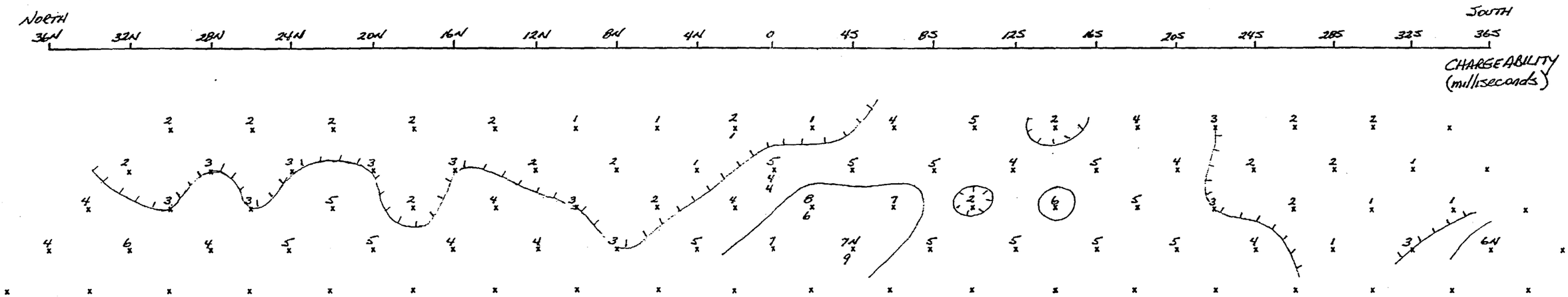
MARCH 7-8, 1989

400-foot dipoles

400'

72W





N: noisy

CONTOURS

Resistivity: logarithmic: 1, 1.5, 2, 3, 5, 7.5, 10, etc

Chargeability: 3, 6, 9, 12, 15, 20, 25, 30, 40, 50, etc

CALLAHAN MINING CORPORATION

MERIWETHER CLAIMS

LA PAZ COUNTY, ARIZONA

INDUCED POLARIZATION SURVEY

LINE 80W

MARCH 9, 1989

400-foot dipoles

400'

80W

MERIWETHER CLAIM AREA

Geology & Geochemistry

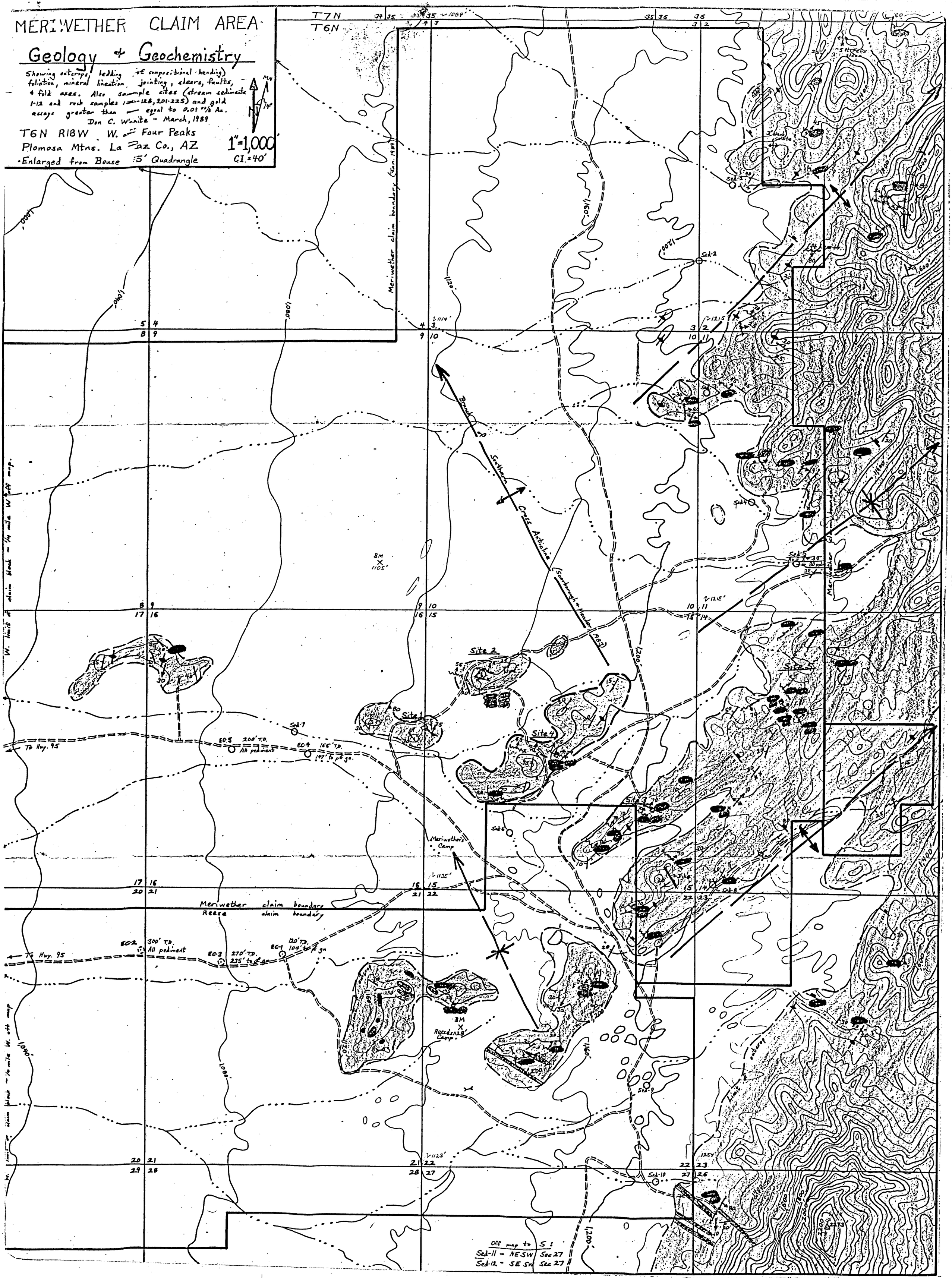
Showing outcrops, bedding (& compositional banding) foliation, mineral lineation, jointing, shears, faults, & fold axes. Also sample sites (stream sediments 1-12 and rock samples 1-128, 201-225) and gold assays greater than or equal to 0.01 oz/t Au.

Don C. White - March, 1989

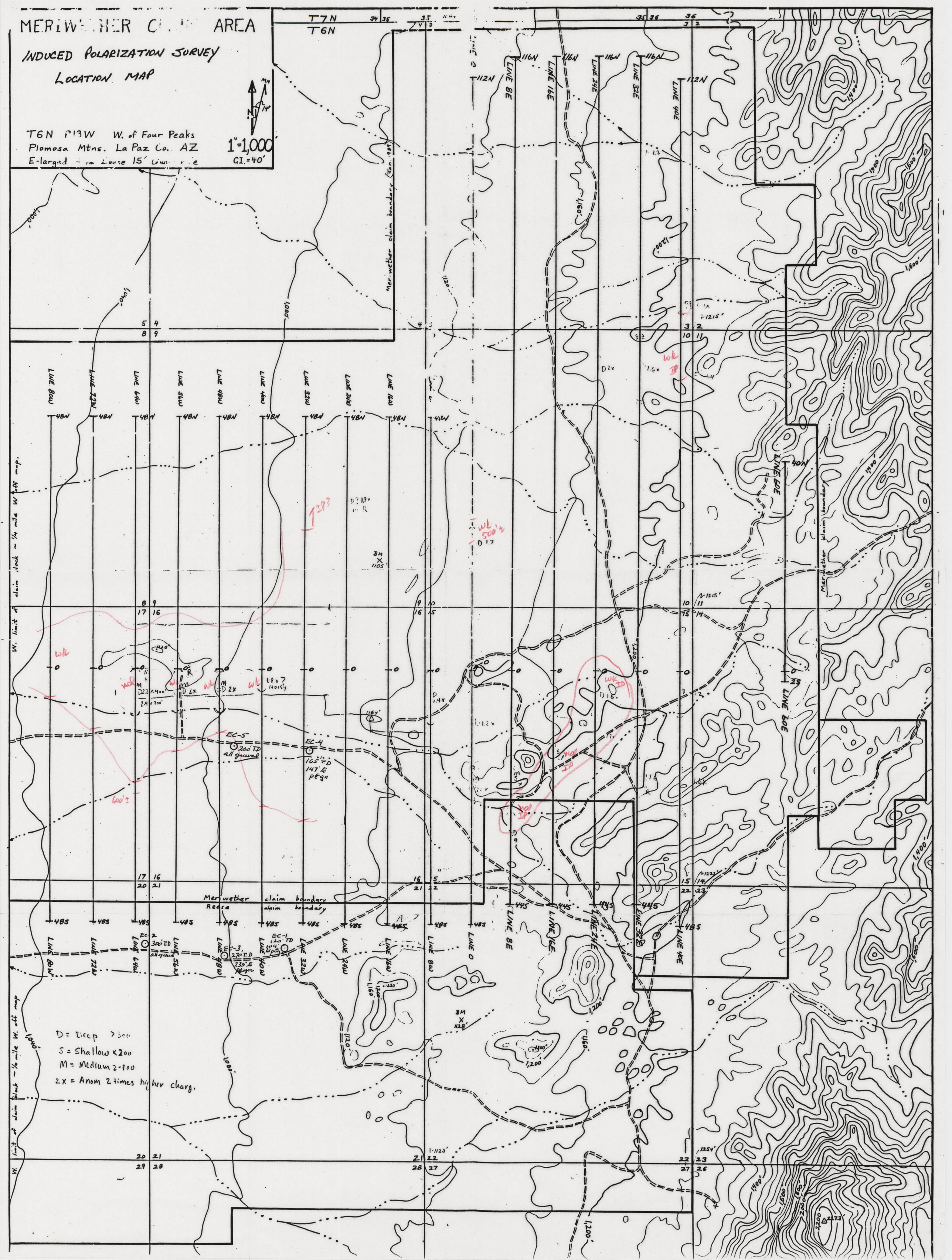
T6N R18W W. of Four Peaks
Plomosa Mtns. La Paz Co., AZ
Enlarged from Bouse 15' Quadrangle

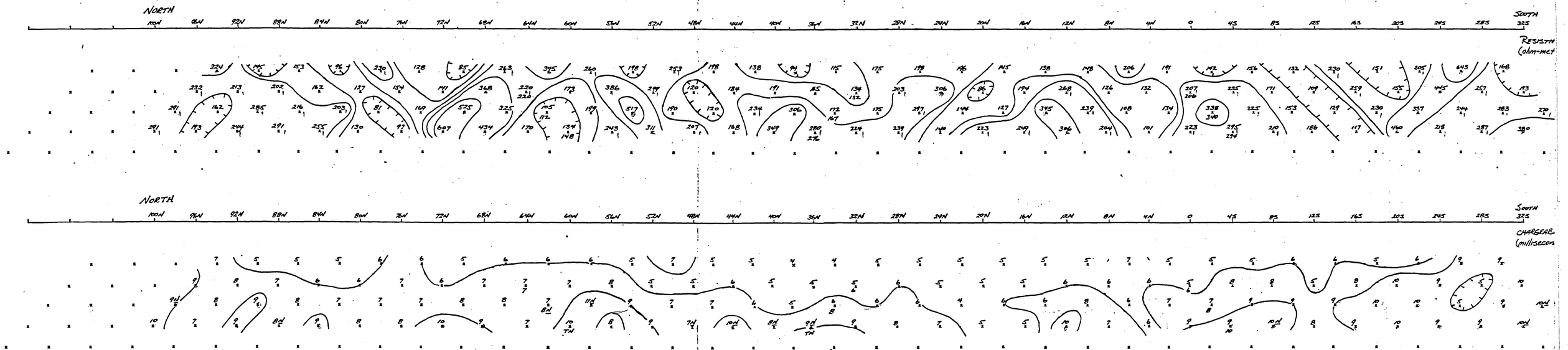
1"=1,000'
C.I.=40'

MN
N 14°

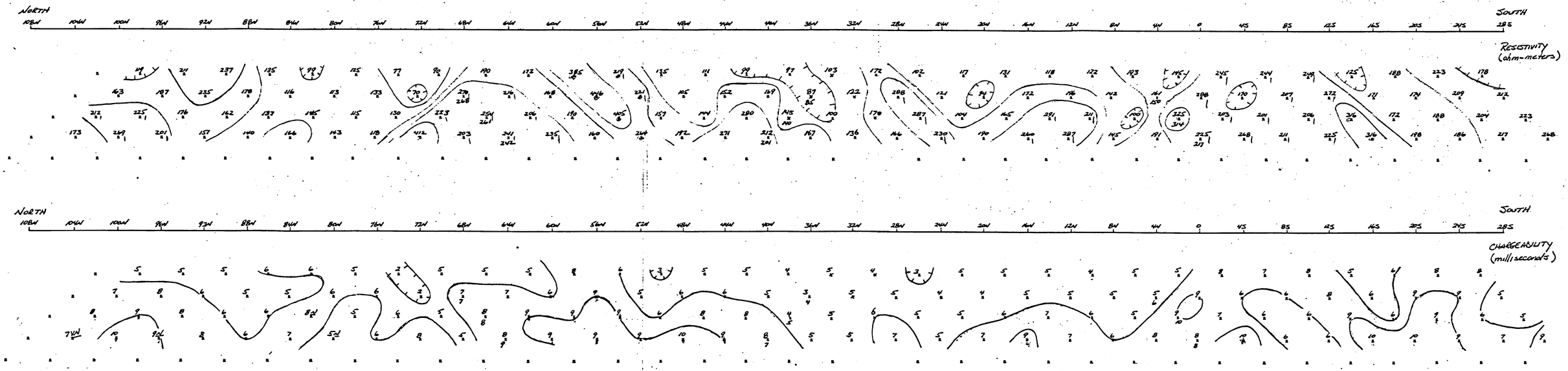


Extra set of
large maps/sections


MERIWETHER CLAIM AREA
INDUCED POLARIZATION SURVEY
LOCATION MAP
T6N R13W W. of Four Peaks
Plomosa Mtns. La Paz Co. AZ
Enlarged from Louise 15' Quadrangle
1"=1,000'
C.I.=40'
MN
14°
T7N
T6N
Meriwether claim boundary (Jan. 1989)
LINE 8E
LINE 16E
LINE 24E
LINE 32E
LINE 40E
LINE 80E
LINE 8W
LINE 16W
LINE 24W
LINE 32W
LINE 40W
LINE 48W
LINE 56W
LINE 64W
LINE 72W
LINE 80W
116N
112N
48N
40N
445
485
W. limit of claim that ~ 1/4 mile W of the W. tip of claim block ~ 1/4 mile W of map.
Meriwether claim boundary
Reese claim boundary
EC-5 200' TD all gravel
EC-4 165' TD 147' to pEgn
EC-2 300' TD all gravel
EC-3 270' TD 235' to pEgn
EC-1 120' TD 104' to pEgn
D = Deep >300
S = Shallow <200
M = Medium 2-300
2X = Anom 2 times higher charg.
BM 1105'
BM 1128'
1215'
1223'
1254'
2273'

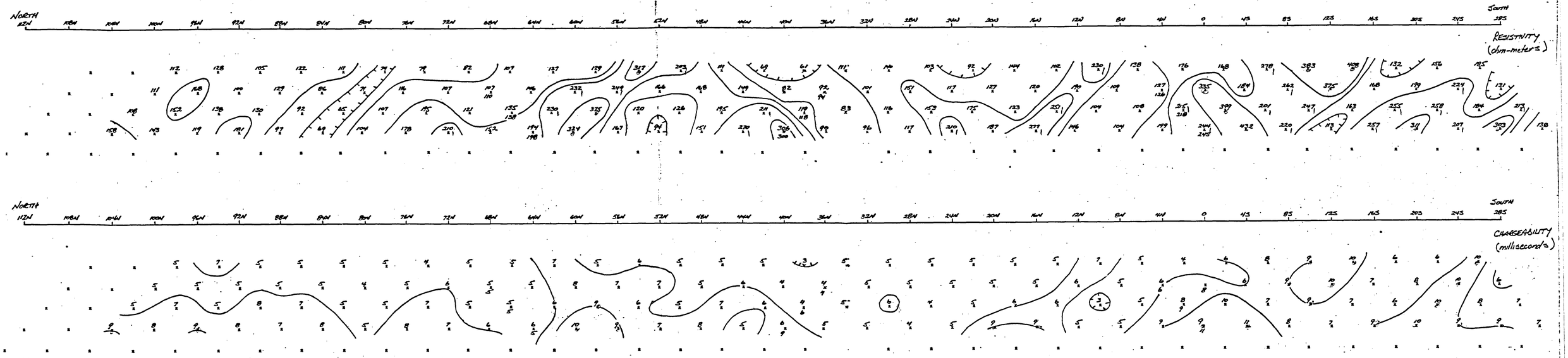


CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA
INDUCED POLARIZATION SURVEY
LINE 40E
MARCH 28-31, 1989
400-FOOT DIPOLES



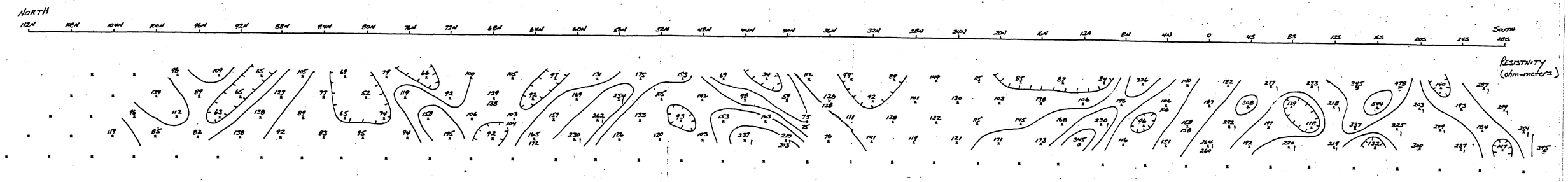
CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, CLAIMS
INDUCED POLARIZATION CLAIMS
LINE 32E

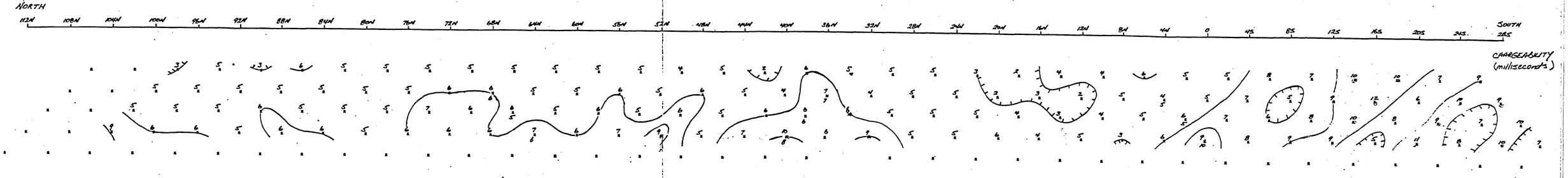
MARCH 24, 27-28, 1989



CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS.
LA PAZ COUNTY, ARIZONA
INDUCED POLARIZATION SURVEY
LINE 24E

MARCH 20-23, 1989
Hom-Cut dipoles





CONTOURS

Resistivity: logarithmic: 1, 1.5, 2, 3, 5, 7.5, 10, etc.

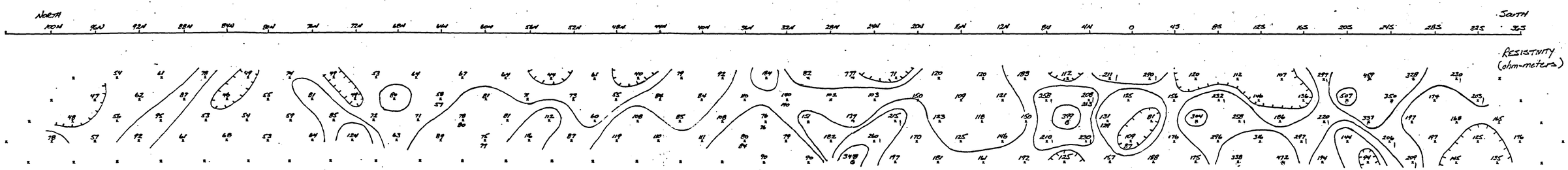
Chargeability: 3, 6, 9, 12, 15, 20, 25, 30, 40, 50, etc.

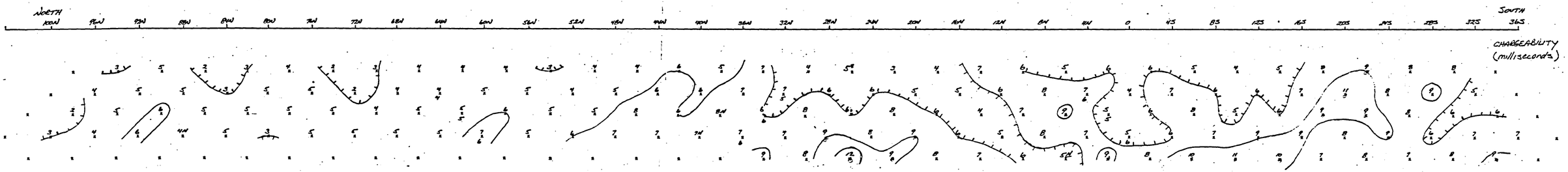
CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA

INDUCED POLARIZATION SURVEY
LINE 16E

MARCH 17, 19

400-foot dipoles





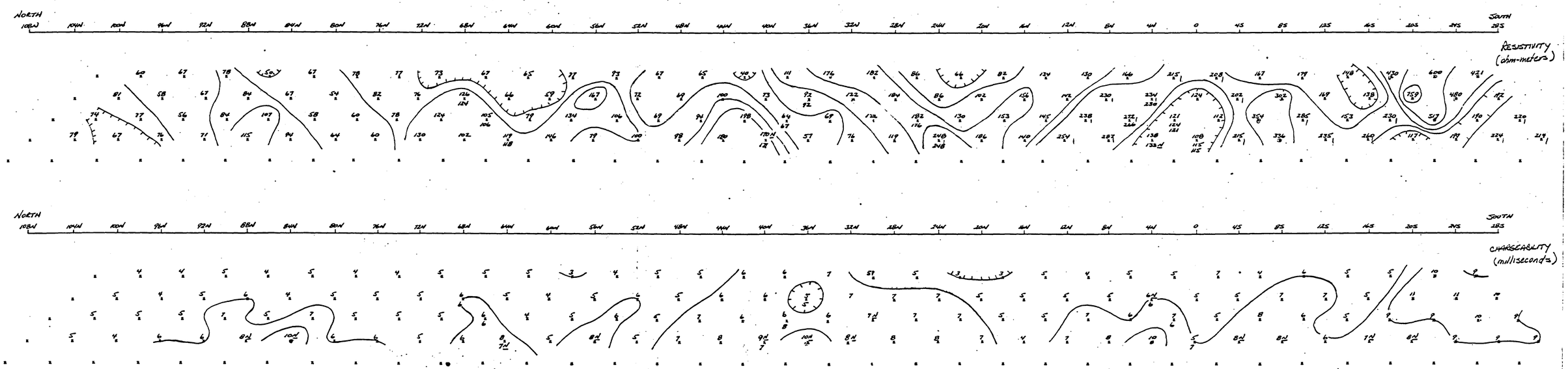
RESISTIVITY: logarithmic: 1, 1.5, 2, 3, 5, 7.5, 10, etc

CHARGEABILITY: 3, 6, 9, 12, 15, 20, 25, 30, 40, 50, etc

N: NOISY

CALLAHAN MINING CORPORATION
MERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA
INDUCED POLARIZATION SURVEY
LINE O

FEBRUARY 21-22, 1989
MARCH 11-12, 1989
400-foot dipoles



CONTOURS

Resistivity: logarithmic: 1, 1.5, 2, 3, 5, 7.5, 10, etc

chargeability: 3, 6, 9, 12, 15, 20, 25, 30, 40, 50, etc

N: noisy

CALLAHAN MINING CORPORATION
HERIWETHER CLAIMS
LA PAZ COUNTY, ARIZONA

INDUCED POLARIZATION SURVEY
LINE 8E

MARCH 14-16, 1989
400-foot dipoles

JDS

ASARCO

Exploration Department
Southwestern United States Division
James D. Sell
Manager

July 22, 1991

Mr. Marcus A. Wiley
President
Wiley Engineering, Inc.
9137 East Mineral Circle, Suite 380
Englewood, Colorado 80112

Meriwether Claim Block
T6N, R18W
La Paz County, Arizona

Dear Mr. Wiley:

Asarco SWED thanks you for the reports and maps you submitted on the Meriwether Claim block in La Paz County, Arizona. I am returning the submitted data as you have requested.

In reviewing the data with our geophysics we find that the data expresses weak effects and/or a depth factor that is beyond our present depth configuration.

The concept that the area may be in structural arch and a possibility of a rock change at depth is intriquing, but again, with the drill hole information available, Asarco will decline on further testing the property at this time.

Please excuse the Gp'ers red lines on your map, as he got carried away on your original which you sent, instead of us making a copy for him to work on.

Again, thanks for your submittal, and we look forward to additional info which changes the picture.

Sincerely,

James D. Sell

James D. Sell

JDS:mek
Encs.

cc: W.L. Kurtz
C.O. Windels

ASARCO Incorporated P.O. Box 5747 Tucson, Az 85703-0747
1150 North 7th Avenue FAX (602) 792-3934 Phone (602) 792-3010