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The following file is part of the John E. Kinnison mining collection

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CAP  
Dos Cabezas

DRILL HOLE DC-4  
T.D. 1955 ft

Bedrock depth 200 ft

Alteration

Top of Sulphides 450 ft

Chalcocite : 450-500

Total Sulphides 5 %

<u>BEDROCK</u>	<u>DETAILS</u>	<u>JEK - Descrip of samples</u>
<u>Original log</u>	<u>Correlation</u>	
200 - 1200 Schist	Schist	@ 500 & 720 Sch.
- 1650 Amp and "Qtz-ser rock"	Qtz-latitude(?) of w-1 type	@ 918 - Qtz rich sch. - similar to w-1 Qtz lat in appearance.
- 1955 Amp & Qtz - Ser-chl rock	Qtz monzonite porphyry	@ 1460 - Sample suggests porphyry text -- but is not so described by Severa. Poss correl. to w-1 type Qtz-latitude rather than intr. @ 1953 - Qtz monzonite porph. st. alt-ser + chl.

Assays (Rotary Samples)

200 - 450' - 250' - Gen. .01-.02% Cu Leached Copping.  
- 500 - 50' - .07% Cu Cc zone  
- 600 - 100' -  $\pm$  .04% Cu pri sulph  
- 1050' - 450' - gen. increasing curve to  $\pm$  .12% Cu  
- 1450 - 400' - Major Section of higher values, Peak\* at .57% Cu  
- 1955 - 505' - @ 1100'; decreasing then to  $\pm$  .12% Cu  
 $\pm$  .08% Cu

\*Peak Values Cc enriched

Comments or notes

W-5

Wilcoy

Rotary —

Beam 55 pump.

Meas. out put 25 gpm.

Collars 3 1/4" OD.

2-10

20'

8-11

88

Sub and bit

3

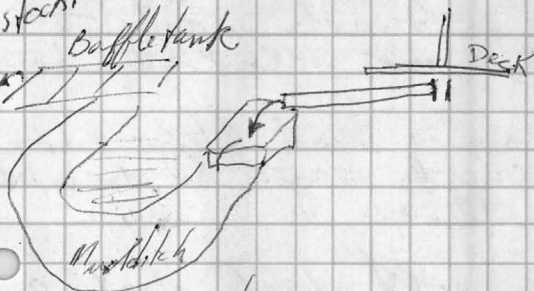
upper sub to N Rods  $\frac{1}{112'}$  total

Mud sample collection poor

3 stock tanks

Baffle tank

Deck



4' M-shape

Drilling fast and easy  
much native clay  
pebbles in lower strata.

Sample records poor

AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

November 26, 1965

PERSONAL  
CONFIDENTIAL

MEMORANDUM FOR J. H. COURTRIGHT:

WILLCOX PORPHYRY COPPER PROSPECT  
DRILLING

During the early part of November, Mr. Saegart asked me to visit the Willcox job and check on the manner in which the drilling was being conducted by the contractor, as well as our own staff there. I spent three drilling shifts observing the operations and, while nothing of an entirely serious nature is apparent, I must criticize the deficiency in many of the small details which are normally attended to routinely. The only copies of this memorandum will be yours, Mr. Saegart's, and one extra in case you wish to transmit it to Mr. Wojcik for his comments. Nothing has been placed in the general files. I was not given authority to make changes in the drilling process; my observations were only to be directed to your attention.

The equipment in use by the Metler Brothers Drilling Company is a modified Longyear 44 diamond drill, with heavy draw works and a BBS-3 head. The cylinders appear to be about 4 inches in diameter. For rotary drilling, NW rods are used along with 3 1/4 inch OD drill collars. The total length of the collar string, together with subs, totals 112 feet. The collars are both 10 and 11 feet long. The Metler Drilling Company could not furnish me with an exact weight per foot for their collars, nor an exact inside diameter. I am told by Frank Metler, however, that the ID is not more than 1 1/2 inches, and that the weight is equivalent to standard collars. Some quick calculations suggest that with this ID, of 1 1/2 inches, the collars would weigh about 22 pounds per foot, in contrast with the failing collars which weigh about 25-27 pounds per foot. The NW rods are 2 5/8 OD and weigh about 5 1/2 pounds per foot. These weights, of course, are reduced by the buoyancy of the drilling fluid. The chuck is hydraulically operated, and the cylinders have a stroke of 3.4 feet. The drill while operating with a rock bit is capable of reducing speed to 60 rpm without any apparent load, or irregularity on the engine.

In all, this drill is much better suited for rotary drilling than any other modified diamond drill I have seen in use in this area. The pump which is mounted on the drill is an ordinary Bean 35, which in use with mud fluid and slightly sandy conditions probably cannot deliver more than 20 gallons a minute at optimum. The drilling company, at the time of my visit, had brought to the job a Bean 55 which appeared to be operating at a greatly reduced capacity. Mr. Stauffer has measured the flow and determined it to be about 25 gallons per minute. Judging from the appearance of the volume of discharge from the pipe leading out



of the hole, this seems to be the correct order of magnitude. The pump situation then, is woefully inadequate to provide an adequate rising velocity in the annulus for removal of cuttings.

Because bedrock has generally been shallow, and of a distinctly different nature than the overlying silt and sandy clay, no particular problem has been experienced in determining the position of bedrock. This would not be the case if this drill were to be used in more adverse conditions, such as existed at Sacaton. The regular rotary style of pump, or "mud hog", would be necessary for many jobs, and desirable for all of them.

The drillers have in general kept the drilling fluid at fairly optimum conditions with a low gel strength, thereby allowing all the coarse cuttings to drop easily. Viscosities near 50 seconds have not been uncommon, and this is too high. Baroid products are used with a standard caustic-quebracho, low - PH mud. One difficulty has been the entrance into the drilling fluid of native clay and very fine silt which is recycled. The mud is cycled through settling tanks and so when the weight becomes too great, or the sand content a little too high, it's dumped. This is one solution to the problem, but causes the use of much more mud and chemicals than would otherwise be the case.

Our own sample collecting system certainly could receive much improvement. The discharge fluid impinges directly into a sample pan in a short ditch dug in the ground, and this then drains into the first tank. Samples are collected at 10-foot intervals. The question here is - Does this little pan fill up gradually, accurately representing the 10 foot intervals? Does it immediately fill up with the first foot or so of penetration and then allow the remaining sample to go on past and into the ditch? Does it constantly change due to the turbulence caused by the fluid impinging directly into the pan? I do not know the answer to these questions and no one seems to have bothered to find out. Another problem effecting this particular drill program is the high content of silt and clay in the alluvial cover. This is not retained in the sample because it is washed out and goes into the circulating mud fluid; thus the plastic sample vials which are retained for reference contain some part of the strata drilled, but just what part? In as much as the samplers are not geologists, they cannot be expected to constantly check and correctly record an estimate of the clay or silt content. Nothing has been done to determine if there is any other, more mechanical method of collecting a sample which would yield a record of the silt and clay content of the alluvial strata.

Of all the shift reports I have examined, nearly all are incompletely filled out. The samplers do not record the stick-up at any time during the shift or make any check on the length of rod or collars actually being used in the hole. Bits are not accurately kept track of so that we can determine what the bit life really is. No record is kept of the hydraulic pressure used; I noted for example, that during the last shift I was there, the driller maintained a constant and rather rapid penetration but that the pressure which had been held at about 100 psi was increased to 400 psi. If the pistons are approximately 4 inches, they would be similar to Failing 1500 pistons, and I recall that I calculated 400 pounds on these pistons will produce a downward pressure on the rods of about 10,000 pounds. This type of heavy pressure must inevitably lead to buckling of the drill pipe and consequent side wall contamination.

November 26, 1965

I have reported all of this to you verbally but I thought it best to put my comments on record for your reference. I believe the principle criticism that I would have to levy is that there is a complete absence of attention to routine details which might prove very valuable in (1). assessing the rotary problems that might be encountered if the job should develop into a large one and (2). enabling us to evaluate the contractor's performance. I realize that at times some information must be passed over because of expense, lack of personnel, or other considerations. In this job there is only one drill on only two shifts; a sampler is present for each shift and there are two supervisors. I see no reason not to gather all data; there are enough people there to do this.

*John E. Kinnison*  
JOHN E. KINNISON ✓

JEK/pjc  
cc: WESaegart  
1 X



AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

June 10, 1965

TO: J. H. COURTRIGHT


FROM: J. E. KINNISON

WILLCOX PORPHYRY COPPER PROSPECT

When Mr. Beck originally found an old abandoned water well with chalcocite in the sludges, this seemed to be a prospect worth following up. The fact that Mr. Beck has since found two more drill holes, dug by Bear Creek, and which contained lost core chips which showed chalcocite with appreciable copper values adds the significance of size which we could not previously demonstrate.

I have not followed the legal problems of land acquisition other than to note in conversations with Mr. Bowditch that there have been innumerable delays and that the people who own the land are exceedingly difficult to deal with; however, I personally consider this to be one of the best virgin porphyry copper prospects of which we now know in southern Arizona. This memorandum is for the purpose of calling to your attention my strong feelings regarding the prospect.

ORIGINAL SIGNED BY  
JOHN E. KINNISON

J. E. KINNISON 

JEK/jak  
cc: DBBeck  
SIBowditch

AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

September 1, 1964

Mr. C. P. Pollock, Vice President  
American Smelting and Refining Company  
120 Broadway  
New York, N. Y. 10005

Appropriation Request  
Willcox Prospect  
Teviston District  
Cochise County, Arizona

Dear Sir:

Enclosed are two memorandums by Mr. D. B. Beck, a memorandum by Mr. J. E. Kinnison and a memorandum by Mr. S. I. Bowditch pertaining to the subject prospect.

SUMMARY

A strongly altered and copper mineralized churn drill hole was discovered in August near Willcox, Arizona, by Mr. D. B. Beck. This hole is immediately adjacent to a large block of ground on which Bear Creek Mining Company has been recently drilling. Lack of activity at the present time suggests that Bear Creek may have abandoned this area--for what reasons we do not know. It is concluded that Bear Creek is unaware of the existence of the copper mineralized churn drill hole. This "discovery hole" could be a lead to a porphyry copper deposit concealed under valley fill.

The land immediately west of the "discovery hole" is privately owned. An authorization in the amount of \$36,000 is requested to obtain purchase options on 1260 acres including the location of the "discovery hole."

DISCOVERY OF PROSPECT AND REVIEW OF RECENT ACTIVITY

Mr. Beck has located at least five Bear Creek diamond drill holes in an area north of Willcox. The locations, as shown on the enclosed map (Attachment A), are south, southeast and northeast of the outcrop ridge known as Spike-E Hill. While examining outcrops on this hill, Mr. Beck discovered a mineralized churn drill hole collared in alluvium to the northwest. The hole is located, as shown on Attachment A, about 500' from the nearest outcrop on the hill. The mineralization is described under Geology below.

Mr. J. E. Kinnison examined rock chips from this hole. His enclosed memorandum also describes the alteration and mineralization of these samples.

In 1963 the U.S.G.S. published the results of an aeromagnetic survey which includes the prospect area. Aeromagnetic contours are sketched on Attachment A. A magnetic low elongated northeast-southwest, occurs in the valley between Willcox and Spike-E Hill. From the description of known Bear Creek drill holes it is obvious that their exploration has been concentrated within the magnetic low. The fact that Bear Creek has not drilled within  $\frac{1}{2}$  mile of the mineralized churn drill



hole immediately suggested that they may have overlooked the most important exploration lead in the area.

Bear Creek's drill rig has been moved from its last known location and is apparently no longer in the area. The Bear Creek Field Office in Willcox is empty. From all appearances Bear Creek has, at least for the time being, discontinued their project. There is no way of knowing whether they have permanently abandoned the area or have interrupted the drilling program while negotiating for additional property.

Bear Creek controls the northwest part of Section 17. It would have been possible for them to drill a hole within 100-150' east of the churn drill hole showing. The fact that they have not drilled closer than 1/2 mile to such an important lead indicates that they are probably unaware of the existence of this mineralized hole.

#### GEOLOGY

Yesterday I accompanied Mr. Bock and Mr. Kinnison on another examination of the prospect area. We examined cuttings from the churn drill hole northwest of Spike-E Hill in detail. Bedrock is a strongly sericitized rock having a porphyry texture. Alteration is so intense that the original rock classification is indeterminate from an examination of the cuttings.

The hole penetrated both capping and sulphides. Cuttings of capping show hematite and goethite in partially filled sulphide cavities. Chips from the sulphide zone contain chiefly pyrite which is generally rimmed with chalcocite coatings. Some samples exhibit fairly thick replacement by the secondary copper sulphide. The chalcocite is sometimes surrounded by copper carbonates.

Mr. Kinnison estimated from the size of the pile of mineralized cuttings, including leached capping, that the hole penetrated on the order of 100' of bedrock.

Spike-E Ridge is shown on Cooper's<sup>1</sup> map as Precambrian Pinal schist. Most of the outcrops and talus which we examined were composed of a hard quartzite. The entire outcrop contains generally pervasive specular hematite mineralization, both as disseminations and fracture fillings. Occasionally grains of specularite form outlines which could be after sulphides, but most of this iron oxide appears to be of primary origin.

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<sup>1</sup> Cooper, J. R. U.S.G.S. Mineral Investigations Field Studies Map MF-231. Reconnaissance Map of the Willcox, Fisher Hills, Cochise, and Dos Cabezas Quadrangles, Cochise and Graham Counties, Arizona.

September 1, 1964

Moderate amounts of sericite are developed in parts of the outcrop area, presumably where argillaceous impurities originally existed. The sericite may be of hydrothermal origin.

We do not know whether or not the specularite development throughout this outcrop area is mineralogically related to the copper occurrence in the churn drill hole to the northwest.

We examined two of the Bear Creek diamond drill sites south and southeast of the outcrop. Core fragments from these holes show only weak specularite mineralization in quartzite (?). Mr. Beck found the other three Bear Creek drill sites had been bulldozed over, leaving no trace of cuttings or core.

#### RECOMMENDATIONS

Asarco should follow up Mr. Beck's discovery by attempting to obtain purchase options on all of the private land in Sections 7, 8 and 18 which is not controlled by Bear Creek. This represents a contiguous block of land totaling 1260 acres.

I propose that we make offers of up to \$25 per acre for one-year options to purchase at up to \$250 per acre.

It is likely that Bear Creek has already approached these same owners in an unsuccessful attempt to tie up property. I therefore think it would be inadvisable for Asarco to directly negotiate for land in its own behalf. I would prefer utilizing an intermediary to conceal the fact that the principal is another major mining company. My choice of agent would be Howard Horne and Associates (realtors) who recently negotiated a favorable deal in the purchase of property on our Sacaton project.

In line with these recommendations I request an authorization in the amount of \$36,000.

If we are successful in tying up this ground, an additional authorization will be requested to conduct a modest IP survey and drill a minimum of--say, three holes.

Mr. K. E. Richard was briefed on the Wilcox prospect in a very preliminary way during his visit here last week. He also saw a sample of leached capping from the churn drill hole. I doubt, however, that he would wish to comment on this proposal without more complete first-hand knowledge.

Messrs. Kinnison and Beck agree with the conclusions and authorization request incorporated herein.


Very truly yours,

ORIGINAL SIGNED BY  
W. E. SAEGART  
W. E. SAEGART

WES/jk

Enclosures

cc: KERichard, w/encs.  
JHCourtright, "

SIBowditch, w/encs.  
JEKinnison, " 

DBBeck, w/encs.  
WESAegart, "



R24E.

R25E.

EXPLANATION

- QTal Older alluvium
- Tv Volcanic rocks
- Tkg Laramide granite
- peg Granitic rocks
- pEp Pinal schist

T 12 S

T 13 S

Aeromagnetic Contours  
 X1760 Measured maximum or minimum intensity  
 within closed high or closed low.

Water Well showing 5 P.P.B. Cu.  
 All Mo. samples less than 5 P.P.B.

AIRPORT

Willcox

Location of Bear Creek Drilling Project  
 Willcox Arizona  
 SCALE 1"=1 mile

Geology after J. R. Cooper U.S.G.S.  
 M.I. Field Studies Map MF-231  
 GEOPHYSICAL INVESTIGATION  
 MAP GP-418

File No. 1634

AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

August 10, 1964

W.E.S.  
AUG 12 1964

MEMORANDUM FOR W. E. SAEGART

Bear Creek Drilling  
Cochise County, Arizona

According to information that John Kinnison gathered from Jack Clark, Bear Creek was drilling for copper in the Sulfur Springs valley. The drilling project was reported to have been initiated by means of water well sludge analysis and was located within the valley proper away from any outcrops.

On August 5, I located one Boyles Brothers' drilling rig run by Bear Creek three miles north of Willcox. (See attached map) Evidence of more than one drill hole was noted along with some claim corners. An old water well churn hole was found on the northwest edge of the Spike-E hills just south of the drilling project. The sludge from this churn hole contained well altered fragments of porphyry rock and some exotic copper staining. The hills themselves are quartzite with much specular hematite found along fractures. No evidence of pervasive alteration or mineralization was found.

The Circle 1 hills located north of the drilling consist of Pinal schist, Laramide granite and Tertiary volcanics. Except for a few minor pyrite showings along fractures in the schist-type rocks, no pervasive alteration or mineralization was noted.

A later conversation with Bear Creek personnel disclosed the idea that the project was coming to a close due to negative results. The fact that only one drill rig was found and that Bear Creek was reported to have three running at one time might help to confirm the above statement.

*David B. Beck*  
DAVID B. BECK

DBB/jk  
Attachment



AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

August 25, 1964

MEMORANDUM FOR W. E. SAEGART

Bear Creek Drilling  
Cochise County, Arizona

Attached is a map showing locations of five Bear Creek diamond drill holes. A day was spent trying to locate drill sites and possible claim corners. Although only five sites were found, probably more are located in the area, possibly east of the hiway north of Willcox. Only one group of claims was found in the area. These are located in Sections 2, 3, 4, 5 and 6 in T13S, R25E. They were poorly staked and most of the posts were down, thus other claims in the area might have been missed because of claim posts being on the ground.

The aeromagnetic contours on the attached map come from the U.S.G.S. Geophysical Investigation Map GP-418. The map shows that Bear Creek probably drilled the magnetic low in Section 16 first, then moved westward toward the Spike E Hills. They are presently drilling a hole just east of the hills in Section 17.

A Water Resources Report of the Willcox Basin, prepared by the U.S.G.S., shows that none of the water wells in the area can give us any information on the depth to bedrock or type of bedrock under the alluvium. Eight water samples from wells in Spike E Hills area were sampled for copper and molybdenum. The results are plotted on the attached map.

Due to the fact that all drilling so far has been confined, as far as I can determine, east of the small quartzite hills, I feel that if any ground is open to the west of the churn hole, (Memo, W. E. Saegart, August 10, 1964), we should investigate the possibility of obtaining this ground.

*David B. Beck*  
DAVID B. BECK

DBB/jk

cc: DBBeck  
2 extra

AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

August 28, 1964

MEMORANDUM TO MR. W. E. SAEGART

Cochise County  
Willcox Area  
Teviston District  
Bear Creek Mining Company

At your request I have investigated the ownership and status in the northern part of Township 13 South, Range 25 East, northeast of Willcox in Cochise County, Arizona. Bear Creek Mining Company has taken options on some private ground, has apparently staked every part of the township where mineral rights were reserved by the Federal government when patent was issued for the surface, and applied for prospecting permits on all State land, but completed their applications on only three parcels.

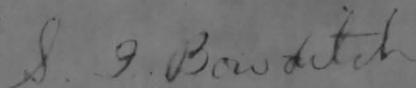
On the map accompanying this memorandum I have shown the three categories of land, i.e.; wholly private, surface private but mineral rights still in the Federal government, and State land. I have also shown the surface ownership in the northwest part of the township, keyed to the list given below, the land under option to Bear Creek, and the Bear Creek claim groups where their location could be identified. The location certificates filed at Bisbee only rarely contain a description by which the location of the claim could be even approximately plotted, but Mr. Beck found some claim posts in the field, and occasionally Bear Creek would slip in a tie to a section corner, when someone slipped up. The vast majority of the certificates do not even mention the section the claim is in. However, certificates have been filed for well over 300 claims, enough to cover all the Federal mineral rights in all but the most southern part of the township.

The surface ownership, taken from the County Assessor's records, is as follows:

- 1) Hans T. Kortsen and James Kortsen, Jr. et ux - All Section 3 and 4, N 1/2 Section 9, Lots 1-6 and that part of Lot 11, Northwest of Highway 86, Section 10, SE 1/4, Section 10, and all of Section 15. Bear Creek has a five year option on the N 1/2 of Section 9 (1/2 of the mineral rights belong to others), and on Lots 3, 4, 5 and that part of Lots 6 and 11, Northwest of Highway 86.
- 2) Edward B. McAleb et ux - N 1/2 Section 5; NE 1/4 and E 1/2 NW 1/4, Section 6; N 1/2 SW 1/4 and SW 1/4 SW 1/4, Section 17; and E 1/2 SE 1/4 SE 1/4 and SW 1/4 SE 1/4, Section 18.

August 28, 1964

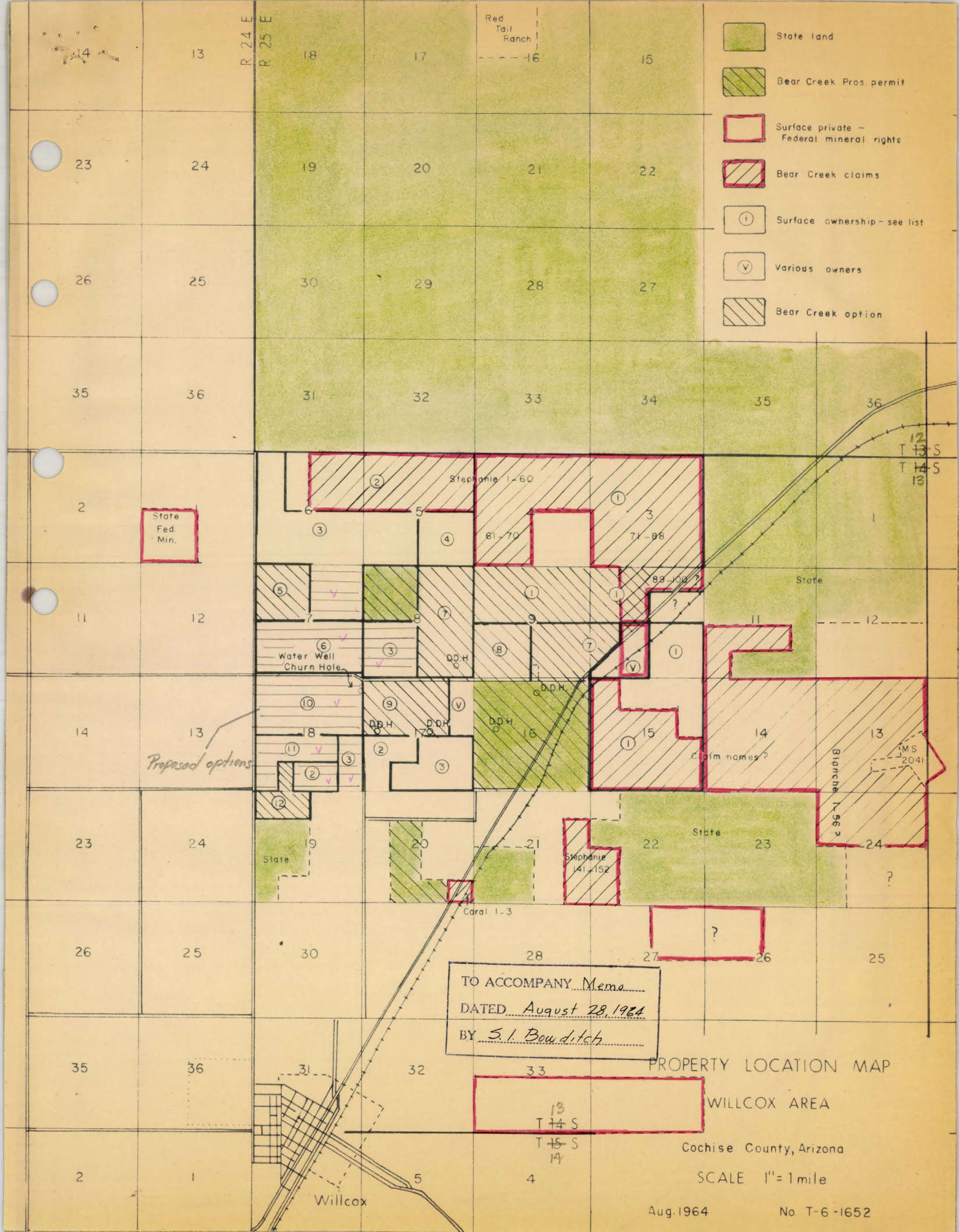
- 3) E. B. McAleb et ux and Pauline Frances Simmons - SW 1/4, Section 5; W 1/2 NW 1/4 and S 1/2, Section 6; NE 1/4, Section 7; SW 1/4, Section 8; SE 1/4 and SE 1/4 SW 1/4, Section 17; and Lots 5 and 6, or E 1/2 SE 1/4, Section 18.
- 4) Hope B. Parmeley - SE 1/4, Section 5.
- 5) Richard B. Fraker and Bonnie B. Fraker - NW 1/4, Section 7. Bear Creek has a five-year option on this piece which recites that half the mineral rights belong to others.
- 6) John F. Lane et ux - S 1/2, Section 7.
- 7) Joe Rubin et ux - E 1/2, Section 8; most of SE 1/4, Section 9; and that part of Lots 12 and 13, Section 10, NW of Highway 86. Bear Creek has an option on all this.
- 8) Phoenix Title and Trust Company, Trust No. RH 26851 - SW 1/4, Section 9. The Bear Creek-Rubin Agreement includes this tract, so Rubin may have purchased this recently under contract, and because title has not finally passed, the Assessor does not show it. Bear Creek has an option from Phoenix Title and Trust for one-half the mineral rights, so these must have been reserved when the parcel was sold to Rubin.
- 9) Earl F. Johannsen et ux - NW 1/4, Section 17 and W 1/2 NE 1/4, Section 17 (?). Bear Creek has an option from Tucson Title and Trust Company, Trust No. 10723, for these parcels.
- 10) Betty Lane - N 1/2, Section 18.
- 11) Jessie F. McAleb - Lots 3 and 4 (W 1/2 SW 1/4) and NE 1/4 SW 1/4 and NW 1/4 SE 1/4, Section 18.
- 12) Albert Schwertner - W 1/2 SE 1/4 SW 1/4, Section 18 and N 1/2 NW 1/4 Section 19. Bear Creek has an option on this piece.



S. I. BOWDITCH

SIB/jk  
cc: 2 extra





- State land
- Bear Creek Pros. permit
- Surface private - Federal mineral rights
- Bear Creek claims
- Surface ownership - see list
- Various owners
- Bear Creek option

TO ACCOMPANY Memo.....  
DATED August 28, 1964  
BY S. I. Bowditch

PROPERTY LOCATION MAP  
WILLCOX AREA

Cochise County, Arizona

SCALE 1"=1 mile

Aug. 1964

No. T-6-1652



AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

September 3, 1964

Mr. C. P. Pollock, Vice President  
American Smelting and Refining Company  
120 Broadway  
New York, N. Y. 10005

Willcox Prospect  
Teviston District  
Gochise County, Arizona

Dear Sir:

An error has been noted on one of the maps which was enclosed with my letter of September 1 concerning the subject and on the map attached to Mr. Bowditch's memo of August 28. The township numbers are incorrect on both maps. The township boundary along the north edge of Bear Creek's holdings should be labeled T12S instead of T13S.

T13S. Also, the township boundary which passes through the town of T14S

Willcox should read T13S instead of T14S.  
T14S T15S

Please make these corrections on your maps.

Very truly yours,

ORIGINAL SIGNED BY  
W. E. SAEGART

W. E. SAEGART

WES/jk

cc: KERichard - Mexico  
JHCourtright - Mexico  
SIBowditch  
JEKinnison  
DBBeck

well near Willcox

AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

August 18, 1964

MEMORANDUM FOR DAVID B. BECK

I examined 2 samples which you collected from a water well north of Willcox, No. 1 leached, No. 2 containing py.

No. 1 Porphyry. Vy st alt to sericite, with abundant quartz flooding. Por. texture preserved only by a few outlines of small euhedral feldspar--now gone completely to sericite/clay. Limonite, inside small diss. cubic cavities, is "live" but cavities are mostly empty, suggesting diss. py with some Cc replacement but high py/Cc ratio. Former sulphides est. 3%.

No. 2 Partly oxidized to yellow limonite, and alt. matrix absorbs some green copper salts. Diss. py is partly clean and partly rimmed by a dark film which might be Cc. Sulphides similar to capping (No. 1) at about 3% total.

These samples are very typical of strong porphyry Cu type alteration-mineralization, although I do not think they represent an ore-grade area.

JOHN E. KINNISON 

JEK/jk  
cc: WESaegart

CAP  
Dos Cabezas

DRILL HOLE W-1  
T.D. 581 ft

Bedrock depth 242 ft Alteration  
Top of Sulphides 405 ft  
Chalcocite: Films on py. Best Cu zone is due to enrichment.  
Total Sulphides 5 %

<u>BEDROCK</u>	<u>DETAILS</u>	<u>JEK - Descrip of samples</u>
<u>Original log</u>	<u>Correlation</u>	
Andesite/dacite porph.	Quartz latite; also found in W-5; prob W-3, SE-6, SE-8.	@ 550' - fine gr Rhy or q-lat. st ser alt. 5% py w/rims of cc 570' - Same, without cc. 580' - Same, poss. minor films of cc on py.

Assays

242-405 (leached) .05 % Cu  
- 468 cc/py .08  
- 545-77' - cc/py - .17  
- 581 py .04

Comments or notes

fine grained unit - no schistosity, but could be  
part of a volcanic sect in the pre-Cambrian,  
closely related stratigraph. to the Spike E Hills  
qtz. Possible correl. to DC-4 @ 918 which does  
show schistose features.  
Alternately, this rock could be an intrusive.

CAP  
Dos Cabezas

DRILL HOLE W-2  
T.D. 662 ft

Bedrock depth 450 ft

Top of Sulphides 600 ft

Chalcocite :

Total Sulphides 3 %

Alteration

Clay. chl in sulph zone.  
(ASARCO data)

<u>BEDROCK</u>	<u>DETAILS</u>	<u>JEK - Descrip of samples</u>
<u>Original log</u> Andesite flow, andesite porph.	<u>Correlation</u> Prob part of Dacite porph unit -- see W-4	None

Assays

Very low.

Spot assays: @ 462' - 4' - .08 % Cu leached  
576 - 6' - .10 (Tr. Cu) leached zone  
608 - 54' - .05 sulph (py)

Comments or notes

Prob represents only moderate mineralization



CAP  
Dos Cabezas

DRILL HOLE W-3  
T.D. 295 ft

Bedrock depth 80 ft

Alteration

Top of Sulphides Not Reached ft

st spec + hem.

Chalcocite : None

Total Sulphides ? %

<u>BEDROCK</u>	<u>DETAILS</u>	
<u>Original log</u>	<u>Correlation</u>	<u>JEK - Descrip of samples</u>
Quartzite w/ dacite porph 130-170	Spike E Hills qtz + Quartz latite like W-1	—

Assays

None made

Comments or notes

Degree of mineral, not certain. Prob much like  
the outcrop.

CAP  
Dos Cabezas

DRILL HOLE W-4  
T.D. 797 ft

Bedrock depth 465 ft

Top of Sulphides 600 ft

Chalcocite : None

Total Sulphides  $\pm 1\%$

Alteration

wk clay, chl (Asarco)

BEDROCK

DETAILS

Original log

Correlation

Andesite porph

Dacite porphyry

JEK - Descrip  
of samples

@ 794'  
- Vg wk alt - feld to  
clay. No sulphides

Assays

Spot assays @ 689 - 9' - .05% Cu  
790 - 7 - .05

Comments or notes

Fringe of alteration/mineralization



CAP  
Dos Cabezas

DRILL HOLE W-5  
T.D. 563 ft

Bedrock depth 350 ft

Alteration

Top of Sulphides 490 ft

Chalcocite : None

Total Sulphides 5 %

<u>BEDROCK</u>	<u>DETAILS</u>
<u>Original log</u>	<u>Correlation</u>
Andesite por (leached) And-Dae flows and agglomerates (sulphide zone)	Quartz latite correl. to W-1 rock.

JEK - Descrip  
of samples  
@ 500' Rhy or Qtz  
latite - same  
as W-1. 5 ft  
ser/clay. Sulph  
all py.

Assays

@ 468 - 8' - .067% Cu  
486 - 10' - .02  
550 - 9' - .05

Comments or notes

CAP  
Dos Cabezas

DRILL HOLE W-6  
T.D. 690 ft

Bedrock depth 410 ft

Alteration

Top of Sulphides Not Reached ft

Chalcocite : None

Total Sulphides 7\* % (prob error)

<u>BEDROCK</u>		<u>DETAILS</u>	<u>JEK - Descrip of samples</u>
<u>Original log</u>		<u>Correlation</u>	
1) 410-560 And. flow st clay, Fe ox.		1) Post-ore volcanics	1) @ 522' - And. or Q. latite Bx text - funny looking rock. Deuteric? alt - No lim/sulph but st Fe ox flooding.
2) - 640 Dacite por.		2) & 3) - See attach sheet.	2) @ 610 - And/dac por. No hydro. Min/alt. Poss deuteric alt of feld.
3) - 690 Granite por.			@ 669 & 689' Quartz monz or Quartz latite. Dev. & glassy groundmass (see J. Sevava) suggests latite class - poss flow rock.

<u>Assays</u>	
@ 419-9' - .12% ox Cu	} prob exotic.
616-10' - .34 "	
647-11 - .07 "	

Comments or notes

\* Total sulphide est based on limonite in leached zone in  
Andesite unit. Exam. of specimens suggests to me  
that nearly all lim/hem may be transp or altered  
ferromag mins.



CAP  
Dos Cabezas

Continued- Sheet 2  
DRILL HOLE W-6  
T.D. 17

Bedrock depth 11 ft Alteration  
Top of Sulphides 17 ft  
Chalcocite :  
Total Sulphides 7 %

BEDROCK	DETAILS	JEK - Descrip of Samples
<u>Original log</u>	<u>Correlation</u>	

Correlation of units 2 & 3: Two alt. possible --

- Unit 2
- A) Dacite por of pre-min (see W-4) type. Either fresh or minor propyl. fringe zone.
  - B) Post-min -- Qtz latite (Severa) flow. General freshness of rock suggests this more likely than to be K vol.

- Unit 3
- A) Pre-mineral intrusive porph - v. wk to nil mineral.
  - B) Post-mineral flow. Glassy groundmass (Severa) suggests this most likely, even though megascopically the rock looks like a q-m porph.

Comments or notes

JEK believes alternate B is more prob than A.

CAP  
Dos Cabezas

DRILL HOLE W-7  
T.D. 392 ft

Bedrock depth 250 ft

Alteration

Top of Sulphides None ft

Chalcoite : None

Total Sulphides = 7.

<u>BEDROCK</u>	<u>DETAILS</u>	
<u>Original log</u>	<u>Correlation</u>	<u>JEK - Descrip</u>
Andesite flow	Post-ore andesite	<u>of samples</u>
		Fresh Andesite; or
		basalt (Severa)
		Samples @ 303 & 391

Assays

Comments or notes



CAP  
Dos Cabezas

DRILL HOLE W-8  
T.D. 353 ft

Bedrock depth 340 ft

Alteration

Top of Sulphides - ft

Chalcocite: -

Total Sulphides = 7%

<u>BEDROCK</u>	<u>DETAILS</u>	
<u>Original log</u>	<u>Correlation</u>	<u>JEK - Descrip</u>
Andesite flow	Post-ore sequence	of samples
Wk ehl alt	See W-7	Andesitic tuff,
		Fresh

Assays

None

Comments or notes

CAP  
Dos Cabezas

DRILL HOLE W-9  
T.D. 658 ft

Bedrock depth 412 ft

Alteration

Top of Sulphides Not Reached ft

Chalcocite: —

Total Sulphides = 7.

<u>BEDROCK</u>	<u>DETAILS</u>	<u>JEK - Descrip of samples</u>
<u>Original log</u>	<u>Correlation</u>	
1) Andesite flow, st. clay, ser alt. st. Fe ox.	1) Post-ore and like unit 1 in W-6	
2) Dacite porph WK chl alt.	2) Same correl. problem as in W-6 unit 2. Prob post-ore	

Assays  
None

Comments or notes



CAP  
Dos Cabezas

DRILL HOLE SEH-1  
T.D. 756 ft

Bedrock depth 283 ft

Alteration

Top of Sulphides 474 ft

Unknown

Chalcocite : None indicated by assays

Total Sulphides 2 %

<u>BEDROCK</u>	<u>DETAILS</u>	
<u>Original log</u>	<u>Correlation</u>	<u>JEK - Descrip</u>
Schist	Schist	<u>of samples</u>
		—

Assays

<.04 % Cu in both leached and sulph zones;  
except: @ 595 - 10' - .16 % Cu

Comments or notes

CAP  
Dos Cabezas

DRILL HOLE SEH 2  
T.D. 541 ft

Bedrock depth 148 ft

Top of Sulphides 422 ft

Chalcocite : -

Total Sulphides 1 %

Alteration

Unknown but prob wk or  
prop.

<u>BEDROCK</u>	<u>DETAILS</u>	
<u>Original log</u>	<u>Correlation</u>	<u>JEK - Descrip of samples</u>
Schist; 286-293 Mz dike	Schist	

Assays  
2.02 % Cu

Comments or notes

CAP  
Dos Cabezas

DRILL HOLE SEH-3  
T.D. 126 ft

Bedrock depth 90 ft

Alteration

Top of Sulphides - ft

Fresh

Chalcocite : -

Total Sulphides None %

<u>BEDROCK</u>	<u>DETAILS</u>	
<u>Original log</u>	<u>Correlation</u>	<u>JEK - Descrip</u>
pEgr	pEgr	<u>of samples</u>

Assays

.01 ave

Comments or notes



CAP  
Dos Cabezas

DRILL HOLE SEH - 4  
T.D. 834 ft

Bedrock depth 235 ft

Alteration

Top of Sulphides 688 ft

Not Known

Chalcocite : ?

Total Sulphides 5 %

<u>BEDROCK</u>	<u>DETAILS</u>	
<u>Original log</u>	<u>Correlation</u>	<u>JEK - Descrip of samples</u>
Monzonite.	Qtz Monzonite por	

Assays

275-675	- 400'	- 2.01% Cu	Leached capping	
- 692	- 17'	- .015% Cu	" "	
- 706	- 14'	- .025% Cu	Sulphides	
- 715	- 9'	- .12% Cu	"	
- 762	- 47'	- .06% Cu	"	
- 834	- 72'	- .13% Cu	"	
				} 142' @ .10% Cu

Comments or notes

Cc not indicated by assays. Cu is presumed to  
be all primary

CAP  
Dos Cabezas

DRILL HOLE SEN-5  
T.D. 929 ft

Bedrock depth 201 ft

Alteration

Top of Sulphides 449 ft

Not known

Chalcocite : 460' - 605' +

Total Sulphides 4 %

<u>BEDROCK</u>	<u>DETAILS</u>	
<u>Original log</u>	<u>Correlation</u>	<u>JEK - Descrip of samples</u>
Rhyolitic Vol Agglom.	Quartz latite See W-1 rock unit.	

Assays

201 - 422 - 221' - .01 % Cu

Leached Copping

- 449 - 27' - .03 % Cu

"

- 460 - 11' - .23 % Cu

Prob Cc

- 605 - 145' - .09 % Cu

Range .01 - .27 % --  
Prob Cc enriched.

End of Assay log  
(Rest missing)

Comments or notes

CAP  
Dos Cabezas

DRILL HOLE SEN-6  
T.D. 889 ft

Bedrock depth 286 ft

Alteration

Top of Sulphides 745 ft

Not Known

Chalcocite :

Total Sulphides 5 %

<u>BEDROCK</u>		<u>DETAILS</u>	<u>JEK - Descrip of samples</u>
<u>Original log</u>		<u>Correlation</u>	
1) 286-475 Tuffac. Rhy Post-min.		1) Qtz - latite(?) w-l rock	
2) - 603 Silic Rhy (Spike E Hills rock)		2) Quartzite -	
3) - 889 Rhy Vol. Aggl.		3) Qtz-latite w-l rock	

Assays

Spot assays unit 1 - .02 % Cu Ave  
" Unit 2 - .02 " " } leached zone  
" Unit 3 - .02

727-747' - 20' - .04% Cu - leached  
- 889 - 142' - .09% Cu - Sulph - prob Cu enriched  
range .01- .20% Cu

Comments or notes



CAP  
Dos Cabezas

DRILL HOLE SEH-7  
T.D. 686 ft

Bedrock depth 236 ft

Alteration

Top of Sulphides 543 ft

Not Known

Chalcocite : 543 - T.D. indicated by assays

Total Sulphides 3 %

<u>BEDROCK</u>	<u>DETAILS</u>	
<u>Original log</u>	<u>Correlation</u>	<u>JEK - Descrip of samples</u>
Schist Mz dike 614- 651'	Schist	

Assays

245 - 541 - 296' - .04 % Cu Leached Capping  
- 672 - 131 - .31 % Cu Prob. Cc  
686 - 14 - .07 % Cu Cc diminishing

Comments or notes

Decreasing grades, from .51 % Cu in 1<sup>st</sup> run below  
Base 1 oxidation, clearly indicate Cc zone

CAP  
Dos Cabezas

DRILL HOLE SEH-8  
T.D. 675 ft

Bedrock depth 248 ft Alteration  
Top of Sulphides 615 ft Not Known  
Chalcocite : 615-TD indicated by assays.  
Total Sulphides 4 %

<u>BEDROCK</u>	<u>DETAILS</u>	<u>JEK - Descrip</u>
<u>Original log</u>	<u>Correlation</u>	<u>of samples</u>
Rhyolitic Vol. aggl.	Qtz habit of w-1 type	

Assays

Spot assays - .01 % Cu (Leached zone)

Continuous assays:

606-617 - 11' - .11 % Cu (Leached zone)

- 675 - 58 - .19 % Cu prob. Cc

Comments or notes

Erratic assays 617-675 (.01-.52)  
suggest local Cc enrich., or a leached  
Cc zone as in SEH-9

CAP  
Dos Cabezas

DRILL HOLE SEH-9  
T.D. 699 ft

Bedrock depth 309 ft

Alteration

Top of Sulphides 599 ft

Not Known

Chalcocite :

Total Sulphides 4.7%

<u>BEDROCK</u>	<u>DETAILS</u>	
<u>Original log</u>	<u>Correlation</u>	<u>JEK - Descrip of samples</u>
Rhyolitic Vol. Aggl	Qtz-halite of w.i type (possibly)	

Assays

310 - 520 - 210' - .015% Cu leached zone  
- 599 - 79 - .13% Cu leached Cu zone?  
- 629 - 30 - .11 Cu Prob Cu  
- 699 - 70 - .05 Cu Prob diminishing Cu enrichment.

Comments or notes

520-599 given as above top of sulphides. Probably represents  
leached (erratic grade .01-.37% Cu) and possibly oxidized  
Cu zone.



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May 22, 1974

J. D. Lowell  
Still, Lowell, and Still  
5115 N. Oracle Road  
Tucson, Arizona

Subject: Dos Cabezas CAP,  
Exploration Review, Cochise  
County, Arizona

Dear Sir:

Following a one-day field examination, and a thorough review of drill results and rock samples, a full verbal report was presented to you on May 3. This letter will summarize my findings and transmit maps and drill logs prepared during this review.

All previous information (including reports, maps, and petrography) was made available to me, including Mr. Still's memo to you of January 29.

#### MAPS

Attachment A: Bedrock geology.

Attachment B: Contours of depth to bedrock. Since the land surface is very level, this also essentially depicts bedrock topography.

Attachment C: Contours of depth to sulphides, also showing per cent total sulphides and limits of strong pervasive alteration/mineralization.

Attachment D: Contours, depth to bedrock, also showing inferred faults and drill holes with best copper content.

#### ROCK CORRELATION

Spike E hill is made either of a true quartzite, or of a very siliceous acid volcanic. The dip, as suggested in outcrop and by drill hole correlation, is about 40° south. This quartzite is surrounded by quartz latite--probably a flow. I believe that both these formations are units of the pre-Cambrian, and are probably underlain and also overlain by the more typical pre-Cambrian schist. The quartzite is

probably of limited extent, as it is seen only in outcrop and in two adjacent drill holes.

Monzonite porphyry, probably a small stock, has been penetrated in SEH-4 and DC-4. The two western-most Asarco holes (W-2 and 4) penetrated a dacite porphyry--probably a Cretaceous or early Tertiary flow.

Post-mineral volcanics were intersected by DC-1 and 5, and by W-7 and 8. Asarco W-6 and 9 are considered pre-mineral in the Asarco report; however, I believe otherwise. The attached logs detail this problem. For W-6, I have chosen post-mineral alternative correlations 2A and 3A, as most likely for the lower two units penetrated. The upper unit is surely a post-mineral andesite. Asarco W-9 penetrated rocks correlative to the upper two units in W-6, and also therefore penetrated only the post-mineral section. The above interpretation is at variance with the Asarco conclusions; however, I have considered this matter carefully, and I believe the interpretation here given is the most probable.

#### DISCUSSION

The principal problem outlined by Mr. Arnold was: if a "copper" center was actually present within the area of principal drilling, how could its presence remain undetected? I believe the answer may lie in the geometry of post-mineral faulting, and the distribution of Tertiary volcanic cover.

The following assumptions are permissible, and in part are indicated by fact:

1. The alteration/mineralization encountered is strong, and is not entirely pyritic--that is, some copper is locally present. Statistically, there should be a cupriferous "center," even if such a center is not actually ore.
2. The zone of better copper mineralization will be cylindrical or elliptical.
3. The volcanics as seen in outcrop to the northeast of Spike E hill strike N-NW and dip 30-50° SW. This is in conformance to dips plotted elsewhere in the Dos Cabezas range and other nearby hills (USGS).
4. The copper "cylinder" thus should have been rotated, so that it now plunges 40-60° NE.

5. The copper center may have a high pyrite "shell" or periphery, partly or entirely surrounding the center.

6. The working hypothesis, then, is that a copper center, more or less cylindrical, probably exists somewhere within Spike E hill zone of alteration/mineralization, and that it now plunges--say--50° NE.

Mr. Still has proposed that a fault, striking easterly, passes north of Spike E hill. The bedrock topography (Att. B and D.) suggests the possibility of such a fault or faults, and the depth of oxidation (top of sulphides, Att. C) suggests modification in harmony with such a fault. The most probable explanation of bedrock geology dictates the presence of the main east-striking fault, and also suggests two possible related faults which form a graben of post-mineral volcanics.

The amount and direction of displacement on the major fault can be only the subject of speculation. General considerations suggest a throw with the north side down; the apparent dip-throw of the schist-quartz latite contact intersected in DC-4 is 600 feet. The amount of horizontal throw, if any, can only be inferred--however, the faults bounding the volcanic graben intersect the major fault at an angle suggesting right-lateral strike slip. Notwithstanding the above speculations, I must emphasize that although the major fault above discussed must certainly exist, present data permits neither the direction nor amount of throw to be defined with confidence.

The most appealing interpretation is that both normal throw and perhaps large right-lateral movement have occurred on the principal fault. The graben area results from tension faults in the hanging wall. Under this assumption, the following interpretation is possible:

The pyritic mineralization encountered south of the fault represents the southwest and southern periphery of the altered zone, which is probably elongated SW. The copper "center" was penetrated on its extreme south edge by DC-4. The increase and then decrease in primary copper sulphides represents--as you have theorized--the effect of drilling past the periphery of the tilted copper cylinder. The principal part of the copper center lies north of the east-striking major fault, but has been shifted east at least 1,000 feet, largely by horizontal motion. Drill holes SEH-7 and 9 penetrated only the southwest flank of the tilted cylinder.

All drilling, thus, has penetrated what, in effect, is a pyritic "footwall" of the tilted copper center. The copper cylinder lies east or northeast of SEH-7. Since IP data suggest that sulphides die out about 3,000 feet NE of SEH-7, it must be supposed that the pyritic "shell" was originally asymmetrical, and existed principally around the western periphery of the deposit, and that the copper "center" fades



out into fresh rock through a pyrite-poor zone. Such a "model" certainly has precedent in known deposits--Sacaton for example.

An alternate possibility is that the combined movement along the major fault produced a throw down and to the west. Under such an assumption, SEH-7 and 9 might have penetrated the pyritic shell on the northeast side, or "hanging wall," of the tilted copper cylinder. The copper center would thus be concealed beneath the volcanic graben, and would not have been reached in depth by shallow hole SEH-9. All holes south of the major fault, by this reasoning, penetrated the southwest or "footwall" pyritic shell.

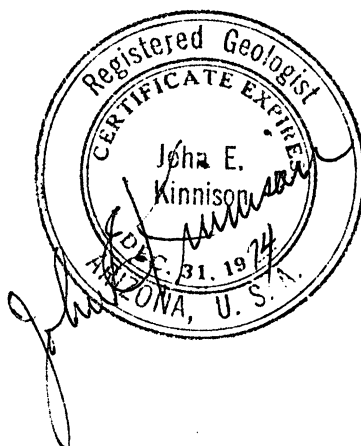
#### EXPLORATION RECOMMENDATIONS

As discussed earlier, a hole positioned on available land, about 2,000 feet north of DC-4, will quickly serve to indicate whether the hypothesis above favored is correct. Such a hole should be much closer to the "center" (or within it) if major right-lateral movement has been present.

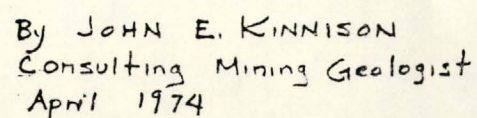
If the second alternative should prove correct, there is no recourse but drilling in section 8, which I am advised poses a difficult property situation.

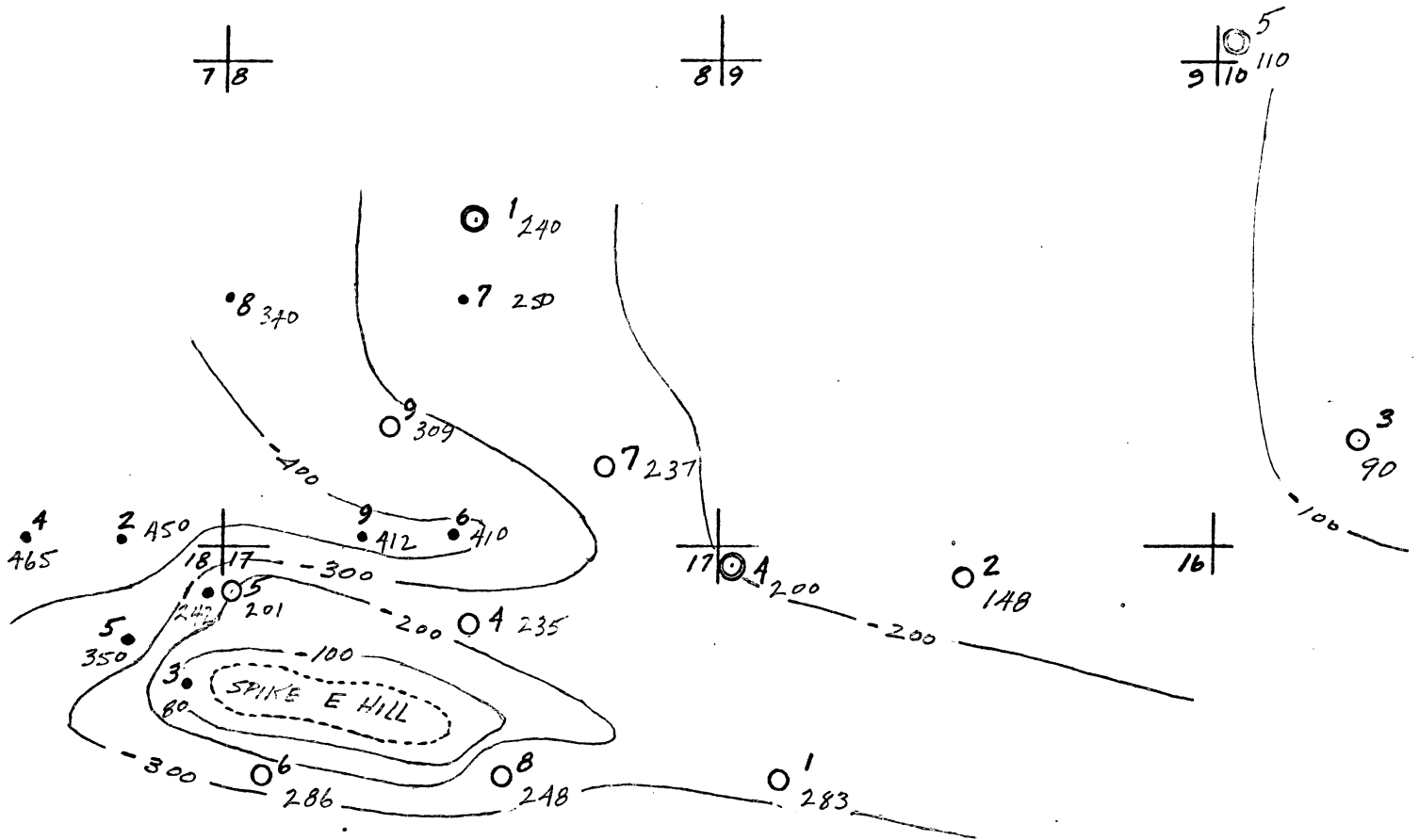
There is no evidence whatever that copper values increase to the southwest, and accordingly I would be reluctant to recommend an expensive program in that direction, even though the pervasive mineralization is technically "open" in this direction.

Yours very truly,



John E. Kinnison





PREPARED FOR J.D. LOWELL

DOS CABEZAS

-CAP-

Cochise Co., Ariz.

DEPTH to BEDROCK

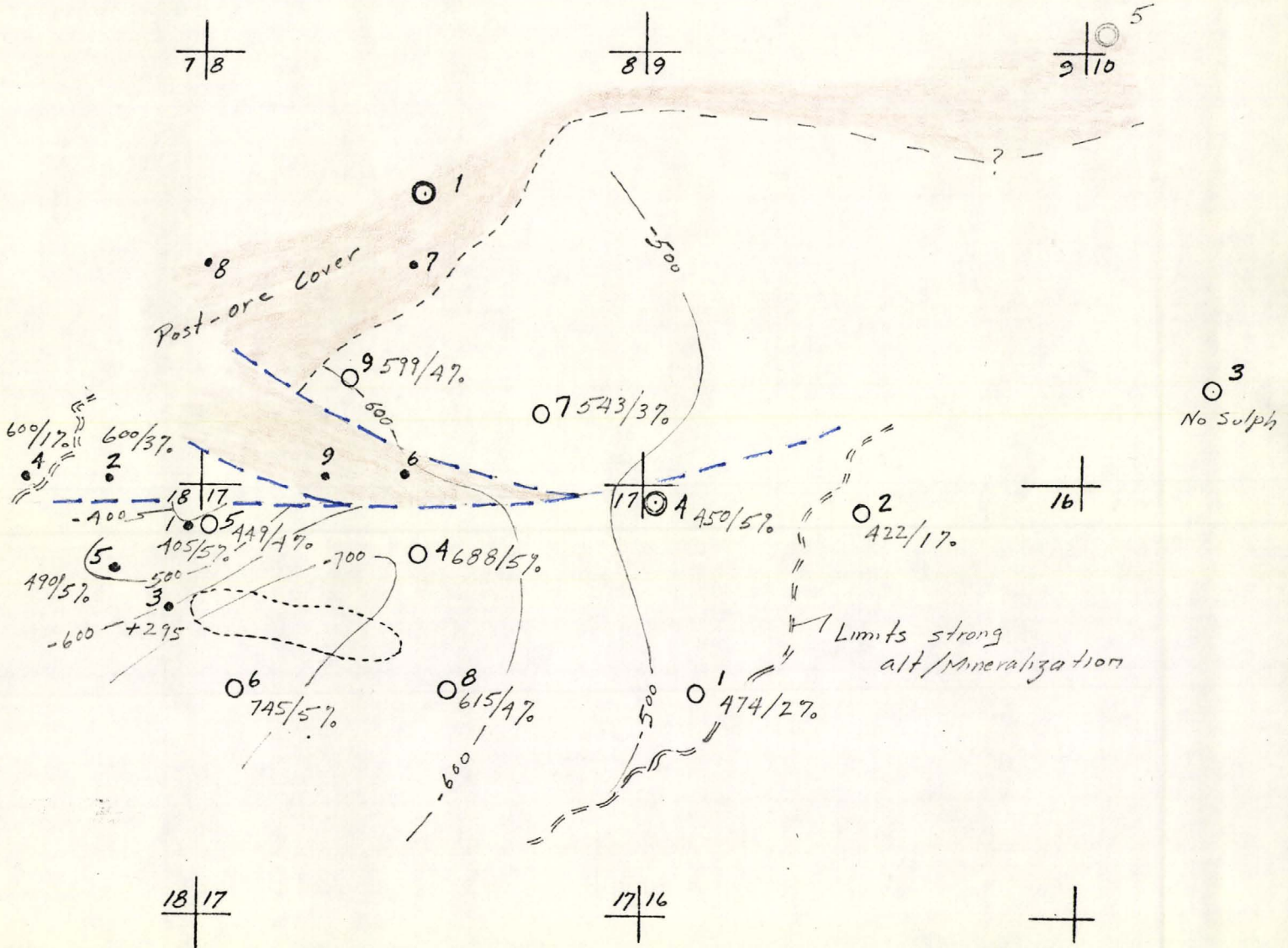
# DRILL HOLES

- AS&R (W-1 etc)
- Bear Creek (SEN-1 etc)
- Lowell (DC-1 etc)

1" = 2000 ft

By JOHN E. KINNISON  
Consulting Mining Geologist  
April 1974





PREPARED FOR J D LOWELL  
 DOS CABEZAS  
 -CAP-  
 Cochise Co, Ariz

DEPTH TO SULPHIDES

DRILL HOLES

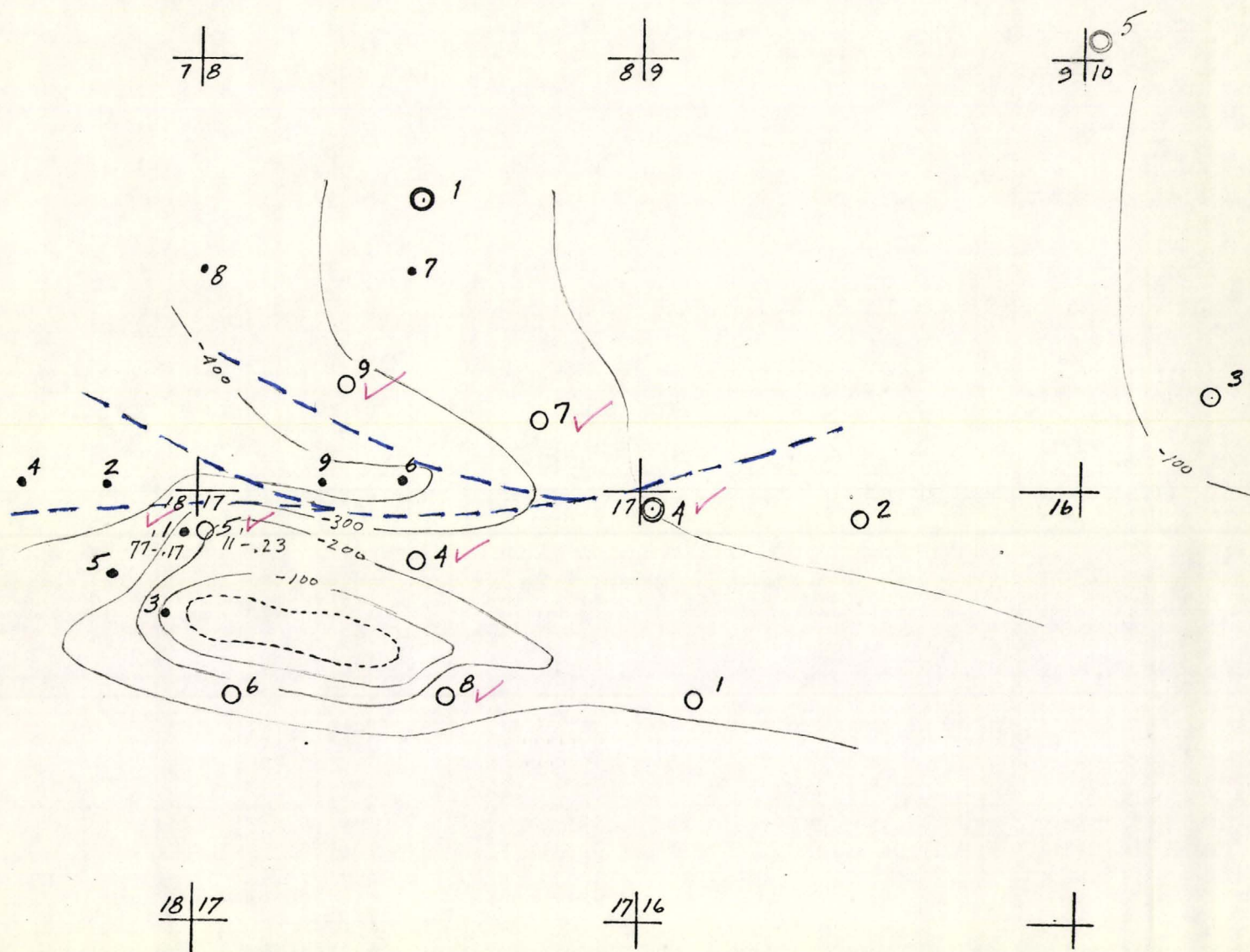
- AS&R (W-1 etc)
- Bear Creek (SEN-1 etc)
- Lowell (DC-1 etc)

1" = 2000 ft

• 8 - Drill Hole  
 615/47%  
 ↑ ↑  
 % Total Sulph  
 (Vol)  
 Depth Sulph

By JOHN E. KINNISON  
 Consulting Mining Geologist  
 April 1974





✓ Drill hole with generally better copper content, either as secondary, primary, or both. SEH-7 best Cc.

#### DRILL HOLES

- ASER (W-1 etc)
- Bear Creek (SEH-1 etc)
- Lowell (DC-1 etc)

1" = 2000 ft

PREPARED FOR J D LOWELL

DOS CABEZAS

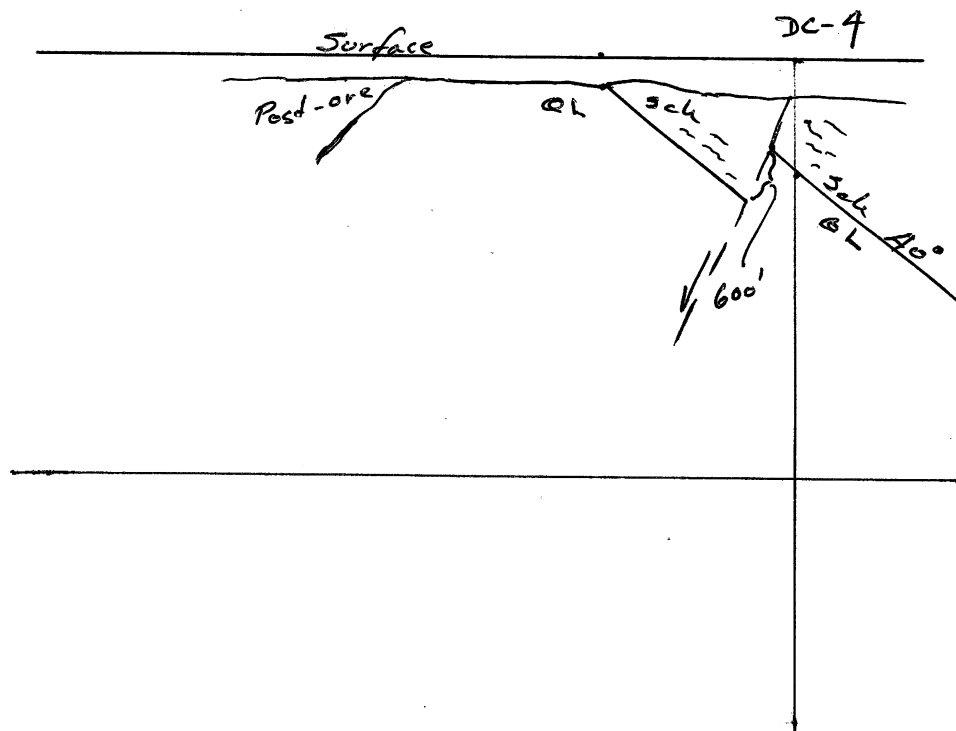
-CAP-

Cochise Co, ARIZ

BEDROCK CONTOURS  
&  
INFERRED FAULTS

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Consulting Mining Geologist  
April 1974

Supplemental  
Attachment



DOS CABEZAS CAF  
Cochise County, Arizona

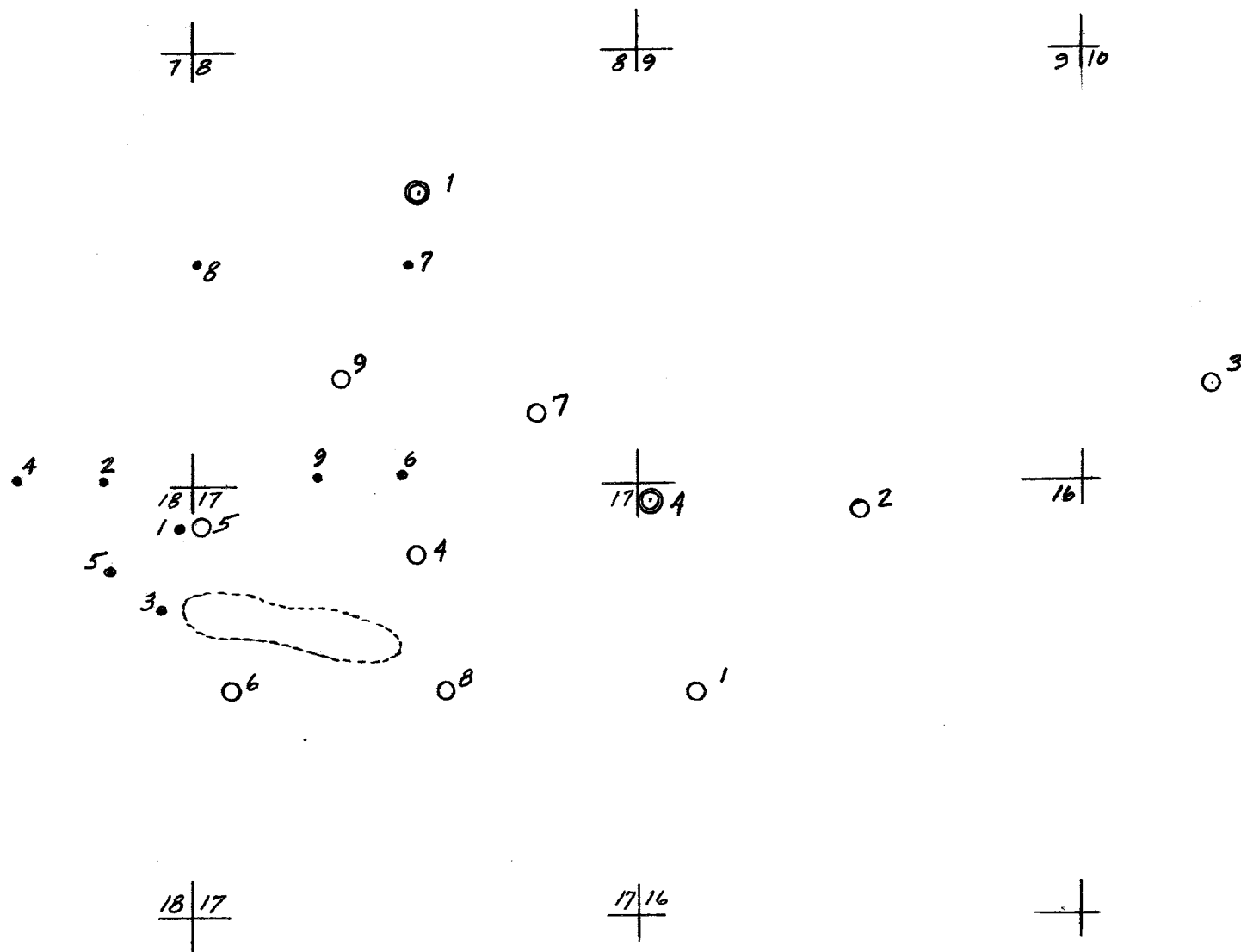
X-SECTION THROUGH  
DC-4

Looking NE

Showing apparent displacement  
of Schist-Qtz Latite contact.

1" = 2000'

JE Kinnison



PREPARED FOR J D LOWELL

DOS CABEZAS

-CAP-

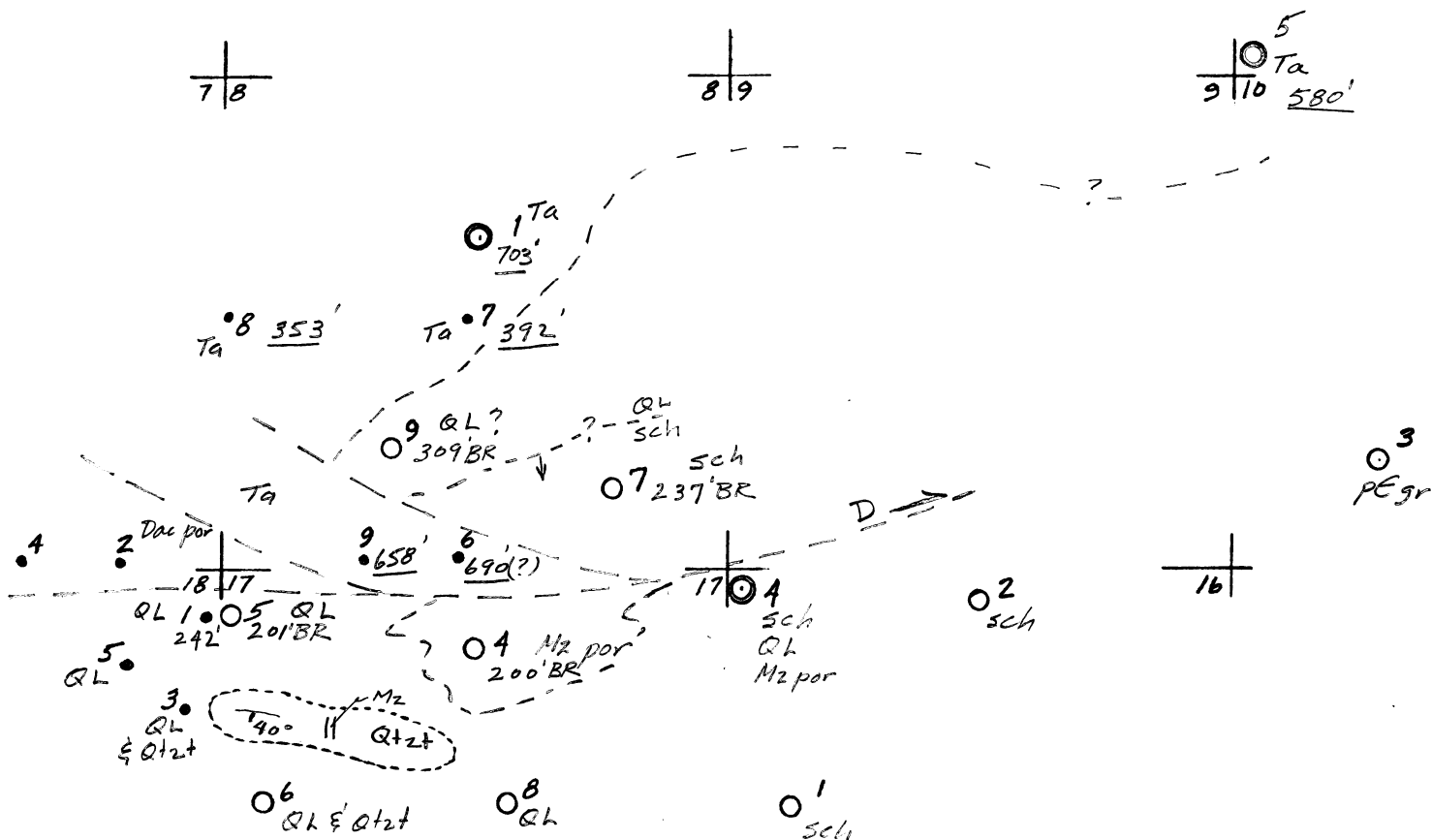
Cochise Co, ARIZ

# DRILL HOLES

- ASER (W-1 etc)
- Bear Creek (SEH-1 etc)
- Lowell (DC-1 etc)

1" = 2000 ft

By JOHN E. KINNISON  
Consulting Mining Geologist  
April 1974



POST-ORE TERT —

Ta

Andesite & tuff

LARAMIDE —

Mz por

Qtz Moniz por

TERT - CRET —

Dac Por

Dacite porphyry

PRE-CAMBRIAN —

QL

Qtz Latite

Qtzt

Quartzite

sch

Schist

#### DRILL HOLES

- ASER (W-1 etc)
- Bear Creek (SEN-1 etc)
- Lowell (DC-1 etc)

1" = 2000 ft

9 658  
Penetration Depth in  
Post-ore Rocks

4 200 Depth pre-ore BR

PREPARED FOR J D LOWELL

DOS CABEZAS

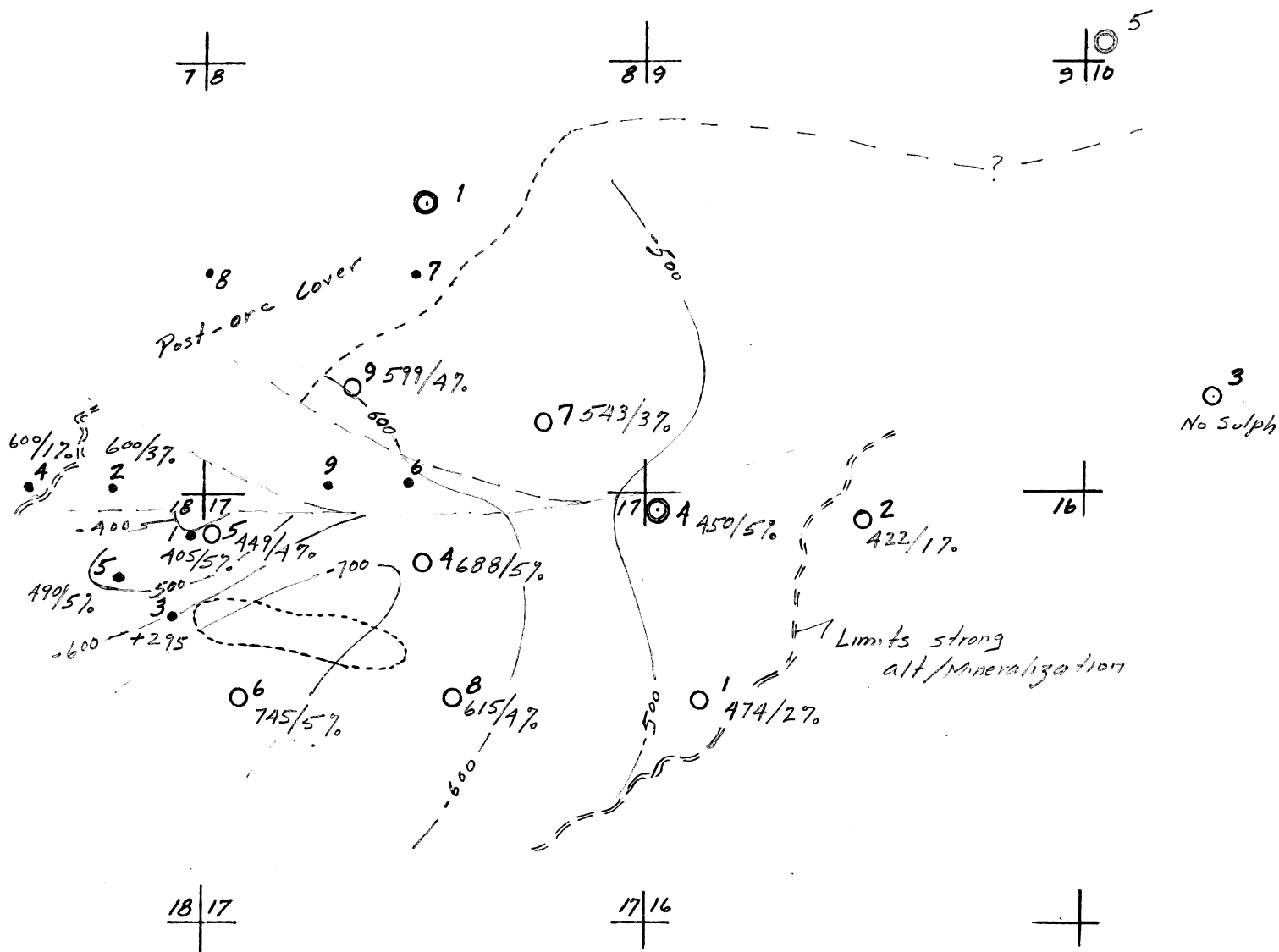
-CAP-

Cochise Co, ARIZ

BEDROCK GEOLOGY

By JOHN E. KINNISON  
Consulting Mining Geologist  
April 1974





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DOS CABEZAS

-CAP-

Cochise Co, ARIZ

DEPTH TO SULPHIDES

# DRILL HOLES

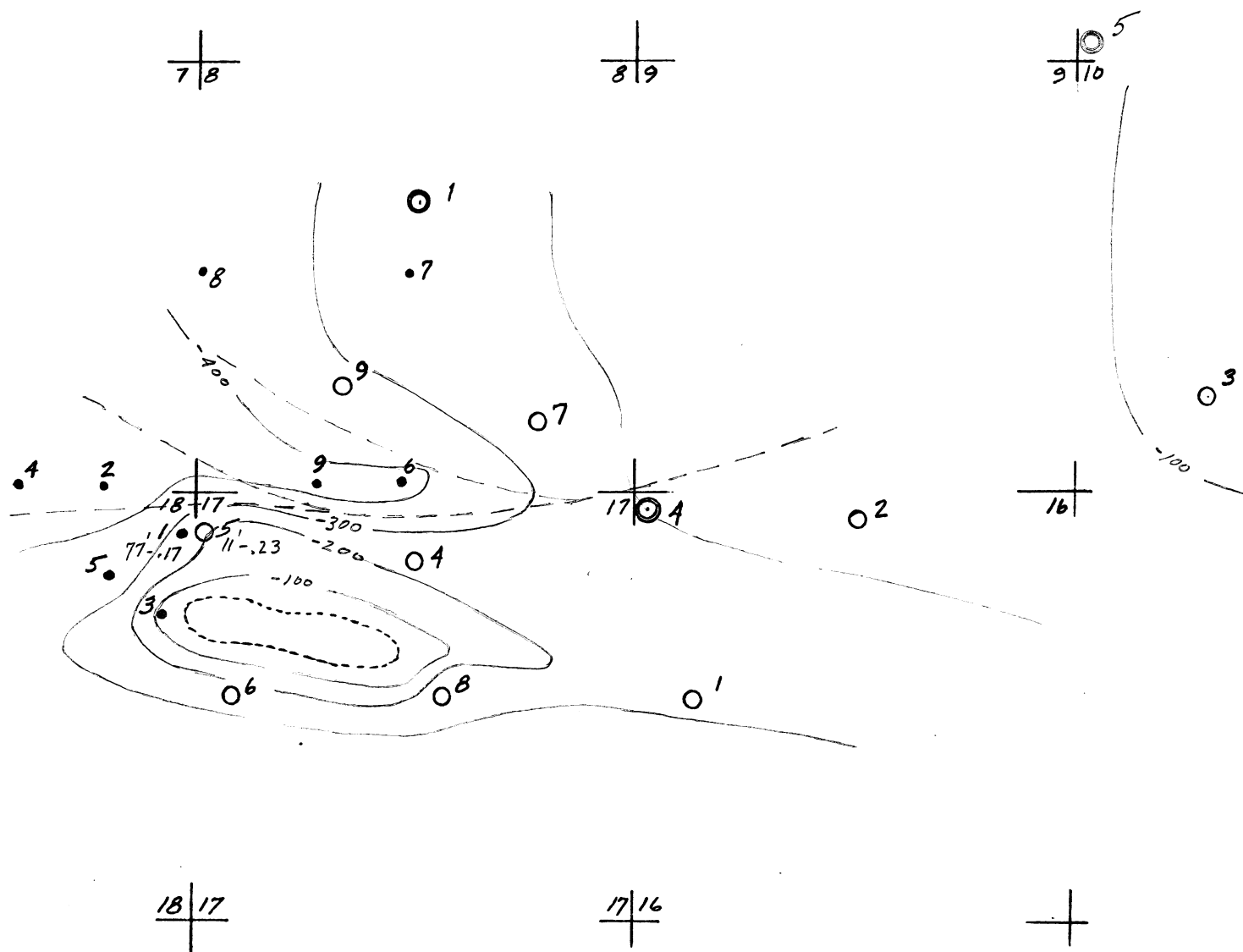
- ASER (W-1 etc)
- Bear Creek (SEN-1 etc)
- Lowell (DC-1 etc)

1" = 2000 ft

8 - Drill Hole  
615/4%  
↑  
20 Total Sulph  
(Vol)  
Depth Sulph

By JOHN E. KINNISON  
Consulting Mining Geologist  
April 1974





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DOS CABEZAS

-CAP-

Cochise Co, ARIZ

BEDROCK CONTOURS  
&  
INFERRED FAULTS

# DRILL HOLES

- ASFR (W-1 etc)
- Bear Creek (SEN-1 etc)
- Lowell (DC-1 etc)

1" = 2000 ft

By JOHN E. KINNISON  
Consulting Mining Geologist  
April 1974

CAP  
Dos Cabezas

DRILL HOLE \_\_\_\_\_  
T.D. \_\_\_\_\_ ft

Bedrock depth \_\_\_\_\_ ft

Alteration \_\_\_\_\_

Top of Sulphides \_\_\_\_\_ ft

Chalcocite :

Total Sulphides — %

BEDROCK DETAILS

Original log Correlation

JEK - Descrip  
of samples

Assays

Comments or notes



CAP  
Dos Cabezas

DRILL HOLE \_\_\_\_\_  
T.D. \_\_\_\_\_ ft

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BEDROCK

DETAILS

Original log

Correlation

JEK - Descrip  
of samples

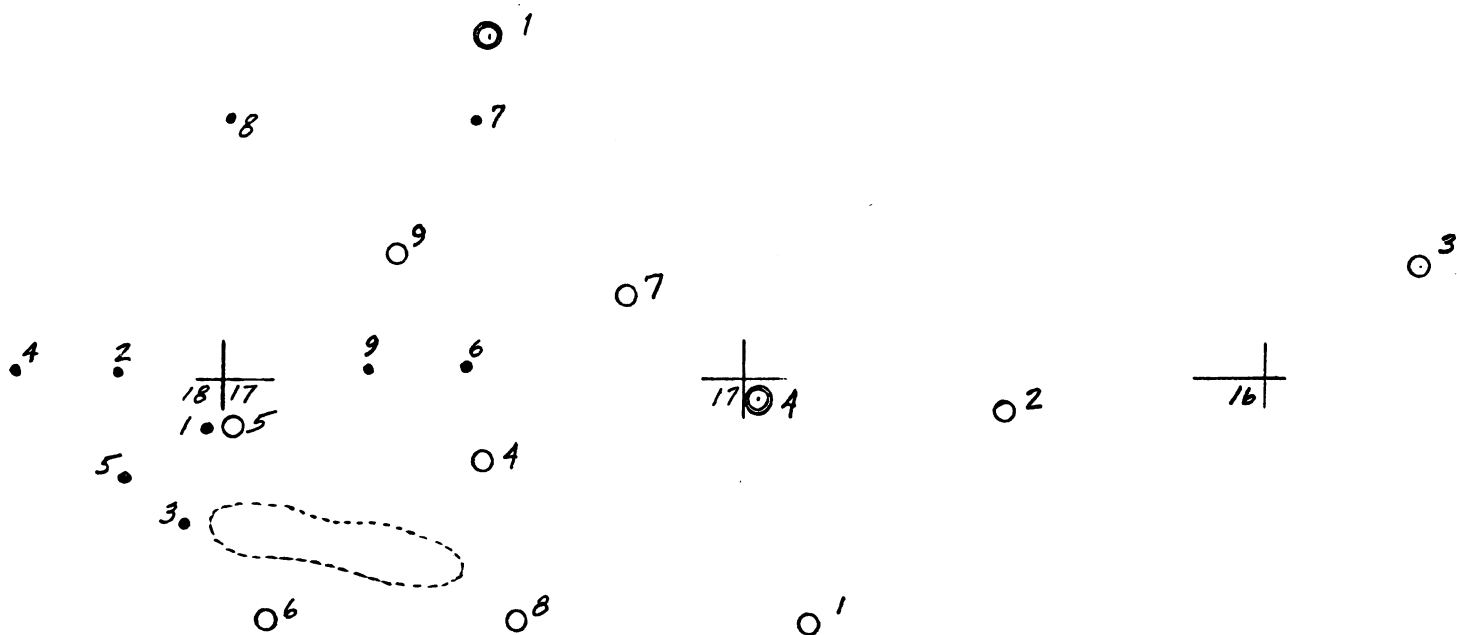
Assays

Comments or notes

7|8

8|9

9|10



18|17

17|16

+

PREPARED FOR J D LOWELL

DOS CABEZAS

-CAP-

Cochise Co, ARIZ

DRILL HOLES

- ASER (W-1 etc)
- Bear Creek (SEH-1 etc)
- Lowell (DC-1 etc)

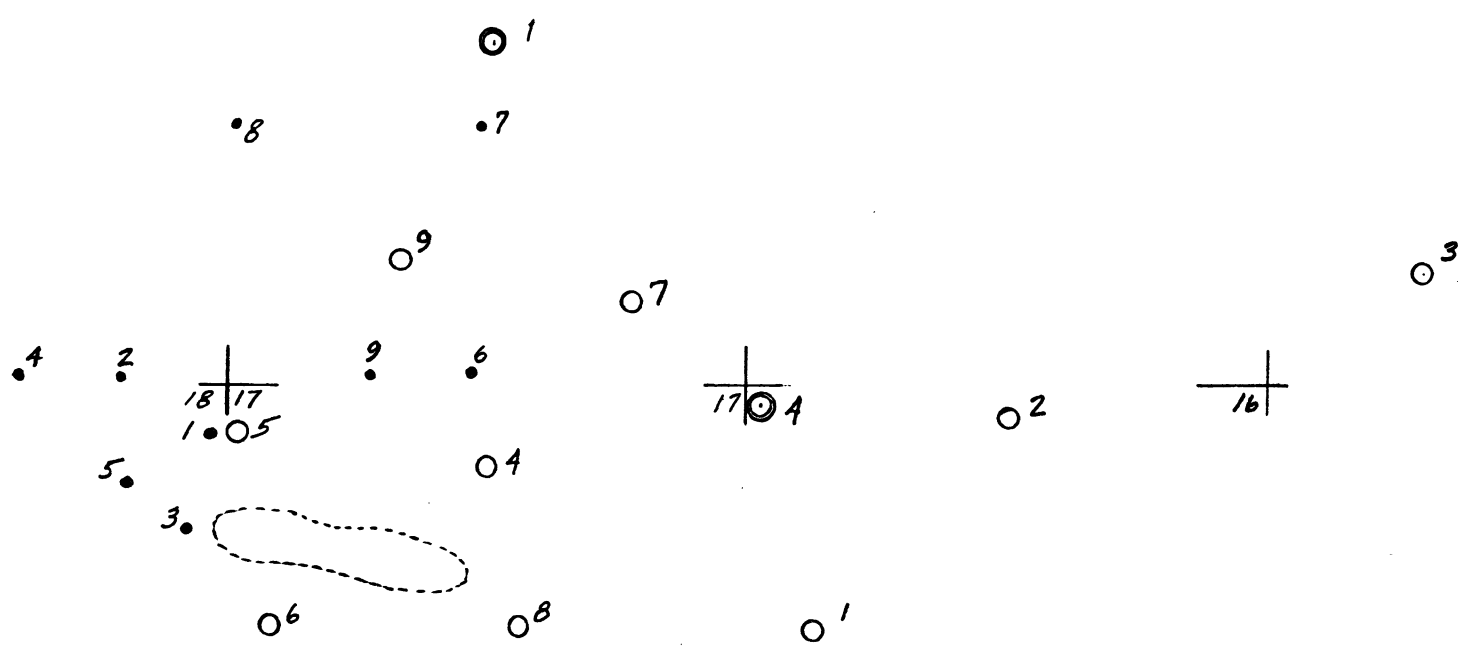
1" = 2000 ft

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7|8

8|9

9|10



18|17

17|16

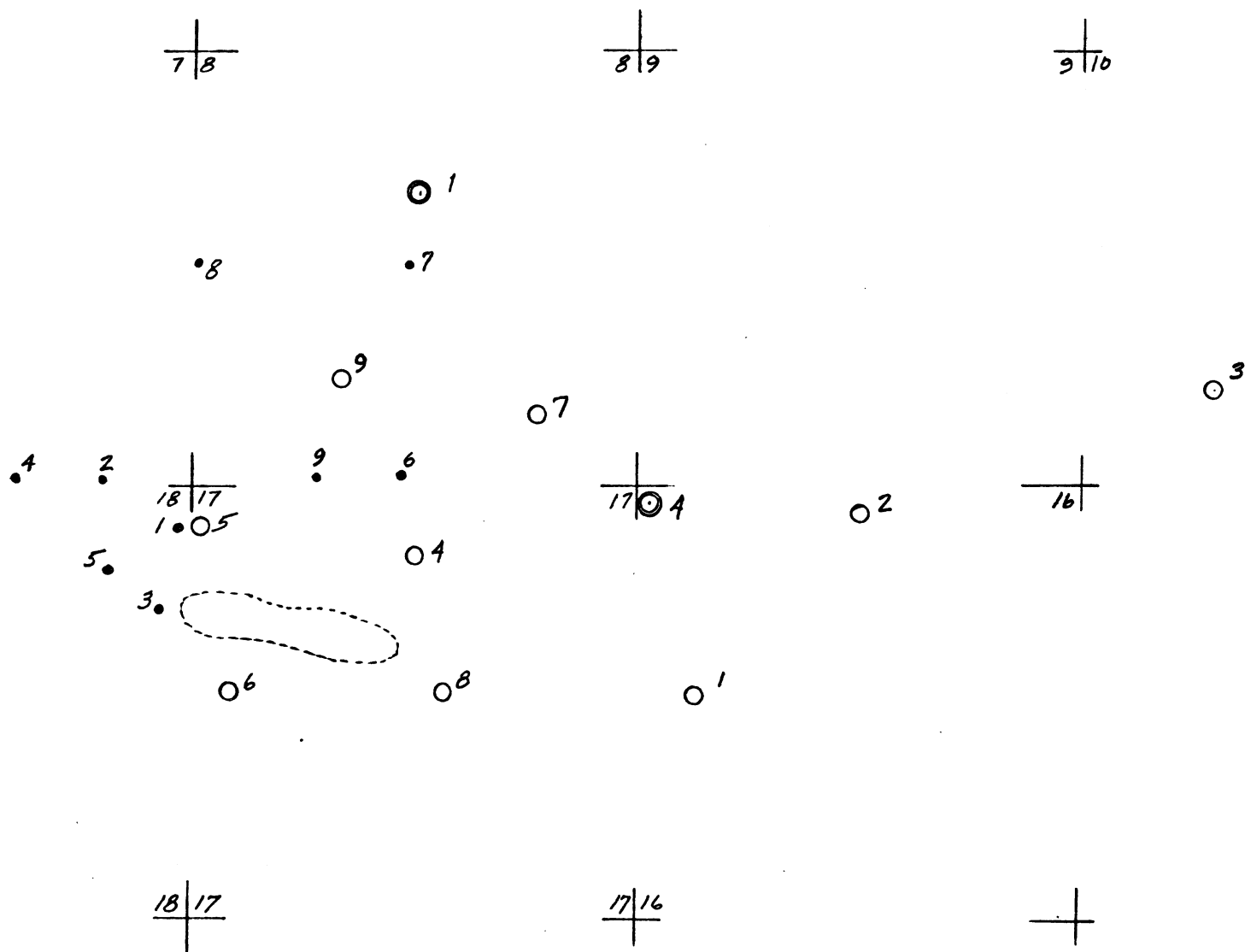
+

PREPARED FOR J D LOWELL  
 DOS CABEZAS  
 -CAP-  
 Cochise Co, ARIZ

- DRILL HOLES
- AS&R (W-1 etc)
  - Bear Creek (SEH-1 etc)
  - ⊙ Lowell (DC-1 etc)

1" = 2000 ft

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DOS CABEZAS

-CAP-

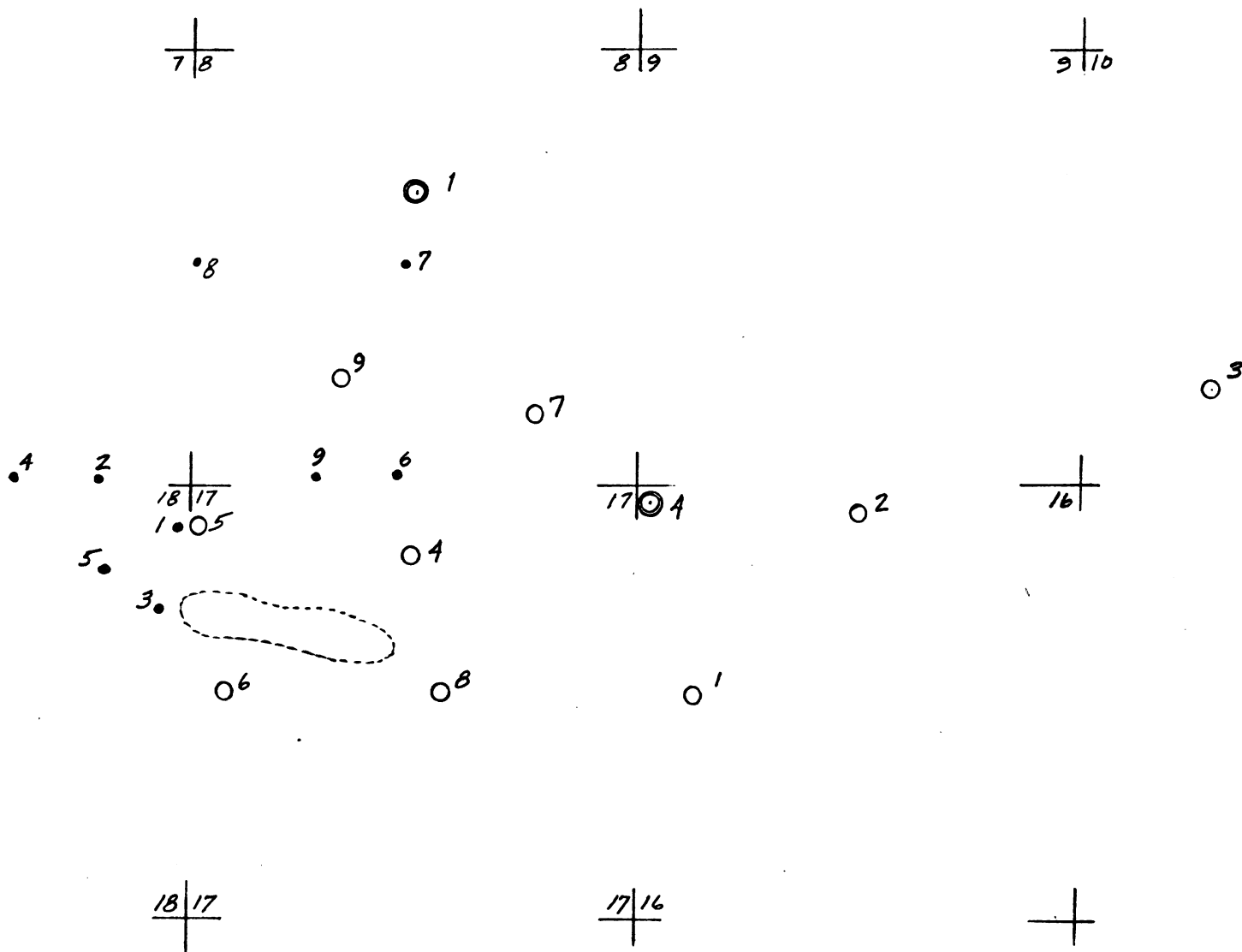
Cochise Co, ARIZ

# DRILL HOLES

- ASER (W-1 etc)
- Bear Creek (SEH-1 etc)
- Lowell (DC-1 etc)

1" = 2000 ft

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PREPARED FOR J D LOWELL

DOS CABEZAS

-CAP-

Cochise Co, ARIZ

#### DRILL HOLES

- AS&R (W-1 etc)
- Bear Creek (SEH-1 etc)
- ⊙ Lowell (DG-1 etc)

1" = 2000 ft

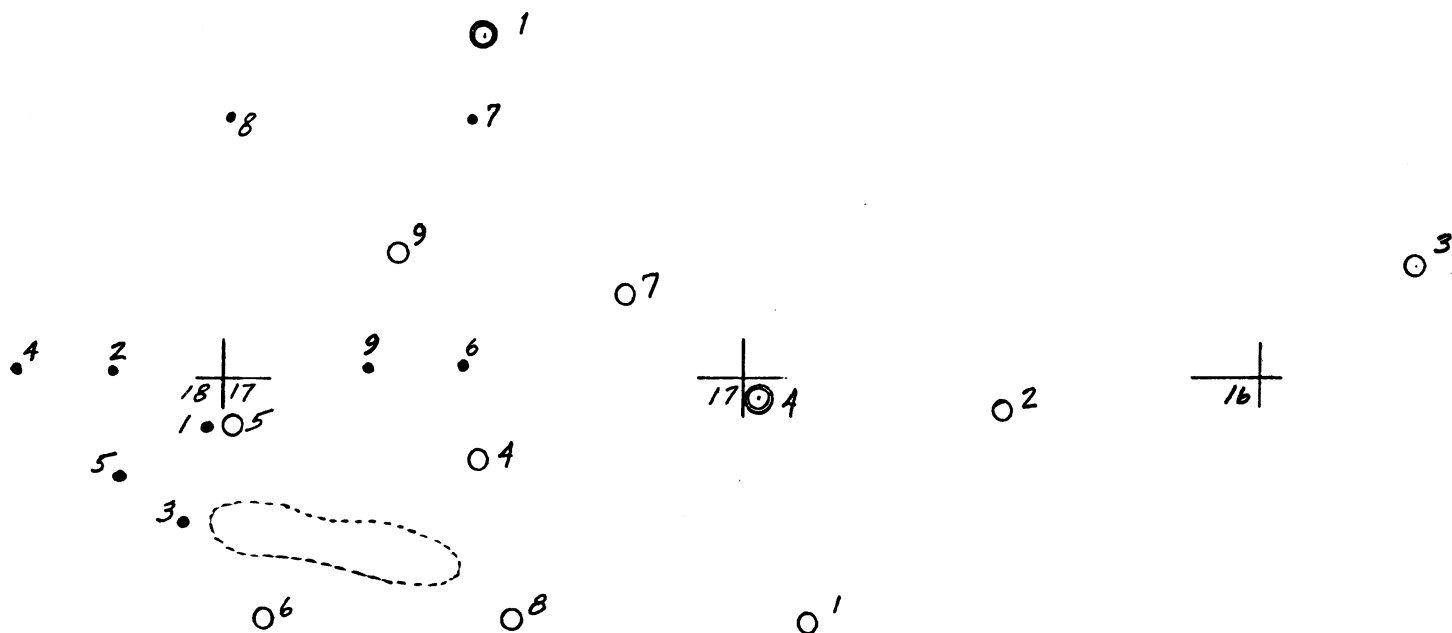
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7|8

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18|17

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+

PREPARED FOR J D LOWELL

DOS CABEZAS

-CAP-

Cochise Co, ARIZ

DRILL HOLES

- AS&R (W-1 etc)
- Bear Creek (SEN-1 etc)
- Lowell (DC-1 etc)

1" = 2000 ft

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CAP  
Dos Cabezas

DRILL HOLE \_\_\_\_\_  
T.D. \_\_\_\_\_ ft

Bedrock depth \_\_\_\_\_ ft

Alteration \_\_\_\_\_

Top of Sulphides \_\_\_\_\_ ft

Chalcocite :

Total Sulphides — 7.

BEDROCK

DETAILS

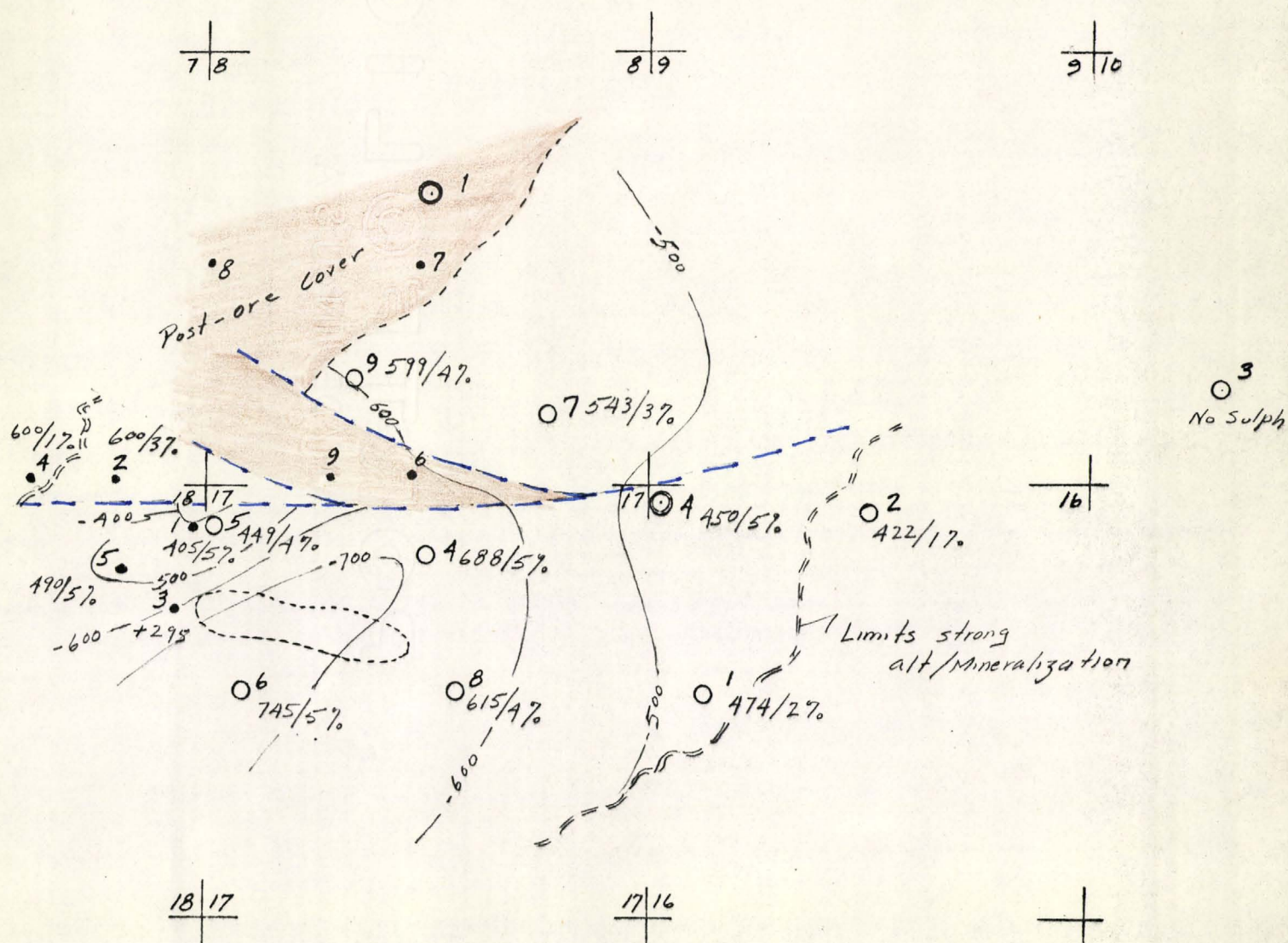
Original log

Correlation

JEK - Descrip  
of samples

Assays

Comments or notes



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 DOS CABEZAS  
 -CAP-  
 Cochise Co, ARIZ

DEPTH TO SULPHIDES

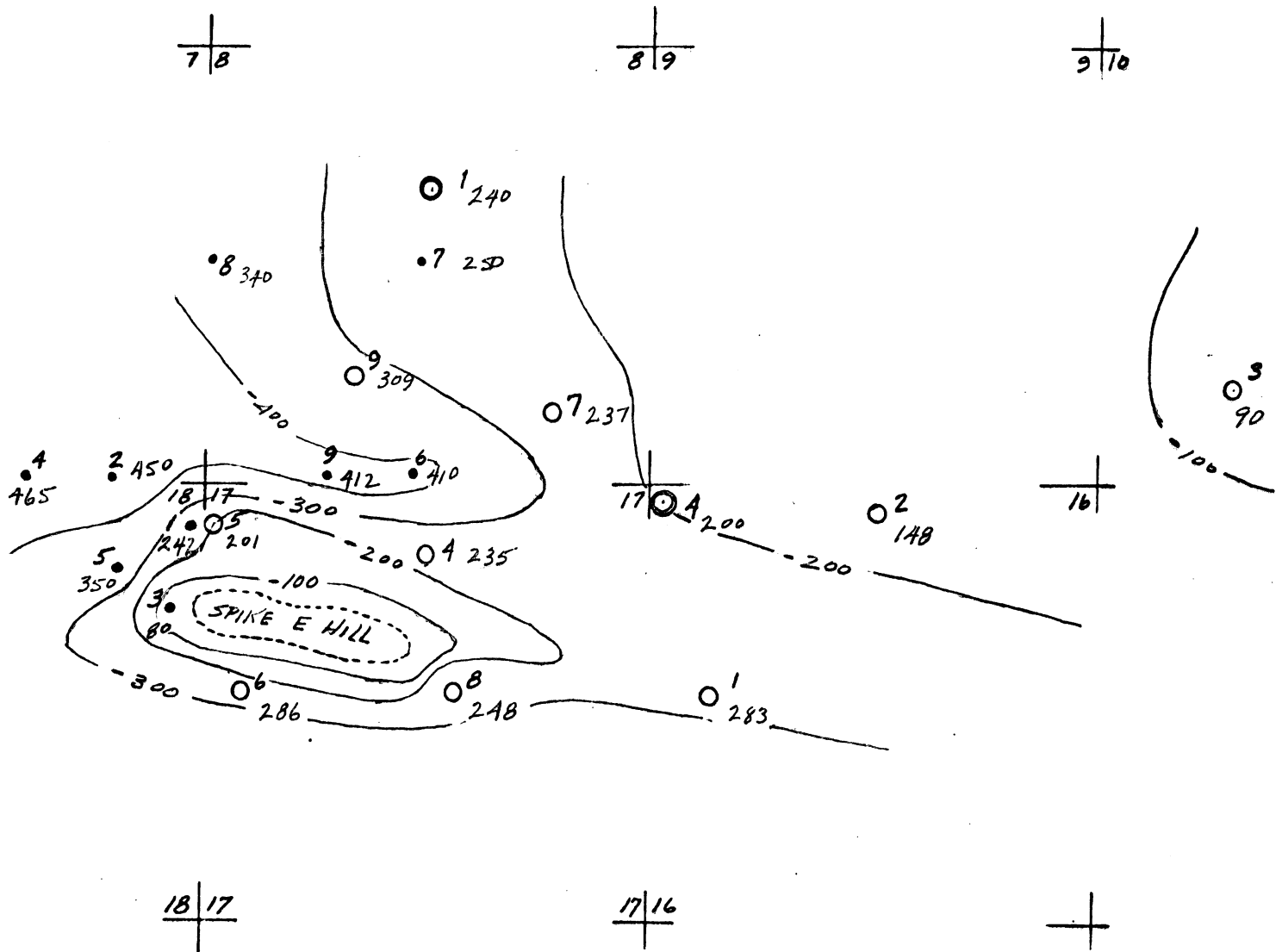
# DRILL HOLES

- ASER (W-1 etc)
- Bear Creek (SEH-1 etc)
- Lowell (DC-1 etc)

1" = 2000 ft

8 - Drill Hole  
 615/47.  
 ↑ ↑  
 % Total Sulph (Vol)  
 Depth Sulph

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PREPARED FOR J D LOWELL

DOS CABEZAS

-CAP-

Cochise Co, ARIZ

DEPTH to BEDROCK

DRILL HOLES

- ASER (W-1 etc)
- Bear Creek (SEH-1 etc)
- Lowell (DC-1 etc)

1" = 2000 ft

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