CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

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

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

August 14, 1959

Mr. A. R. Byrd, Jr.
Byrd Brothers
721 South Sixth Avenue
Tucson, Arizona

ANGLIN CLAIMS
North of Duval's Esperanza Mine
Twin Buttes District
Pima County, Arizona

Dear Sir:

Thanks for your letter of August 12 with attached assay certificate and copy of your letter of June 3, 1947. We have copied the latter two items, and I am returning them to you for your files.

Our Mr. Arthur Blucher has spent several days mapping and sampling the Anglin Claims, and yesterday Mr. Kinnison and I went over the property with him.

There are indications of some fairly sizeable zones of disseminated copper mineralization with minor amounts of molybdenite. However, it is our opinion that these zones have an overall weak aspect and would be too low in grade to offer any exploration possibilities of interest to this Company at the present time. This opinion is expressed in cognizance of your statement to me that you would make us "a very good deal" on the property.

We thank you very much for bringing this property to our attention, and I am sorry that our opinion of it could not have been more favorable. I would be glad to discuss with you the details of the mineralization characteristics if you call at my office.

Yours very truly,

Original Signed By
K. Richard

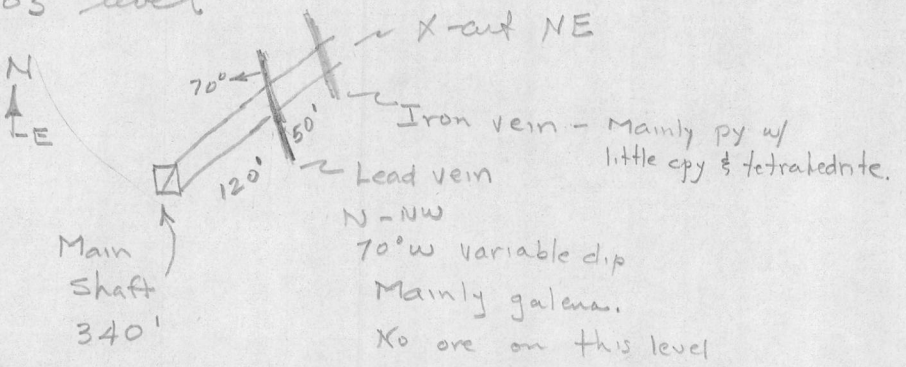
KENYON RICHARD

Enclosures
KR/ds
cc: AGBlucher
JEKinnison

2½ miles S60°W from Helmet Peak. Paymaster

Granite @ 300' in main shaft.

205' level



Veins are in crushed gangy andesite.
Postmineral faulting.

Shipped ore ran up to around 70 oz Ag and 40 % Pb. Variable Zn.
Probably hand sorted.
Total tonnage small.

Large production prior to 1900 in Ag-Pb ore reported but not verified

Notes From Asarco file

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

June 11, 1959

MEMORANDUM FOR A. C. HALL

MISSION PROPERTY
Emmons Limestone Samples

As you requested, I have prepared the following memorandum to summarize my preliminary geologic examination of the Emmons limestone.

The accompanying Index Map (Fig. 1) shows the location of the limestone in question, and the geologic sketch map (Fig. 2) and cross-sections (Fig. 3) show the details of the outcrops which contain limestone of interest for possible use as milling lime.

On the "south hill", the crest and southern dip slope are composed of limestone without chert. This unit is underlain by cherty limestone and quartzite which are clearly unsuitable for milling lime. An approximate estimate of tonnage, based on the outcrop map (Fig. 2), indicates a potential approaching 1 million tons.

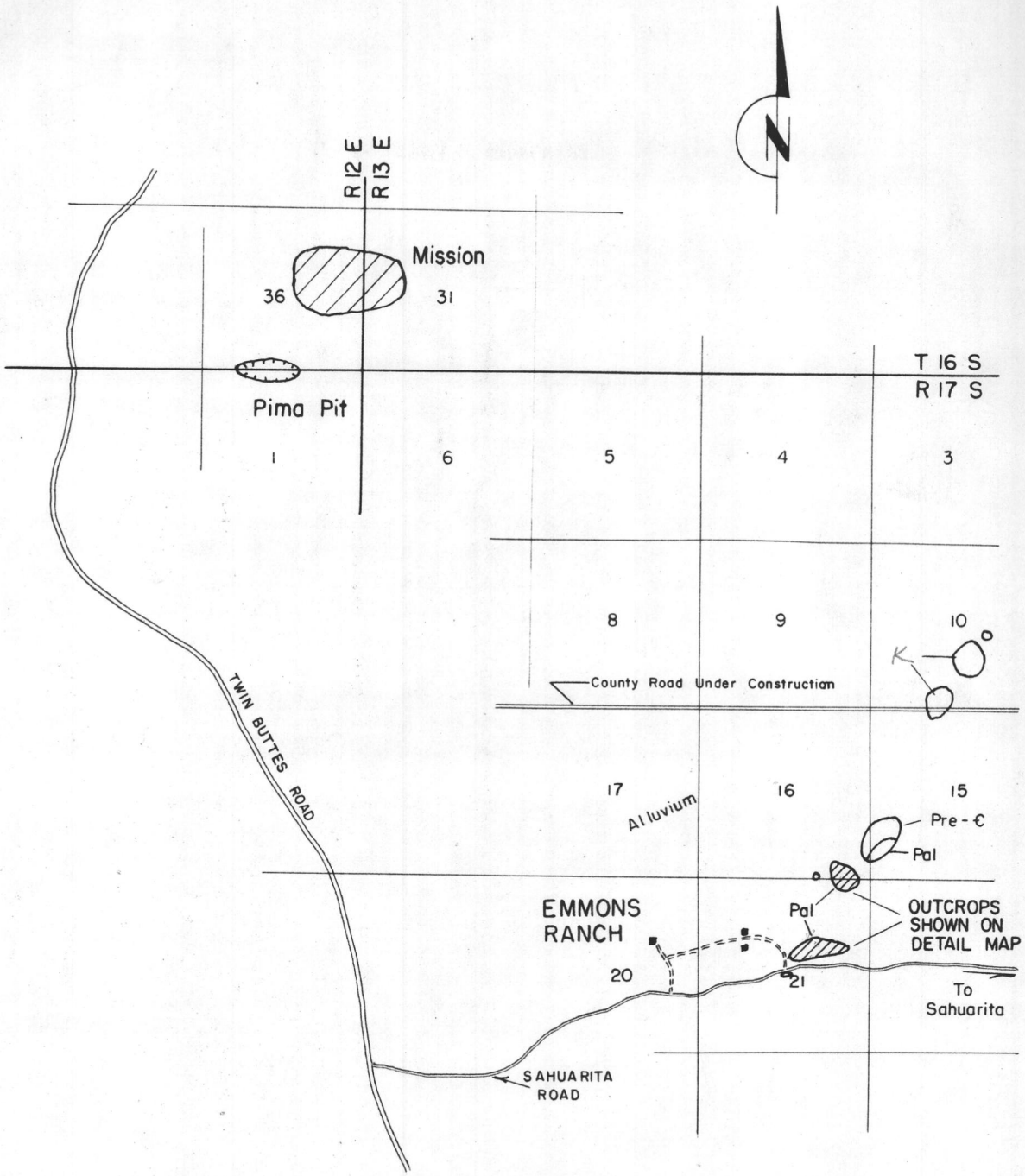
The west slope of the "north hill" is composed of pure white marble, without chert. The potential of the unit based on the sketch map (Fig. 2) approaches 200,000 tons.

Figure 3 shows in cross-sections the probable geologic conditions, and possible quarry outlines. The promising outcrops were sampled in a preliminary way by taking chips from the surface. Sample locations are shown on Fig. 2.

A topographic map and additional sampling probably including a few core drill holes to prove the continuity in depth of the suitable limestone units, will be necessary before a firm estimate of tonnage and lime content can be made.

JOHN E. KINNISON

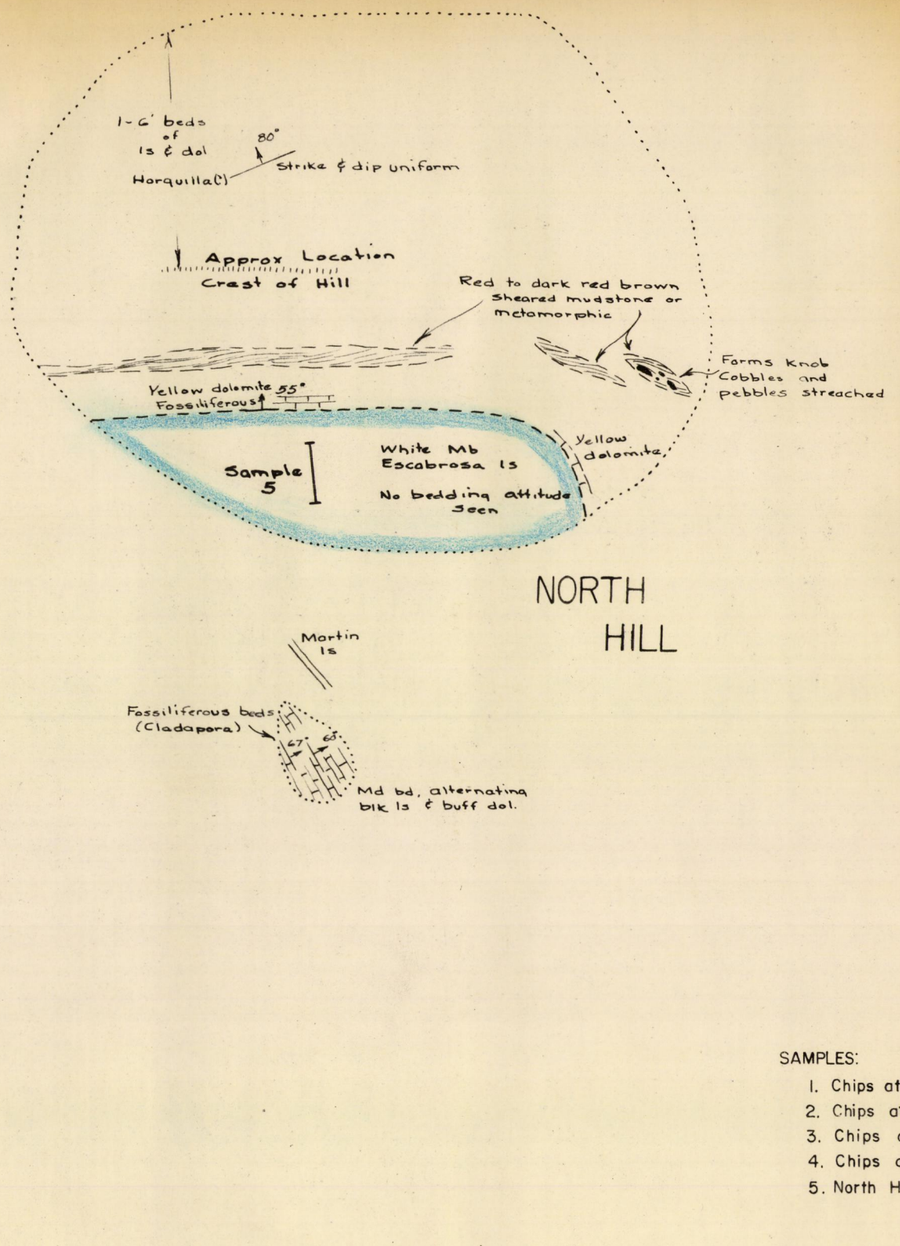
Attachs. (3)
JEK:S



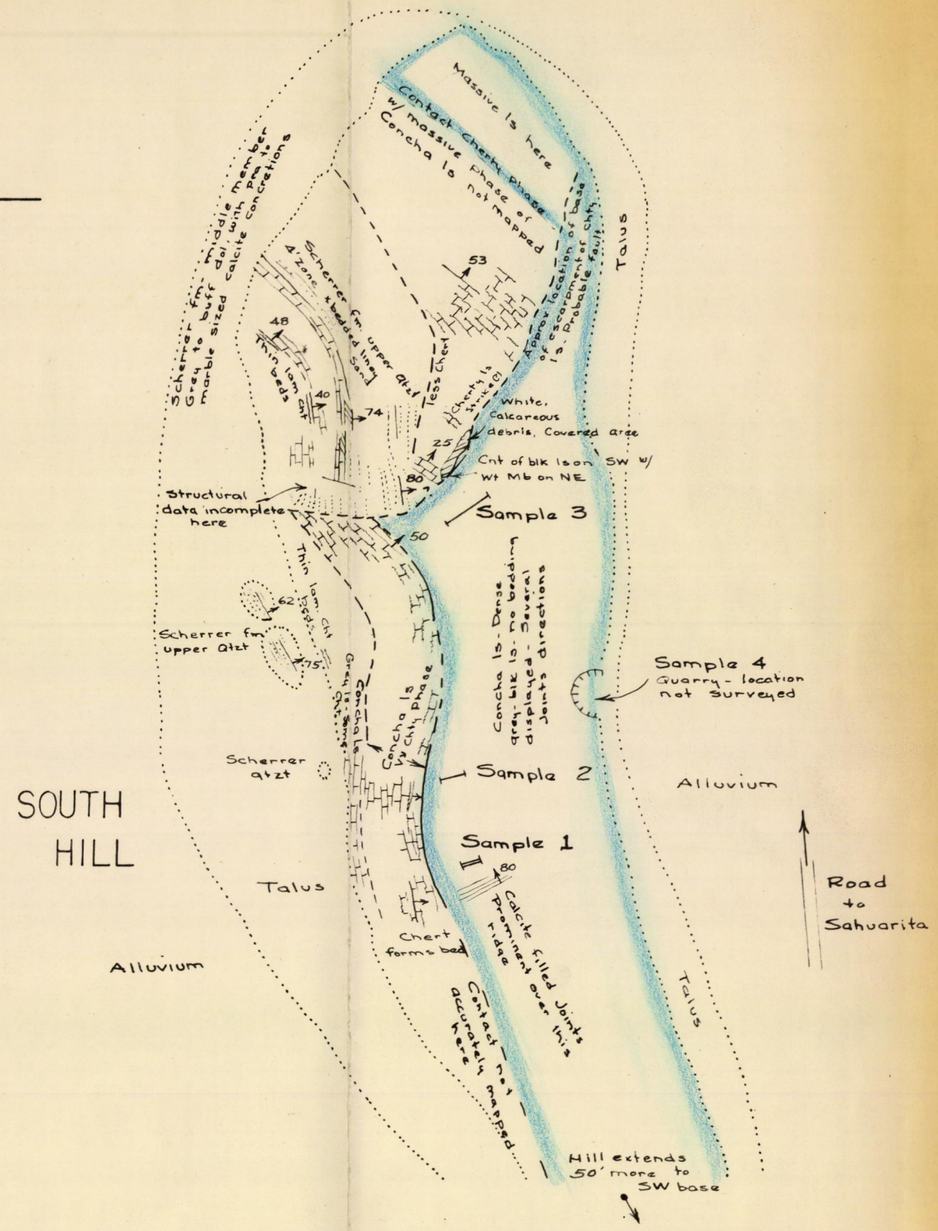
INDEX MAP

EMMONS LIMESTONE

Figure 1



North



SAMPLES:

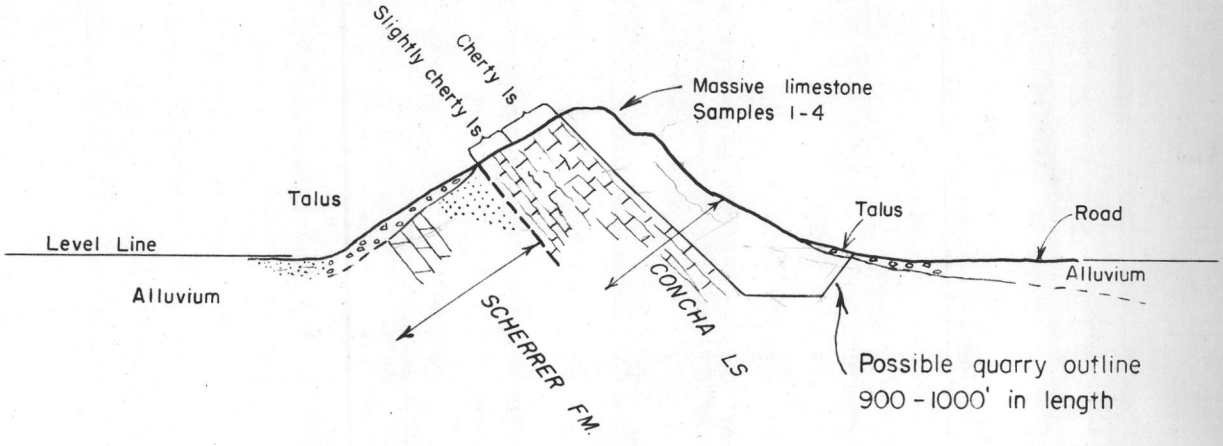
1. Chips at 3' centers, 2 rows-1' apart, 18' total
2. Chips at 3' centers – 1 row – 30' total
3. Chips at 10' centers – 60' total
4. Chips at random in quarry, south side of hill
5. North Hill – Chips at 8' centers – 80' total

Potential limestone outlined in blue

Geologic Sketch of Isolated Hills on Emmons Ranch - just north of Twin Buttes - Sahuarita Road, Pima District, Arizona

J.E.Kinnison
3-29-59

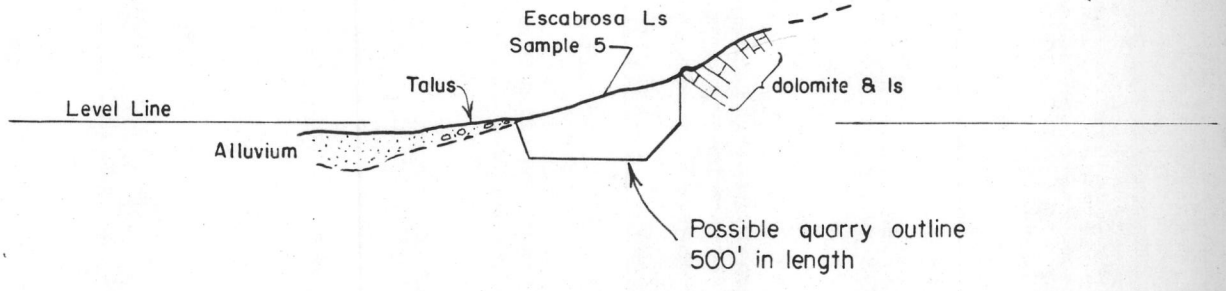
Figure 2



EMMONS SOUTH HILL

LOOKING N 70 E

Figure 3A



EMMONS NORTH HILL

WEST SLOPE ONLY

LOOKING NORTH

Figure 3B

EMMONS LIMESTONE

CROSS-SECTIONS

SCALE 1" = 200'

Kenyon — South Hill is probably not so high as I have drafted it here — therefore tonnage available is less. JCK

77,000
190 000.00 a ft
12 TF
9,500,000

70'
1100
270'

250,000

OMIT

Block A
1000' strike length

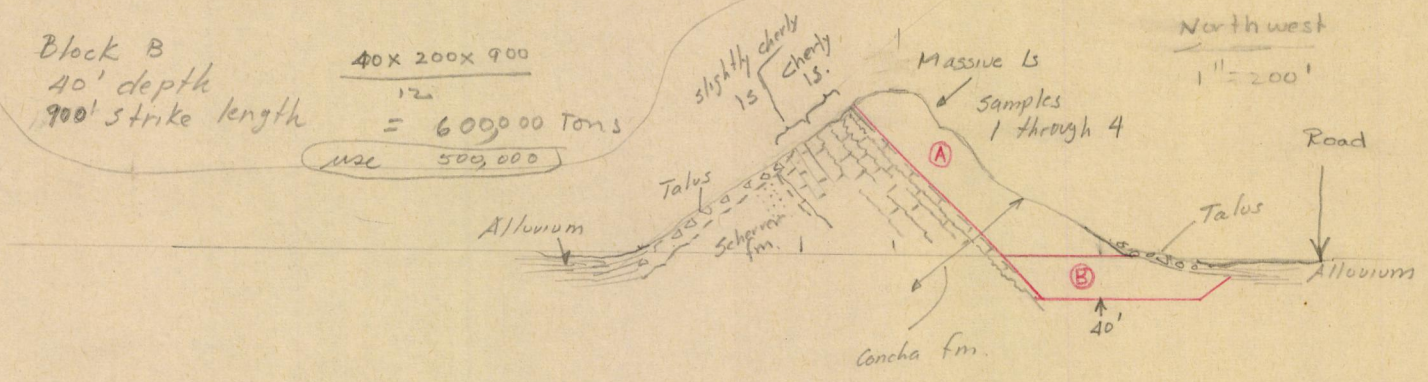
$\frac{60 \times 1000 \times 250}{12} = 1,250,00$ Tons

use 1,000,000

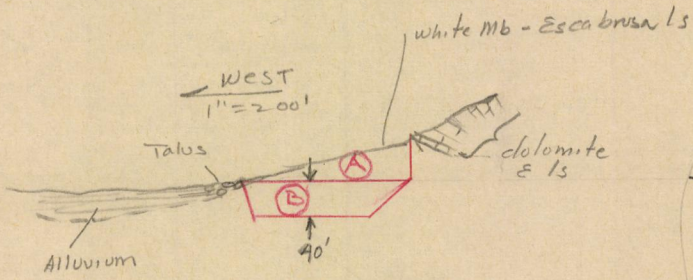
Block B
40' depth
900' strike length

$\frac{40 \times 200 \times 900}{12} = 600,000$ Tons

use 500,000



SOUTH HILL CROSS SECTION
LOOKING N 70 E



NORTH HILL CROSS SECTION
SHOWING WEST SLOPE ONLY
LOOKING NORTH

Block A
500' strike length

$\frac{40 \times 170 \times 500}{2 \times 12} = 140,000$ tons

use 150,000

Block B
500' strike length

$\frac{40 \times 150 \times 500}{12} = 250,000$ tons

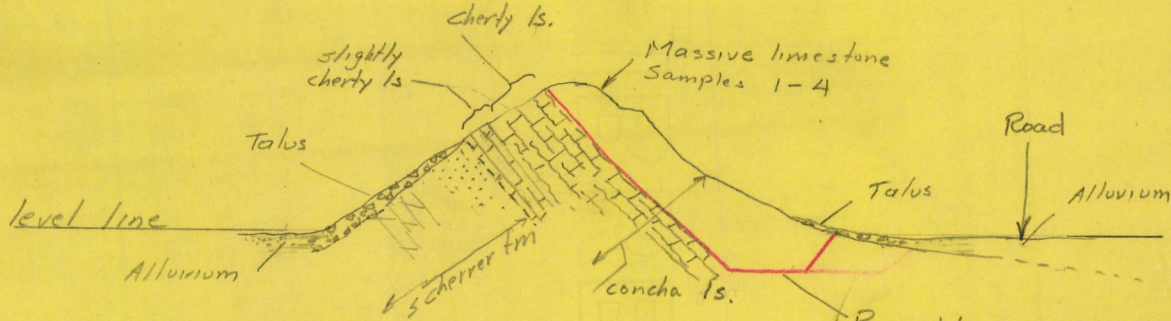
use

OMIT

Joftsman

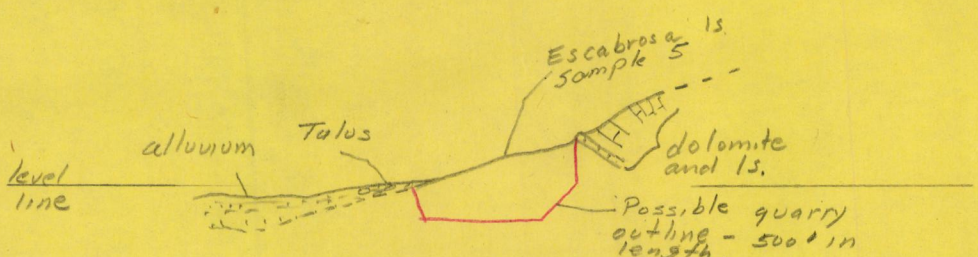
OMIT detail of calculations
Show only tonnage of each block, each section. Label:

APPROXIMATE AVAILABLE TONNAGE
BLOCK (A) –
BLOCK (B) –



EMMONS · SOUTH HILL
Looking N 70° E

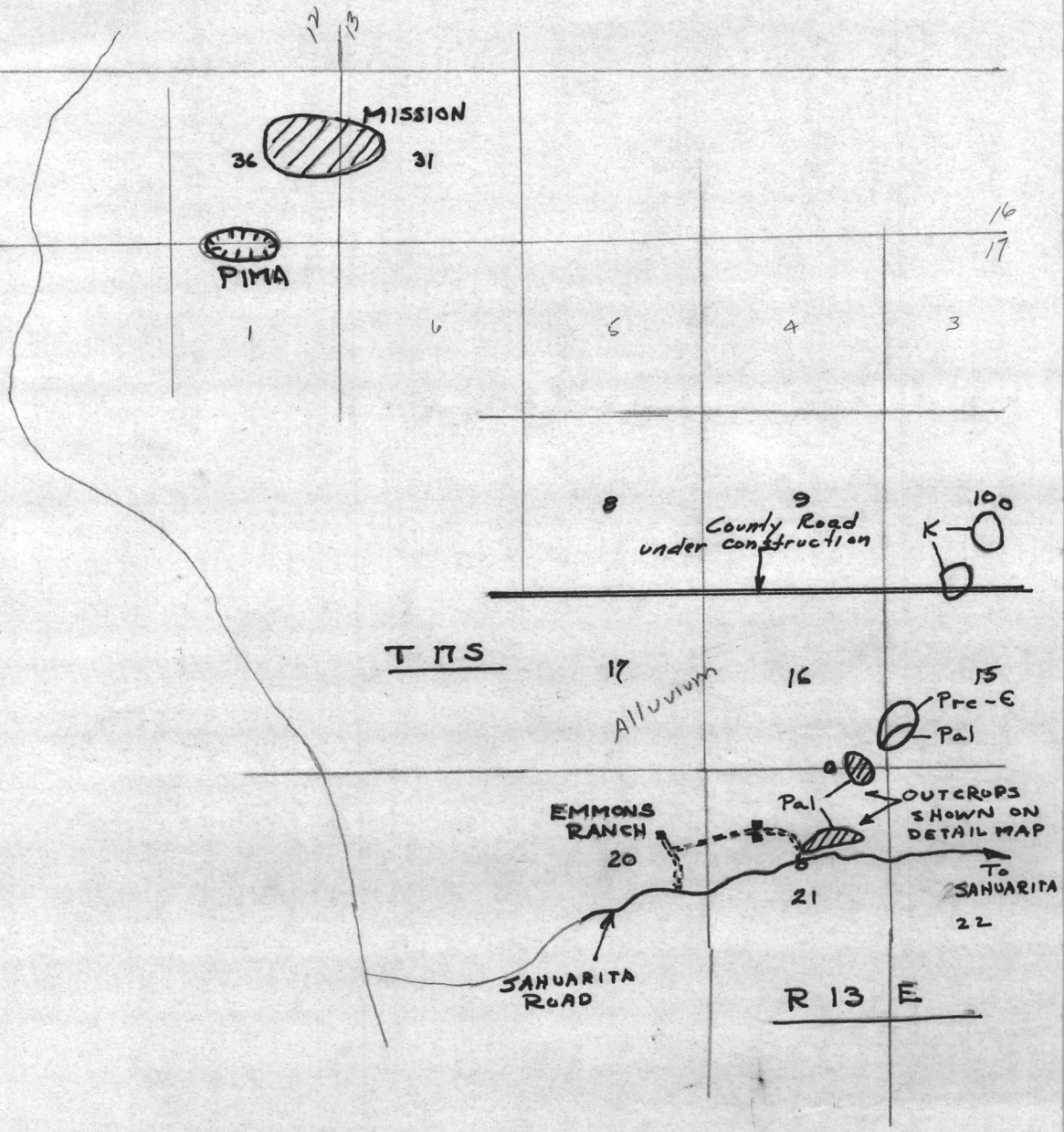
Fig 3 A



EMMONS NORTH HILL
WEST SLOPE ONLY
LOOKING NORTH

Fig 3B

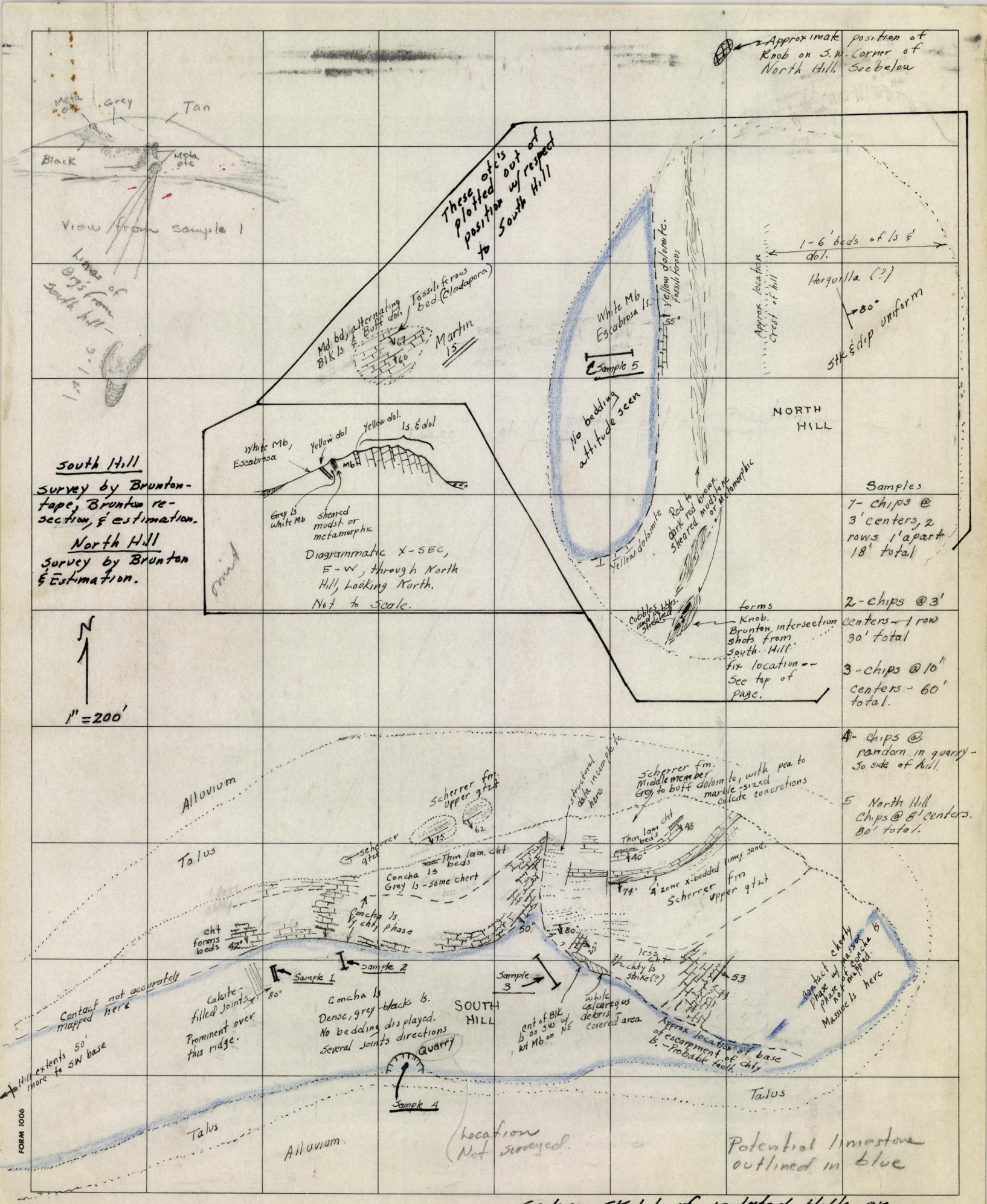
EMMONS
LIMESTONE
X-SECS
1" = 200'



INDEX MAP

EMMONS LIMESTONE

Fig 1


Approximate position of Knob on S.W. Corner of North Hill. See below
Meta etc
Grey
Tan
Black
Meta etc
View from Sample 1
Lines of sight from South Hill
These etc's plotted out of position w/ respect to South Hill
Md bds alternating Blk ls & Buff dol.
Fossiliferous bed (Cladaporea)
Martin ls
White Mb Escabrosa ls.
Yellow dolomite fossiliferous
Sample 5
No bedding attitude seen
1-6' beds of ls & dol.
Approx location Crest of Hill
Horquilla (?)
80°
Strk & dip uniform
NORTH HILL
White Mb, Escabrosa
Yellow dol
Yellow dol. ls & dol
Mb
Grey ls White Mb
Sheared mudst. or metamorphic
Diagrammatic X-SEC, E-W, through North Hill, Looking North. Not to Scale.
Red to dark red brown. Sheared muds to ls of metamorphic
Yellow dolomite
Cobbles, blks and pebbles sheared
forms Knob. Brunton intersection shots from South Hill fix location -- See top of page.
South Hill
Survey by Brunton-tape, Brunton re-section, & estimation.
North Hill
Survey by Brunton & Estimation.
N
1" = 200'
Samples
1- chips @ 3' centers, 2 rows 1' apart 18' total
2- chips @ 3' centers - 1 row 30' total
3- chips @ 10" centers - 60' total.
4- chips @ random in quarry - So side of hill.
5 North Hill Chips @ 8' centers. 80' total.
Alluvium
Talus
Scherrer fm. upper qtzt
structural data incomplete here
Scherrer fm. Middle member Grey to buff dolomite, with pea to marble-sized calcite concretions
Thin lam. cht beds
Scherrer qtzt
Concha ls Grey ls - some chert
Concha ls. Dy chty phase
cht forms beds
Thin lam cht beds
'A' zone X-bedded limey sand.
Scherrer fm upper qtzt
Sample 1
Sample 2
Sample 3
Sample 4
Contact not accurately mapped here
Calcite-filled joints
Prominent over this ridge.
Concha ls Dense, grey-black ls. No bedding displayed. Several joints directions
SOUTH HILL
Quarry
Hill extents 50' more to SW base
cont of Blk ls on SW wf wt Mb on NE
white calcareous debris Covered area
Approx location of base of escarpment of chty ls. - Probable fault.
Contact phase of Scherrer not mapped. Massive ls here
Talus
Alluvium
Location Not surveyed.
Potential limestone outlined in blue
Road to Sahuarita
Geologic Sketch of Isolated Hills on Emmon's Ranch - just north of Twin Buttes - Sahuarita Road, Pima District.
3/29/59 JEKinnison
Fig 2
FORM 1006

LOG
DIAMOND DRILL CORES
from
WILSON - CHILSON - TODD PROPERTY
Southwest of Helmet Peak
Logged 6/25/57 @ Ted Dodge's office w/ K. Richard

DDH #1

0-12' Argillite, dark color

12-30' Massive hematite. 1' of granite @ 26'

30-112' Felsite porphyry. light buff. oxidized.

112-131' Breccia. Fairly unaltered andesite frags.

131-201' Breccia, gouge, and red hematite. Mostly altered andesite frags. some argillite frags.

201-284' Granite. Much gouge. heavy Kaolinization

BOTTOM

DDH #2

0-52' Andesite, all in caved pieces.

BOTTOM

DDH # 3 Oxid to 60' - Faint maroon & Red & orange limonite.

0-155' Conglomerate or Breccia. Buff color. Argillite? frags. Highly Kaolinized. Gouge zones with ground-up Pyrite occur suggestive of bedding. Indications of congl. or Bx are faint above 130', and rock looks more like Argillite.

155-165' Congl or Breccia w/ rounded frags. Red color.

165-170' Breccia?

170-336 Granite. Very heavy Kaolinization of feld, increasing downward. Small flecks of sphalerite.

BOTTOM

DDH # A

0-45' Arkose & congl. oxid.

45-53' Gouge?. Mostly clay-like

53-294' Granite, coarse-grained. Feld. w/ interlacing quartz. some chlorite. 1/2' of schistose chloritic material @ 162' - possibly sheared andesite. chlorite heavier below 100'. No sulfides. occassional Kaolinization.

BOTTOM

WILSON-CHILSON-TODD
DDH LOG
continued

DDH #5

0-40' Rockbit - No core

40-43 Andesite

43-75 Granite. Kaolinized, large perfectly euhedral phenocrysts.

75-297 Granite. More typically like a sierreta granite, with abundant quartz. Also some intermixed fine-gr. rock. 1' sheared chloritic material (possibly andesite) @ 188'

BOTTOM

DDH #6

0-256 Porphyry, highly oxidized. Some massive red hematite. Appears to be highly kaolinized and sericitized. Partly brecciated. No sulfide cavities seen. Core recovery very poor.

BOTTOM

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

November 5, 1957

FILE MEMORANDUM

WILSON-CHILSON TODD CLAIMS

Drill holes on Wilson-Chilson-Todd Claims, Pima District. Drilled for John C. Higgins under direction of Ken Hamblen. Core at Hoagland and Dodge office logged by K. Richard and J. Kinnison June, 1957:

Hole #1

0 - 201'	Some dark lim-after ferromag(?) in alt. and porph. S. Bell cgl(?). Gouge above and below 201'.
201 - 284'	Alt. granite -- clay -- tr. lim-after-ferromag.

Hole #2

0 - 50'	Unmineralized and. porph. (cgl?). Poor core recov.

Hole #3

0 - 63'	Leached, alt.cgl -- zones of strong silic. -- dark lim. but not after Cu sulph.
63 - 170	Alt. cgl -- sp. pyr. cubes, rare cpy -- Ser. and clay.
170 - 192	No core -- (flt.?)
192 - 336	Clay alt. in granite -- tr. marmatite in dissem. grains.

Hole #4

0 - 46'	Alt. cgl. with doubtful and. porph. pebbles. Lim.-after-pyr.
46 - 51	White gouge, clay -- flat planes.
51 - 294	Granite -- some chlor.(?) on clay alt. -- no sulph or lim.

Hole #5

0 - 40'	Rockbit
40 - 43	Andesite
43 - 60	Sp. lim. in granite(?) or cgl.(?) -- st. argil. alt.
60 - 297	Same -- sp. lim.-after-ferromags.

Hole #6

0 - 256' Red beds(?) cgl. or porphyry(?) -- abdt. red clayey material, but probably no mineral. Upper portions resemble S.Bell cgl.

KENYON RICHARD

KR/ds
cc: RCribbs
JKinnison

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

February 5, 1958

FILE MEMORANDUM

WILSON - CHILSON - TODD CLAIMS

Summary of original diamond drill hole logs on eight holes drilled for J. C. Higgins during 1957 on the Wilson - Chilson - Todd Claim. Location is southwest of Helmet Peak in Pima County.

Much of the rock identification may be questionable. Copper assays did not exceed 0.05% Cu.

Hole #1	
0-110	Brxted arkose. Fe oxides on slips
110-145	Arkose. Narrow diorite dikes
145-155	Granite. Strong alt. Red and brown Fe oxides
155-200	Brxted diorite, arkose, and quartzite. Much Fe oxides
200-284	Granite. Some brxtion. Ser. and arg. alt. Sp. specular hematite.
Hole #2	
0-50	Andesite. Fe oxide.
Hole #3	
0-50	Brxted arkose. Fe stained. Some ser. alt.
50-65	Arkose. Sp. pyrite Xls.
65-125	Arkose and quartzite. Strong ser. alt. Fine diss. pyrite. Sp. chalcopyrite.
125-150	Arkose. Pyrite in seams to 1/4"
150-175	Brxted arkose and quartzite. Strong ser. alt. Diss. fine pyrite.
175-315	Arkose. Strong ser. and arg. alt. Diss. fine pyrite and specular hematite.
315-336	Sheared granite. Arg. and chl. alt. Diss. pyrite.
Hole #4	
0-45	Brxted arkose. Arg. and ser. alt. Fe oxides and some fine pyrite.
45-135	Brxted f. g. arkose, Diorite dikes. Sp. pyrite and marmatite xls. Some chlorite and Fe oxide.
135-160	M. g. diorite. Some Fe oxide. Sp. pyrite xls.
160-161	Andesite dike
161-175	Diorite. Fe oxide and chlorite.
175-260	M. g. quartz diorite. Some shearing. Arg. and chl. alt. Sp. pyrite xls.
260-285	Arkose. Arg. alt. Sp. pyrite xls.
285-294	Quartz diorite.

File Memo
Wilson - Chilson - Todd Claims

Hole #5

0-45	No core.
45-50	Dike. Strong alt.
50-95	Arkose. Strong arg. alt. Some Fe oxide.
95-205	C. g. arkose. Chl. alt. Some Fe oxide and Mn stain.
205-215	Brxted arkose. Granite dike.
215-297	C. g. arkose. Some brxtion. Fe oxide in seams. Sp. f. g. pyrite and specular hematite.

Hole #6

0-125	No core.
125-175	Brxted arkose. Much Fe oxide. A few spots of biotite.
175-270	Brxted arkose. Ser. alt. Red and yellow Fe oxide in seams.
270-310	Arkose. Some brxtion. Sp. specular hematite?
310-350	Brxted arkose. Some Fe oxide. Diss. fine pyrite.
350-375	No core.
375-410	Andesite dike?
410-435	F. g. brxted arkose. Some fine pyrite.
435-525	Very f. g. arkose and quartzite. Much fine diss. pyrite. Sp. chalcopyrite.
525-568	F. g. brxted arkose. Some pyrite. A 1" basic dike at 547'.

Hole #7

0-40	No core.
40-105	Brxted arkose. Ser. and arg. alt. Red Fe oxide.
105-175	Brxted arkose. Much Fe oxide 105-125.
175-225	M. g. weakly brxted and sheared arkose. Ser. alt. Fe oxide.
225-260	Arkose. Some diss. pyrite.
260-295	Arkose, hard and soft rubble. Much diss. pyrite in seams. Minn red Fe oxide.
295-350	White f. g. quartzite. Fine pyrite. Rare chalcopyrite.
350-436	M. g. to f. g. arkose. Arg. alt. Many spots of fine and coarse pyrite. Rare chalcopyrite.

Hole #8

0-35	No core.
35-60	Weakly brxted arkose. F. g. diss. pyrite. Rare chalcopyrite.
60-70	Dense white quartzite. Some pyrite.
70-108	M. g. dense light colored arkose. A few pink feldspars. Some diss. pyrite.

R. E. CRIBBS

Data given to Cooper
JCR March 1958

X 128 Collar 3304'
B.R. @ 190'
Basalt to 340
No Rec to 360
S. X. to 680
(Siltstone to 520
cgl to 680)
Fault
680 - 915 Pre ore rocks
Bottom

X 123 S Collar 3196'
B. R. @ 100'
Basalt to 175
Cgl (S.X) to 240
B. por. to 327
Bottom

X 116 S Collar 3090'
B. R. @ 140'
Cgl & Siltstone to 430'
Basalt to 484
Bottom

X 130 S Collar 3042
B. R. @ 140
Cgl to 305
Basalt to 510
silt (S. X.) to 590
590 to 816 Pre Ore
Bottom

X 204 Collar 3195
B. R. @ 200'
Basalt to 440'
Cgl to
B. por to 786
Bottom

X 235 - 3256'
B. R. @ 210'
Basal to 410
Silt (S. X.) to 514
Fault.
Pre-ore to Bottom

X 302S Collar 2989
B. R @ 252
Cgl to 431
Blk & red hard mudstone?
similar to below
to 486
cgl? to 442
Blk & red Mudstone (hard)
to 451'
Mudstone (hard) red, blk., gray,
brown to 498 ± 3'.
Fi-gr Diabase
or diorite to 575
Bottom

IN REPLY REFER TO:
Geologic Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
FEDERAL CENTER, DENVER 2, COLORADO
Room 2214 Bldg. 25

25 June 1958

Mr. John E. Kinnison
American Smelting & Refining Co.
813 Valley National Bank Bldg.
Tucson, Arizona

Dear John:

Many thanks for sending the remaining samples of alluvium from the East Pima shaft; they arrived in good condition. I regret that I will not be able to do anything with these samples until fall as I am leaving tomorrow for a summer project in northwestern Maine.

With best regards.

Sincerely yours,

Frank

Frank C. Canney
Project Chief
Geochemical Exploration Section

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

June 13, 1958

Mr. Frank Canney
Geochemical Exploration Section
U. S. Geological Survey
Building 25, Federal Center
Denver, Colorado

Dear Frank:

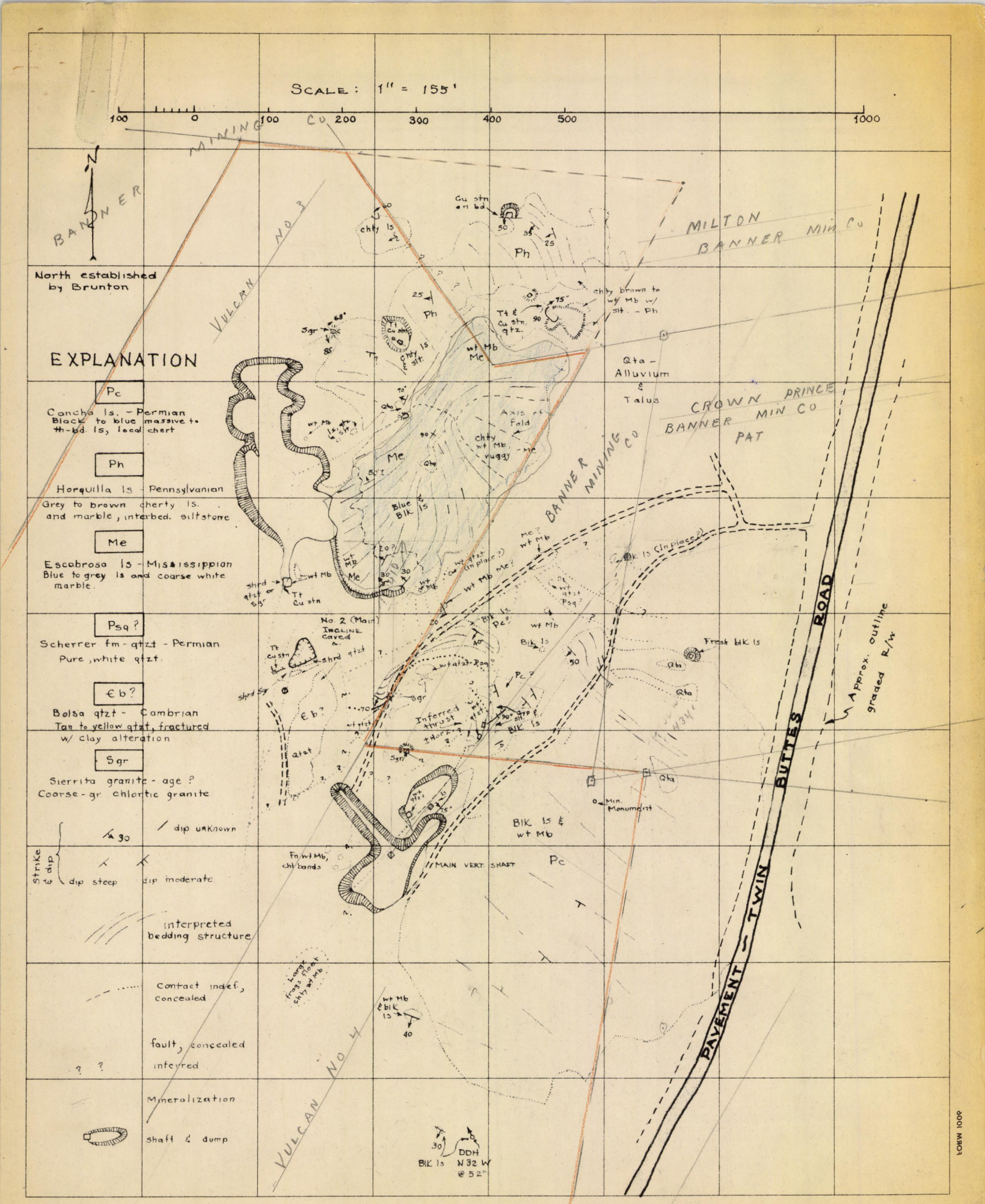
I have mailed the remaining samples of alluvium from the East Pima shaft. Bedrock is 197 feet deep, and hard caliche conglomerate begins at about 180 feet with a very gradational contact. Boulders with visible copper minerals occurred between 125 and 145 feet, but were very scattered. Below 166 feet are abundant boulders with Fe oxides and below 183 feet abundant copper bearing boulders.

I failed to note the exact sample which ended the group you collected, so if there is a gap between the samples you have and this last group let me know. The numbers should be consecutive.

Yours very truly,

J. E. KINNISON

JEK/ds



SURFACE GEOLOGY

VULCAN MINE

Mapped on aerial photo., Blanton & Cole No. 5-6 ; JEK , 1958

FORM 1009

6-3-59

K. R.

The area of interest is controlled by

VULCAN Copper & ZINC Min. Co
(U.S. Pat mining claim Vulcan No 3)
Hal C Warnock, 907 Valley Nat. Bank Bldg. Secretary

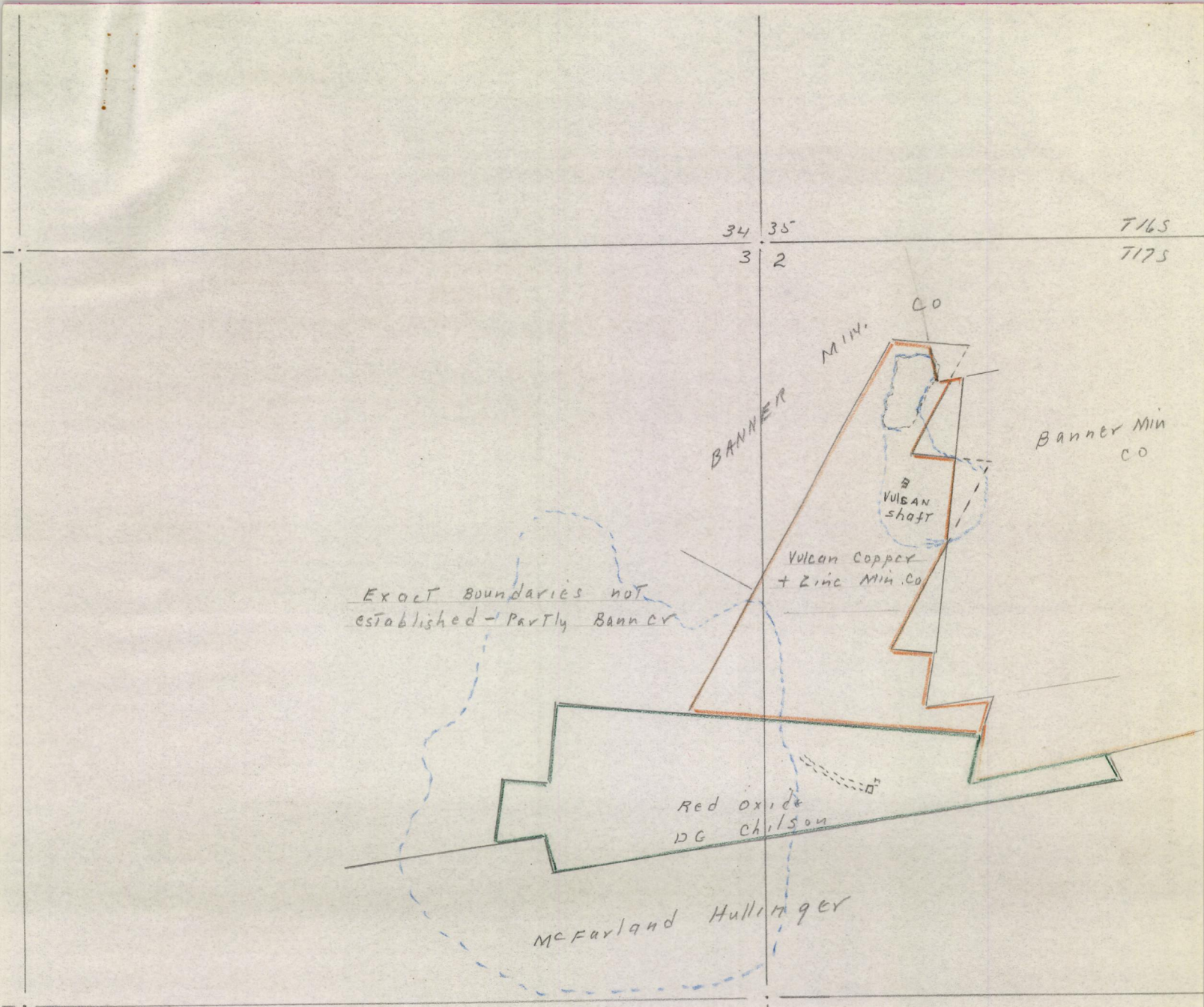
This property, consisting of 4 Pat. claims, the Vulcan Nos 1, 2, 3 + 4, is under lease and option to

Sherwood B Owen

I do not have the terms of the lease: it is not recorded in the 1955 to date recordings. Older recordings were not available at the time of checking.

All ground immediately East, North, and West is held by Banner Mining Co.

Ad



Generalized Limestone Outcrop

VULCAN Copper and Zinc US PAT 1573 73.41AC

RED Oxide Group DG Chilson

GENERAL SKETCH

after T.N. STEVENS

Approx 1" = 1000'

6-3-59

Aa-16.16.3A
Kinnison

November 3, 1959

Mr. Richard E. Chilson
8350 Tanque Verde Road
Tucson, Arizona

CHILSON CLAIMS
Pima County, Arizona

Dear Sir:

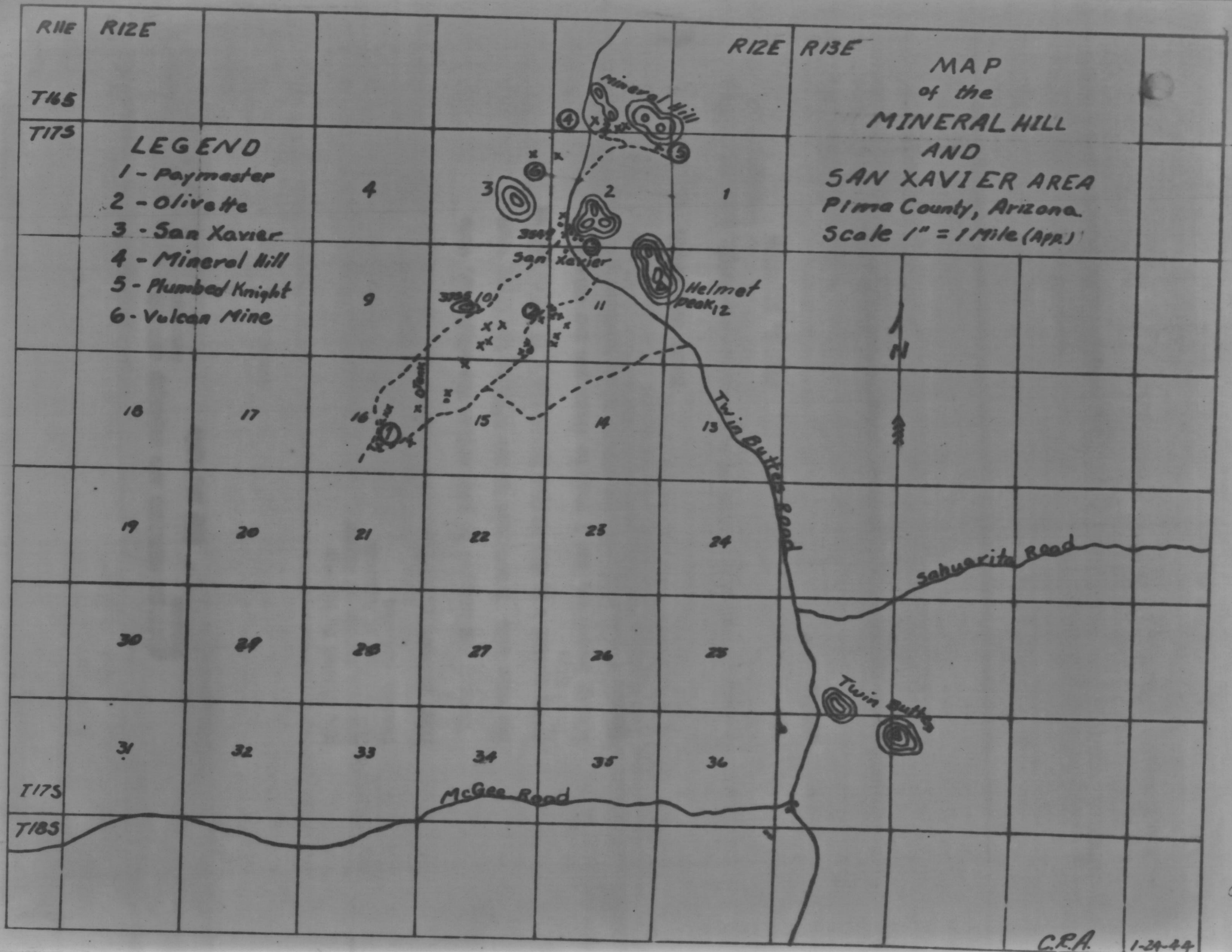
I am returning the photos of your claims near the Banner tailing pond. I wish to thank you very much for loaning them, for they have been most helpful, and also thank you for accompanying me in the field to show me the claim layout.

I have been absent on vacation for two weeks, but in the next few days will be on the ground to make my examination.

Sincerely yours,

J. E. KINNISON

JEK/ds
Enclosures


R11E
R12E
R12E
R13E
T16S
T17S
T18S
MAP
of the
MINERAL HILL
AND
SAN XAVIER AREA
Pima County, Arizona.
Scale 1" = 1 Mile (Appx.)
LEGEND
1 - Paymaster
2 - Olivette
3 - San Xavier
4 - Mineral Hill
5 - Plumbed Knight
6 - Vulcan Mine
Mineral Hill
San Xavier
Helmet peak
Twin Buttes Road
Sahuarita Road
Twin Buttes
McGee Road
N
C.R.A.
1-24-44

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

May 10, 1960

Mr. Eldred D. Wilson
Arizona Bureau of Mines
University of Arizona
Tucson, Arizona

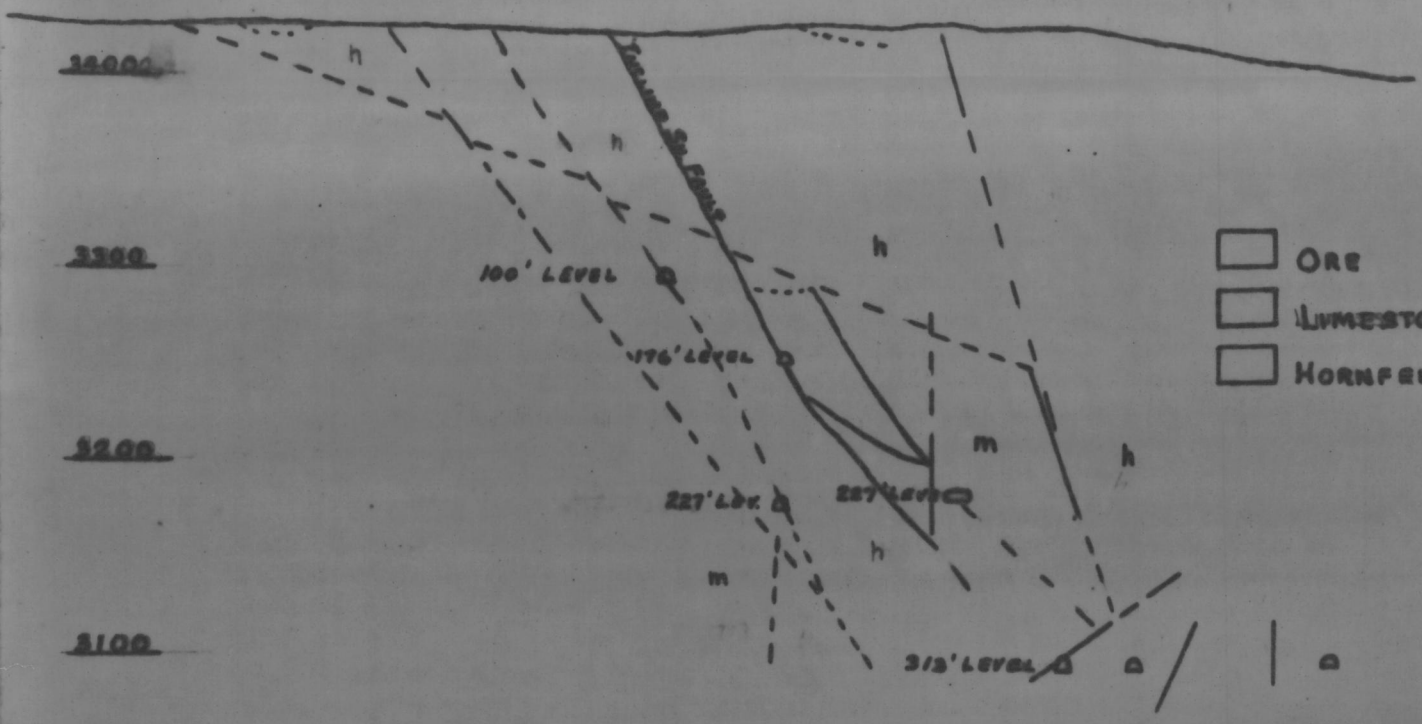
Dear Eldred:

I stopped by your office the other day, when you were out. I returned to Bob O'Haire the three maps (Twin Buttes - 2, San Xavier Extension - 1) which you so kindly loaned me, and I wish to thank you for this courtesy.

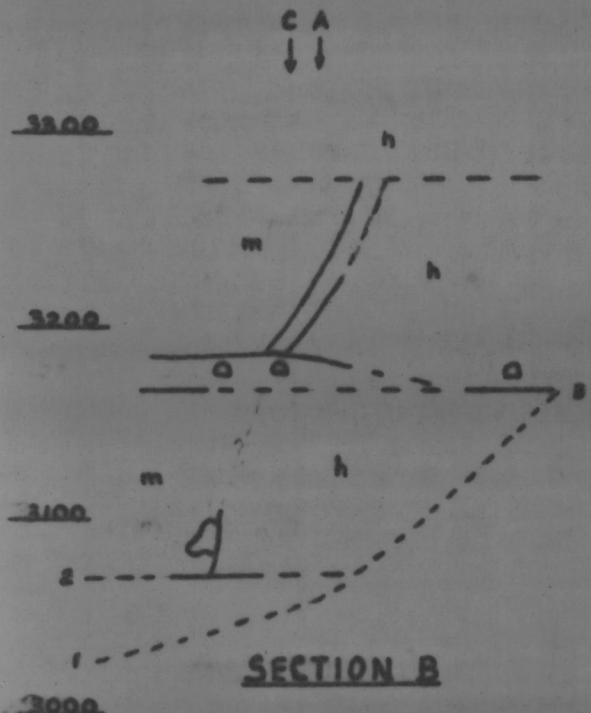
Yours very truly,

JOHN E. KINNISON

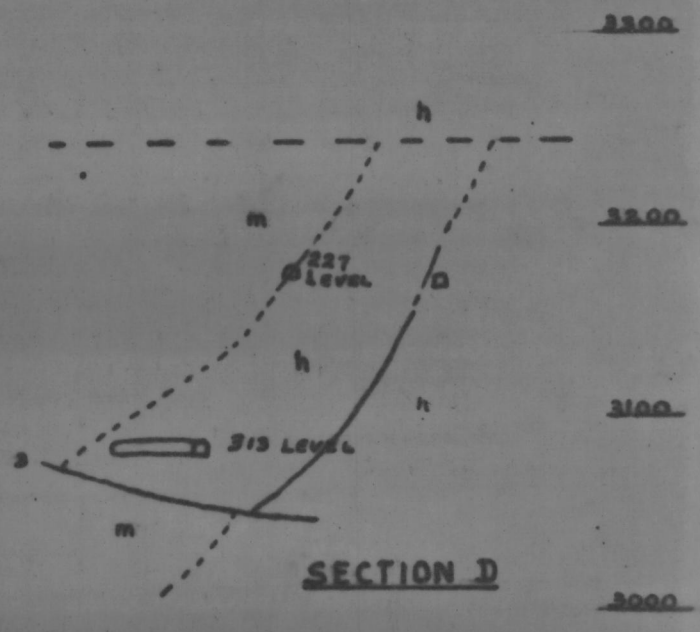
JEK/ds



SECTION A



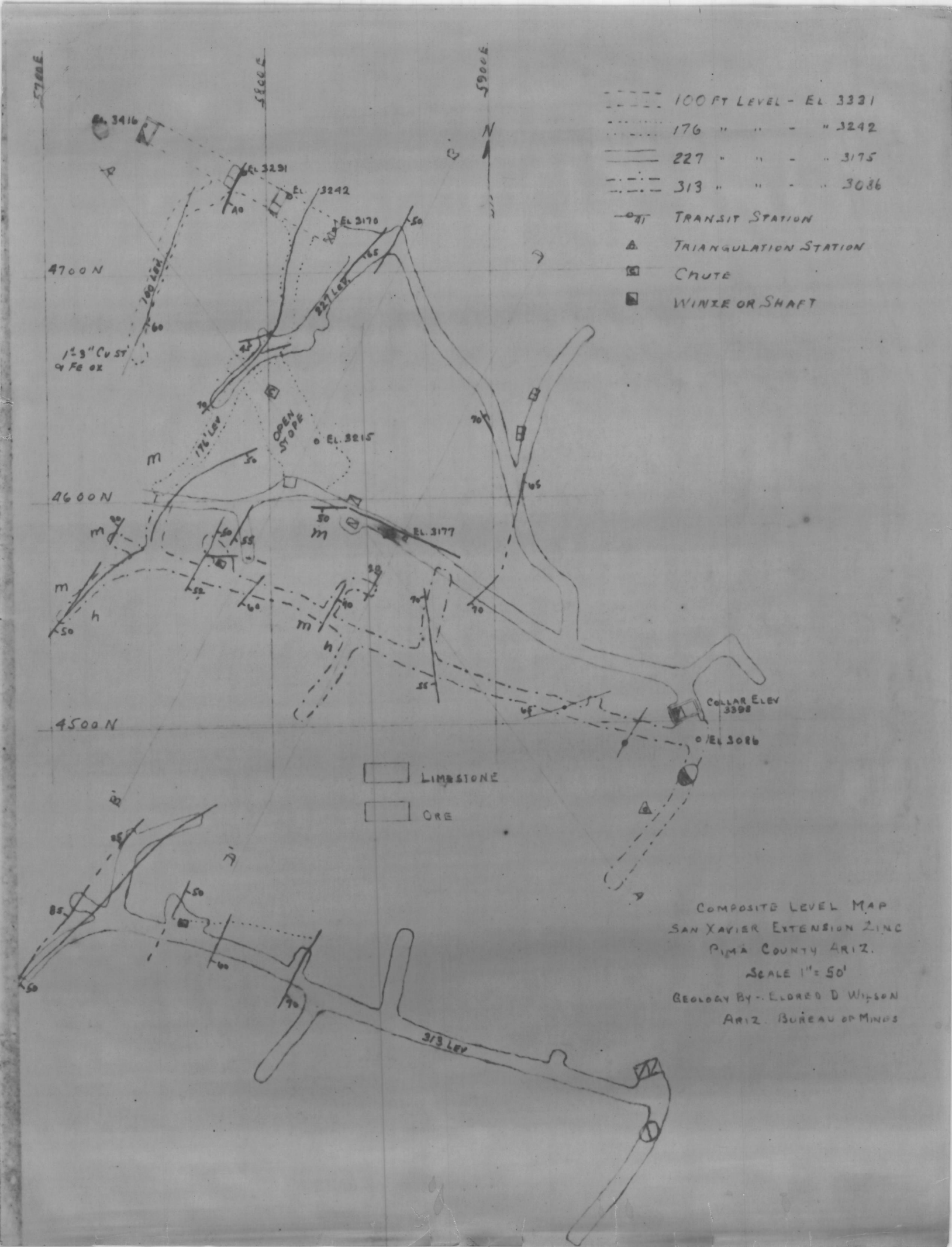
SECTION B



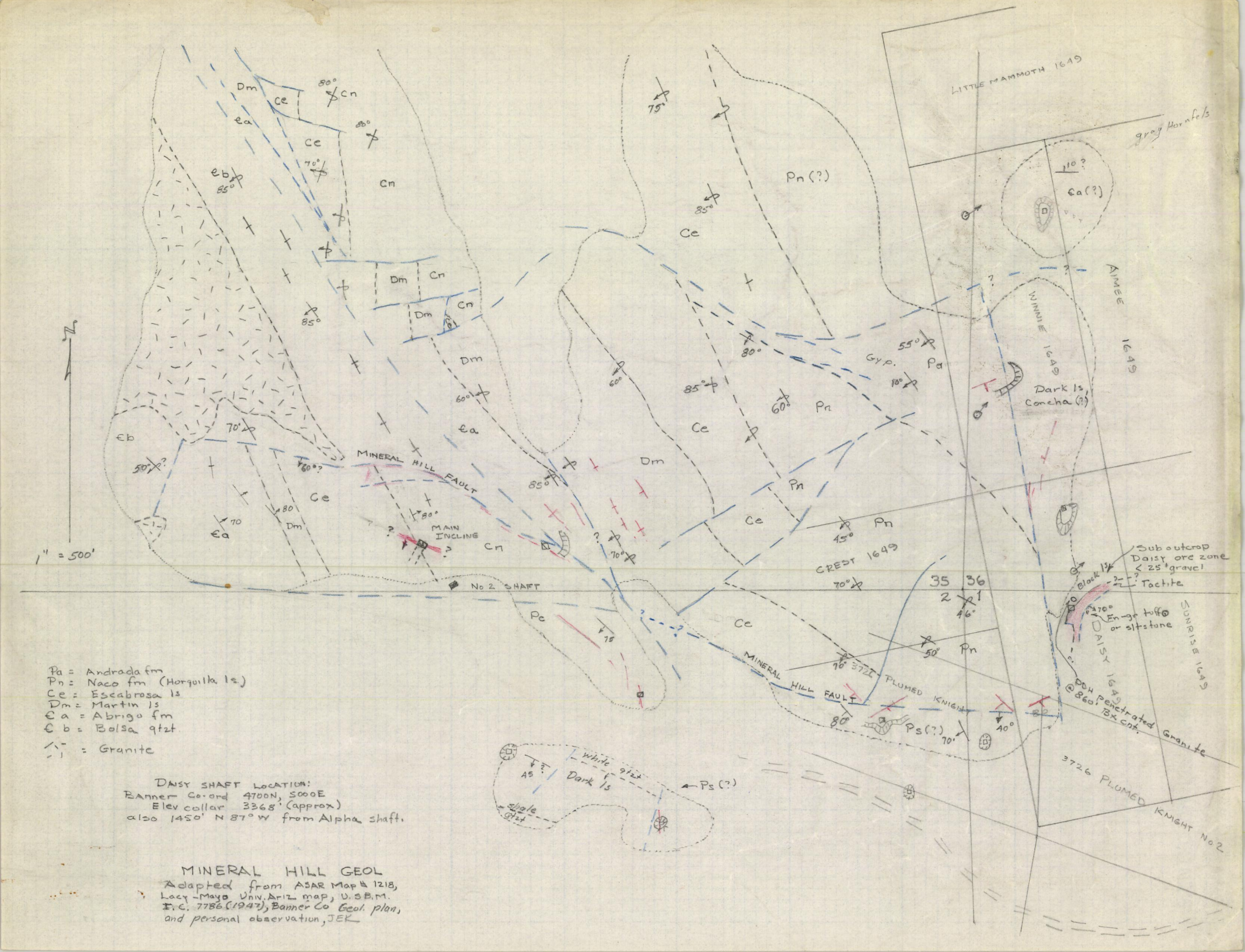
SECTION D

SAN XAVIER EXTENSION ZINC
PIMA COUNTY, ARIZ.
SCALE 1" = 100'
GEOLOGY BY ELDRED D. WILSON

SAN XAVIER EXTENSION



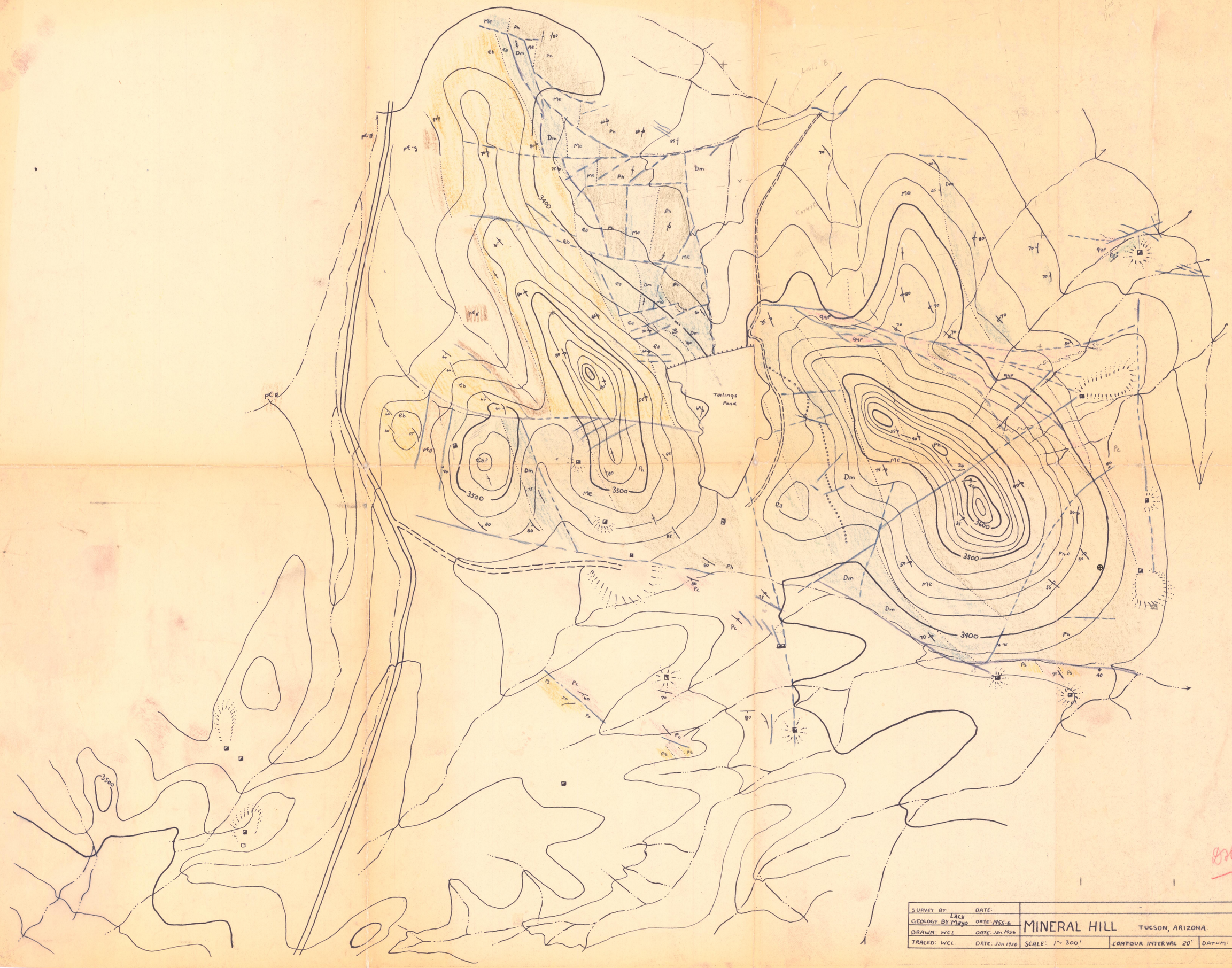
COMPOSITE LEVEL MAP
SAN XAVIER EXTENSION ZINC
PIMA COUNTY ARIZ.
SCALE 1" = 50'
GEOLOGY BY:- ELDRED D WILSON
ARIZ. BUREAU OF MINES



Pa = Andrada fm
Pn = Naco fm (Horquilla ls.)
Ce = Escabrosa ls
Dm = Martin ls
Ea = Abrigo fm
Eb = Bolsa qtzt
= Granite

DAISY SHAFT LOCATION:
Banner Co-ord 4700N, 5000E
Elev collar 3368' (approx)
also 1450' N 87° W from Alpha shaft.

MINERAL HILL GEOL
Adapted from ASAR Map # 1218, Lacy-Mayo Univ. Ariz. map, U.S.B.M. I.C. 7786 (1947), Banner Co Geol. plan, and personal observation, JEK



SURVEY BY:	DATE:		
GEOLOGY BY: Lacy Mayo	DATE: 1955-6	MINERAL HILL	TUCSON, ARIZONA
DRAWN: WCL	DATE: Jan 1956		
TRACED: WCL	DATE: Jan 1956	SCALE: 1"= 300'	CONTOUR INTERVAL 20' | DATUM: Sealevel

D.L. Bryant
Min. Hill

4200-E 4300-E 4400-E 4500-E 4600-E 4700-E 4800-E 4900-E 5000-E 5100-E 5200-E 5300-E 5400-E 5500-E 5600-E 5700-E

5600-N 5500-N 5400-N 5300-N 5200-N 5100-N 5000-N 4900-N 4800-N 4700-N 4600-N

DDH 3024
DDH 3021
DDH 3002
DDH 3009
DDH 3018
DDH 3001
DDH 3015
DDH 3022
DDH 3006
DDH 3017

3024 3023 3021 3018 3017 3016 3015 3014 3013 3012 3011 3010 3009 3008 3007 3006 3005 3004 3003 3001 3027 3026 3025 3029 3028 3030 3031 3032 3033 3034 3035 3036 3037 3038 3039 3040 3041 3042 3043 3044 3045 3046 3047 3048 3049 3050 3051 3052 3053 3054 3055 3056 3057 3058 3059 3060 3061 3062 3063 3064 3065 3066 3067 3068 3069

1. TOM NINE
DOD LABVAL
2. NORMOUS CASTLEMAN
CLOUD PARK — SHOP
WALLACE
3. RAMMANUAL —
KENNEDY GROUP
OFFICE & EQUIPMT.

GEOLOGY & TOPOGRAPHY

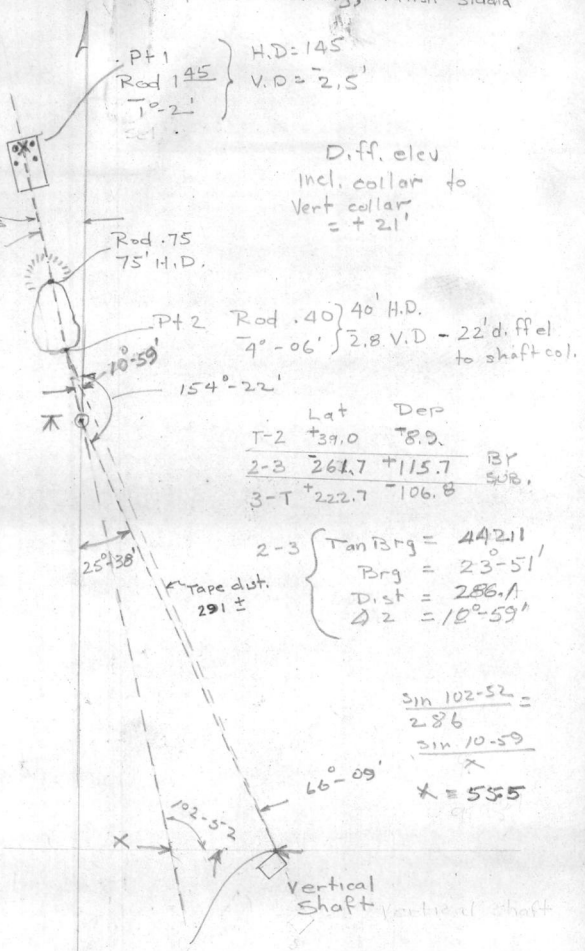
MINERAL HILL DISTRICT

Pima County Arizona

Scale 1"=500', Contour Interval 20'

Tucson, January 1958

Note: Compass Bearing, transit-stadia



$\frac{\sin 102\text{-}52}{286} = \frac{\sin 10\text{-}59}{X}$

$X = 555$

$\angle 2\text{-}X\text{-}3 = 167°14'$

10-59
167-14
1-46
178-119 or
179-59
OK

$\frac{\sin 167\text{-}14}{286.1} = \frac{\sin(3)}{40}$

$\sin(3) = .03089$

$\angle 3 = 1°46'$

in 1917 Ramsdell's deepest workings on 282 level near No 2 Incline. Caved in 1918.

1920 a vertical shaft sunk 210 feet deep. About 300' SE of Collar No 2 Incline

T.N. Steven made map of workings up to 1917. (No copy)

Sulfides at 200 ft approx

Ramsdell shipped 8000 ton 6–7½ % Cu ore.

AMIS

Two incline shafts. One reached a depth of 560 feet. The other intersected the first at the 200 foot level (inclined distance). Both on ore

About 500 feet SE of Main shaft. a vertical shaft reached 180 feet. and encountered granite.

100' NE vertical shaft granite in cut w/ ls in a prospect shaft.

Main incline on N 60 E fracture dip 40° SE, 5' wide

F.W. is in keen g/st.

Mineralized x-fractures N30E 70° SE

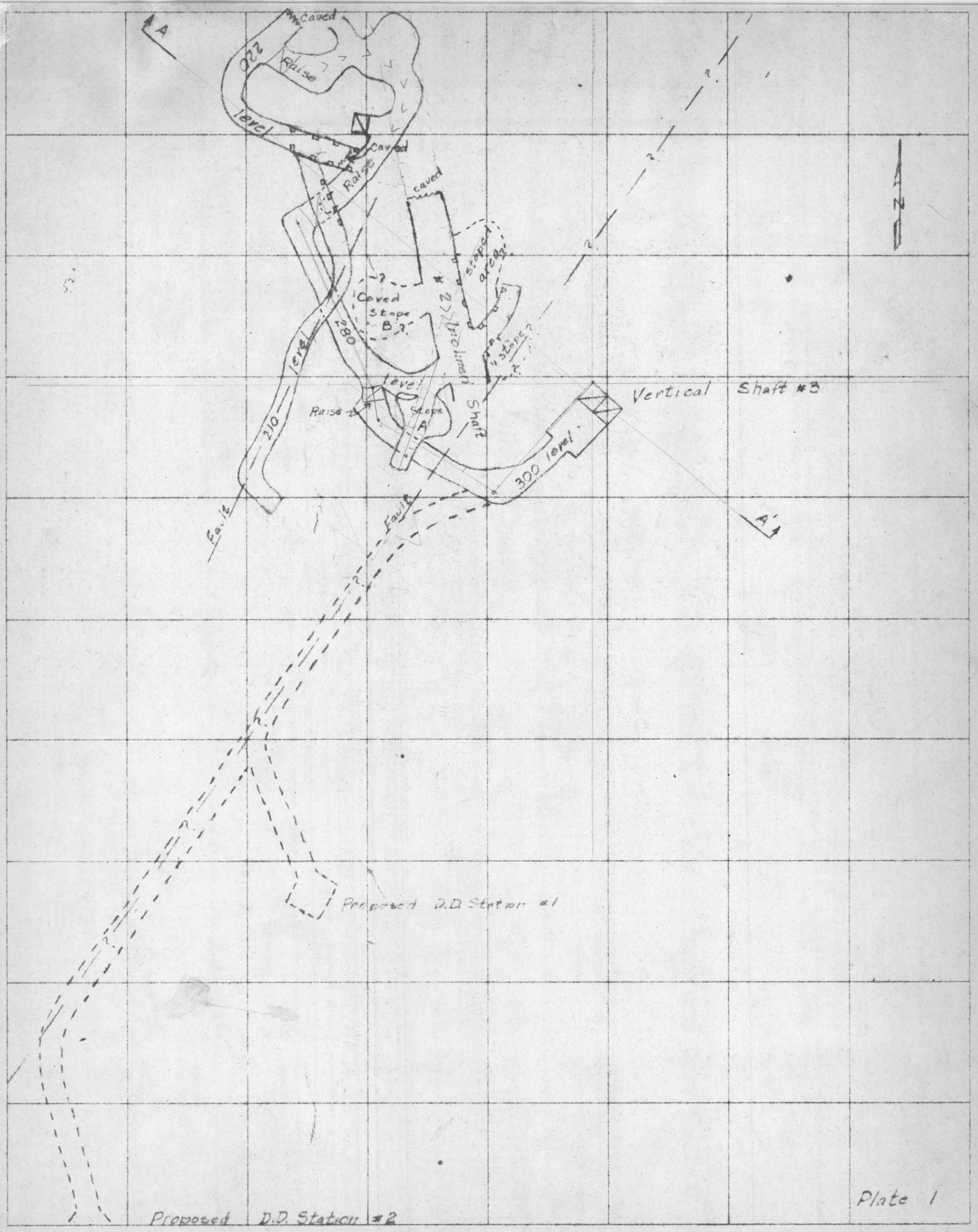


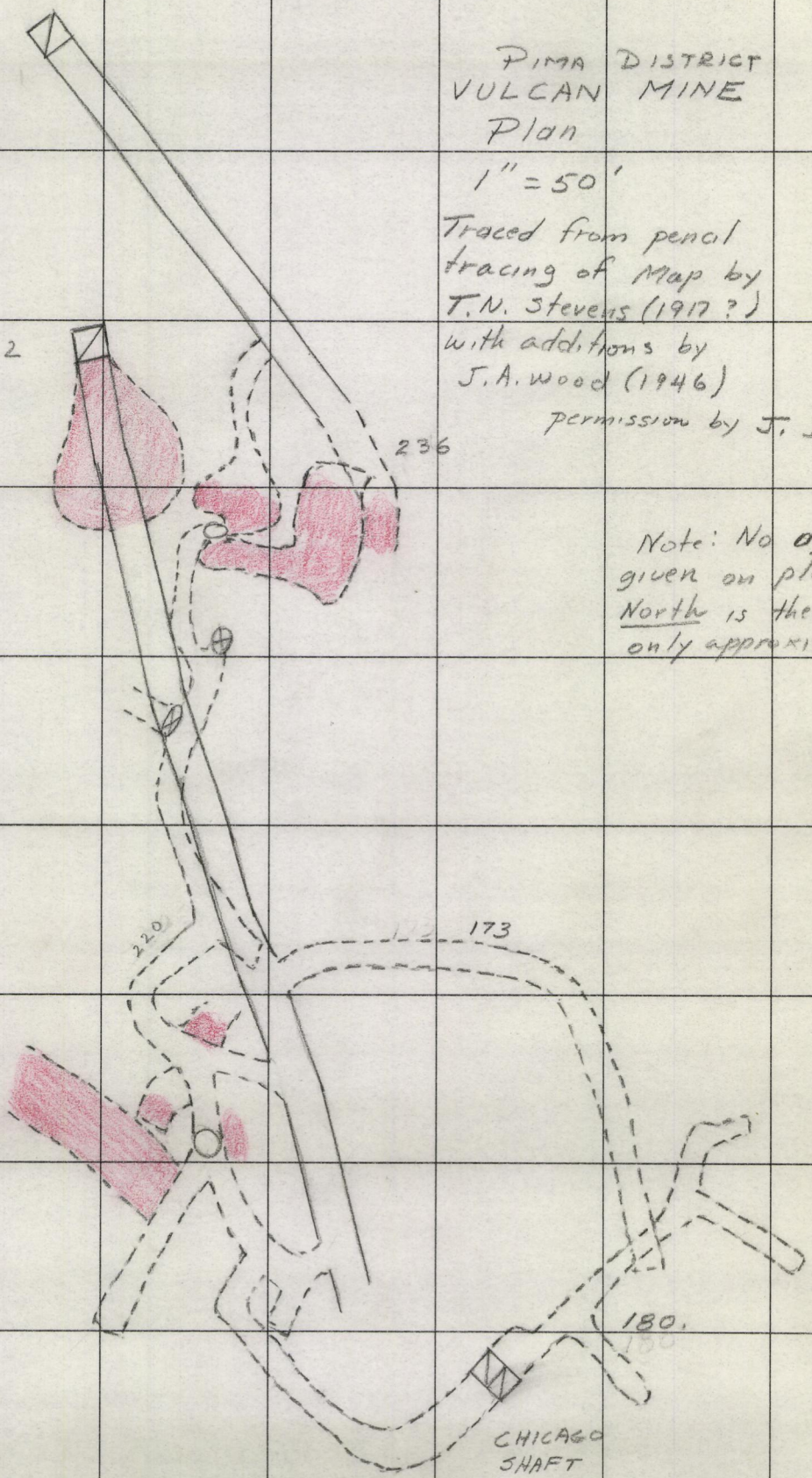
Plate 1

MINE VULCAN LOCATION Pima County, Arizona LEVEL Accessible

GEOLOGY BY _____ SURVEY A.M. Rugg DATE 9-26-57 SCALE 1" = 30'

N _____ E _____ EL. _____

T. N. Stevens
J. A Wood 1946



PIMA DISTRICT
VULCAN MINE
Plan

1" = 50'

Traced from pencil tracing of Map by T.N. Stevens (1917 ?) with additions by J.A. Wood (1946)
permission by J. Irwin

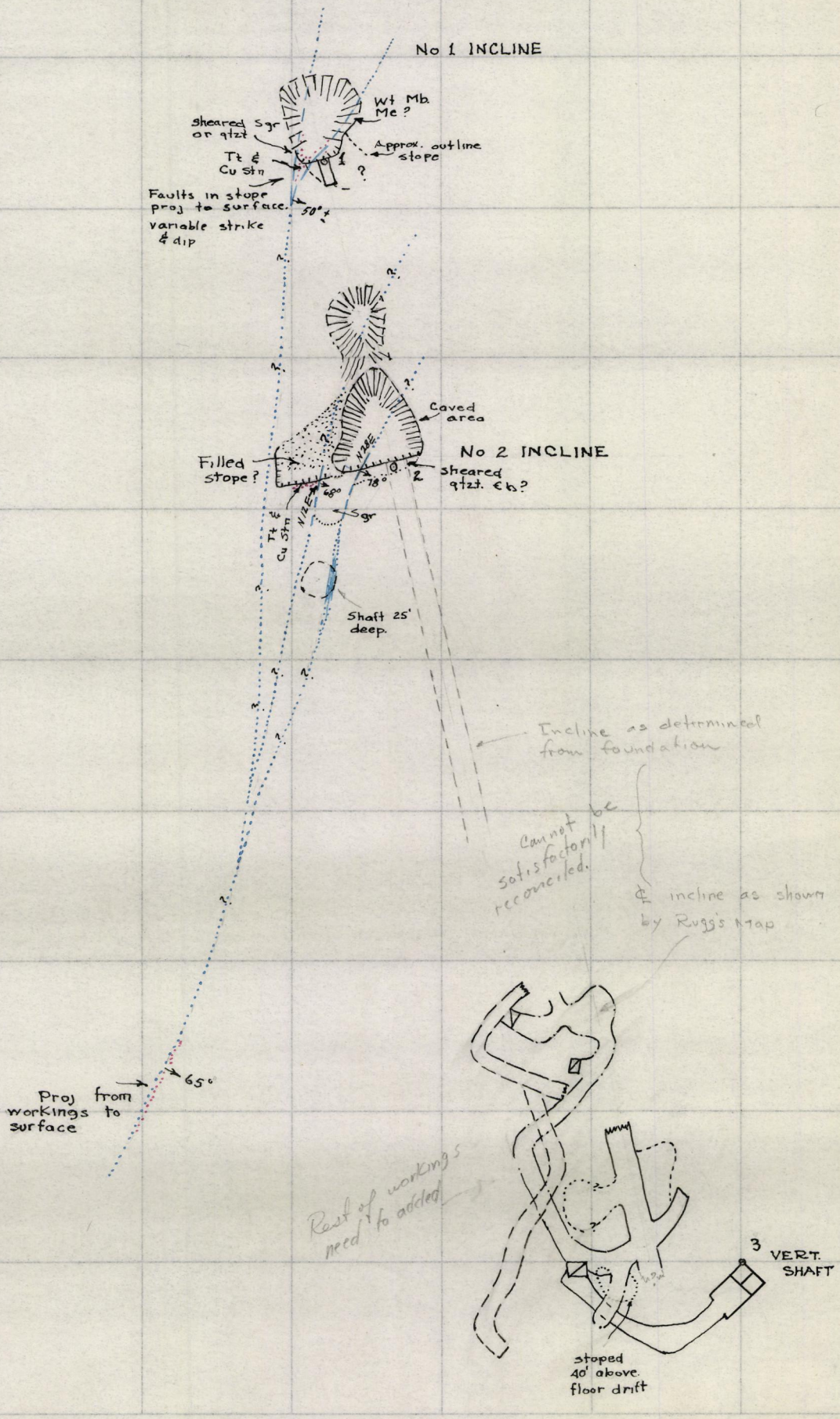
Note: No azimuth given on plan. North is therefore only approximate

No Azimuth Given on Sketch

MINE _____ LOCATION _____ LEVEL _____

GEOLOGY BY _____ SURVEY _____ SCALE _____ DATE _____

Note — Unfinished pending additional info.



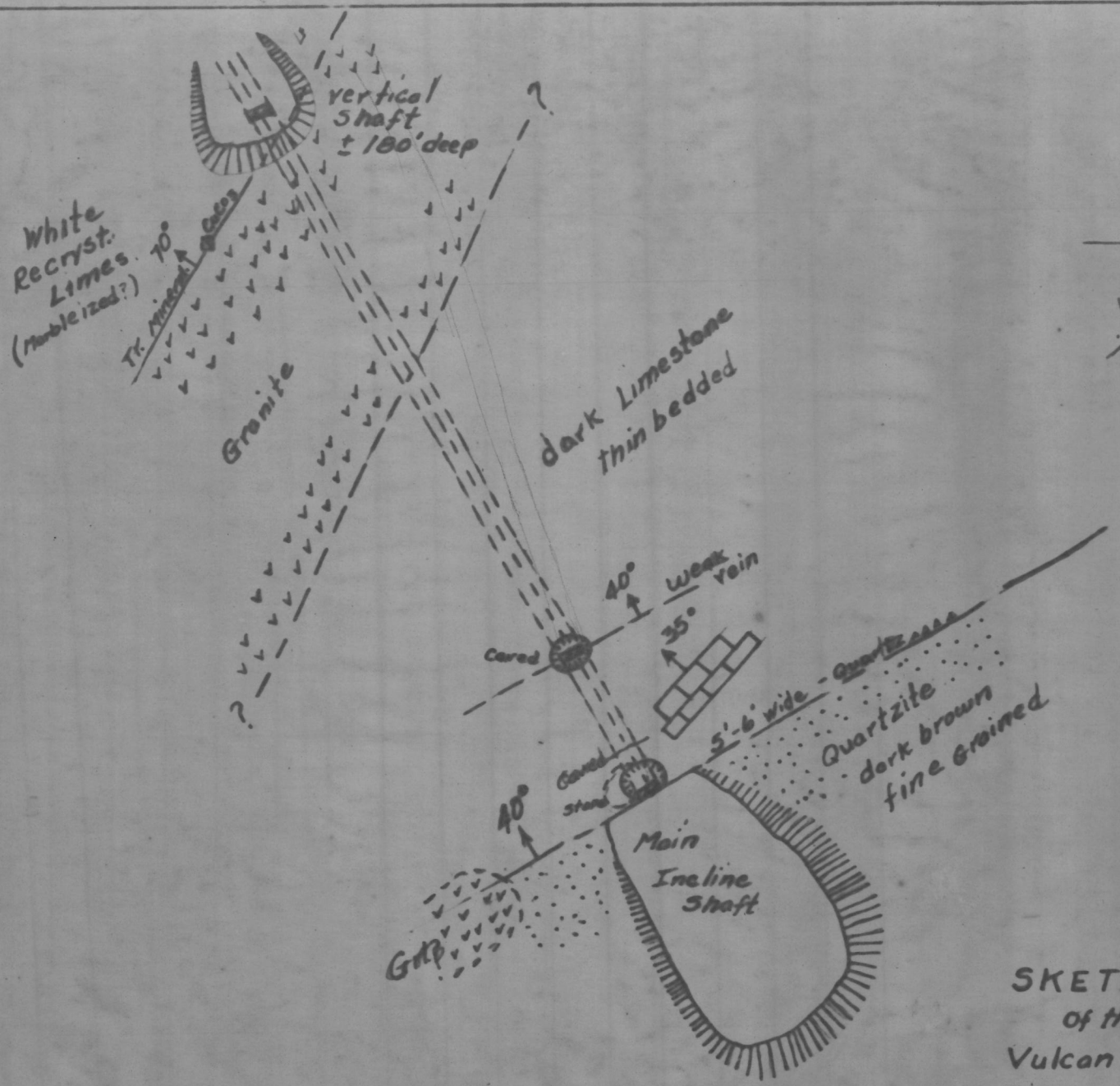
MINE VULCAN LOCATION PIMA DISTRICT LEVEL COMPOSITE

GEOLOGY BY Surface - JEK
Underground - A. M. Rugg

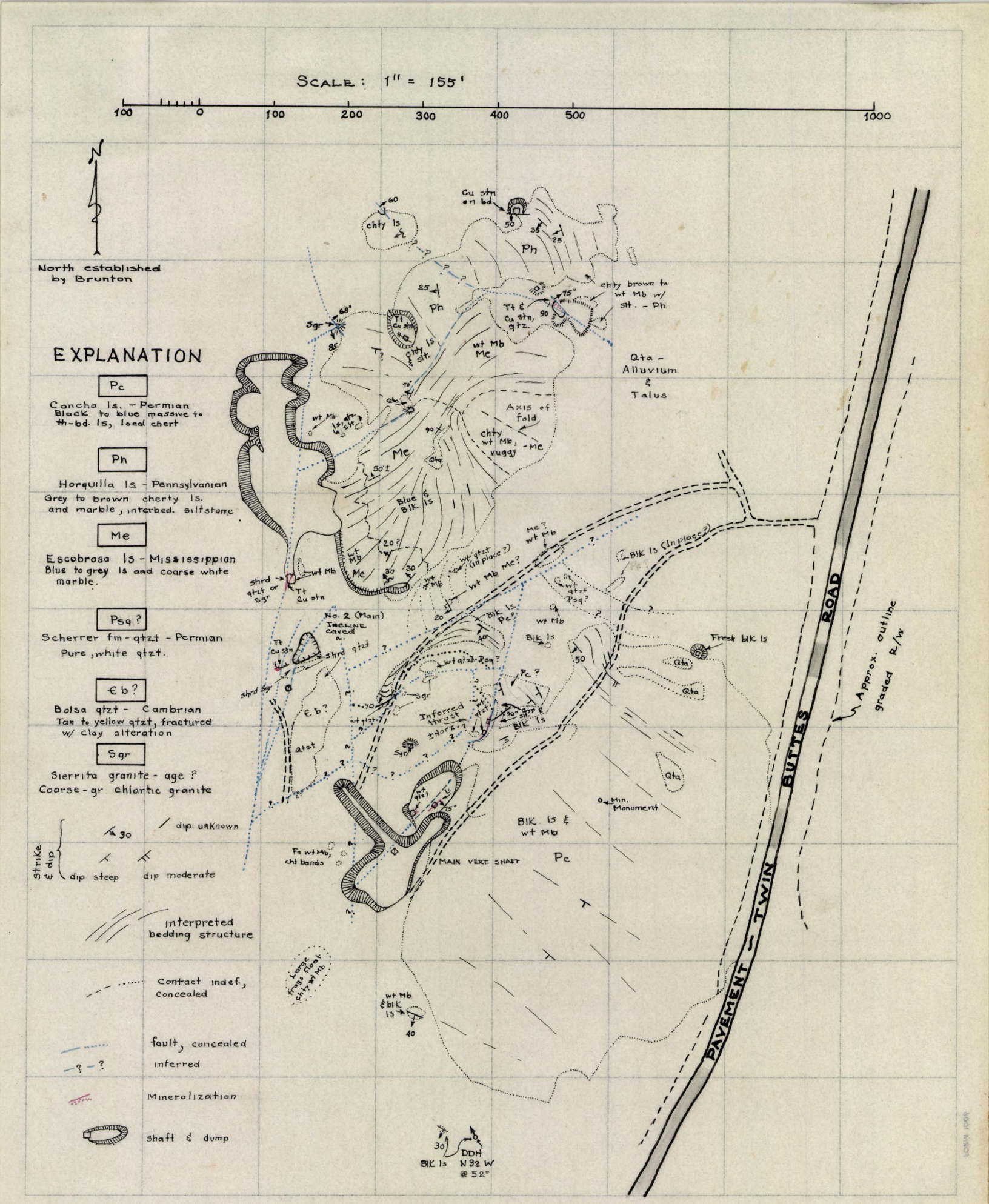
SURVEY Surface - Transit -
Stadia - JEK ; Underground -
Brunton-tape - A. M. Rugg

SCALE 1" = 50'

DATE June 1958



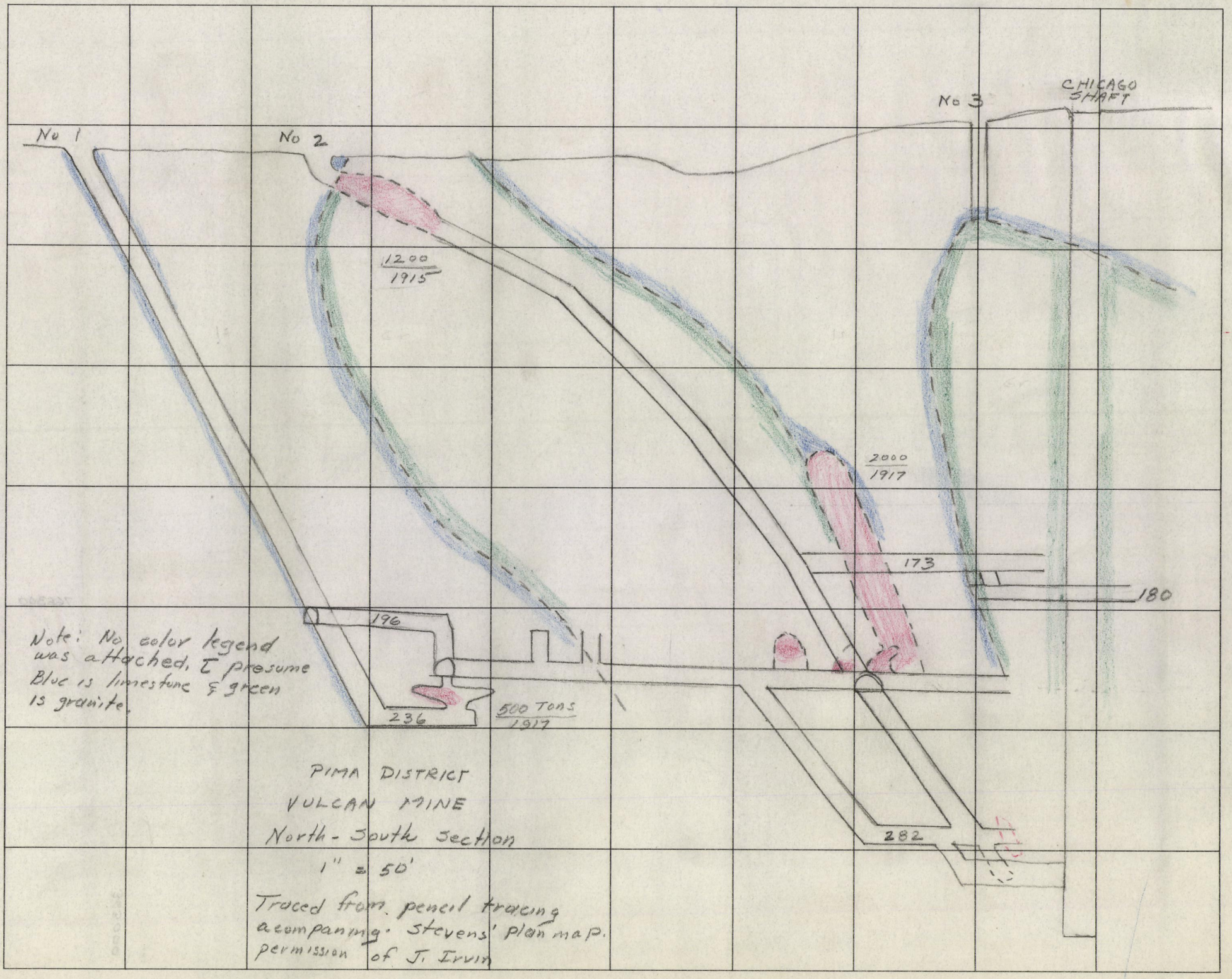
SKETCH MAP
of the
Vulcan Mine
Pima Co. Arizona
Twin Buttes, Dist.
Scale 1" = 100 feet
1-26-44 – C.R.A.



SURFACE GEOLOGY
VULCAN MINE

Mapped on aerial photo., Blanton & Cole No. 5-6; JEK, 1958

MINE ___ GEOLOGY BY ___ SURVEY ___ SCALE ___ DATE ___ LEVEL ___ LOCATION ___



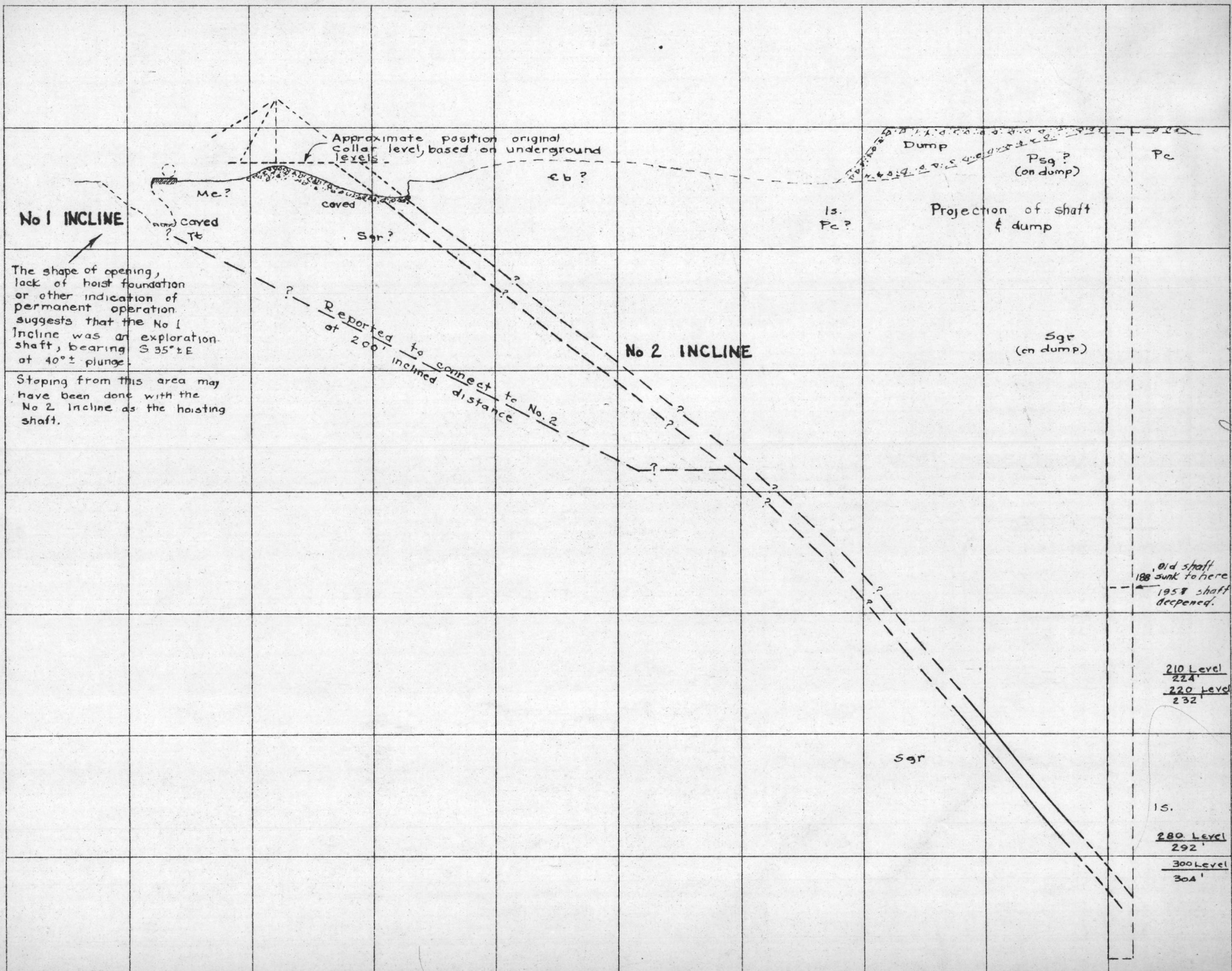
Note: No color legend was attached, I presume Blue is limestone & green is granite.

PIMA DISTRICT
VULCAN MINE
North - South Section
1" = 50'

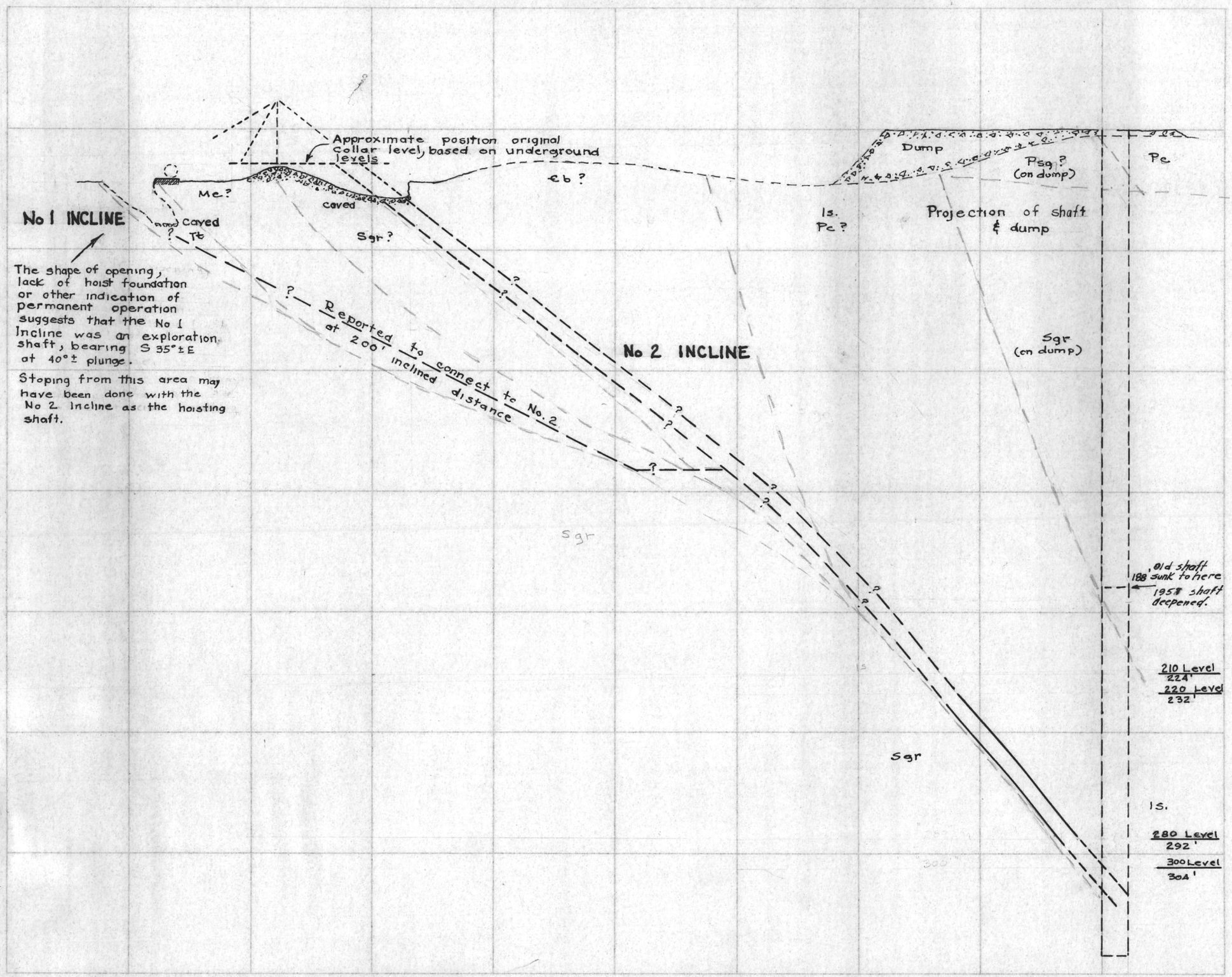
Traced from pencil tracing accompanying Stevens' plan map. permission of J. Irvin

MINE VULCAN LOCATION PIMA DISTRICT LEVEL LONGITUD. SEC.

GEOLOGY BY JEK SURVEY See composite plan SCALE 1" = 60' DATE June 1958



Incomplete



MINE VULCAN LOCATION PIMA DISTRICT LEVEL LONGITUD. SEC.

GEOLOGY BY JEK SURVEY See composite plan SCALE 1" = 50' DATE June 1958

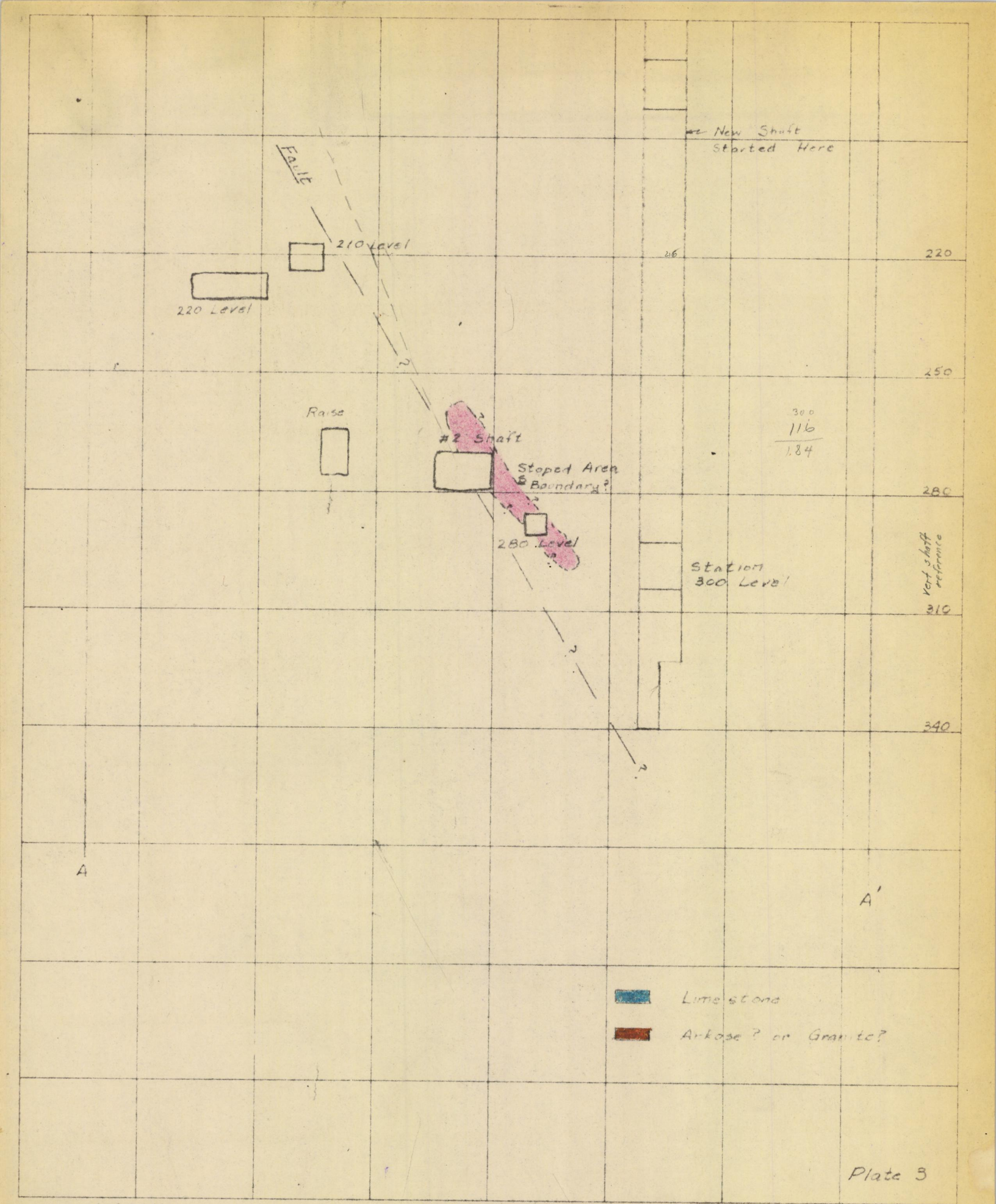


Plate 3

MINE VULCAN LOCATION Pima County, Arizona LEVEL Section A-A'

GEOLOGY BY A. M. Rugg SURVEY A. M. Rugg DATE 9/26/57 SCALE 1" = 30'

N _____ E _____ EL. _____

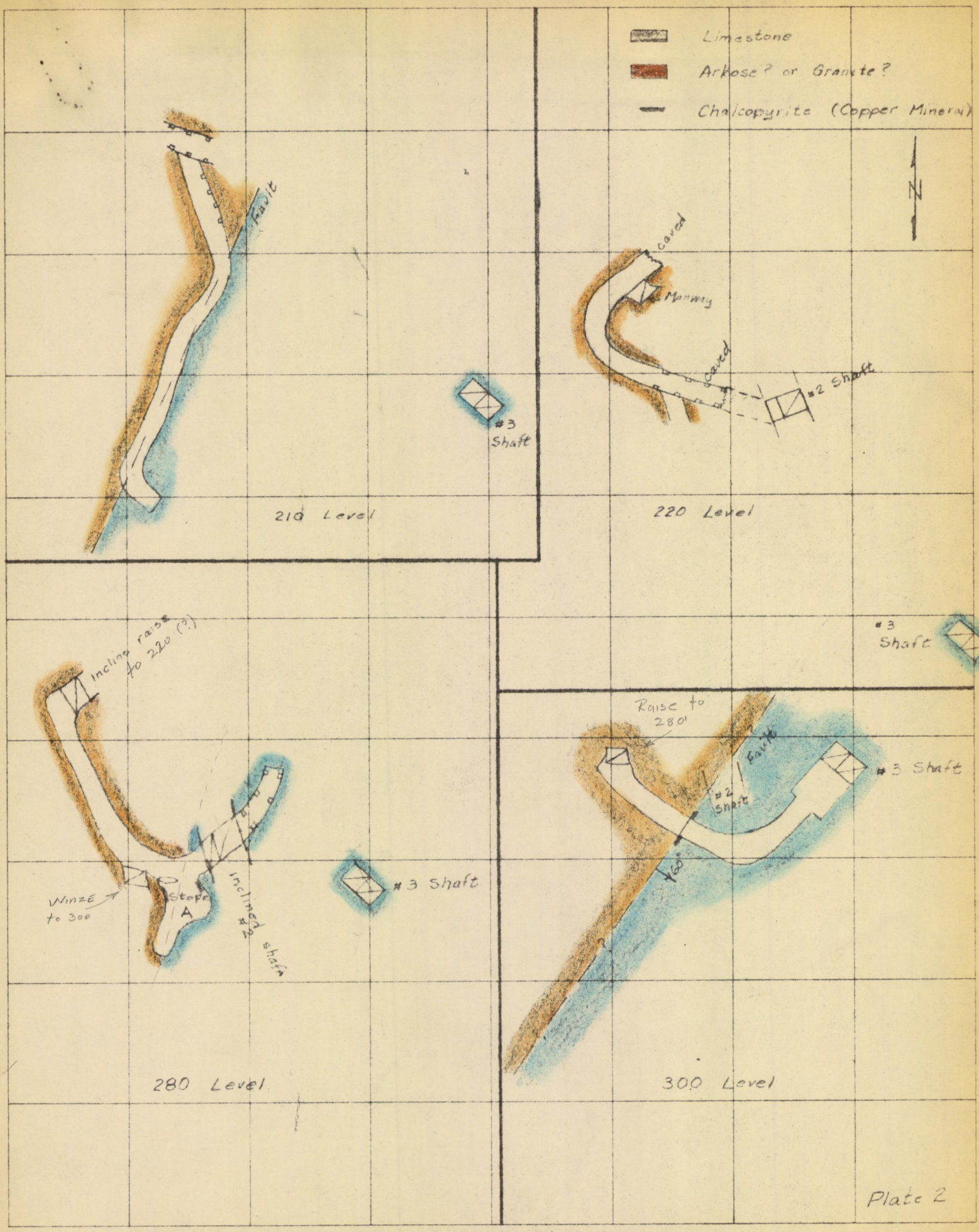


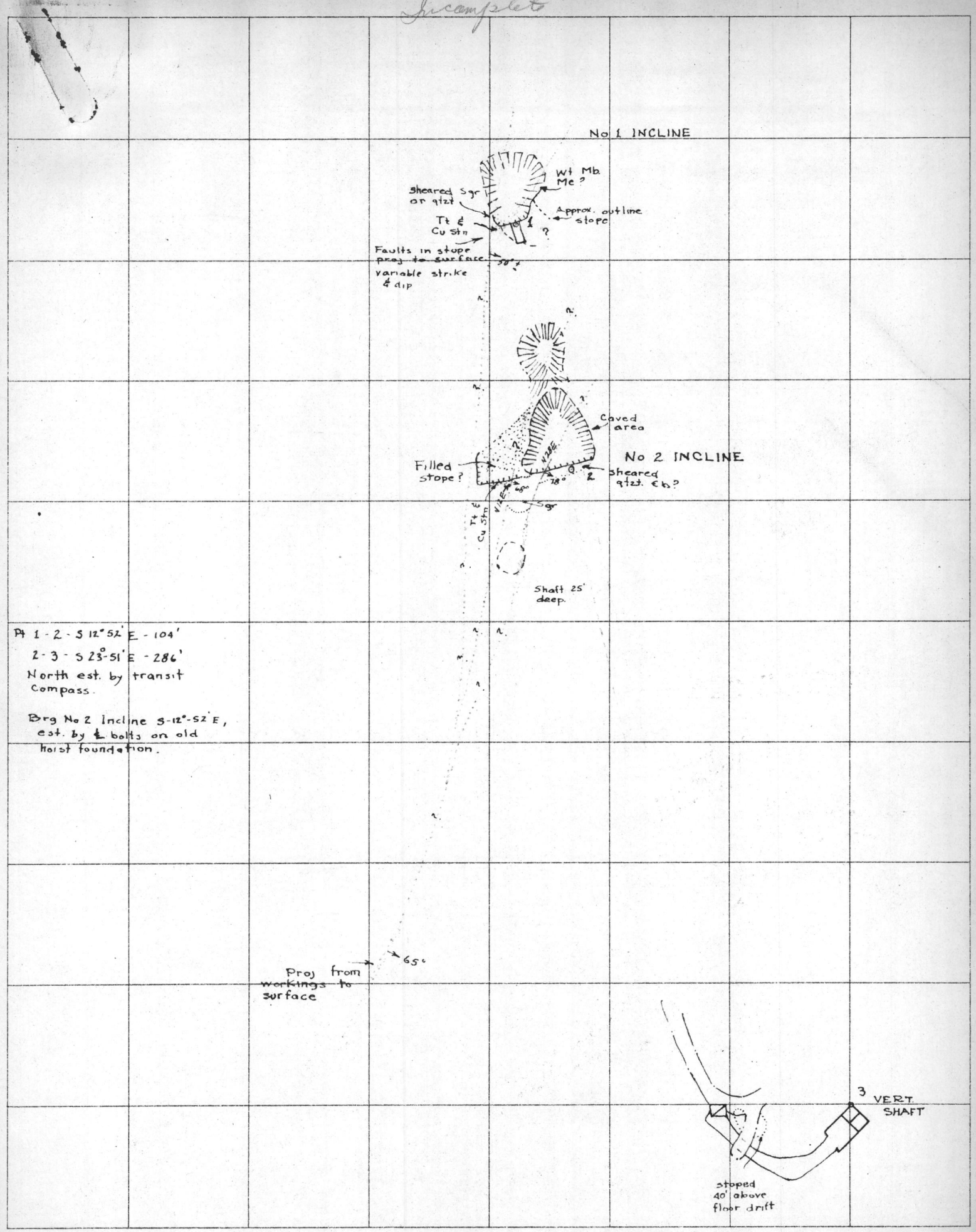
Plate 2

MINE VULCAN LOCATION Pima County, Arizona LEVEL

GEOLOGY BY A.M. Rugg SURVEY A.M. Rugg DATE 9/26/57 SCALE 1" = 30'

N E EL.

Incomplete



Pt 1 - 2 - S 12°52' E - 104'

2 - 3 - S 23°51' E - 286'

North est. by transit compass.

Brg No 2 incline S-12°-52' E, est. by ℄ bolts on old hoist foundation.

MINE VULCAN LOCATION PIMA DISTRICT LEVEL COMPOSITE

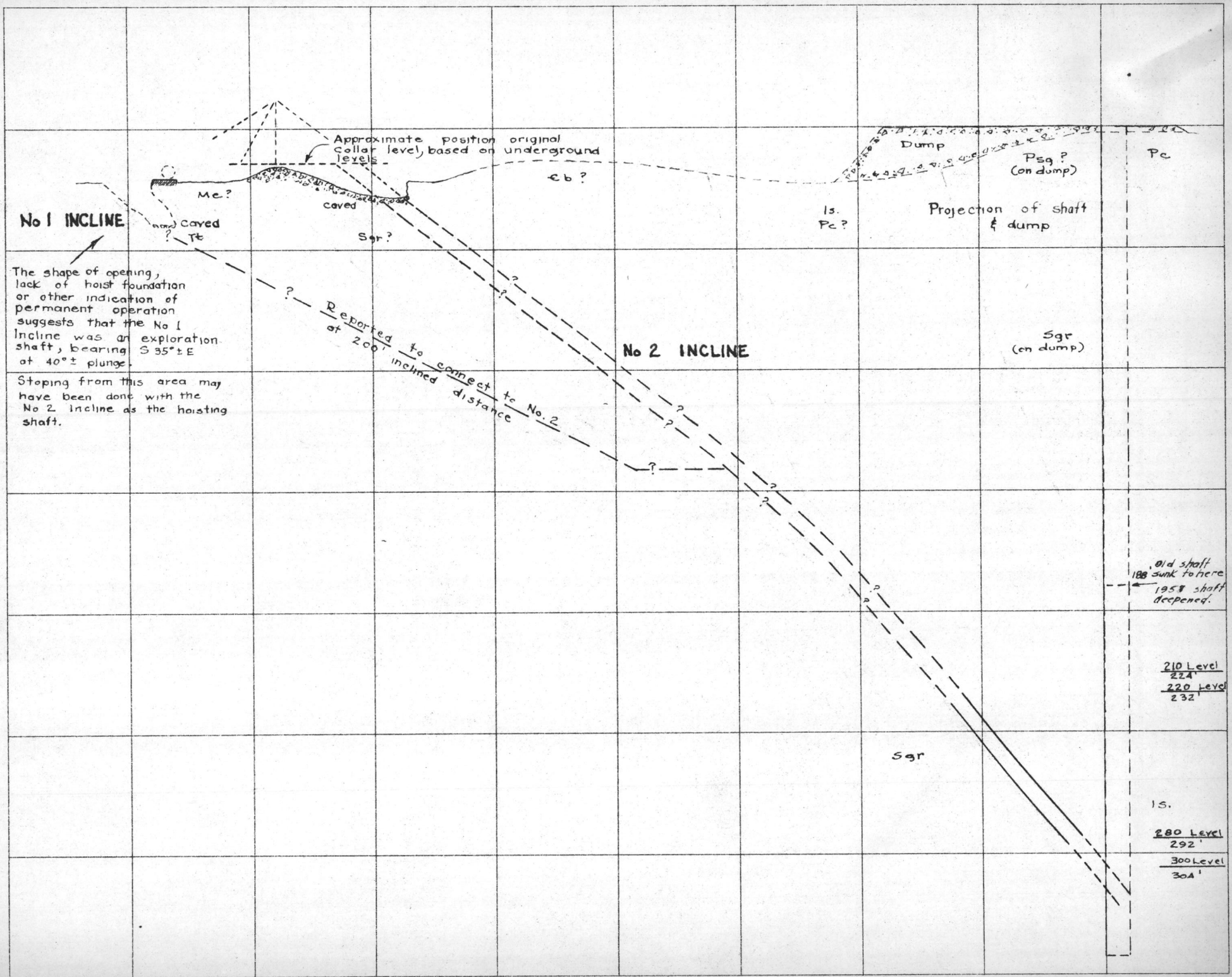
GEOLOGY BY Surface - JEK SURVEY Surface - Transit - SCALE 1" = 50' DATE June 1958

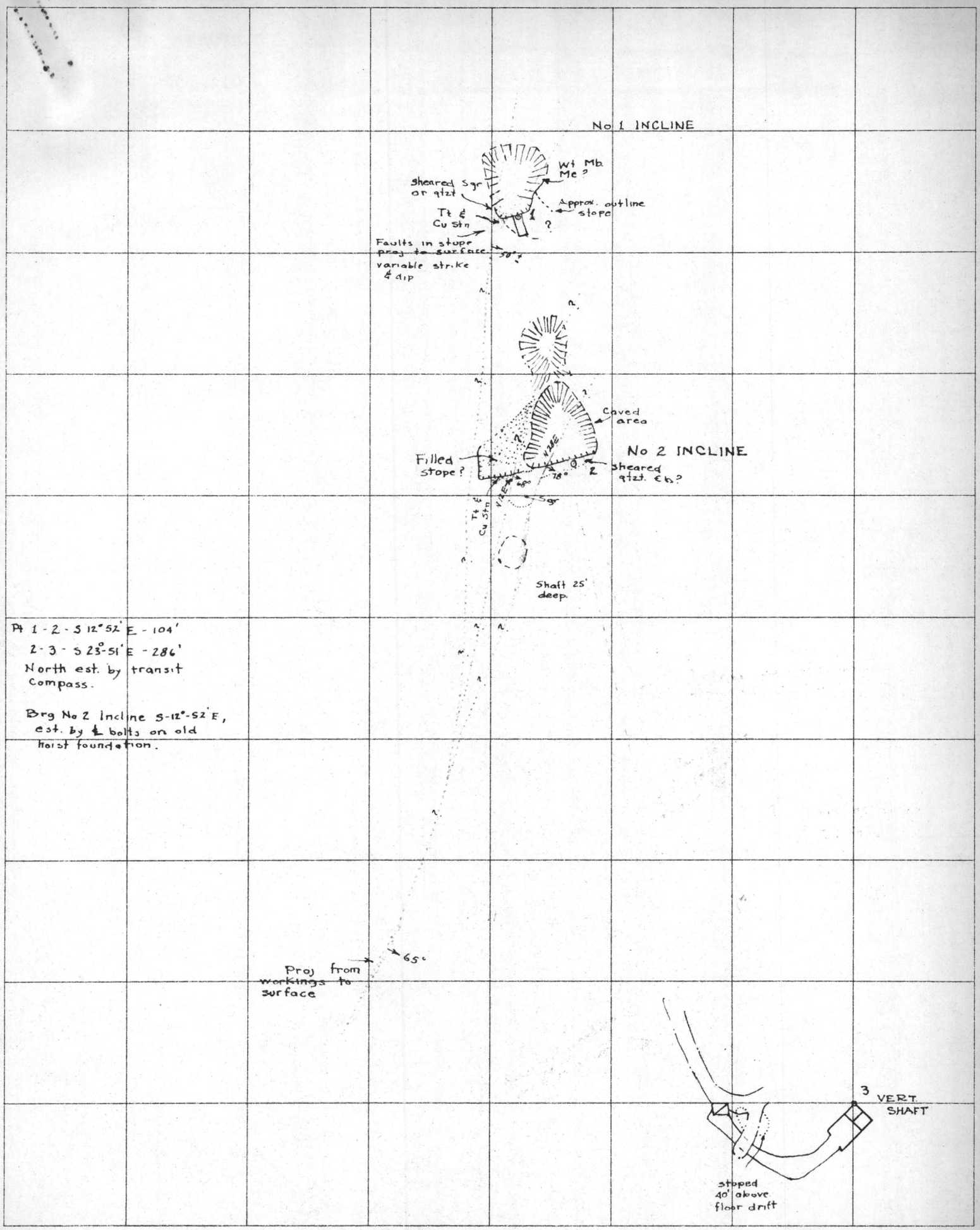
Underground - A. M. Rugg

Stadia - JEK; Underground - Brunton-tape - A. M. Rugg

MINE VULCAN LOCATION PIMA DISTRICT LEVEL LONGITUD. SEC.

GEOLOGY BY JEK SURVEY See composite plan SCALE 1" = 50' DATE June 1958

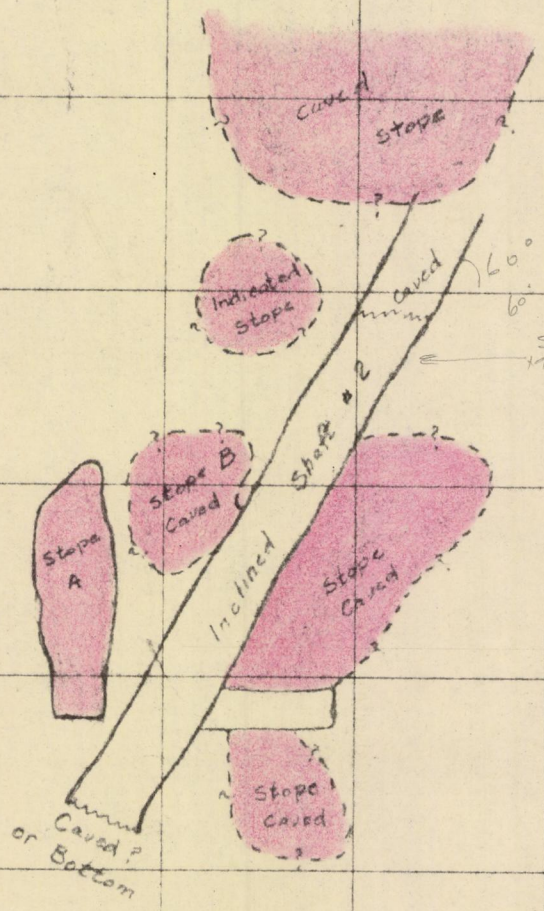




MINE VULCAN LOCATION PIMA DISTRICT LEVEL COMPOSITE

GEOLOGY BY Surface - JEK SURVEY Surface - Transit - SCALE 1" = 50' DATE June 1958

Underground - A. M. Rugg Stadia - JEK ; Underground -
Brunton-tape - A. M. Rugg



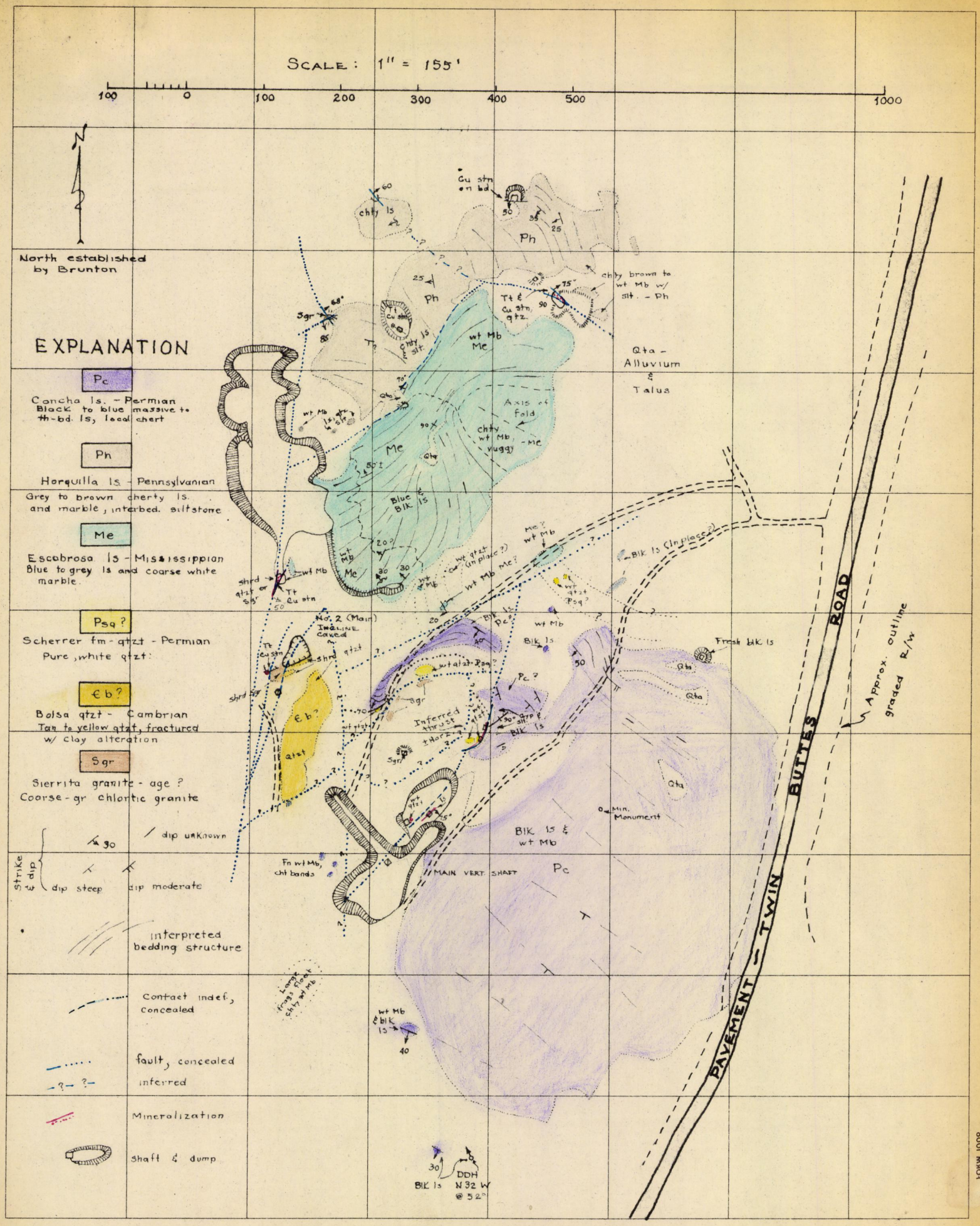
SECTION IN PLANE OF FAULT SHOWING STOPED AREAS

Plate 4

MINE VULCAN LOCATION Pima County, Arizona LEVEL

GEOLOGY BY SURVEY A.M. Rugg DATE 9/26/57 SCALE 1" = 30'

N E EL



SURFACE GEOLOGY
VULCAN MINE

Mapped on aerial photo., Blanton & Cole No. 5-6; JEK, 1958

SKETCH (FROM MEMORY) OF PIMA'S MAGNETIC CONTOUR MAP

35 | 36
2 | 1

1250 Gammys

PIMA MINE

PROPOSED DRILL HOLE LOCATIONS

MINERAL HILL MINE

PIMA MINING COMPANY

BANNER MINING COMPANY

UNITED GEOPHYSICAL COMPANY

EAGLE PICHER COMPANY

RED HILL

SAN XAVIER MINE

HELMET PEAK

RANCH

BM 3406

BM 3477

BM 3549

BANNER Co DRILL HOLE

DENSE GRAY HORNFELS

Cu. Ox. VEINS IN BEDDING

Cu. Ox. VEIN

SLAG DUMP

Cu. VEINS

GYPSUM

PROSPECT SHAFT

DRILL HOLE

SUBOUTCROP OF ORE ZONE UNDER 200' OF GRAVEL

CRETACEOUS SANDSTONE CONTACT

Alpha Shaft

265'-268' TR. Cu.
275'-280' 1.0% Cu
(IN ALTERED ARKOSE)

202'-228' 2.18% Zn, 1.68% Cu
(IN ALTERED ARKOSE)

214'-228' 0.31% Cu.
(IN ALTERED ARKOSE)

No Assays
(IN ALTERED ARKOSE)

CHRYSOCOLLA VEIN

OUTCROP OF ALTERED ARKOSE WITH SPARSE DISSEMINATED LIMONITE AFTER CHALCOCITE

145'-175' 1.34% Cu.
215'-265' 0.33% Cu.
(IN ALTERED ARKOSE)

STRONGLY ALTERED ARKOSE THROUT. SPARSE LIMONITE AFTER CHALCOCITE.

SPARSE CHALCOCITE IN DISSEMINATED PYRITE ON PROSPECT DUMPS

GARNET Cu. Ox.

Cu. Ox. & GARNET

SPARSE OXIDE COPPER IN METAMORPHOSED SHALES & LIMESTONES

GRAR. Is Cu. Ox.

DARK GRAY CHERTY Ls

CREATE BEDS

VULCAN SHAFT

CONTORTED CHERTY Ls

WHITE QTZITE

LIMESTONE BEDDING

DARK Ls

HORNFELS

GRAY SHALE

THIN Ls BED

THIN RED SHALES

SILICEOUS GOSSAN

SHALY GRAY CHERTY Ls

DARK THIN BEDDED Ls

ARKOSE

RED SH.

EPIDOTE & METAMORPHIC Cu.

QUARTZITE

GRAY & RED SS

PURPLE Cg

GRAY SS & RED SHALES

SS & SH

DARK LIMESTONE

RED SHALE

EXPLANATION

AGE		SEDIMENTARY ROCKS
RECENT		Gravel Deposits
CRETACEOUS	Ks	Arkose, cong. shale & quartzite
PERMIAN	Ps	Limestone with minor shale & quartzite
PENN.	Cn	(Naco) Limestone and shale
MISS.	Ce	(Escabrosa) Thick-bedded limestone
DEVONIAN	Dm	(Martin) Limestone
CAMBRIAN	€a	(Abrigo) Thick-bedded limestone
CAMBRIAN	€b	(Bolsa) Quartzite
		IGNEOUS ROCKS
	Gr	Granite - intrusive
	Db	Diabase - intrusive

TOPOGRAPHY ENLARGED FROM U.S.G.S. QUADRANGLE MAP, SCALE 1" = 1 MILE

AMERICAN SMELTING AND REFINING COMPANY

GEOLOGIC PLAN OF PIMA MINING DISTRICT

PIMA COUNTY, ARIZONA

J.H. COURTRIGHT, B.S. HARDIE & P.I. EIMON

SCALE: 1" = 500'

SEPT. 1953

MAP NO. 1218

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

March 30, 1960

FILE MEMORANDUM

PAYMASTER MINE- Pb-Ag
Pima District, Arizona

Through arrangement by R. Welch, I briefly examined the reopened workings at the old Paymaster Mine, 3/3/60, guided by Fred Durazzo, Superintendent, and Tom Nye, geologist. The Sunrise Mining Co. has entered the old No. 6 shaft to 140' level (inclined dist.) and explored 3 veins.

The main vertical shaft is under water at 50'; the No. 6 inclined shaft, which I inspected, lies 1800' N18°E of the vertical shaft, and is dry.

Original plans were to open the vertical shaft to the granite contact reported by Ransome at 300', where W. C. Lacy (consultant geol. for Sunrise) theorized a possibility of ore. This plan was abandoned in favor of cheaper development at the present site, where a drill hole had intersected a thin lens of Pb-Ag ore.

A sketch of the workings is attached. The veins consist of brecciated zones 1-6' wide, altered to clay and serpentine minerals, which strike about north and dip steeply east. The host rock is Silver Bell formation (andesite breccia). Sulphides are galena, sphalerite, chalcopyrite, pyrite, and tetrahedrite (reported - Lacy). Oxidation extends to 30 feet (reported). The sulphides occur both as sparse disseminations and as widely separated lenses, 4-6 inches wide, of solid sulphide. These lenses of high grade have been on the order of 10 to 20 tons at a maximum. Lacy reports the veins to contain about $12 (mostly silver) over most of their length, and proposes that this value will more or less pay for the cost of prospecting for high-grade shoots. Our files show past shipments of small tonnages containing as much as about 40% Pb, 70 oz Ag, 15% Zn, and 3% Cu.

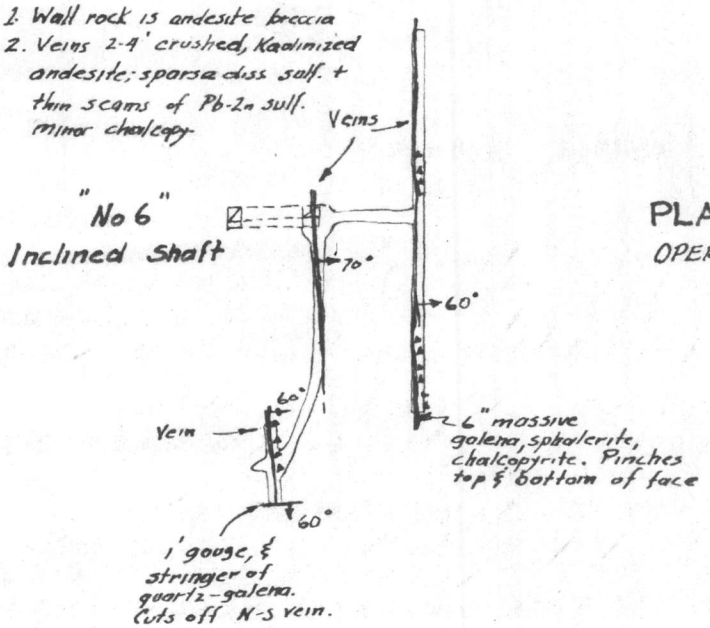
Most of the brecciation is pre-ore, as shown by many seams of sulphide which form tight mineral-contacts with altered breccia. Numerous post-ore faults follow the plane of the veins; the displacement is not known but may be small.

Our files show that past production of rich Pb-Ag ore ammounted to small tonnages, perhaps hand-sorted. The work by Sunrise has developed nothing better.

JOHN E. KINNISON

cc: RWelch
KRichard

1. Wall rock is andesite breccia
2. Veins 2-4' crushed, Kaolinized andesite; sparse diss sulf. + thin seams of Pb-Zn sulf. minor chalcopy.

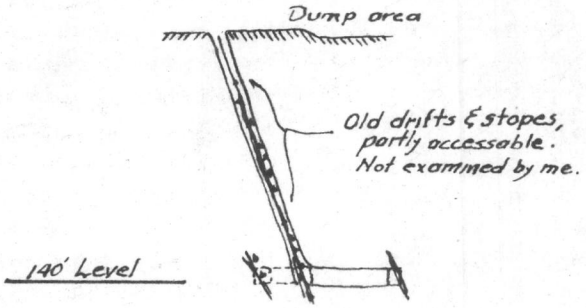


N

PLAN 140 LEVEL

OPERATED BY SUNRISE MINE CO.

Distances estimated
March 3, 1960
visit by J. Kinnison



VERTICAL PROJECTION

→ E.

SKETCH MAP
PAYMASTER MINE
No. 6 SHAFT
PIMA DISTRICT
1" = 100' Scale