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8/3/83

Memo To : File

From : D.S. Wronkiewicz

Subject : Castle Dome Submittal

Approximately 1 1/2 hours ~~were~~ spent sampling and examining the Castle Dome Submittal on 3/5/83. An attempt was made to reproduce Messrs. Renn and Sullivan's two anomalous Au jasperoid values of 1.062^{ppm} (#3701) and .150 ppm (#2124). Although jasperoidal outcrops were wide spread throughout the area, the owners of the property failed to turn up any other interesting values, so no attempt was made to further reproduce any of their ~~values~~ assays. Results of NICOR sampling are as follows:

Sample #	owner's Locality	Au ppm	Ag ppm	As ppm	Sb ppm
G594	#3701	.02	.4	70	8
G595	#2124	<.02	.4	90	8

My samples failed to reproduce the assays of the prospects owners. No further work is recommended.

CASTLE DOME PROSPECT REPORT

December 29, 1982

Richard M. Renn - Clay Sullivan
Minerals Geologists

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CASTLE DOME PROSPECT

INTRODUCTION

The Castle Dome Prospect is a disseminated gold prospect located in southeastern Arizona in Cochise County, approximately eighteen miles north of the town of Douglas, Arizona (Figure 1). The prospect is situated in a southern extension of the Swisshelm Mountains in Township 21 South, Range 28 East, Sections 20, 21, 28 and 29. The property is best accessed either from McNeil, Arizona on Route 666, where a county maintained dirt road leads to the east for approximately eleven miles and the prospect area or a route directly north from Douglas on another county maintained paved and dirt road for about eighteen miles.

Topographically, the Castle Dome Prospect lies in a valley of moderately rolling hills, bordered on the northeast and southwest by high ridges (Figure 2). The prospect is bounded on the southeast by rougher terrain and the Castle Dome, for which the property receives its name. Elevations range from a low of 4,600 feet to 5,000 feet in the valley to over 5,300 feet on the ridge tops. Vegetation in the prospect vicinity consists of range grasses, grease brush, cat claw and a variety of cacti, including yuccas, prickly pear and cholla.

LAND STATUS

The Castle Dome Prospect consists of 413 acres that underlie twenty unpatented, lode mining claims, collectively referred to as the Rimar Claims (Plate I). In the immediate area, only 120 acres are privately



FIGURE 1. STATE MAP OF ARIZONA WITH CASTLE DOME PROSPECT LOCATION

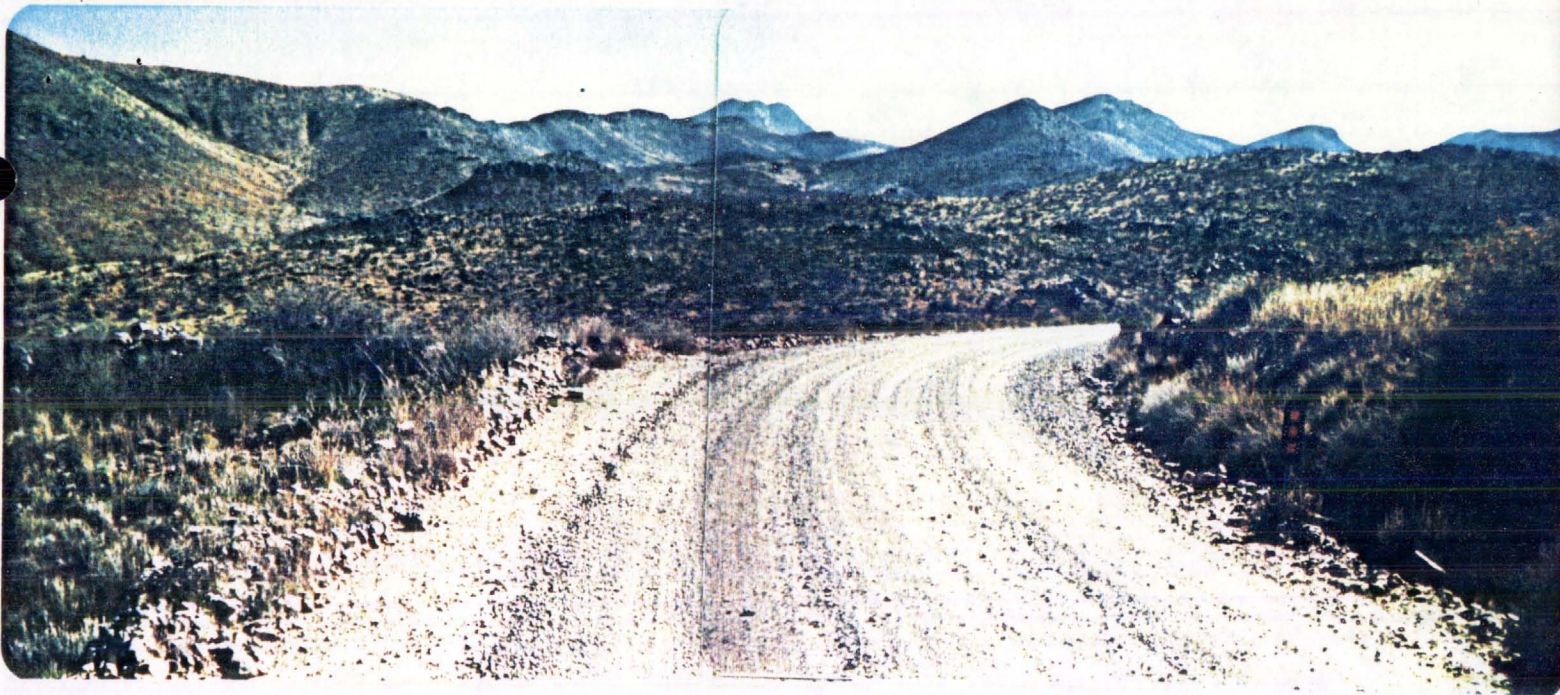


FIGURE 2A. CASTLE DOME PROSPECT SHOWING
GENERAL TOPOGRAPHY AND STRONG
JASPEROID DEVELOPMENT (DARK
COLORED OUTCROPS IN CENTER OF
PHOTO). VIEW LOOKING SOUTHEAST



FIGURE 2B. VIEW EASTWARD OF NORTH-CENTRAL
PORTION OF PROSPECT. NOTE JASPEROIDS
IN FOREGROUND

owned, separated into two parcels of forty acres and eighty acres. The remainder of the area is under federal and state control and is still open for location at the time of writing. At present, the land is used for grazing a few head of cattle by local ranchers.

STRATIGRAPHY

Rocks exposed in the vicinity of the Castle Dome Prospect range from Devonian to Quaternary in age (Figure 3). The oldest rocks exposed in the prospect area are those of the Swisshelm Formation, which is a \pm 400 foot thick interbedded mixture of Devonian thin-bedded grey limestone, brown dolomite, quartzite, quartz sandstone, shale and marlstone (Drewes, 1981). The Swisshelm Formation represents the primary potential host for precious metal mineralization in the system because of its proximity to the surface, thin-bedded nature of the units and high degree of silicification and alteration. By far the most prevalent time-rock unit, this formation outcrops on the property, covering approximately 80% of the Rimar claim block. Thin-bedded sections of the Swisshelm Formation are exposed in numerous locations on the prospect but occur primarily in the eastern and central portions. Figure 4 illustrates the thin-bedded nature of two such exposures in the Swisshelm Formation on the Castle Dome Prospect. In Figure 4B, thin-bedded limestones exposed in a sixty foot cat-cut, are seen to be argillically altered and heavily iron-stained and a fire assayed sample (#3701) taken from this trench resulted in a 1.01 ppm gold anomaly (sample results are summarized in Table I). This formation hosts nearly all the jasperoid development and silicification on the property. Figure 2 shows, in part, the high degree of silicification (jasperoids), which has developed.

Conformably overlying the Swisshelm Formation is the Mississippian Escabrosa Limestone, which is described as a medium-grey, thick-bedded,

QUATER.

TERTIARY

PENNSYLVANIAN
HORQUILLA
LIMESTONE

MISSISSIPPIAN
ESCABROSA

DEVONIAN
SWISSHELM

Volcanic sequence consisting of
rhyolite and tuffaceous sandstone
and conglomerate

Thin-bedded to massive cherty
limestone intruded by Tertiary
jasperoids

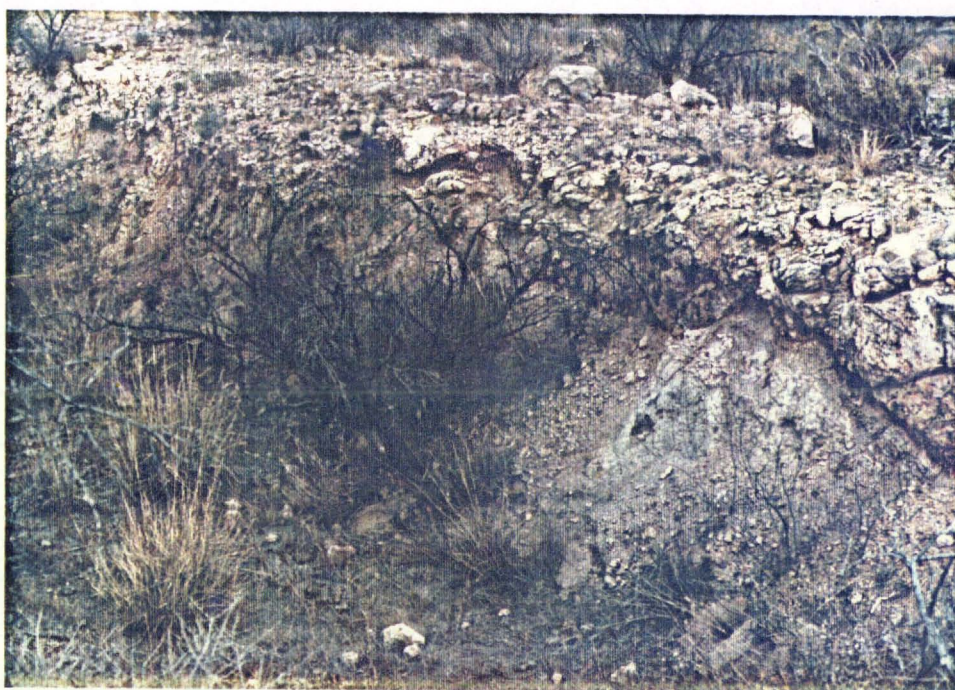
Massive, cherty and
fossiliferous limestone

Sedimentary sequence con-
sisting of interbedded
sandstone, quartzite, shale,
dolomite, marlstone and
thin-bedded limestone

FIGURE 3. GENERALIZED STRATIGRAPHIC COLUMN



A.



B.

FIGURE 4. THIN-BEDDED UNITS OF SWISSHELM FORMATION
ON CASTLE DOME PROSPECT. LOWER PHOTO SHOWS
MATERIAL SAMPLED FROM CAT-CUT, WHICH RESULTED
IN A 1.01 GOLD ANOMALY

bioclastic to crinoidal limestone that contains scattered, dark-grey chert nodules (Drewes, 1981). It is typically responsible for steep slopes and cliffs and on the Rimar claims, is no exception, providing the cap rock for the two most prominent hills on the property.

The middle to upper Pennsylvanian Horquilla Limestone forms the high ridge to the southwest of the claims and is in fault contact with the Swisshelm Formation on the claim block. Drewes (1981) describes the Horquilla as a thin-bedded to moderately thick-bedded limestone, light-grey to pinkish-grey and cherty, typically 1,300 feet to 1,500 feet in thickness. Thin-bedded portions of the Horquilla occur near the fault contact with the Swisshelm Formation, as reported by Drewes (1981), and could represent a secondary drill target for precious metal mineralization.

Comprising the hills and ridges, which border the property on the northeast, are lava flows, tuffs and crystal-rich welded tuffs and sedimentary tuffaceous sandstones and conglomerates.

STRUCTURE

In the Castle Dome Prospect area, homoclinally northeastward dipping, Paleozoic strata were cut by at least two types of major faults, each with a history of possible multiple movement (Drewes, 1981). These two distinctly different, contemporaneous types of faulting are: a series of northeastward dipping thrust faults and a northwestward trending, complex fault system. The apparent system most responsible for acting as a conduit for the upward migration of mineralizing fluids in the prospect area, is the complex fault system formally referred to as the Leslie Canyon fault zone. New evidence reviewed by Drewes, indicates that both the thrust faults and the Leslie Canyon fault system were active during Laramide time and that during

time a major phase of movement on the Leslie Canyon fault system occurred after major movement on the thrust faults. It was probably shortly after this pulse of structural development, that siliceous and other mineralizing solutions were introduced into the overlying strata via the Leslie Canyon fault zone. The geometry and the influence of structural control of the faults in this system on the emplacement of jasperoids and the silicification of units in the Devonian Swisshelm Formation (Ds) is illustrated on the geologic and tectonic map (Plate II) and in cross-section AA', which depicts the structure on the northern portion of the claim block. Cross-section AA' also demonstrates how the thin-bedded upper portion of the Horquilla Limestone favorably dips into the partially, silicified fault zone, which enhances the opportunity for fluid migration and mineral deposition in these units.

ALTERATION AND MINERALIZATION

The Rimar claim group covers an area of extensive hydrothermal alteration thought to represent the most active portion of a large fossil geothermal system. Hydrothermal activity in the area was controlled by numerous high angle fault and fractures in the Leslie Canyon fault zone. Hydrothermal fluids also circulated through favorable lithologic units, most notably the Swisshelm Formation. The Paleozoic carbonate and fine-grained clastic host rocks in the area have undergone varying degrees of silicification and argillic alteration.

Prevalent, intense silicification of carbonate rocks along fault zones and favorable stratigraphic units has formed large bodies of both fault controlled and stratabound jasperoid. The jasperoid is typically dense, aphanitic to fine-grained phaneritic, red or brown and displays some type of breccia texture (Figure 5). Matrix supported breccias and grain supported breccias with a high percentage of matrix are common,



FIGURE 5. JASPEROIDS, CASTLE DOME PROSPECT

possibly indicative of boiling and hydraulic fracturing. Silicified fault breccias and pseudo-breccias, developed by passive replacement processes, also occur. Veins of euhedral quartz crystals occur where post-silicification movement has fractured the jasperoid bodies.

Weak to moderate argillic alteration and weak silicification has affected some of the shale and interbedded, thin-bedded limestone units of the Swisshelm Formation. Alteration has bleached and hematite stained the host rocks and in places, destroyed bedding structures (Figure 6). These altered thin-bedded units crop out rarely but are exposed in portions of claims 2, 8, 10 and 12. Limited rock chip sampling has shown the area contains anomalous gold concentrations. Gold values up to 1.0 ppm occur in silicified and argillic altered, thin-bedded shale and limestone.

It should be noted, that most accurate assay results were obtained from the argillic samples when first they were fire assayed, the bead put into solution and assayed with conventional atomic absorption techniques. North American Assay Labs in Tempe, Arizona has done most of the assaying for the Castle Dome Prospect samples.

CONCLUSIONS

With its heavy fault density, high degree of silicification and the development of jasperoids, the presence of thin-bedded units and anomalous gold mineralization, the Swisshelm Formation represents a remarkable potential host for a disseminated gold orebody. Outcropping on the majority of the prospect, there will be no dearth of suitable drill locations. In addition, because of the silicified fault contact with the thin-bedded, upper portion of the Horquilla Limestone, indicating mineralized fluid migration and probable alteration, the Horquilla will represent a secondary drill target.



FIGURE 6. BLEACHED AND HEMATITE STAINED
UNITS OF THE SWISSHELM FORMATION,
CASTLE DOME PROSPECT

TERMS AND CONDITIONS

Three basic conditions exist for the leasing of the Castle Dome Prospect. They are: a front-end bonus, a net smelter royalty, which can be determined on a sliding scale tied to the price of gold and annual advance royalties. If interested, specific payments and percentages can be negotiated by contacting either:

Richard M. Renn
10817 Cielito Lindo, NE
Albuquerque, NM 87111
(505) 292-3899

or

Clay Sullivan
3150 Holcomb Lane
Reno, Nevada 89511

PROSPECT										COUNTY/STATE Cochise Co., AZ									
CASTLE DOME PROSPECT																			
SAMPLE NO.	LOCATION				COL-LEC-TOR	DATE	RESULTS					DESCRIPTION							
	T	R	S	FNL	FEL														
2158	21	28	29	4900	300	RR	12-9-81	Au (ppm)	Ag (ppm)	As (ppm)	Sb (ppm)	Heavily Fe stained jasperoid w/box-work structure(70%)interior is solid, gray to pink(also Fe stained) 10' sample Jasperoid w/ar time, heavy Fe stains (Hem) also has some of the drusy characteristics of Bisbee Queen jasper 50' sample. Thin-bedded limestone, shale & calcareous siltstone, all show some Fe staining and some argillic alteration. Section dips into structure and jasperoid outcrops in vicinity. 100' sample, strike N10°W Dip 48°SW							
								.04	.14	<10	<1								
2159	"	"	28	4900	5000	"	"	.02	.12	<10	<1								
2160	"	"	"	200	4500	"	"	.03	.2	<10	<1								
2161	"	"	"	600	3400	"	"	<0.01	.4	<10	<1	Argillically altered limestone w/Fe staining, 25' sample adjacent to jasperoid some Lim after pyrite in limestone. Jasperoid in a limestone & thin-bedded siltstone, some of the jasper is also thin-bedded due to the nature of the silts, heavy lim & hem also quartz crystals 40' sample.							
2162	"	"	"	1200	2600	"	"	<0.01	.4	<10	<1								
2163	"	"	"	1200	3300	"	"	<0.01	.2	<10	<1								
												Jasperoid 30' sample, heavy Hem & Lim drusy quality looks conglomeratic in spots.							

PROSPECT CASTLE DOME PROSPECT										COUNTY/STATE Cochise Co., AZ									
SAMPLE NO.	LOCATION				COL-LEC-TOR	DATE	RESULTS					DESCRIPTION							
	T	R	S	FNL	FEL														
2164	28	28	29	100	2100	DKB	12-9-81	Au (ppm)	Ag (ppm)	As (ppm)	Sb (ppm)	Clear,lt.gray,lt.-med.red jasper, extremely vuggy w/abund. druzy quartz and strong brecciation. Trace intermit. Fe stain variable.							
								.03	.2	<10	<1								
2165	"	"	"	1500	1500	"	"	<0.01	0.1	<10	<1								
2166	"	"	"	1700	900	"	"	<0.01	<0.1	<10	<1	Higeraded strongly brecciated,lt.gray to red brown jasper. Abund Hem stain in fractures and throughout rock, int. vugs, int. druzy quartz in vugs. Lt.grayish-pink to lt.maroon red. strongly brecciated fractured sampled jasper. Very little druzy quartz if any. Sample taken next to strongly Fe stained limestone and still calcareous only highly altered shale.							
2167	"	"	28	2100	5000	"	"	.08	<0.1	<10	<1	Lt.red,Lt.yellow-brown,some lt.gray, strongly brecciated,vuggy, Hem & Lim stained jasper. Looks like jasper after mudstone or silty limestone, looks very favorable color hues of Alligator Ridge pit samples. Nearby limestone all extremely Fe stained.							
2168	"	"	"	2700	1200	"	"	.03	<0.1	<10	<1	DK.red-brown to orange-brown, massive strongly brecciated,highly Fe stained jasper in and on float sample. Abund. white boxwork jasper mixed in w/strongly Fe stained jasper,white jasper looks opaline. Looks very favorable.							

PROSPECT **CASTLE DOME PROSPECT**

17

GEOLOGIC MAP and CROSS SECTION of the RIMAR CLAIM GROUP COCHISE COUNTY, ARIZONA

AFTER DREWES, 1981

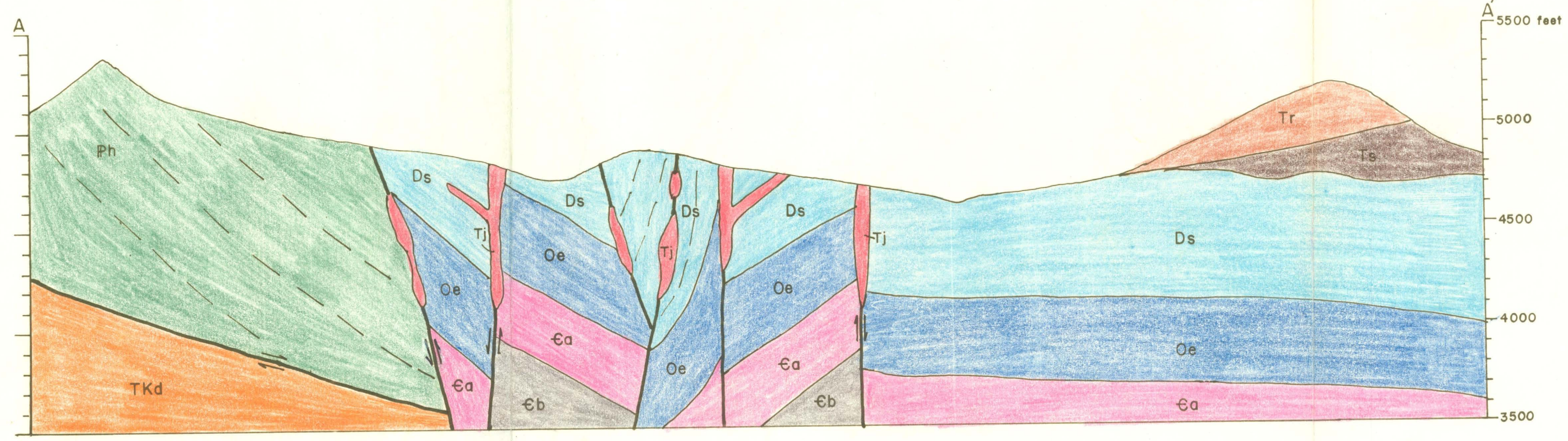
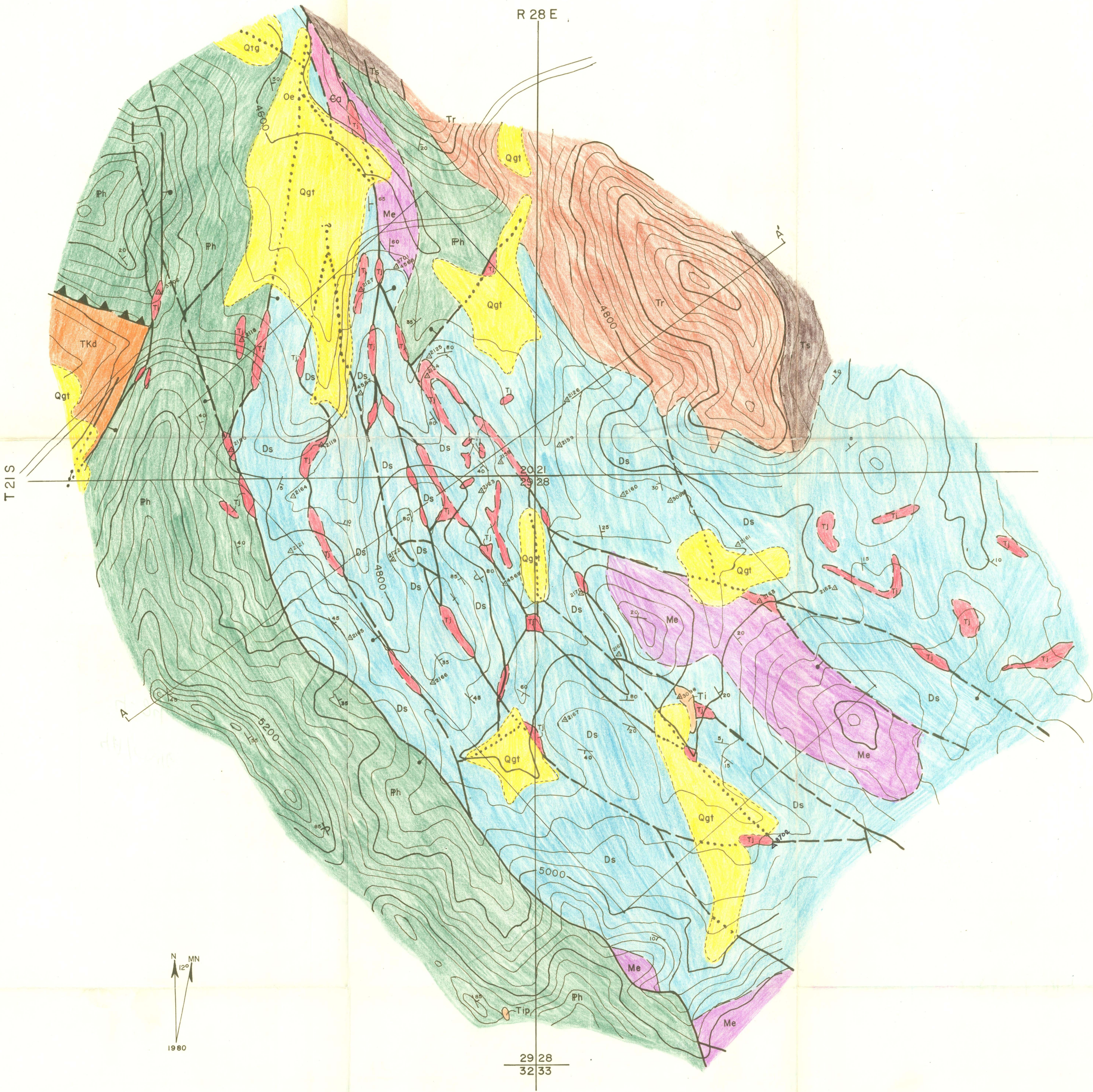
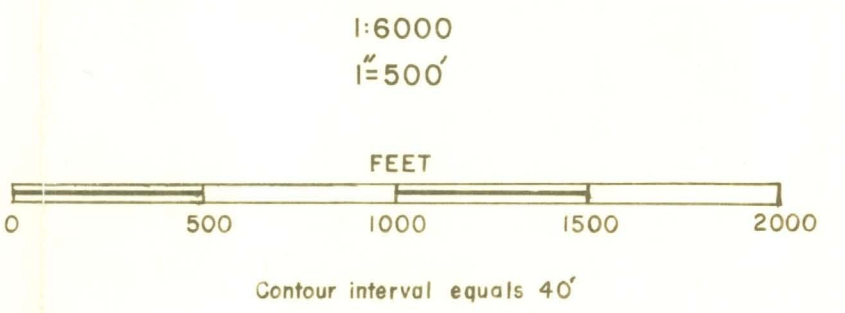
PLATE II

EXPLANATION

- Qgt QUATERNARY gravel.
- Tr TERTIARY rhyolitic and rhyodacitic volcanic rocks.
- Ts TERTIARY tuffaceous sandstone and conglomerate.
- Ti TERTIARY felsic intrusive rock.
- Tj TERTIARY(?) JASPEROID— fault controlled and stratabound, brown, red and white aphanitic and fine-grained phaneritic jasperoid; breccias very common; often cut by veins of euhedral quartz.
- TKd TERTIARY and CRETACEOUS dacitic volcanic rocks.
- Ph PENNSYLVANIAN HORQUILLA LIMESTONE— light grey, thin to thick-bedded limestone and minor dolomite.
- Me MISSISSIPPIAN ESCABROSA LIMESTONE— medium grey, coarse-grained, thick-bedded limestone.
- Ds DEVONIAN SWISSHELM FORMATION— thin-bedded, platy and thick-bedded fossiliferous limestone, brown dolomite, grey shale and sandstone.
- Oe ORDOVICIAN EL PASO DOLOMITE— medium grey limestone and dolomite.
- Ca CAMBRIAN ABRIGO FORMATION— thin-bedded, platy limestone, shale and sandstone.
- Cb CAMBRIAN BOLSA QUARTZITE— thick-bedded sandstone.

- CONTACT
- HIGH ANGLE FAULT
- THRUST FAULT
- STRIKE AND DIP OF BEDDING
- △2170 SAMPLE LOCATION

SCALE



35

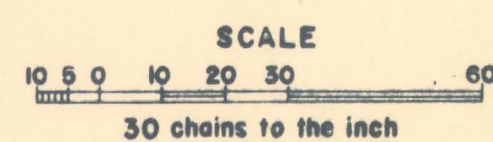
FOR ORDERS EFFECTING DISPOSAL OR USE OF
UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION
MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES
REFER TO INDEX OF MISCELLANEOUS DOCUMENTS.

MDS 829 NE

Robert J Stuart

RECEIVED
B.L.M. AZ STATIONER
APR 1 8 47 AM '83
PHOENIX, ARIZONA

T. 20 S.
R. 27 E.



Lat. $31^{\circ}38'29''$ N
Long. $109^{\circ}32'01''$ W

Swiss helmi

Prospect and Submittal Report

Date: _____

Property Name: EAST SWISSHELM MTNS.

Township: 21S

County, State: Cochise County, Arizona

Range: 28E

Date Examined: _____ By: WSD

Section: 4 W-1/2

Reply and Date: _____

Quadrangle Name: Swisshelms and

AMS Sheet: Pedregosa Mtns. 15'

Summary, Conclusions, Actions Recommended Silicified rhyolite plug with local qtz-veining; one assay of 0.5 ppm Au. Silicified zones in surrounding Paleozoic(?) limestones are intense, some "zebra rock" type alteration. Potential hosts include thrust faults.

Location and Accessibility Good access to windmill within 1/2 mile of area of silicification. Poor access up drainages to prospects.

Owners and Intermediaries, Address, Phone, Zip _____

Property Description, Status Open BLM ground in sec. 4; sec. 3 has surface rights leased by Bar Boot Ranch

Terms _____

Previous Exploration and Production Numerous prospects in intensely veined rhyolite and in jasperoids on margin of intrusive.

General Geology Area of thrustsed Paleozoic sediments intruded by Tert.-age(?) rhyolitic stock.

Geology of Prospect* Large area of silicification and Fe-staining surrounds silicified plug. Much of the plug shows strong flow foliation, small grains of limonite after pyrite. Veinlets and veins to 1' are frequent in parts of plug. Surrounding Pz limestones are silicified and show "zebra" rock type replacement phenomena.

Mineralization* (Primary and Secondary) Restricted to qtz-veining with minor limonite after pyrite, silica-stockwork veining locally, jasperoid and zebra-rock replacement. Soem barite was observed as float but could not be found in place.

Geochem Results Jasperoids, zebra-rock were barren of Au, Ag. 0.5 ppm Au from rhyolite, where silicified at hilltop (prospect pit).

Exploration Recommended Thrust contacts up hill from rhyolite should be investigated for further potential.

Attachments Map

References Drewes, Harald

* Attach geologic map, sketch or otherwise, including examiner's observations with emphasis on mineralization and alteration and their relationships to other geological features. Other desirable attachments: Location map, property map, sample results, etc.

ALBUQUERQUE GEOCHEMICAL
1000 Grove St. N.E.
Albuquerque, N.M. 87110
(505) 266-6713

DATE October 8, 1983

FOR Nicor

DATA SHEET

SAMPLE NO.	PPM GOLD	PPM SILVER	PPM COPPER	PPM LEAD	PPM ZINC
K- 601	.05	2.6			
602	*	1.6	Mex Hnt Mtn.		
603	*	<.1			
604	*	<.1			
605	.08	3.0			
606	1.2	4.5			
607	.03	0.80	Winchester Mtns.		
608	.06	<.1			
609	*	<.1			
610	.10	<.1			
611	.51	2.4	Ray Pipe		
612	*	1.2			
613	*	<.1			
614	.06	<.1	E. swishelms		
615	*	0.2			
616	.86	0.2			
617	*	<.1			
618	*	0.2			
619	.05	<.1			
620	*	<.1	Geronimo		
621	*	<.1			
622	.03	<.1			
623	*	<.1			
624	.07	<.1			
625	*	0.2			

* less than 0.01 ppm

Great America Mtn

Swisshelm Mts dist - Sec. 12 T20S R27E
Sec. 12, 13, 14

Dos Cabezas - Sec 29, 30 T 14S, R 28E

No claims on file

Texas Gulf Army 1-29 claims Case Closed 1987

Sec 30-31-33
SW 1/4 NW 1/4 all 1/4 2 claims self sec 3
No Assessment
South Pass Dragoon Sec 15, T19S, R24E

Sec 14 all ~ 30 claims independent groups - Most Not assessed some that 12

Sec 23 w/ Dan Christensen 10 claims assessed through 1982

28th

Bisbee

6586

Ag 15.47 ac/hr

Swisshelm Mts

T20S R27E Sec 1 BLM

MMN Mtns Pastor SW 1/4 3 claims assessed through 1982
Inspiration King 37-48 Last assessed 1980
- Gen Min of America 10 claims 1981 assessed through 1982
Freepoint 45-48 Stated 1982 split into Sec 2

2 State Section

3 State Section

10 State Section

11 State Section

12 BLM - MMN 14 claims through 1982
- Gen Min of America 2 claims NW 1/4 assessed through 1982
Stewart Robert with claims 1981 - Not assessed
Stewart Robert 2 claims NW 1/4 1981 Not assessed

13 BLM MMN group 1 claim NW 1/4 assessed through 1982

14 state & BLM

T20S R28E 6 BLM - Inspiration 3 claims no assessment abt 1980 with
- Greater American 2 claims Assessment through 1982 with

7 BLM No claims

18 BLM No claims

T19S R27E 34 BLM Freepoint 28-44 Stated 1982 15 1/2
35 BLM Inspiration 1-36 Assessed through 1980
36 State Freepoint 4-44 Stated 1982

T19S R27E Sec 29
Freepoint 26 claims

Swiss 1/2 sec 1/4 sec

T203 R20E Sec 29 None

30 None

31 None

32 State Section

T215 R20E Sec 4 None

5 None

6 None

7 None

8 None

9 1/4 sec None

10 State

17 1/4 sec None

18 None

Leatherman Survey Post claimant

Dunlop Sill Toler Inc current claimant

T35 R23E 31, 32, 33

T45 R23E 4, 5, 6

Beaver Exploration Company
4651 N 1st Ave
Tucson, AZ 85704

Chance #1-4

Keystone

(See Copy)

Freeport Claims : 268

Sec 1, T20S, R27E

Sec 34 & 35 T19S, R27E

Also Need Land Status & claims for

Secs 6 & 7, T20S, R28E

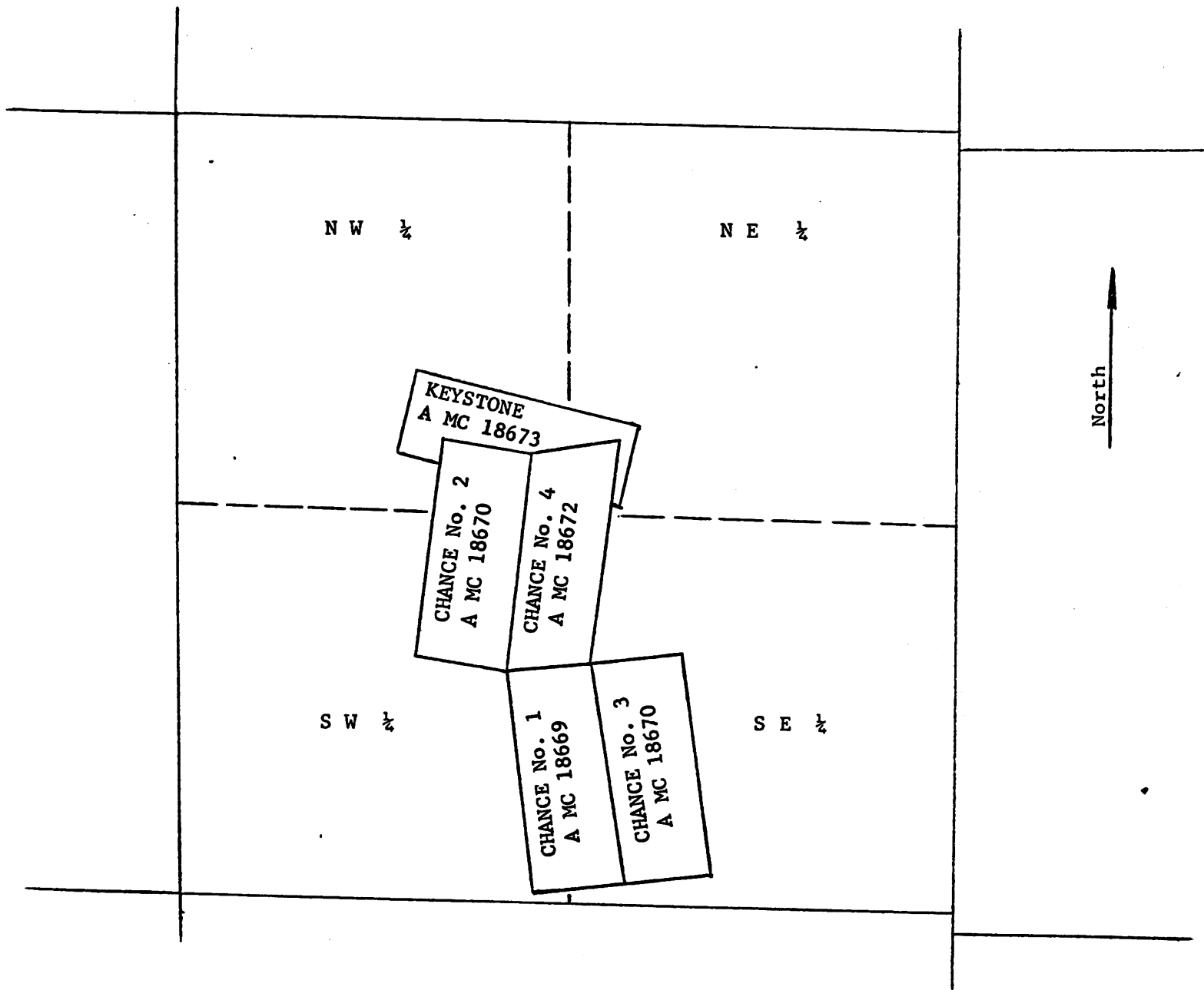
Sec 31 T19S, R28E

Who Controls

State Sections 2, ~~10~~ 11, 14 T20S, R27E

Sec 36, T¹⁹~~20~~S, R27E

Sec 31, T19S, R28E



SKETCH MAP SHOWING LOCATION OF MINING CLAIMS

in

SECTION 12, TWP. 20S, R. 27 E. COCHISE COUNTY, ARIZONA

RECEIVED
B. L. M. AZ STATE OFFICE

MAR 8 1978

10:00 A.M.
PHOENIX, ARIZONA

NICOR MINERAL VENTURES

Prospect and Submittal Report

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Township: 21S

County, State: Cochise Co., AZ

Range: 28E

Date Examined: _____ By: _____

Section: 4 W 1/2

Reply and Date: _____

Quadrangle Name: Swisshelms and

AMS Sheet: Pedregosa Mtns. 15'

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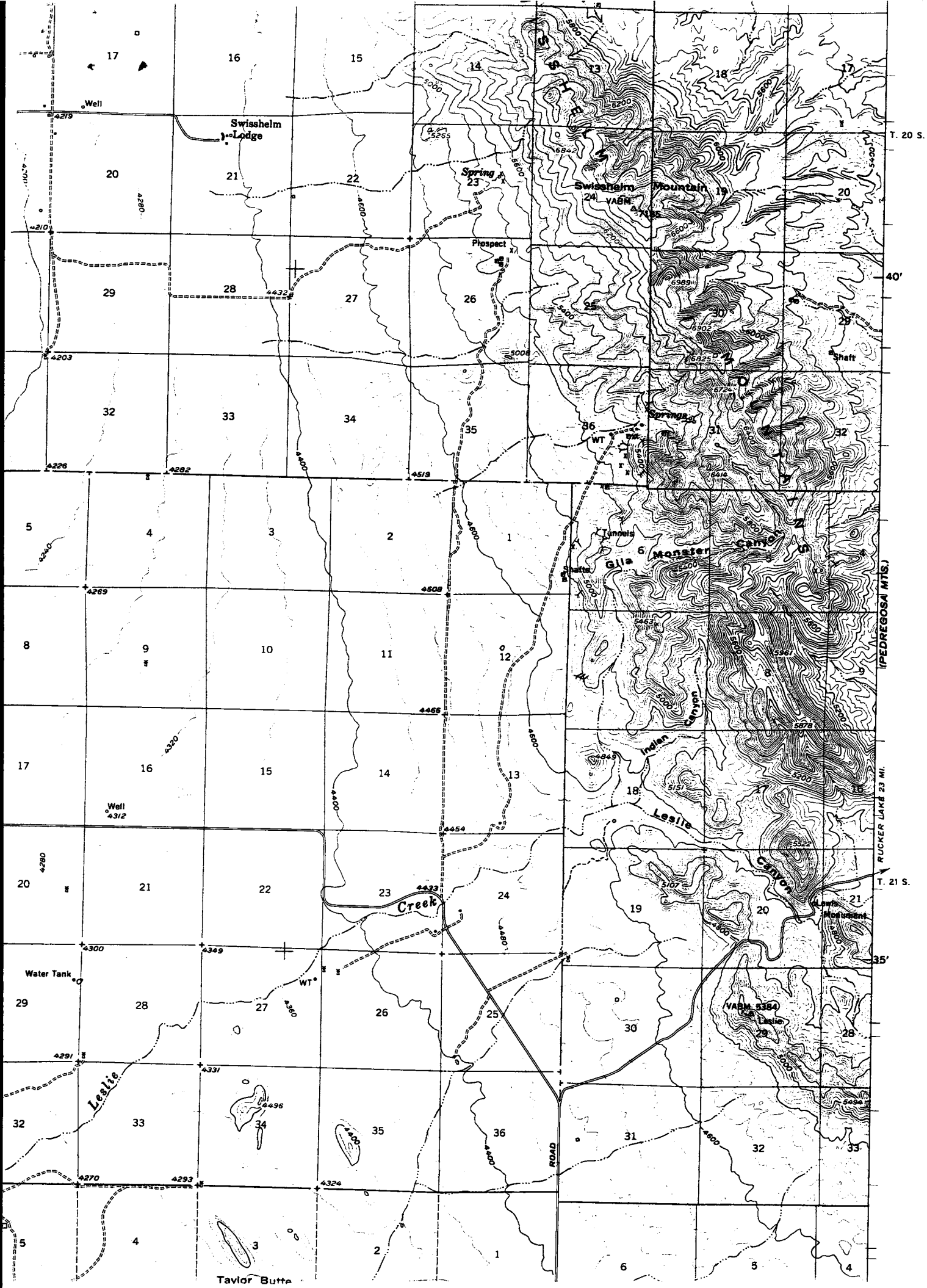
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Vol. XXII, No. 3



July, 1951

University of Arizona Bulletin

ARIZONA BUREAU OF MINES

University of New Mexico Library

ARIZONA ZINC AND LEAD DEPOSITS

PART II

ARIZONA BUREAU OF MINES GEOLOGICAL SERIES NO. 158

BULLETIN NO. 168

SIXTY CENTS

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CHAPTER III—SWISSHELM DISTRICT

By F. W. GALBRAITH AND W. B. LORING

PHYSICAL FEATURES

The Swisshelm district is in the northern portion of the Swisshelm Mountains, about 30 miles north of Douglas.

Most of the lead mining area is within Twp. 20 S. R. 27E. It is accessible by 4 miles of road that branches southward from the Rucker Canyon road at a point 13 miles east of U.S. Highway 666.

The Swisshelm Mountains form a range about 15 miles long which extends north-northwest from the Chiricahua Mountains, on the east side of Sulphur Spring Valley. A small valley, about 5,500 feet above sea level or some 1,000 feet lower than the nearby peaks, trends northward through the mining area.

ROCKS

The geology of the Swisshelm Mountains was studied briefly by C. J. Sarie in 1922 for the Geologic Map of Arizona. In 1947 W. B. Loring¹ made a geologic study of the Swisshelm mining district and determined the stratigraphic sequence as follows (see also Fig. 7):

Age, formation and character	Thickness in feet
Tertiary	
Rhyolite flows; lavender to red, massive.....	500+
Cretaceous	
Morita formation; maroon shales, arkosic quartzites, and conglomerates.....	1,000
Permian	
Snyder Hill formation; limestone, thin-bedded with red shales and conglomerate at the base.....	250
Pennsylvanian	
Naco formation; medium-to-thin bedded limestone alternating with thin shale.	
Conglomerate at base	2,400
Mississippian	
Escabrosa limestone; thick-bedded, white, and relatively pure.....	330
Devonian	
Lower Ouray formation; limestones, thin black, shaly, and dolomitic.....	50
Martin limestone; thin-to-thick bedded, brown to gray, sandy	350
Cambrian	
Copper Queen limestone; gray, sandy.	
Parting quartzite at top.....	175
Abrigo formation; interbedded limestone and shale, thin, cherty, and green.....	225
Cochise formation; interbedded limestone and shale, thin, cherty, and green.....	200
Bolsa quartzite; dense, medium-bedded, white.....	200+

The Cretaceous and older rocks are intruded by granite which crops out over much of the western portion of the range. Its age

¹ References are listed numerically at end of chapter.

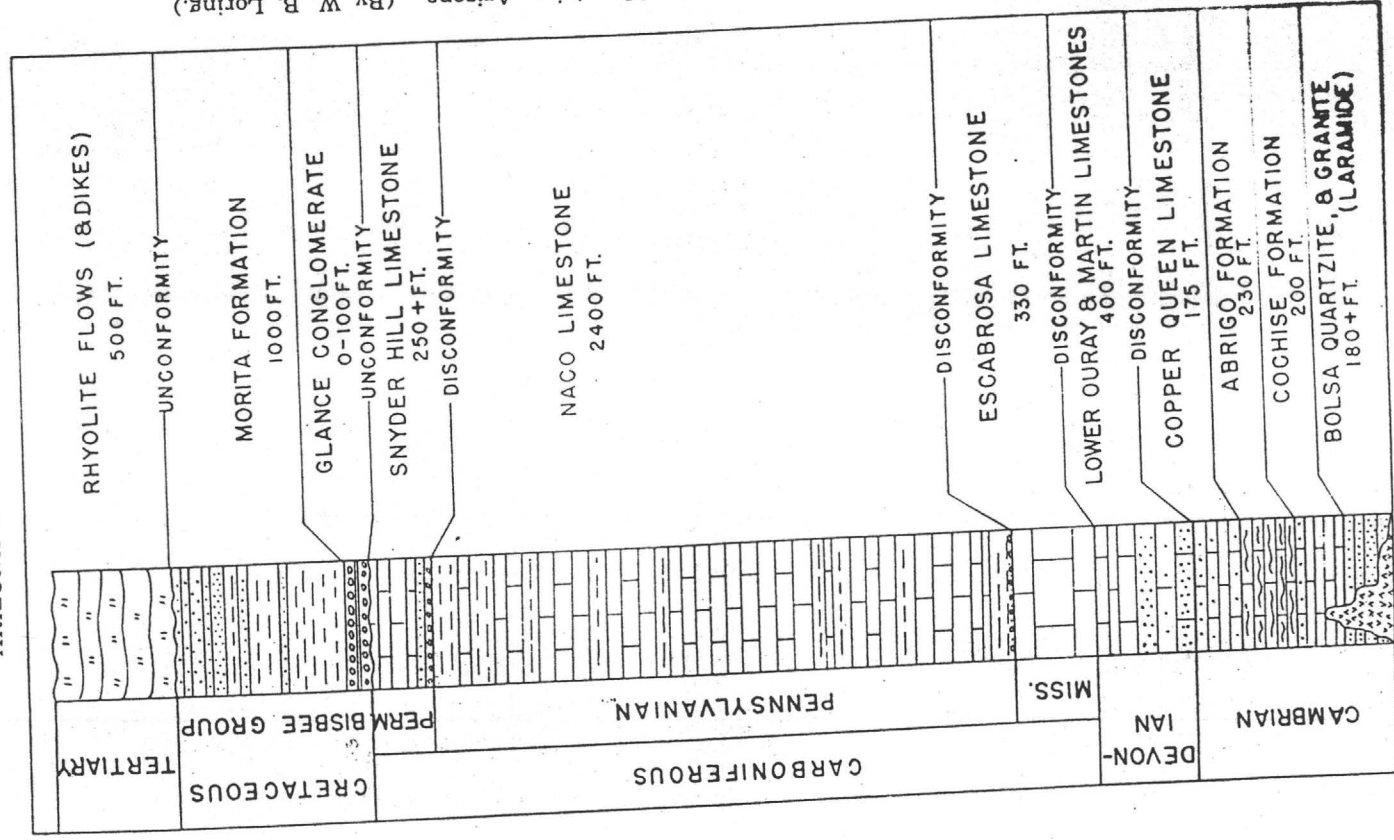


Figure 7.—Generalized columnar section, Swisshelm Mountains, Arizona. (By W. B. Loring.)

tentatively is considered as Laramide (late Cretaceous — early Tertiary).

Numerous small dikes of diorite cut the granite. A relatively thin, tabular mass of diorite porphyry crops out in the central part of the district.

STRUCTURE

The post-Cretaceous structural history of the Swisshelm Mountains includes intense folding, thrust faulting, and normal faulting. The sedimentary formations of the Swisshelm mining district represent the eastern flank of a sharply compressed anticline which plunges 15 degrees north-northwestward. The beds on the east flank have an average northeasterly dip of about 45 degrees. A body of granite has been intruded along the anticlinal axis and separates the eastern flank from the western flank, whose beds crop out in the foothill area to the west of the range and dip steeply to the southwest.

The structure of the eastern flank has been complicated by a low-angle thrust fault on which a plate of Upper Paleozoic rocks has been moved over the Lower Paleozoic rocks. The outcrop of this fault is highly irregular, but may be traced in a northwesterly direction across the central part of the district. It dips 10 to 15 degrees to the northeast. The beds in the overthrust plate have an average dip of about 35 degrees to the southwest.

In the northern part of the area several parallel thrust faults have resulted in a complex imbricate structure.

The main thrust fault has been intruded by a tabular body of diorite porphyry (Fig. 8) which ranges from 4 to 50 feet in thickness.

Where the porphyry is best exposed in the central part of the district, Cambrian rocks dipping eastward lie below the sill, and Pennsylvanian rocks dipping westward lie above it.

Along the western margin of the district is a normal fault which strikes north-northwest and dips 60 degrees to the northeast. It has brought Tertiary rhyolite on the northeast down against Paleozoic sedimentary rocks on the southwest. Loring estimated the vertical displacement at about 500 feet.

ORE DEPOSITS

OCCURRENCE

The ore deposits of the Swisshelm district occur as replacements in Naco limestone. The most productive bodies of ore have been found in the beds immediately above the diorite porphyry. They were apparently localized by the intersections of northwesterly and northeasterly tension fractures with the favorable limestone beds.

PRODUCTION

The Swisshelm district produced lead, silver, and gold at intervals during 1885-1918, but no figures regarding the output for that period are available.

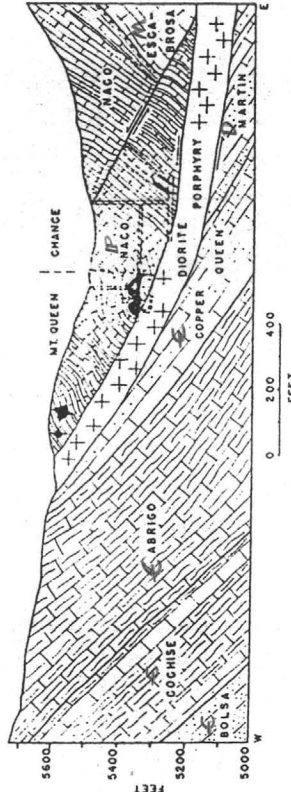


Figure 8.—Cross section of Mountain Queen and Chance mine areas, looking north.

Production during 1918-49 has been approximately as follows:²

Lead, 1918-49	9,271,217 pounds, valued at \$1,117,930
Silver, 1918-49	244,780 ounces, 194,989
Gold, 1918-49	2,887 ounces, 96,211
Zinc, 1948-49	197,500 pounds, 25,306
Copper, 1926-49	49,318 pounds, 8,705

Total value, 1918-49

\$1,443,141

The greater part of this output was during 1946-49.

MOUNTAIN QUEEN OR SCRIBNER MINE

Situation: The Mountain Queen or Scribner mine is in the northeastern part of the Swisshelm Mountains, approximately ½ mile south-southeast of U.S. Mineral Monument No. 1, at an altitude of 5,500 feet.

History and production: The deposit was discovered in 1885, and a small production of oxidized lead-silver ore was intermittently maintained until 1913. No production records are available for this period.

In 1913 the property was leased. Recorded production from 1918-26 is gold, \$5,807; silver, \$35,365; lead, \$41,754.

In 1935, a well drilled for water near the east side of the Mountain Queen claim penetrated ore 25 feet thick at a depth of 125 feet. This ore was mined from a shaft on the Chance No. 1 claim. In 1941 a cave-in put an end to this operation. A production of \$80,000 is reported for this period.

In 1945 the property was again leased and has been operated more or less continuously since that time. As of 1951, it was owned by Dr. Edwin Larson of Los Angeles, California. In 1947 a two-compartment shaft was completed on the Mountain Queen claim. The bulk of total ore taken from the mine was produced during 1947-49.

The total production from the Mountain Queen mine is not known, but it has accounted for the greater part of the output of the Swisshelm district.

Geology: The Mountain Queen mine is in the Pennsylvanian Naco formation, which consists of thin limestone beds alternating

with thin-bedded calcareous shale. In general the beds strike N. 35 degrees W. and dip 25 to 50 degrees SW.

The Naco formation is part of an overthrust plate of Paleozoic sedimentary rocks which is underlain by a tabular body of diorite porphyry (Fig. 8) intruded along the plane of the thrust fault. The horizontal compression which resulted in the thrust faulting also produced minor folds in the Naco formation, the axes of which trend northwesterly. Vertical tension fractures have formed parallel to the fold axes, and a series of fractures with northeasterly strike and steep dips have developed at right angles to the trend of the folds. Bedding slips with northwesterly strike and low northeasterly dips are also present.

Ore deposits: The ore bodies occur as replacements in the Naco formations at the upper contact with, or not far above, the diorite porphyry. Some of the individual ore bodies attain a length of 100 feet, a width of 50 feet, and a thickness of 10 or more feet.

On the 160 level the ore bodies occur along the axis of a minor fold which trends northward. Parallel and at right angles to the fold axis are several more or less vertical fractures. Also parallel to the fold axis is a bedding slip which dips 40 degrees northward. The ore apparently occurs in an area where the axis of the fold, the northwest and northeast fractures, and the bedding slip intersect immediately above the diorite porphyry contact. This relationship suggests a definite structural control of ore deposition by thorough preparation of the more brittle limestone beds by fracturing or brecciation.

In the near-surface workings on the western edge of the Mountain Queen claim, ore deposition appears to have been controlled by high angle northeasterly trending fractures.

Ore minerals from the 160 level are principally galena and cerussite with which is associated a little pyrite. In 1947 the average grade was reported to be 25 per cent lead with a sulfide-carbonate ratio of 1:4. The silver most probably is contained in the galena, as microscopic examination of the ore failed to reveal the presence of any silver mineral. In the old surface workings iron oxides are abundant, and cerargyrite probably was an important constituent of these ores.

The mine is developed to a depth of 210 feet by a shaft, adits, drifts and stopes, aggregating about 1,000 feet of work. The mine produces no water.

In June, 1951, according to C. W. Colvin,³ mine superintendent, underground development work was being carried on in the northern part of the mine.

CHANCE MINE

Situation: The Chance mine is in the northeastern part of the Swissshelm Mountains, a few hundred feet northeast of the Mountain Queen or Scribner mine.

History and production: The claims embracing the Chance mine were located in 1885 shortly after discovery of the Mountain Queen, but apparently no ore was found then on the property.

In 1915 a shallow inclined shaft was sunk near the northern end of the Chance group of claims, with negative results.

In 1935, following discovery of ore on the Mountain Queen claim, a shaft 116 feet deep was sunk on the Chance No. 1 claim and a drift run to the newly discovered ore body of the Mountain Queen. So far as is known, no ore was discovered on the Chance at that time.

In 1945 the lessees of the Mountain Queen and Chance claims jointly sank a new shaft 250 feet deep on the Chance No. 1, 220 feet southeast of the old shaft. A drift to the east on the 200 level penetrated ore.

The production from the Chance mine is not known, but it has been substantially less than that from the Mountain Queen or Scribner mine.

Geology and ore deposits: The Chance mine is in the same overthrust block of Pennsylvanian Naco formation (Fig. 8) as the Mountain Queen mine. The beds strike northwesterly and dip approximately 55 degrees southward. The overthrust block is underlain by the tabular body of diorite porphyry and is broken by a series of northeasterly trending fractures with steep dips.

Four ore bodies had been discovered up to the end of 1947. One of these, which had been mined out, was 50 feet long, 20 feet thick and 30 feet high. They are replacements of the limestone beds along or adjacent to fractures which strike north-northeast and lie immediately above the diorite porphyry contact. As in the Mountain Queen, the diorite porphyry is so altered that the fractures could not be definitely traced into it.

Ore minerals are galena and cerussite. A little pyrite occurs associated with the galena. In 1947 the average grade was reported to be 25 per cent lead and, in places, up to 28 ounces of silver and 0.2 ounces of gold per ton.

The mine is developed to a depth of 250 feet by a shaft, manway, drifts, and cross-cuts aggregating about 1,300 feet of work.

As of 1947, the mine workings yielded about 3,000 gallons of water per day.

SWISSHELM MOUNTAIN GOLD AND SILVER MINING COMPANY

Situation: The property of the Swissshelm Mountain Gold and Silver Mining Company is approximately 2,000 feet northeast of U.S. Mineral Monument No. 1, or a mile northeast of the Scribner.

History and production: The Mammoth and Whale groups of claims were located in 1898. They were acquired in 1922 by Swissshelm Development Company, which completed an inclined shaft 300 feet deep and several hundred feet of drifting.

In 1947 Swissshelm Mountain Gold and Silver Mining Company acquired the claims.

The production from this property is not known.

Geology and ore deposits: The mine of Swissshelm Gold and Silver Mining Company is in the same overthrust block of Pennsylvanian Naco formation as the Mountain Queen and Chance mines. The beds strike northeasterly and dip about 30 degrees northward.

Mineralization consists of replacements in the Naco formation. It is principally of silver with some lead and gold, accompanied by quartz, calcite, and a little pyrite.

The mine is developed by an inclined shaft 300 feet deep on a 30-degree incline, an adit on the 75 level, 575 feet of cross-cuts, and 425 feet of drifting.

REFERENCES, SWISSHELM DISTRICT

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2. Compiled by J. W. Anthony. For 1918-29, from estimates by J. B. Tenney; for 1930-47, from U.S. Mineral Resources and U.S. Minerals Yearbooks.
3. Oral communication.

CHAPTER IV—HUACHUCA MOUNTAINS

By ELDRED D. WILSON
PHYSICAL FEATURES

Huachuca Mountains are in southwestern Cochise County, on the west side of the San Pedro Valley. They form a range approximately 22 miles long by a maximum of 8 miles wide which trends northward from the International boundary. The minimum altitude, 9,446 feet, is on Miller Peak, 4,500 feet above the eastern base of the range. The slopes are prevailing steep and deeply dissected by canyons.

Topography of the Huachuca Mountains has been mapped by the U.S. Geological Survey on the Hereford and Benson quadrangle sheets.

The principal settlement is Fort Huachuca, at the northeastern base of the range. Ranches and summer homes are in several of the canyons, and a few people live at some of the mines. Hereford, a station on the Southern Pacific railway, is 9 miles east of the mountains.

The eastern margin of the range is skirted by State Highway 2, and its southern end is crossed by the Montezuma Canyon road. Access roads from these routes and from highways on the north and west lead to the mines.

ROCKS

The rocks of the Huachuca Mountains have been described in considerable detail by Alexis¹ and Weber.²

Bolsa quartzite rests upon pre-Cambrian granite and is overlain by limestones and shales of Cambrian, Devonian, Mississippian, Pennsylvanian, and Permian ages. Above the Permian is a thick succession of conglomerate, sandstone, quartzite, shale, and interbedded volcanic flows, of Lower Cretaceous age. These beds are unconformably overlain by Tertiary (?) volcanic rocks in the northwestern part of the range.

References are listed numerically at end of chapter.

Intruding the Cretaceous and older rocks is a northward-trending stock of quartz monzonite which crops out over an area 7 miles long by 2½ miles wide in the southern part of the range, between Montezuma Canyon and Carr Peak.³ Associated with it are dikes of andesite and quartz-latte porphyry.

STRUCTURE

As determined by Alexis¹ and Weber,² the Huachuca Mountains area was successively deformed by folding, broken by normal and reverse faulting, and subjected to normal faulting. In the eastern central portion, according to Weber,² six major thrust-faults were superimposed upon the northeastern limb of a regional anticlinal fold.

Folding was apparently initiated previous to thrust faulting, but continued with the development of successively younger thrusts northeastward from the anticlinal axis. Both fold axes and thrust faults are persistently northward, generally paralleling the trend of the thrusts dip prevailing northeastward at low to high angles.

The development of minor anticlinal and synclinal folds apparently accompanied thrust faulting, in several places resulting in folding of earlier thrust sheets. Overturned folds and drag folds were also companion features.

The observed major structural deformation apparently began in post-early Cretaceous time, and may have continued into the Tertiary.³

The quartz monzonite is largely younger than the major deformation of the range.²

ORE DEPOSITS

HISTORY AND PRODUCTION³

Prospecting in the Huachuca Mountains began at an early date but was retarded by Apache hostilities until the establishment of Fort Huachuca in 1877. During the early eighties a little ore was sent from the Nellie James and other properties to lead smelters at Charleston and Benson.

Early in the present century, the Butte and Arizona, State of Texas, and Sitric were developed, and the Exposed Reef was worked as a gold prospect. The Eureka and Copper Glance mines were operated by a religious sect living at Sunnyside.¹ The Wisconsin mines were developed by a company which in 1903 was managed by Harry Hamburg.⁴

Tungsten deposits⁵ were worked mainly during war years, and gold placers during periods of depression. Zinc and lead have been mined principally since the beginning of World War II.

Available figures regarding production of lead, zinc, copper, gold, and silver in the Huachuca Mountains (Hartford district) are as follows:⁶

Lead, 1909-49	558,685 lb.,	valued at \$ 49,007
Zinc, 1943-47	348,000 lb.,	39,247
Copper, 1909-48	71,550 lb.,	10,113
Gold, 1909-49	388 oz.,	15,740
Silver, 1909-49	24,254 oz.,	16,517
Unspecified (mainly lead and silver)		23,379
Total value, 1909-49		\$154,003

Situation: The State of Texas Mine is in Montezuma Canyon, near the southeastern end of the Huachuca Mountains. It is about 30 miles from Bisbee, via State Highway 92 and the Montezuma Pass road. When visited in 1948, the property consisted of one patented and six unpatented claims, held by Miss Grace Sparkes.

History: Locations in this area were made by August Baron, of Tombstone, in 1889, and his State of Texas claim was surveyed for patent in 1898. A few years later Baron's claim and thirty-two other claims in the area were acquired by the Mitchell Development Company, of Ishpeming, Michigan. As reported in the Copper Handbook,⁸ workings by 1904 consisted of three tunnels, a shaft about 250 feet deep, and a shallower shaft. According to Grebe,⁷ some copper ore was reported to have been found in the main shaft at a depth of 300 feet and in diamond-drill holes below the 350 level. The Mitchell Development Company liquidated in 1906,⁹ and the property remained essentially idle until World War II.

According to Miss Sparkes,⁹ production during 1943-47 totaled 1,791 tons, which was sent to the Shattuck Denn custom mill at Bisbee. This ore yielded essentially all of the output of recoverable zinc (330,000) credited to the Hartford district for the years 1943-46.¹¹ Also, it contained from 1.0 to 6.65 per cent lead and 0.2 to 1.12 per cent copper, together with 2.75 to 11.0 ounces of silver and generally less than 0.1 ounce of gold per ton.⁹ It commonly ranged from 10 to 19.65 per cent in zinc content.⁹

Geology: The State of Texas mine is on the north side of Montezuma Canyon, at an altitude of approximately 5,700 feet. From top to bottom this side of the canyon shows the following sequence of rocks: (1) Granite rock, classified as quartz monzonite by Weber,² forming large mass of ridge; (2) marble, approximately 60 feet thick; (3) impure dark-gray limestone, approximately 40 feet; (4) porphyry sill, 5 to 20 feet; and (5) reddish-brown shade, sandstone, and quartzite, to bed of canyon.

The marble and limestone resemble portions of the Carboniferous Escabrosa and Naco formations, and the underlying shale-sandstone series is probably Cretaceous; low-angle and steep reverse faulting has thrust the older rocks over the younger rocks. The porphyry sill⁴ was intruded along a low-angle fault, and presumably the larger masses of quartz monzonite came in along zones of reverse and shear faulting. In places renewed fault movement occurred along the contacts; for example, a fault zone, dipping 80 degrees northward and locally marked by copper stain, separates the marble from the intrusive mass north of the mine. The marble and limestone south of this fault form a belt approximately 350 feet wide and several hundred feet long from east to west. Their beds in general dip 15 to 50 degrees northward, but in places they have been deformed by flexures and faults.

Workings and mineralization: The zinc-lead workings in the State of Texas mine are about 200 feet southeast of the old Mitchell vertical shaft. They consist of an adit with about 250 feet of drifts and an irregular stope about 80 feet in maximum length and breadth by 5 to 15 feet high.

The ore consists essentially of sphalerite and galena together with local pyrite and a little chalcopyrite. It occurs associated with garnet and other silicates, minor quantities of willemite (?), calcite, and quartz.

As seen in the workings, the ore replaced favorable portions of the impure limestone within the arch of a northward-plunging low anticline. The roof in the southern part of the stope shows a fault dipping 20 degrees southward immediately above the ore. Two fissure zones, about 25 feet apart, striking N. 80 degrees W., and almost vertical, are associated with the best-developed mineralization. Presumably the ore-bearing solutions were localized to a considerable extent along these fissures. The surface outcrop of the stronger zone of fissuring, marked particularly by dark limonitic alteration, extends east of the present workings.

North of the stope a short drift extends into unmineralized marble. During 1948 two inclined diamond-drill holes driven from this drift found high-grade sphalerite, together with some galena and chalcopyrite, at a depth of about 55 feet vertically below the floor of the stope. Not enough development work has been done to determine the attitude, thickness, and extent of this mineralization.

One of the drill holes encountered quartz monzonite at a vertical depth of 85 feet below the floor of the stope. Granitic rock also occurs in workings northeast of the stope and is there faulted against the limestone. Presumably these granitic bodies are sills, but their thickness, extent, and structural relations are not evident.

PANAMA OR MANILA MINE

The Panama or Manila mine is on the northern margin of the Huachuca Mountains, ½ mile south of the Canelo-Fort Huachuca road.

Figures of the total production from this property are not available. It is credited¹⁰ with shipments of 132 tons of ore, averaging 14 to 31 per cent lead and about 1.5 ounces of silver per ton, in 1925; one car of lead ore in 1926; and one car of oxidized lead ore in 1928. In 1926, Huachuca Queen Mining Company built on the property a flotation plant, reported to have been of 85 tons daily capacity. The main vertical shaft was reported in 1925 to be 300 feet deep.¹⁰

According to Alexis,¹

Water was encountered 125 feet below the surface in the main shaft, and pumping was required. The pumping was stopped by a court injunction on June 9, 1928, because the spring on the Pycatt Ranch ran dry allegedly as the result of the pumping operations.

Sometime after the court injunction had been issued, a resurvey found that the mine was 200 yards within the Military Reservation. The operators were then obliged to move their equipment from the property and cease all operations.

The major structure in the Panama mine area is the Crest Line fault, which has thrust Paleozoic limestones over Lower Cretaceous strata, mostly red shales and sandstone. The fault surface dips to the north less than 10 degrees. The overthrust plate of Paleozoic limestone has largely been removed by erosion, so that the overthrust block is less than 100 feet thick.

The mineralization is on a steeply dipping northeast fissure which cuts the Paleozoic limestones and the Cretaceous strata below the thrust-fault surface. Specimens of ore collected from the adit level consisted of cerussite in a quartz and calcite gangue with a little malachite. Except for the adit level, the mine was not accessible for study.

OTHER ZINC AND LEAD MINES

Armistice mine: The Armistice mine is credited¹ with shipments of several cars of silver-lead ore during 1940-41; 73 tons in 1942; 91 tons of lead ore in 1943; 50 tons of lead-silver ore in 1944; 156 tons of lead ore in 1948; and a few tons in 1949.

Cave mine: The Cave mine produced some zinc-lead ore in 1946. In 1947 it was operated by Cave Mountain Mines Corporation and produced 388 tons containing 73,716 pounds of zinc, 50,281 pounds of lead, 3,938 pounds of copper, and 285 ounces of silver.¹

James mine: Production of lead ore from the James tungsten mine² is reported as 25 tons in 1947 and a small amount in 1945.¹ The *Anne Marie* and *Borderland Metals* properties produced small quantities of lead ore during 1949.¹

REFERENCES, HUACHUCA MOUNTAINS

1. Carl O. Alexis, The geology of the northern part of the Huachuca Mountains, Arizona: Univ. Ariz., Ph.D. Thesis, 69 pp., maps, 1949.
2. Robert H. Weber, The geology of the east-central portion of the Huachuca Mountains, Arizona: Univ. Ariz., Ph.D. Thesis, 164 pp., maps, 1950.
3. For years prior to 1930, partly from unpublished notes of J. B. Tenney.
4. Wm. P. Blake, Report to the Governor of Arizona, 1903.
5. Eldred D. Wilson, Tungsten deposits of Arizona: Univ. Ariz., Ariz. Bureau of Mines Bulletin 148, 1941; also Robert H. Weber, work cited.
6. H. J. Stevens, The Copper Handbook, vols. 3-5, 1903-05.
7. E. Grebe, Unpublished report, March 21, 1914.
8. H. J. Stevens, The Copper Handbook, vol. 6, 1906.
9. Written communication from Miss Grace Sparkes, Nov. 13, 1948.
10. U.S. Mineral Resources.
11. U.S. Minerals Yearbooks.

CHAPTER V.—ORO BLANCO OR RUBY DISTRICT INTRODUCTION

The Oro Blanco district is in the eastern portion of the Oro Blanco Mountains of southwestern Santa Cruz County. Its principal settlement, Ruby, in the eastern part of the district, is 32 miles by road from Nogales and about 34 miles from Amado, a station on the Southern Pacific railway.

The portion of the Oro Blanco Mountains in the vicinity of Ruby comprises a series of ridges and southward-trending canyons ranging in altitude from 3,600 to 5,400 feet. Topography of this area is shown on the Ruby and Oro Blanco quadrangle sheets, published by the U.S. Geological Survey on a scale of 1:62,500 and a contour interval of 50 feet.

HISTORY¹

Gold deposits in the Oro Blanco district probably were worked by the early Spaniards. American locations were made in 1873 on the Oro Blanco vein. The prominent quartz outcrop now known as the Montana vein was located in the early seventies.²

Other locations followed soon afterward, and rich gold ore was ground in arrastras. The Ostrich mill, equipped with a roasting furnace to treat refractory sulfide ores, was built during the early eighties and operated by the Orion Company on ore from the Montana and Warsaw mines. This company obtained the Montana property and by 1884 had been reorganized as the Montana Company, controlled by Tombstone Mill and Mining Company.

The Warsaw mill was built in 1882 and operated as a custom plant. In 1884 Esperanza Mines Company built a mill to treat ore from the Blain ledge.

From 1887 to 1893, most of the mines were inactive.

During 1894-96 mills operated at the Austerlitz, Yellow Jacket, Old Glory, Oro, and Golden Eagle mines.

At the Montana mine a 10-stamp mill, utilizing concentration and pan amalgamation methods to treat oxidized lead-gold-silver ores, was built in 1891 but abandoned in 1893. The Montana claims were patented in 1907 by L. Zeckendorf.³

In 1903 amalgamation and cyanide mills were built to treat gold and silver ores from properties in the district.

After 1904 little work was done until 1912 when the Austerlitz and Oro mines were reopened. A concentrator was built at the Austerlitz and operated for more than one year.

In 1916 Goldfield Consolidated Mines Exploration Company obtained an option on the Montana property, completed a mill using flotation, and developed the mine to about the 250 level. It ceased operations in 1918, partly because of labor shortages, and gave up its option.³

In 1926 Eagle-Picher Lead Company, as Montana Mines Operations, took an option on the Montana property. A mill of 250 tons

¹ References are listed numerically at end of chapter.



STATE OF ARIZONA
COUNTY OF COCHISE

WITNESS MY HAND AND OFFICIAL SEAL
CHRISTINE RHODES, COUNTY RECORDER

[Signature] DEPUTY DRAFT
INDEXED *[Signature]* PLOTTED *[Signature]*
(LODE)*[Signature]*

I HEREBY CERTIFY THAT THE WITHIN
INSTRUMENT FILED AND RECORDED
AT REQUEST OF:

FEE \$

Bob J. Stuart
Phoenix, Ariz.

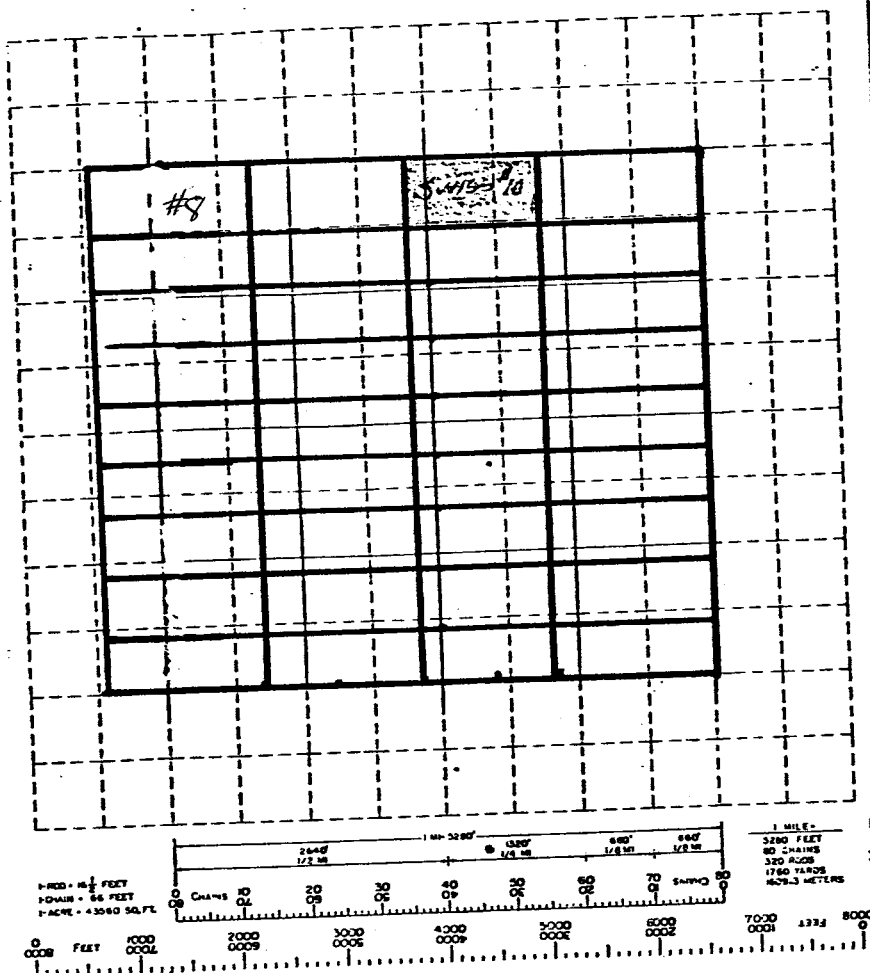
DATE **FEB 11 '82 - 11:15 AM**

DOCKET **1570** PAGE **214** NO **2852**
215

SEG. 35 TWP. 19S.
RGE. 27E

ARIZONA STATE LAND DEPT.

MAP OF SWISS # 10



RECEIVED
B.L.M. AZ STATE OFFICE

MAR 3 1982

07:45 A.M.
PHOENIX, ARIZONA

The bearing and distance between corners is as follows: beginning at the SE corner, at which a wood monument is posted, thence W a distance of 1500 feet to a wood monument, the SW corner; thence N a distance of 600 feet to a wood monument the NW corner; thence E a distance of 1500 feet to a wood monument the NE corner; thence S a distance of 600 feet to the place of beginning. The SE corner of the claim bears S 61° W a distance of 1650 feet from the COMMON CORNER

35 | 36

DKT **1570** PAGE **215**

7 MC 159571



STATE OF ARIZONA
COUNTY OF COCHISE] SS.

WITNESS MY HAND AND OFFICIAL SEAL
CHRISTINE RHODES, COUNTY RECORDER

I HEREBY CERTIFY THAT THE WITHIN
INSTRUMENT WAS FILED AND RECORDED
AT R. OF: Robert J. Stuart

FEE \$ 5.00 7000 E. Tanque Verde
Tucson, Ariz. (85715)

DEPUTY DRAFT

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MAP OF SWISS #1 MINING CLAIM
LOCATION

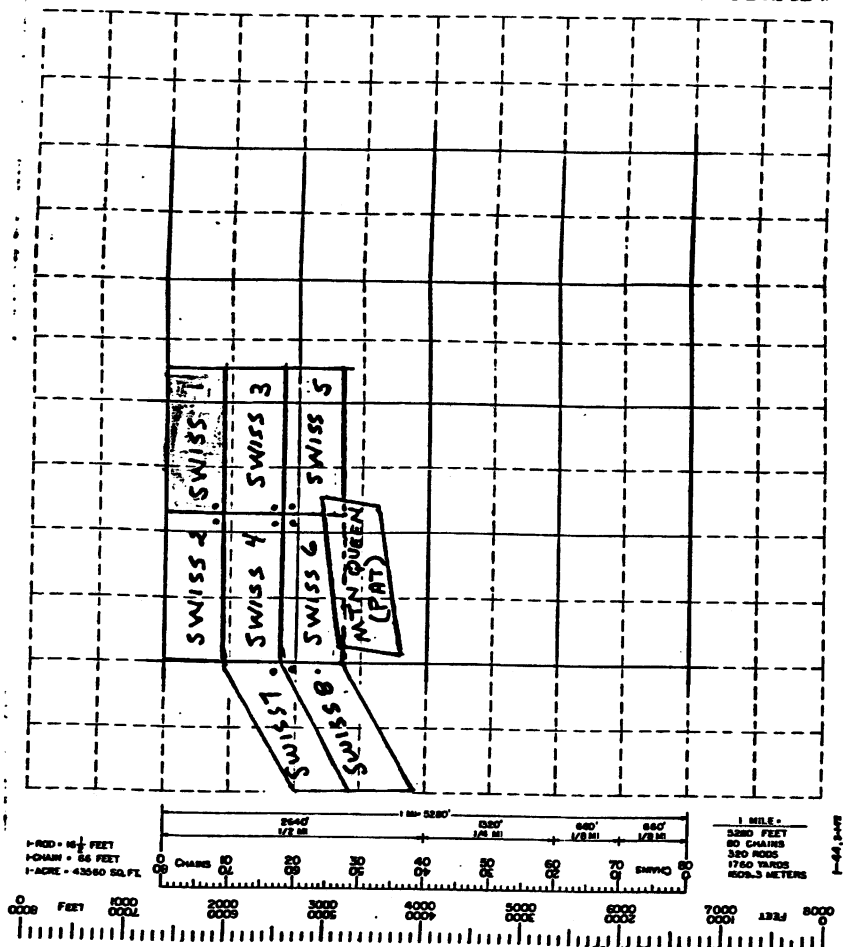
SEC 12 TWP 20S
RGE 27E

ARIZONA STATE LAND DEPT.

ARIZONA STATE OFFICE
BU. LAND MANAGEMENT

FEB 4 1981

7:45 A.M.
PHOENIX, ARIZONA



The bearing and distance between corners is as follows: beginning at the SE corner, at which a wood monument is posted, thence N a distance of 1500 feet to a wood monument, the NE corner; thence W a distance of 600 feet to a wood monument the NW corner; thence S a distance of 1500 feet to a wood monument the SW corner; thence E a distance of 600 feet to the place of beginning. The SE corner of the claim bears S53W a distance of 2300 feet from the USMM #1, in section 12.

OKJ 1480 PAGE 155

SEC. 1

SEC 12

~~CONTACT #23~~

~~CONTACT~~ ~~NR 2~~

CONTACT NO.

N 54° 30' E
WHALE
LOT NO 37

KEYSTONE

CRES# NO 3

CHANE na 2

CHANCE NA 4.

Crest no 1

CRASH NR 2

CHANCE N-3

CHASE #21

NOT IN QUEEN
NOT NO 39

SEC. 12
T 20S, R 27E

SCALE:- 1" = 600'

RECEIVED
B. L. M. AZ STATE OFFICE

MAY 22 1978

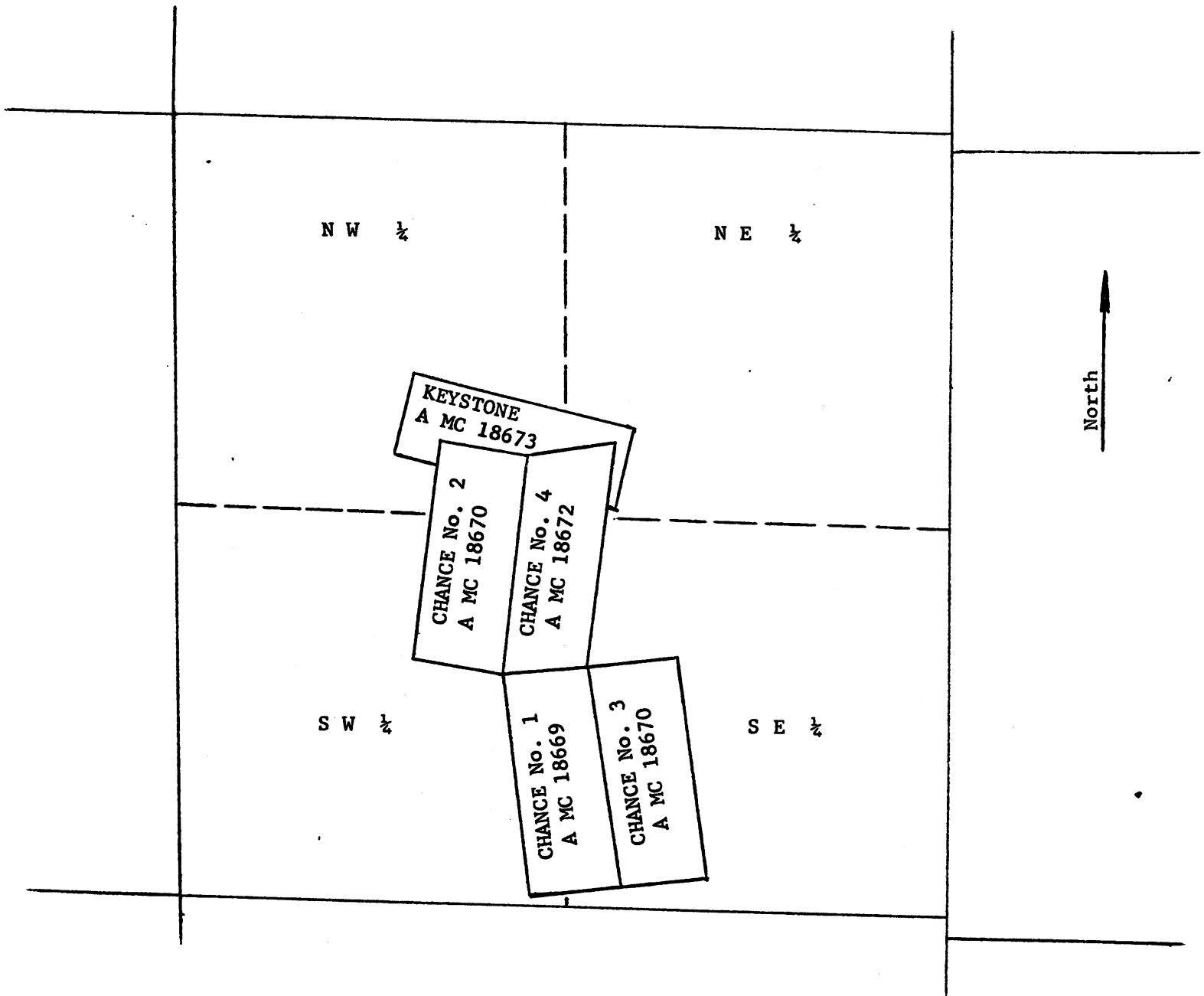
10:00 A.M.
PHOENIX, ARIZONA

III VALID CLAIMS

RECEIVED
B. L. M. AZ STATE OFFICE

MAY 22 1978

10:00 A.M.
PHOENIX, ARIZONA

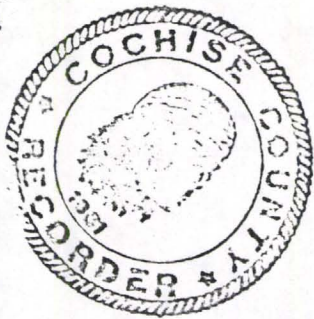


SKETCH MAP SHOWING LOCATION OF MINING CLAIMS
in
SECTION 12, TWP. 20S, R. 27 E. COCHISE COUNTY, ARIZONA

Scale 1" = 1,000'

RECEIVED
 B. L. M. AZ STATE OFFICE
 MAR 8 1978
 10:00 A.M.
 PHOENIX, ARIZONA

Beaver Exploration Company
 4651 North 1st Avenue
 Tucson, Arizona 85704



STATE OF ARIZONA]
COUNTY OF COCHISE] SS.

WITNESS MY HAND AND OFFICIAL SEAL
CHRISTINE RHODES, COUNTY RECORDER

I HEREBY CERTIFY THAT THE WITHIN
INSTRUMENT WAS FILED AND RECORDED
AT REQUEST OF:

3.00

Bob J. Stewart
Tucson, Ariz.

DEPUTY DRAFT

INDEXED	PHOTOSTAT COMPLETED	QUOTED
DM	MY	HA

DATE FEB 11 '82 - 11 15 AM

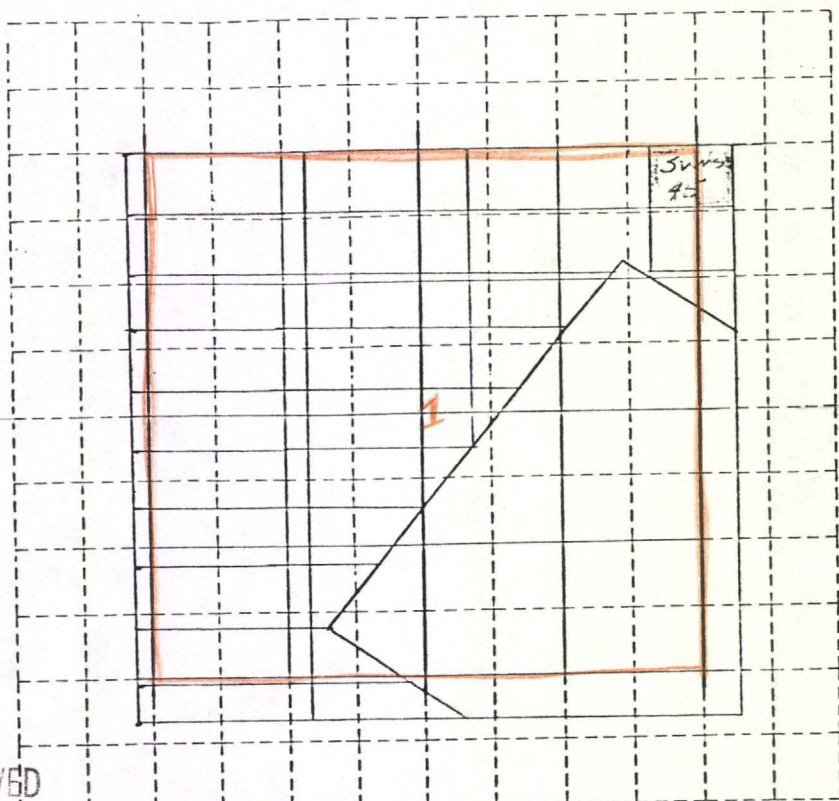
DOCKET 1570 PAGE 284 NO 2887
285

(LODE)

MAP OF SWISS #45 MINING
CLAIM LOCATION

SEG 1 TWP 20S
RGE 187E

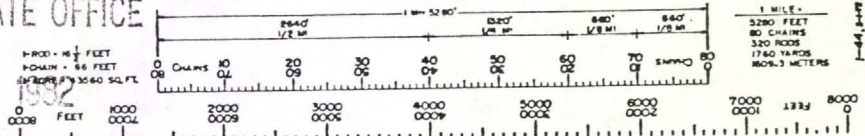
ARIZONA STATE LAND DEPT.



RECEIVED
B.L.M. AZ STATE OFFICE

MAR 3 1982

07:45 A.M.
PHOENIX, ARIZONA

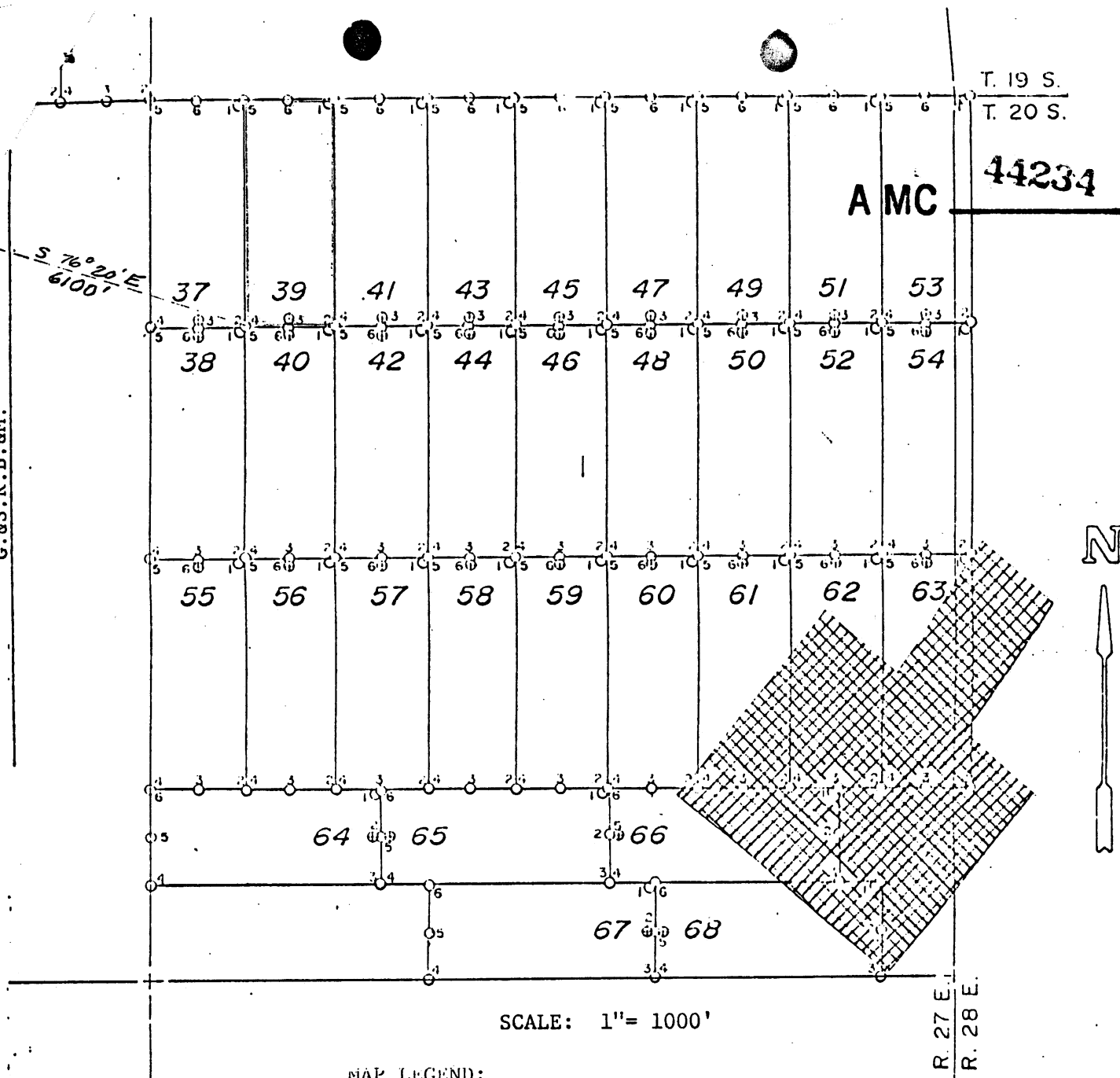


The bearing and distance between corners is as follows: beginning at the SW corner, at which a wood monument is posted, thence E a distance of 1500 feet to a wood monument, the SE corner; thence N a distance of 600 feet to a wood monument the NE corner; thence W a distance of 1500 feet to a wood monument the NW corner; thence S a distance of 600 feet to the place of beginning. The SW corner of the claim bears N. 23° W. a distance of 2500 feet from the Q. 4. 1/2 E. CORNER OF SEC. 1 T. 20 S. R. 27 E. AND SEC. 6 T. 20 S. R. 28 E.

DKT 1570 PAGE 285

A MC 159606

TO THE SOUTHWEST CORNER OF Sec. 35, T.19S., R.
G.&S.R.B.&M.



MAP LEGEND:

- Discovery Monuments
- Location Monuments and Claim Corner Monuments

NOTE: All location notices are posted at the Northeast Corner Monuments within the boundaries of the claims. All monuments are 2"x2" wooden posts.

THE BEARING AND DISTANCES BETWEEN CORNERS ARE AS FOLLOWS:

Beginning at the Northeast Corner, thence South a distance of 1500 feet, to the Southeast Corner; thence West a distance of 300 feet, to the South End Center Monument; thence West a distance of 300 feet, to the Southwest Corner; thence North a distance of 1500 feet, to the Northwest Corner, thence East a distance of 300 feet, to the North End Center Monument; thence East a distance of 300 feet, to the Place of Beginning.

The Southwest Corner bears in a S 76° 20' E direction and a distance of 6100 feet from the Southwest corner of Section 35, Township 19 South, Range 27 East, G. & S. R. B. & M.

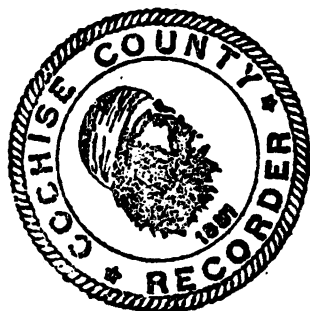
RECEIVED
BLM. AZ STATE OFFICE

JUN 11 1979

10:00 A.M.
PHOENIX, ARIZONA

PLAT OF THE KING 39 LODE CLAIM

Swisshelm Mining District
Cochise County, Arizona



STATE OF ARIZONA
COUNTY OF COCHISE

WITNESS MY HAND AND OFFICIAL SEAL
CHRISTINE RHODES, COUNTY RECORDER

J. Vasquez DEPUTY

INDEXED
PHOTOCOPY
COMPARED
PLOTED
mg

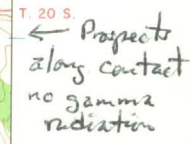
I HEREBY CERTIFY THAT THE WITHIN
INSTRUMENT WAS FILED AND RECORDED
AT THE REQUEST OF

FEE \$ 33.00

DRAFT

DATE MAY 24 1979 - 3:00 PM
DOCUMENT NO. 1332 PAGE 422 NO. 11434
428

ONT 1332 PAGE 428



APPROXIMATE MEAN DECLINATION, 1958



ROAD CLASSIFICATION

Medium-duty ——— Light-duty ———

Unimproved dirt - - - - -

U. S. Route

1958

FREEPORT

A 122923

ARIZONA STATE OFFICE
BU. LAND MANAGEMENT

FEB 4 1981

7:45 A.M.
PHOENIX, ARIZONA

FREEPORT EXPLORATION COMPANY

7000 E. TANQUE VERDE ROAD • SUITE 30
TUCSON, ARIZONA 85715
PHONE: (602) 885-3577

February 3, 1981

Bureau of Land Mangement
Arizona State Office
2400 Valley Bank Center
Phoenix, Arizona 85073

To Whom It May Concern:

Please find enclosed eight (8) lode location notices for Swiss #1 thru #8. A map for each claim location is attached to its respective notice.

Please bill our account for the filing costs, which we understand will be \$40.00. Let us know by return mail our account balance and the Arizona MC numbers for these claim notices.

Thank you.

Sincerely,

Bob Stuart

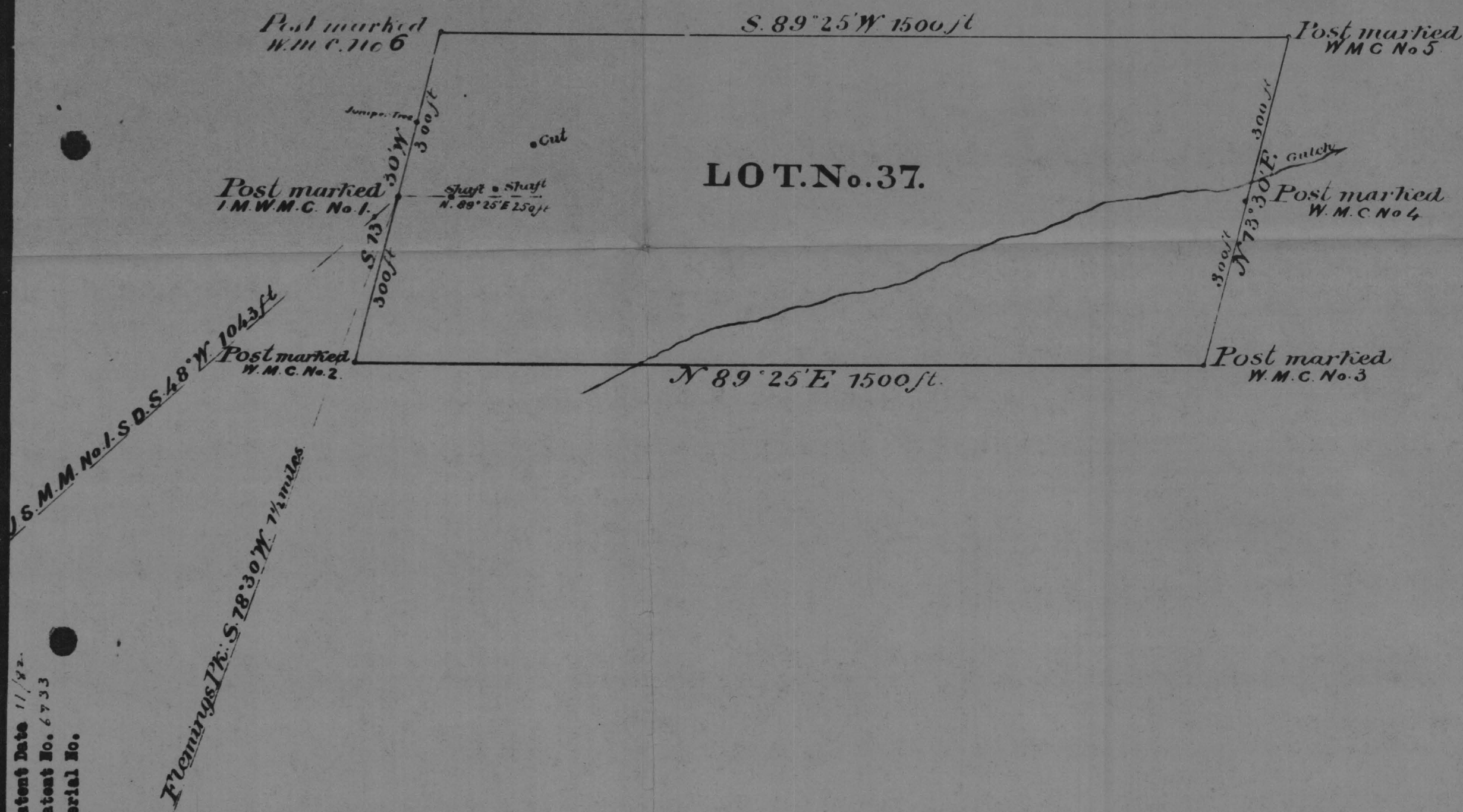
Robert J. Stuart
Senior Geologist

RJS/bjm
Enclosures

2-4-81

*Called - they will
send check for
claims - disregard
request to deduct from
copywork acct. m2*

Patent Date 11/17/81
Patent No. 4733
Serial No.



Lot No. 37.
PLAT
of the
Whale
MINING CLAIM,
Swisshehn Mining District, County of Cochise
Arizona.
Claimed by *The Larimer Silver Mining Co.*
Surveyed by *H. G. Howe*, U. S. Deputy Surveyor,
March 11 12 1881.

Containing 19.80 Acres.
Scale 200 feet to an inch.

Whale

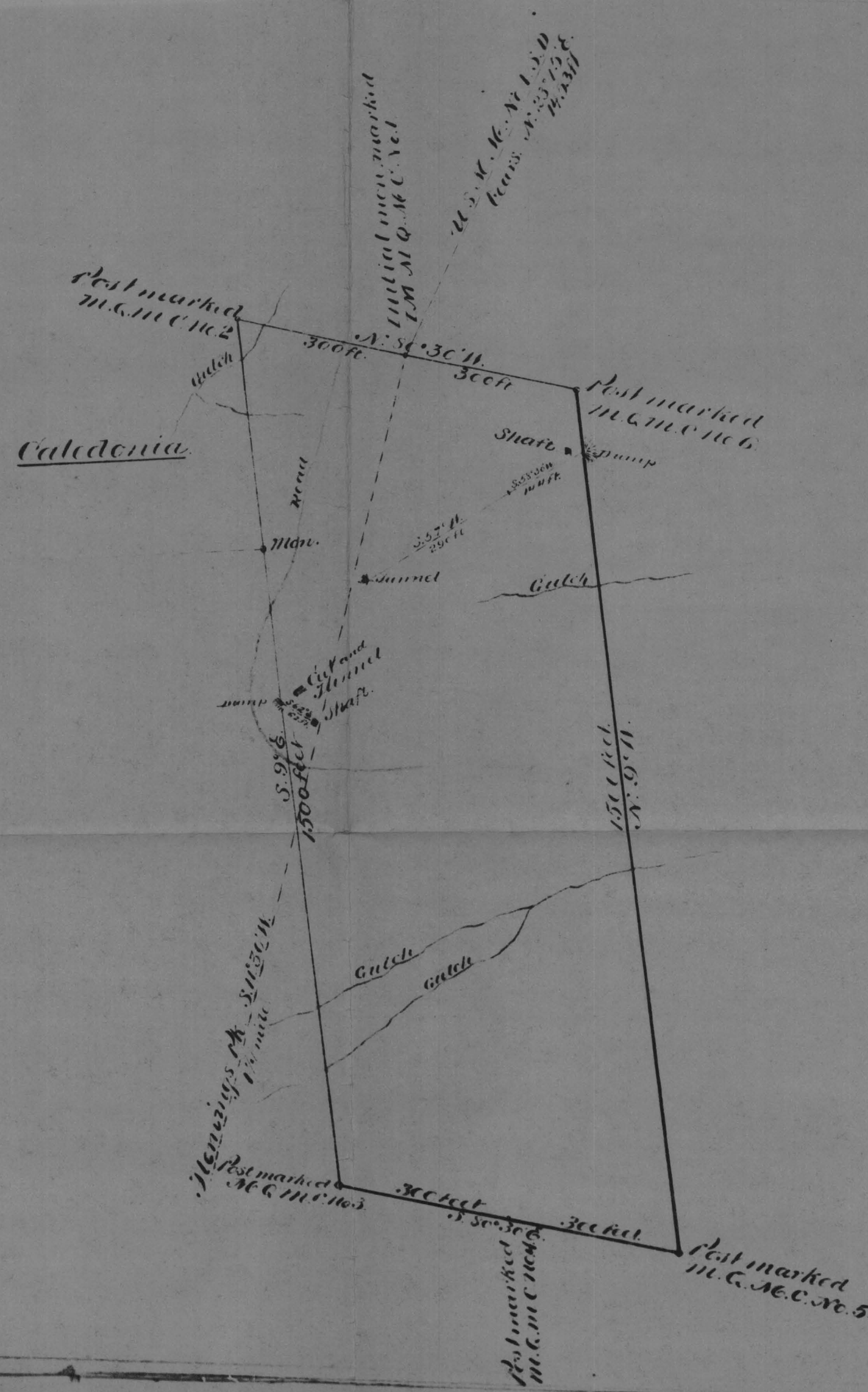
The original field notes of the survey of the *Whale* mining claim from which this plat has been made, have been examined and approved and are on file in this office, and I hereby certify that they furnish such an accurate description of said *Whale* mining claim as will, if incorporated into a patent, serve to identify the premises; and that such reference is made therein to natural objects and permanent monuments as will perpetuate and fix the locus thereof.

I further certify that the value of the labor and improvements upon said mining claim, placed in road by the applicant *s* and *their* grantors, is not less than five hundred dollars, and that said improvements consist of

a Shaft 5.5 ft 6 ft deep
4.6 10.
a Cut 12 x 20 ft 14 ft.

And I further certify that this is a correct plat of said *Whale* mining claim or premises, made in conformity with said original field notes of survey thereof.

John Masson
Surveyor-General.
U. S. Surveyor-General's Office,
Territory of Arizona, June 1. 1881.

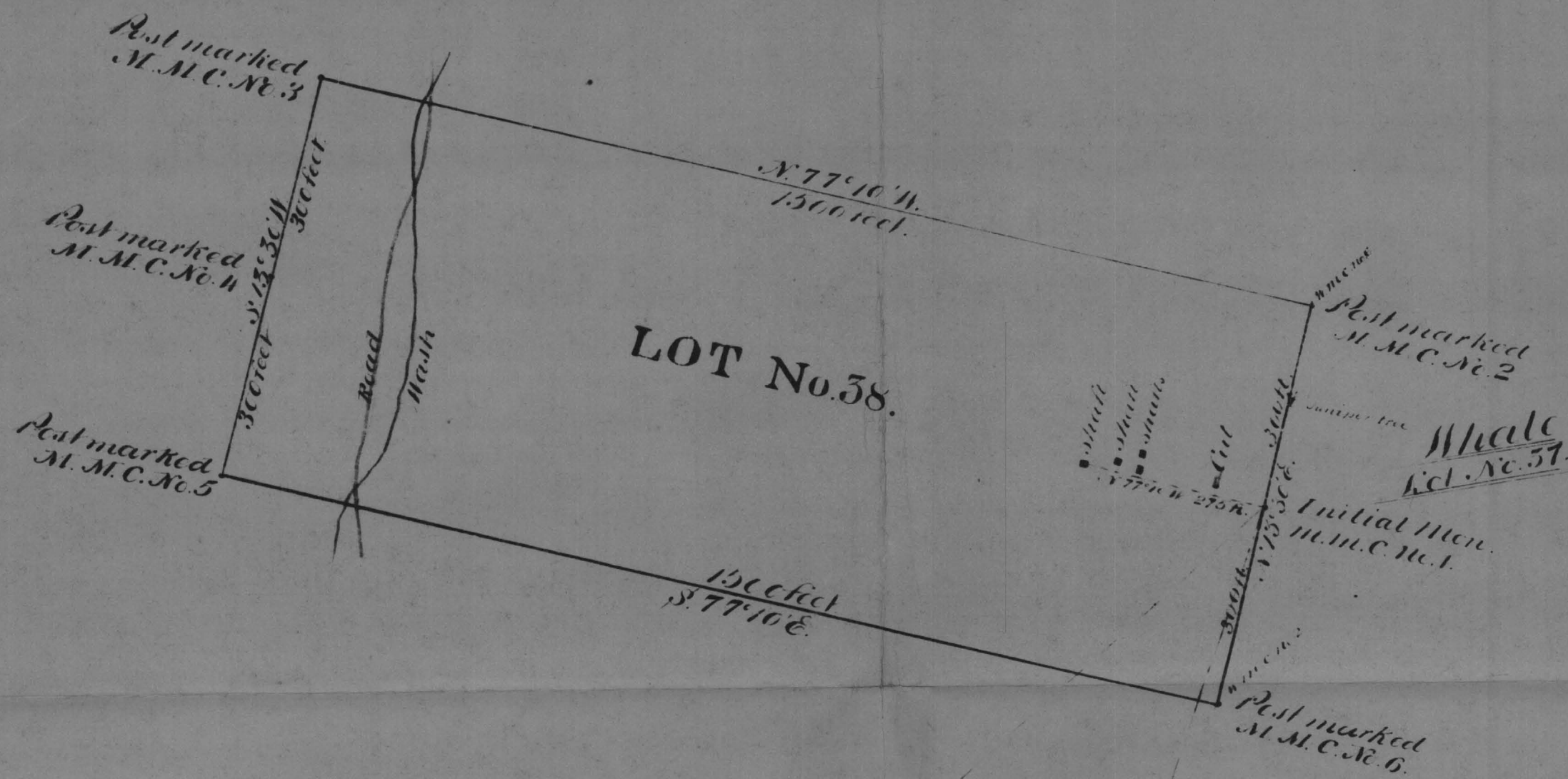


Patent No. 11/12
 Patent No. 6735
 Serial No. 7

39
 PLAT
Mountain Queen
 MINING CLAIM,
 Situated in Swishelm Mining District, County of Cochise
 and in State of Arizona.
 Claimed by The Lawrence Silver Mining Co.
 Surveyed by H. G. Hene U. S. Deputy Surveyor
March 11, 1881
 Containing 19.6 Acres
 Scale 200 feet to an inch
 11

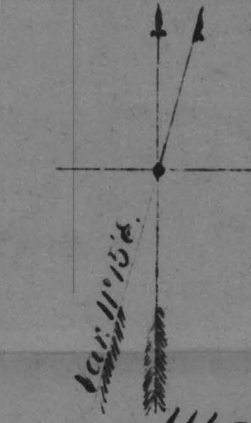
The original field notes of the survey of the Mountain Queen
 mining claim from which this plat has been made, have been examined and approved and are
 on file in this office, and I hereby certify that they furnish such an accurate description of
 said Mountain Queen mining claim as will, if incorporated into a
 patent, serve fully to identify the premises, and that such reference is made therein to natural
 objects and permanent monuments as will perpetuate and fix the locus thereof.
 I further certify that the value of the labor and improvements upon said mining claim,
 placed thereon by the applicant and their grantors, is not less than five hundred dollars,
 and that said improvements consist of
Summit 5 x 7 ft. and 4 in. long with 15 ft. deep
" 5 x 8 " " 20 " " 12 " "
Shaft 4 x 6 " " 60 " deep
" " " " 35 " "

And I further certify that this is a correct plat of said Mountain Queen
 mining claim or premises, made in conformity with said original field notes of survey thereof.
H. G. Hene
 U. S. Surveyor-General's Office,
 Tucson, Arizona. June 3, 1881.



Section 27-4
 Lot 38
PLAT
 of the
Mammoth
MINING CLAIM,
 Situate in **Swishetm** Mining District, County of **Cochise**
 and in Sec. 27-4, T. 1 N., R. 1 E., S. 1 N.,
Arizona.
 Claimed by **The Larimer Silver Mining Co.**

Surveyed by **H.G. Hone**, U. S. Deputy Surveyor.
March 11 and 12, 1881
 Containing **20.6** Acres.
 Scale **200 feet** to an inch.

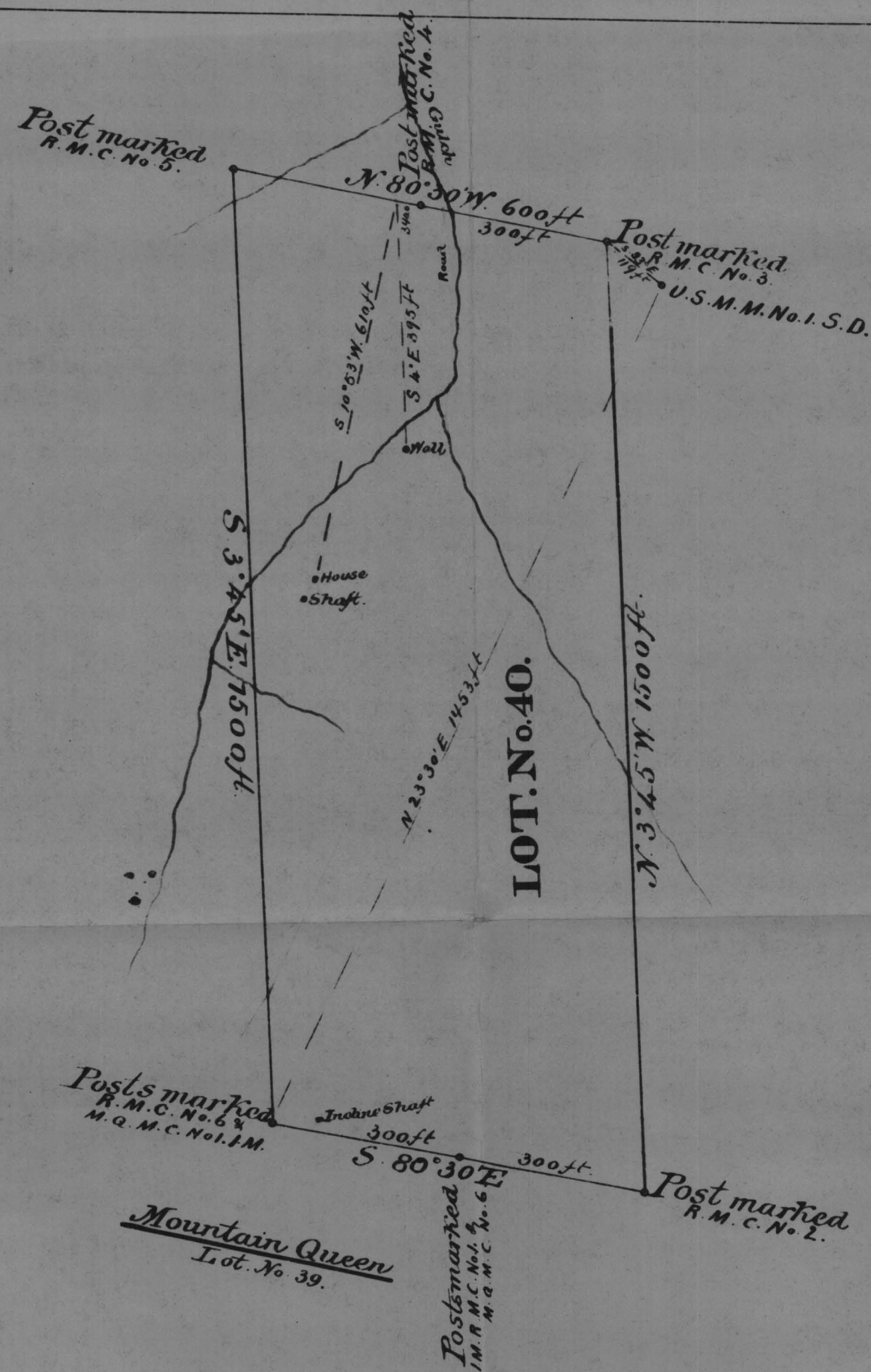


The original field notes of the survey of the
 mining claim from which this plat has been made, have been examined and approved and are
 on file in this office, and I hereby certify that they furnish such an accurate description of
 and **Mammoth** mining claim as will, if incorporated into a
 patent, serve fully to identify the premises; and that such reference is made therein to natural
 objects and permanent monuments as will perpetuate and fix the locus thereof.
 I further certify that the value of the labor and improvements upon said mining claim,
 placed thereon by the applicant, and **their** grantors, is not less than five hundred dollars,
 and that said improvements consist of
Cut 6 x 20 feet and 6 feet deep.
A shaft 4 x 6 feet and 55 feet deep with
a drift " " " " " "
a shaft " " " " " "
Two shafts 8 x 8 " " " " " "
with incline " " " " " "
 And I further certify that this is a correct plat of said **Mammoth**
 mining claim or premises, made in conformity with said original field notes of survey thereof.

John H. Mason
 U. S. Surveyor-General's Office,
 Tucson, Arizona, **June 2, 1881.**

U.S. M.M.C. No. 1 S.D. 245' N. 1043 feet
Monuments No. 215° 30' W. 1043 feet

Patent No. 2734
 Serial No. 1162



288
Lot No. 40.
PLAT
 of the
Retriever

MINING CLAIM,
 Situated in Swisshelm Mining District,
Cachise County,
 and in Sec. 1, T. 1, R. 1, Gila
 and Salt River Meridian,
ARIZONA TERRITORY.

Claimed by the Larimore Silver Mining Co.
 Surveyed by H. G. Howe, U.S.D.S.
June 18, 1887

Containing an area of 20.10 Acres.
 Scale, 200 feet to an inch.
 Variation 11° 15' East.

The original Field Notes of the Survey of the
Retriever Mining Claim,
 from which this plat has been made, have been exam-
 ined and approved, and are on file in this office; and I
 hereby certify that they furnish such an accurate de-
 scription of said Mining Claim, as will, if incorpo-
 rated into a patent, serve fully to identify the premises;
 and that such reference is made therein to natural ob-
 jects and permanent monuments as will perpetuate and
 fix the locus thereof.

I further certify that the value of the labor and
 improvements placed thereon by the applicant or his
 grantors is not less than Five Hundred Dollars, and
 that said improvements consist of

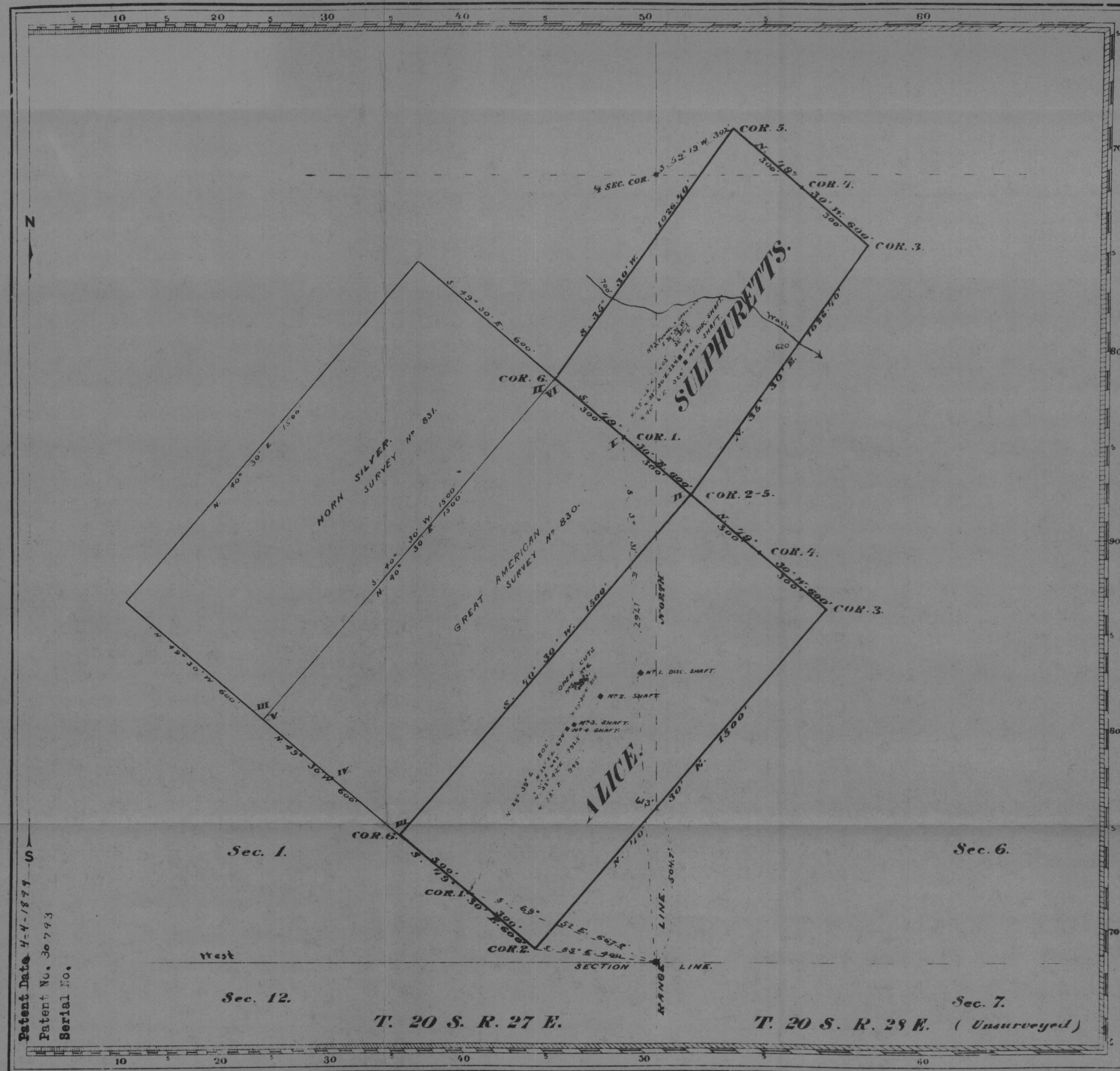
An Incline Shaft 46 ft. 50 ft. deep
" 46 ft. 35 ft. "

as appears by the report of the Deputy Surveyor and
 the testimony of two disinterested witnesses.

And I further certify that this is a correct Plat of
 said Mining Claim, made in conformity with said
 original field notes of the survey thereof.

J. H. Mason
 U. S. Surveyor-General for Arizona.

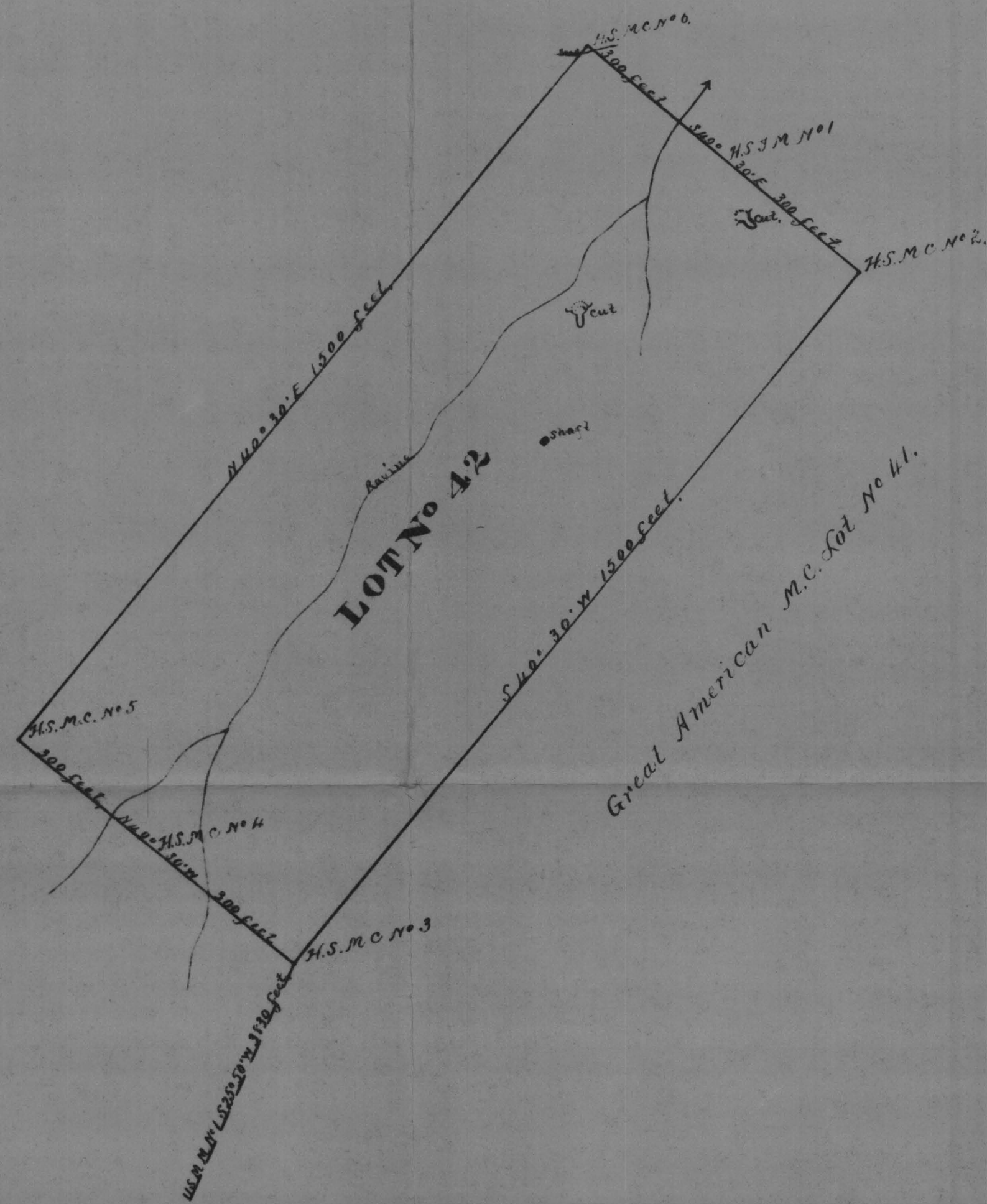
U. S. Surveyor-General's Office,
 Tucson, Arizona Territory,
July 12, 1887.



Patent Date 4-4-1874
 Patent No. 30793
 Serial No.

Claim Located January 4, 1882.
 Mineral Survey No. 1262.
 Lot No. 616 Land District.
PLAT
 OF THE CLAIM OF
The Great American Mining Co.
 KNOWN AS THE
Sulphurettes & Alice Lodes.
 IN Swisshelm MINING DISTRICT,
Cochise COUNTY, Arizona.
 Containing an Area of 14.07 Acres.
 Scale of 300 feet to the inch.
 Variation 11° 15' E.
 SURRENDERED Aug. 7-7. 1897 BY
Henry G. Howe.
 U.S. Deputy Mineral Surveyor.
 The Original Field Notes of the Survey of the Mining Claim of
The Great American Mining Co.
 known as the
Sulphurettes & Alice Lodes.
 from which this plat has been made under my direction,
 have been examined and approved, and are on file in this office;
 and I hereby certify that they furnish such an accurate descrip-
 tion of said Mining Claim as will, if incorporated into a patent,
 serve fully to identify the premises, and that such reference
 is made therein to natural objects or permanent monuments
 as will perpetuate and fix the locus thereof.
 I further certify that five hundred dollars worth of labor has
 been expended or improvements made upon said Mining
 Claim by claimant or its grantors, and that
 said improvements consist of 6 Shafts, 1 Tunnel
and 3 Open Cuts.
 that the location of said improvements is correctly shown
 upon this plat, and that no portion of said labor or im-
 provements has been included in the estimate of expendi-
 tures upon any other claim.
 And I further certify that this is a correct plat of said Mining
 Claim made in conformity with said original field notes of the
 survey thereof, and the same is hereby approved.
 U.S. Surveyor General's Office. George H. H.
Tucson, Ariz. U.S. Surveyor General for
December 6, 1897. Arizona.

Patent No. 17514
Serial No.



SURVEY No. 831

PLAT

OF THE

Horn Silver

MINING CLAIM,

Swiss helm Mining District,

Cochise County,

ARIZONA.

Claimed by Great American Mining Co

Located Jan'y 4th 1884

Surveyed by H. J. Roskrige U. S. D. S.

April 14th 1885

Containing an Area of 20.66 Acres.

Scale 200 feet to the inch.

Variation 11° 15' East.

The original Field Notes of the Survey of the

Horn Silver Mining Claim, from which this plat has been made, have been examined and approved and are on file in this office; and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if incorporated into a patent, serve fully to identify the premises; and that such reference is made therein to natural objects and permanent monuments, as will perpetuate and fix the locus thereof.

I further certify that the value of the labor and improvements placed thereon by the applicant or grantor is not less than Five Hundred Dollars, and that said improvements consist of

as appears by the report of the Deputy Surveyor and the testimony of two disinterested witnesses.

And I further certify that this is a correct Plat of said Mining Claim, made in conformity with said original Field Notes of the survey thereof.

John H. Rose
U. S. Surveyor-General for Arizona.

U. S. Surveyor General's Office,
Tucson, Arizona,

May 5th 1885

SURVEY No. 230

PLAT

OF THE

Great American

MINING CLAIM,

Swiss helm Mining District,

Cochise County,

ARIZONA.

Claimed by Great American Mining Co

Located Jan'y 1st 1884

Surveyed by G. J. Raskrue, U. S. D. S.

April 13th 1885,

Containing an Area of 2.066 Acres.

Scale 200 feet to the inch.

Variation 11° 15' East.

The original Field Notes of the Survey of the

Great American Mining Claim, from which this plat has been made, have been examined and approved and are on file in this office; and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if incorporated into a patent, serve fully to identify the premises; and that such reference is made therein to natural objects and permanent monuments, as will perpetuate and fix the locus thereof.

I further certify that the value of the labor and improvements placed thereon by the applicant or grantor is not less than Five Hundred Dollars, and that said improvements consist of

as appears by the report of the Deputy Surveyor and the testimony of two disinterested witnesses.

And I further certify that this is a correct Plat of said Mining Claim, made in conformity with said original Field Notes of the survey thereof.

John H. H. H.

U. S. Surveyor-General for Arizona

U. S. Surveyor General's Office,
Tucson, Arizona,

May 5th 1885

