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CAMBIOR USA, INC.

MEMORANDUM

To: Michael Gustin

From: Gary Parkison GAP

Date: June 14, 1994

Subject: MEETING WITH MR. SAL ANZALONE, ASARCO INC., COPPER BUTTE AND BUCKEYE PROPERTIES, PINAL COUNTY, ARIZONA

On Wednesday, June 8, I met for about 50 minutes with Mr. Sal Anzalone, Chief Geologist, Mining for Asarco Inc. at its Tucson offices--1150 North 7th Avenue, Tucson, Arizona 85703-0747, Phone (602) 798 -7757 Fax (602) 798-7783. Over the last several years, I have contacted Mr. Anzalone several times regarding the possibility of Cambior gaining an interest in the Copper Butte and Buckeye properties owned by Asarco. Because of the recent work in the area from Florence to Ray by Cambior and the positive results from these investigations, this meeting was initiated to again discuss the possible interest of Asarco in joint venturing these project areas. Mr. Anzalone indicated that in his role as Chief Geologist for mining, he was likely to be the best person to forward our proposal to the mine group and that he would likely be the one to negotiate any possible deals.

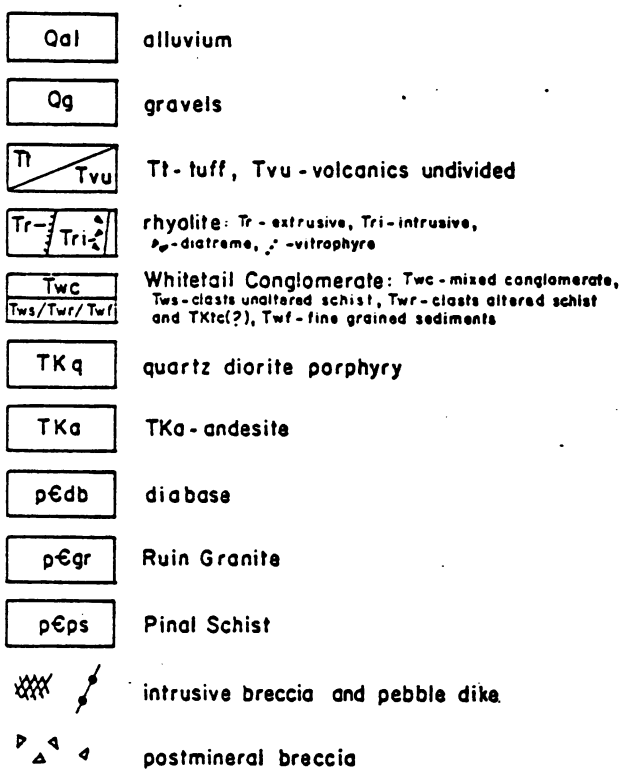
According to Mr. Anzalone, the Mine Development Group at Ray is apparently about six months away from making a production decision for the Copper Butte deposit. The group is evaluating two possible scenarios--1) a stand alone operation with its own SX-EW plant, and 2) a mine only with ore being trucked approximately six miles to the east for placement on existing leach dumps at the Ray Mine. This latter proposal is favored because it shortens in time and lessens the expense of permitting a stand alone operation, including a SX-EW plant, which is the biggest detriment Asarco believes to the stand alone operation. Ray personnel are currently focusing on the Copper Butte deposit because of its apparent economic advantage over the more deeply buried Buckeye East and Buckeye West deposits. In addition, these latter deposits are located farther to the west, and hence, would require additional haulage distance to transport ore to the Ray leach dumps.

It is likely that if either scenario for a positive production decision is made at Copper Butte, then Asarco will likely not joint venture or dispose of the Buckeye properties. However, if a decision is made not to proceed with development of the Copper Butte property, then it is likely Asarco may entertain a proposal to divest Copper Butte, the adjacent Buckeye, and all of its other exploration properties in the Ray-Florence trend.

The remaining portion of our discussion related to problems getting mining operations permitted in the state of Arizona, and this factor will weigh very heavily on the ultimate decision as to whether or not the Copper Butte deposit is developed by Asarco. Mr. Anzalone definitely knows that Cambior is interested in the properties, and I would recommend that either myself

or someone from the Exploration Group touch base with Mr. Anzalone at approximate three-month intervals to determine the latest from Asarco regarding the Copper Butte evaluation. I would not anticipate that Mr. Anzalone will be calling us anytime in the near future. I did give mr. Anzalone a Cambior 1993 Annual Report.

EXPLANATION



PIONEER - ALABAMA
PINAL COUNTY, ARIZONA

Research Geologist: L.F. Barrett
IP data by: R.K. Andrews (1973)
Geology incorprates mapping by Welsh(1968) and Sherer (1970)

MEMORANDUM

TO: Files DATE: August 13, 1973

FROM: J. W. Allan

SUBJECT: PIONEER-ALABAMA PROSPECT, PINAL COUNTY, ARIZONA
QUINTANA DRILLING WEST & NORTHWEST OF
CAPPING AREA

In conversation with Bill Saegart of Quintana this morning, Bill offered the following information regarding some of Quintana's recent drilling in the Pioneer-Alabama area. Three holes for which generalized results were learned are located on the accompanying sketches. The holes were numbered by myself for reference to the below descriptions.

Hole No. 1

Total depth 3510'. Bottomed in Whitetail conglomerate overlain by 400-500' of dacite. 0'-2000' was mainly conglomerates probably roughly correlative with the Gila with intertongued rhyolite.

Hole No. 2

Total depth +2000'. Encountered "pyritic Pinal schist" essentially barren of copper at about 2000'. Saegart indicated sulfide content about 1/2%.

Hole No. 3

Total depth +1800'. Encountered barren, unaltered Pinal schist at about 1800'.

James W. Allan

James W. Allan

JWA:ct

OPERATING PROPERTIES 02709999

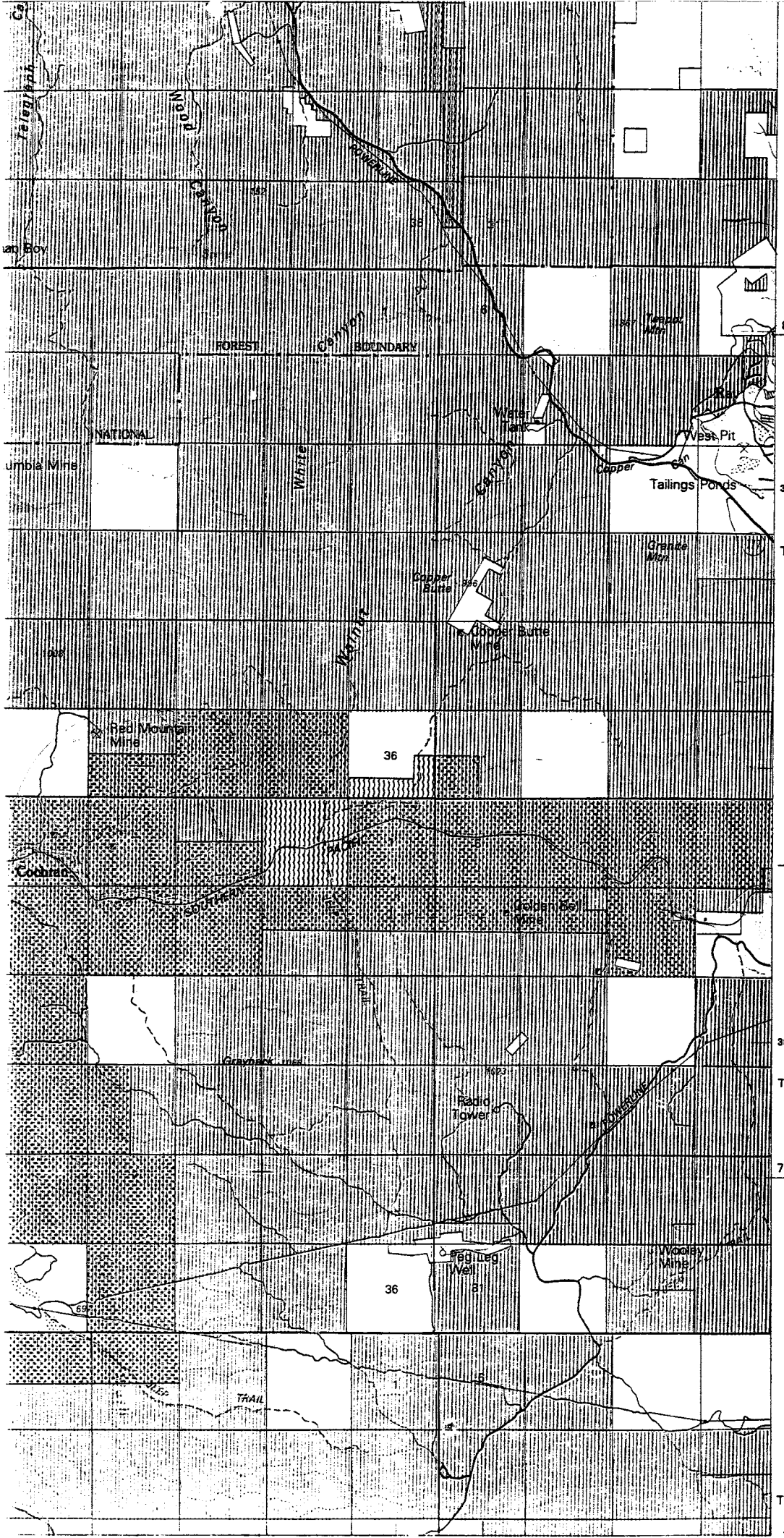
Pioneer-Alabama, Pinal County, Arizona (02700052)

Continued geologic mapping and additional VIP lines at Pioneer-Alabama and an RMD examination about 7 miles west of Ray, resulted in refinement of the target concept. As Figure 5 shows an IP source about 10,000 feet long, 3,000 feet wide, and more than 90% covered by postmineral gravels and volcanics has been defined. Chalcocite mineralization is abundant where the IP anomaly overlaps bedrock, and an RMD drill hole (CB-75) drilled in 1973 to test part of the IP source intersected 654 feet of highly pyritized and copper-enriched (200 feet of 0.35% Cu) Pinal Schist. Although the mineralization encountered in this hole is not ore grade, the chance for discovery of +1% supergene copper in other parts of the system is considered good.

The present target concept is for a remnant(s) of a partially eroded, major enrichment blanket preserved under gravel and/or structural cover. Such a deposit could reasonably contain more than 100 million tons of ore.

Postdepositional tilting of the Whitetail Conglomerate indicates that a remnant of an enrichment blanket would probably be steeply tilted to the east. "Shallow" parts of the IP source may correlate with the edge of such a tilted remnant. During the second quarter, 1974, RMD plans to drill one hole about 1,000 feet north of CB-75 to test a "shallow" part of the IP source.

[illegible] Salt Lake City, Utah 84104 • Phone [illegible] • TWX [illegible]



MINERALS OWNED BY THE FEDERAL GOVERNMENT

Mineral Rights

All minerals . . . . . .

Coal only . . . . . .

Oil and Gas only . . . . . .

Oil, Gas, and Coal only . . . . . .

Other . . . . . .

No symbol indicates no Federal minerals . . . . . .

NOTE TO MAP USERS

The surface and minerals managemer overprints are published as general and management tools. Some of the lands and mineral rights, may have been s patented lands due to the lack of inf available to BLM with respect to the r acquisition. Tracts less than 40 acres ar omitted because of the map scale. Access private lands may be restricted. The offi records in the respective offices of the B Land Management or other responsible agencies should be checked for up-to-da on any specific tract of land. Inadequaci BLM maps should be reported to the r Bureau of Land Management offices fro the maps were obtained.

CAMBIOR USA, INC.

FAX ☎ 1-303-773-0733
Facsimile Transmittal Sheet

TRANSMISSION TYPE (✓ One) ☐ NORMAL ☐ PRIORITY ☐ CONFIDENTIAL

P.S. Sherry called and ordered staff for T3.4S R12E. Will ship from Phoenix on Monday

NUMBER OF PAGES (Including Transmittal Sheet) _____

DATE May 13 Friday The 13th

TO ☞ The Dakmeister **COMPANY** _____

FAX ☎ Nº _____

FROM ☞ The Gapmeister

MESSAGE Here are the copies of the fiche - still no version more recent than this one. Also copy of the 1:100,000 mineral map. Area shown with stipple, incl. Sec. 4, is covered by mineral withdrawl by Water and Power Resources Service. Sherry has noted that a lot of these withdrawls have been withrawn since this map (1979) and it would be open for location. Suggest you check the most recent MTP and Historical Index up in Phoenix BLM. I will send hardcopy of this in the mail!

Please call (303) 694-4936 if any problems with this transmission and ask for _____

Gary

8101 East Prentice Avenue, Suite 800, Englewood, Colorado 80111
303-694-4936 Fax 303-773-0733

4 S 12 E 4 W2

REPORT DATE: NOV 3, 1993
ADMINISTRATIVE STATE: ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
4 S	12 E	4	W2	21	2	288922*LD		BEVEROCK #8 SECT 4	BEVERSDORF FRANK	288915	1553:0803	9/04/1988	0000	4/17/1990
			SW	21		288923*LD		BEVEROCK #9 SECT 4		288915	1553:0805	9/04/1988	0000	4/17/1990
		5	NE	21		50121*LD		BEVEROCK #2		50120	783:289	4/23/1975	1986	4/06/1988
			NW	21		50127*LD		BEVEROCK #13		50120	783:309	4/23/1975	1986	4/06/1988
			NE	21		50128*LD		BEVEROCK #14		50120	783:311	4/23/1975	1986	4/06/1988
			NE	21		59643 LD		TW 3	KENNECOTT CORP	59548	513:718	8/07/1967	1984	4/17/1986
			NE	21		59645 LD		TW 7		59548	513:722	8/07/1967	1984	4/17/1986
			NE	21		59711 LD		TW 100		59548	804:621	9/17/1975	1984	4/17/1986
			N2	21		288917*LD		BEVEROCK #2	BEVERSDORF FRANK	288915	1553:0811	9/06/1988	0000	4/17/1990
			N2	21		288926*LD		BEVEROCK #13 SECT 5		288915	1553:0813	9/04/1988	0000	4/17/1990
			NE,S2	21		288927*LD		BEVEROCK #14 SECT 5		288915	1553:0815	9/06/1988	0000	4/17/1990
		6	S2	21		288915*LD		BEVEROCK #2A		288915	1553:0817	9/04/1988	0000	4/17/1990
			ALL	21		288918*LD		BEVEROCK #3 SECT 6		288915	1553:0819	9/04/1988	0000	4/17/1990
			ALL	21		288919*LD		BEVEROCK #4 SECT 6		288915	1553:0823	9/04/1988	0000	4/17/1990
			ALL	21		288924*LD		BEVEROCK #10 SECT 6		288915	1553:0821	9/04/1988	0000	4/17/1990
		13	N2	21		318791*LD		COPPER REEF #1	XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0561	12/07/1991	0000	
			W2	21		318792*LD		COPPER REEF #2	XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0563	12/07/1991	0000	
			SW	21		318793*LD		COPPER REEF #3	XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0565	12/07/1991	0000	
			NW	21		318795*LD		COPPER REEF #5	XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0569	12/07/1991	0000	
			NW	21		318796*LD		COPPER REEF #6	XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0571	12/07/1991	0000	
			N2	21		325980*LD		COPPER REEF #1	XANTHOS JOHN XANTHOS SHIRLEY	325980	1880:0321	1/12/1993	0000	
			W2	21		325981*LD		COPPER REEF #2	XANTHOS JOHN XANTHOS SHIRLEY	325980	1880:0324	1/12/1993	0000	
			SW	21		325982*LD		COPPER REEF #3	XANTHOS JOHN XANTHOS SHIRLEY	325980	1880:0327	1/12/1993	0000	
			NW	21		325984*LD		COPPER REEF #5	XANTHOS JOHN XANTHOS SHIRLEY	325980	1880:0333	1/12/1993	0000	
			N2	21		325985*LD		COPPER REEF #6	XANTHOS JOHN XANTHOS SHIRLEY	325980	1880:0336	1/12/1993	0000	
		14	E2	21		318792*LD		COPPER REEF #2	XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0563	12/07/1991	0000	
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			E2	21		318794*LD		COPPER REEF #4	XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0567	12/07/1991	0000	
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			E2	21		325981*LD		COPPER REEF #2	XANTHOS JOHN	325980	1880:0324	1/12/1993	0000	

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REPORT DATE: NOV 3, 1993 UNITED STATES DEPARTMENT OF THE INTERIOR PAGE NO: 12316
ADMINISTRATIVE STATE: ARIZONA BUREAU OF LAND MANAGEMENT PCN: LT892PP1

GEOGRAPHIC INDEX ALL CLAIMS MERIDIAN: GILA-SALT R.

TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
4 S	12 E	3	NE	21	2	59568	LD	BYE #17	KENNECOTT CORP	59548	775;816	2/06/1975	1984	4/17/1986
			E2	21		59569	LD	BYE #18		59548	775;817	2/06/1975	1984	4/17/1986
			NW	21		59664	LD	TW 29		59548	513;744	8/07/1967	1984	4/17/1986
			NW	21		59665	LD	TW 30		59548	513;745	8/07/1967	1984	4/17/1986
			NW	21		59710	LD	TW 75		59548	513;790	8/07/1967	1984	4/17/1986
			NW	21		59715	LD	TW 104		59548	804;625	9/17/1975	1984	4/17/1986
			NW	21		253381*	LD	TW #29	ASARCO	253273		4/30/1986	1992	
			NW	21		253382*	LD	TW #30		253273		4/29/1986	1992	
			NW	21		253427*	LD	TW #75		253273		4/29/1986	1992	
			NW	21		253430*	LD	TW #104		253273		4/30/1986	1992	
		4	NE	21		50122*	LD	BEVEROCK #6	BEVERSDORF FRANK	50120	783;297	4/23/1975	1986	4/06/1988
			NE	21		50123*	LD	BEVEROCK #7		50120	783;299	4/23/1975	1986	4/06/1988
			NW	21		50124*	LD	BEVEROCK #8		50120	783;301	4/23/1975	1986	4/06/1988
			NW	21		50125*	LD	BEVEROCK #9		50120	783;303	4/23/1975	1986	4/06/1988
			NW	21		59643	LD	TW 3	KENNECOTT CORP	59548	513;718	8/07/1967	1984	4/17/1986
			NW	21		59644	LD	TW 4		59548	513;719	8/07/1967	1984	4/17/1986
			NW	21		59645	LD	TW 7		59548	513;722	8/07/1967	1984	4/17/1986
			NW	21		59646	LD	TW 8		59548	513;723	8/07/1967	1984	4/17/1986
			NE	21		59649	LD	TW 12		59548	513;727	8/07/1967	1984	4/17/1986
			N2	21		59650	LD	TW 13		59548	513;728	8/07/1967	1984	4/17/1986
			NE	21		59651	LD	TW 14		59548	513;729	8/07/1967	1984	4/17/1986
			NW	21		59652	LD	TW 15		59548	513;730	8/07/1967	1984	4/17/1986
			NE	21		59653	LD	TW 16		59548	513;731	8/07/1967	1984	4/17/1986
			NW	21		59654	LD	TW 17		59548	513;732	8/07/1967	1984	4/17/1986
			NE	21		59664	LD	TW 29		59548	513;744	8/07/1967	1984	4/17/1986
			NE	21		59665	LD	TW 30		59548	513;745	8/07/1967	1984	4/17/1986
			NW	21		59711	LD	TW 100		59548	804;621	9/17/1975	1984	4/17/1986
			NW	21		59712	LD	TW 101		59548	804;622	9/17/1975	1984	4/17/1986
			N2	21		59713	LD	TW 102		59548	804;623	9/17/1975	1984	4/17/1986
			NE	21		59714	LD	TW 103		59548	804;624	9/17/1975	1984	4/17/1986
			NE	21		59715	LD	TW 104		59548	804;625	9/17/1975	1984	4/17/1986
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			N2	21		253368*	LD	TW #14		253273		4/30/1986	1992	
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			NE	21		253381*	LD	TW #29		253273		4/30/1986	1992	
			NE	21		253382*	LD	TW #30		253273		4/29/1986	1992	
			N2	21		253428*	LD	TW #102		253273		4/30/1986	1992	
			NE	21		253429*	LD	TW #103		253273		4/30/1986	1992	
			NE	21		253430*	LD	TW #104		253273		4/30/1986	1992	
			NW	21		288920*	LD	BEVEROCK #6 SECT 4	BEVERSDORF FRANK	288915	1553;0809	9/06/1988	0000	4/17/1990
			NW	21		288921*	LD	BEVEROCK #7 SECT 4		288915	1553;0807	9/06/1988	0000	4/17/1990

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B-132 X 64 10-6

REPORT DATE: NOV 3, 1993
ADMINISTRATIVE STATE: ARIZONA

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BUREAU OF LAND MANAGEMENT

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			W2	21		253410*LD		TW #58		253273		4/29/1986	1992	
			NW	21		253411*LD		TW #59		253273		4/29/1986	1992	
			NW	21		253412*LD		TW #60		253273		4/29/1986	1992	
			NW	21		253413*LD		TW #61		253273		4/29/1986	1992	
			NW	21		253414*LD		TW #62		253273		4/29/1986	1992	
			NW	21		253415*LD		TW #63		253273		4/29/1986	1992	
			NW	21		253416*LD		TW #64		253273		4/29/1986	1992	
			NW	21		253418*LD		TW #66		253273		4/29/1986	1992	
			ALL	21		253419*LD		TW #67		253273		4/29/1986	1992	
			N2	21		253420*LD		TW #68		253273		4/29/1986	1992	
			N2	21		253421*LD		TW #69		253273		4/29/1986	1992	
			NE	21		253422*LD		TW #70		253273		4/26/1986	1992	
			N2	21		253423*LD		TW #71		253273		4/29/1986	1992	
			NE	21		253424*LD		TW #72		253273		4/26/1986	1992	
			N2	21		253425*LD		TW #73		253273		4/29/1986	1992	
			NE	21		253426*LD		TW #74		253273		4/26/1986	1992	
			N2	21		288928*LD		BEVEROCK #15 SECT 35	BEVERSDORF FRANK	288915	1553;0795	9/06/1988	0000	4/17/1990
			NW	21		288929*LD		BEVEROCK #16 SECT 35		288915	1553;0793	9/06/1988	0000	4/17/1990
			NW	21		288930*LD		BEVEROCK #17 SECT 35		288915	1553;0791	9/06/1988	0000	4/17/1990
		36	NW	21		18982 LD		SOMNAMBULANT 2	KENNECOTT CORP	18977	893;928	10/21/1977	1984	4/17/1986
			N2	21		18984 LD		SOMNAMBULANT 4		18977	893;931	10/21/1977	1984	4/17/1986
			NE	21		18985 LD		SOMNAMBULANT 5		18977	893;932	10/21/1977	1984	4/17/1986
			NE	21		18986 LD		SOMNAMBULANT 6		18977	893;933	10/21/1977	1984	4/17/1986
			NW	21		59570 LD		SUE 37		59548	522;952	8/17/1967	1984	4/17/1986
			NW	21		253293*LD		SUE #37	ASARCO	253273		4/26/1986	1992	
4 S	12 E	2	NW	21		59568 LD		BYE #17	KENNECOTT CORP	59548	775;816	2/06/1975	1984	4/17/1986
			W2	21		59569 LD		BYE #18		59548	775;817	2/06/1975	1984	4/17/1986
		3	NW	21		59552 LD		BYE #1		59548	775;800	2/06/1975	1984	4/17/1986
			W2	21		59553 LD		BYE #2		59548	775;801	2/06/1975	1984	4/17/1986
			NW	21		59554 LD		BYE #3		59548	775;802	2/06/1975	1984	4/17/1986
			W2	21		59555 LD		BYE #4		59548	775;803	2/06/1975	1984	4/17/1986
			NW	21		59556 LD		BYE #5		59548	775;804	2/06/1975	1984	4/17/1986
			W2	21		59557 LD		BYE #6		59548	775;805	2/06/1975	1984	4/17/1986
			NW	21		59558 LD		BYE #7		59548	775;806	2/06/1975	1984	4/17/1986
			W2	21		59559 LD		BYE #8		59548	775;807	2/06/1975	1984	4/17/1986
			N2	21		59560 LD		BYE #9		59548	775;808	2/06/1975	1984	4/17/1986
			ALL	21		59561 LD		BYE #10		59548	775;809	2/06/1975	1984	4/17/1986
			NE	21		59562 LD		BYE #11		59548	775;810	2/06/1975	1984	4/17/1986
			E2	21		59563 LD		BYE #12		59548	775;811	2/06/1975	1984	4/17/1986
			NE	21		59564 LD		BYE #13		59548	775;812	2/06/1975	1984	4/17/1986
			E2	21		59565 LD		BYE #14		59548	775;813	2/06/1975	1984	4/17/1986
			NE	21		59566 LD		BYE #15		59548	775;814	2/06/1975	1984	4/17/1986
			E2	21		59567 LD		BYE #16		59548	775;815	2/06/1975	1984	4/17/1986

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REPORT DATE: NOV 3, 1993
ADMINISTRATIVE STATE: ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

-LEGAL DESCRIPTION- TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
3 S	12 E	34	NE	21	2	59699	LD	TW 64	KENNECOTT CORP	59548	513:779	8/07/1967	1984	4/17/1986
			NE	21		59700	LD	TW 65		59548	513:780	8/07/1967	1984	4/17/1986
			NE	21		59701	LD	TW 66		59548	513:781	8/07/1967	1984	4/17/1986
			SW	21		59710	LD	TW 75		59548	513:790	8/07/1967	1984	4/17/1986
			NE	21		59716	LD	WINDY #1		59548	766:667	10/17/1974	1984	4/17/1986
			NW	21		59717	LD	PLUG 106		59548	522:908	9/20/1967	1984	4/17/1986
			W2	21		59719	LD	PLUG 108		59548	522:910	9/20/1967	1984	4/17/1986
			NE	21		253348*	LD	SUE #93	ASARCO	253273		5/01/1986	1992	
			NE	21		253351*	LD	SUE #96		253273		5/01/1986	1992	
			N2	21		253352*	LD	SUE #97		253273		5/01/1986	1992	
			SW	21		253382*	LD	TW #30		253273		4/29/1986	1992	
			SW	21		253383*	LD	TW #31		253273		4/29/1986	1992	
			SW	21		253384*	LD	TW #32		253273		4/29/1986	1992	
			SW	21		253385*	LD	TW #33		253273		4/29/1986	1992	
			SW	21		253386*	LD	TW #34		253273		4/30/1986	1992	
			SW	21		253387*	LD	TW #35		253273		4/30/1986	1992	
			SW	21		253389*	LD	TW #37		253273		4/30/1986	1992	
			W2	21		253391*	LD	TW #39		253273		4/30/1986	1992	
			NW	21		253392*	LD	TW #40		253273		4/30/1986	1992	
			NW	21		253393*	LD	TW #41		253273		4/30/1986	1992	
			NW	21		253394*	LD	TW #42		253273		4/30/1986	1992	
			NW	21		253395*	LD	TW #43		253273		4/29/1986	1992	
			S2	21		253396*	LD	TW #44		253273		4/29/1986	1992	
			S2	21		253397*	LD	TW #45		253273		4/29/1986	1992	
			SE	21		253398*	LD	TW #46		253273		4/29/1986	1992	
			S2	21		253399*	LD	TW #47		253273		4/29/1986	1992	
			E2	21		253400*	LD	TW #48		253273		4/29/1986	1992	
			ALL	21		253401*	LD	TW #49		253273		4/29/1986	1992	
			N2,SE	21		253402*	LD	TW #50		253273		4/29/1986	1992	
			W2	21		253403*	LD	TW #51		253273		4/29/1986	1992	
			N2	21		253404*	LD	TW #52		253273		4/29/1986	1992	
			NW	21		253405*	LD	TW #53		253273		4/29/1986	1992	
			N2	21		253406*	LD	TW #54		253273		4/29/1986	1992	
			NW	21		253407*	LD	TW #55		253273		4/29/1986	1992	
			N2	21		253408*	LD	TW #56		253273		4/29/1986	1992	
			E2	21		253409*	LD	TW #57		253273		4/29/1986	1992	
			E2	21		253411*	LD	TW #59		253273		4/29/1986	1992	
			NE	21		253413*	LD	TW #61		253273		4/29/1986	1992	
			NE	21		253415*	LD	TW #63		253273		4/29/1986	1992	
			NE	21		253416*	LD	TW #64		253273		4/29/1986	1992	
			NE	21		253417*	LD	TW #65		253273		4/29/1986	1992	
			NE	21		253418*	LD	TW #66		253273		4/29/1986	1992	
			SW	21		253427*	LD	TW #75		253273		4/29/1986	1992	
			ALL	21		288916*	LD	BEVEROCK #2 SECT 34	BEVERSDORF FRANK	288915	1553:0797	9/06/1988	0000	4/17/1990

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GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
3 S	12 E	33	E2	21	2	253390*LD		TW #38	ASARCO	253273		4/30/1986	1992	
			E2	21		253391*LD		TW #39		253273		4/30/1986	1992	
			E2	21		253392*LD		TW #40		253273		4/30/1986	1992	
			NE	21		253393*LD		TW #41		253273		4/30/1986	1992	
			NE	21		253394*LD		TW #42		253273		4/30/1986	1992	
			W2	21		288925*LD		BEVEROCK #12 SECT 33	BEVERSDORF FRANK	288915	1553:0789	9/06/1988	0000	4/17/1990
			NW	21		288931*LD		BEVEROCK #18 SECT 33		288915	1553:0787	9/06/1988	0000	4/17/1990
			NW	21		309928*LD		BR 2	J H DRILLING INC	309928		11/24/1990	1992	
			NW	21		309929*LD		BR 3		309928		11/24/1990	1992	
		34	NW	21		50132*LD		BEVEROCK #18	BEVERSDORF FRANK	50120	783:319	4/23/1975	1986	4/06/1988
			N2	21		50133*LD		BEVEROCK=19		50120	783:321	4/23/1975	1986	4/06/1988
			NW	21		50134*LD		BEVEROCK #20		50120	783:323	4/23/1975	1986	4/06/1988
			NE	21		59625 LD		SUE 93	KENNECOTT CORP	59548	523:8	8/26/1967	1984	4/17/1986
			NE	21		59628 LD		SUE 96		59548	523:11	8/26/1967	1984	4/17/1986
			N2,SE	21		59629 LD		SUE 97		59548	523:12	8/26/1967	1984	4/17/1986
			SW	21		59665 LD		TW 30		59548	513:745	8/07/1967	1984	4/17/1986
			SW	21		59666 LD		TW 31		59548	513:746	8/07/1967	1984	4/17/1986
			SW	21		59667 LD		TW 32		59548	513:747	8/07/1967	1984	4/17/1986
			SW	21		59668 LD		TW 33		59548	513:748	8/07/1967	1984	4/17/1986
			SW	21		59669 LD		TW 34		59548	513:749	8/07/1967	1984	4/17/1986
			SW	21		59670 LD		TW 35		59548	513:750	8/07/1967	1984	4/17/1986
			W2	21		59672 LD		TW 37		59548	513:752	8/07/1967	1984	4/17/1986
			W2	21		59674 LD		TW 39		59548	513:754	8/07/1967	1984	4/17/1986
			NW	21		59675 LD		TW 40		59548	513:755	8/07/1967	1984	4/17/1986
			NW	21		59676 LD		TW 41		59548	513:756	8/07/1967	1984	4/17/1986
			NW	21		59677 LD		TW 42		59548	513:757	8/07/1967	1984	4/17/1986
			NW	21		59678 LD		TW 43		59548	513:758	8/07/1967	1984	4/17/1986
			S2	21		59679 LD		TW 44		59548	513:759	8/07/1967	1984	4/17/1986
			S2	21		59680 LD		TW 45		59548	513:760	8/07/1967	1984	4/17/1986
			SE	21		59681 LD		TW 46		59548	513:761	8/07/1967	1984	4/17/1986
			S2	21		59682 LD		TW 47		59548	513:762	8/07/1967	1984	4/17/1986
			E2	21		59683 LD		TW 48		59548	513:763	8/07/1967	1984	4/17/1986
			N2,SW	21		59684 LD		TW 49		59548	513:764	8/07/1967	1984	4/17/1986
			N2	21		59685 LD		TW 50		59548	513:765	8/07/1967	1984	4/17/1986
			NW	21		59686 LD		TW 51		59548	513:766	8/07/1967	1984	4/17/1986
			N2	21		59687 LD		TW 52		59548	513:767	8/07/1967	1984	4/17/1986
			NW	21		59688 LD		TW 53		59548	513:768	8/07/1967	1984	4/17/1986
			N2	21		59689 LD		TW 54		59548	513:769	8/07/1967	1984	4/17/1986
			NW	21		59690 LD		TW 55		59548	513:770	8/07/1967	1984	4/17/1986
			N2	21		59691 LD		TW 56		59548	513:771	8/07/1967	1984	4/17/1986
			E2	21		59692 LD		TW 57		59548	513:772	8/07/1967	1984	4/17/1986
			NE	21		59694 LD		TW 59		59548	513:774	8/07/1967	1984	4/17/1986
			NE	21		59696 LD		TW 61		59548	513:776	8/07/1967	1984	4/17/1986
			NE	21		59698 LD		TW 63		59548	513:778	8/07/1967	1984	4/17/1986

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GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

LEGAL DESCRIPTION TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
3 S	12 E	33	ALL	21	2	59661	LD	TW 24	KENNECOTT CORP	59548	513:739	8/07/1967	1984	4/17/1986
			W2	21		59662	LD	TW 25		59548	513:740	8/07/1967	1984	4/17/1986
			N2,SW	21		59663	LD	TW 26		59548	513:741	8/07/1967	1984	4/17/1986
			SE	21		59665	LD	TW 30		59548	513:745	8/07/1967	1984	4/17/1986
			SE	21		59667	LD	TW 32		59548	513:747	8/07/1967	1984	4/17/1986
			SE	21		59669	LD	TW 34		59548	513:749	8/07/1967	1984	4/17/1986
			SE	21		59670	LD	TW 35		59548	513:750	8/07/1967	1984	4/17/1986
			SE	21		59671	LD	TW 36		59548	513:751	8/07/1967	1984	4/17/1986
			SE	21		59672	LD	TW 37		59548	513:752	8/07/1967	1984	4/17/1986
			E2	21		59673	LD	TW 38		59548	513:753	8/07/1967	1984	4/17/1986
			E2	21		59674	LD	TW 39		59548	513:754	8/07/1967	1984	4/17/1986
			NE	21		59675	LD	TW 40		59548	513:755	8/07/1967	1984	4/17/1986
			NE	21		59676	LD	TW 41		59548	513:756	8/07/1967	1984	4/17/1986
			NE	21		59677	LD	TW 42		59548	513:757	8/07/1967	1984	4/17/1986
			NE	21		59717	LD	PLUG 106		59548	522:908	9/20/1967	1984	4/17/1986
			NE	21		59718	LD	PLUG 107		59548	522:909	9/20/1967	1984	4/17/1986
			E2	21		59719	LD	PLUG 108		59548	522:910	9/20/1967	1984	4/17/1986
			E2	21		59720	LD	PLUG 109		59548	522:911	9/20/1967	1984	4/17/1986
			N2	21		59721	LD	PLUG 110		59548	522:912	9/20/1967	1984	4/17/1986
			NW	21		59722	LD	PLUG 111		59548	522:913	9/20/1967	1984	4/17/1986
			ALL	21		59723	LD	PLUG 112		59548	522:914	9/20/1967	1984	4/17/1986
			W2	21		59724	LD	PLUG 113		59548	522:915	9/20/1967	1984	4/17/1986
			NW	21		59725	LD	PLUG 114		59548	522:916	9/20/1967	1984	4/17/1986
			NW	21		59726	LD	PLUG 115		59548	522:917	9/20/1967	1984	4/17/1986
			NW	21		253351*	LD	SUE #96	ASARCO	253273		5/01/1986	1992	
			E2	21		253365*	LD	SUE #201		253273		4/30/1986	1992	
			SE	21		253368*	LD	TW #14		253273		4/30/1986	1992	
			SE	21		253369*	LD	TW #15		253273		4/30/1986	1992	
			S2	21		253370*	LD	TW #16		253273		4/30/1986	1992	
			SW	21		253371*	LD	TW #17		253273		4/30/1986	1992	
			S2	21		253372*	LD	TW #18		253273		4/30/1986	1992	
			SW	21		253373*	LD	TW #19		253273		4/30/1986	1992	
			S2	21		253374*	LD	TW #20		253273		4/30/1986	1992	
			SW	21		253375*	LD	TW #21		253273		4/30/1986	1992	
			NE,S2	21		253376*	LD	TW #22		253273		4/30/1986	1992	
			W2	21		253377*	LD	TW #23		253273		4/30/1986	1992	
			ALL	21		253378*	LD	TW #24		253273		4/30/1986	1992	
			W2	21		253379*	LD	TW #25		253273		4/30/1986	1992	
			N2	21		253380*	LD	TW #26		253273		4/30/1986	1992	
			SE	21		253382*	LD	TW #30		253273		4/29/1986	1992	
			SE	21		253386*	LD	TW #34		253273		4/30/1986	1992	
			SE	21		253387*	LD	TW #35		253273		4/30/1986	1992	
			SE	21		253388*	LD	TW #36		253273		4/30/1986	1992	
			SE	21		253389*	LD	TW #37		253273		4/30/1986	1992	

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REPORT DATE: NOV 3, 1993
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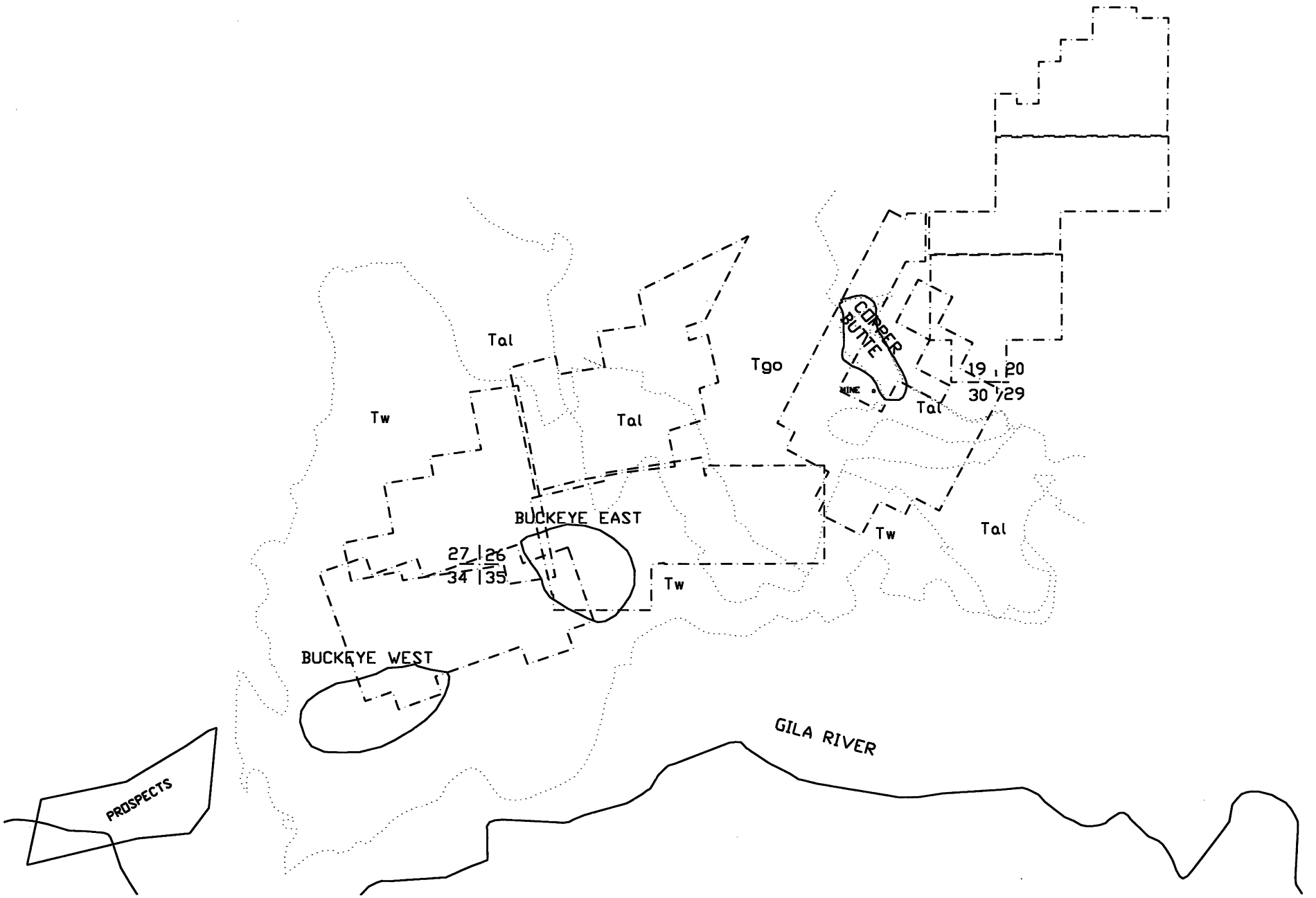
ALL CLAIMS

MERIDIAN: GILA-SALT R.

-LEGAL DESCRIPTION- TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
3 S	12 E	29	S2	21	2	311329*LD		JEN 14	VISTA LITE MINING	311316		1/01/1991	1992	
			N2	21		326581*LD		EL 1	GARDNER ELWIN W	326576		4/12/1993	0000	8/05/1993
			N2	21		326582*LD		EL 2		326576		4/12/1993	0000	8/05/1993
			N2	21		326583*LD		EL 3		326576		4/12/1993	0000	8/05/1993
			N2	21		326584*LD		EL 4		326576		4/12/1993	0000	8/05/1993
			ALL	21		326585*LD		EL 5		326576		4/12/1993	0000	8/05/1993
			S2	21		326586*LD		EL 6		326576		4/12/1993	0000	8/05/1993
			S2	21		326587*LD		EL 7		326576		4/12/1993	0000	8/05/1993
			S2	21		326588*LD		EL 8		326576		4/12/1993	0000	8/05/1993
			S2	21		326589*LD		EL 9		326576		4/12/1993	0000	8/05/1993
		30	NE	21		309969*LD		J 127	J H DRILLING INC	309928		11/20/1990	1992	
			NE	21		309970*LD		J 128		309928		11/20/1990	1992	
			E2	21		309971*LD		J 129		309928		11/20/1990	1992	
			SE	21		309972*LD		J 130	JH DRILLING INC	309928		11/20/1990	1992	
		32	SE	21		59645 LD		TW 7	KENNECOTT CORP	59548	513;722	8/07/1967	1984	4/17/1986
			SE	21		59647 LD		TW 9		59548	513;724	8/07/1967	1984	4/17/1986
			NE	21		59722 LD		PLUG 111		59548	522;913	9/20/1967	1984	4/17/1986
			E2	21		59724 LD		PLUG 113		59548	522;915	9/20/1967	1984	4/17/1986
			NE	21		59726 LD		PLUG 115		59548	522;917	9/20/1967	1984	4/17/1986
			NW	21		292427*LD		JEN 15	VISTA LITE	292413		1/06/1989	0000	1/27/1989
			NW	21		292428*LD		JEN 16		292413		1/06/1989	0000	1/27/1989
			NW	21		292429*LD		JEN 17		292413		1/06/1989	0000	1/27/1989
			NW	21		292430*LD		JEN 18	VISTA LITE CORP	292413		1/06/1989	0000	1/27/1989
			N2	21		292431*LD		JEN 19	VISTA LITE	292413		1/06/1989	0000	1/27/1989
			N2	21		292432*LD		JEN 20		292413		1/06/1989	0000	1/27/1989
			N2	21		292433*LD		JEN 21		292413		1/06/1989	0000	1/27/1989
			N2	21		292434*LD		JEN 22		292413		1/06/1989	0000	1/27/1989
		33	SW	21		50120*LD		BEVEROCK MINING	BEVERSDORF FRANK		782;42	4/17/1975	1986	4/06/1988
			SW	21		50126*LD		BEVEROCK #12		50120	783;307	4/23/1975	1986	4/06/1988
			E2	21		59642 LD		SUE 201	KENNECOTT CORP	59548	531;644	12/08/1967	1984	4/17/1986
			SW	21		59645 LD		TW 7		59548	513;722	8/07/1967	1984	4/17/1986
			SW	21		59646 LD		TW 8		59548	513;723	8/07/1967	1984	4/17/1986
			SW	21		59647 LD		TW 9		59548	513;724	8/07/1967	1984	4/17/1986
			SW	21		59648 LD		TW 10		59548	513;725	8/07/1967	1984	4/17/1986
			SE	21		59651 LD		TW 14		59548	513;729	8/07/1967	1984	4/17/1986
			S2	21		59652 LD		TW 15		59548	513;730	8/07/1967	1984	4/17/1986
			SE	21		59653 LD		TW 16		59548	513;731	8/07/1967	1984	4/17/1986
			SW	21		59654 LD		TW 17		59548	513;732	8/07/1967	1984	4/17/1986
			S2	21		59655 LD		TW 18		59548	513;733	8/07/1967	1984	4/17/1986
			SW	21		59656 LD		TW 19		59548	513;734	8/07/1967	1984	4/17/1986
			S2	21		59657 LD		TW 20		59548	513;735	8/07/1967	1984	4/17/1986
			SW	21		59658 LD		TW 21		59548	513;736	8/07/1967	1984	4/17/1986
			S2	21		59659 LD		TW 22		59548	513;737	8/07/1967	1984	4/17/1986
			SW	21		59660 LD		TW 23		59548	513;738	8/07/1967	1984	4/17/1986

* * DISCLOSURE * * ALL INFORMATION RECEIVED IN THIS OFFICE MAY NOT YET BE LISTED ON THIS REPORT. NAMES AND ADDRESSES ARE ENTERED AS THEY APPEAR ON THE LOCATION NOTICE OR ARE ABBREVIATED TO FIT LIMITED SPACE; THEREFORE THEY MAY NOT APPEAR IN THE EXPECTED SEQUENCE. A BLANK LATEST ASSESSMENT YEAR IN THIS REPORT DOES NOT CONSTITUTE AN ABANDONED CLAIM. * AFTER S/N INDICATES LAND STATUS CHECKED.

8-132 X 64 10-6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COPPER BUTTE MINE
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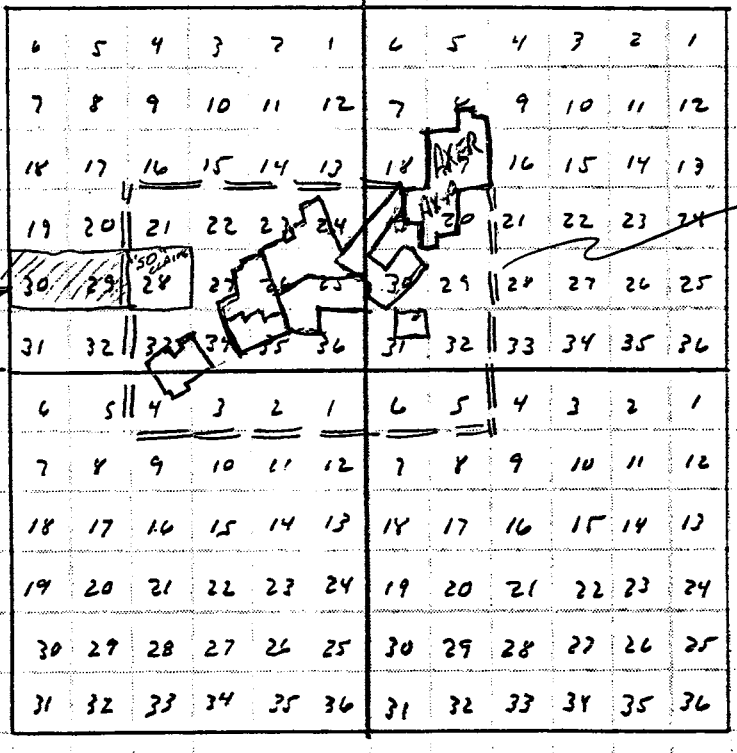
BUCKEYE WEST
GILA RIVER
PROSPECTS

R12E R13E

T3S

T4S



JEH CLAIMS

PRINTOUT, CLAIM STATUS COVERAGE.

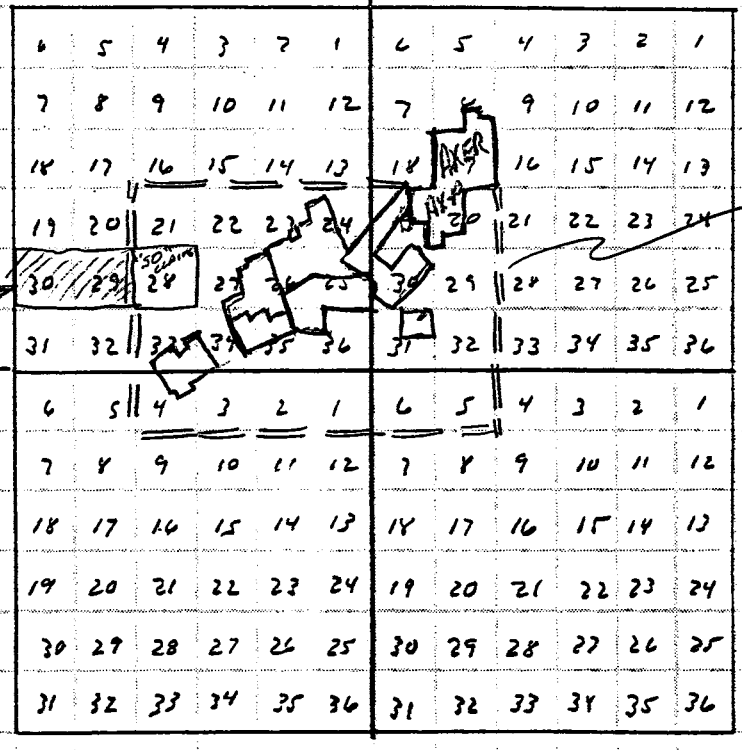
SKETCH OF MAP COVERAGE

HARKORE INC - ("50" CLAIMS)
C.R. 270
WATHROP, CO. 81236

R12E R13E

T3S

T4S



J&H CLAIMS

PRINTOUT, CLAIM STATUS COVERAGE.

SKETCH OF MAP COVERAGE

HARKORE INC - ("SO" CLAIMS)
C.R. 270
NATHROP, CO. 81236

R. I. 3914

AUGUST 1946

UNITED STATES
DEPARTMENT OF THE INTERIOR
J. A. KRUG, SECRETARY

BUREAU OF MINES
R. R. SAYERS, DIRECTOR

REPORT OF INVESTIGATIONS

EXPLORATION OF THE COPPER BUTTE MINE
MINERAL CREEK MINING DISTRICT
PINAL COUNTY, ARIZ.

BY

HARLOW D. PHELPS

R.I. 3914,
August 1946.

REPORT OF INVESTIGATIONS

UNITED STATES DEPARTMENT OF THE INTERIOR - BUREAU OF MINES

EXPLORATION OF THE COPPER BUTTE MINE, MINERAL CREEK MINING DISTRICT, PINAL COUNTY, ARIZ.[1]

By Harlow D. Phelps[2]

CONTENTS

INTRODUCTION

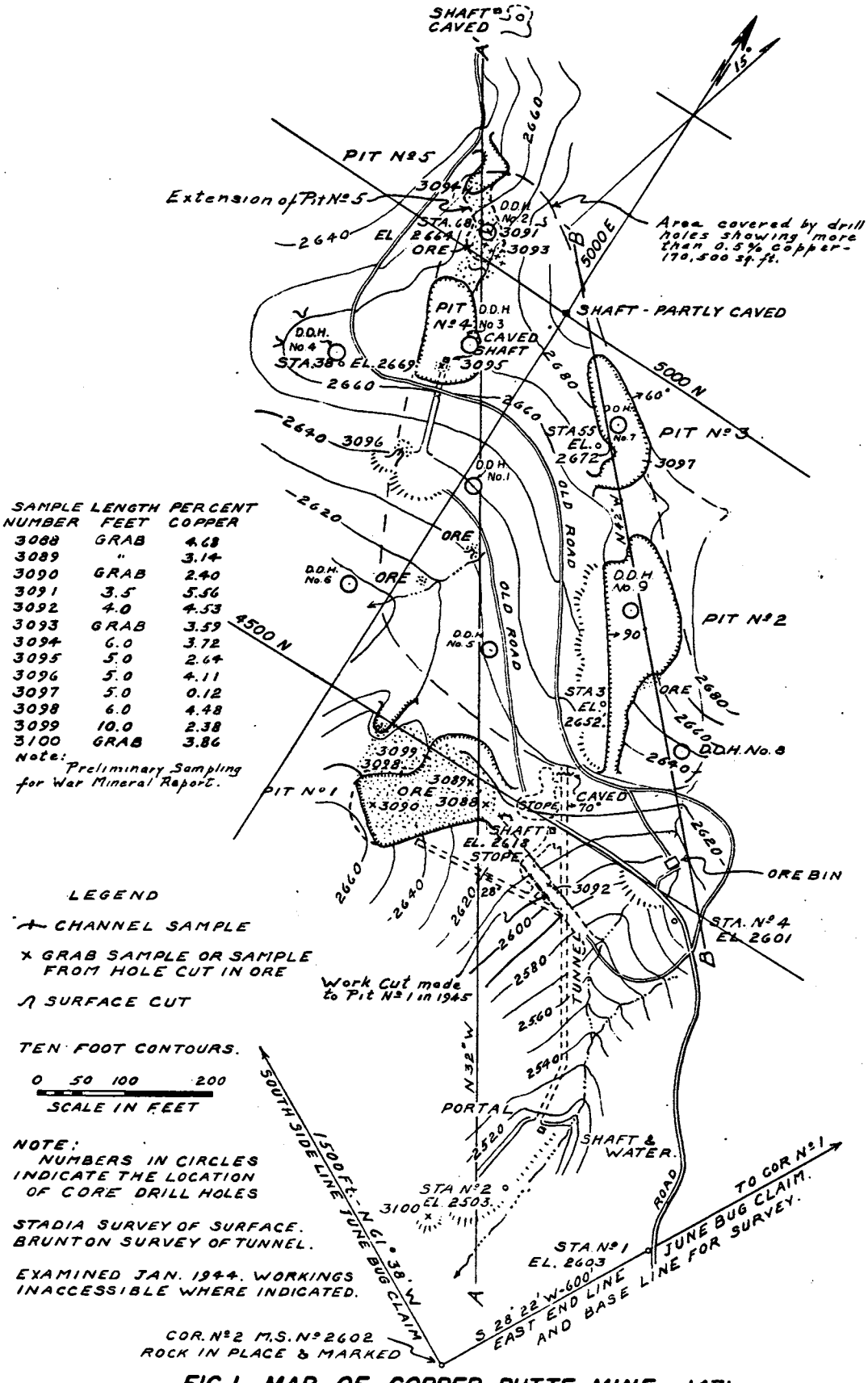
The Copper Butte mine was examined, surveyed, and mapped (fig. 1) by a Bureau of Mines engineer in January 1944. As a result, it was decided to diamond-drill the deposit, using Bureau of Mines equipment, and drilling was started October 14, 1944, under the supervision of two Bureau engineers, and stopped April 5, 1945. Nine holes were drilled for a total of 1,274 feet, not including 48 feet on a lost hole. Figures 2 and 3 are sections at AA' and BB' of figures 1, and show the adjusted average assays of drill-hole samples. Figures 4 and 5 are separate maps of holes 4 and 6, respectively.

ACKNOWLEDGMENTS

In its program of exploration of mineral deposits, the Bureau of Mines has as its primary objective the more effective utilization of our mineral resources, to the end that they make the greatest possible contribution to the national security and economy. It is the policy of the Bureau to publish the facts developed by each exploitation project as soon as practicable after its conclusion. The Mining Branch, Lowell B. Moon, chief, conducts preliminary examinations, performs the actual exploratory work, and prepares the final report. The Metallurgical Branch, R. G. Knickerbocker, chief, analyzes samples and performs beneficiation tests. Both these branches are under the supervision of R. S. Dean, Assistant Director.

1/ The Bureau of Mines will welcome reprinting of this paper, provided the following footnote acknowledgment is used: "Reprinted from Bureau of Mines Report of Investigations 3914."

2/ Mining engineer, Bureau of Mines.



SAMPLE NUMBER	LENGTH FEET	PERCENT COPPER
3088	GRAB	4.68
3089	"	3.14
3090	GRAB	2.40
3091	3.5	5.56
3092	4.0	4.53
3093	GRAB	3.59
3094	6.0	3.72
3095	5.0	2.64
3096	5.0	4.11
3097	5.0	0.12
3098	6.0	4.48
3099	10.0	2.38
3100	GRAB	3.86

Note: Preliminary Sampling for War Mineral Report.

LEGEND

CHANNEL SAMPLE

× GRAB SAMPLE OR SAMPLE FROM HOLE CUT IN ORE

SURFACE CUT

TEN FOOT CONTOURS.

0 50 100 200
SCALE IN FEET

NOTE:
NUMBERS IN CIRCLES INDICATE THE LOCATION OF CORE DRILL HOLES

STADIA SURVEY OF SURFACE.
BRUNTON SURVEY OF TUNNEL.

EXAMINED JAN. 1944. WORKINGS INACCESSIBLE WHERE INDICATED.

FIG. 1 — MAP OF COPPER BUTTE MINE — 1471

Special acknowledgment is due Dr. Eldred D. Wilson, geologist, Arizona Bureau of Mines, University of Arizona, Tucson, for his contribution of the chapter on Geology and the accompanying geologic maps of the Copper Butte area, which are a part of this report. Acknowledgment is made, also, to Robert M. Grantham, who assisted as project engineer during the life of the project, and to S. R. Zimmerley, regional engineer; H. W. St. Clair, assistant regional engineer; Paul T. Allsman, principal mining engineer, all of the Western Region, to J. H. Hodges, chief, and Thomas C. Denton and W. R. Storms, acting chiefs, Tucson Division, for aid and direction given.

LOCATION AND ACCESSIBILITY

The mine is in the Mineral Creek Mining District, sections 19 and 30, T. 3 S., R. 13 E., G. and S. R. Meridian, Pinal County, Arizona. It may be reached by taking the Ray-Superior highway west from Ray and turning left at the top of a hill, 4 miles from Ray. It is 4 miles from this point to the property on a fair mine road, with a steep climb for the last mile.

OWNERSHIP

The property, consisting of eight patented lode claims, is owned by C. Fred Mitchell, Ray, Ariz.

HISTORY AND PRODUCTION

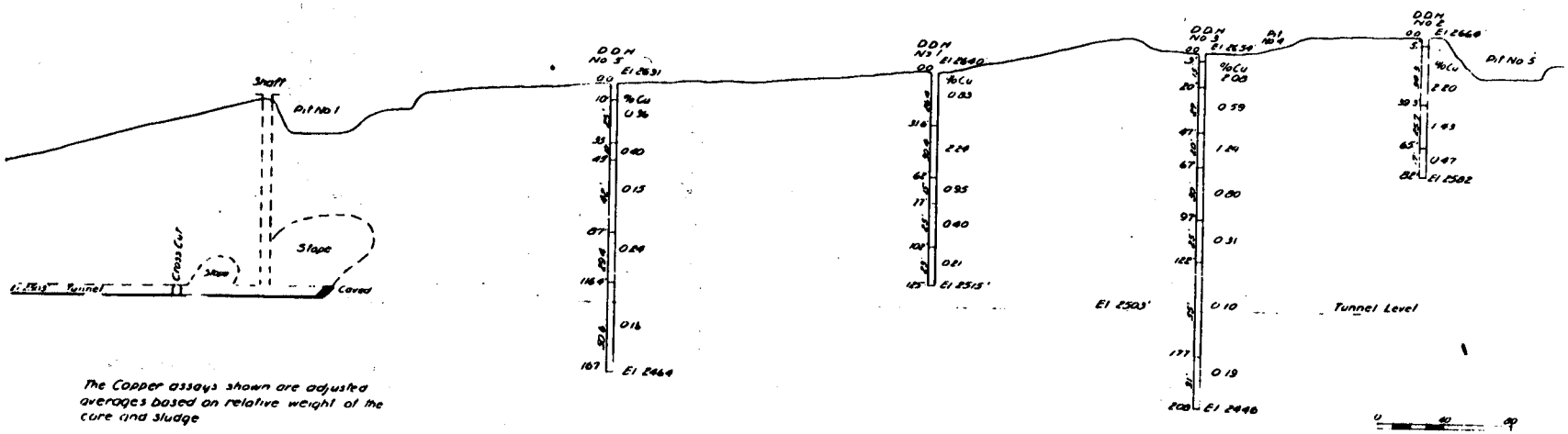
The property is believed to have been located about 1901. Eight lode claims were patented by the Copper Butte Mines in March 1909, Mineral Survey No. 2602, consisting of the June Bug, Cochise, and Butte Nos. 1 to 6, inclusive.

The only known record of early production was furnished by the American Smelting & Refining Co., as follows:

Tons	Cu, percent	Fe, percent	SiO_2, percent	Al_2O_3, percent
6,646	4.64	8.0	60.0	11.0

Shipments were made by F. C. Armstrong during 1917, 1918, and 1919 to the Hayden Smelter. The ore was trucked from the mine tunnel to Butte siding on the Southern Pacific Railroad over a 3-mile road. This road, all downgrade, followed a wash south to the Gila River. The railroad is on the opposite side of the river from the mine. At that time there was very little water in the Gila River, and the crossing was passable most of the year. Now the road is not practicable because of the larger amount of water released down the Gila river from the San Carlos reservoir.

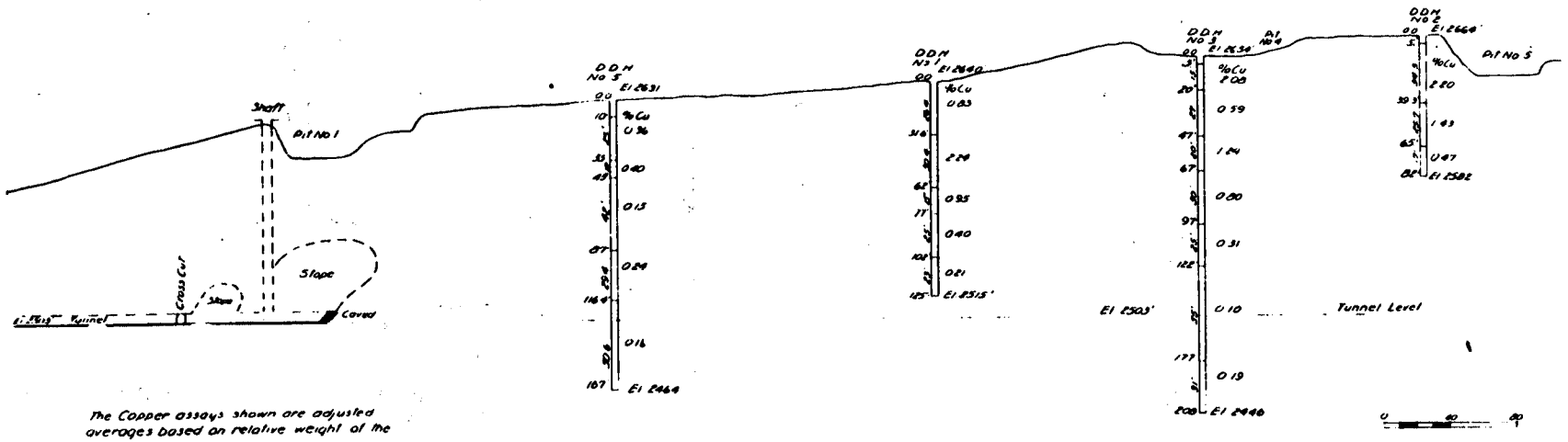
C. Fred Mitchell bought the property at a tax sale in 1941 and believes he has a clear title to it. The first mining done by the present owner was in an old stope south of the shaft on the tunnel level. A headframe was constructed and a hoist installed at the shaft (this shaft ends at the tunnel level). The ore from the stope was trucked directly to the International Smelter at Miami. Shipments were as follows:



The Copper assays shown are adjusted averages based on relative weight of the core and sludge

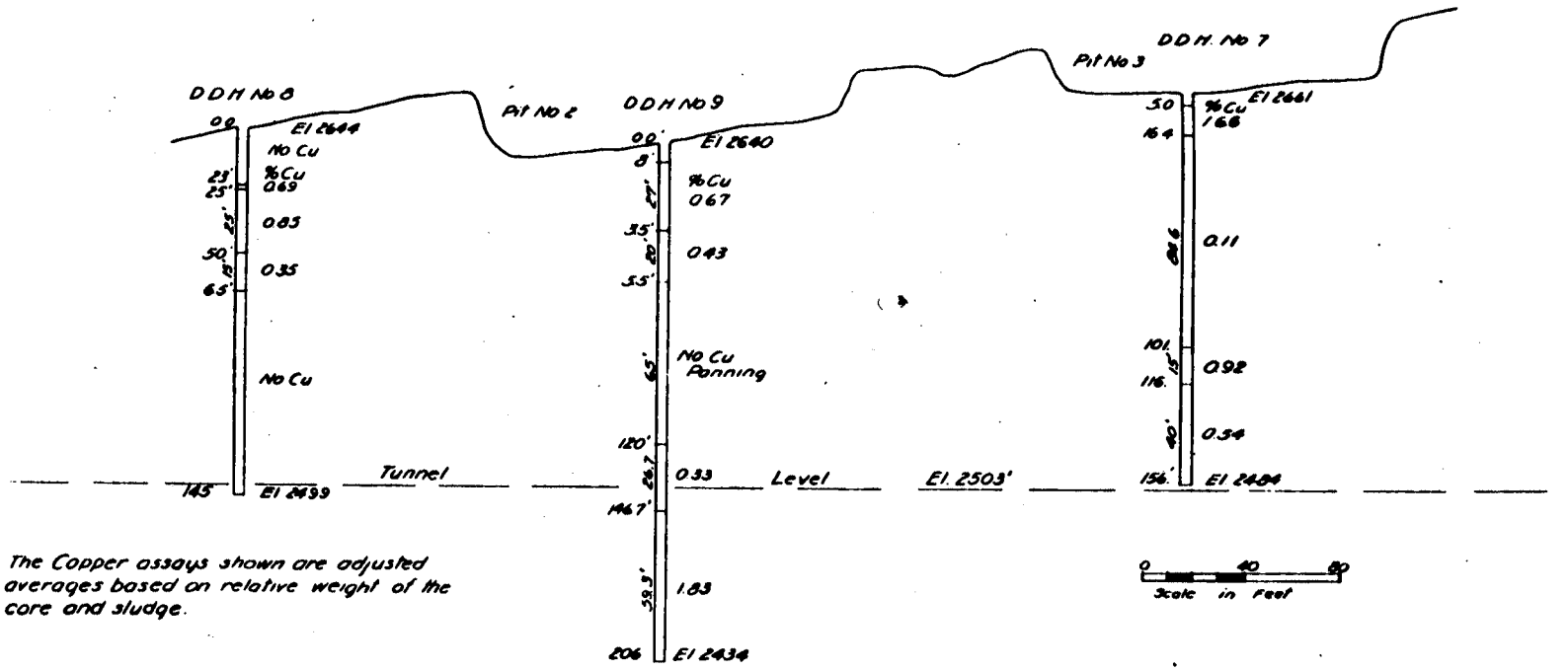
PROJECTION ON VERTICAL SECTION A-A'-N32°W

FIG. 2-COPPER BUTTE MINE-PROJECT 1471-PINAL COUNTY, ARIZ.



PROJECTION ON VERTICAL SECTION A-A'-N32°W

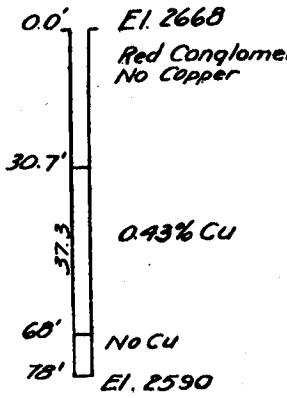
FIG. 2 - COPPER BUTTE MINE - PROJECT 1471 - PINAL COUNTY, ARIZ.

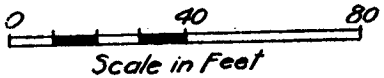


PROJECTION ON VERTICAL SECTION B-B'-N 42°W

FIG. 3-COPPER BUTTE MINE - PROJECT 1471 - PINAL COUNTY, ARIZ.

U S DEPARTMENT OF INTERIOR - BUREAU OF MINES

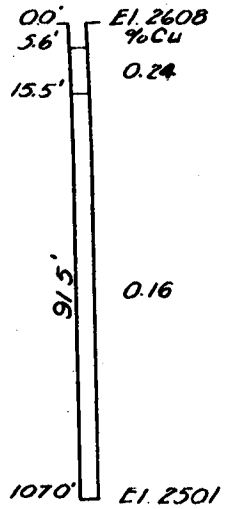


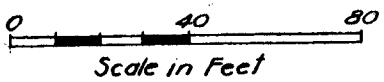


D.D. Hole No. 4

FIG. 4 - COPPER BUTTE MINE - 1471 - PINAL CO, ARIZ.

U S DEPARTMENT OF INTERIOR - BUREAU OF MINES





D D. Hole No. 6

FIG 5 - COPPER BUTTE MINE - 1471 - PINAL CO, ARIZ.

TABLE 1. - Ore shipments

Date	Tons	Gold, oz. per ton	Silver, oz. per ton	Copper, percent
2/4/42	8.703	-	0.12	4.42
6/12/42	10.508	-	0.26	4.85
11/28/42	42.485	-	-	3.83
12/15/42	29.243	-	-	3.56
12/17/42	49.410	-	-	4.35
12/24/42	48.072	-	-	3.72
12/31/42	41.501	-	-	3.74
	229.922	Weighted average		3.95

No further shipments were made by the present owner until August 1, 1943, when shipments were started to the American Smelting & Refining Co. at Hayden. A total of 1,357.92 dry tons having a weighted average of 2.88 percent copper was shipped during the remainder of 1943. This ore was mined from surface pit 1 (fig. 1).

Shipments in 1944 totaled 5,140.75 dry tons averaging 3.1 percent copper. All of this ore was mined from surface pits, the greatest part coming from pit 1.

Shipments for 1945 up to August 1, amounted to 13,916.1 dry tons averaging 2.96 percent of copper. All of the ore shipped since July 1943 has gone to the American Smelting & Refining Co. smelter at Hayden.

The ore mined from the surface by the present owner has all come from pits 1, 2, and 5. No accurate record has been kept of the tonnage mined from the various pits.

After the Bureau's drilling disclosed 20 feet of ore at hole 2, mining operations were started there, and it is estimated that 1,700 tons of that ore had been mined from cut 5 up to August 1945. Only about 94 tons had been mined from pit 2, as selective mining and sorting was necessary to keep the ore up to shipping grade.

The total ore shipped by the present owner, from the first shipments in 1942 to July 1945, inclusive, was 20,644.6 dry tons averaging 3 percent copper. The moisture, as assayed by the smelter, averages about 10 percent, giving a total of 22,709 tons of ore mined.

PHYSICAL FEATURES

The mine is situated on a saddle or small divide in the Tortilla Mountains west of Ray. From this saddle the drainage is toward the south and west by three gulches. The run-off eventually reaches the Gila River. The river, about 3 miles south and several hundred feet lower, can be seen from

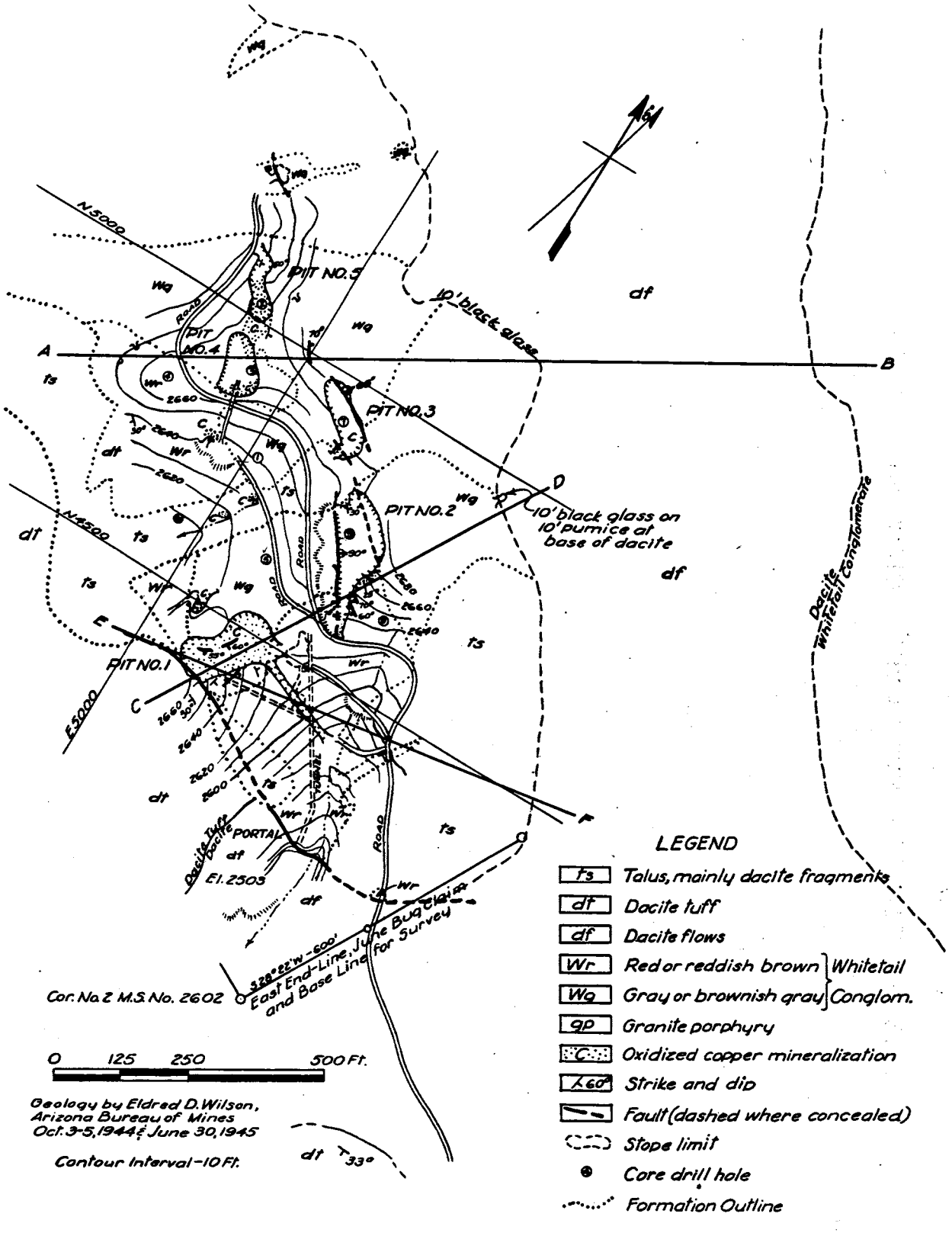


FIG. 6 - COPPER BUTTE PROJECT 1471, PINAL COUNTY, ARIZONA

the mine. The assumed elevation of 2,500 feet near the portal of the tunnel was taken from the Federal Geological Survey map of the Florence Quadrangle.

Vegetation is scanty, mostly cacti and mesquite. The climate is arid, summers are hot and winters mild.

Drinking water must be hauled from Ray. A shaft at the portal of the tunnel supplies enough water for drilling and mining.

The nearest source of electric power probably would be Ray, although there is a high-tension transmission line along the Ray-Superior highway about 2-3/4 miles north of the property.

LIVING CONDITIONS

There are no living accommodations or water for domestic use at the mine. Ray, 8 miles by road from the property, is the nearest town. At present, labor is scarce.

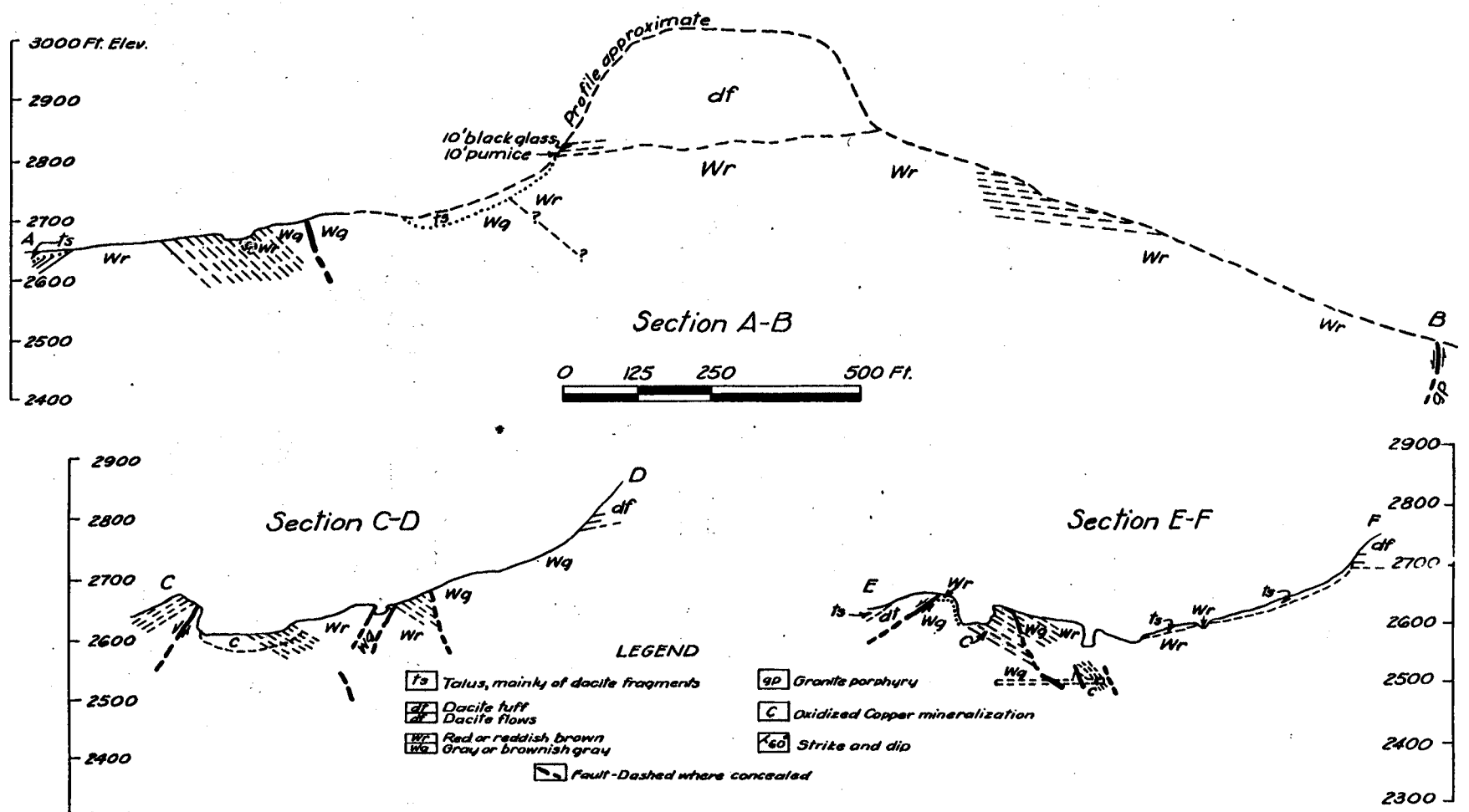
GEOLOGY[3]

The Copper Butte deposit occurs in conglomerate that is faulted against granite porphyry on the east and overlain by dacitic volcanic rocks, as shown by the accompanying map and cross sections (figs. 6 and 7). This conglomerate is equivalent to the Whitetail conglomerate of the Ray area. As described by Ransome,[4] this conglomerate typically consists of rather coarse and somewhat angular stony detritus that accumulated in the hollows of a former land surface prior to eruption of the dacite in early Tertiary time. Its thickness varies greatly but amounts to more than 800 feet at Teapot Mountain, northwest of Ray.

In the Copper Butte area, the fragments composing the Whitetail are chiefly of altered schist together with locally abundant quartzite and limestone. These fragments are firmly consolidated by a sandy clay cement that is relatively impermeable. As mapped on figure 6, some areas of the Whitetail are of dull gray color, whereas others are brown to reddish with iron oxide. The formation shows weak stratification, which dips eastward 30° to 55°. Where opened by pit or mine workings, it is seen to be cut by numerous faults, as shown in figure 6. The most prominent faults strike N. 30° to 70° W. and dip steeply. Their displacement has not been determined, but on some of them considerable horizontal movement is indicated. A fault of northwest strike and steep southwest dip separates dacite from the Whitetail conglomerate in the southern part of the June Bug claim. Other less prominent faults range in strike from N. 15° E. to East and at places appear to have offset the northwesterly faults.

3/ By Eldred D. Wilson, geologist, Arizona Bureau of Mines, University of Arizona, Tucson, Ariz.

4/ Ransome, F. L., Copper Deposits of Ray and Miami, Ariz.: U. S. Geol. Survey Prof. Paper 115, 1919.



Geology by Eldred D. Wilson, Arizona Bureau of Mines

FIG. 7 - COPPER BUTTE PROJECT 1471, PINAL COUNTY, ARIZONA

In this area the thickness of the Whitetail conglomerate and the kind of rocks upon which it rests are not revealed.

At several places in the Copper Butte area, the Whitetail, as shown by pit and mine workings and by drill holes, is impregnated with oxidized copper minerals. This mineralization apparently favors certain series of beds, but the extent to which these beds are mineralized horizontally and down the dip has not been determined. The faulting does not seem to have guided or controlled the mineralization.

As pointed out by Ransome,5/ the Whitetail conglomerate was formed as a result of profound erosion during which the principal supergene enrichment at Ray and Miami occurred. The Copper Butte deposit may represent placer or alluvial material formed when this erosion cut into the outcrop of some preexisting copper ore body not now exposed.

In places, as east of pit 1, beds of high iron oxide content overlie the copper-bearing beds. In other places, however, as shown by drill hole 4, the beds below reddish iron oxide outcrops are poor in copper. This may be regarded as evidence that the iron outcrops do not represent gossans above the copper, but rather that the iron was oxidized before its deposition in the conglomerate.

As the Whitetail is a rather tight formation that does not admit of much water circulation except along faults, there was no great opportunity for migration of iron or copper-bearing solutions through it. Consequently, no important zone of supergene enrichment is anticipated here.

ORE OCCURRENCE

The copper minerals are mostly chrysocolla and malachite. A small amount of tenorite occurs with the ore in the surface pits. Azurite is found in some of the ore, particularly from the stopes at the tunnel level. The ore carries only a trace of gold and silver.

The copper minerals are found almost entirely in beds or zones of the so-called gray conglomerate. Apparently there is no clearly defined division between the barren and the copper-bearing conglomerate. The change from one to the other is gradual in some places and abrupt in others. Copper is not evenly disseminated throughout the rock.

The red iron-stained conglomerate carries little or no copper. Sample 3097 (fig. 1), which was taken entirely from a red oxidized conglomerate, assayed only 0.12 percent copper.

There is considerable faulting. Often a fault is found separating the gray from the red conglomerate, as shown in the accompanying sections.

5/ Ransome, F. L., Work cited in footnote 4, p. 173-174.

There appears to be a local ground-water level a little below the tunnel level. The shaft at the portal of the tunnel has water standing about 5 feet below that level. The water pumped from that point for drilling only temporarily lowered the water. This shaft, reported to be several hundred feet deep, is believed to be an incline, dipping to the north and into the conglomerate. Drainage is towards the Gila River. This river basin would seem to be the permanent ground-water level for the district.

No trace of sulfides has been found in any of the conglomerate. Three holes drilled below the tunnel level showed no change in the oxidization or character of the rock.

DEVELOPMENT AND MINING

Most of the exploratory work and developing was done prior to the present ownership. All of the pits, (1 to 5, inclusive) and small cuts shown on the map (fig. 1) had been worked previously.

The tunnel is said to extend a considerable distance beyond the place marked "caved" on the map. All four shafts were the result of former operations. The 114-foot shaft, which connects with and ends at the tunnel level, alone is accessible at present. There has been no underground mining since the first 230 tons were shipped by the present owner.

Until recently, mining in the pits had been done with hand labor, including stripping of 2 to 3 feet of overburden at pit 1. The ore was broken from small benches with vertical holes and loaded into the trucks by hand shoveling. The ore is comparatively soft and breaks easily. The owner now has a 1-1/8-cubic yard Athey Mobile mechanical loader mounted on a caterpillar tractor, which eliminates hand loading. One truck operates between the pit and the loading bin on the property. Two other trucks, which are loaded to about 6 tons each, take ore from the bin to the railroad siding at Ray Junction, 15 miles away. There it is dumped directly into railroad cars and hauled 18 miles to the Hayden smelter.

A force of 6 to 8 men, including the owner, has been shipping two to four 50-ton cars a week.

Mine equipment consists of three self-dumping trucks capable of hauling 6 tons of ore, two portable compressors, and a 1-1/8-yard Athey mobile loader mounted on a caterpillar tractor; also, a hoist, bucket, car, track, jack hammer, steel, and miscellaneous equipment necessary to carry on small-scale mine operations. There is a head frame at the shaft and a good ore bin with a capacity of about 90 tons on the mine road.

WORK DONE BY THE BUREAU OF MINES

The Bureau drilled nine vertical holes (1,274 feet) with a prospecting diamond drill owned by it. Drilling started October 14, 1944, and stopped April 5, 1945. The holes varied in depth from 78 to 208 feet. That was about the maximum depth to which it was possible to drill with the Bureau's equipment.

The locations of the diamond-drill holes are shown on figure 1. The vertical projections at A-A' and B-B' are shown on figures 2 and 3. No drilling could be done close to pit 1 because of blasting and mine operations then in progress. It was intended to drill all the holes to a depth somewhat below the tunnel level. This procedure was not always possible because of mechanical difficulties encountered. The ground proved very difficult and costly to drill. Very little core was recovered, and the ground caved badly in places.

Hole 9, which was drilled to a depth of 69 feet below the tunnel level, showed 60 feet of 1.83 percent copper, with the bottom of the hole still in copper conglomerate. Holes 3 and 5 showed a trace of copper in about 50 feet of conglomerate below the tunnel level. No change was apparent in the oxidized character of the ore below that level.

The adjusted average of the first 10 feet of ore (5 to 15 feet) at hole 2 is 2.50 percent copper. The adjusted average for 20 feet of ore is 2.20 percent copper. After drilling was completed at this hole, the owner began mining at pit 5, 30 feet to the northwest. He carried the pit to the southeast to include the hole. At the time of writing, it was 30 feet beyond the hole and included the first 10 feet of ore indicated by the drilling.

A total of 974.2 tons of ore shipped from here averaged 3.29 percent copper. The minimum assay on any shipment was 2.89 percent copper, and the maximum was 3.61 percent copper. This was ore not mixed with material from any other pit. There is no apparent reason for the discrepancy between the diamond drillhole assays and the assay of the ore shipments, except for the fact that the copper content varies considerably throughout the copper-bearing conglomerate.

Smelter returns showed very little variation in the percentage of silica, alumina, and lime in the ore shipments. The average was approximately 60 percent SiO_2, 11 percent Al_2O_3, and 0.4 percent CaO.

To save unnecessary assaying, only composite assays of diamond drillhole samples were made for silica and alumina. None was made for lime. The composite sludge assays for alumina in holes 1, 2, 3, 5, and 8 averaged 11.3 percent Al_2O_3, the minimum being 9.9 percent and the maximum 12.5 percent. Holes 7 and 9 in pits 3 and 2 averaged 23.2 and 30.1 percent Al_2O_3, respectively. The copper content was better where the Al_2O_3 was lower. No composite assays were made for holes 4 and 6, as the samples assayed less than 0.5 percent copper.

Core recovery varied from a minimum of 1.6 percent in hole 8 to a maximum of 12.0 percent for hole 6. The average was 6.5 percent.

The assay results and log of the diamond drill holes are given on the following pages.

R.I. 3914

Diamond drill-hole log

HOLE NO: 1
Location: 4778 N., 5010 E.
Elevation of collar: 2640 feet
Depth: 125 feet
Dip: vertical
Bearing: - -
Date begun: 10/14/44
Date finished: 11/2/44

Theoretical weight, in grams, of sludge per foot of hole:
Bx-- 2352
Ax-- 1466
Ex-- 938

Footage			Recoveries						Core diam., in.	Sample Nos.		Description and remarks
			Core		Sldg.	In percent						
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.		Core	Sldg.	
0.0	5.2	5.2	0			0			1-5/8			Overburden, clay and pebbles.
5.2	11.5	6.3	0.2	45	9895	3	108	100	1-3/16	3381	3382	Qtzt. core; some copper-stained silica.
11.5	17.2	5.7	0	0	22605	0	270	100	"		9395	Sand sludge.
17.2	22.2	5.0	0	0	15895	0	217	100	"		9396	Do.
22.2	27.0	4.8	0	0	17650	0	249	100	"		3383	Sprinkling of copper.
27.0	31.6	4.6	0.5	85	2885	11	68	100	7/8		9397	Qtzt. core; sand sludge.
31.6	37.0	5.4	0.6	140	4020	11	82	100	"		9398	Do.
37.0	42.0	5.0	0.8	135	3265	16	72	90	"	3384	3385	Qtzt. core, sand sludge, a little copper
42.0	47.0	5.0	0.2	30	2115	4	45	90	"	3386	3387	Do.
47.0	52.0	5.0	0.2	45	3945	4	85	90	"	3388	3389	Qtzt. core with copper on fractures.
52.0	57.0	5.0	0.2	25	4050	4	87	90	"	3390	3391	Qtzt. and cgl. core with copper; a little sludge.
57.0	62.0	5.0	1.0	15	4800	2	103	90	"		9399	Qtzt. and qtz. core, sand, sludge.
62.0	67.0	5.0	0.3	70	5970	6	129	90	"		9400	Qtzt. core; sand sludge.
67.0	72.0	5.0	0.1	15	12670	2	271	90	"		9401	Do.
72.0	77.0	5.0	0.2	45	11820	4	255	90	"	3392	3393	Qtzt. core; a little copper panned.
77.0	82.0	5.0	1.3	305	11655	26	266	100	7/8		9402	Core mostly limestone; sand sludge.
82.0	87.0	5.0	0.1	20	10750	2	230	100	"		9403	Qtzt. core; sand sludge.
87.0	92.0	5.0	0.2	60	9700	4	209	100	"		9404	Do.
92.0	97.0	5.0	0.4	100	11495	8	250	100	"		9405	Qtzt. and limestone core; sand sludge.
97.0	102.0	5.0	1.3	310	12595	26	287	100	7/8		9406	Qtzt. and limestone core; sand sludge.
102.0	104.9	2.0	0.7	155	5840	24	228	100	"		9407	Mostly limestone core; sand sludge.
104.9	110.0	5.1	1.0	210	7970	20	174	100	"		9408	Do.

Diamond drill-hole log (Cont'd.)

Footage			Recoveries						Core diam., in.	Sample Nos.		Description and remarks
			Core		Sldg.	In percent						
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.		Core	Sldg.	
110.0	115.0	5.0	0.8	140	6465	16	142	100	7/8		9409	Limestone and qtzt. core; sand sludge.
115.0	120.0	5.0	1.3	310	7045	26	161	100	"		9410	Mostly limestone core; sand sludge.
120.0	125.0	5.0	1.0	230	7880	20	177	100	"		9411	Do.

5.2 - 27.0 feet drilled with casing to 5.2 feet.
27.0 - 31.6 feet drilled with casing to 27.0 feet.
31.6 - 41.7 feet drilled with casing to 31.6 feet.
41.7 - 125.0 feet drilled with casing to 41.7 feet.

Record of diamond drill-hole value

Footage			Sample Nos.		Analyses		Adjusted average* percent	
					Core, percent	Sludge, percent		
From	To	Feet	Core	Sldg.	Cu.	Cu.	Cu.	Av.
5.2	11.5	6.3	3381	3382	0.11	1.07	1.07	
11.5	17.2	5.7		9395		0.90	0.90	
17.2	22.2	5.0		9396		0.68	0.68	
22.2	27.0	4.8		3383		0.64	0.64	
27.0	31.6	4.6	9447	9397	0.06	0.81	0.79	0.83
31.6	37.0	5.4	9448	9398	0.06	1.80	1.75	
37.0	42.0	5.0	3384	3385	0.48	2.50	2.42	
42.0	47.0	5.0	3386	3387	0.64	2.35	2.33	
47.0	52.0	5.0	3388	3389	0.36	2.70	2.67	
52.0	57.0	5.0	3390	3391	1.65	2.42	2.42	
57.0	62.0	5.0	9449	9399	0.45	1.89	1.84	2.24
62.0	67.0	5.0	9450	9400	0.09	1.17	1.15	
67.0	72.0	5.0	9451	9401	0.09	0.81	.81	
72.0	77.0	5.0	3392	3393	0.11	0.90	.90	0.95
77.0	82.0	5.0		9402		0.35		
82.0	87.0	5.0		9403		0.40		
87.0	92.0	5.0		9404		0.33		
92.0	97.0	5.0		9405		0.50		
97.0	102.0	5.0		9406		0.42		0.40
102.0	104.9	2.9		9407		0.17		
104.9	110.0	5.1		9408		0.20		
110.0	115.0	5.0		9409		0.24		
115.0	120.0	5.0		9410		0.20		
120.0	125.0	5.0		9411		0.25		0.21
				SLUDGE COMPOSITS				
5.2	31.6			9484		0.80		
31.6	62.0			9485		2.27		

*Based upon relative weights of core and sludge recovered.

Composite samples, hole 1

Footage			Sample Nos.		Analyses							
					Core, percent			Sludge, percent			Composite*	
From	To	Feet	Core	Sldg.	Group	SiO_2	Al_2O_3	Group	SiO_2	Al_2O_3	SiO_2	Al_2O_3
5.2			3381	3382								
			and	9395								
			9447	to								
	31.6	26.4		9397	4	69.94	6.92	1	63.67	12.21	63.7	12.2
31.6			9448	9398								
			3384	3385								
			3386	3387								
			3388	3389								
			3390	3391								
	62.0	30.4	9449	9399	5	59.58	6.77	2	63.20	9.98	63.2	10.0
62.												
			9450	9400								
			9451	9401								
	77.0	15.0	3392	3393	6	87.02	4.60	3	60.10	12.45	60.1	12.5

*Sludge only.

Diamond drill-hole log

HOLE NO: 2
Location: 5032N., 4874 E.
Elevation of collar: 2664 feet
Depth: 82 feet
Dip: vertical
Bearing: - -
Date begun: 11/3/44
Date finished: 11/15/44

Theoretical weight in grams, of sludge per foot of hole:
Bx-- 2352
Ax-- 1466
Ex-- 938

Footage			Recoveries: Core		Recoveries: Sldg.	Recoveries: In percent			Core diam.,	Sample Nos.		Description and remarks
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.	in.	Core	Sldg.	
0	5.0	5.0	0.8	555	0	16	0	0	1-5/8			Part loose fill, part conglomerate.
5.0	10.0	5.0	0.7	245	6240	14	88	85	1-3/16	3395	3396	Cgl. core with copper; good copperpanning.
10.0	15.0	5.0	0.4	130	6090	8	84	90	"	3397	3398	Qtzt. and diabase core with copper; good copper panning.
15.0	20.0	5.0	0.4	115	7250	8	100	90	1-3/16	3399	3400	Qtzt. and cgl. core; fair copper panning.
20.0	25.0	5.0	0.5	135	5890	10	82	90	1-3/16	9351	9352	Mostly qtzt. core; poor copper panning.
25.0	30.0	5.0	0.7	240	6090	14	86	90	1-3/16	9353	9354	Qtzt. and cgl. core; fair copper panning.
30.0	35.0	5.0	0.1	15	7740	2	106	90	1-3/16	9355	9356	Qtzt. core; fair copper panning.
35.0	39.3	4.3	0.1	30	7290	2	116	90	1-3/16	9357	9358	Qtzt. core; poor to fair copperpanning.
39.3	45.0	5.7	0	0	11455	0	148	90	1-3/16	-	9359	Poor copper panning.
45.0	50.0	5.0	0.1	10	4965	2	106	100	7/8	9360	9361	Qtzt. core; no copper panned.
50.0	55.0	5.0	0.3	60	5340	6	115	100	"	9362	9363	Qtzt. and cgl. core; a little copper on fractures; no copper panned.
55.0	82.0	27.0	0.9			3		100	"			Qtzt., cgl., and schist core; no copper panned.
55.0	60.0	5.0	0	0	3415	0	73	90	"		9412	No copper panned.
60.0	65.0	5.0	0	0	4420	0	94	100	"		9413	Do.
65.0	70.0	5.0	0.2	40	9590	4	206	100	"		9414	Qtzt. and cgl. core; no copper panned.
70.0	75.0	5.0	0.4	95	9440	8	205	100	"		9415	Qtzt. core; no copper panned.
75.0	77.0	2.0	0.2	30	2115	10	113	100	"		9416	Do.
77.0	82.0	5.0	0.1	25	4240	2	91	80	"		9417	Qtzt. and schist core; no copperpanned.

5 - 45 feet drilled with casing at 0 - 5 feet.
45 - 82 feet drilled with casing at 0 -45 feet.

Record of diamond drill-hole values

Footage			Sample Nos.		Analyses		Adjusted average*	
					Core, percent	Sludge, percent	Percent	
From	To	Feet	Core	Sldg.	Cu.	Cu.	Cu.	Av. Cu.
5.0	10.0	5.0	3395	3396	5.11	2.40	2.50	
10.0	15.0	5.0	3397	3398	0.21	2.55	2.50	
15.0	20.0	5.0	3399	3400	0.67	2.05	2.03	
20.0	25.0	5.0	9351	9352	0.81	2.22	2.19	
25.0	30.0	5.0	9353	9354	0.94	2.14	2.09	
30.0	35.0	5.0	9355	9356	0.11	2.22	2.22	
35.0	39.3	4.3	9357	9358	0.35	1.88	1.87	
								2.20
39.3	45.0	5.7	--	9359		1.17	1.17	
45.0	50.0	5.0	9360	9361	0.46	1.27	1.27	
50.0	55.0	5.0	9362	9363	0.78	1.88	1.87	
55.0	60.0	5.0		9412		1.59	1.59	
60.0	65.0	5.0		9413		1.26	1.26	
								1.43
65.0	70.0	5.0		9414		0.63		
70.0	75.0	5.0		9415		0.40		
75.0	77.0	2.0		9416		0.41		
77.0	82.0	5.0		9417		0.45		
							0.47	

Composite Sample

5	55	50	9351	9363	65.32 percent SiO_2	10.6 percent Al_2O_3
55	65	5	9412	9413	55.86 percent SiO_2	11.5 percent Al_2O_3

*Based upon relative weights of core and sludge recovered.

R.I. 3914

Diamond drill-hole Log

HOLE NO: 3
Location: 4910 N., 4926 E.
Elevation of collar: 2654 feet
Depth: 208 feet
Dip: Vertical
Bearing: - -
Date begun: 11/16/44
Date finished: 12/16/44

Theoretical weight, in grams, of sludge per foot of hole:
Bx-- 2352
Ax-- 1466
Ex-- 938

Footage			Recoveries						Core diam., in.	Sample Nos.	Description and remarks
			Core		Sldg.	In percent					
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.		Sldg.	
0	5.0	5.0	0	0	0	0	0	0	1-5/8		Overburden.
5.0	10.0	5.0	0.2	65	7200	4	99	75	1-3/16	9364	Qtzite. and cg. core; fair copper panned.
10.0	15.0	5.0	0.5	105	6400	10	89	100	"	9365	Qtzite. and schist core; poor copper panned.
15.0	220.0	5.0	0.5	160	6060	10	85	100	"	9366	Qtzite. and schist core; poor copper panned.
20.0	26.0	6.0	0.4	120	11320	7	130	100	"	9367	Qtzite. and schist core; fair copper panned.
26.0	32.0	6.0	0.3	90	13840	5	159	100	"	9368	Qtzite. core; poor copper panning.
32.0	37.0	5.0	0.4	125	14120	8	196	100	"	9369	Do.
37.0	42.0	5.0	0.5	85	4320	10	94	100	7/8	9370	Qtzite core; very poor copper panning
42.0	47.0	5.0	0.1	25	4400	2	94	100	"	9371	Ls. and qtz. core; poor copper panning.
47.0	52.0	5.0	0.3	40	5880	6	126	100	"	9372	Qtzite. and cg. core; fair copper panning.
52.0	57.0	5.0	0.2	30	3840	4	82	100	"	9373	Qtzite. core; poor copper panning.
57.0	62.0	5.0	0.9	225	8000	18	179	100	"	9374	Do.
62.0	67.0	5.0	0.1	15	5900	2	127	100	"	9375	Do.
67.0	72.0	5.0	0.2	45	10800	4	233	100	"	9376	Qtzite. and qtz. core; poor copper panning.
72.0	77.0	5.0	0.4	60	21200	8	458	100	"	9377	Qtzite core; poor copper panning.
77.0	82.0	5.0	0.5	125	16800	10	368	100	"	9378	Qtzite. and qtz. core; poor copper panning.
82.0	92.0	10.0	0	0	27000	0	288	90	"	9379	Very poor copper panning.
92.0	97.0	5.0	0.4	100	12260	8	267	90	"	9380	Qtzite. and sch. core; poor copper panning.
97.0	102.0	5.0	0.2	30	8100	4	174	90	"	9381	Do.
102.0	112.0	10.0	0.5	115	18000	5	194	90	"	9382	Ls., qtzite. and sch. core; poor copper panning.
112.0	118.0	6.0	0	0	16630	0	177	90	"	9383	Poor copper panning.
118.0	122.0	4.0	0.1	15	3970	3	106	100	"	9384	Diorite and qtz. core; no copper panned.
122.0	132.0	10.0	1.3	280	12560	13	138	80	"	9385	Ls. and qtzite. core; no copper panned.

Diamond drill-hole log (Cont'd.)

Footage			Recoveries						Core diam., in.	Sample Nos.	Description and remarks
			Core		Sldg.	In percent					
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.		Sldg.	
132.0	141.0	9.0	1.0	235	6800	11	83	70	7/8	9386	Ls. and qtzite. core; no copper panned.
141.0	147.0	6.0	0.3	70	4800	5	86	60	"	9387	Qtzite. and ls. core; poor copper panning.
147.0	157.0	10.0	1.1	235	10450	11	114	100	"	9388	Qtzite., qtz., and ls. core; poor copperpanning.
157.0	167.0	10.0	1.5	325	10800	15	119	95	"	9389	Ls., qtzite., and sch. core; poor copper panning.
167.0	177.0	10.0	0.5	120	7670	5	83	100	"	9390	Ls. and qtzite core; fair copper panning.
177.0	187.0	10.0	1.2	290	11620	12	128	100	"	9391	Do.
187.0	195.0	8.0	0.4	60	6640	5	87	75	"	9392	Ls. and qtzite. core; poor copper panning.
195.0	205.0	10.0	0.8	180	14130	8	154	100	"	9393	Qtzite., ls., sch., and amphibolite core; poor copper panning.
205.0	208.0	3.0	0.4	80	7110	13	260	80	"	9394	Qtzite., qtz., and sch. core; poor copper panning.

5.0 - 37.0 feet drilled with casing to 5.0 feet.
37.0 - 118.0 feet drilled with casing to 37.0 feet.
118.0 - 141.0 feet drilled with casing to 106.5 feet.
141.0 - 167.0 feet drilled with casing to 106.5 feet.
167.0 - 208.0 feet drilled with casing to 160.5 feet

Qtzite. = quartzite
Qtz. = quartz
Ls. = limestone
cg. = conglomerate
sch. = schist.

Record of diamond drill-hole values

Footage			Sample Nos.		Analyses		Adjusted average*	
					Core, percent	Sludge, percent		
From	To	Feet	Core	Sldg.	Cu.	Cu.	Percent Cu.	Av. Cu.
5.0	10.0	5.0	9468	9364	0.39	1.97	1.97	
10.5	15.0	5.0	9469	9365	1.50	2.68	2.66	
15.0	20.0	5.0	9470	9366	0.28	1.64	1.61	2.08
20.0	26.0	6.0	9471	9367	0.12	0.68	0.67	
26.0	32.0	6.0	9472	9368	0.05	0.60	0.60	
32.0	37.0	5.0	9473	9369	0.06	0.55	0.55	
37.0	42.0	5.0	9474	9370	0.05	0.40	0.39	
42.0	47.0	5.0	9475	9371	0.06	0.71	0.71	0.59
47.0	52.0	5.0	9476	9372	0.96	1.11	1.11	
52.0	57.0	5.0	9477	9373	0.06	1.36	1.34	
57.0	62.0	5.0	9478	9374	0.07	1.00	0.96	
62.0	67.0	5.0	9479	9375	0.04	1.56	1.56	1.24
67.0	72.0	5.0	9480	9376	0.07	0.81	0.81	
72.0	77.0	5.0	9481	9377	0.05	0.80	0.80	
77.0	82.0	5.0	9482	9378	0.10	0.82	0.82	
82.0	92.0	10.0	-	9379	-	0.84	0.84	
92.0	97.0	5.0	9483	9380	0.10	0.71	0.71	0.80
97.0	102.0	5.0		9381		0.40		
102.0	112.0	10.0		9382		0.34		
112.0	118.0	6.0		9383		0.43		
118.0	122.0	4.0		9384		0.20		0.31
122.0	132.0	10.0		9385		0.08		
132.0	141.0	9.0		9386		0.08		
141.0	147.0	6.0		9387		0.14		
147.0	157.0	10.0		9388		0.10		
157.0	167.0	10.0		9389		0.10		
167.0	177.0	10.0		9390		0.14	0.10	
177.0	187.0	10.0		9391		0.24		
187.0	195.0	8.0		9392		0.18		
195.0	205.0	10.0		9393		0.15		
205.0	208.0	3.0		9394		0.15	0.19	

*Based upon relative weight of core and sludge recovered.

Composite samples, hole 3

Footage			Sample Nos.		Analyses							
					Core, percent			Sludge, percent			Composite*	
From	To	Feet	Core	Sldg.	Group	SiO_2	Al_2O_3	Group	SiO_2	Al_2O_3	SiO_2	Al_2O_3
5			9468	9364								
			9469	9365								
	20	15	9470	9366	8	78.10	7.10	12	57.64	12.26	57.6	12.3
20			9471	9367								
			9472	9368								
			9473	9369								
			9474	9370								
	47.0	27	9375	9371	9	90.56	3.38	13	57.88	11.42	57.9	11.4
47			9476	9372								
			9477	9373								
			9478	9374								
	67	20	9479	9375	10	86.00	3.96	14	60.64	11.34	60.6	11.3
67			9480	9376								
			9481	9377								
			9482	9378								
			-	9379								
	97	30	9483	9380	11	63.18	8.46	15	56.20	11.54	56.2	11.5

*Sludge only.

R.I. 3914

Diamond drill-hole log

HOLE NO.: 4
Location: 4822 N., 4808 E.
Elevation of collar: 2668 feet.
Depth: 78 feet
Dip: Vertical
Bearing: - -
Date begun: 12/16/44
Date finished: 1/11/45

Theoretical weight, in grams, of sludge per foot of hole:
Bx-- 2352
Ax-- 1466
Ex-- 938

Footage			Recoveries						Core diam., in.	Sample Nos.	Description and remarks
			Core		Sldg.	In percent					
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.		Sldg.	
0.0	14.0	14.0	0.5			4			1-5/8		Red conglomerate.
14.0	30.7	16.7	0.7			4		100	1-3/16		Red conglomerate, quartzite core, no copper.
30.7	39.0	8.3	0	0	29750	0	226	100	"	9418	Red sludge; very poor copper panning.
39.0	48.0	9.0	0	0	40800	0	309	100	"	9419	Buff sludge; very poor copper panning.
48.0	56.0	8.0	1.0	135	10925	13	94	100	7/8	9420	Quartzite core; poor copper panning.
56.0	64.0	8.0	1.6	315	12950	20	113	100	"	9421	Do.
64.0	68.0	4.0	1.0	205	8475	25	150	90	"	9422	Do.
68.0	78.0	10.0	0.5	95		5		90	"	*	Quartzite and schist core; poor copper panning.

*Sample ruined by excessive sand washing.
14.0 - 48.0 feet drilled with casing at 14 feet.
48.0 - 78.0 feet drilled with casing at 48 feet.

Record of diamond drill-hole values

Footage			Sample Nos.		Analyses, percent Cu.		
From	To	Feet	Core	Sludge	Core	Sludge	Composite
30.7	39.0	8.3		9418		0.40	
39.0	48.0	9.0		9419		0.39	
48.0	56.0	8.0		9420		0.41	
56.0	64.0	8.0		9421		0.51	
64.0	68.0	4.0		9422		0.44	

Diamond drill-hole log

HOLE NO.: 5
Location: 4631 N., 5129 E.
Elevation of collar: 2631 feet
Depth: 167 feet
Dip: Vertical
Bearing: - -
Date begun: 1/12/45
Date finished: 1/29/45

Theoretical weight, in grams, of sludge per foot of hole:
Bx-- 2352
Ax-- 1466
Ex-- 938

Footage			Recoveries: Core		Recoveries: Sldg.	Recoveries: In percent			Core diam.,	Sample Nos.		Description and remarks
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.	in.	Core	Sldg.	
0	10.0	10.0							1-5/8			0-3 feet overburden; 3-10 feet congl.
10.0	15.0	5.0	0	0	7375	0	99	100	1-3/16		9423	Conglomerate; poor copper panning.
15.0	20.0	5.0	1.0	520	12775	20	188	100	"		9424	Ls. and qtzt. core; poor copper panning.
20.0	25.0	5.0	0.2	55	8150	4	112	100	"		9425	Qz. with cu. on fractures; fair cu panning
25.0	30.0	5.0	0	0	18300	0	250	100	"		9426	Conglomerate; good copper panning.
30.0	35.0	5.0	0	0	15275	0	209	100	"		9427	Conglomerate; poor copper panning.
35.0	40.0	5.0	0.4	125	17510	8	243	100	"		9428	Qtzt., sch., and qz. core; poor copper panning.
40.0	45.0	5.0	0.1	20	12250	2	168	100	"		9429	Qtzt. core; poor copper panning.
45.0	50.0	5.0	0.4	90	12250	8	170	100	"		9430	Qtzt. and ls. core; poor copper panning.
50.0	55.0	5.0	0.5	150	9900	10	138	100	"		9431	Qtzt. and ls. core; poor copper panning.
55.0	60.0	5.0	0.7	180	8750	14	122	100	"		9432	Qtzt. and sch. core; poor copper panning.
60.0	65.0	5.0	0.4	165	12540	8	175	100	"		9433	Ls. and qz. core; poor copper panning.
65.0	70.0	5.0	1.0	370	7425	20	107	100	"		9434	Ls. core; poor copper panning.
70.0	75.0	5.0	1.0	440	10075	20	146	100	"		9435	Ls., qtzt., and chert core; poor copper panning.
75.0	82.0	7.0	0.4	110	12125	6	119	100	"		9436	Sch., ls., and qtzt. core; very poor copper panning.
82.0	87.0	5.0	0.4	130	12725	8	177	100	"		9437	Qtzt. and sch. core; very poor copper panning.
87.0	92.0	5.0	0.3	75	10375	6	143	100	"		9438	Ls. and sch. core; fair copper panning.

Diamond drill-hole log (Cont'd.)

Footage			Recoveries						Core diam., in.	Sample Nos.		Description and remarks
			Core		Sldg.	In percent						
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.		Core	Sldg.	
92.0	102.0	10.0	1.0	405	29700	10	208	100	1-3/16		9439	Ls., sch., and qtzt. core; fair copper panning.
102.0	109.6	7.6	0.8	270	30650	10	282	100	"		9440	Do.
109.6	116.4	6.8	0.7	155	4750	10	76	100	7/8		9441	Sch., qtzt., and ls. core; very poor copper panning.
116.4	127.0	10.6	0.5	105	7325	5	74	100	"		9442	Ls., qtzt., and sch. core; no copper panned.
127.0	137.0	10.0	0.5	130	8000	5	86	100	"		9443	Sch., ls. and qtzt. core; no copper panned.
137.0	147.0	10.0	0.6	150	9125	6	99	100	"		9444	Sch. and qtzt. core; no copper panned.
147.0	157.0	10.0	1.0	240	10300	10	113	100	"		9445	Qtzt., sch., ls. core; no copper panned.
157.0	167.0	10.0	1.5	305	24400	15	269	100	"		9446	Ls., sch., and qtzt. core; no copper panned.

10.0 - 109.6 feet drilled with casing at 10.0 feet.
109.6 - 167.0 feet drilled with casing at 109.6 feet.

Qtzt. = quartzite
Qz. = quartz
Sch. = schist
Ls. = limestone

Record of diamond drill-hole values

Footage			Sample Nos.		Sample No.	Analyses							
						Core, percent			Split assay	Sludge, percent		Adjusted average*	
From	To	Feet	Core	Sludge		Cu	SiO_2	Al_2O_3		Cu	Re assay	percent Cu	Av. Cu
0	10.0	10.0											
10.0	15.0	5.0		9423						1.24		1.24	
15.0	20.0	5.0	10072	9424		0.08	55.05	5.65		0.52		0.50	
20.0	25.0	5.0	10073	9425		1.35				0.90		0.90	
25.0	30.0	5.0		0426						1.17		1.17	
30.0	35.0	5.0		9427						0.99		0.99	0.96
35.0	40.0	5.0		9428						0.55		0.50	
40.0	45.0	5.0		9429						0.30		0.30	0.40
45.0	50.0	5.0		9430						0.17			
50.0	55.0	5.0		9431						0.18			
55.0	60.0	5.0		9432						0.10			
60.0	65.0	5.0		9433						0.15			
65.0	70.0	5.0		9434						0.12			
70.0	75.0	5.0		9435						0.16			
75.0	82.0	7.0		9436						0.14			
82.0	87.0	5.0		9437						0.19			0.15
87.0	92.0	5.0		9438	10025+				0.27	(0.08)	0.19	0.23	
92.0	102.0	10.0		9439	10026+				0.24	(0.20)	0.24	0.24	
102.9	109.6	7.6		9440	10027+				0.27	(0.38)	0.27	0.27	
109.6	116.4	6.8		9441					0.22	(0.14)	0.22	0.22	0.24
116.4	127.0	10.6		9442					0.09			0.09	
127.0	137.0	10.0		9443					0.20			0.20	
137.0	147.0	10.0		9444					0.08			0.08	
147.0	157.0	10.0		9445					0.07			0.07	
157.0	167.0	10.0		9446					0.11			0.11	0.11

Other analyses

15.0	25.0	10.0	10072 10073	9424 9425			55.05	55.65		SiO_2 53.66	Al_2O_3 9.94	SiO_2 53.7	Al_2O_3 9.9

+Split assays of sludge.
*Based upon weights of core and sludge.

R.I. 3914

Diamond drill-hole log

HOLE NO.: 6
Location: 4608 N; 4955 E.
Elevation of collar: 2608 feet
Depth: 107 feet
Dip: Vertical
Bearing: - -
Date begun: 1/30/45
Date finished: 2/8/45

Theoretical weight, in grams, of sludge per foot of hole:
Bx-- 2352
Ax-- 1466
Ex-- 938

Footage			Recoveries: Core		Recoveries: Sldg.	Recoveries: In percent			Core diam.,	Sample Nos.		Description and remarks
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.	in.	Core	Sldg.	
0	5.6	5.6	0.2	120		4			2-1/8			0-2 Alluv. 2-5.6 cgl. with a little copper.
5.6	8.7	3.1	0	0	7975	0	109	100	1-5/8		9452	Cg.; poor copper panning.
8.7	13.7	5.0	0	0	12450	0	106	100	"		9453	Do.
13.7	15.5	1.8	0	0	7030	0	166	90	"		9454	Do.
15.5	20.5	5.0	0	0	9575	0	131	90	1-3/16		9455	Do.
20.5	27.4	6.9	0.1	55	10225	2	102	100	"		9456	Ls. qz. core; no copper panned.
27.4	32.0	4.6	0.3	120	6625	7	100	100	"		9457	Ls. sch. and qz. core, no copper panned.
32.0	37.0	5.0	0.8	380	5975	16	86	90	"		9458	Ls. and sch. core; very poor copper panned.
37.0	47.0	10.0	0.8	325	15440	8	107	90	"		9459	Ls. and qtzt. core; very poor copper panned.
47.0	52.5	5.5	0.9	420	15825	16	207	90	"		9460	Ls. quzt. core; fair copper panning.
52.5	61.2	8.7	0.9	205	6675	10	84	100	7/8		9461	Qtzt. sch. and ls. core; no copper panned.
61.2	71.0	9.8	0.8	175	6970	8	77	90	"		9462	Sch. qtzt. and ls.; no copper panned.
71.0	81.0	10.0	3.0	645	7225	30	83	90	"		9463	Ls. qtzt. and sch. core; no copper panned.
81.0	91.0	10.0	2.3	495	23300	23	262	80	"		9464	Ls. sch. qtzt. core; no copper panned.
91.0	93.0	2.0	0.2	35	4325	10	235	90	" "		9465	Sch. and qtzt. core; no copper panned.
93.0	102.0	9.0	2.0	400	9825	22	122	75	"		9466	Qtzt. ls. and sch.; no copper panned.
102.0	107.0	5.0	0.5	95	3500	10	76	75	"		9467	Qtzt. and sch.; no copper panned.

5.6 - 8.7 feet drilled with casing at 5.6 feet.
8.7 - 15.5 feet drilled with casing at 8.7 feet.
15.5 - 20.5 feet drilled with casing at 15.5 feet.
20.5 - 52.5 feet drilled with casing at 20.5 feet.
52.5 - 107.0 feet drilled with casing at 52.5 feet.

Qtzt. = quartzite
Sch. = schist
Ls. = limestone
Qz. = quartz

Record of diamond drill-hole values

Footage			Sample Nos.		Analyses	
From	To	Feet	Core	Sldg.	Sludge, percent Cu.	Adjusted average, percent Cu.
0	5.6	5.6				
5.6	8.7	3.1		9452	0.21	
8.7	13.7	5.0		9453	0.24	
13.7	15.5	1.8		9454	0.30	0.24
15.5	20.5	5.0		9455	0.17	
20.5	27.4	6.9		9456	0.15	
27.4	32.0	4.6		9457	0.14	
32.0	37.0	5.0		9458	0.12	
37.0	47.0	10.0		9459	0.13	
47.0	52.5	5.5		9460	0.20	
52.5	61.2	8.7		9461	0.07	
61.2	71.0	9.8		9462	0.19	
71.0	81.0	10.0		9463	0.27	
81.0	91.0	10.0		9464	0.16	
91.0	93.0	2.0		9465	0.13	
93.0	102.0	9.0		9466	0.18	
102.0	107.0	5.0		9467	0.10	0.16

R.I. 3914

Diamond drill-hole log

HOLE NO: 7
Location: 4928 N., 5118 E.
Elevation of collar: 2661 feet
Depth: 156 feet
Dip: Vertical
Bearing: - -
Date begun: 2/9/45
Date finished: 3/1/45

Theoretical weight, in grams, of sludge per foot of hole:
Bx-- 2352
Ax-- 1466
Ex-- 938

Footage			Recoveries: Core		Recoveries: Sldg.	Recoveries: In percent			Core diam.,	Sample Nos.		Description and remarks
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.	in.	Core	Sldg.	
0	5.0	5.0										Loose fill.
5.0	8.3	3.3	0.5	140	7725	15	101	75	1-5/8		9486	Grn. cgl. qtzt. and sch. core; good cu. pan.
8.3	11.4	3.1	0.6	205	10425	19	147	100	"		9487	Grn. cgl. qtzt. and sch. core; fair cu. pan.
11.4	16.4	5.0	0.4	140	15500	8	134	95	"		9488	Do.
16.4	18.7	2.3	0.3	55	5775	13	174	95	1-3/16		9489	Red cgl. qtzt. and sch. core; poor cu. pan.
18.7	23.7	5.0	0.6	220	5675	12	80	85	"		9490	Do.
23.7	31.0	7.3	0.6	270	9150	8	88	95	"		9491	Buff cgl. qtzt. core; poor cu. pan.
31.0	41.0	10.0	0.4	120	26100	4	179	80	"		9492	Red cgl. qtzt. and sch. core; no cu. pan.
41.0	51.0	10.0	0.1	30	12725	1	87	80	"		9493	Red cgl. qtzt. core; no cu. pan.
51.0	61.0	10.0	0.1	20	24700	1	169	75	"		9494	Red cgl. sch. core; no cu. pan.
61.0	71.0	10.0	0.2	35	29550	2	202	85	"		9495	Red cgl. qtzt. core; no cu. pan.
71.0	78.2	7.2	0	0	17550	0	166	95	"		9496	Red cgl.; no cu. pan.
78.2	83.5	5.3	0	0	4850	0	62	75	7/8		9497	Do.
83.5	91.0	7.5	0.1	20	12100	1	172	90	"		9498	Red cgl. qtzt. core; no cu. pan.
91.0	101.0	10.0	0.3	45	7300	3	78	90	"		9499	Do.
101.0	106.0	5.0	1.3	245	14375	26	324	90	"		9500	Grn. cgl. qtzt. cgl. and cu. core; good cu. pan.
106.0	111.0	5.0	0.9	130	10100	18	222	90	"		10001	Grn. cgl., qtzt. cgl., and cu. core; fair cu. pan.
111.0	116.0	5.0	0.1	15	11700	2	251	90	"		10002	Grn. cgl., qtzt. core; fair cu. pan.
116.0	121.0	5.0	0.1	25	11800	2	254	90	"		10003	Grn. cg., qtzt. core; fair cu. pan.
121.0	126.0	5.0	0	0	10375	0	221	90	"		10004	Grn. cgl.;; fair cu. pan.
126.0	131.0	5.0	0	0	11350	0	242	90	"		10005	Do.

Diamond drill-hole log (Cont'd.)

Footage		Recoveries							Core diam., in.	Sample Nos.		Description and remarks
		Core			Sldg.	In percent						
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.		Core	Sldg.	
131.0	136.0	5.0	0.1	20	14850	2	318	90	7/8		10006	Grn. cgl., qtzt. core; poor/fair cu. pan.
136.0	141.0	5.0	0.3	60	13500	6	292	90	"		10007	Grn. cgl., qtzt. and sch. core; poor/fair cu. pan.
141.0	151.0	10.0	0.9	160	19800	9	215	90	"		10008	Grn. cgl., qtzt. and ls. core; poor/fair cu. pan.
151.0	156.0	5.0	0	0	13950	0	297	90	"		10009	Grn. cgl., poor/fair cu. pan.

5.0 - 16.4 feet drilled with casing at 5.0 feet.
16.4 - 78.2 feet drilled with casing at 16.4 feet.
78.2 - 156.0 feet drilled with casing at 78.2 feet.

grn. = green
cgl. = conglomerate
cu. = copper
qtzt. = quartzite
ls. = limestone
sch. = schist

Record of diamond drill-hole values

Footage			Sample Nos.		Analyses			
					Core, percent	Sludge, percent	Adjusted average	
From	To	Feet	Core	Sldg.	Cu.	Cu.	percent Cu.	Av. Cu.
5.0	8.3	3.3	10062	9486	0.28	1.69	1.66	
8.3	11.4	3.1	10063	9487	0.21	1.98	1.95	
11.4	16.4	5.0	10064	9488	0.10	1.45	1.44	1.66
16.4	18.7	2.3	-	9489		0.35		
18.7	23.7	5.0	-	9490		0.36		
23.7	31.0	7.3	-	9491		0.49		
31.0	41.0	10.0	-	9492		0.18		
41.0	51.0	10.0	-	9493		0.10		
51.0	61.0	10.0	-	9494		0.09		
61.0	71.0	10.0	-	9495		0.06		
71.0	78.2	7.2	-	9496		0.10		
78.2	83.5	5.3	-	9497		0.10		
83.5	91.0	7.5	-	9498		0.10		
91.0	101.0	10.0	-	9499		0.18		0.11
101.0	106.0	5.0	10065	9500	5.04	1.00	1.07	
106.0	111.0	5.0	10066	10001	2.00	0.96	.97	
111.0	116.0	5.0	10067	10002	0.06	0.72	.72	0.92
116.0	121.0	5.0	10068	10003	0.08	0.53	.53	
121.0	126.0	5.0	-	10004		0.52	.52	
126.0	131.0	5.0	-	10005		0.39	.39	
131.0	136.0	5.0	10069	10006	0.18	0.47	.47	
136.0	141.0	5.0	10070	10007	0.04	0.55	.55	
141.0	151.0	10.0	10071	10008	0.12	0.63	.63	
151.0	156.0	5.0	-	10009		0.63	.63	0.54

Composite samples, hole 7

Footage			Sample Nos.		Analyses							
					Core, percent			Sludge			Composite*	
From	To	Feet	Core	Sldg.	Group	SiO_2	Al_2O_3	Group	SiO_2	Al_2O_3	SiO_2	Al_2O_3
5			10062	9486								
			10063	9487								
	16.4	11.4	10064	9488	E	73.07	14.83	F	55.21	16.67	55.2	16.7
101.0			10065	9500								
			10066	10001								
	116.0	15	10067	10002	H	79.97	10.31	G	66.53	25.06	66.5	25.1
116			10068	10003								
-			-	10004								
			-	10005								
			10069	10006								
			10070	10007								
	151.0	35	10071	10008	I	76.22	5.96	J	55.96	27.83	56.0	27.8

*Sludge only.

Diamond drill-hole log

HOLE NO.: 8
Location: 4648 N. and 5373 E.
Elevation of collar: 2644 feet
Depth: 145 feet
Dip: Vertical
Bearing: - -
Date begun: 3/2/45
Date finished: 3/19/45

Theoretical weight, in grams, of sludge per foot of hole:
Bx-- 2352
Ax-- 1466
Ex-- 938

Footage			Recoveries: Core		Recoveries: Sldg.	Recoveries: In percent			Core diam.,	Sample Nos.		
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.	in.	Core	Sldg.	Description and remarks
0	8.0	8.0	0	-	-	-	-	-	-	-	-	Pink cgl.; no copper.
8.0	14.2	6.2	0	0	35500	0	243	90	1-5/8			Do.
14.2	23.0	8.8	0.2	80	19300	2	94	100	"			Pink cgl. qtzt. core; no copper panned.
23.0	25.0	2.0	0	0	6475	0	138	100	"	-	10017	Pink cgl.; a little copper at end of run.
25.0	30.0	5.0	0.2	75	8550	4	118	100	1-3/16	10010	10018	Grn. cgl., qtzt. core; fair copper pan.
30.0	35.0	5.0	0.1	25	10350	2	142	100	"	10011	10019	Do.
35.0	40.0	5.0	0.4	75	13250	8	182	100	"	10012	10020	Green cgl.; qtzt. core; fair to good panning.
40.0	45.0	5.0	0.3	50	6500	6	140	95	7/8	10013	10021	Green cgl.; qtzt. core; fair copper panning.
45.0	50.0	5.0	0.2	35	7100	4	153	100	"	10014	10022	Grn. and buff cgl., qtzt. core; poor/fair panning.
50.0	60.0	10.0	0.3	45	7700	3	166	100	"	10015	10023	Buff cgl. to red, qtzt. core; very poor panning.
60.0	65.0	5.0	0.1	20	12000	2	257	90	"	10016	10024	Red cgl., qtzt. core; very poor panning.
65.0	75.0	10.0	0.1	20	8150	1	87	95	"			Red cgl., qtzt. core; no copper panned.
75.0	80.0	5.0	0.2	40	5400	4	116	75	"			Red cgl., qtzt. & sch core; no copper panned.
80.0	90.0	10.0	0	0	18400	0	196	95	"			Do.
90.0	100.0	10.0	0	0	25300	0	270	100	"			Do.
100.0	105.0	5.0	0	0	11150	0	238	100	"			Do.
105.0	115.0	10.0	0.1	15	25090	1	268	100	"			Do.

Diamond drill-hole log (Cont'd.)

Footage			Recoveries: Core		Recoveries: Sldg.	Recoveries: In percent			Core diam.,	Sample Nos.		Description and remarks
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.	in.	Core	Sldg.	
115.0	125.0	10.0	0	0	24000	0	256	100	7/8			Red cgl.; qtzt. & sch core; no copper panned.
125.0	135.0	10.0	0	0	25700	0	274	80	"			Do.
135.0	145.0	10.0	0.2	35	18900	2	201	75	"			Red cgl., qtzt. core; no copper panned.

8.0 - 14.2 feet drilled with casing at 8.0 feet.
14.2 - 25.0 feet drilled with casing at 14.0 feet.
25.0 - 40.0 feet drilled with casing at 25.0 feet.
40.0 - 65.0 feet drilled with casing at 40.0 feet.
65.0 - 145.0 feet drilled with casing at 65.0 feet.

cgl. = conglomerate
qtzt. = quartzite
grn. = green
sch. = schist

Record of diamond drill-hole values

Footage			Sample Nos.		Analyses			
					Core, percent	Sludge, percent	Composite*	
From	To	Feet	Core	Sldg.	Cu.	Cu.	percent Cu.	Ay. Cu.
23.0	25.0	2.0	-	10017		0.69		0.69
25.0	30.0	5.0	10010	10018	0.06	1.07	1.06	
30.0	35.0	5.0	10011	10019	0.20	0.85	0.85	
35.0	40.0	5.0	10012	10020	0.07	0.83	0.83	
40.0	45.0	5.0	10013	10021	0.10	0.75	0.75	
45.0	50.0	5.0	10014	10022	0.18	0.78	0.78	0.85
50.0	60.0	10.0	10015	10023	0.06	0.36	0.36	
60.0	65.0	5.0	10016	10024	0.08	0.32	0.32	0.35

Composite sample

					SiO_2	Al_2O_3	
25	50	25	10010 to 10014	10018 to 10022	64.1	14.7	

*Based upon relative weights of core and sludge recovered.

Diamond drill-hole log

HOLE NO.: 9
Location: 4752 N., 5241 E.
Elevation of collar: 2640 feet
Depth: 206 feet
Dip: Vertical
Bearing: - -
Date begun: 3/20/45
Date finished: 4/5/45

Theoretical weight, in grams, of sludge per foot of hole:
Bx-- 2352
Ax-- 1466
Ex-- 938

Footage			Recoveries: Core		Recoveries: Sldg.	Recoveries: In percent			Core diam.,	Sample Nos.		Description and remarks
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.	in.	Core	Sldg.	
0	8.0	8.0										Loose fill.
8.0	13.0	5.0	0.2	135	15950	4	132	100	1-5/8	10028	10044	Grn. and buff cgl., qtzt. core; fair Cu panned.
13.0	20.0	7.0	0.5	290	13950	7	86	100	"	10029	10045	Grn. and buff cgl., qtzt. and sch. core; poor Cu panned.
20.0	25.0	5.0	0.5	135	5630	10	78	100	1-3/16	10030	10046	Buff cgl., qtzt. core; poor Cu panned.
25.0	35.0	10.0	0.4	105	11150	4	77	100	"	10031	10047	Do.
35.0	45.0	10.0	0.3	55	18350	6	126	95	"	10032	10048	Do.
45.0	55.0	10.0	0.2	55	14300	2	98	80	"	10033	10049	Buff cgl., qtzt. core; very poor Cu panned.
55.0	120.0	75.0	0.4			1		100	1-3/16, 7/8			Red cgl., qtzt. core; no Cu panned.
120.0	130.0	10.0	0.2	35	20700	2	222	100	7/8	10034	10050	Red and buff cgl., qtzt. core; very poor Cu panned.
130.0	139.2	9.2	0.9	200	6500	10	77	100	"	10035	10051	Red cgl., qtzt. core; no Cu panned.
139.2	146.7	7.5	0.2	30	8850	3	126	100	"	10036	10052	Buff cgl., qtzt. core; very poor Cu panned.
146.7	156.0	9.3	0.4	60	8650	4	100	95	7/8	10037	10053	Green cgl. qtzt. core; poor Cu panned.
156.0	166.0	10.0	0.3	30	8650	3	93	100	"	10038	10054	Green cgl. qtzt. and cgl. core; poor Cu. panned.
166.0	171.0	5.0	0.2	20	11750	4	252	100	"	10039	10055	Green cgl. qtzt. core; good Cu panned.

Diamond drill-hole log (Cont'd.)

Footage		Recoveries							Core diam.,	Sample Nos:		Description and remarks
		Core			Sldg.	In percent						
From	To	Feet	Feet	Gm.	gm.	Core	Sldg.	Wtr.	in.	Core	Sldg.	
171.0	176.0	5.0	0.4	45	8650	8	193	100	7/8	10040	10056	Green cgl. and qtzt. core; fair Cu panned.
176.0	181.0	5.0	0.5	65	12150	10	263	100	"	10041	10057	Green cgl. qtzt. core; fair Cu panned.
181.0	183.5	2.5	0	0	5800	0	247	95	"	-	10058	Do.
183.5	191.0	7.5	0.1	20	13550	2	193	95	"	10042	10059	Do.
191.0	196.0	5.0	0	0	9500	0	203	95	-		10060	Green cgl., fair Cu panned.
196.0	206.0	10.0	0.4	60	20450	4	219	95	"	10043	10061	Green cgl., qtzt. core; fair Cu panned.

8.0 - 20.0 feet drilled with casing at 8.0 feet.
20.0 - 55.0 feet drilled with casing at 20.0 feet.
55.0 - 130.0 feet drilled with casing at 55.0 feet.
130.0 - 206.0 feet drilled with casing at 130.0 feet.

grn. = green
cgl. = conglomerate
qtzt. = quartzite
sch. = schist
Cu. = copper

Record of diamond drill-hole values

Footage			Sample Nos.		Analyses			
					Core, percent Cu.	Sludge, percent Cu.	Adjusted average*	
From	To	Feet	Core	Sldg.			percent Cu.	Av. Cu.
8.0	13.0	5.0	10028	10044	0.14	1.22	1.21	
13.0	20.0	7.0	10029	10045	0.10	0.87	0.86	
20.0	25.0	5.0	10030	10046	0.15	0.45	0.44	
25.0	35.0	10.0	10031	10047	0.06	0.38	0.38	0.67
35.0	45.0	10.0	10032	10048	0.11	0.40	0.40	
45.0	55.0	10.0	10033	10049	0.15	0.46	0.46	0.43
120.0	130.0	10.0	10034	10050	0.05	0.21	0.21	
130.0	139.2	9.2	10035	10051	0.04	0.40	0.40	
139.2	146.7	7.5	10036	10052	0.12	0.39	0.39	0.33
146.7	156.0	9.3	10037	10053	0.10	1.69	1.69	
156.0	166.0	10.0	10038	10054	1.85	1.77	1.77	
166.0	171.0	5.0	10039	10055	0.40	2.02	2.02	
171.0	176.0	5.0	10040	10056	0.48	2.02	2.02	
176.0	181.0	5.0	10041	10057	0.20	1.92	1.92	
181.0	183.5	2.5	-	10058		1.92	1.92	
183.5	191.0	7.5	10042	10059	0.18	1.72	1.72	
191.0	196.0	5.0	-	10060		1.83	1.83	
196.0	206.0	10.0	10043	10061	0.18	1.64	1.64	1.83

*Based upon relative weight of core and sludge recovered.

Composite assays, hole 9

Footage			Sample Nos.		Analyses							
					Core, percent			Sludge, percent			Composite*	
From	To	Feet	Core	Sldg.	Group	SiO_2	Al_2O_3	Group	SiO_2	Al_2O_3	SiO_2	Al_2O_3
8			10028 to	10044 to								
	35	27	10031	10047	A	75.34	23.48	B	61.96	34.21	62.0	34.2
156			10038 to	10054 to								
	206	50	10043	10061	C	86.54	8.41	D	63.83	26.00	63.8	26.0

*Sludge only.

FACSIMILE TRANSMITTAL FORM

DGA CONSULTING GEOLOGIST

Date: 4-18-94

To: Michael

Fax #:

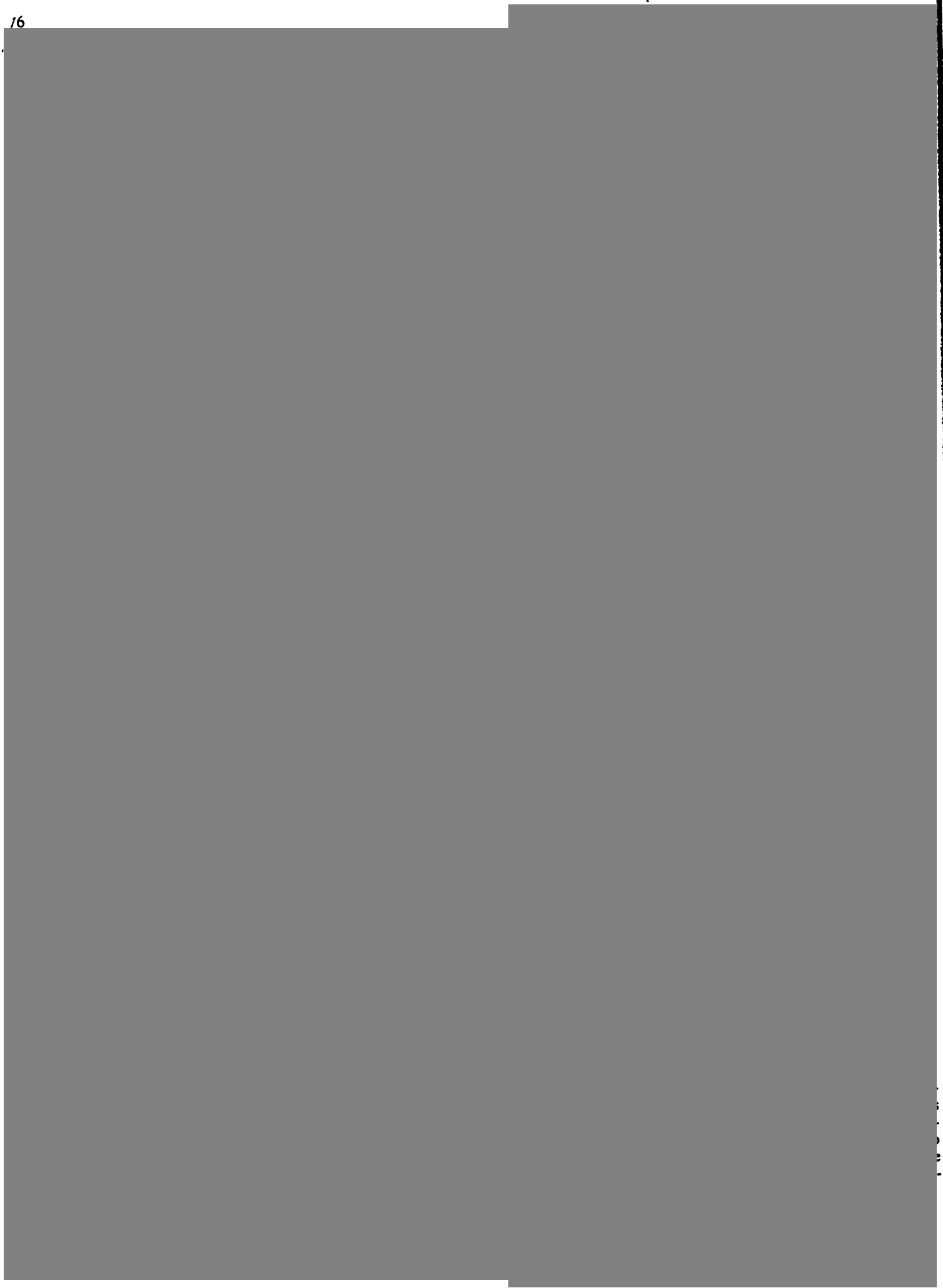
From: Dale

Number of pages including cover sheet: 11

Subject : Map showing ASARCO holdings, from BLM files. Looks like open ground surrounding ASARCO has CuOx potential! Might be a good idea to stake and then talk to ASARCO??. This is all my land data. Lawrence likes the area aswell.

ASARCO has only 4 years of silicate ore at RAY remaining. This might make them less interested in a J.V.

Report any problems with transmittal to: (602) 326-1577.



FAX ☎ 1-303-773-0733
Facsimile Transmittal Sheet

CAMBIOR USA, INC.

TRANSMISSION TYPE (✓ One) ☐ NORMAL ☐ PRIORITY ☐ CONFIDENTIAL

NUMBER OF PAGES (Including Transmittal Sheet) 7

DATE May 13 Friday The 13th

TO ☞ The Dakmeister COMPANY _____

FAX ☎ Nº _____

FROM ☞ The Gopmeister

MESSAGE Here are the copies of the fiche - still no version more recent than this one. Also copy of the 1:100,000 minerals map. Area shown with stipple, incl. Sec. 4, is covered by mineral withdrawl by Water and Power Resources Service. Sherry has noted that a lot of these withdrawls have been withrawn since this map (1979) and it could be open for location. Suggest you check the most recent MTP and Historical Index up in Phoenix BLM. I will send hardcopy of this in the mail!

Please call (303) 694-4936 if any problems with this transmission and ask for _____

Gary

8101 East Prentice Avenue, Suite 800, Englewood, Colorado 80111
303-694-4936 Fax 303-773-0733

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REPORT DATE: NOV 3, 1993
ADMINISTRATIVE STATE: ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PAGE NO: 12317
PCN: LI892PP1

GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

-LEGAL DESCRIPTION- TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
4 S	12 E	4	W2	21	2	288922*LD		BEVEROCK #8 SECT 4	BEVERSDORF FRANK	288915	1553:0803	9/04/1988	0000	4/17/1990
			SW	21		288923*LD		BEVEROCK #9 SECT 4		288915	1553:0805	9/04/1988	0000	4/17/1990
		5	NE	21		50121*LD		BEVEROCK #2		50120	783:289	4/23/1975	1986	4/06/1988
			NW	21		50127*LD		BEVEROCK #13		50120	783:309	4/23/1975	1986	4/06/1988
			NE	21		50128*LD		BEVEROCK #14		50120	783:311	4/23/1975	1986	4/06/1988
			NE	21		59643 LD		TW 3	KENNECOTT CORP	59548	513:718	8/07/1967	1984	4/17/1986
			NE	21		59645 LD		TW 7		59548	513:722	8/07/1967	1984	4/17/1986
			NE	21		59711 LD		TW 100		59548	804:621	9/17/1975	1984	4/17/1986
			N2	21		288917*LD		BEVEROCK #2	BEVERSDORF FRANK	288915	1553:0811	9/06/1988	0000	4/17/1990
			N2	21		288926*LD		BEVEROCK #13 SECT 5		288915	1553:0813	9/04/1988	0000	4/17/1990
			NE,SZ	21		288927*LD		BEVEROCK #14 SECT 5		288915	1553:0815	9/06/1988	0000	4/17/1990
		6	S2	21		288915*LD		BEVEROCK #2A		288915	1553:0817	9/04/1988	0000	4/17/1990
			ALL	21		288918*LD		BEVEROCK #3 SECT 6		288915	1553:0819	9/04/1988	0000	4/17/1990
			ALL	21		288919*LD		BEVEROCK #4 SECT 6		288915	1553:0823	9/04/1988	0000	4/17/1990
			ALL	21		288924*LD		BEVEROCK #10 SECT 6		288915	1553:0821	9/04/1988	0000	4/17/1990
		13	N2	21		318791*LD		COPPER REEF #1	XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0561	12/07/1991	0000	
			W2	21		318792*LD		COPPER REEF #2	XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0563	12/07/1991	0000	
			SW	21		318793*LD		COPPER REEF #3	XANTHOS JOHN	318791	1789:0565	12/07/1991	0000	
			NW	21		318795*LD		COPPER REEF #5	XANTHOS SHIRLEY XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0569	12/07/1991	0000	
			NW	21		318796*LD		COPPER REEF #6	XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0571	12/07/1991	0000	
			N2	21		325980*LD		COPPER REEF #1	XANTHOS JOHN	325980	1880:0321	1/12/1993	0000	
			W2	21		325981*LD		COPPER REEF #2	XANTHOS SHIRLEY XANTHOS JOHN XANTHOS SHIRLEY	325980	1880:0324	1/12/1993	0000	
			SW	21		325982*LD		COPPER REEF #3	XANTHOS JOHN XANTHOS SHIRLEY	325980	1880:0327	1/12/1993	0000	
			NW	21		325984*LD		COPPER REEF #5	XANTHOS JOHN	325980	1880:0333	1/12/1993	0000	
			N2	21		325985*LD		COPPER REEF #6	XANTHOS SHIRLEY XANTHOS JOHN XANTHOS SHIRLEY	325980	1880:0336	1/12/1993	0000	
		14	E2	21		318792*LD		COPPER REEF #2	XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0563	12/07/1991	0000	
			E2	21		318793*LD		COPPER REEF #3	XANTHOS JOHN	318791	1789:0565	12/07/1991	0000	
			E2	21		318794*LD		COPPER REEF #4	XANTHOS SHIRLEY XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0567	12/07/1991	0000	
			NE	21		318795*LD		COPPER REEF #5	XANTHOS JOHN XANTHOS SHIRLEY	318791	1789:0569	12/07/1991	0000	
			E2	21		325981*LD		COPPER REEF #2	XANTHOS JOHN	325980	1880:0324	1/12/1993	0000	

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REPORT DATE: NOV 3, 1993
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PAGE NO: 12316
PCN: LT892PP1

GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

-LEGAL DESCRIPTION- TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
4 S	12 E	3	NE	21	2	59568	LD	BYE #17	KENNECOTT CORP	59548	775;816	2/06/1975	1984	4/17/1986
			E2	21		59569	LD	BYE #18		59545	775;817	2/06/1975	1984	4/17/1986
			NW	21		59664	LD	TW 29		59548	513;744	8/07/1967	1984	4/17/1986
			NW	21		59665	LD	TW 30		59548	513;745	8/07/1967	1984	4/17/1986
			NW	21		59710	LD	TW 75		59548	513;790	8/07/1967	1984	4/17/1986
			NW	21		59715	LD	TW 104		59548	804;625	9/17/1975	1984	4/17/1986
			NW	21		253381*	LD	TW #29	ASARCO	253273		4/30/1986	1992	
			NW	21		253382*	LD	TW #30		253273		4/29/1986	1992	
			NW	21		253427*	LD	TW #75		253273		4/29/1986	1992	
			NW	21		253430*	LD	TW #104		253273		4/30/1986	1992	
		4	NE	21		50122*	LD	BEVEROCK #6	BEVERSDORF FRANK	50120	783;297	4/23/1975	1986	4/06/1988
			NE	21		50123*	LD	BEVEROCK #7		50120	783;299	4/23/1975	1986	4/06/1988
			NW	21		50124*	LD	BEVEROCK #8		50120	783;301	4/23/1975	1986	4/06/1988
			NW	21		50125*	LD	BEVEROCK #9		50120	783;303	4/23/1975	1986	4/06/1988
			NW	21		59643	LD	TW 3	KENNECOTT CORP	59548	513;718	8/07/1967	1984	4/17/1986
			NW	21		59644	LD	TW 4		59548	513;719	8/07/1967	1984	4/17/1986
			NW	21		59645	LD	TW 7		59548	513;722	8/07/1967	1984	4/17/1986
			NW	21		59646	LD	TW 8		59548	513;723	8/07/1967	1984	4/17/1986
			NE	21		59649	LD	TW 12		59548	513;727	8/07/1967	1984	4/17/1986
			N2	21		59650	LD	TW 13		59548	513;728	8/07/1967	1984	4/17/1986
			NE	21		59651	LD	TW 14		59548	513;729	8/07/1967	1984	4/17/1986
			NW	21		59652	LD	TW 15		59548	513;730	8/07/1967	1984	4/17/1986
			NE	21		59653	LD	TW 16		59548	513;731	8/07/1967	1984	4/17/1986
			NW	21		59654	LD	TW 17		59548	513;732	8/07/1967	1984	4/17/1986
			NE	21		59664	LD	TW 29		59548	513;744	8/07/1967	1984	4/17/1986
			NE	21		59665	LD	TW 30		59548	513;745	8/07/1967	1984	4/17/1986
			NW	21		59711	LD	TW 100		59548	804;621	9/17/1975	1984	4/17/1986
			NW	21		59712	LD	TW 101		59548	804;622	9/17/1975	1984	4/17/1986
			N2	21		59713	LD	TW 102		59548	804;623	9/17/1975	1984	4/17/1986
			NE	21		59714	LD	TW 103		59548	804;624	9/17/1975	1984	4/17/1986
			NE	21		59715	LD	TW 104		59548	804;625	9/17/1975	1984	4/17/1986
			NE	21		253366*	LD	TW #12	ASARCO	253273		4/30/1986	1992	
			N2	21		253367*	LD	TW #13		253273		4/30/1986	1992	
			N2	21		253368*	LD	TW #14		253273		4/30/1986	1992	
			N2	21		253369*	LD	TW #15		253273		4/30/1986	1992	
			N2	21		253370*	LD	TW #16		253273		4/30/1986	1992	
			NW	21		253371*	LD	TW #17		253273		4/30/1986	1992	
			NE	21		253381*	LD	TW #29		253273		4/29/1986	1992	
			NE	21		253382*	LD	TW #30		253273		4/30/1986	1992	
			N2	21		253428*	LD	TW #102		253273		4/30/1986	1992	
			NE	21		253429*	LD	TW #103		253273		4/30/1986	1992	
			NE	21		253430*	LD	TW #104		288915	1553;0809	9/06/1988	0000	4/17/1990
			NW	21		288920*	LD	BEVEROCK #6 SECT 4	BEVERSDORF FRANK	288915	1553;0807	9/06/1988	0000	4/17/1990
			NW	21		288921*	LD	BEVEROCK #7 SECT 4						

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GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

LEGAL DESCRIPTION TWNSHP	RANGE	SEC	SUBDV	GED CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
3 S	12 E	35	W2	21	2	253409*LD		TW #57	ASARCO	253273		4/29/1986	1992	
			W2	21		253410*LD		TW #58		253273		4/29/1986	1992	
			NW	21		253411*LD		TW #59		253273		4/29/1986	1992	
			NW	21		253412*LD		TW #60		253273		4/29/1986	1992	
			NW	21		253413*LD		TW #61		253273		4/29/1986	1992	
			NW	21		253414*LD		TW #62		253273		4/29/1986	1992	
			NW	21		253415*LD		TW #63		253273		4/29/1986	1992	
			NW	21		253416*LD		TW #64		253273		4/29/1986	1992	
			NW	21		253418*LD		TW #66		253273		4/29/1986	1992	
			ALL	21		253419*LD		TW #67		253273		4/29/1986	1992	
			N2	21		253420*LD		TW #68		253273		4/29/1986	1992	
			N2	21		253421*LD		TW #69		253273		4/29/1986	1992	
			NE	21		253422*LD		TW #70		253273		4/26/1986	1992	
			N2	21		253423*LD		TW #71		253273		4/29/1986	1992	
			NE	21		253424*LD		TW #72		253273		4/26/1986	1992	
			N2	21		253425*LD		TW #73		253273		4/29/1986	1992	
			NE	21		253426*LD		TW #74		253273		4/26/1986	1992	
			N2	21		288928*LD		BEVEROCK #15 SECT 35	BEVERSDORF FRANK	288915	1553;0795	9/06/1988	0000	4/17/1990
			NW	21		288929*LD		BEVEROCK #16 SECT 35		288915	1553;0793	9/06/1988	0000	4/17/1990
			NW	21		288930*LD		BEVEROCK #17 SECT 35		288915	1553;0791	9/06/1988	0000	4/17/1990
		36	NW	21		18982 LD		SOMNAMBULANT 2	KENNECOTT CORP	18977	893;928	10/21/1977	1984	4/17/1986
			N2	21		18984 LD		SOMNAMBULANT 4		18977	893;931	10/21/1977	1984	4/17/1986
			NE	21		18985 LD		SOMNAMBULANT 5		18977	893;932	10/21/1977	1984	4/17/1986
			NE	21		18986 LD		SOMNAMBULANT 6		18977	893;933	10/21/1977	1984	4/17/1986
			NW	21		59570 LD		SUE 37		59548	522;952	8/17/1967	1984	4/17/1986
			NW	21		253293*LD		SUE #37	ASARCO	253273		4/26/1986	1992	
4 S	12 E	2	NW	21		59568 LD		BYE #17	KENNECOTT CORP	59548	775;816	2/06/1975	1984	4/17/1986
			W2	21		59569 LD		BYE #18		59548	775;817	2/06/1975	1984	4/17/1986
		3	NW	21		59552 LD		BYE #1		59548	775;800	2/06/1975	1984	4/17/1986
			W2	21		59553 LD		BYE #2		59548	775;801	2/06/1975	1984	4/17/1986
			NW	21		59554 LD		BYE #3		59548	775;802	2/06/1975	1984	4/17/1986
			W2	21		59555 LD		BYE #4		59548	775;803	2/06/1975	1984	4/17/1986
			NW	21		59556 LD		BYE #5		59548	775;804	2/06/1975	1984	4/17/1986
			W2	21		59557 LD		BYE #6		59548	775;805	2/06/1975	1984	4/17/1986
			NW	21		59558 LD		BYE #7		59548	775;806	2/06/1975	1984	4/17/1986
			W2	21		59559 LD		BYE #8		59548	775;807	2/06/1975	1984	4/17/1986
			N2	21		59560 LD		BYE #9		59548	775;808	2/06/1975	1984	4/17/1986
			ALL	21		59561 LD		BYE #10		59548	775;809	2/06/1975	1984	4/17/1986
			NE	21		59562 LD		BYE #11		59548	775;810	2/06/1975	1984	4/17/1986
			E2	21		59563 LD		BYE #12		59548	775;811	2/06/1975	1984	4/17/1986
			NE	21		59564 LD		BYE #13		59548	775;812	2/06/1975	1984	4/17/1986
			E2	21		59565 LD		BYE #14		59548	775;813	2/06/1975	1984	4/17/1986
			NE	21		59566 LD		BYE #15		59548	775;814	2/06/1975	1984	4/17/1986
			E2	21		59567 LD		BYE #16		59548	775;815	2/06/1975	1984	4/17/1986

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3 S 12 E 34 NE

REPORT DATE: NOV 3, 1993
ADMINISTRATIVE STATE: ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

-LEGAL DESCRIPTION- TWNSHP	RANGE	SEC	SUBDV	CTY	GEO DIST	BLM SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
3 S	12 E	34	NE	21	2	59699	LD	TW 64	KENNECOTT CORP	59548	513:779	8/07/1967	1984	4/17/1986
			NE	21		59700	LD	TW 65		59548	513:780	8/07/1967	1984	4/17/1986
			NE	21		59701	LD	TW 66		59548	513:781	8/07/1967	1984	4/17/1986
			SW	21		59710	LD	TW 75		59548	513:790	8/07/1967	1984	4/17/1986
			NE	21		59716	LD	WENDY #1		59548	766:667	10/17/1974	1984	4/17/1986
			NW	21		59717	LD	PLUG 106		59548	522:908	9/20/1967	1984	4/17/1986
			W2	21		59719	LD	PLUG 108		59548	522:910	9/20/1967	1984	4/17/1986
			NE	21		253348*	LD	SUE #93	ASARCO	253273		5/01/1986	1992	
			NE	21		253351*	LD	SUE #96		253273		5/01/1986	1992	
			N2	21		253352*	LD	SUE #97		253273		5/01/1986	1992	
			SW	21		253382*	LD	TW #30		253273		4/29/1986	1992	
			SW	21		253383*	LD	TW #31		253273		4/29/1986	1992	
			SW	21		253384*	LD	TW #32		253273		4/29/1986	1992	
			SW	21		253385*	LD	TW #33		253273		4/30/1986	1992	
			SW	21		253386*	LD	TW #34		253273		4/30/1986	1992	
			SW	21		253387*	LD	TW #35		253273		4/30/1986	1992	
			SW	21		253389*	LD	TW #37		253273		4/30/1986	1992	
			W2	21		253391*	LD	TW #39		253273		4/30/1986	1992	
			NW	21		253392*	LD	TW #40		253273		4/30/1986	1992	
			NW	21		253393*	LD	TW #41		253273		4/30/1986	1992	
			NW	21		253394*	LD	TW #42		253273		4/29/1986	1992	
			NW	21		253395*	LD	TW #43		253273		4/29/1986	1992	
			S2	21		253396*	LD	TW #44		253273		4/29/1986	1992	
			S2	21		253397*	LD	TW #45		253273		4/29/1986	1992	
			SE	21		253398*	LD	TW #46		253273		4/29/1986	1992	
			S2	21		253399*	LD	TW #47		253273		4/29/1986	1992	
			E2	21		253400*	LD	TW #48		253273		4/29/1986	1992	
			ALL	21		253401*	LD	TW #49		253273		4/29/1986	1992	
			N2,SE	21		253402*	LD	TW #50		253273		4/29/1986	1992	
			W2	21		253403*	LD	TW #51		253273		4/29/1986	1992	
			N2	21		253404*	LD	TW #52		253273		4/29/1986	1992	
			NW	21		253405*	LD	TW #53		253273		4/29/1986	1992	
			N2	21		253406*	LD	TW #54		253273		4/29/1986	1992	
			NW	21		253407*	LD	TW #55		253273		4/29/1986	1992	
			N2	21		253408*	LD	TW #56		253273		4/29/1986	1992	
			E2	21		253409*	LD	TW #57		253273		4/29/1986	1992	
			E2	21		253411*	LD	TW #59		253273		4/29/1986	1992	
			NE	21		253413*	LD	TW #61		253273		4/29/1986	1992	
			NE	21		253415*	LD	TW #63		253273		4/29/1986	1992	
			NE	21		253416*	LD	TW #64		253273		4/29/1986	1992	
			NE	21		253417*	LD	TW #65		253273		4/29/1986	1992	
			NE	21		253418*	LD	TW #66		253273		4/29/1986	1992	
			SW	21		253427*	LD	TW #75		253273		4/29/1986	1992	
			ALL	21		288916*	LD	BEVERDCK #2 SEC1 34	BEVERSDORF FRANK	288915	1553:0797	9/06/1988	0000	4/17/1990

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3 S 12 E 33 E2

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REPORT DATE: NOV 3, 1993
ADMINISTRATIVE STATE: ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PAGE NO: 12312
PCN: LI892PP1

GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

-LEGAL DESCRIPTION- TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
3 S	12 E	33	E2	21	2	253390*LD	TW	#38	ASARCO	253273		4/30/1986	1992	
			E2	21		253391*LD	TW	#39		253273		4/30/1986	1992	
			E2	21		253392*LD	TW	#40		253273		4/30/1986	1992	
			NE	21		253393*LD	TW	#41		253273		4/30/1986	1992	
			NE	21		253394*LD	TW	#42		253273		4/30/1986	1992	
			W2	21		288925*LD	BEVEROCK #12 SECT 33		BEVERSDORF FRANK	288915	1553:0789	9/06/1988	0000	4/17/1990
			NW	21		288931*LD	BEVEROCK #18 SECT 33			288915	1553:0787	9/06/1988	0000	4/17/1990
			NW	21		309928*LD	BR	2	J H DRILLING INC	309928		11/24/1990	1992	
			NW	21		309929*LD	BR	3		309928		11/24/1990	1992	
			NW	21		50132*LD	BEVEROCK #18		BEVERSDORF FRANK	50120	783:319	4/23/1975	1986	4/06/1988
		34	NW	21		50133*LD	BEVEROCK=19			50120	783:321	4/23/1975	1986	4/06/1989
			N2	21		50134*LD	BEVEROCK #20			50120	783:323	4/23/1975	1986	4/06/1988
			NW	21		59625 LD	SUE	93	KENNECOTT CORP	59548	523:8	8/26/1967	1984	4/17/1986
			NE	21		59628 LD	SUE	96		59548	523:11	8/26/1967	1984	4/17/1986
			NE	21		59629 LD	SUE	97		59548	523:12	8/26/1967	1984	4/17/1986
			N2,SE	21		59665 LD	TW	30		59548	513:745	8/07/1967	1984	4/17/1986
			SW	21		59666 LD	TW	31		59548	513:746	8/07/1967	1984	4/17/1986
			SW	21		59667 LD	TW	32		59548	513:747	8/07/1967	1984	4/17/1986
			SW	21		59668 LD	TW	33		59548	513:748	8/07/1967	1984	4/17/1986
			SW	21		59669 LD	TW	34		59548	513:749	8/07/1967	1984	4/17/1986
			SW	21		59670 LD	TW	35		59548	513:750	8/07/1967	1984	4/17/1986
			W2	21		59672 LD	TW	37		59548	513:752	8/07/1967	1984	4/17/1986
			W2	21		59674 LD	TW	39		59548	513:754	8/07/1967	1984	4/17/1986
			NW	21		59675 LD	TW	40		59548	513:755	8/07/1967	1984	4/17/1986
			NW	21		59676 LD	TW	41		59548	513:756	8/07/1967	1984	4/17/1986
			NW	21		59677 LD	TW	42		59548	513:757	8/07/1967	1984	4/17/1986
			NW	21		59678 LD	TW	43		59548	513:758	8/07/1967	1984	4/17/1986
			S2	21		59679 LD	TW	44		59548	513:759	8/07/1967	1984	4/17/1986
			S2	21		59680 LD	TW	45		59548	513:760	8/07/1967	1984	4/17/1986
			SE	21		59681 LD	TW	46		59548	513:761	8/07/1967	1984	4/17/1986
			S2	21		59682 LD	TW	47		59548	513:762	8/07/1967	1984	4/17/1986
			E2	21		59683 LD	TW	48		59548	513:763	8/07/1967	1984	4/17/1986
			N2,SW	21		59684 LD	TW	49		59548	513:764	8/07/1967	1984	4/17/1986
			N2	21		59685 LD	TW	50		59548	513:765	8/07/1967	1984	4/17/1986
			NW	21		59686 LD	TW	51		59548	513:766	8/07/1967	1984	4/17/1986
			N2	21		59687 LD	TW	52		59548	513:767	8/07/1967	1984	4/17/1986
			NW	21		59688 LD	TW	53		59548	513:768	8/07/1967	1984	4/17/1986
			N2	21		59689 LD	TW	54		59548	513:769	8/07/1967	1984	4/17/1986
			NW	21		59690 LD	TW	55		59548	513:770	8/07/1967	1984	4/17/1986
			N2	21		59691 LD	TW	56		59548	513:771	8/07/1967	1984	4/17/1986
			E2	21		59692 LD	TW	57		59548	513:772	8/07/1967	1984	4/17/1986
			NE	21		59694 LD	TW	59		59548	513:774	8/07/1967	1984	4/17/1986
			NE	21		59696 LD	TW	61		59548	513:776	8/07/1967	1984	4/17/1986
			NE	21		59698 LD	TW	63		59548	513:778	8/07/1967	1984	4/17/1986

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B-132 R 64 10-6

3 S 12 E 33 ALL

REPORT DATE: NOV 3, 1993
ADMINISTRATIVE STATE: ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

TWNSHP	RANGE	SEC	SUBDV	GEO CITY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
3 S	12 E	33	ALL	21	2	59661	LD	TW 24	KENNECOTT CORP	59548	513:739	8/07/1967	1984	4/17/1986
			W2	21		59662	LD	TW 25		59548	513:740	8/07/1967	1984	4/17/1986
			N2,SW	21		59663	LD	TW 26		59548	513:741	8/07/1967	1984	4/17/1986
			SE	21		59665	LD	TW 30		59548	513:745	8/07/1967	1984	4/17/1986
			SE	21		59667	LD	TW 32		59548	513:747	8/07/1967	1984	4/17/1986
			SE	21		59669	LD	TW 34		59548	513:749	8/07/1967	1984	4/17/1986
			SE	21		59670	LD	TW 35		59548	513:750	8/07/1967	1984	4/17/1986
			SE	21		59671	LD	TW 36		59548	513:751	8/07/1967	1984	4/17/1986
			SE	21		59672	LD	TW 37		59548	513:752	8/07/1967	1984	4/17/1986
			E2	21		59673	LD	TW 38		59548	513:753	8/07/1967	1984	4/17/1986
			E2	21		59674	LD	TW 39		59548	513:754	8/07/1967	1984	4/17/1986
			NE	21		59675	LD	TW 40		59548	513:755	8/07/1967	1984	4/17/1986
			NE	21		59676	LD	TW 41		59548	513:756	8/07/1967	1984	4/17/1986
			NE	21		59677	LD	TW 42		59548	513:757	8/07/1967	1984	4/17/1986
			NE	21		59717	LD	PLUG 106		59548	522:908	9/20/1967	1984	4/17/1986
			NE	21		59718	LD	PLUG 107		59548	522:909	9/20/1967	1984	4/17/1986
			E2	21		59719	LD	PLUG 108		59548	522:910	9/20/1967	1984	4/17/1986
			E2	21		59720	LD	PLUG 109		59548	522:911	9/20/1967	1984	4/17/1986
			N2	21		59721	LD	PLUG 110		59548	522:912	9/20/1967	1984	4/17/1986
			NW	21		59722	LD	PLUG 111		59548	522:913	9/20/1967	1984	4/17/1986
			ALL	21		59723	LD	PLUG 112		59548	522:914	9/20/1967	1984	4/17/1986
			W2	21		59724	LD	PLUG 113		59548	522:915	9/20/1967	1984	4/17/1986
			NW	21		59725	LD	PLUG 114		59548	522:916	9/20/1967	1984	4/17/1986
			NW	21		59726	LD	PLUG 115		59548	522:917	9/20/1967	1984	4/17/1986
			NW	21		253351*	LD	SUE #96	ASARCO	253273		5/01/1986	1992	
			E2	21		253365*	LD	SUE #201		253273		4/30/1986	1992	
			SE	21		253368*	LD	TW #14		253273		4/30/1986	1992	
			SE	21		253369*	LD	TW #15		253273		4/30/1986	1992	
			S2	21		253370*	LD	TW #16		253273		4/30/1986	1992	
			SW	21		253371*	LD	TW #17		253273		4/30/1986	1992	
			S2	21		253372*	LD	TW #18		253273		4/30/1986	1992	
			SW	21		253373*	LD	TW #19		253273		4/30/1986	1992	
			S2	21		253374*	LD	TW #20		253273		4/30/1986	1992	
			SW	21		253375*	LD	TW #21		253273		4/30/1986	1992	
			NE,S2	21		253376*	LD	TW #22		253273		4/30/1986	1992	
			W2	21		253377*	LD	TW #23		253273		4/30/1986	1992	
			ALL	21		253378*	LD	TW #24		253273		4/30/1986	1992	
			W2	21		253379*	LD	TW #25		253273		4/30/1986	1992	
			N2	21		253380*	LD	TW #26		253273		4/29/1986	1992	
			SE	21		253382*	LD	TW #30		253273		4/30/1986	1992	
			SE	21		253386*	LD	TW #34		253273		4/30/1986	1992	
			SE	21		253387*	LD	TW #35		253273		4/30/1986	1992	
			SE	21		253388*	LD	TW #36		253273		4/30/1986	1992	
			SE	21		253389*	LD	TW #37						

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3 S 12 E 29 S2

REPORT DATE: NOV 3, 1993
ADMINISTRATIVE STATE: ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

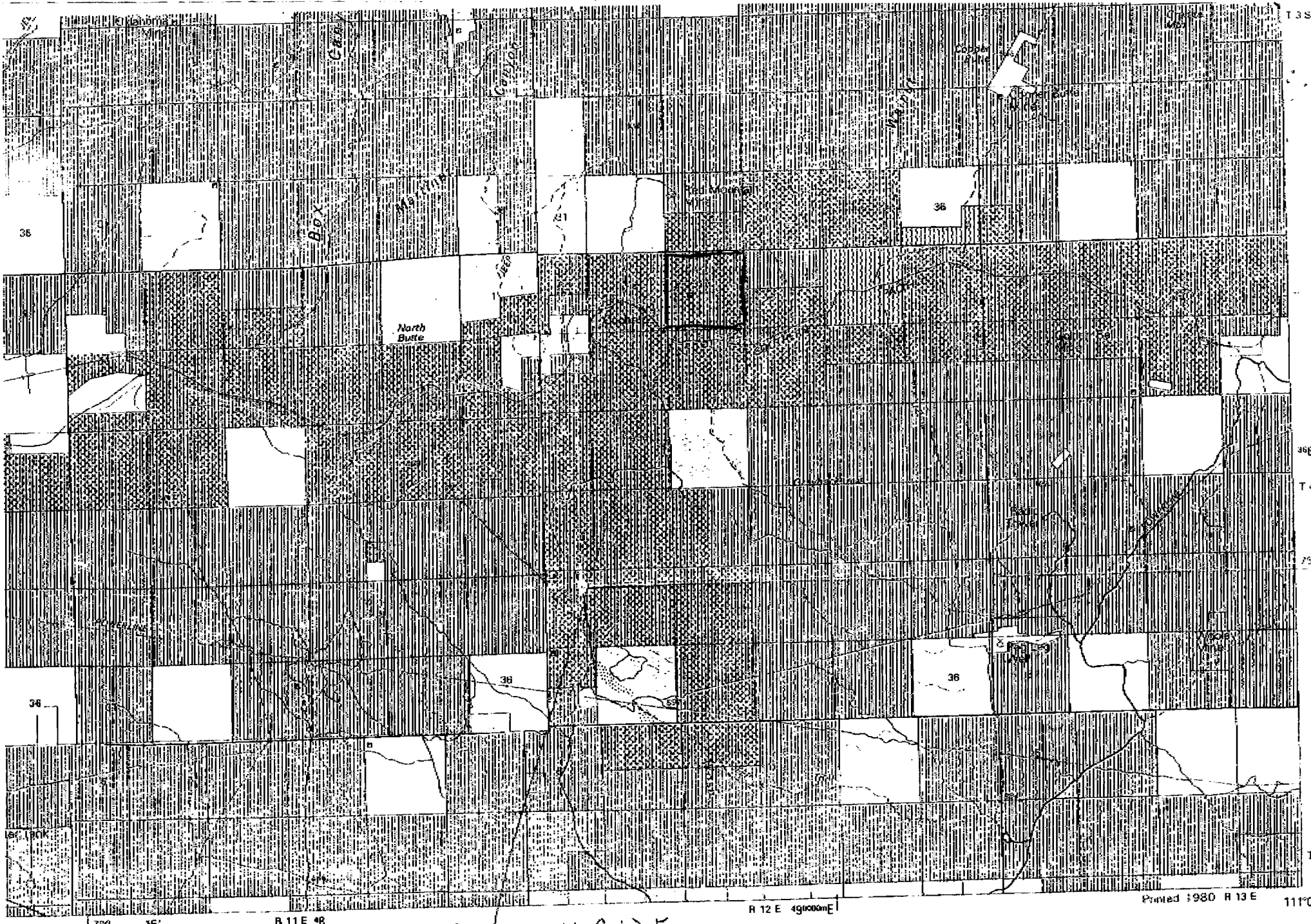
GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

-LEGAL DESCRIPTION- TWNSHP	RANGE	SEC	SUBDV	GEO CITY	BLM DIST	SERIAL CASE NO.	TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
3 S	12 E	29	S2	21	2	311329*LD		JEN 14	VISTA LITE MINING	311316		1/01/1991	1992	
			N2	21		326581*LD		EL 1	GARDNER ELWIN W	326576		4/12/1993	0000	8/05/1993
			N2	21		326582*LD		EL 2		326576		4/12/1993	0000	8/05/1993
			N2	21		326583*LD		EL 3		326576		4/12/1993	0000	8/05/1993
			N2	21		326584*LD		EL 4		326576		4/12/1993	0000	8/05/1993
			ALL	21		326585*LD		EL 5		326576		4/12/1993	0000	8/05/1993
			S2	21		326586*LD		EL 6		326576		4/12/1993	0000	8/05/1993
			S2	21		326587*LD		EL 7		326576		4/12/1993	0000	8/05/1993
			S2	21		326588*LD		EL 8		326576		4/12/1993	0000	8/05/1993
			S2	21		326589*LD		EL 9		326576		4/12/1993	0000	8/05/1993
			S2	21		326589*LD		EL 9		326576		4/12/1993	0000	8/05/1993
		30	NE	21		309969*LD		J 127	J H DRILLING INC	309928		11/20/1990	1992	
			NE	21		309970*LD		J 128		309928		11/20/1990	1992	
			E2	21		309971*LD		J 129		309928		11/20/1990	1992	
			SE	21		309972*LD		J 130	JH DRILLING INC	309928		11/20/1990	1992	
		32	SE	21		59645 LD		TW 7	KENNECOTT CORP	59548	513:722	8/07/1967	1984	4/17/1986
			SE	21		59647 LD		TW 9		59548	513:724	8/07/1967	1984	4/17/1986
			NE	21		59722 LD		PLUG 111		59548	522:913	9/20/1967	1984	4/17/1986
			E2	21		59724 LD		PLUG 113		59548	522:915	9/20/1967	1984	4/17/1986
			NE	21		59726 LD		PLUG 115		59548	522:917	9/20/1967	1984	4/17/1986
			NW	21		292427*LD		JEN 15	VISTA LITE	292413		1/06/1989	0000	1/27/1989
			NW	21		292428*LD		JEN 16		292413		1/06/1989	0000	1/27/1989
			NW	21		292429*LD		JEN 17		292413		1/06/1989	0000	1/27/1989
			NW	21		292430*LD		JEN 18	VISTA LITE CORP	292413		1/06/1989	0000	1/27/1989
			N2	21		292431*LD		JEN 19	VISTA LITE	292413		1/06/1989	0000	1/27/1989
			N2	21		292432*LD		JEN 20		292413		1/06/1989	0000	1/27/1989
			N2	21		292433*LD		JEN 21		292413		1/06/1989	0000	1/27/1989
			N2	21		292434*LD		JEN 22			782:42	4/17/1975	1986	4/06/1988
		33	SW	21		50120*LD		BEVEROCK MINING	BEVERSDORF FRANK	50120	783:307	4/23/1975	1986	4/06/1988
			SW	21		50126*LD		BEVEROCK #12						
			E2	21		59642 LD		SUE 201	KENNECOTT CORP	59548	531:644	12/08/1967	1984	4/17/1986
			SW	21		59645 LD		TW 7		59548	513:722	8/07/1967	1984	4/17/1986
			SW	21		59646 LD		TW 8		59548	513:723	8/07/1967	1984	4/17/1986
			SW	21		59647 LD		TW 9		59548	513:724	8/07/1967	1984	4/17/1986
			SW	21		59648 LD		TW 10		59548	513:725	8/07/1967	1984	4/17/1986
			SE	21		59651 LD		TW 14		59548	513:729	8/07/1967	1984	4/17/1986
			S2	21		59652 LD		TW 15		59548	513:730	8/07/1967	1984	4/17/1986
			SE	21		59653 LD		TW 16		59548	513:731	8/07/1967	1984	4/17/1986
			SW	21		59654 LD		TW 17		59548	513:732	8/07/1967	1984	4/17/1986
			S2	21		59655 LD		TW 18		59548	513:733	8/07/1967	1984	4/17/1986
			SW	21		59656 LD		TW 19		59548	513:734	8/07/1967	1984	4/17/1986
			S2	21		59657 LD		TW 20		59548	513:735	8/07/1967	1984	4/17/1986
			SW	21		59658 LD		TW 21		59548	513:736	8/07/1967	1984	4/17/1986
			S2	21		59659 LD		TW 22		59548	513:737	8/07/1967	1984	4/17/1986
			SW	21		59660 LD		TW 23		59548	513:738	8/07/1967	1984	4/17/1986

* * DISCLOSURE * * ALL INFORMATION RECEIVED IN THIS OFFICE MAY NOT YET BE LISTED ON THIS REPORT, NAMES AND ADDRESSES ARE ENTERED AS THEY APPEAR ON THE LOCATION NOTICE OR ARE ABBREVIATED TO FIT LIMITED SPACE; THEREFORE THEY MAY NOT APPEAR IN THE EXPECTED SEQUENCE. A BLANK LATEST ASSESSMENT YEAR IN THIS REPORT DOES NOT CONSTITUTE AN ABANDONED CLAIM. * AFTER S/N INDICATES LAND STATUS CHECKED.

8-132 X 84 10-8



Sec. 4 T4S R12E

LEGEND

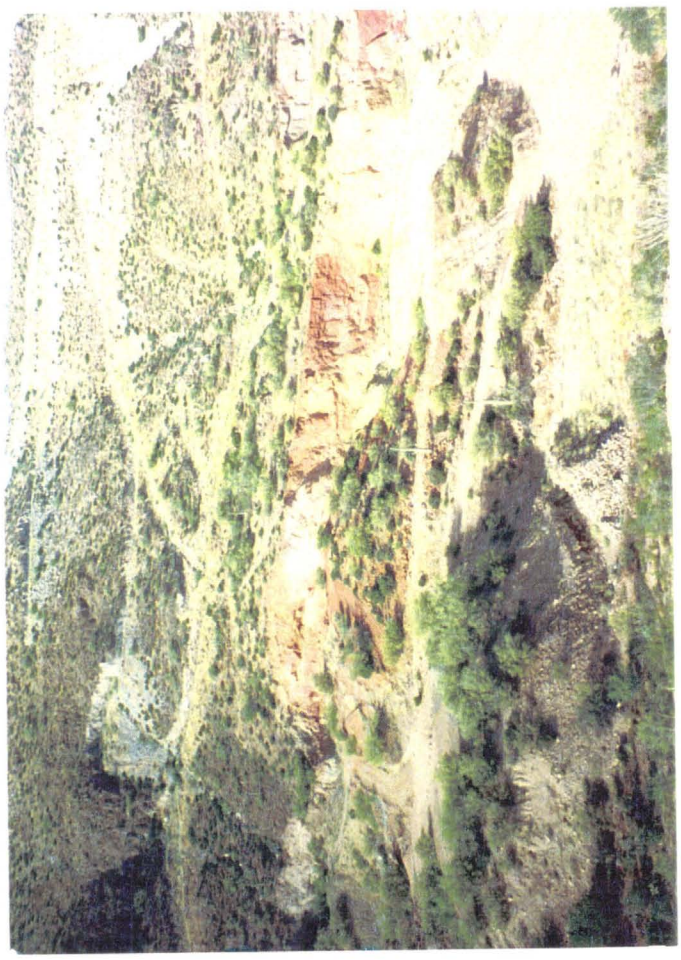
Village or locality . . . . . •

Landmark building . . . . . ▪

ROAD CLASSIFICATION

Primary highway, hard surface . . . . . ———

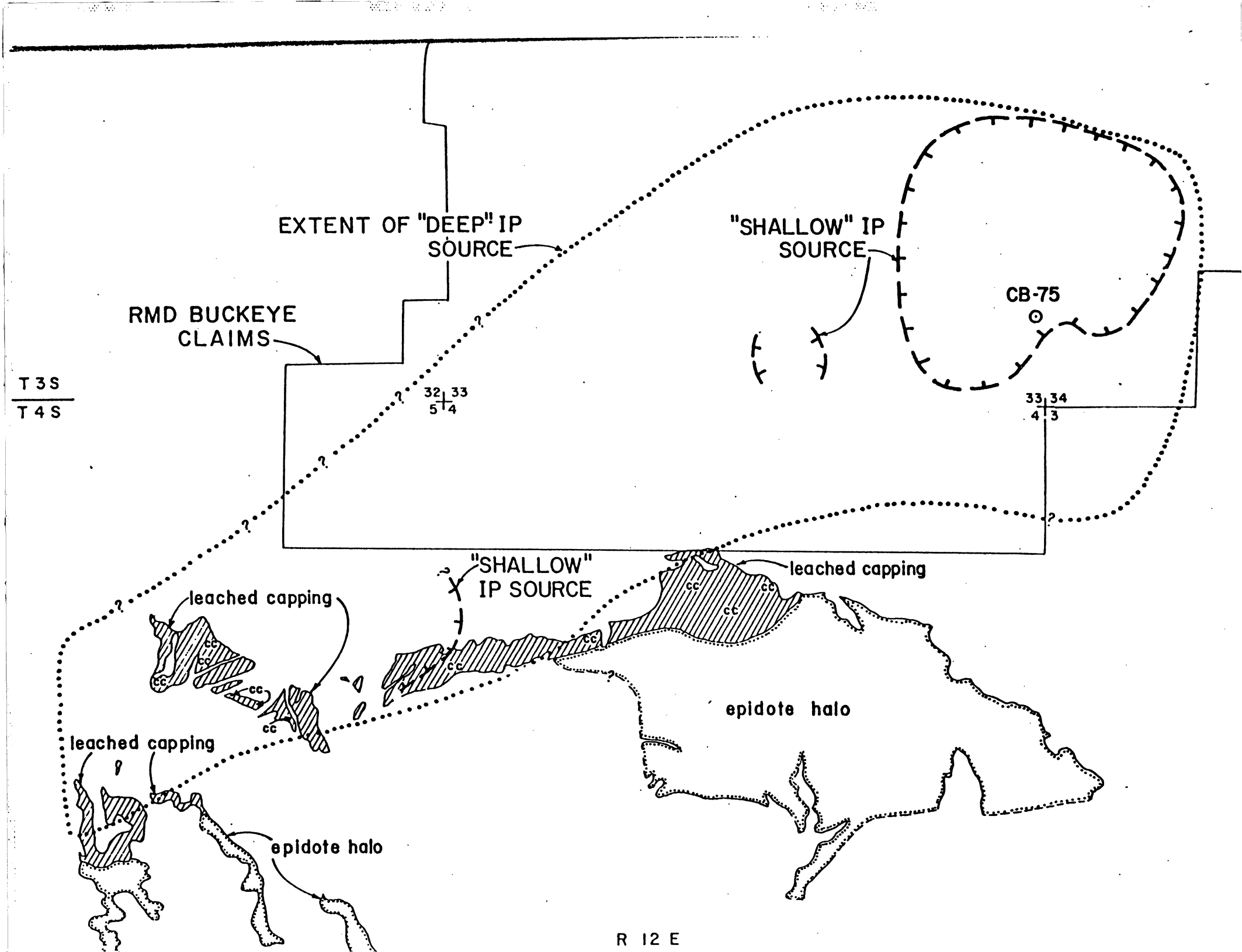
Secondary highway, hard surface . . . . . ———



Deep Oxides?? or enriched zone (>1000')

Pioneer Alabama Mineral District

Pinal County


EXTENT OF "DEEP" IP SOURCE
"SHALLOW" IP SOURCE
CB-75
RMD BUCKEYE CLAIMS
T 3 S
T 4 S
32
5
33
4
33
4
34
3
"SHALLOW" IP SOURCE
leached capping
leached capping
leached capping
epidote halo
epidote halo
cc
R 12 E

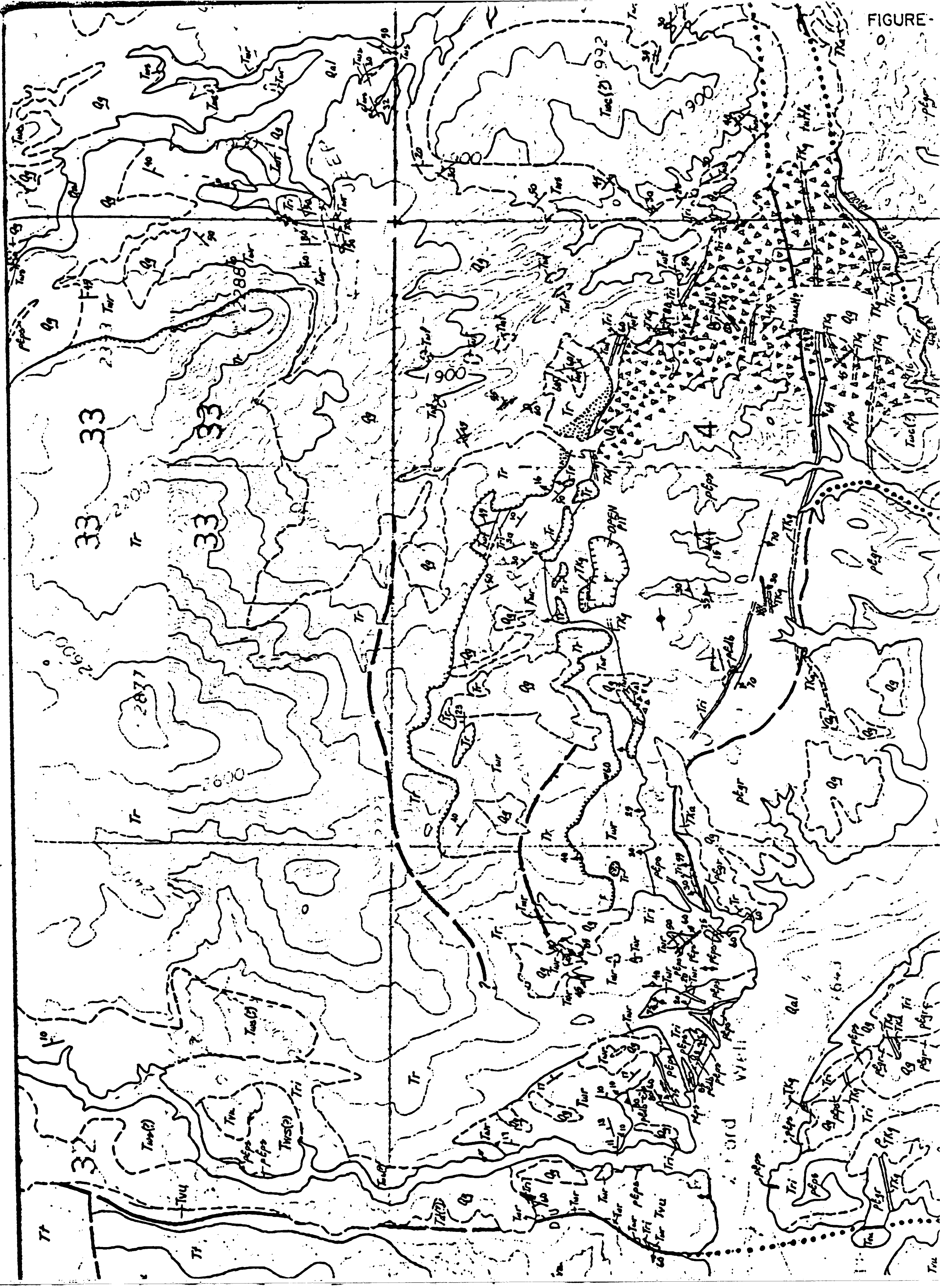


FIGURE-

PIONEER-ALABAMA

PINAL COUNTY, ARIZONA

by

James I. Lyons

March 1976

CONTENTS

ILLUSTRATIONS

CONCLUSIONS AND RECOMMENDATIONS

Significant progress has been made in this latest effort to decipher the complex Pioneer-Alabama geology. Structures which place tighter constraints on the distribution of mineralization have been located. In addition to the previously known low angle fault (the Great Buckeye Fault) locally forming a structural floor to the mineralization, the upper plate has been found to be cut by imbricate low angle normal faults and related tear faults.

The tear faults place structural boundaries to the mineralized rock mass which is impressively consistent with previous modeling of IP data. They define a target area 3000 feet wide and at least 13,000 feet long trending N70°E. The target area is broken into four or five separate blocks by low angle normal faults and younger high angle normal faults.

Two primary recommendations are:

1. Continued and increased drilling in the target area;

2. An extension of mapping to the east in an attempt at a structural reconstruction of the area. The purpose of this reconstruction would be to find further fault bounded mineralized blocks, and hopefully the roots of the system.

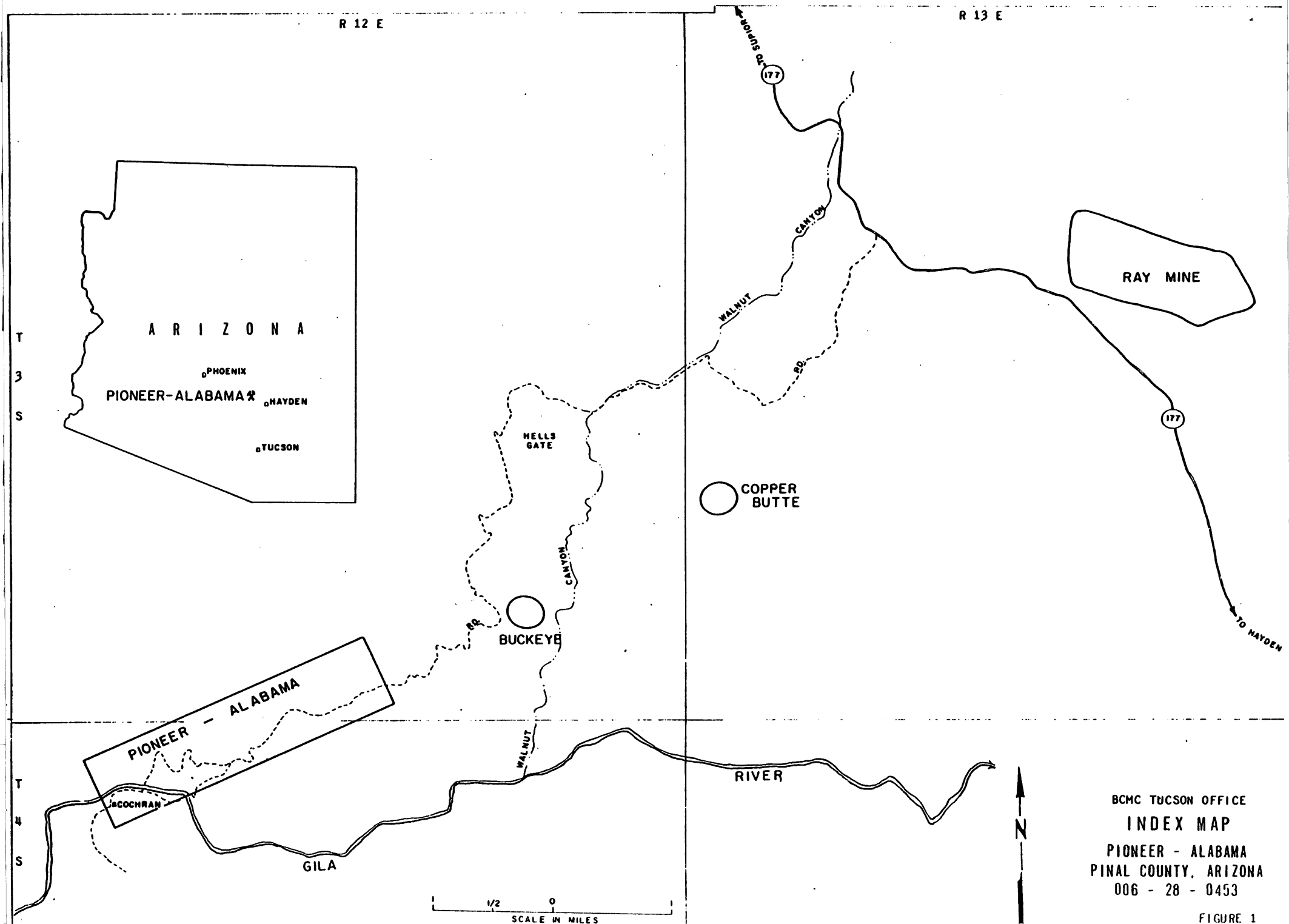
INTRODUCTION

Four holes drilled by Ray Mines have substantiated the occurrence of an enrichment blanket in covered Pinal schist. The best intercept (102 feet of 0.71% copper) was encountered in drill hole CB-82A. The geologic work discussed in this report is just a part of a continuing effort aimed at better defining target concepts in this complex area of proven interest. This study was originally directed at a better understanding of the rhyolites but developed into a structural study. The attached bibliography attempts to cite the most important of the many past contributions. The report by Andrews and Barrett (1974) is the most complete reference on the area.

LOCATION AND LAND

The Pioneer-Alabama area is seven miles west-southwest of Ray in Pinal County, Arizona (Figure 1). It is along the boundary between T3S, and T4S in R12E.

All land of interest, other than a small area in the Middle Gila River Withdrawal, is under Bear Creek or Ray Mines control.



BCMC TUCSON OFFICE

INDEX MAP

PIONEER - ALABAMA
PINAL COUNTY, ARIZONA
006 - 28 - 0453

FIGURE 1

STRUCTURAL GEOLOGY.

Pioneer-Alabama is an area of extreme structural complexity, which is just beginning to be understood (Plate 1). The structural control of the Tertiary intrusive rhyolites and basalts is the key to the present interpretation. The presence of sills in the low angle Great Buckeye Fault aided in the original recognition of its trace (Andrews and Barrett, Jan. 1974). Observation of the structural controls on the distribution of the large mass of Tertiary intrusives on the northern part of the Pioneer-Alabama prospect revealed subsidiary faulting, which is as significant to the distribution of mineralization as the Great Buckeye Fault.

The Great Buckeye Fault, recognized in drill hole CB-75 and mapped in the field by Barrett (Andrews and Barrett, Jan. 1974) is a low angle fault locally forming a floor to the mineralization. In June 1974, this fault was again intersected in drill hole CB-82A. During this investigation the trace of the fault was mapped both to the east and west of its previously known outcrops. A segment of this trace separates typical Precambrian Ruin K-spar porphyry (hanging wall) and what Cornwall (1975) maps as Laramide Teacup granodiorite.

The hanging wall or upper plate of the Buckeye Fault is cut by numerous subsidiary faults consisting mainly of imbricate low angle normal faults and N70°E trending high angle tear faults. In addition, later north-trending high angle normal faults also cut the area. Although at first the young rhyolites appear to obscure structure in the upper plate, recognition of the strong control exerted by the structure on the emplacement of the rhyolites greatly simplifies the problem. The base of the main mass of rhyolite represents the plane of a major low angle normal fault with the hanging wall displaced on the order of a mile to the west-southwest. The evidence for this interpretation is fourfold:

1. The base of the rhyolite dips 20 to 30 degrees to the west-southwest. The Whitetail bedding is rotated almost 90° to the west into the plane of the fault and is intensely sheared.

2. A low angle sympathetic fault paralleling the base of the rhyolite in the footwall displays drag in both Whitetail conglomerate and Pinal schist indicating westward movement.

3. The hanging wall of the main fault consists of large coherent blocks of Apache Leap tuff and Whitetail conglomerate totally enclosed in large masses of rhyolite. The strikes and dips of the bedding within these blocks are consistent with those in

the footwall. With normal (down to the west) movement the Apache Leap tuff is downthrown against lower to middle Whitetail conglomerate, and upper Whitetail or San Manuel formation is downthrown against Pinal schist.

4. Offset of the Pinal-Whitetail contact is estimated on the basis of the above evidence to be approximately a mile.

Another low angle normal fault is observed along the western edge of the rhyolite mass (Plate 1). This fault can be measured to dip 35° to the southwest and is observed to place middle or upper Whitetail down against Pinal schist. Because of limited outcrop, the significance of this fault is yet to be determined.

The tear faults place important boundaries on the mineralization but, because of poor outcrops, are the most difficult to delineate particularly in the Whitetail. The evidence classifying these faults as strike-slip is

1. the occurrence of three subparallel fault systems which occur approximately perpendicular with the strike of the low angle faults;

2. apparent large scale drag in the Whitetail along these zones which may or may not be consistent with this model. The main problem is the flattening of dip as the beds rotate into the structures in some areas instead of the expected steepening of dip. The anomalous drag may be produced by complex oblique-slip movement;

3. subhorizontal slickensides, observed in outcrop of the southernmost tear fault;

4. that a strikeslip mechanism is consistent with concurrent low angle faulting.

The southernmost defined tear fault is easy to delineate because of contrasting rock types and good outcrops. It has long been recognized as a fault but its sequence of motion was not. In addition to the slickensides observed on this fault, drag observed in the upper Whitetail or San Manuel is consistent with left lateral motion.

The central and northern tear faults only have short segments occurring in premineral rock and the large scale drag observed in the Whitetail is incompletely understood.

The credibility of the tear fault model is increased when compared with the modeling done by Andrews (1974) of IP data in the area (Figure 2). Using the faults to form the northern and southern boundaries of the modeled IP source, the sulfide system cutoffs can readily be explained by a lateral shifting of the sulfide bearing rock north and south of the known IP source.

This structural breakdown of the hanging wall of the Buckeye fault can be further utilized to develop a theory as to the direction and sense of movement of the Buckeye fault itself. It is believed most likely that significant motion within a fault block will most likely reflect the direction and motion of the block as a whole and shear motion within this block will tend to be parallel to the direction of motion of the block. The observations would therefore describe the Buckeye fault as a low angle gravity glide fault which moved S70°W.

Three significant young high angle normal faults occur in the western part of the map area. These faults trend north and are down to the west. The westernmost fault forms an effective cutoff downthrowing any mineralized rock at least 4,000 feet. The middle fault down drops the schist less than a thousand feet and may contain a mineralized block of schist. The easternmost of these faults does not have significant displacement but contains a complex mass of rhyolite dikes.

GEOCHEMISTRY AND LEACHED CAPPING

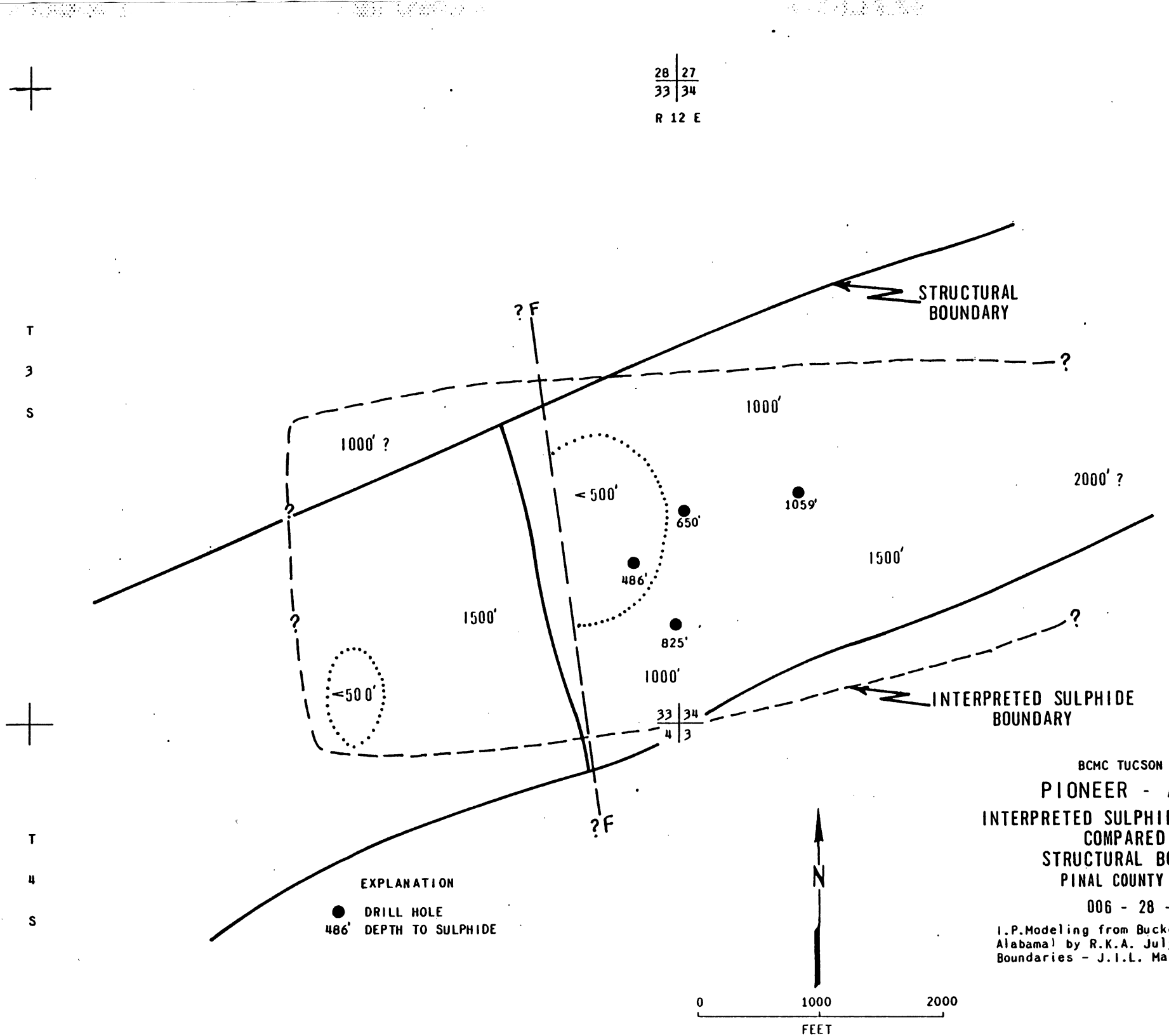
Representative sampling of mineralized Pinal schist was carried out both for Cu, Mo, Pb and Zn assays and limonite smears (Plates 1a and 1b). Limonite smears were also taken from leached capping in drill holes CB-82A and CB-75. In addition to limonite smears, Cu, Mo, Pb and Zn assays were run on schist samples at 100-foot intervals in these drill holes as well as CB-98, CB-72, CB-88 and CB-91.

The high hematite content of the limonite shows no real recognizable trends within the target area. The real contrast is with schist outside of the target area which is much less hematitic and jarositic and is dominantly goethitic.

There is also at this stage no obvious trends in the geochemistry within the target area. These data are being studied further and gold geochemistry is presently being run by Bob Bamford. As with the limonites, the obvious geochemical contrast occurs between the target area and surrounding areas.

TARGET AREA

The target area is completely bounded by structures (Plate 2). The Great Buckeye Fault forms a floor to the mineralization in the target area. The upper plate of the Great Buckeye Fault is broken by tear faults, imbricate low angle normal



BCMC TUCSON OFFICE

PIONEER - ALABAMA

INTERPRETED SULPHIDE DISTRIBUTIO COMPARED WITH STRUCTURAL BOUNDARIES

PINAL COUNTY , ARIZONA

006 - 28 - 0453

I.P.Modeling from Buckeye West (Pioneer-Alabama) by R.K.A. July 1975. Structural Boundaries - J.I.L. March 1976.

Figure 2

faults and younger high angle normal faults. Two N70°E trending tear faults 3000 feet apart correspond closely with sulfide distribution determined from IP modeling. The mineralized zone is cut off to the west by a high angle normal fault and is open to the east. As presently defined the zone is 13,000 feet long and is apparently broken into at least four blocks by the low and high angle normal faults. These crosscutting structures correspond to breaks in the modeled IP data (Figure 2).

The Great Buckeye Fault and the tear faults are post-mineral and separate the known mineralization from its roots and from probable laterally displaced portions of mineralized rock that are yet to be located.

James I. Lyons

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Mancuso, J. D., 1962, Final report, Copper Butte area, Pinal County, Arizona: BCM-SWD report.

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_____, 1971, Whitetail conglomerate facies study, Copper Butte area, Pinal County, Arizona: BCM-SWD report, 5 p.

Swinderman, J. N., 1969, Pioneer-Alabama property, Pinal County, Arizona: BCM-SWD report, 4 p.

Welsh, J. E., 1968, Copper Butte mine area, Teapot Mountain and Grayback quadrangles, Pinal County, Arizona: BCM-SWD consultant's report, 16 p.

Detailed geologic mapping (1" = 500') within a one-half-mile radius of each of the proposed drill sites and on part of the San Carlos Indian Reservation adjacent to the claims was completed in 1973. While the holes planned for 1974 are in progress, mapping will be extended to include the remainder of the claim block.

Pioneer-Alabama, Pinal County, Arizona

Correlations between mineralization and structural features intersected in drill hole CB-75 (Fig. 8) and surface geology (Fig. 9) have been identified by geologic mapping in the vicinity of Pioneer-Alabama. CB-75, drilled by Ray Mines in September 1973, was initially planned to test Whitetail Conglomerate for oxide copper, but was deepened when VIP data (Andrews, 1973) indicated that the Whitetail concealed sulfide-bearing bedrock.

The drill intersected Whitetail Conglomerate, leached and brecciated Pinal Schist with rhyolite diatremes, then 654 feet of pyritized Pinal Schist. The 654-foot interval assayed 0.1-0.5% copper from chalcocite coating on pyrite. This occurrence of supergene enrichment in the Pinal Schist is of exploration interest.

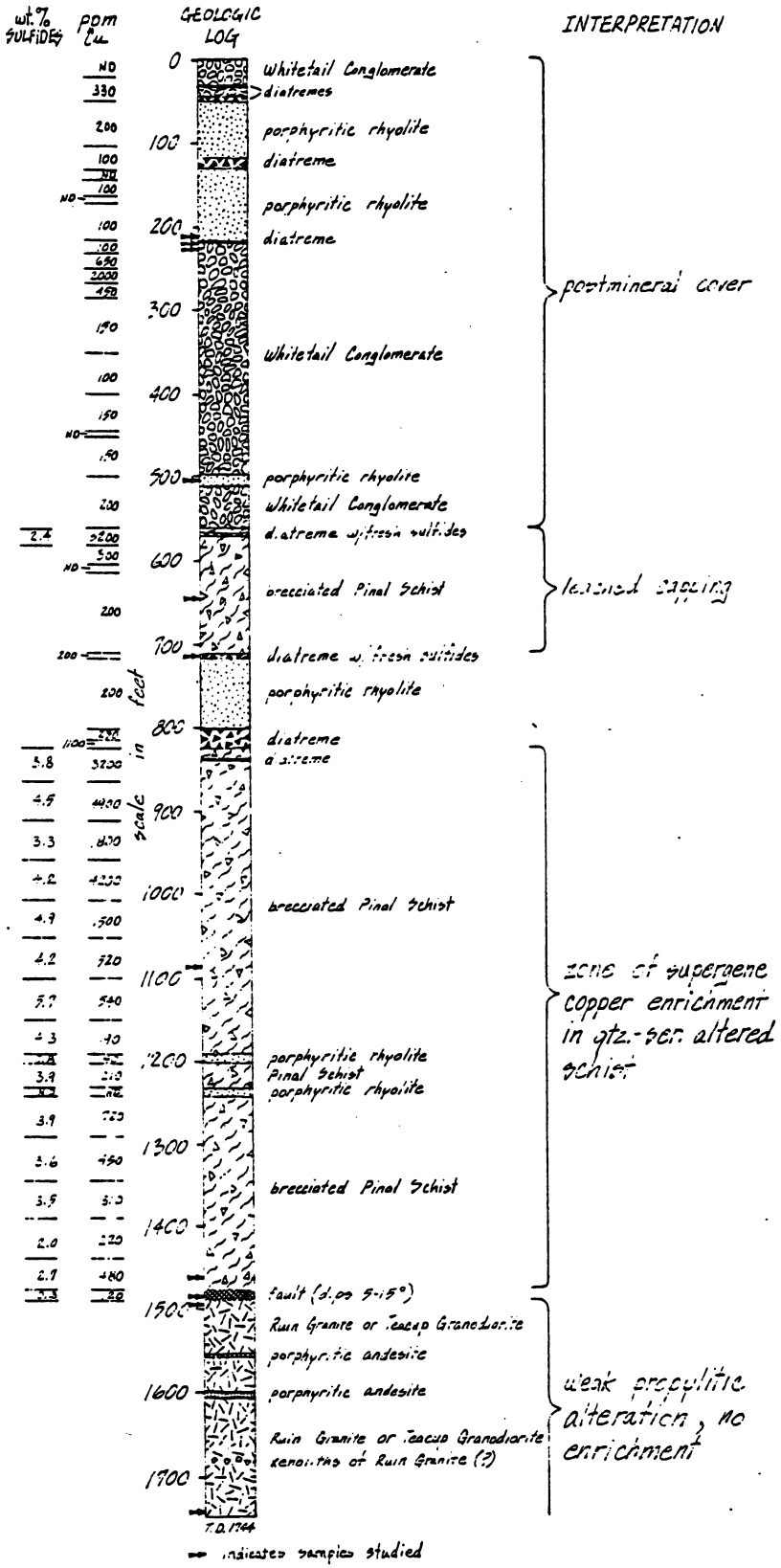
At a depth of 1,476 feet the hole cut a major low-angle fault and passed into what was first interpreted as unmineralized Precambrian Oracle (Ruin) Granite. The Great Buckeye fault (Fig. 10) is probably the fault intercepted in CB-75. The projected dip is right and the rock units separated by the fault are probably the same. However, the correlation with surface geology suggests that the Precambrian Oracle Granite in CB-75 is actually Laramide (63 m.y.; Cornwall, oral communication) Teacup Granodiorite, which is almost indistinguishable from the Oracle.

Outcropping Pinal Schist that composes the hanging wall of the Great Buckeye fault is not pyritized as in CB-75, but it does contain abundant veinlets of epidote in some places. These veinlets were formed before brecciation and their distribution defines a possible epidote halo peripheral to sulfide mineralization that is probably continuous from the workings at Pioneer-Alabama to CB-75.

The overlay to Figure 9 shows the approximate extent of an enriched zone that occurs along the postmineral/premineral contact and undoubtedly extends beneath the postmineral rocks. Chalcocite is exposed in some of the workings, but in general the zone is oxidized and mostly leached of copper.

The Whitetail Conglomerate north of the workings at Pioneer-Alabama contains about 5-10% copper-mineralized clasts that are probably Teacup Granodiorite. This suggests that the Teacup pluton had an associated period of mineralization. Minor copper shows do occur at many places within

FIGURE 8



Geologic log modified and summarized from Hoelscher (1973)

SUMMARY LOG

DDH CB-75

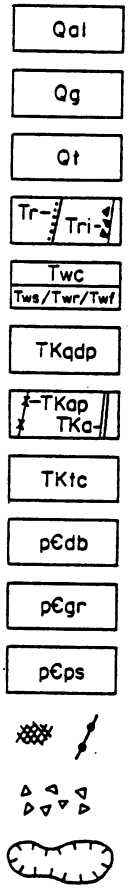
900 N, 200 W OF SE CORNER SEC. 33, T.3S., R.12E.

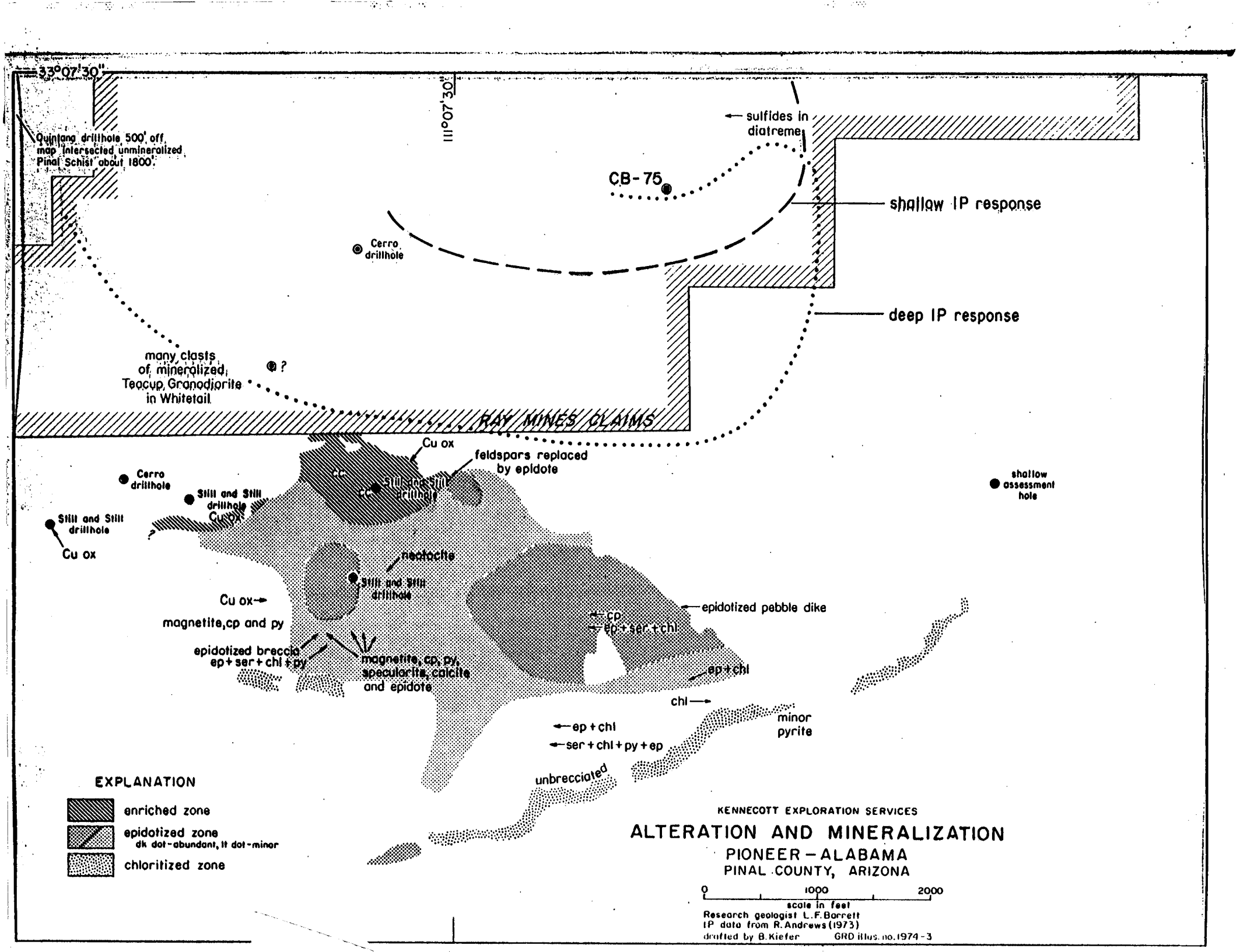
PIONEER - ALABAMA AREA

PINAL COUNTY, ARIZONA

GRD illus. no. 1974-5

EXPLANATION




33°07'30"
111°07'30"
Quintana drillhole 500' off map intersected unmineralized Pinal Schist about 1800'.
sulfides in diatreme
CB-75
shallow IP response
Cerro drillhole
deep IP response
many clasts of mineralized Teacup Granodiorite in Whitetail
?
RAY MINES CLAIMS
Cu ox
feldspars replaced by epidote
Cerro drillhole
Still and Still drillhole
Cu ox
Still and Still drillhole
Cu ox
Still and Still drillhole
shallow assessment hole
Still and Still drillhole
Cu ox
neotocite
Cu ox
magnetite, cp and py
epidotized breccia ep + ser + chl + py
magnetite, cp, py, specularite, calcite and epidote
epidotized pebble dike
cp
ep + ser + chl
ep + chl
chl
minor pyrite
ep + chl
ser + chl + py + ep
unbrecciated
EXPLANATION
enriched zone
epidotized zone
dk dot - abundant, lt dot - minor
chloritized zone
KENNECOTT EXPLORATION SERVICES
ALTERATION AND MINERALIZATION
PIONEER - ALABAMA
PINAL COUNTY, ARIZONA
0
1000
2000
scale in feet
Research geologist L.F. Barrett
IP data from R. Andrews (1973)
drafted by B. Kiefer
GRD illus. no. 1974-3

along the contact of the Teacup pluton, and at one place near the Golden Bell mine (sec. 8, T. 4 S., R. 13 E.) an apophysis of the pluton projects into Oracle Granite and has developed a small sulfide system with significant copper.

The Teacup pluton, which is perhaps more than 20 miles across, has the characteristics-- coarse grained, equigranular, pegmatitic in places; and intrudes only older Precambrian rocks-- of a deeply eroded body. Porphyry copper deposits that might once have formed above the intrusion have probably been eroded, except where major structures acted to downdrop upper parts of the pluton. The Great Buckeye fault may have been such a structure. Although the displacement has not been determined, the fault is likely a gravity fault. Since fault movement seems to be restricted to a post-enrichment, pre-Whitetail age, the logical direction of movement of the hanging wall would have been from the area uplifted by the Teacup pluton to the area subsequently filled with Whitetail Conglomerate. The mineralized and supergene-enriched Pinal Schist at Pioneer-Alabama could have originated above the Teacup pluton. The mineralized clasts of Pinal Schist that compose the linear zone of Whitetail extending from Copper Butte to Pioneer-Alabama might also have had their source above the pluton. Current plans for the continued evaluation of the Pioneer-Alabama area in 1974 include additional VIP, mapping, and drilling.

San Pedro Valley Sedimentological Investigation, Arizona

Facies of the Tertiary San Manuel Formation are being mapped by differentiating the composition of the clasts. Visual percentage estimates of granitic, volcanic, Paleozoic, Late Precambrian Apache Group, and Laramide clasts are noted at each locality. Sulfide system source areas for the San Manuel Formation can be detected in the composition of the clasts thereby providing a method for detecting a possible buried target.

Inliers of bedrock within the San Manuel conglomerate of Precambrian limestone, quartzite, schist, and diabase are geochemically anomalous in lead, zinc, and molybdenum. Northwest-trending faults and gravels with divergent east and west dips suggest a possible doming effect which may indicate a buried topographic high under shallow cover near the anomalous inliers (Fig. 11). These suspected shallow covered areas have been recommended for RIP surveys.

Putnam Wash Manganese Halo Investigation, Arizona

Adjacent to Putnam Wash are extensive outer halo manganese oxide-hematite veins and replacements in the Apache Group sediments and in the Oracle Granite. These occurrences cover approximately 2 square miles

SOUTHWEST DISTRICT

PIONEER-ALABAMA EXAMINATION
PINAL COUNTY, ARIZONA
(06-03-0435)

by

Richard L. Sherer

December, 1970

SUMMARY

The Pioneer-Alabama area is about seven miles southwest of Ray and 14 miles northeast of Florence in Pinal County, Arizona. Swinderman (1969) defined a target area beneath post-mineral cover north of exposed mineralized Pinal schist and intrusive porphyry at the Pioneer-Alabama property. This target concept was re-evaluated in 1970 and it was concluded by J.W. Allan and the writer that there probably is not enough room for a significant porphyry copper orebody in the proposed target area. Attention was then directed to the area west of the Pioneer-Alabama property where the mineralized zone in schist was truncated by a steeply-dipping, north-trending fault. Down-faulted post-mineral volcanic rocks crop out in this area. Two north-south VIP lines were run but responses were attributed to zeolites in the volcanic rocks. Four previously unknown Still and Still drill holes were found and it was learned that these were drilled to 1,000 feet and bottomed in post-mineral volcanic rocks.

Although the VIP survey and Still drilling did not test the pre-volcanic bedrock, no further work is recommended at present in the Pioneer-Alabama area. A deep, speculative target remains in the west, down-faulted block; however, further work is discouraged by the seeming ineffectiveness of IP over the zeolitic volcanic rocks and unfavorable land situation in the southern part of the area.

INTRODUCTION

Location and Access

The Pioneer-Alabama property is in Sections 4 and 5, T4S, R12E, however, the map area covers Sections 20-29, 32-36, T3S, R11E; Sections 1-5, 8-17, E¼W½ 23, E½ 23, 24, T4S, R11E; Sections 19-35, N½ 36, T3S, R12E; Sections 2-11, 14-19, T4S, R12E; and Sections 19, 20, 29, 30, N½ 31, N½ 32, T3S, R12E.

Access to the area is gained by traveling 16½ miles east of Florence on the Florence-Kelvin county road and proceeding north 13 miles on an unmaintained road (Plate 1). This road leads to Cochran, an abandoned Southern Pacific Railroad maintenance station. The Gila River can be forded east of Cochran at low water levels (the river is generally three to four feet deep). A bridge installed by Texas Metallic Mines, Inc., east of the ford, was out in the summer of 1970. Jeep trails from Copper Butte and Section 24, T3S, R11E provide access from north of Gila River.

Land Status

Land status is presented in Plate 2. At the time of Swinderman's report (November, 1969) Texas Metallic Mines, Inc. (P.O. Box 5007, Waco, Texas, 76708) was thought to control the 26± valid claims of the Pioneer-Alabama property. It was reported to have an option agreement with Mr. Joe Akren, present address unknown. The land west of the Pioneer-Alabama property is Middle Gila River Project Withdrawal, within which are small tracts of private and private-Federal mineral lands. State, Federal, and private-Federal mineral lands are north of the withdrawn area.

Origin of Undertaking

Potential for a target in the Pioneer-Alabama area was recognized during the Copper Butte Examination in 1967. J. Mancuso originated the evaluation and was succeeded by C. Caviness and J. Swinderman. The property then passed to the present staff in 1970 to be evaluated as part of the Florence Junction - Saddle Mountain Reconnaissance. Fourteen days were spent in the field by the author in June and July, 1970, mapping the area west of Pioneer-Alabama.

GEOLOGIC SETTING

The Precambrian basement is composed of Pinal schist, Madera diorite, Ruin granite,diabase and aplite. A regional, east-trending Pinal schist-Ruin granite contact passes through the Pioneer-Alabama area. Laramide stocks and dikes intrude the Precambrian basement complex. Stocks have been mapped as quartz monzonite and these vary in texture from coarse-grained equigranular to porphyritic. Laramide dikes are porphyritic and vary in composition from diorite to quartz monzonite. Precambrian and Laramide lithologies are overlain by Tertiary Whitetail conglomerate and a thick sequence of volcanic rocks. The Gila conglomerate is present and it is locally overlain by Quaternary basalt.

Lithologic Units

Lithologic units are described in their order of age from oldest to youngest.

Precambrian

Pinal schist crops out in the northwestern part of the area and scattered outcrops beneath Tertiary rocks are present across the central part of the area. Schist was reportedly encountered at depths less than 150 feet in three foundation test drill holes at the Butte Dam site (Raymond, 1970, personal communication). Outcrops of schist are well foliated and megascopic folds are present. The foliation strikes predominantly north to northeast, but it also is known to strike west-northwest. The schist is fine-grained, and quartz, plagioclase and muscovite are the dominant minerals.

Madera diorite crops out in the eastern part of the area. Hand specimens typically contain laths of plagioclase and interstitial mafic minerals.

Ruin granite is the predominant rock type in the southern half of the area. Outcrops are weathered to a friable rock that disintegrates into grus. Contacts against Pinal schist are sharp and gradational. Where contacts are gradational, alternating layers of feldspar-quartz-mica gneiss and equigranular unfoliated granite are present.

Aplite dikes and irregular shaped bodies of different ages are undivided. Cross-cutting relationships suggest genetic relations to Precambrian and Laramide plutons.

Diabase crops out in dikes, sills and irregular shaped bodies. It is in part late Precambrian age, but cross-cutting relations suggest that some diabase is post-Laramide age. No division of the diabase is made.

Laramide

Granite Mountain porphyry crops out as a roughly circular stock in the northeastern part of the area. Potassium-argon ages of 60 and 63 m.y. have been obtained from biotite in this quartz monzonite (Metz and Rose, 1964; Creasey and Kistler, 1962).

Mineral Mountain quartz monzonite (Schmidt, 1967) is exposed in the west-central part of the area. Schmidt describes the unit as a medium-grained, equigranular, greenish-gray to yellowish-gray intrusive that varies in composition from quartz monzonite to granodiorite. Contacts against Ruin granite and Pinal schist are sharp, irregular and discordant.

Grayback granite is a gray, medium to coarse-grained quartz monzonite cropping out in the southern part of the area. Damon (1970) has obtained a potassium-argon age of 63 m.y. for this unit.

Teapot Mountain porphyry is exposed as a small plug in the northeastern part of the area. The porphyry has a quartz monzonite composition.

Quartz monzonite porphyry. Swinderman (1969) refers to this unit as a porphyritic granite, equivalent to the Teapot Mountain porphyry. Phenocrysts of plagioclase, hornblende, biotite and quartz are present in a gray-green aphanitic groundmass. Selective staining of feldspars indicates that the groundmass consists of K-feldspar and quartz. Epidote aggregates are present as partial to complete replacements of plagioclase, and as partial replacements after hornblende. Biotite shows alteration to chlorite.

Laramide dikes are exposed throughout the area. For convenience, these have been mapped as melanocratic dikes (diorite porphyry, quartz diorite porphyry and trachy andesite porphyry), leucocratic dikes (granodiorite porphyry and quartz monzonite porphyry), and undivided porphyritic dikes.

Tertiary

The ensuing description of Tertiary units refers only to the area west of the Pioneer-Alabama property mapped by R. Sherer. Previous reports (Plate 3) provide description of Tertiary stratigraphy elsewhere.

Whitetail conglomerate is exposed in scattered outcrops beneath the volcanic pile. In Section 3, T4S, R11E outcrops consist of unaltered and unmineralized cobble and boulder size schist clasts in a sandy matrix. In the vicinity of North and South Buttes a coarse-grained arkose containing cobbles and boulders of granite overlies Ruin granite.

Dacite. West of North Butte a ridge of dacite rests on the arkosic facies of Whitetail conglomerate. In hand specimen, phenocrysts of plagioclase, quartz, biotite and hornblende are present in a dark-tan aphanitic groundmass dominated by fine-grained K-feldpsar. The unit is probably a potassium-rich welded tuff.

Rhyodacite flows are exposed in Martinez Canyon in Section 35, T3S, R11E. A basal unit consists of thin flows and agglomerates. This is overlain by a thick

sequence of flows whose individual thicknesses are generally less than 25 feet. Phenocrysts of plagioclase, quartz, biotite and hornblende are present in a tan to light-gray hypocrystalline aphanitic groundmass. The basal contact of the rhyodacite unit is not exposed.

Clastic tuffs make up the bulk of the volcanic pile. They were deposited on Pinal schist, Ruin granite, Whitetail conglomerate and rhyodacite flows. These buff-colored tuffs contain clasts of schist, granite, diabase, glassy volcanic rocks and pumice. Volcanic sandstones are present and several beds appear to have been deposited and reworked in a lacustrine environment. Broad lenses of channel deposits containing schist, granite, and volcanic rocks are exposed in Donnelly Wash east of South Butte.

Andesite flows and agglomerate overlie the clastic tuffs and cap North and South Buttes. Andesite is exposed in fault blocks to the east. Two volcanic vents were recognized east of North Butte. Phenocrysts of plagioclase, pyroxene, biotite, and rare K-feldspar and hornblende are present in a dark-brown to black aphanitic groundmass. In Section 25, T3S, R11E, the andesite is amygdaloidal and contains zeolites.

Rhyolite and Rhyodacite plugs and dikes crosscut clastic tuffs, Whitetail conglomerate, schist and granite. Glassy margins are usually present and intrusive breccia masses are locally present. Vertical to near-vertical flow banding is generally conspicuous. The pink to brown rhyolite contains phenocrysts of biotite and quartz in an aphanitic groundmass. Phenocrysts of biotite, hornblende, quartz and plagioclase are present in a gray holocrystalline aphanitic groundmass in rhyodacite.

Conglomerate and tuffaceous sediments overlie andesite and rhyolite intrusive plugs. Boulders of rhyolite up to several feet in diameter are present in the conglomerate near the intrusive plugs. Elsewhere, clasts of andesite, rhyolite, pumice and clastic tuff up to one foot in diameter are present in a poorly sorted sandy matrix. Sandy material fills joints in the underlying andesite flow east of South Butte.

Gila conglomerate locally, conformably overlies the conglomerate and tuffaceous sediments. The distinction between the two units is based upon two local characteristics possessed by the Gila conglomerate. (1) The Gila conglomerate contains numerous channel deposits of coarse angular boulders of volcanic rocks different from local volcanic rocks. (2) Clasts of Paleozoic(?) limestones are present in the Gila conglomerate but not the older conglomerate.

Rhyolitic tuff crops out in the eastern part of the area and is interpreted as a member of the Gila conglomerate.

Basalt flows overlie the Gila conglomerate west of South Butte.

Quaternary deposits consist of caliche cemented gravels and unconsolidated alluvium, gravel and talus.

TARGET OBJECTIVES

Previous drilling by Dunham, Calumet and Hecla, Cerro de Pasco Corporation and Still and Still (holes B1 to B3) tested mineralized bedrock. Swinderman's (1969) target objective was an enriched porphyry copper deposit containing ±200 million tons of 1% copper under post-mineral cover north of bedrock exposure. Cerro de Pasco Corporation drilled three holes in post-mineral cover north of the exposed mineralized schist, but results of this drilling were not available. A positive VIP response was obtained over the target area in 1969. Swinderman's recommendations of additional VIP surveys and 8,000 feet of drilling to evaluate a target area farther north of Cerro drill holes was contingent upon obtaining positive mineralization data from the Cerro drill holes. Swinderman's target concept was re-evaluated in 1970 and it was recognized that moving the target area further to the north, toward unmineralized schist windows in post-mineral cover, did not leave enough room for a large disseminated orebody.

A new target area was defined west of the Pioneer-Alabama property, along the projected strike of northeast trending mineralized shear zones. This target is beneath post-mineral volcanic rocks in downthrown fault blocks. Positive I.P. responses attributed to zeolites in volcanic rocks were obtained on two north-south lines over this target area.

Four previously unknown Still and Still drill holes (A-1 through A-4) were found. It is not known for whom Art Still acted as consultant, but it was learned that no hole was over 1,000 feet deep. This drilling reportedly was done by a "major oil company". Estimated thickness of the volcanic pile varies from 1,500 to 2,000 feet, and this Still drilling did not encounter pre-volcanic bedrock.

Since the I.P. survey and Still drilling did not penetrate the pre-volcanic rocks a deep, speculative blind target area remains untested.

MINERALIZATION

South of the Gila River scattered copper oxide mineralization is present in quartz veins and shear zones which are spatially related to Laramide porphyry dikes. Sericite and specular hematite are common in these occurrences.

North of the Gila River a facies of the Whitetail conglomerate is composed of altered and mineralized schist fragments and occasional altered porphyry clasts. At the Pioneer-Alabama property a mineralized zone in the Pinal schist and scattered outcrops of altered porphyry are exposed over a distance of about one mile. Mineralization is predominantly controlled by an east-northeast to northeast-trending shear zone about 300 feet wide. This zone contains less than 3 volume percent sulfide. At the eastern end of this zone oxide copper mineralization is prominent over a distance of 500 feet in the vicinity of a steeply dipping northwest-trending shear zone which contains chalcocite replacing chalcopyrite and pyrite (Swinderman, 1969). The mineralized area is concealed by Whitetail conglomerate and Tertiary volcanic rocks to the north and east. To the west, the mineralized zone is truncated by north-trending faults which bound blocks of post-mineral volcanic rocks.

Drilling

Twenty drill holes are known in the area but information is available for only part of these. Data for the eight Dunham (1913) holes is suspect, but Swinderman (1969) interpreted the data at best as indicating a small tonnage of 0.12 to 0.76% copper at depths of 200 to 500 feet.

Two Still holes (B-1 and B-3) encountered trace amounts of copper mineralization and B-1 penetrated post-mineral rhyolite from 486 feet to the bottom of the hole at 1,082 feet. Holes A-1 through A-4 were not over 1,000 feet deep and all bottomed in post-mineral volcanic rocks. These holes were located on I.P. anomalies which were later determined to be due to zeolites in the volcanic rocks.

Two holes collared in mineralized schist were drilled by Calumet and Hecla in 1957. Each was drilled to a depth of 1,500 feet. Each hole, after cutting about 1,230 feet of leached and oxidized schist was bottomed in essentially barren, pyritic mineralization in schist.

No data is available for the three Cerro de Pasco Corporation drill holes.

Geophysics

Two north-south VIP lines totaling six line miles were run over the volcanic cover west of the exposed Pioneer-Alabama mineralization. A moderately strong, shallow response was detected and the strongest response was at the south end of the western line.

In two personal communications Art Still indicated that responses from a Canadian Aeroservice I.P. survey of the area were caused by zeolites. Furthermore, Still indicated that researchers at Harvard University had confirmed the presence of zeolites in the volcanic rocks.

Results of a GD-KEI expander test north of the Pioneer-Alabama property are pending.

CONCLUSIONS AND RECOMMENDATIONS

Re-evaluation of Swinderman's (1969) target area north of the Pioneer-Alabama property indicated that there was not sufficient room for a large ore body. This area is therefore of no further interest.

Our VIP survey and the Still drill holes did not test the pre-volcanic bedrock west of the Pioneer-Alabama mineralization. Thickness of the volcanic cover is estimated to be 1,500 to 2,000 feet. No further work is recommended in the Pioneer-Alabama area at this time. However, it would be wise to continue attempts to obtain the Still data for holes A-1 through A-4 in the event that it becomes favorable to explore for a deep speculative blind target in this area.

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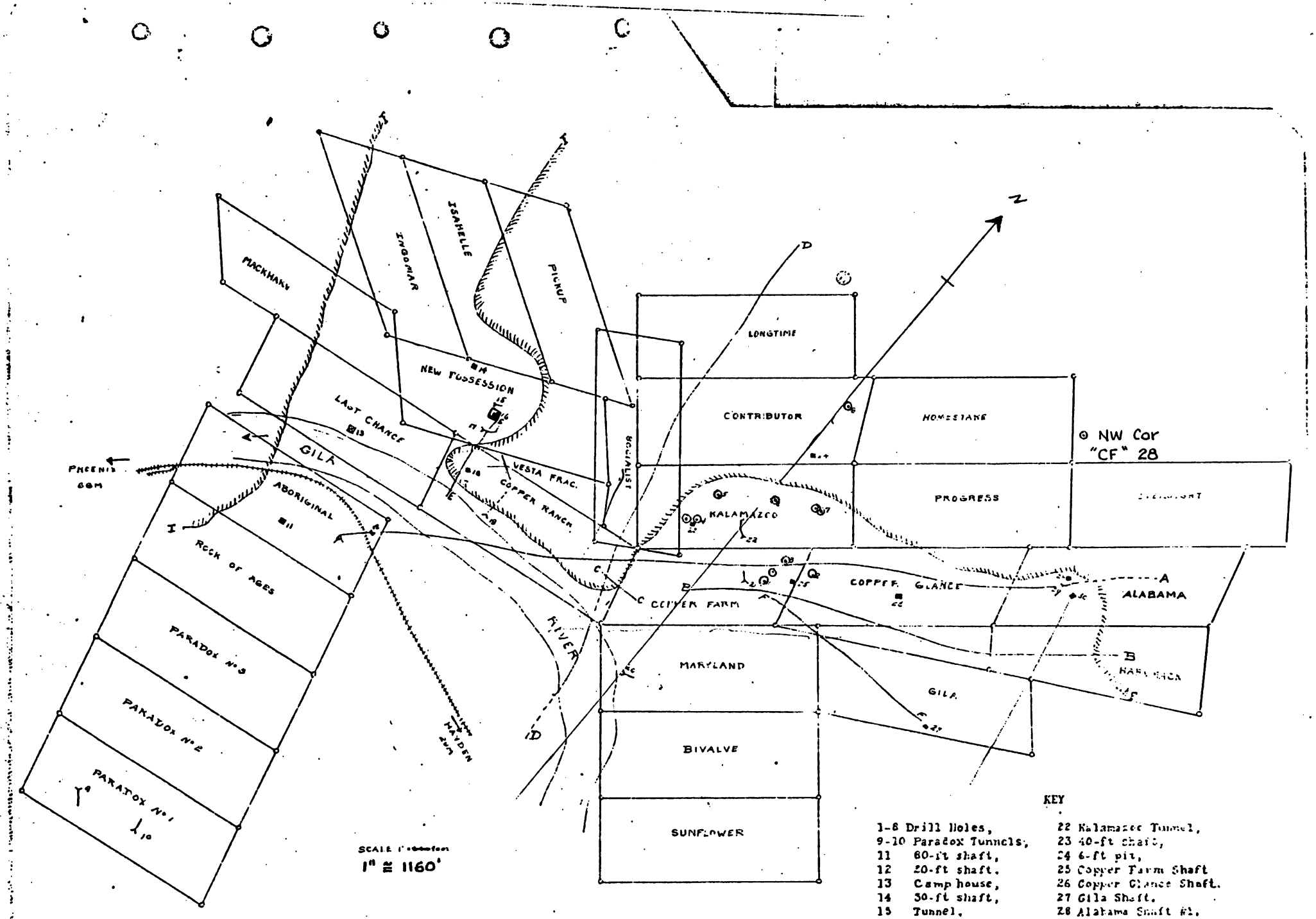
Richard L. Sherer

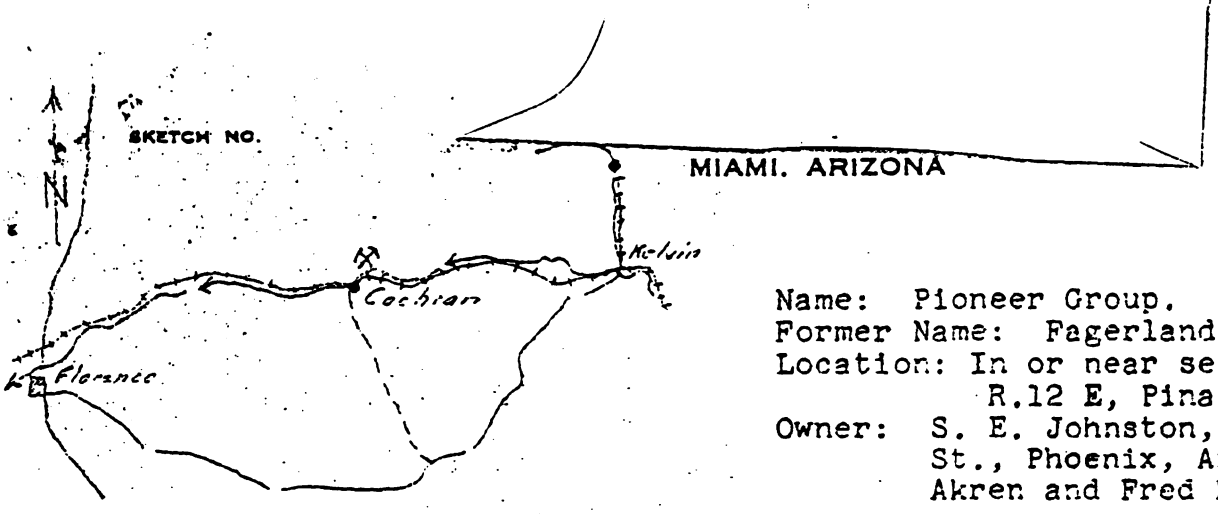
Richard L. Sherer



KEY

1-8 Drill Holes,
9-10 Paradox Tunnels,
11 60-ft shaft,
12 20-ft shaft,
13 Camp house,
14 30-ft shaft,
15 Tunnel,
16 200-ft shaft,
17 New Possession Tunnel,
B-B South Porphyry
D-D Dacite Dike,
22 Kalamazoo Tunnel,
23 40-ft shaft,
24 6-ft pit,
25 Copper Farm Shaft
26 Copper Glance Shaft.
27 Gila Shaft.
28 Alabama Shaft #1.
29 Alabama Tunnel.
30 Alabama Shaft #2.
A-A Main Porphyry Belt.
C-C 10-ft Porphyry
E-E Diabase Dike,

Claim Map
Florence - Fagerlund - Aboriginal Groups



244

SCALE

DATE

DRAWN BY

CHECKED BY

Name: Pioneer Group.
Former Name: Fagerland Group.
Location: In or near sec. 4 & 5, T4S, R.12 E, Pinal County, Arizon
Owner: S. E. Johnston, 4032 N. Harding St., Phoenix, Arizona, and Jose Akren and Fred Hallquist.

Size: 25 unpatented claims.
Present status: Idle.
Development Work: Several inaccessible shafts. Maximum depths probabl 200 ± ft., several adits of undetermined length and a few churn drill holes whose records are unavailable.

Geology: The principal rock types are Pinal schist and an iron staine schist conglomerate that may be a remnant of the Whitetail conglomerate. The schist has been intruded by diabase and dacite(?)* porphyry. Hills are capped by dacite. At the west end of the claims, there is a shear zone 75 - 100 ft. wide.

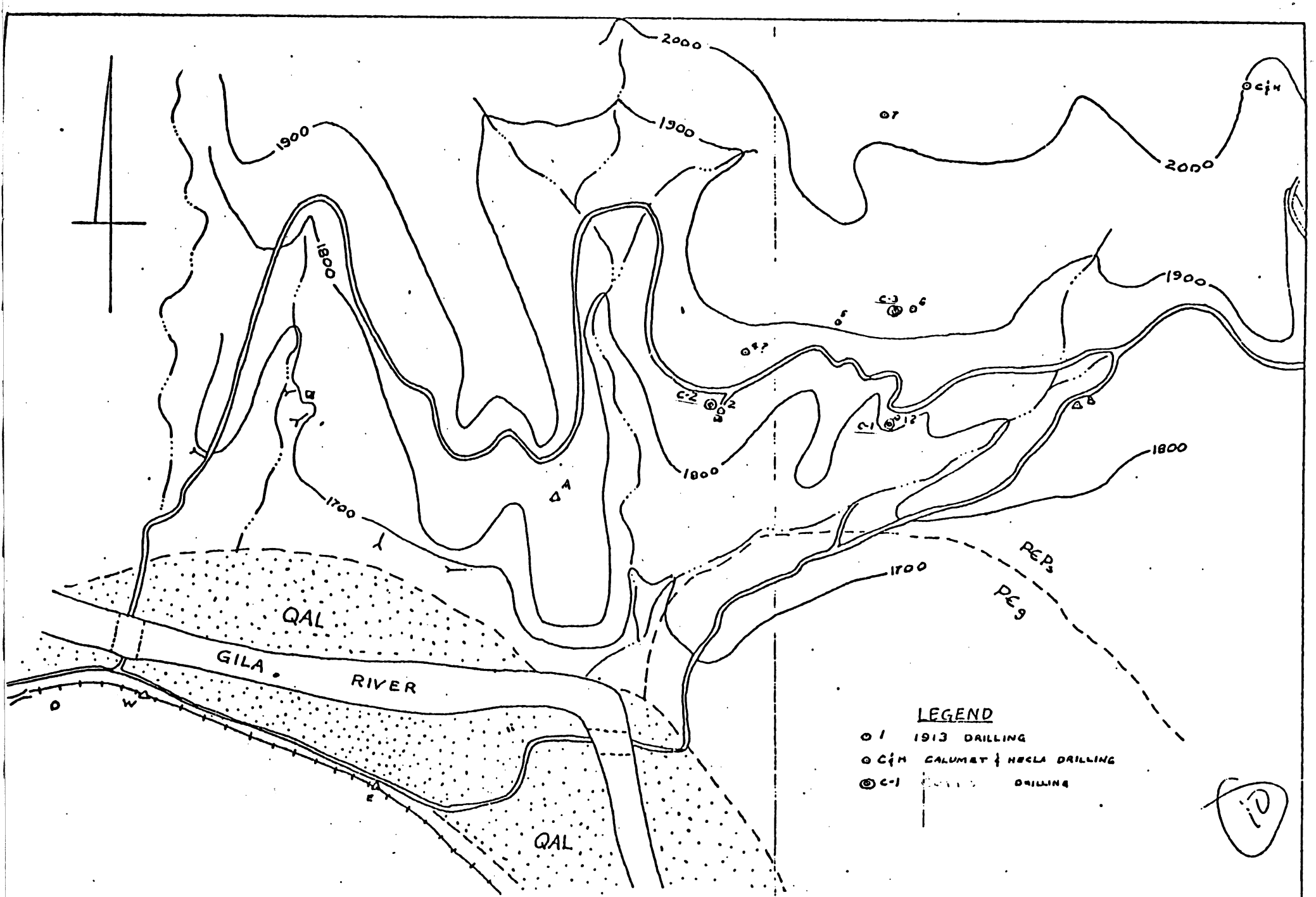
Oxidized copper minerals are found in scattered areas as impregnations in the sheared schist, but the areas between appear to be barren. A high grade pile at a shaft on a 2 - 3 ft. NE vein contained a small amount of galena. The shaft is at the SE end of the group.

Conclusion: The property is not of further interest.

Examined: 2-13-54
Examined by: W. W. S. - J. E. F.

* Another report mentions the occurrence of qtz monzonite and qtz porphyry on the prospect.
JWA

SKETCH NO.



PLANT UNIT No.	REVISIONS			
		SURVEY BY [illegible]	DATE 10-5	
		GEOLOGY BY RRR	DATE 10-5	
		DRAWN RRR	DATE 2-9-61	
		TRACED GW	DATE 2-9-61	

PIONEER PROJECT

NEW YORK

PROGRESS MAP

SCALE — 1" = 500'

BLOCK

DRAWING No: PC-2-1-A-15[illegible]

(8)

GEOLOGY REPORT

ON

THE PIONEER GROUP

The Pioneer Group of copper claims, consisting of thirty-two claims, is located in the Ward Mining district, Pinal County, Arizona. Cochran, a station on the Southern Pacific Railroad, and about sixty-eight miles from Phoenix is adjacent to the property; the Gila River divides the property also.

The property is in a very rough, mountainous country. The elevation is 1650 feet above sea level where the railroad crosses the property. On both sides of the river the land rises rapidly, the highest point along the northern limits of the property being about a thousand feet higher though less than a mile back from the river. The climate is that which is common to mountainous districts of moderate elevation in the southwest.

It is twenty miles to Hayden where the Ray Consolidated Copper Company's concentrator and the Hayden plant of the American Smelting and Refining Company are located. The railroad provides freight service. The nearest post office is at Kelvin.

The central part of Arizona, where this group is located, has been a prominent mining district for many years, first because of the rich silver ores, later on account of the copper mines. The old Silver King, so famous as a silver producer some thirty years ago, is directly north. The Ray copper camp is a little north of east, about seven miles distant. Five miles northeast in the direction of Ray is the Copper Butte mine which has been a large producer. At one time the production exceeded six hundred tons of shipping ore daily.

In the area under consideration, the oldest rocks, the Pinal schist and the intrusive batholithic masses of granite, are the

characteristic types of these two formations as they exist in many portions of the State. The schist belt occurs in the central and northern part of the property, while granite is the prevailing rock south and east. A rhyolite capping covers parts of the property. This capping varies in thickness from a few feet to four hundred feet. So far as is known the rhyolite everywhere overlies a schist breccia, composed of small, subangular fragments of schist and cementing materials. The schist breccia shows no copper stain except in rare instances along prominent fractures where the copper may be considered as having been precipitated by surface waters, or in certain instances along contacts between that breccia and less porous intrusives. Here also, it is possible that copper minerals were precipitated by surface waters.

Traversing the property in a general north-south direction is a wide dike of diorite, forming some of the most distinctive topographic features of the area. Bold outcrops of this dike occur in the bed of the Gila River. The rock is light gray, having a fine-grained ground-mass, through which phenocrysts of quartz, feldspar, and biotite are evenly distributed.

Besides the intrusives mentioned above, there are irregular sheets and masses of diabase and bodies of porphyritic to granular rocks of variable character. It is believed that these last named intrusives, roughly grouped as porphyries, bear an important relation to the ore deposits of the area. In fact it is believed that the belt of porphyry running from the northeast to the southwest, varying in width from fifty to one hundred feet, through the center of the property, will develop the largest bodies of commercial ore on the property.

The development work on the property consists of (A) about 5000 feet of churn drilling and (B) 1500 feet of shafts and tunnels.

The churn drilling was all done in an area roughly 1000 feet square. This area shows on the surface conspicuously red stained schist, in places leached to a light yellow color. The results of the drilling indicate copper values over this area averaging 0.76% copper. In view of the system followed in placing the drill holes they can hardly be considered conclusive evidence in determining the value of even the schist. A study of the ground indicates that the drilling operations did not reach the porphyry belt which is believed to be the mineralized area of greatest importance. Because the porphyry dips north the most southerly holes passed through only the oxidized portions of the belt, while the most northerly holes were not carried deep enough to reach it.

The deepest shaft is 210 ft. deep. This was bottomed in schist, well mineralized and carrying 1.20% copper. The rest of the work consists of numerous shafts and tunnels, many of which supply interesting and valuable data concerning the future of the property. The only work deserving of special mention is the Alabama tunnel and the 75 foot winze therefrom.

For a little over forty feet the Alabama adit is driven through the leached and bleached residue of what was once a well-mineralized quartz-monzonite-porphyry. As the adit gains depth the ground becomes firmer and less altered. Just before the winze is reached, a cross fracture, eight inches wide, was cut. This assayed 35% copper. Beyond this streak, a ten foot zone, exceptionally well mineralized, assays 2.11% copper. Leaching copper ore could be worked as an open pit. On the hangingwall side of the ten-foot streak, a winze was sunk 75 ft. The winze is bottomed in a light gray, silicified rock carrying chalcopyrite, chalcocite, native copper and some pyrite. Samples around the four sides of the winze at five-foot intervals gave the following results:

(1) 2.45%; (2) 3.12%; (3) 1.99%; (4) 1.66%; (5) 2.12%; (6) 1.42%; (7) 1.99%; (8) 0.95%; (9) 1.54%; (10) 1.85%; (11) 1.08%; (12) 1.15%; (13) 2.00%. A composite of the rejects from the above samples assayed 0.70 oz. silver and 0.03 oz. gold.

Samples in the adit beyond the winze taken at intervals of five feet assayed as follows: (1) 2.11%; (2) 1.25%; (3) 1.16%; (4) 2.13%; (5) 0.12%; (6) 0.12% copper.

At the extreme eastern end of the property some very high grade copper ore was opened up. This ore consists of cuprite (copper oxide) and native copper, accompanied by high silver values. The ore occurs next to the south porphyry. The ground from this point northward to the north porphyry appears to have been well mineralized. The full extent of this mineralization has not been definitely proven but it is known to be over one-hundred feet.

The old Alabama claim is the logical place for the initial deep prospecting. The ore zone which seems to be the longest, widest, and most likely to produce the largest tonnage of ore can be most advantageously developed by a shaft not far from the Alabama tunnel. Because of the great length of this one zone more than one shaft will be required to develop it. The first work, however, should be done at a point where the conditions are best understood. The site selected for the first shaft is such that if any shipping ore is developed in sinking it can be delivered to the railway in an aerial tramway and loaded direct onto the cars. For this reason ore can be put into the smelter for less than it is costing some mining companies to place their ore aboard the cars.

The ore zone on which the Alabama tunnel is driven has been prospected for fully a mile along the strike. Over this distance the width varies from fifty to over one hundred feet. Though

leached at the surface, this zone, wherever opened up, is well mineralized. In every instance where work has been carried deep enough to encounter primary ore it has been found to be of good grade. The earlier prospecting has shown clearly the area within which ore bodies should be sought. The more recent work has demonstrated that still deeper work will possibly open up large bodies of commercial grade ore. Thus several shafts and tunnels sunk into the Alabama and the iron dike that extends for 6000 feet east to west are in shipping ore.

After a thorough study of conditions, checked by sampling, the only conclusion to be drawn is that the property is one of merit which may become a profitable producer of copper.

J. L. FL[illegible] C, M.E.
Kelvin, Arizona
May 5, 1921

The following data were taken from incomplete notes made during the time drilling operations were in progress. Drilling was done in 1913. What point was selected as datum is unknown but the reference to the collars of each hole as being so far above datum gives an idea of the depths reached.

No. 1 Hole: No notes available

No. 2 Hole: 130 ft. above datum. The first 30 ft. were in conglomerate. Water was encountered at 150 feet. First sulphides at 280 ft.; little carbonate above this point. Sulphides for the next 85 ft. averaged 1.763% copper. At 370 ft. sulphides were encountered and copper values decreased. Hole bottomed at 485 feet.

No. 3 Hole: 110 ft. above datum. Started in heavy iron cap but went into very much altered schist above water which was struck at 100 ft. Leached zone ended at 265 ft. From 265 to 355 ft. chalcocite and pyrite averaging 1.20% copper. Primary sulphides began at 355 ft. Hole bottomed at 370 ft.

No. 4 Hole: 150 ft. above datum. Started in silicified schist, leached. Water at 140 ft. Leached zone ended at 175 ft. Secondary sulphides at 300 ft. showing chalcocite and pyrite averaging 1.20% copper. Primary sulphides at 300 ft. Hole bottomed at 330 ft. It is believed that this hole bottomed in rhyolite.

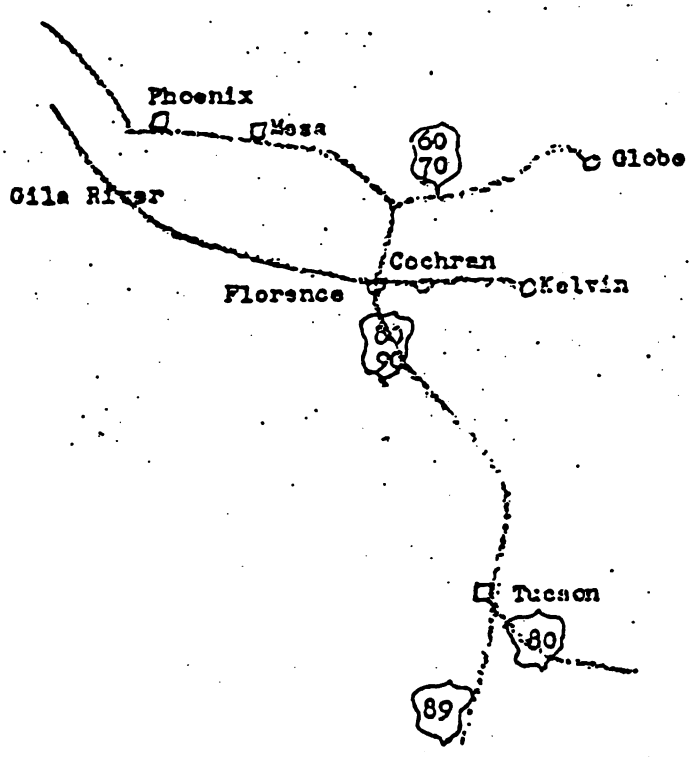
No. 5 Hole: 220 ft. above datum. In altered silicified schist to water at 160 ft. Leached zone continued to 385 ft. Secondary sulphide zone showed chalcocite and a small amount of pyrite, averaging 1.12% copper. Hole lost at 545 ft.

No. 6 Hole: 250 ft. above datum. Through rhyolite capping 150 ft. to water. In leached zone to 495 ft. Next 155 ft. showed secondary chalcocite, averaging around 1.25% copper. The last 75 ft. of this 155 ft. showed a considerable amount of

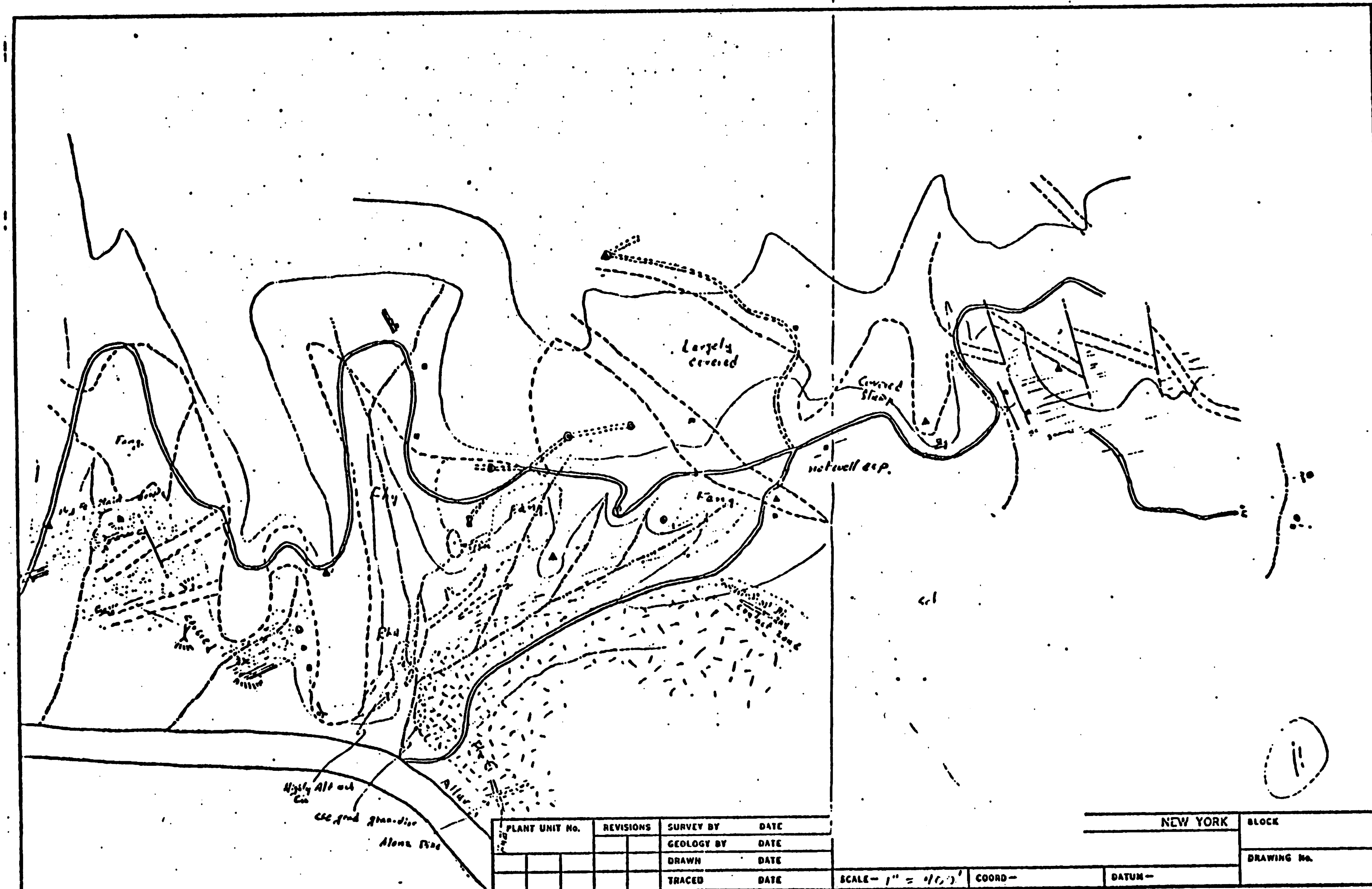
diorite. Hole bottomed at 640 ft. but believed to have possibilities below.

No. 7 Hole: 300 ft. above datum. Started in silicified schist. 1.06% copper at 125 ft. From this point to 265 ft. averaged 1.37% copper; from 265 ft. to 390 ft. averaged 1.19% copper, considered a semi-leached zone. Secondary sulphides began at 550 ft. and for 100 ft. averages 1.36% copper. Hole caved at 665 ft. and lost. Thought to have good possibilities at greater depth.

No. 8 Hole: 500 ft. above datum. Through rhyolite capping to 296 ft. conglomerate lasted 65 ft. Silicified schist to 540 ft. Native copper from 540 to 970 ft., then chalcocite appeared, values after 970 ft. do not go above 1.018% copper. Hole bottomed at 1060 ft.



SCALE: 1 inch approximately 27.5 miles.


Largely covered
Covered Slump
Fang.
Fang
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Alona Fine
NEW YORK
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PLANT UNIT No.
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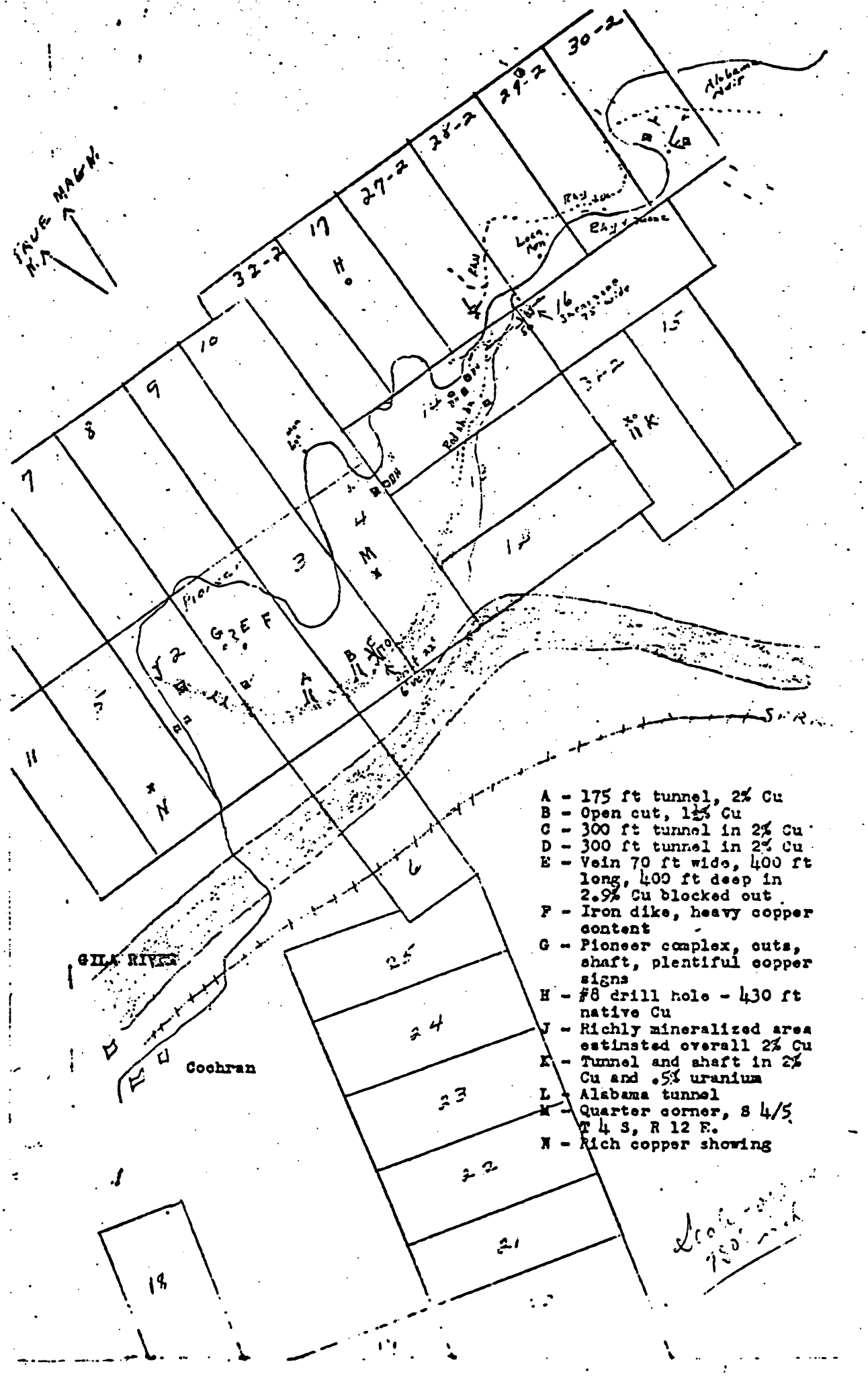
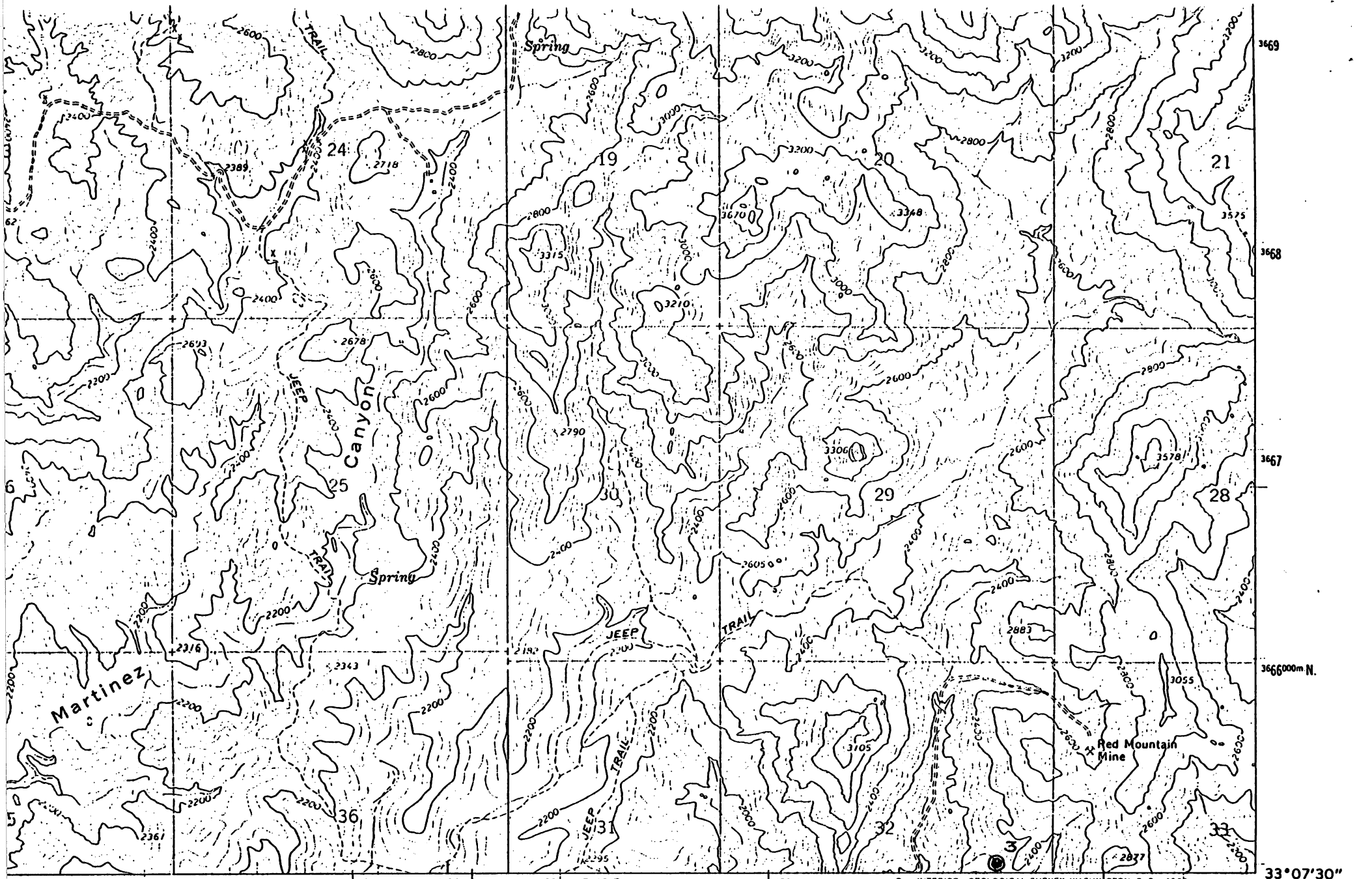

SAME MAG N.
A - 175 ft tunnel, 2% Cu
B - Open cut, 1½% Cu
C - 300 ft tunnel in 2% Cu
D - 300 ft tunnel in 2% Cu
E - Vein 70 ft wide, 400 ft long, 400 ft deep in 2.9% Cu blocked out
F - Iron dike, heavy copper content
G - Pioneer complex, cuts, shaft, plentiful copper signs
H - #8 drill hole - 430 ft native Cu
J - Richly mineralized area estimated overall 2% Cu
K - Tunnel and shaft in 2% Cu and .5% uranium
L - Alabama tunnel
M - Quarter corner, S 4/5 T 4 S, R 12 E.
N - Rich copper showing
GILA RIVER
Cochran



(NORTH BUTTE)
3750 II SW

483 | 484 R. 11 E. 10' | 485 R. 12 E. | 486 | 487000m E.

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1965

33°07'30"
111°07'30"

(GRAYBACK)
3750 II SE

SCALE 1:24000

0 1 MILE

3000 4000 5000 6000 7000 FEET

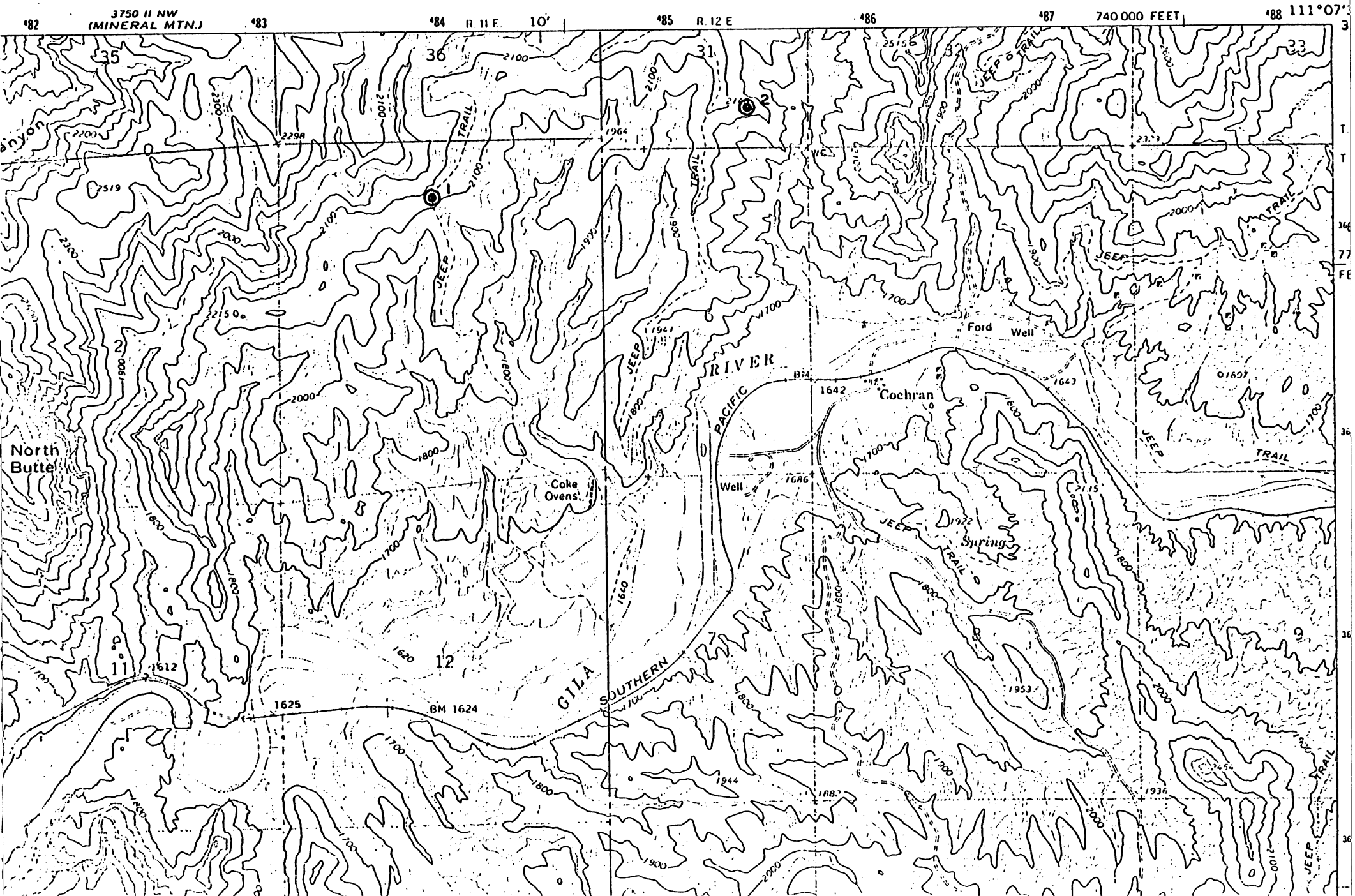
0 1 KILOMETER

INTERVAL 40 FEET

ROAD CLASSIFICATION

Unimproved dirt

NORTH BUTTE QUADRANGLE
ARIZONA—PINAL CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



May have typed copy of this QWA

Pioneer (Fagerland) Group
Notes from A.L. Flagg

Churn drilling was done in an area roughly 100 ft square – Copper values averaged 0.763%.

Deepest shaft – 210 ft deep – bottomed in adit which assayed 1.26% Cu.

Alabama adit & winze

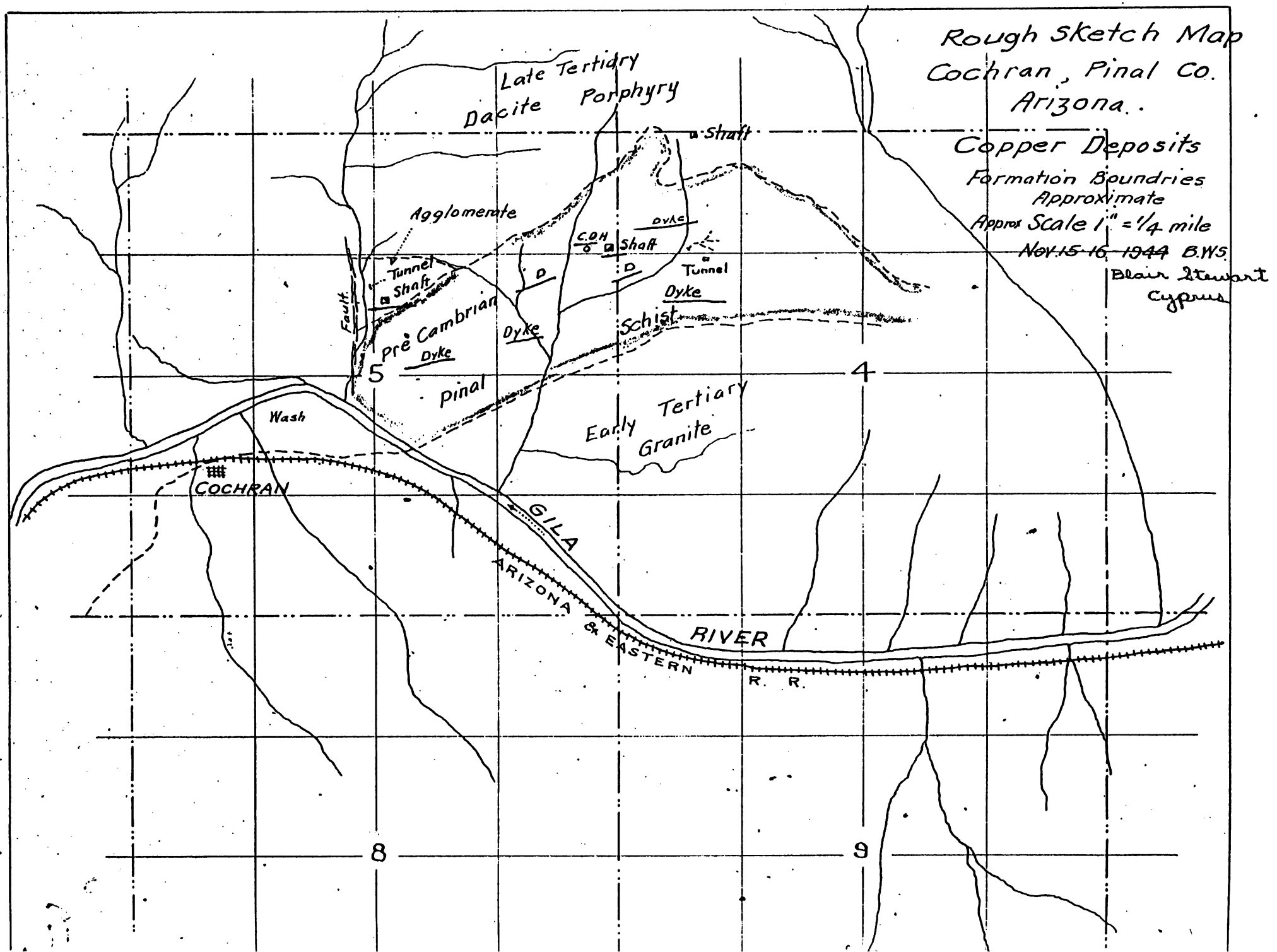
Adit – portal to 40 ft – leached qtz porphyry.
- just before winze is reached, 8 in vein assays 35% Cu. The 10 ft beyond assays 2.11% Cu
- Winze sunk on HW side of this 10 ft streak

Winze – bottoms in lt gray, silicified rock carrying cpy, cc, native Cu, some py (winze 75 ft deep)
- following samples from all 4 walls of winze:

0-5	2.45	% Cu
5-10	3.12	
10-15	1.99	
15-20	1.66	
20-25	2.12	
25-30	1.42	
30-35	1.99	
35-40	0.95	
40-45	1.54	
45-50	1.65	
50-55	1.08	
55-60	1.15	
60-65	2.00	

} reject composite assays 0.70 g Ag & 0.03 g Au

Samples in adit beyond winze at 5 ft intervals:
(1) 2.11% Cu, (2) 1.25% Cu, (3) 1.16% Cu, (4) 2.13% Cu, (5) 0.12% Cu, & (6) 0.12% Cu.


Rough Sketch Map
Cochran, Pinal Co.
Arizona.
Copper Deposits
Formation Boundries
Approximate
Appros Scale 1" = 1/4 mile
Nov. 15-16 1944 B.W.S.
Blair Stewart
Cyprus
Late Tertidry
Dacite Porphyry
Shaft
Agglomerate
Tunnel
Shaft
Fault
Pre Cambrian
Dyke
Dyke
Dyke
C.O.H.
Shaft
Dyke
Tunnel
Dyke
Schist
5
4
Pinal
Wash
Early Tertiary
Granite
COCHRAN
GILA
ARIZONA & EASTERN R. R.
RIVER
8
9

CONTINGENT

SUBJECT: REQUEST FOR EXPLORATION-DEVELOPMENT APPROPRIATION

DATE Sept. 20, 1968

NAME OF UNDERTAKING

PIONEER-ALABAMA

State: Arizona Metals/Minerals: Cu-Mo

___ Reconn.
X Exam.
___ Project
___ Devel.

NEW FUNDS REQUESTED

$ 103,000

EXPECTED DATE OF NEXT DECISION:

July, 1969

Is this a new undertaking? yes Is a change of Explor. Stage involved? ____

Estimated current year's expenditures previous to this request $ ____

Estimated total expenditures previous to this request $ ____

Current Annual Appropriation: $ ____

Current Code #, if any: ____

New Code # to be issued if this request is approved: ____

LIST OF MAIN EXPENDITURE ITEMS (use Schedule of Expenditures as a check list,) (include Services charged to Districts/Projects)

Temporary Salaries, Wages	$ 3,000
Drilling	88,000
Geophysics	9,000
Travel	3,000
Others (all those not itemized)	
Total	$ 103,000

Capital Equipment, $ ____

BEAR CREEK MINING COMPANY

REQUESTED BY: ____
District/Project Manager.

RECOMMENDED: $ ____

PRESIDENT ____ DATE

KENNECOTT - N.Y.

APPROVED $ ____

VICE-PRESIDENT, EXPLORATION ____ DATE

A. BCM and KES exploration-discovery PROFESSIONALS who have WORKED on this undertaking in the field, lab, office (names, dates, time spent): J. Swinderman- 1 week, 1968

B. FOR EXAMINATIONS, PROJECTS AND DEVELOPMENTS:

1. When was area last field-examined and reviewed in detail by District/Project Manager:

2. Quality of target area/ore target concept as rated by District/Project Manager in terms of validity of data, hypotheses, models and approach as they relate to the economic (production, profitability) potential of target:

Excellent for enriched Cu-Mo orebody

3. Type(s) of deposit(s):

Enriched primary copper-molybdenum deposit in Pinal schist

Type(s) of possible mining operations:

Possible open pit

4. Alternative Economic (ore) Target Potentials and Probability of Discovery. District/Project Manager should show at least two alternatives:

Tonnage	Grade(s), Commodities	% Probability of discovery (down to 0.1%) —	This space for HO and SECC use only (in $ Mn) CPV	EPV	Expl.	EP
(a)	1.2% cu sulphide	10%				
(b)	1.2% cu sulphide	20%				
(c)						
(d)						

C. SERVICES to be requested from other KCC units (KES, SECC, WMD-ED, WMD-RD) with cost estimates for work charged to District/Project:

vector I.P. survey

1. Origin of Undertaking: The Pioneer-Alabama property adjoins Bear Creek Mining Company's Copper Butte property on the west. The prospect contains leached cappings of highly altered Pinal schist and porphyritic igneous rocks. Oxide copper occurrences are also known which have attracted previous prospectors and mining companies. The property has been actively explored in the past and results of 1910 drilling are available which indicate exciting amounts of sulphide copper mineralization.

2. Geologic Setting: A mineralized zone is exposed in the Pinal schist for a distance of about one mile, which trends toward Copper Butte under post-mineral rocks of the Whitetail formation. Because of this post-mineral cover the extent of the mineralization is not known to the east or to the north. However, interpretation of the most optimistic results available for eight holes drilled in the area in 1910 indicate at least eight million tons of 1.2% copper. If this mineralization is continuous to the northeast as far as the old Alabama winze, which apparently bottomed in two percent copper, then at least 24 million tons of potential ore are indicated. This old data may be subject to some doubt as to its absolute accuracy but it certainly indicates an exciting amount of bedrock copper mineralization which trend to the northeast under post-mineral rocks and which has not been delineated by drilling to the north. Further drilling by Cerro De Pasco Corporation and Still and Still apparently adds less encouragement but these drilling results are only partially available to us and do not, at this time, distract from the potential target area.

3. Exploration Objectives: The Pioneer-Alabama area is considered a prime exploration target which could well contain an open pit orebody with ±200 million tons of 1.2% copper ore. Exploration objectives are to evaluate this possibility.

This will necessitate land negotiations for the Pioneer-Alabama property and this proposal will be contingent upon successful negotiations with Texas Metallic Mines Incorporated of Waco, Texas who now control the property. Evaluation will include detailed mapping, a vector I.P. survey and about 8,000 feet of drilling.

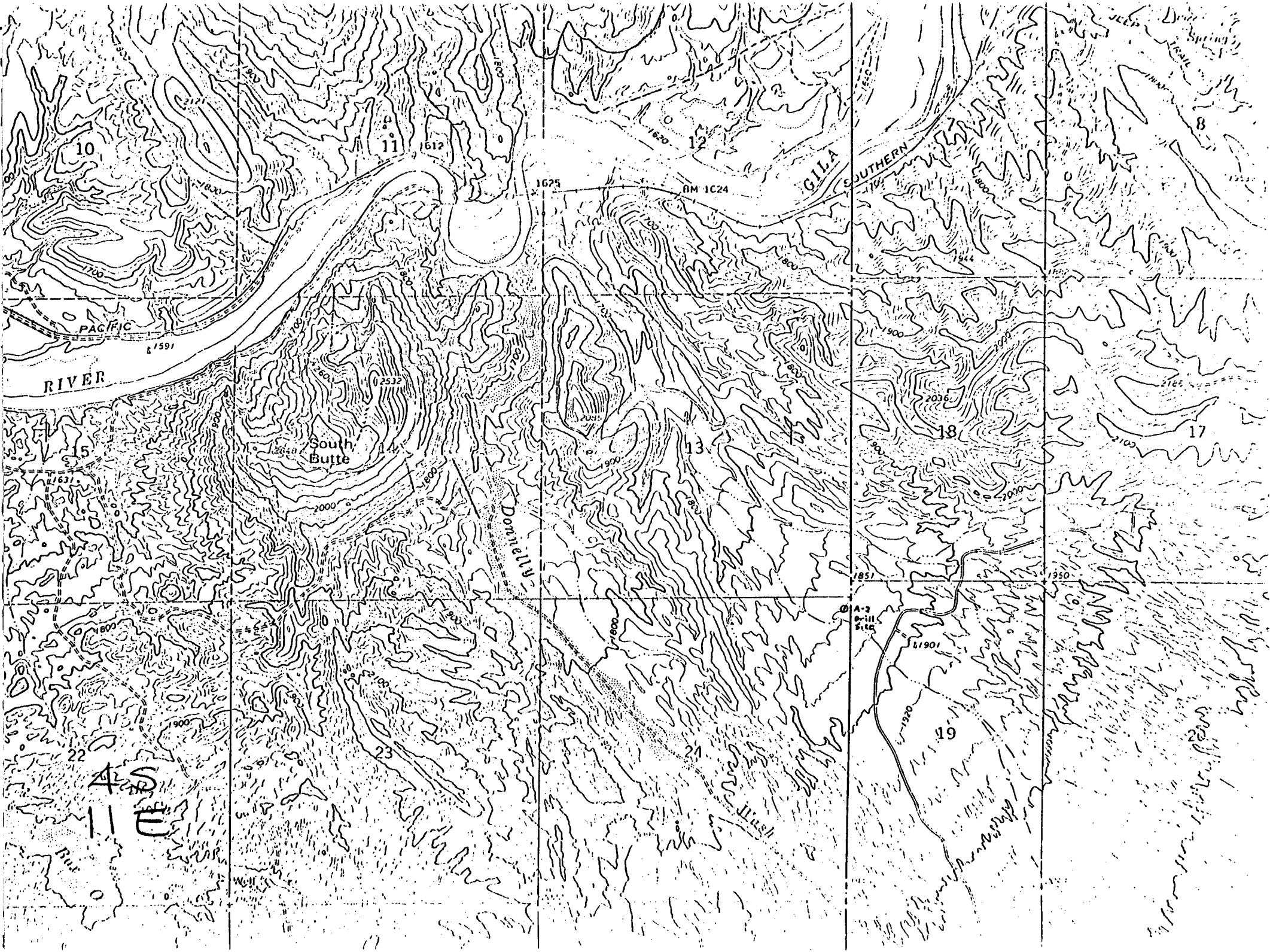
4. Land Status: (see attached schedule) - Land is presently controlled in the Copper Butte area by means of two option agreements (Mitchell and Adams); 201 claims staked by Bear Creek; and two State Prospecting Permits acquired by Bear Creek. We now control land to the east and to the north of the Pioneer-Alabama mineralized area and have only to acquire the Pioneer-Alabama option to be in an excellent position to prospect this occurrence.

5. Exploration Plans: We plan to acquire as much additional data for the Pioneer-Alabama area as possible and negotiate for the property. If this negotiation is successful we will map the bedrock in detail and conduct a vector I.P. survey. If ore targets are still indicated we will evaluate these by drilling.

6. Explanation of Costs:

a. Drilling 8000' @$11.00/ft.	$ 88,000
b. Temporary salaries and wages	3,000
c. Geophysics	9,000
d. Travel	3,000
	$103,000

7. Probable Plans: Evaluation and future plans for the area will depend upon results obtained from the above outlined program. However, if favorable results are obtained in all stages the examination would go to project status and mineralization would be further evaluated by more drilling.


PACIFIC
RIVER
GILA
SOUTHERN
BM 1C24
South Butte
Donnelly
A-2 drill site
4S
11E

(6)

Examination Report

Pioneer Group of Copper Claims, Pinal Co., Ariz.

April 26, 1956

1. Summary, Conclusions and Recommendations

The Pioneer group of claims were investigated on the strength of a report that indicated a substantial tonnage of copper ore might be present.

The examination was confined to the north side of the Gila River between ½ and 1½ miles east of Cochran, a railroad maintenance station on the Arizona Eastern Railroad.

The rocks of the area consisted of a series of steeply west dipping felsite porphyries, flow breccias, and a few diabase, diorite, and spherulitic obsidian dikes. Only a very little of the much older schists and granite was seen. Most of the felsites are intrusive, though at least two obvious flow breccias were seen. Both flow breccias are very red.

There is some scattered mineralization in evidence but it appears to be very superficial in nature. The mineralization seems largely confined to small fissures and contact zones between felsite porphyry and schist. No evidence of large scale dissemination was seen.

As no evidence pointed to the possibility for a large tonnage of ore in the area, it is recommended that the property be given no further consideration.

2. Scope of the Report

About 4 hours were spent on the property by R. R. Reynolds and John Skarbek. The entire property was traversed from east to west on the north side of the river where all the known workings are located.

3. Location and Accessability

The property is located 15 miles east and 6 miles north of Florence, Ariz. It is in unsubdivided National Forest between 1 and 2 miles due east of the NE corner of Sec. 1, T 4 S, R 11 E, Pinal Co., Ariz. This is known as the Ward Mining District.

It is 20 miles by rail to Hayden where the Ray Consolidated Copper Co's concentrator and the Hayden plant of the American Smelting and Refining Co. are located. The railroad provides freight service. The nearest post office is at Kelvin.

The property is accessable by road from Florence by a somewhat devious route of 30 miles. Then, the Gila River must be waded on foot.

No further description of the property will be made because of the unfavorable nature of this report.

R. R. Reynolds

COPPER BUTTE EXAM
GEOLOGIC MAP

DATA BY: J. MANCUSO, C. CAVINESS
DRAWN BY: TLM. JM
SCALE:

0 2000 6000 FT.

TARGET AREAS
BCMC DRILL HOLE
PLANNED DRILL HOLE

LAND CONTROLLED BY BCMC
LAND IN BUTTE DAM WITHDRAWAL

LEGEND

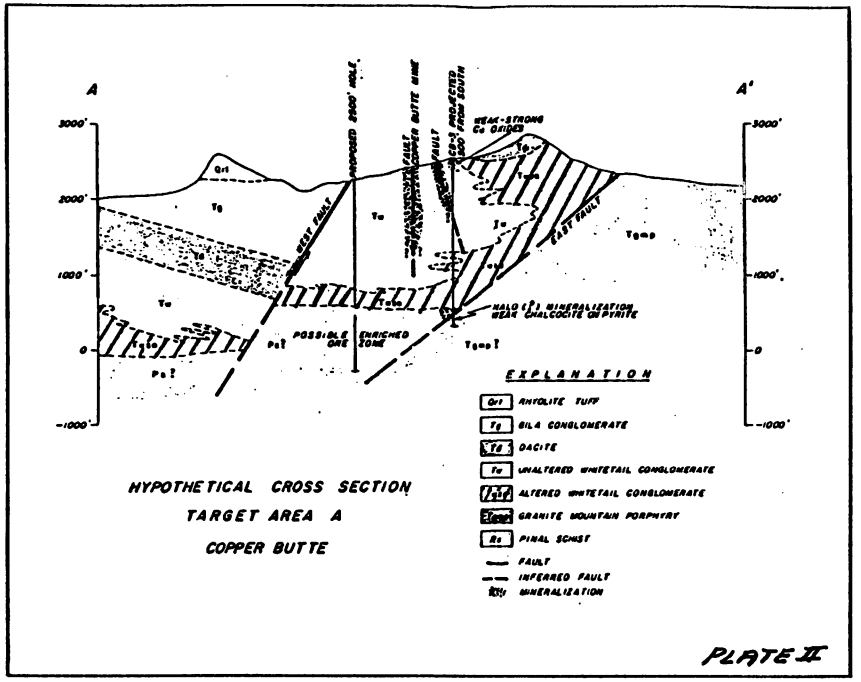
- STREAM SANDS & GRAVELS
- ALLUVIUM & COLLUVIUM
- RHYOLITE
- RHYOLITE TUFF
- GILA CONGLOMERATE
- DACITE
- POST-WHITETAIL VOLCANICS & SEDIMENTS, UNDIFFERENTIATED
- WHITETAIL CONGLOMERATE - MIXED PEBBLES, WITH PRE CAMBRIAN GRANITE
- " - " - " - " - WITHOUT - " - " - " -
- " - " - " - SILTSTONE
- " - " - " - ALTERED SCHIST FRAGMENTS & RED MATRIX
- " - " - " - FRESH SCHIST FRAGMENTS
- TEAPOT MT. PORPHYRY
- SYENITE PORPHYRY
- GRANITE MT PORPHYRY
- PALLOZOIC SEDIMENTS
- PRE CAMBRIAN GRANITE
- PINAL SCHIST

Known / Inferred CONTACT
ATTITUDE OF BEDDING &/or CONTACT
Known / Inferred / Covered NORMAL FAULTS - PLAN VIEW
Known / Inferred FAULT (CROSS SECTION)
THRUST FAULT-POINTS ON HANGING WALL
TRIANGULATION STATION
SYNCLINE AXIS
DRILL HOLE
ALTERED & IRON STAINED BEDROCK
A—A' B—B' LOCATION OF CROSS SECTIONS
AREA MAPPED IN DETAIL BY JD MANCUSO IN 1962

MITCHELL
PROPOSED 2500' HOLE
CB 1
CB 3
CB 4
CB 2
CLAIMS
PROPOSED 1500' HOLE
CLAIMS
CLAIMS
STATE PERMIT
STATE (NOT AVAILABLE)
CERRO DE TASCO DRILL HOLES
PROPOSED 1600' HOLE
PIONEER-ALABAMA PROSPECTS
AKREN (NOT AVAIL)
GILA RIVER

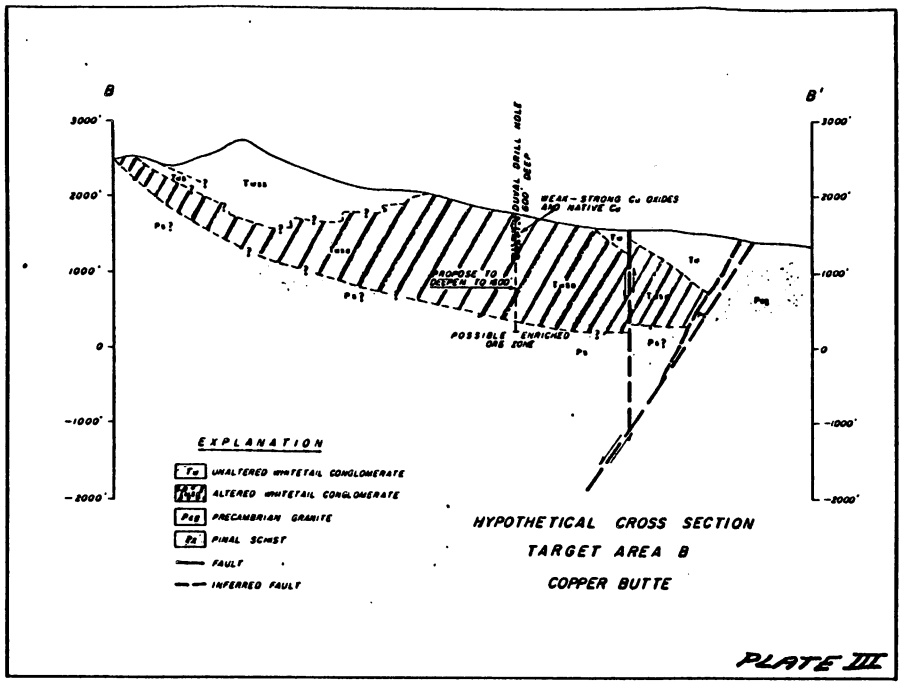
NOTE: COORDINATE NUMBERS REFER TO THE ARIZONA CENTRAL ZONE

PLATE I



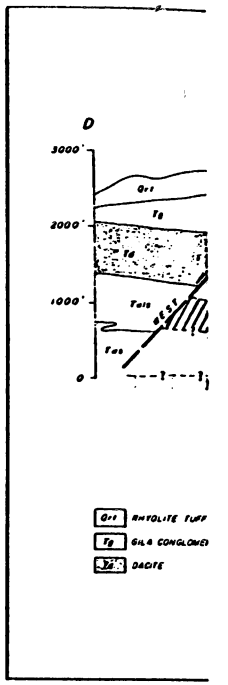
HYPOTHETICAL CROSS SECTION
TARGET AREA A
COPPER BUTTE

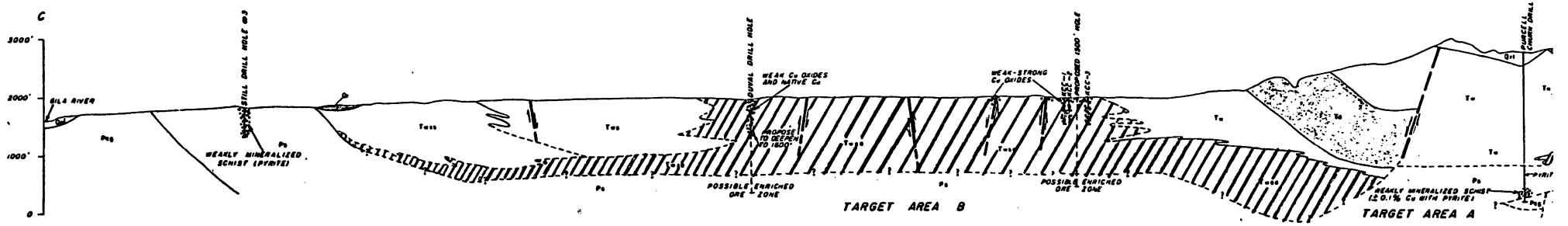
PLATE II



HYPOTHETICAL CROSS SECTION
TARGET AREA B
COPPER BUTTE

PLATE III





Qal ALLUVIUM
Rhyolite
Qrt RHYOLITE TUFF
Tg GILA CONGLOMERATE (GRANITE BRECCIA?)
DACITE
Tu WHITETAIL CONGLOMERATE
Tuig PRECAMBRIAN GRANITE FRAGMENTS WITH SCHIST, LIMESTONE & QUARTZITE
Tuis SCHIST FRAGMENTS WITH LIMESTONE AND QUARTZITE
Tus FRESH SCHIST FRAGMENTS WITH GRAY CONGLOMERATE
ALTERED SCHIST FRAGMENTS WITH HEMATITIC MATRIX
Tuss SILTSTONE AND SANDSTONE
Tgmp GRANITE MOUNTAIN PORPHYRY
Pg PRECAMBRIAN GRANITE
Ps PINAL SCHIST

HYP

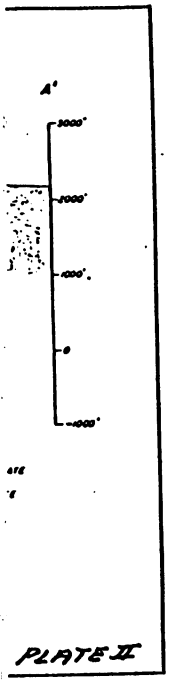
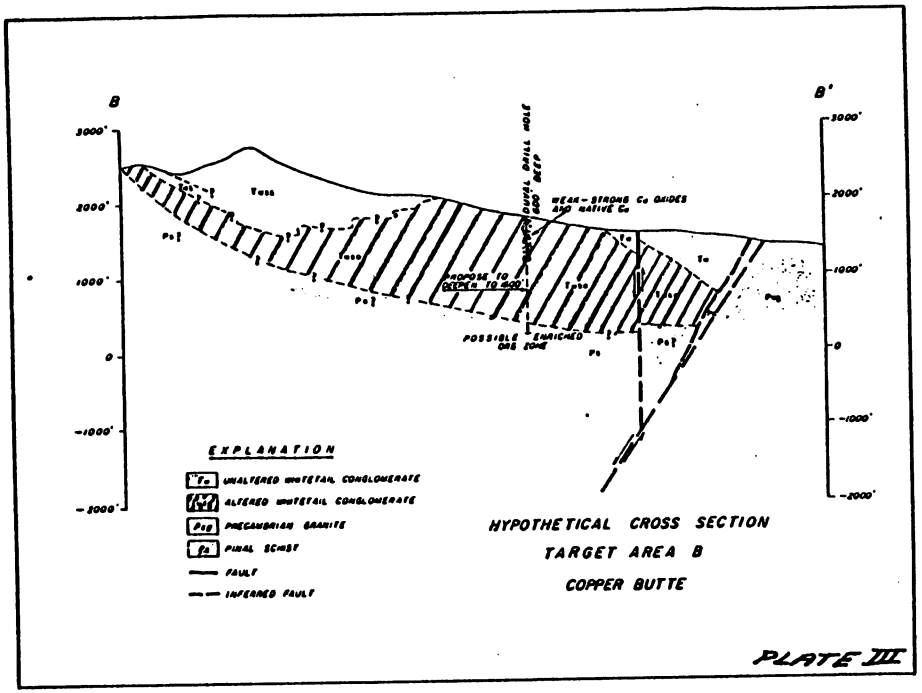
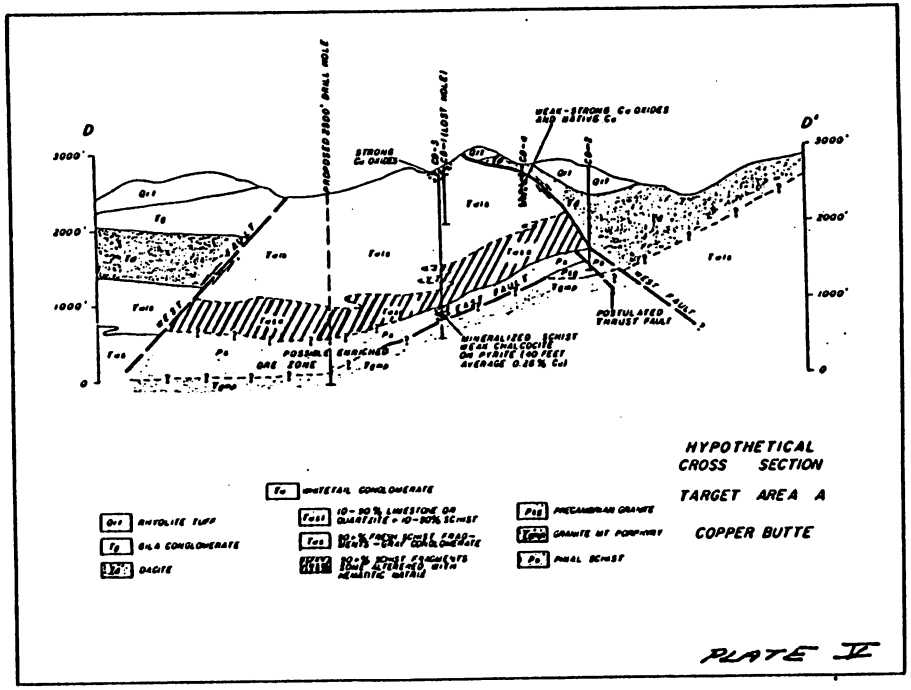


PLATE II



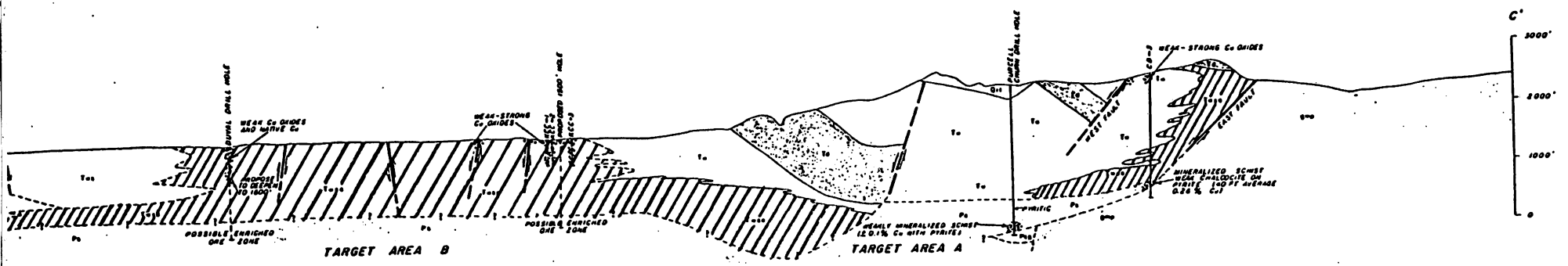
HYPOTHETICAL CROSS SECTION
TARGET AREA B
COPPER BUTTE

PLATE III



HYPOTHETICAL
CROSS SECTION
TARGET AREA A
COPPER BUTTE

PLATE IV

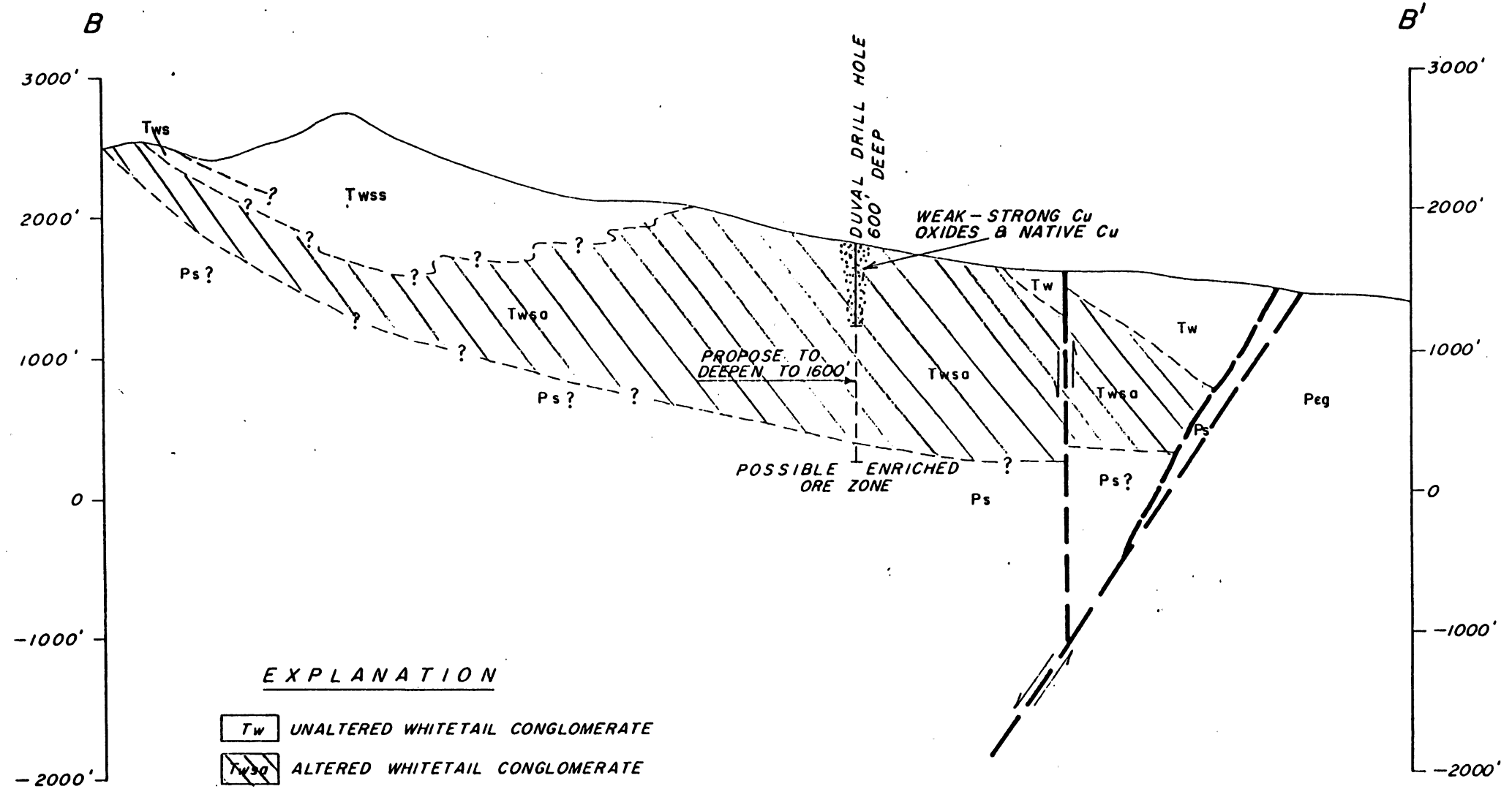


WHITETAIL CONGLOMERATE
PRECAMBRIAN GRANITE FRAGMENTS WITH SCHIST, LIMESTONE & QUARTZITE
SCHIST FRAGMENTS WITH LIMESTONE AND QUARTZITE
FRESH SCHIST FRAGMENTS WITH GRAY CONGLOMERATE
ALTERED SCHIST FRAGMENTS WITH HEMATITIC MATRIX
SILTSTONE AND SANDSTONE
GRANITE MOUNTAIN PORPHYRY
PRECAMBRIAN GRANITE
PINAL SCHIST

HYPOTHETICAL CROSS SECTION C — C'

COPPER BUTTE

PLATE IV

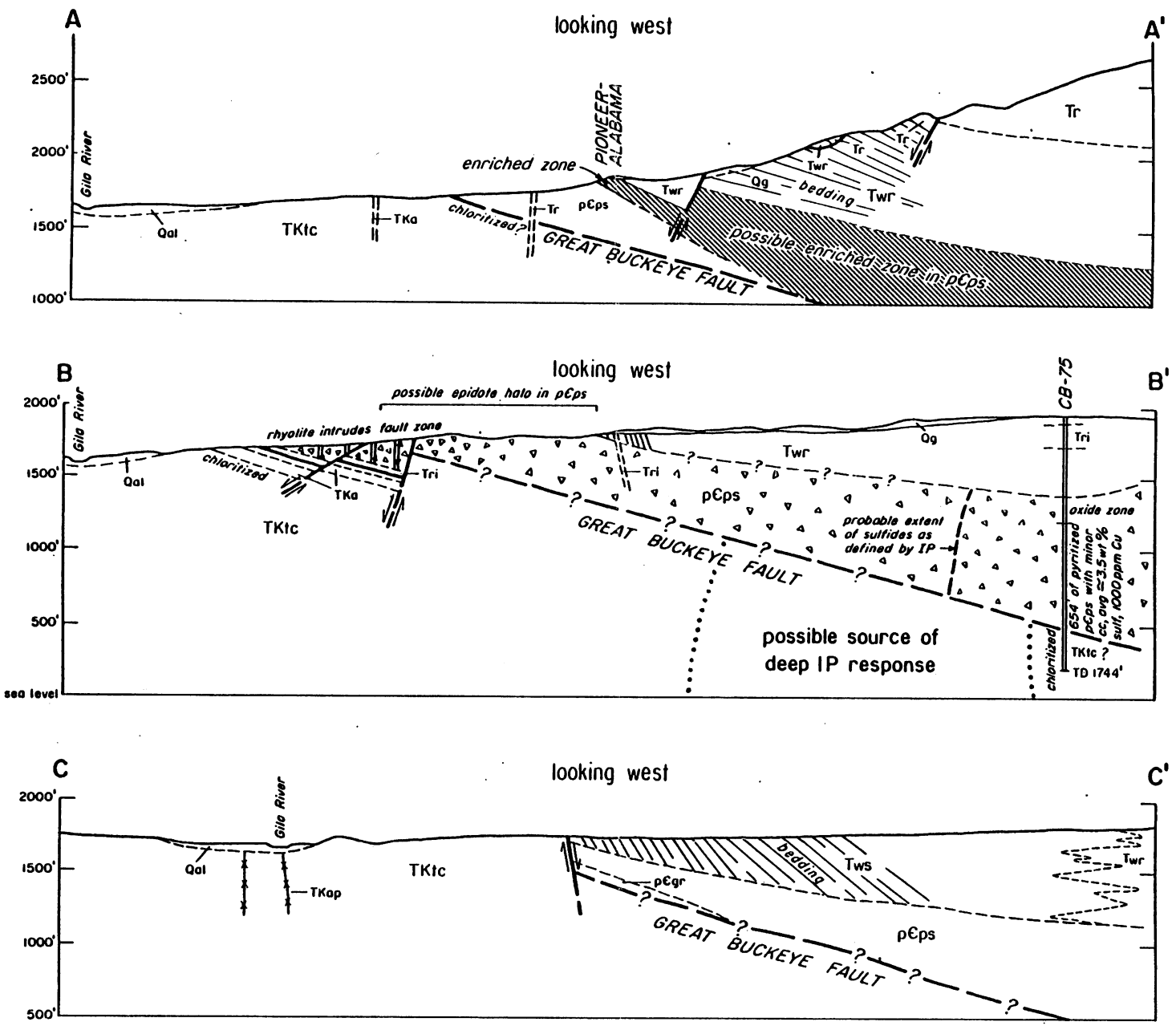


EXPLANATION

- Tw — UNALTERED WHITETAIL CONGLOMERATE
- Twsa — ALTERED WHITETAIL CONGLOMERATE
- Peg — PRECAMBRIAN GRANITE
- Ps — PINAL SCHIST
- FAULT
- INFERRED FAULT

HYPOTHETICAL CROSS SECTION
TARGET AREA B
COPPER BUTTE

PLATE III



KENNECOTT EXPLORATION SERVICES

GEOLOGIC SECTIONS

PIONEER - ALABAMA • PINAL COUNTY, ARIZONA

Research geologist L.F.Barrett
drafted by B.Kiefer GRD illus.no. 1974-4

FIGURE 10

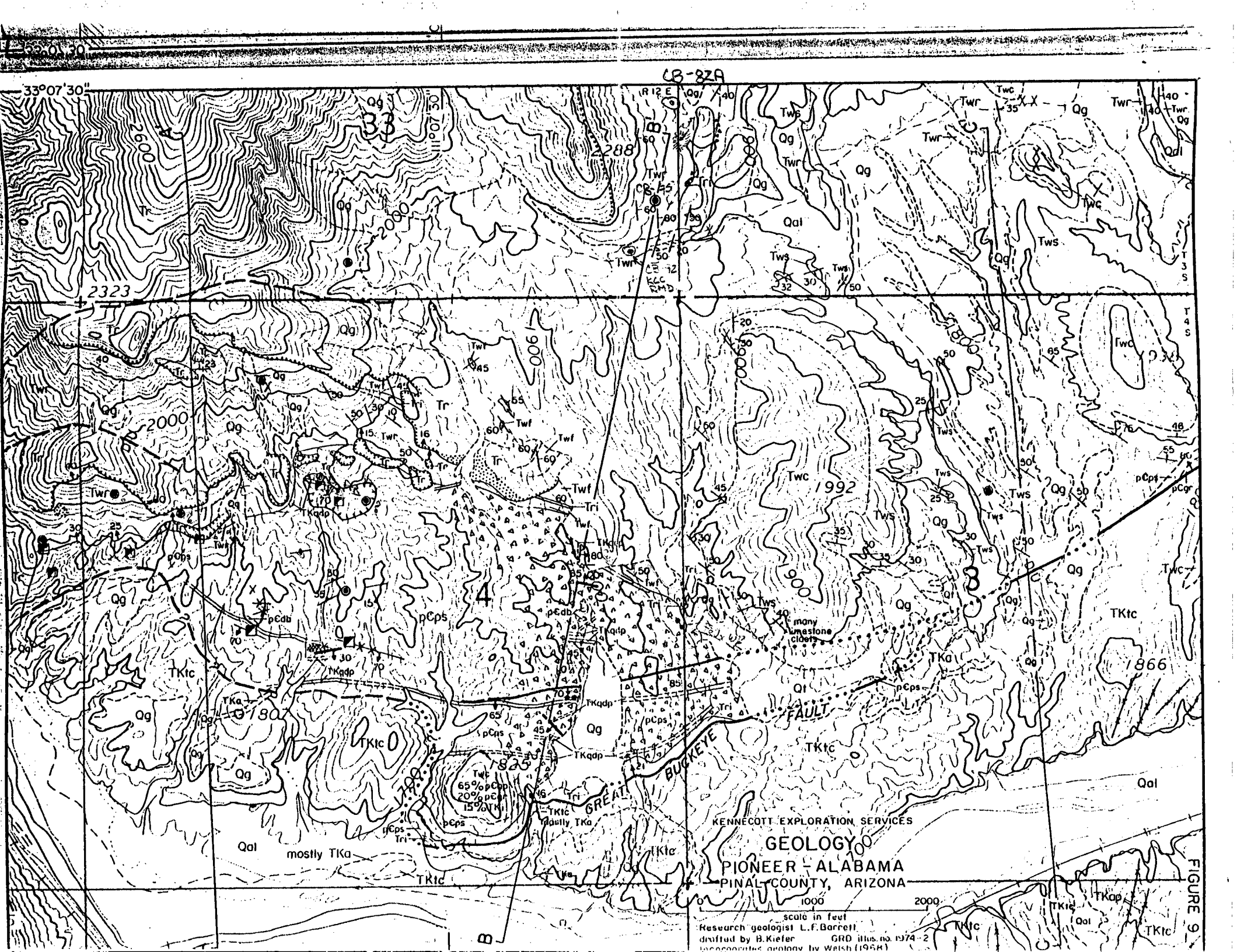

33°07'30"
R 12 E
T 3 S
T 4 S
CB-82A
CB-85
CB-12
KCC RMD
Qg
Qal
Tr
Twf
Twr
Twc
Tws
Tri
TKqdp
TKtc
TKa
TKap
pCps
pCdb
Qf
FAULT
BUCKEYE
GREAT
mostly TKa
many limestone clasts
65% pCpp
20% pCps
15% Tri
2323
2288
2000
1992
1900
1866
1825
1800
1780
1700
1600
1000
900
800
KENNECOTT EXPLORATION SERVICES
GEOLOGY
PIONEER - ALABAMA
PINAL COUNTY, ARIZONA
1000
2000
scale in feet
Research geologist L.F.Barrett
drafted by B.Kiefer
GRD illus.no 1974-2
incorporating geology by Welsh (1968)

FIGURE 9

FAX ☎ 1-303-773-0733
Facsimile Transmittal Sheet

CAMBIOR USA, INC.

TRANSMISSION TYPE (✓ One)

- [X] NORMAL
- [ ] PRIORITY
- [ ] CONFIDENTIAL

NUMBER OF PAGES (Including Transmittal Sheet) 4

DATE 5-25-94 ☎ _____

TO ☞ Dale COMPANY _____

FAX ☎ Nº _____

FROM ☞ Sherry

MESSAGE

Let me know how they come thru!!

Please call (303) 694-4936 if any problems with this transmission and ask for _____

8101 East Prentice Avenue, Suite 800, Englewood, Colorado 80111
303-694-4936 Fax 303-773-0733

CAMBIOR USA, INC.

MEMORANDUM

To: Laurence Gaborit

From: Sherry Ellebracht

Date: May 23, 1994

Subject: Arizona Land Status - T4S, R12E

Enclosed are the following items:

Master Title Plat (MTP) for T4S, R12E
Copy of "Common Abbreviations" used by BLM
Historical Index for T4S, R12E
Copies of withdrawal orders
Copies of geographic index for mining claims for T3S, R12E and T4S, R12E
BLM LT99 report of active unpatented mining claims in specified townships

As you look at the MTP, you will see that some sections or portions of sections are covered by *more than* one withdrawal order. The sections that are open for mining claim location appear to be the following:

N½, Section 3 *(currently covered by ASARCO claims)*
Lots 1, 2, 3, 4, Section 4 *(currently covered by ASARCO claims)*
Lot 1, W½ of Lot 3, E½ of Lot 4, Section 5
S½, Section 11
S½, Section 12
Section 13 *(currently 5 active lode claims owned by Xanthos)*
Section 14
Section 15
E½, Section 21
Minerals federal, surface state-owned, Section 22
Section 23
Section 24
Section 25
Section 26
Section 27
A portion of S½, Section 31
Section 34
Section 35

After you've had a chance to look over the map and other information and if you have any questions, please give me a call and we can discuss the land status.

[A 700]

ARIZONA

Order Opening Public Lands to Mineral Location, Entry, and Patent

By virtue of the authority of the Act of April 23, 1932 (47 Stat. 136; 43 U.S.C. 154) and the regulations thereunder contained in 43 CFR 2400.4; it is ordered as follows:

1. Subject to valid existing rights and the provisions of existing withdrawals, the following described lands shall, commencing at 10 a.m., on August 7, 1967, be open to location, entry, and patenting under the U.S. Mining Laws, subject to the stipulations hereinafter quoted, to be executed and acknowledged in favor of the United States by the locaters, for themselves, their heirs, successors, and assigns, and recorded in the county records and in the U.S. Land Office at Phoenix, Ariz., before any rights attach by virtue of this order:

GILA AND SALT RIVER MERIDIAN, ARIZONA

T. 3 S., R. 12 E.,
Sec. 33, S½;
Sec. 34, N½, W½SW¼, NE¼SW¼, NW¼SE¼.
Sec. 35 NW¼, NW¼NE¼.
T. 4 S., R. 12 E.,
Sec. 4, lots 1, 2, 3, and 4;
Sec. 5, lots 1, W½ of lot 3, and E½ of lot 4.

The area described contains 1,234.32 acres.

2. The lands lie within the withdrawal for the Middle Gila River project made by Public Land Order No. 3525, dated September 27, 1965, and in part, within the withdrawal for the San Carlos Indian Irrigation project made by Public Land Order No. 141 dated June 16, 1943, and Power Site Classification 438, dated November 16, 1956.

3. Location, entry, and/or patenting of the lands shall be subject to the following stipulations:

a. In carrying on the mining and milling operations contemplated hereunder, locator will, by means of substantial dikes or other adequate structures, confine all tailings, debris, and harmful chemicals in such a manner that the same shall not be carried into Gila River Bottom lands by storm waters or otherwise.

b. There shall be reserved to the United States, its successors and assigns, the prior right to use any of the lands to construct, operate and maintain dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways and appurtenant irrigation structures, without payment by the United States or its successors for such right, and the locater shall agree that if the construction of any or all of such dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways, or appurtenant irrigation structures across, over or upon said lands should be made more expensive by reason of the existence of improvements or workings of the locater thereon, the total of such additional expense shall be estimated by the Secretary of the Interior, whose estimate is to be final and binding, and within 30 days after demand is made upon the locator for payment of any such sums, the locator will make payment thereof to the United States or its successors constructing such dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways, or appurtenant irrigation structures across, over, or upon said lands. The United States, its officers, agents and employees and its successors and assigns shall not be held liable for any damage to the improvements or workings of the locater resulting from the construction, operation, and maintenance of any of the works hereinabove enumerated.

Inquiries concerning the lands shall be addressed to the Manager, Land Office, Bureau of Land Management, 3022 Federal Building, Phoenix, Ariz. 3502

JACOB J. WELLS,
State Director.

JUNE 27, 1967.

[F.R. Doc. 67-7567; Filed, July 3, 1967, 8:4[illegible] a.m.]

Order Opening Lands to Mineral Location, Entry and Patent published in Federal Register as Doc. 67-7567, Page 9719, Vol. 32, No. 128, on July 4, 1967.

(A 700)

N½, W½ SW¼, NE¼ SW¼, NW¼ SE¼

Executive Order

Withdrawal of Public Lands for Use in Connection with San Carlos Indian Irrigation Project, Arizona

Under authority of the act of Congress approved June 25, 1910 (36 Stat. 847), as amended by the act of August 24, 1912 (37 Stat. 497), it is hereby ordered that the following described tracts of public lands in Arizona be, and they are hereby, withdrawn from settlement, location, sale, or entry, except as provided in said acts, for use in connection with the San Carlos Indian Irrigation Project, subject to any valid rights or claims initiated prior to March 24, 1931:

GILA AND SALT RIVER MERIDIAN

T. 4 S., R. 11 E., sec. 1, S. ½ SW. ¼ and SE. ¼;
sec. 2, S. ½ SE. ¼;
sec. 11, lots 1, 2, 3, 8, and 9 and NE. ¼ NE. ¼;
sec. 12, all;
sec. 13, N. ½ and N. ½ S. ½;
sec. 14, NE. ¼ and N. ½ SE. ¼;
T. 4 S., R. 12 E., sec. 1, all;
sec. 2, all;
sec. 3, S. ½;
sec. 4, S. ½;
sec. 5, all;
sec. 6, all;
sec. 7, all;
sec. 8, N. ½;
sec. 9, N. ½;
sec. 10, N. ½;
T. 4 S., R. 13 E., sec. 5, all;
sec. 6, all;
T. 5 S., R. 15 E., sec. 12, SE. ¼;
sec. 13, E. ½;
sec. 24, NE. ¼;
T. 4 S., R. 16 E., sec. 28, all (N. ½ unsurveyed);
T. 5 S., R. 16 E., sec. 7, all (partly unsurveyed).

This order shall continue in full force and effect unless and until revoked by the President or by act of Congress.

HERBERT HOOVER.

THE WHITE HOUSE,
April 24, 1931.

[No. 5611]

DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Gila River, Arizona

60334

POWER SITE CLASSIFICATION NO. 438

Pursuant to authority vested in me by the act of March 3, 1879 (20 Stat. 394; 43 U.S.C. 31), and by Departmental Order No. 2333 of June 10, 1947 (43 C.F.R. 4.623; 12 F. R. 4025), the following described land is hereby classified as power sites insofar as title thereto remains in the United States and subject to valid existing rights; and this classification shall have full force and effect under the provisions of sec. 24 of the act of June 10, 1920, as amended by sec. 211 of the act of August 26, 1935 (16 U.S.C. 818):

Gila and Salt River Meridian

T. 12 N., R. 5 E. (Unsurveyed)
Every smallest legal subdivision which when surveyed will be adjacent to Verde River upstream from Sycamore Creek and under an altitude of 3,100 feet. Protraction of existing surveys indicates that the lands when surveyed will be within secs. 1, 2, 3, 11, and 12.

T. 13 N., R. 5 E.,
sec. 4, $S\frac{1}{2}SW\frac{1}{4}$;
sec. 5, lots 2, 6, and $SW\frac{1}{4}NE\frac{1}{4}$;
sec. 7, lots 8 and 11;
sec. 9, $NW\frac{1}{4}$ and $S\frac{1}{2}SE\frac{1}{4}$;
sec. 10, $SW\frac{1}{4}SW\frac{1}{4}$;
sec. 15, lot 2, $SW\frac{1}{4}$, and $NW\frac{1}{4}SW\frac{1}{4}$;
sec. 16, $N\frac{1}{2}NE\frac{1}{4}$, $SW\frac{1}{4}NE\frac{1}{4}$, $W\frac{1}{2}SE\frac{1}{4}$, and $SE\frac{1}{4}SE\frac{1}{4}$;
sec. 17, lots 2, 3, 5, 6, and 8;
sec. 18, $NE\frac{1}{4}NE\frac{1}{4}$;
sec. 20, $SE\frac{1}{4}NE\frac{1}{4}$ and $E\frac{1}{2}SE\frac{1}{4}$;
sec. 21, $N\frac{1}{2}$ and $W\frac{1}{2}SW\frac{1}{4}$;
sec. 22, $E\frac{1}{2}W\frac{1}{2}$ and $SW\frac{1}{4}SE\frac{1}{4}$;
sec. 25, $S\frac{1}{2}SW\frac{1}{4}$ and $SE\frac{1}{4}$;
sec. 26, $SW\frac{1}{4}$;
sec. 27, $NW\frac{1}{4}NE\frac{1}{4}$, $NE\frac{1}{4}NW\frac{1}{4}$, and $S\frac{1}{2}NW\frac{1}{4}$;
sec. 28, $NE\frac{1}{4}$ and $W\frac{1}{2}NW\frac{1}{4}$;
sec. 33, lots 1, 7, and 8;
sec. 34, lots 1, 2, 3, 4, 5, 6, 7, 8, 11, and 12;
sec. 35, $S\frac{1}{2}NE\frac{1}{4}$, $NW\frac{1}{4}$, and $S\frac{1}{2}$;
sec. 36, $NE\frac{1}{4}$, $W\frac{1}{2}$, and $W\frac{1}{2}SE\frac{1}{4}$.

T. 14 N., R. 5 E.,
sec. 19, NE¼SE¼;
sec. 20, lots 2 and 3;
sec. 29, lots 4, 7, and 8;
sec. 30, lot 2;
sec. 32, lots 2 and 8.

T. 13 N., R. 6 E.,
sec. 31, lots 4 and 5.

T. 1 S., R. 10 E.,
sec. 25, SE¼SE¼;
sec. 36, lots 1, 2, 3, 4, NE¼, SE¼NW¼, and N½S½.

T. 1 S., R. 11 E. (Unsurveyed)
Every smallest legal subdivision any part of which when surveyed will be adjacent to Queen Creek under an altitude of 2,250 feet. Protraction of existing surveys indicates that the lands when surveyed will be within secs. 20, 21, 27, 28, 29, 30, 31, 32, 33, 34, and 35.

T. 2 S., R. 11 E.,
sec. 5, lots 3, 4, and SW¼NW¼;
sec. 6.

T. 4 S., R. 11 E.,
sec. 1, SE¼SW¼ and SE¼;
sec. 2, W½SE¼ and SE¼SE¼;
sec. 11;
sec. 12, lots 1, 3, 4, 5, 6, 7, and 8, N½NW¼, S½SW¼, and SE¼SE¼;
sec. 13, N½, N½SW¼, SW¼SW¼, and W½SE¼;
sec. 14, NE¼.

T. 3 S., R. 12 E.,
sec. 34, S½SE¼;
sec. 35, E½NE¼ and S½;
sec. 36, S½SW¼, SW¼SE¼, and E½SE¼.

T. 4 S., R. 12 E.,
sec. 1, lots 1, 2, 3, 4, S½N½, and N½S½;
sec. 2;
sec. 3, S½;
sec. 4, S½N½ and S½;
sec. 5, lots 2, 3, 4, S½N½, and S½;
sec. 6, lots 1, 4, 5, 6, and SE¼NE¼;
sec. 7, lots 3, 4, and SE¼;
sec. 8, N½ and NW¼SW¼;
sec. 9, N½, NE¼SW¼, and N½SE¼;
sec. 10, N½NE¼ and NW¼;
sec. 18, lot 1.

T. 4 S., R. 13 E.,
sec. 1, lots 3, 7, 9, and $SW\frac{1}{4}SW\frac{1}{4}$;
sec. 3, $S\frac{1}{2}S\frac{1}{2}$;
sec. 4, $SW\frac{1}{4}NE\frac{1}{4}$, $S\frac{1}{2}NW\frac{1}{4}$, $NE\frac{1}{4}SW\frac{1}{4}$, $S\frac{1}{2}SW\frac{1}{4}$, and $SE\frac{1}{4}$;
sec. 5, $S\frac{1}{2}N\frac{1}{2}$, $NE\frac{1}{4}SW\frac{1}{4}$, and $SE\frac{1}{4}$;
sec. 6, lots 3, 4, 5, 6, $S\frac{1}{2}NE\frac{1}{4}$, and $SE\frac{1}{4}NW\frac{1}{4}$;
sec. 8, $NE\frac{1}{4}NE\frac{1}{4}$;
sec. 9, $NE\frac{1}{4}$ and $N\frac{1}{2}NW\frac{1}{4}$;
sec. 12, lots 1, 2, and $NW\frac{1}{4}NW\frac{1}{4}$.

T. 4 S., R. 14 E.,
sec. 7, lots 3, 4, 7, and $SW\frac{1}{4}SE\frac{1}{4}$;
sec. 17, $SE\frac{1}{4}SW\frac{1}{4}$.

T. 4 S., R. 15 E.,
sec. 1, $S\frac{1}{2}N\frac{1}{2}$;
sec. 2, $SE\frac{1}{4}NE\frac{1}{4}$ and $NE\frac{1}{4}SE\frac{1}{4}$;
sec. 12, $NE\frac{1}{4}NW\frac{1}{4}$.

T. 4 S., R. 16 E.,
sec. 4, $S\frac{1}{2}S\frac{1}{2}$ (Unsurveyed);
sec. 5, $S\frac{1}{2}N\frac{1}{2}$ (Unsurveyed);
sec. 13, $NW\frac{1}{4}NW\frac{1}{4}$ (Unsurveyed);
sec. 18, $NE\frac{1}{4}NE\frac{1}{4}$ (Unsurveyed).

T. 7 S., R. 16 E.,
sec. 1, $SW\frac{1}{4}$;
sec. 2;
sec. 3, lot 1;
sec. 4, lot 14;
sec. 10, lot 7 and $SE\frac{1}{4}SE\frac{1}{4}$;
sec. 11, $S\frac{1}{2}S\frac{1}{2}$;
sec. 12, $S\frac{1}{2}SW\frac{1}{4}$;
sec. 13, $W\frac{1}{2}W\frac{1}{2}$;
sec. 14;
sec. 15, lots 10, 12, and $NE\frac{1}{4}NE\frac{1}{4}$;
sec. 23, $E\frac{1}{2}$, $N\frac{1}{2}NW\frac{1}{4}$, and $SE\frac{1}{4}NW\frac{1}{4}$;
sec. 24, $NW\frac{1}{4}NW\frac{1}{4}$, $S\frac{1}{2}NW\frac{1}{4}$, $N\frac{1}{2}SW\frac{1}{4}$, and $SW\frac{1}{4}SW\frac{1}{4}$;
sec. 25, $W\frac{1}{2}$ and $SW\frac{1}{4}SE\frac{1}{4}$;
sec. 26, $N\frac{1}{2}NE\frac{1}{4}$, $SE\frac{1}{4}NE\frac{1}{4}$, and $NE\frac{1}{4}SE\frac{1}{4}$.

T. 8 S., R. 16 E.,
sec. 1, lot 1;
sec. 2, lot 1 and $SE\frac{1}{4}NE\frac{1}{4}$;
sec. 12, $E\frac{1}{2}NW\frac{1}{4}$.

T. 7 S., R. 17 E.,
sec. 6, $W\frac{1}{2}SE\frac{1}{4}$.

T. 8 S., R. 17 E.,
sec. 6, lot 6;
sec. 7, $E\frac{1}{2}NW\frac{1}{4}$.

T. 21 S., R. 21 E.,
sec. 9, $N\frac{1}{2}NE\frac{1}{4}$;
sec. 10, $N\frac{1}{2}$ and $SE\frac{1}{4}$;
sec. 12, lots 1, 2, $S\frac{1}{2}NE\frac{1}{4}$, $SE\frac{1}{4}NW\frac{1}{4}$, and $N\frac{1}{2}SE\frac{1}{4}$.

T. 21 S., R. 22 E.,
sec. 7, $NE\frac{1}{4}NE\frac{1}{4}$ and $NE\frac{1}{4}SW\frac{1}{4}$.

T. 2 S., R. 31 E.,
Every smallest legal subdivision in unsurveyed secs. 17, 18, 19, 20, and 30 adjacent to Blue River which when surveyed will be in whole or in part under an altitude of 4,000 feet.

The area described is estimated to aggregate 24,608 acres, 19,408 acres of which are surveyed.

/S/ Thomas B. Nolan
Director

Date
Nov 16 1956

Copy to: BLM, Wash., D. C.
BLM, Phoenix, Arizona

600

UNITED STATES
DEPARTMENT OF THE INTERIOR

CODE OF FEDERAL REGULATIONS
TITLE 43--PUBLIC LANDS: INTERIOR

CHAPTER I--BUREAU OF LAND MANAGEMENT
APPENDIX--PUBLIC LAND ORDERS

PUBLIC LAND ORDER 3835
(Arizona 017239)

ARIZONA

WITHDRAWAL FOR PROPOSED BUTTES DAM AND RESERVOIR
MIDDLE GILA RIVER PROJECT

By virtue of the authority contained in section 3 of the Act of June 17, 1902 (32 Stat. 338; 43 U.S.C. 416), as amended and supplemented, it is ordered as follows:

1. Subject to valid existing rights, the following described public lands which are under the jurisdiction of the Secretary of the Interior, are hereby withdrawn from all forms of appropriation under the public land laws, including the mining laws, but not from leasing under the mineral leasing laws, and reserved for the proposed Buttes Dam and Reservoir, Middle Gila River Project:

Gila and Salt River Meridian

T. 4 S., R. 10 E.,
sec. 10, SE¼SE¼;
sec. 13, NW¼NW¼, S½NW¼, S½;
sec. 14, S½NE¼, NE¼NW¼, S½NW¼, S½;
sec. 15, N½, NW¼SW¼, S½SE¼.

T. 4 S., R. 11 E.,
sec. 1, SE¼, S½NW¼;
sec. 2, S½;
sec. 5,

sec. 7, lots 1, 3, 4, 7, S½SW¼, S½SE¼;
secs. 8, 9, 10, 11 and 12;
sec. 13, N½, N½S½, S½SW¼, S½SE¼;
secs. 14, 15 and 17;
sec. 22, NE¼SE¼.

T. 3 S., R. 12 E.,
sec. 33, S½;
secs. 34 and 35.

T. 4 S., R. 12 E.,
sec. 1;
sec. 3, S½;
secs. 4 and 5;
sec. 6, lots 1, 2, 3, 4, 5, 6, S½NE¼;
sec. 7, lots 3, 4, SE¼;
secs. 8, 9, and 10;
sec. 11, N½;
sec. 12, N½;
sec. 17;
sec. 18, lots 1, 2, 3, 4, E½;
sec. 19, lots 1, 2, 3, 4, E½;
sec. 20;
sec. 21, N½;
secs. 28 and 29;
sec. 30, lots 1, 2, 3, 4, E½;
sec. 31, lots 1, 2, NE¼;
sec. 33.

T. 5 S., R. 12 E.,
sec. 4, lots 1, 2, 3, 4, S½N½;
sec. 5, lots 1, 2, 3, 4, S½N½;

T. 3 S., R. 13 E.,
sec. 31, lots 3, 4, E½SW¼.

T. 4 S., R. 13 E.,
sec. 1, lots 4, 5, W½SW¼;
sec. 2, lots 1, 2;
sec. 3;
sec. 4, lots 1, 2, 3, 4, S½N½, NE¼SW¼, S½SW¼, NW¼SE¼, S½SE¼;
secs. 5 and 6;
sec. 7, lots 1 and 2, E½NW¼, NE¼;
sec. 8, N½;
sec. 9, lots 1, 2, 3, 4, N½N½, S½NW¼, N½S½, S½SE¼;
sec. 12, lots 1, 2, 4, and part of lots 3, 5, 6, 7, 8, Part S½NW¼, that are Federal lands; NW¼NW¼.

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Certified to be a

Rickard
Certifying Officer

T. 4 S., R. 14 E.,
sec. 7, lot 6;
sec. 8, S½SW¼, SW¼SW¼;
sec. 18, lots 1, 2, 3, 4, 9, 10, 11;
sec. 19, W½NE¼;
sec. 20, SW¼NW¼, SW¼SW¼.

T. 5 S., R. 13 E.,
sec. 7, SE¼SW¼;
sec. 13, lot 4;
sec. 24, lots 1 and 4, W½SE¼.

T. 5 S., R. 16 E.,
sec. 5, lots 1 to 6, S½NE¼, N½SE¼, SW¼SE¼;
sec. 6, lot 1, and unsurveyed portion of SE¼SE¼;
sec. 7, lot 1, pt. lot 2, E½NE¼, N½SE¼, and unsurveyed portion of N½NW¼, NW¼NE¼;
sec. 8, NW¼NW¼.

The areas described aggregate approximately 26,164.28 acres in Pinal County.

2. The use and administration of the lands will become subject to the provisions of the reclamation laws (Act of June 17, 1902, supra, as amended and supplemented), including the use of the lands under lease, license or permit, at such time as the Buttes Dam and Reservoir, Middle Gila River Project, is authorized by the Congress.

3. Pending authorization of the project, the withdrawal made by this order does not alter the applicability of the public land laws governing the use of the lands under lease, license, or permit, or the disposal of their mineral or vegetative resources, other than under the mining laws, subject to the condition that such use or disposition will not be inconsistent with the reclamation laws and the purposes for which [illegible] withdrawn.

SEP 27 1965 Oct 1 8 45 AM '65 Stanley R. Anderson

Certified to be a true copy of the original. Secretary of the Interior

Richard R. Lee

Certification Officer

Form ASO 1275-3
Oct. 1974 (Revised)

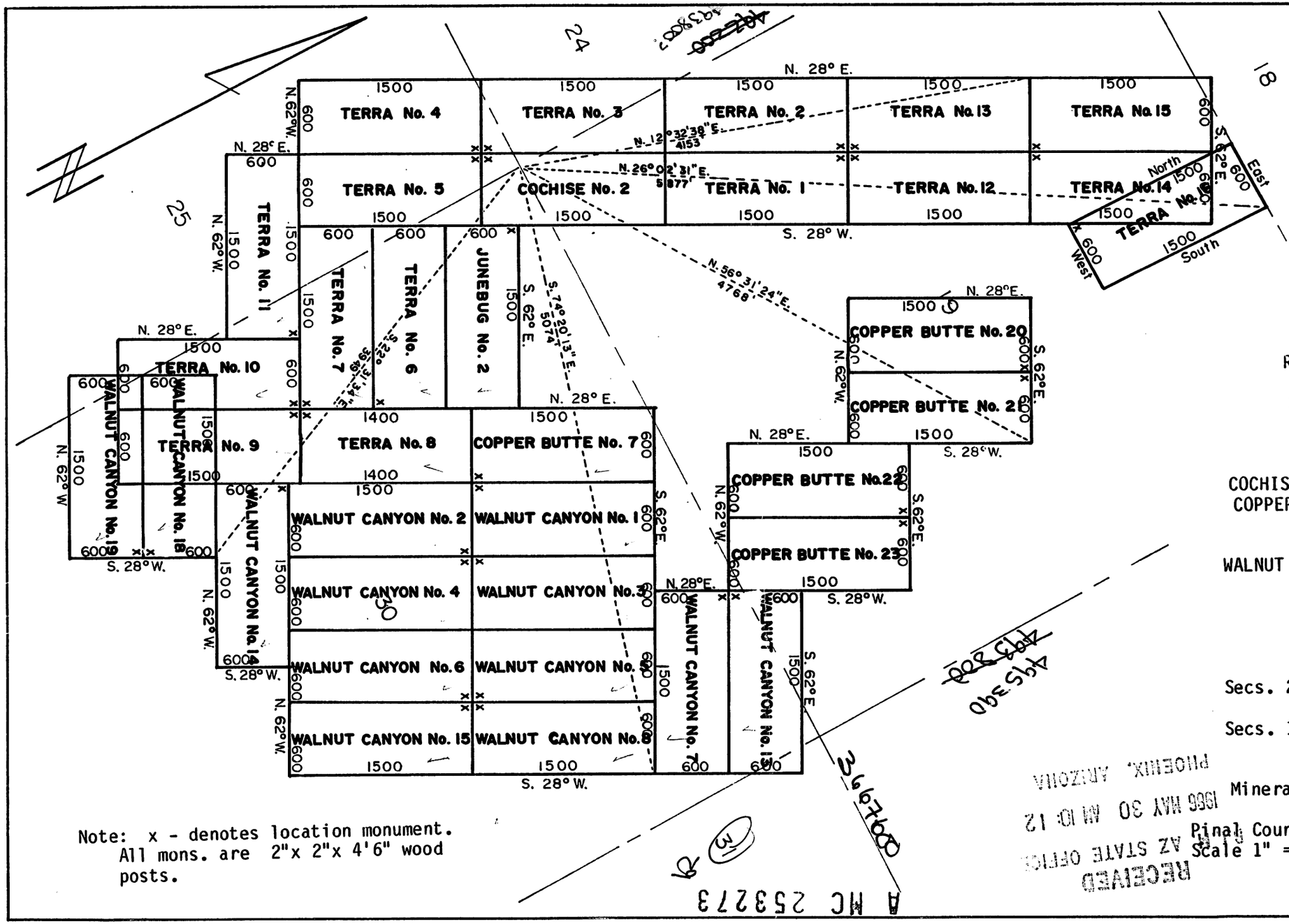
COMMON ABBREVIATIONS
BUREAU OF LAND MANAGEMENT PUBLIC RECORDS

A-(number)	Arizona Serial Number
A	Acre(s)
Acq	Acquired
Act of Cong	Act of Congress
ADHE	Adjusted homestead entry
Adm S	Administrative site
AEC	Atomic Energy Commission
AF	Air Force
Agri	Agriculture, Agricultural
Agri Exp Sta	Agriculture Experiment Station
AHE	Additional homestead entry
All Min	All Minerals
Allot	Allotment
Amdt	Amendment, Amended, Amends
ANS	Air Navigation Site
Apln	Application
Apln Ext	Application for extension
App	Appendix
Approp	Appropriation, Appropriate, Appropriated
Appvd	Approved
AR-(number)	Arizona Serial Number
Ariz	Arizona
Arpt	Airport
Asgn	Assignment
Asph	Asphalt
ASRHE	Additional stockraising homestead entry
Auth	Authorization
Av Lse	Aviation Lease
Bdy; Bdrs	Boundary, Boundaries
BIA	Bureau of Indian Affairs
Blk	Block
BLM	Bureau of Land Management
BM	Bench Mark
Br	Branch
BR	Bureau of Reclamation
BSFW	Bureau of Sports, Fisheries & Wildlife
C of E	Corps of Engineers
CA	Communitization Agreement
Cad	Cadastral
Canc	Cancellation, Cancelled
Cpg	Campground
CDI	Control Document Index
CE	Cash entry
Cert	Certificate
CFR	Code of Federal Regulations
Ch, Chs	Chain, Chains
CHE	Commuted homestead entry
Circ	Circular
Cl	Classification
Co	Company
Colo	Colorado
Comm P	Community Pit
Comm S	Communication Site
Condemn	Condemnation
Corp	Corporation
C/T	Color of Title
Cur Pat	Curative patent
D	Director
D/C	Ditches and/or Canal
Ded	Dedication
Def	Deficiency
Dept of Agri	Department of Agriculture
Dept of Int	Department of the Interior
Des	Designated or Designation
Det	Determination
Dist	District
Div	Division
DLE	Desert land entry
DM	District Manager
Doc	Document
E	East
Eff	Effective
EHE	Enlarged homestead entr
Elim	Elimination
Eng	Engineering
Enlgmt	Enlargement
EO	Executive Order
ES	Exchange survey
Esmt	Easement
Excl	Excluding, excluded
Exp	Expire(d)
Ext	Extended, extension, extend
FAA	Federal Aviation Admin.
F&WS	Fish & Wildlife Service
FC	Final certificate
Fed	Federal
FHA	Farmers Home Admin.
Fis	Fissionable materials
FLS	Forest lieu selection
FLUP	Free Land Use Permit
Fm U	Farm unit
FPA	Federal Power Act
FPC	Federal Power Commission
FR	Federal Register
Frac	Fractional
FS	Forest Service
FUP	Free Use Permit
FX	Forest exchange
Gd	Gold
Geo	Geothermal
Geol Str	Geologic structure
GLO	General Land Office
Geo Plat	Geothermal Resource Plat
GSR Mer	Gila & Salt River Meridi
Hdq S	Headquarters Site
HDS	Homestead declaratory statement
HE	Homestead entry
HES	Homestead entry survey
HI	Historical Index
Hwy	Highway
IA	Indian Allotment
ID	Interior Decisions
Iden	Identify, Identification
IL	Indemnity list-State lan
Illus	Illustration
Inc	Including, Inclusive
Ind Fee	Indian Fee
Ind Tr Pat	Indian trust patent
Ind Res	Indian reservation
Ind Tr	Indian Trust
Intpr	Interpretation
IS	Indemnity selection
IT	Isolated tract
Juris	Jurisdiction
KCLA	Known Coal Leasing Area
KGRA	Known Geothermal Resourc Area
KGS	Known Geologic Structur
KLA	Known Leasing Area
Lat	Latitude
LD	Interior Land Decisions
Lic	License
LO	Land Office
Loc	Location

Long	Longitude
LS	Lieu selection
Lsbl	Leaseable
Lse	Lease
Ltr	Letter
LU	Land Utilization
Mat S	Material site
M&B	Metes and Bounds
MCOA or MOA	Mining Claim Occupancy Act
ME	Mineral entry
Mer	Meridian
Mgmt	Management
Mil Pur	Military Purpose
Mil Res	Military Reservation
Mill S	Millsite
Min	Mineral
Min Cert or MC	Mineral certificate
Misc	Miscellaneous
ML	Mineral location
MLCI	Mineral Location & Contest Index
MM	Mineral monument
Mod	Modification
Mon	Monument
MS	Mineral survey
Mtn	Mountain
MTP	Master Title Plat
Mult Use	Multiple Use
N	North
N Mon	National Monument
Nav Mer	Navajo Meridian
nc	Noncompetitive
NF	National Forest
NOS	Not Open to Entry (Surface, Mining and Mineral Leasing)
NOL	Not Open to Lease
NOM	Not Open to Mining
NP	National Park
NRL	National Resource Lands
NWR	National Wildlife Refuge
O	Order
OE	Open to Entry
OG	Oil and Gas
Oper	Operation
Par	Parcel
Part	Partially
Pat	Patent
PD	Public Domain
Per	Permit
Pet Res	Petroleum reserve
Pho	Phosphate
PHX-(Number)	Phoenix Serial Number
PL	Public Law
PLC	Private Land Claim
PLO	Public Land Order
Pot	Potassium
Pr Per	Prospecting permit
Pre	Preemption
Proc	Proclamation
Proj	Project
Prop	Propose, Proposed
Prot Wdl	Protective Withdrawal
PS	Public Sale
PU	Public Use
Pur	Purchase
PW Res	Public water reserve
Pwr Proj	Power Project
Pwr S	Power site
PX	Private Exchange
QCD	Quitclaim deed
Qs	Quicksilver
R	Range
R&PP	Recreation & Public Purposes
RB	River Basin
Rcpl	Reciprocal
Rd	Road
re	Reference
Re-cl	Reclassified
Rec Lse	Recreation lease
Recl Wdl	Reclamation withdrawal
Recon	Reconveyed
Reg	Regional
Rej	Rejected & rejection
Rel	Relinquished or Relinquishment
Res	Reservation or Reserve
Resc	Rescind, Rescindad
Rest	Restoration or Restored
Resvr	Reservoir
Rev	Revocation or Revoked
Rfg	Refuge
Rgr Sta	Ranger Station
RHE	Reclamation homestead entry
RI	Range Improvement
RIP	Records Improvement Project
Rmks	Remarks
RR	Railroad
RRG	Railroad Grant
RRIS	Railroad indemnity selection
RRLS	Railroad lieu selection
RS	Revised Statutes
Rstd	Restricted
Rvst	Revested
R/W	Right-of-way
Ry	Railway
S	South
SAH	Soldier's additional homestead
SB Mer	San Bernardino Meridian
SD	State Director
SDO	State Director's Order
SDS	Soldier's declaratory statement
SDW	Stock Driveway
SDW Wdl	Stock driveway withdraw
Sec	Section
Sec of Agri	Secretary of Agricultur
Sec of the Int	Secretary of the Interior
Segr	Segregate or Segregated
Sel	Selection or Selected
SG	State Grant
SHC	Small holding claim
Si	Silver
Sim	Simultaneous
SLUP	Special Land Use Permit
SO	Secretary's Order
Sod	Sodium
Spec Per	Special Permit
SR	Serial Register
SRHE	Stockraising homestead entry
SS	State selection
ST	Small tract
Stat	Statutes at Large
ST Cl	Small tract classification

ST Lse	Small tract lease
Sta	Station
STS	Small tract sale
Subdiv Und	Subdivisions undefined
Subj	Subject
Sul	Sulphur
Suppl	Supplemental
Sur	Survey or Surveyed
Sus	Suspended
SX	State exchange
T or Tp	Township(Tps - Townships)
TC	Timber culture
Tel	Telephone
Teleg or Tel	Telegraph
Temp	Temporary
Term	Terminate, Termination
Tns	Townsite
Tr	Tract
Trans	Transmission
Trf	Transfer
Trf Juris	Transfer of Jurisdiction
Trfd	Transferred
Tri Sta	Triangulation Station
Trsp	Trespass
T/S	Timber and Stone
UA	Unit Agreement
Unapprop	Unappropriated
Undet	Undetermined
UNDGD	Underground
USS	United States Survey
Unsur	Unsurveyed
Ur	Uranium
USAF	United States Air Force
USC	United States Code
USGS	United States Geological Survey
W	West
WAA	War Assets Administration
War Dept	War Department
W/Chg	With Change(s)
WD	Warranty deed
Wdl	Withdrawal
Wdn	Withdrawn
W/O	Without
WP	Water Power
WP Des	Water Power Designation
WR	Water rights
WS	Watershed
Wt	Warrant
X	Exchange(d)

Withdrawals
Patents
Leases
Pt. 167 Determination Area
Limits of surveyed land, (hatching on unsurveyed side)
Railroad
Telephone Line
Power transmission line
Maps: Hard surface
Graveled
Imp. dirt
Trail
Fence
Acq. land
Bridge
County Road
Established Livestock Route
Access Control
Mine Prospect
Corridor (R/W's)
Settlement (Towns & Cities)
Cemetery
Historic Ruins
River & Island
Stream
Lake & Island
Marsh or Swamp
Spring (Improved)
Reservoir
Pipe line or Conduit
Canal or Ditch Flume
Artesian Well
Windmill & trough storage
Drainage Basement
Cultivated Land
Cattle Guard
Corral
Land Treatment Area (Reseeding, Brush Eradication, Contour trenching, Diking, Ripping, Fire burn, etc.)
Water pumping plant
Telegraph line
School
Mine or Quarry
Spring
Water well
Water well (with trough)
Water well (with trough & storage)
Storage tank
Rainwater Catchment
Stock pond or earthen tank
Dike or Levee
Airplane Landing Field
Gauging Station
Mine Shaft
Radio Station
Communication Site



MINING CLAIMS

of

KENNECOTT
Ray Mines Division
P. O. Box 8
Hayden, AZ 85235

known as

COCHISE No. 2, JUNEBUG No. 2,
COPPER BUTTE Nos. 7 & 20-23,
TERRA Nos. 1-16
and
WALNUT CANYON Nos. 1-8, 13-15,
18 & 19
lodes

situate in

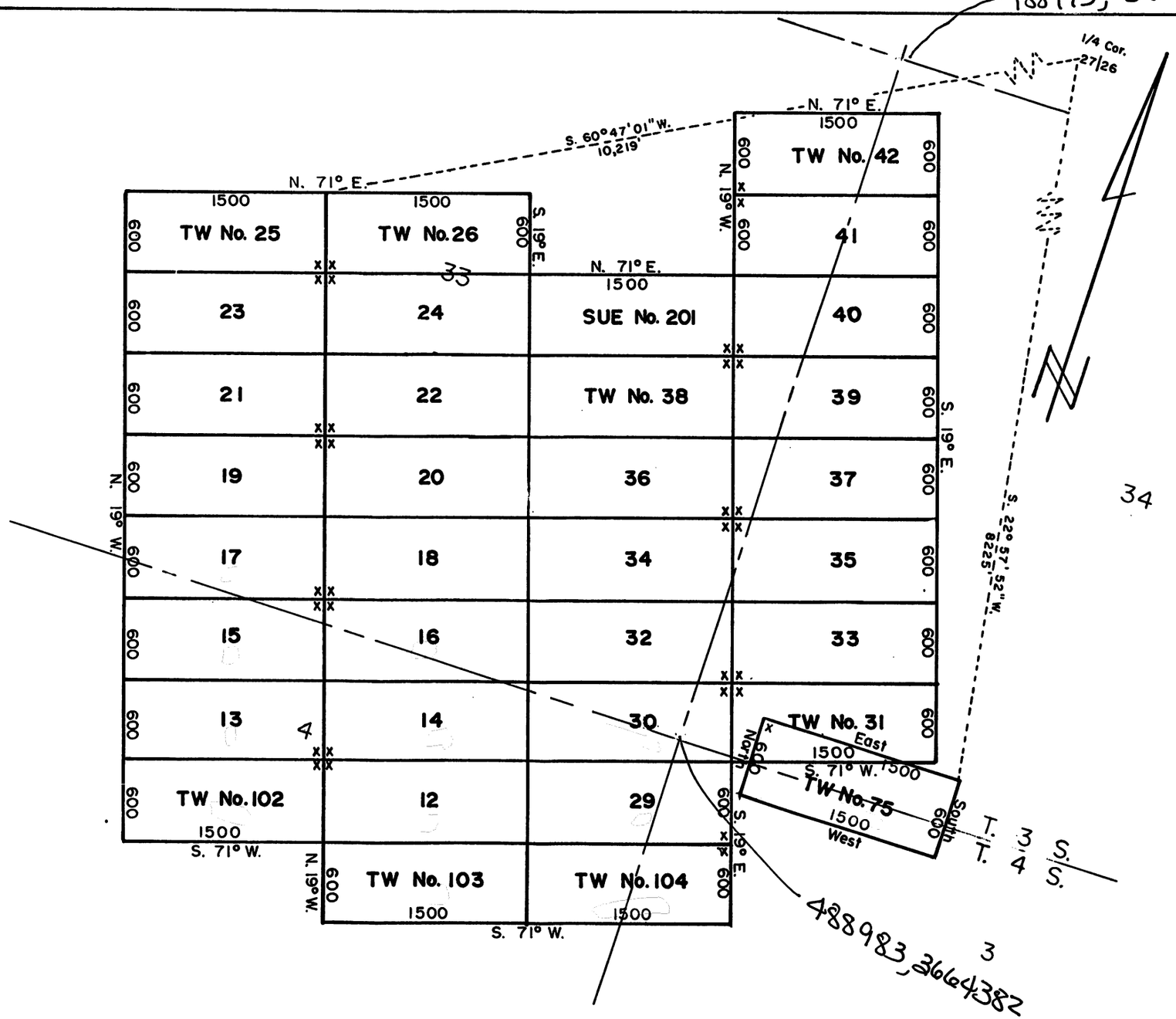
Secs. 24 & 25, T.3 S., R.12 E.
and
Secs. 19 & 30, T.3 S., R.13 E.
G.& S.R.M.

Mineral Creek Mining District

Pinal County
Scale 1" = 1000'

Arizona
May 7, 1986

Note: x - denotes location monument.
All mons. are 2"x 2"x 4'6" wood posts.



MINING CLAIMS

of

KENNECOTT
Ray Mines Division
P. O. Box 8
Hayden, AZ 85235

known as

TW Nos. 12-26, 29-42, 75 & 102-104
and
SUE No. 201
lodes

situate in

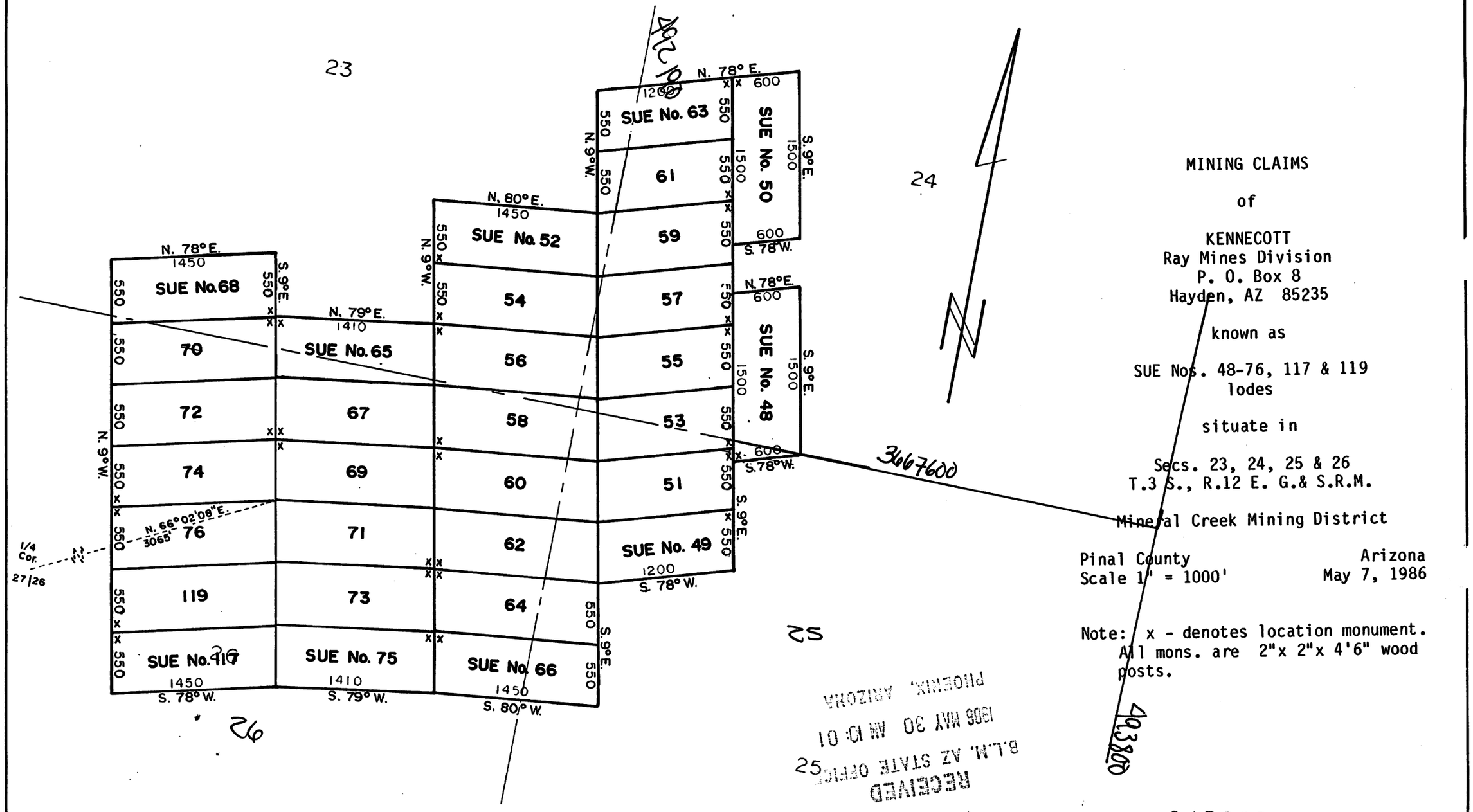
Secs. 33 & 34, T.3 S., R.12 E.
and
Secs. 3 & 4, T.4 S., R.12 E.
G.& S.R.M.

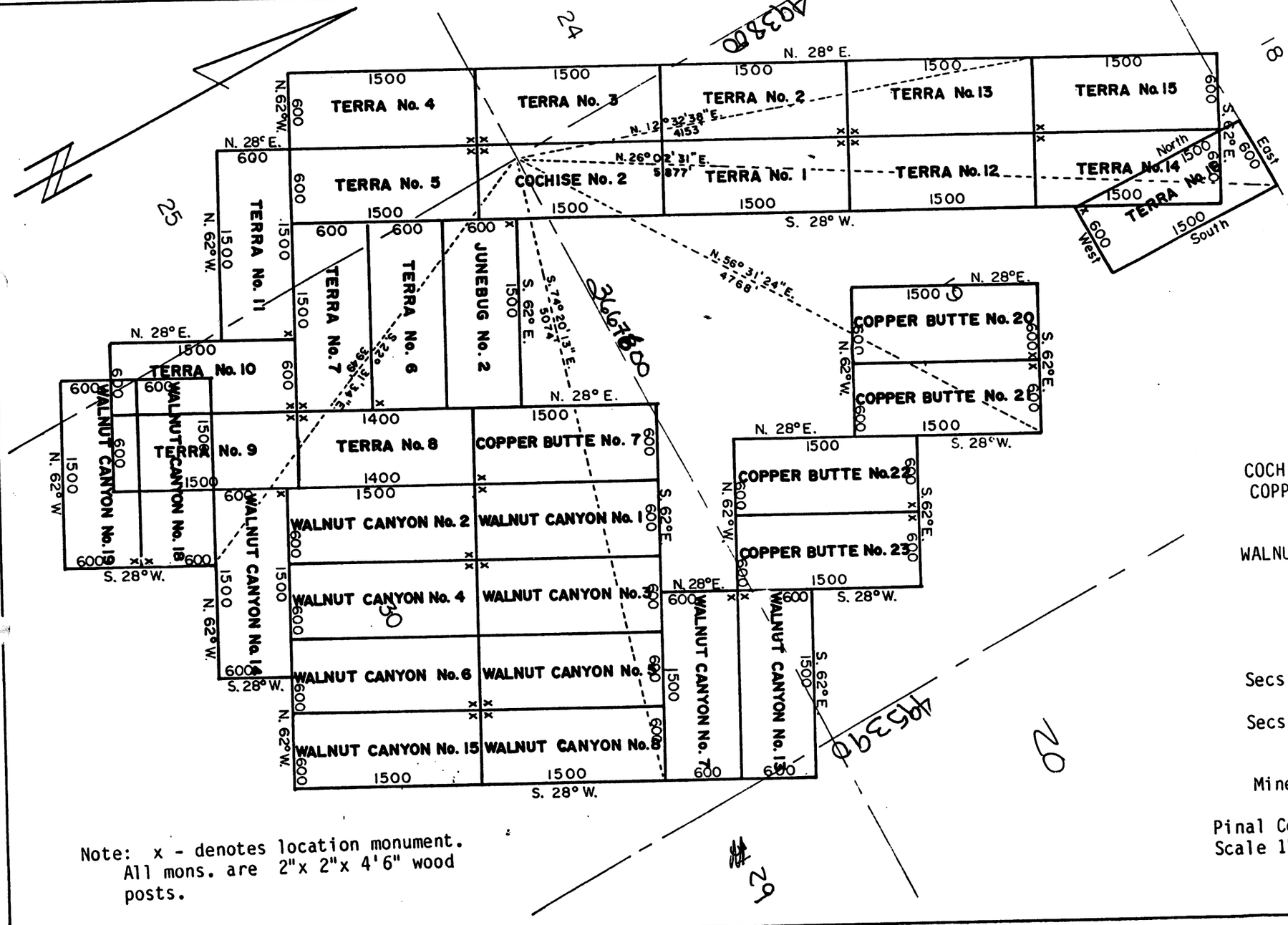
Mineral Creek Mining District

Pinal County — Arizona
Scale 1" = 1000' — May 7, 1986

Note: x - denotes location monument. All mons. are 2"x 2"x 4'6" wood posts.

A MC 253273





Note: x - denotes location monument.
All mons. are 2"x 2"x 4'6" wood posts.

MINING CLAIMS

of

KENNECOTT
Ray Mines Division
P. O. Box 8
Hayden, AZ 85235

known as

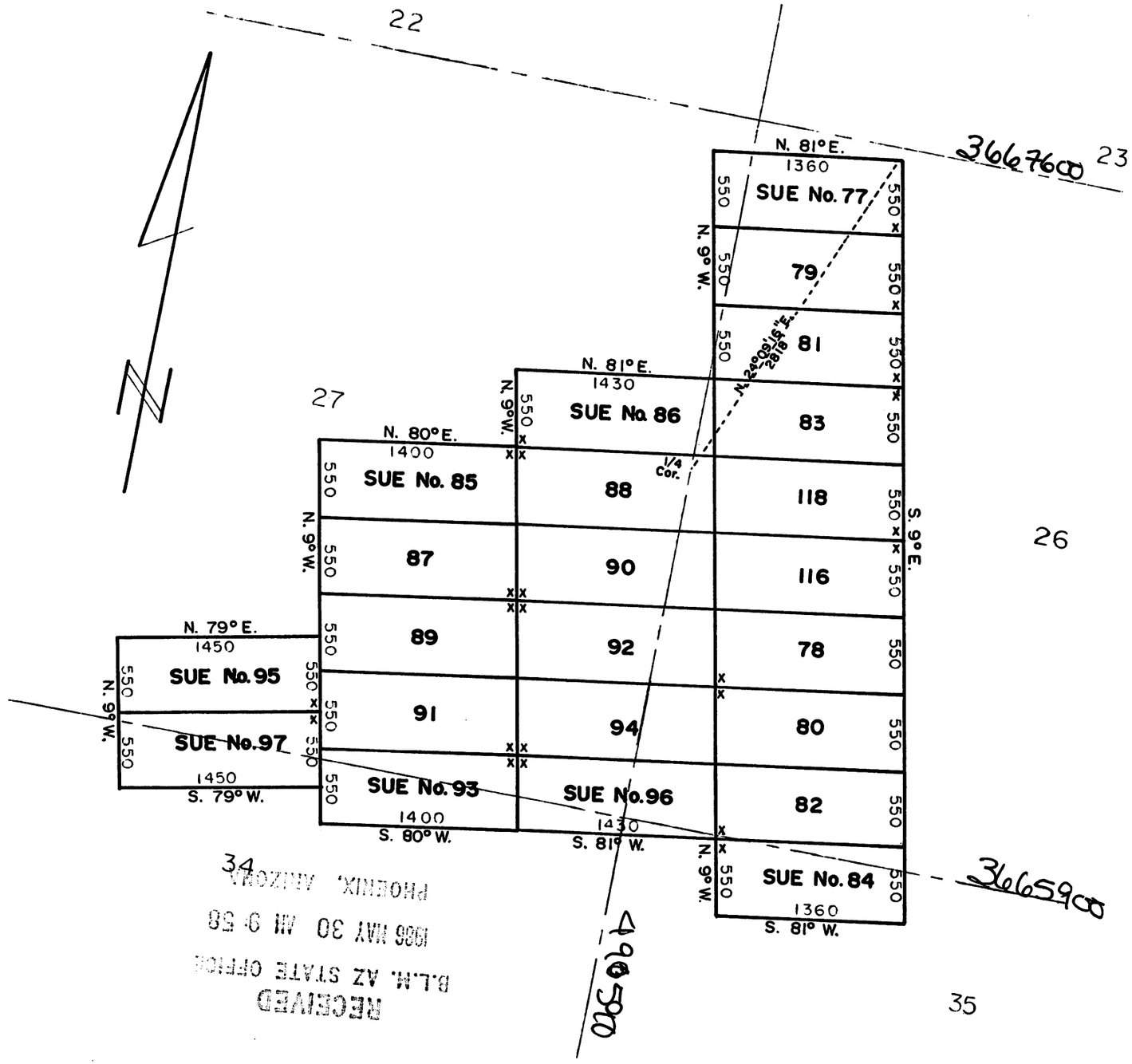
COCHISE No. 2, JUNEBUG No. 2,
COPPER BUTTE Nos. 7 & 20-23,
TERRA Nos. 1-16
and
WALNUT CANYON Nos. 1-8, 13-15,
18 & 19
lodes

situate in

Secs. 24 & 25, T.3 S., R.12 E.
and
Secs. 19 & 30, T.3 S., R.13 E.
G.& S.R.M.

Mineral Creek Mining District

Pinal County Arizona
Scale 1" = 1000' May 7, 1986



MINING CLAIMS

of

KENNECOTT
Ray Mines Division
P. O. Box 8
Hayden, AZ 85235

known as

SUE Nos. 77-97, 116 & 118
lodes

situate in

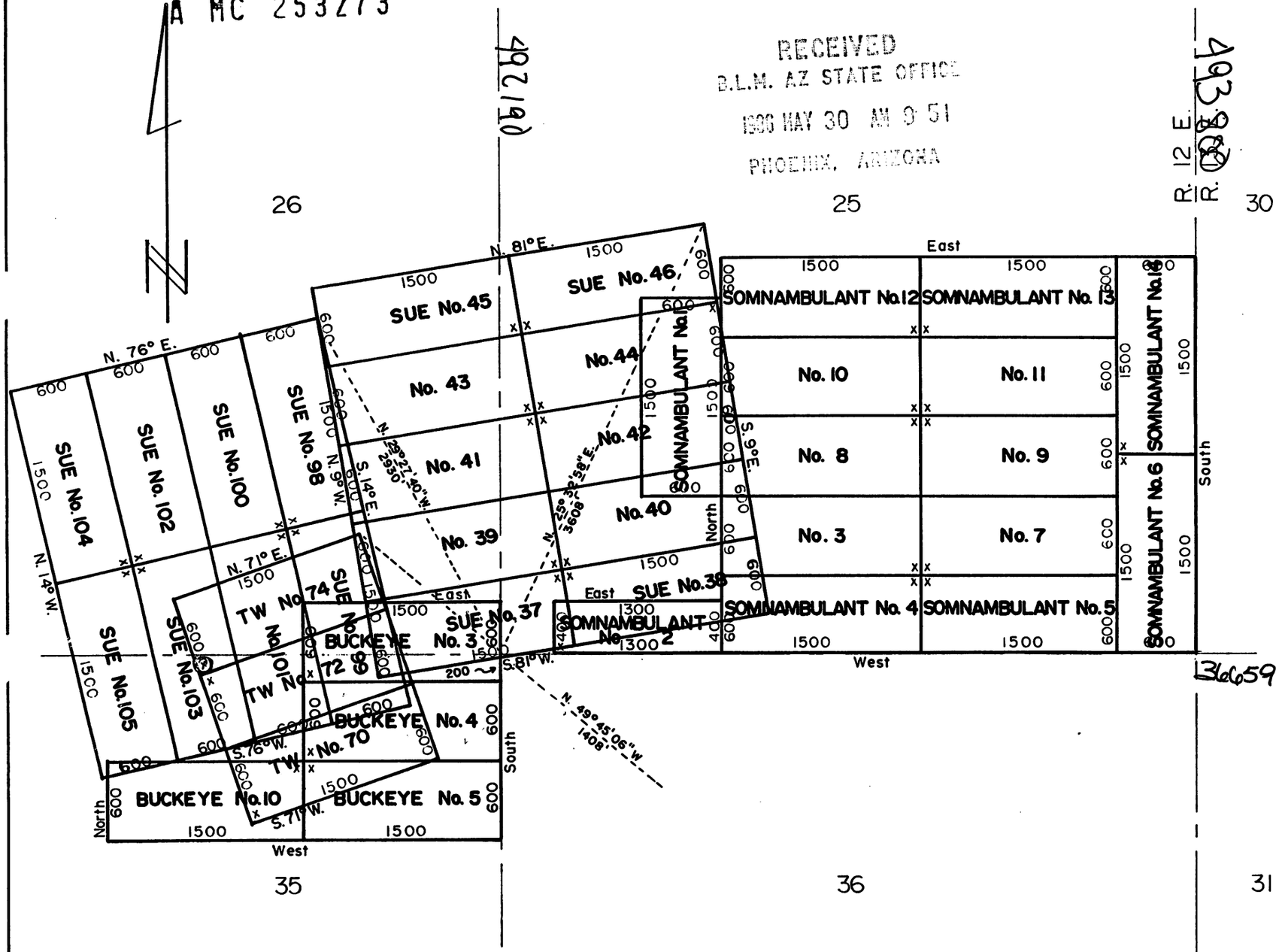
Secs. 26, 27, 34 & 35
T.3 S., R.12 E., G.& S.R.M.

Mineral Creek Mining District

Pinal County — Arizona
Scale 1" = 1000' — May 7, 1986

Note: x - denotes location monument.
All mons. are 2"x 2"x 4'6" wood posts.

A MC 253273



MINING CLAIMS

of

KENNECOTT
Ray Mines Division
P. O. Box 8
Hayden, AZ 85235

known as

SUE Nos. 37-46 & 98-105,
BUCKEYE Nos. 3-5 & 10,
SOMNAMBULANT Nos. 1-14
and
TW Nos. 70, 72 & 74
lodes

situate in

Secs. 25, 26, 35 & 36
T.3 S., R.12 E., G.& S.R.M.

Mineral Creek Mining District

Pinal County Arizona
Scale 1" = 1000' May 7, 1986

Note: x - denotes location monument.
All mons. are 2"x 2"x 4'6" wood posts.

A MC 277468

MINING CLAIMS

OF

ASARCO INCORPORATED
Ray Unit
P.O. Box 8
Hayden, AZ 85235

KNOWN AS

AXER #'s 8-21, 38-51, 70-83 & 102-115
AX-A #'s 1-8, 31-38 & 55-62 millsites.

SITUATE IN

Secs. 17, 19 & 20
T. 3 S., R. 13 E., G. & S.R.M.

Pinal County, Arizona
Scale 1" = 600' Nov. 20, 1987

18 | 17 | 16

495380 | 497000 | 3668200

AXER #8 S 1/2 NW1/4 NW1/4 SW1/4	AXER #9 S 1/2 NE1/4 NW1/4 SW1/4	AXER #38 S 1/2 NW1/4 NE1/4 SW1/4	AXER #39 S 1/2 NE1/4 NE1/4 SW1/4	AXER #70 S 1/2 NW1/4 NW1/4 SE1/4	AXER #71 S 1/2 NE1/4 NW1/4 SE1/4	AXER #102 S 1/2 NW1/4 NE1/4 SE1/4	AXER #103 S 1/2 NE1/4 NE1/4 SE1/4
#10 N 1/2 SW1/4 NW1/4 SW1/4	#11 N 1/2 SE1/4 NW1/4 SW1/4	#40 N 1/2 SW1/4 NE1/4 SW1/4	#41 N 1/2 SE1/4 NE1/4 SW1/4	#72 N 1/2 SW1/4 NW1/4 SE1/4	#73 N 1/2 SE1/4 NW1/4 SE1/4	#104 N 1/2 SW1/4 NE1/4 SE1/4	#105 N 1/2 SE1/4 NE1/4 SE1/4
#12 S 1/2 SW1/4 NW1/4 SW1/4	#13 S 1/2 SE1/4 NW1/4 SW1/4	#42 S 1/2 SW1/4 NE1/4 SW1/4	#43 S 1/2 SE1/4 NE1/4 SW1/4	#74 S 1/2 SW1/4 NW1/4 SE1/4	#75 S 1/2 SE1/4 NW1/4 SE1/4	#106 S 1/2 SW1/4 NE1/4 SE1/4	#107 S 1/2 SE1/4 NE1/4 SE1/4
#14 N 1/2 NW1/4 SW1/4 SW1/4	#15 N 1/2 NE1/4 SW1/4 SW1/4	#44 N 1/2 NW1/4 SE1/4 SW1/4	#45 N 1/2 NE1/4 SE1/4 SW1/4	#76 N 1/2 NW1/4 SW1/4 SE1/4	#77 N 1/2 NE1/4 SW1/4 SE1/4	#108 N 1/2 NW1/4 SE1/4 SE1/4	#109 N 1/2 NE1/4 SE1/4 SE1/4
#16 S 1/2 NW1/4 SW1/4 SW1/4	#17 S 1/2 NE1/4 SW1/4 SW1/4	#46 S 1/2 NW1/4 SE1/4 SW1/4	#47 S 1/2 NE1/4 SE1/4 SW1/4	#78 S 1/2 NW1/4 SW1/4 SE1/4	#79 S 1/2 NE1/4 SW1/4 SE1/4	#110 S 1/2 NW1/4 SE1/4 SE1/4	#111 S 1/2 NE1/4 SE1/4 SE1/4
#18 N 1/2 SW1/4 SW1/4 SW1/4	#19 N 1/2 SE1/4 SW1/4 SW1/4	#48 N 1/2 SW1/4 SE1/4 SW1/4	#49 N 1/2 SE1/4 SE1/4 SW1/4	#80 N 1/2 SW1/4 SW1/4 SE1/4	#81 N 1/2 SE1/4 SW1/4 SE1/4	#112 N 1/2 SW1/4 SE1/4 SE1/4	#113 N 1/2 SE1/4 SE1/4 SE1/4
AXER #20 S 1/2 SW1/4 SW1/4 SW1/4	AXER #21 S 1/2 SE1/4 SW1/4 SW1/4	AXER #50 S 1/2 SW1/4 SE1/4 SW1/4	AXER #51 S 1/2 SE1/4 SE1/4 SW1/4	AXER #82 S 1/2 SW1/4 SW1/4 SE1/4	AXER #83 S 1/2 SE1/4 SW1/4 SE1/4	AXER #114 S 1/2 SW1/4 SE1/4 SE1/4	AXER #115 S 1/2 SE1/4 SE1/4 SE1/4

AX-A #55 N 1/2 NE1/4 NW1/4 NE1/4	AX-A #56 N 1/2 NW1/4 NE1/4 NE1/4	AX-A #1 N 1/2 NE1/4 NE1/4 NE1/4	AX-A #2 N 1/2 NW1/4 NW1/4 NW1/4	AX-A #31 N 1/2 NE1/4 NW1/4 NW1/4	AX-A #32 N 1/2 NW1/4 NE1/4 NW1/4
#57 S 1/2 NE1/4 NW1/4 NE1/4	#58 S 1/2 NW1/4 NE1/4 NE1/4	#3 S 1/2 NE1/4 NE1/4 NE1/4	#4 S 1/2 NW1/4 NW1/4 NW1/4	#33 S 1/2 NE1/4 NW1/4 NW1/4	#34 S 1/2 NW1/4 NE1/4 NW1/4
#59 N 1/2 SE1/4 NW1/4 NE1/4	#60 N 1/2 SW1/4 NE1/4 NE1/4	#5 N 1/2 SE1/4 NE1/4 NE1/4	#6 N 1/2 SW1/4 NW1/4 NW1/4	#35 N 1/2 SE1/4 NW1/4 NW1/4	#36 N 1/2 SW1/4 NE1/4 NW1/4
AX-A #61 S 1/2 SE1/4 NW1/4 NE1/4	AX-A #62 S 1/2 SW1/4 NE1/4 NE1/4	AX-A #7 S 1/2 SE1/4 NE1/4 NE1/4	AX-A #8 S 1/2 SW1/4 NW1/4 NW1/4	AX-A #37 S 1/2 SE1/4 NW1/4 NW1/4	AX-A #38 S 1/2 SW1/4 NE1/4 NW1/4

19 | 20 | 21

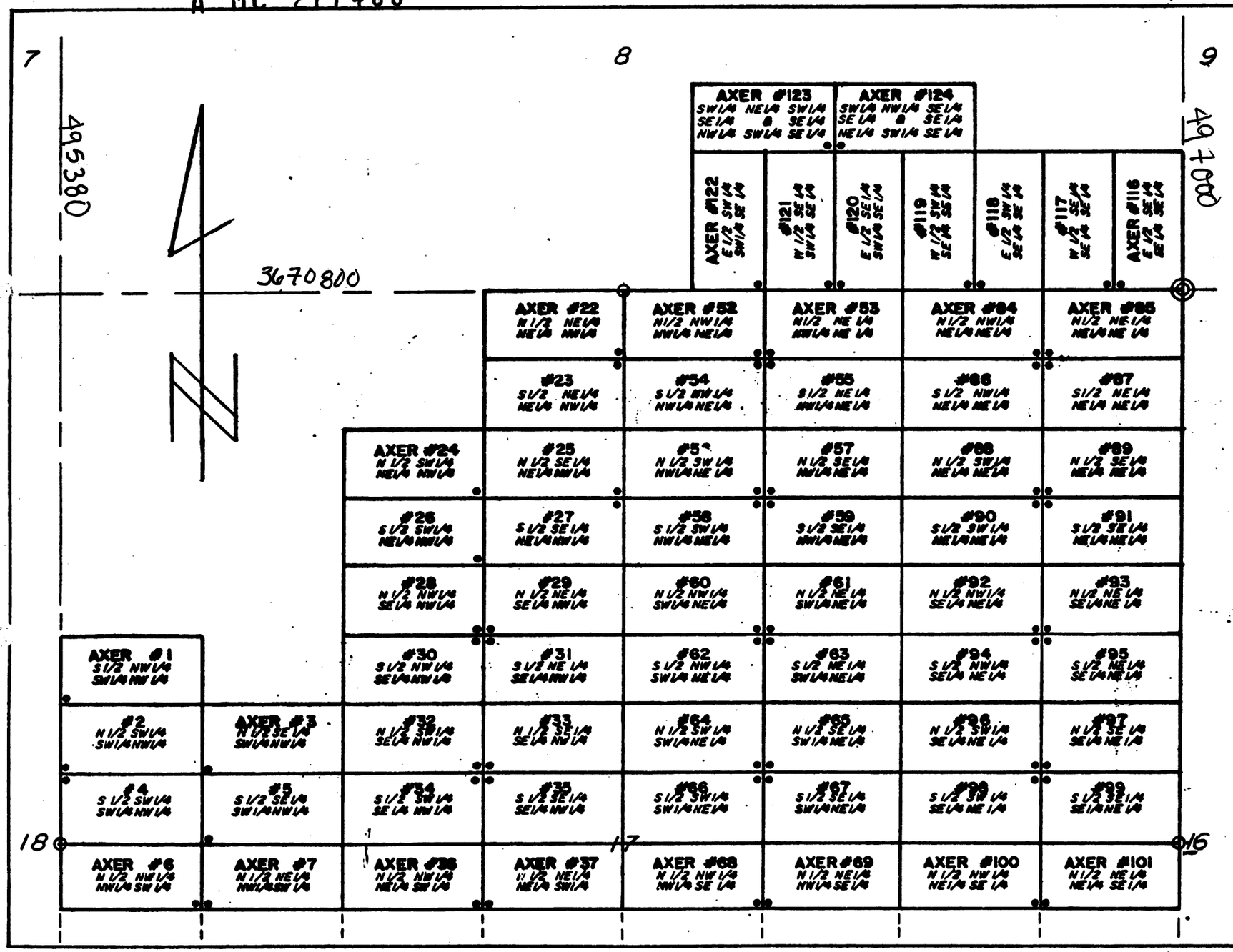
Surveyed by:
Harvey W. Smith, E.M.
Del Tierra Engineering
& Mining Corporation

Note: ● - denotes location monument
All monuments are 2"x2"x 48" wood posts

RECEIVED
B.L.M. AZ STATE OFFICE
1987 DEC -4 PM 2:57
PHOENIX, ARIZONA

RECEIVED
B.L.M. AZ STATE OFFICE
1987 DEC -4 PM 2:57
PHOENIX, ARIZONA

A MC 277468



MINING CLAIMS

OF

ASARCO INCORPORATED
Ray Unit
P.O. Box 8
Hayden, AZ 85235

KNOWN AS

AXER #'s 1-7, 22-37, 52-69, 84-101 & 116-124 millsites.

SITUATE IN

Secs. 8 & 17, T. 3 S., R. 13 E., G. & S.R.M.

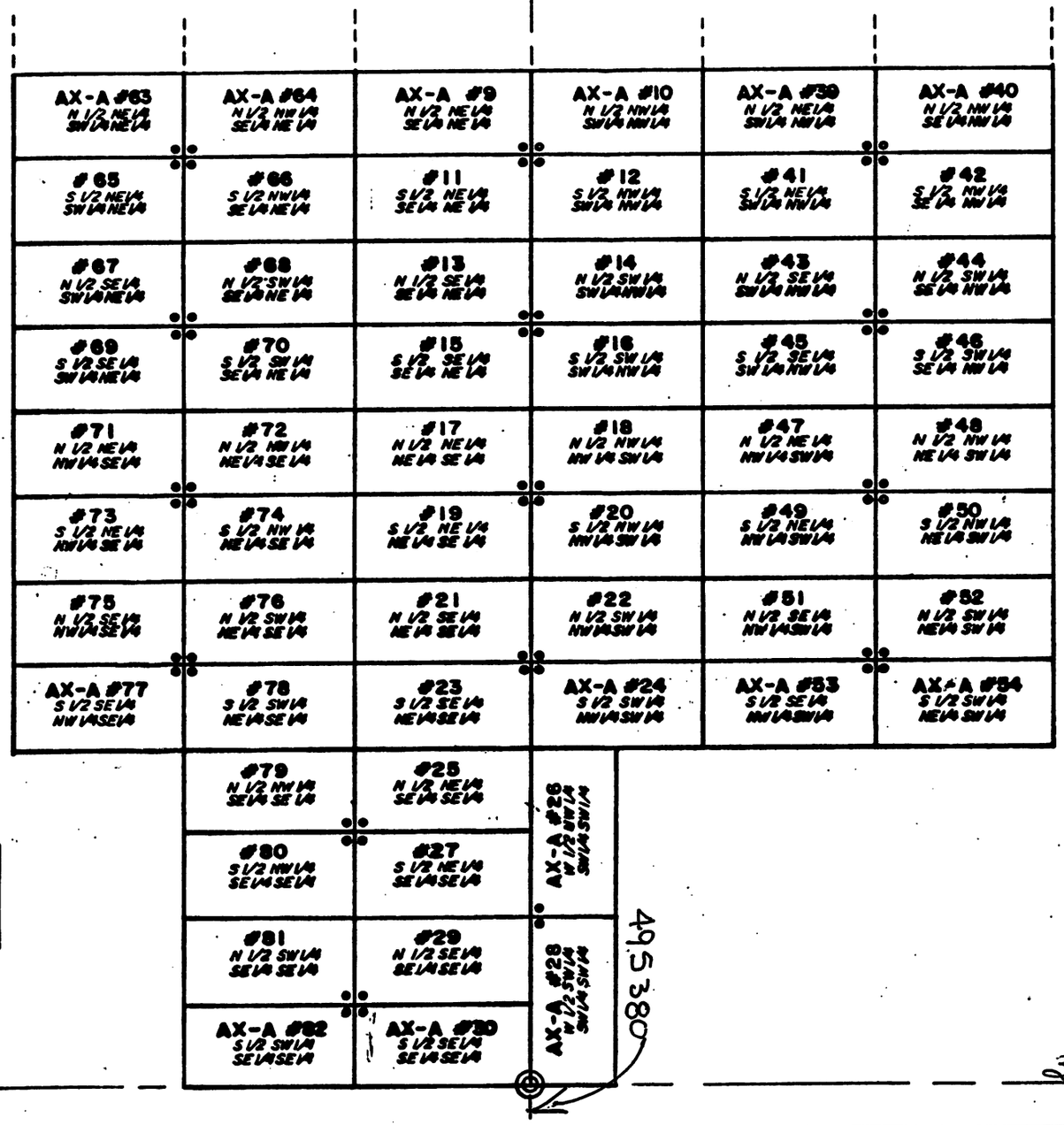
Pinal County Arizona
Scale 1" = 600' Nov. 20, 1987

Surveyed by:

Harvey W. Smith, E.M.
Del Tierra Engineering & Mining Corporation

Note: ● - denotes location monument
All monuments are 2"x 2"x 4'6" wood posts.

A MC 277468



MINING CLAIMS

OF

ASARCO INCORPORATED
Ray Unit
P.O. Box 8
Hayden, AZ 85235

KNOWN AS

AX-A #'s 9-30, 39-54 & 63-82 millsites,

SITUATE IN

Secs. 19 & 20, T. 3 S., R. 13 E., G. & S.R.M.

Pinal County, Arizona
Scale 1" = 600' Nov. 20, 1987

Surveyed by:

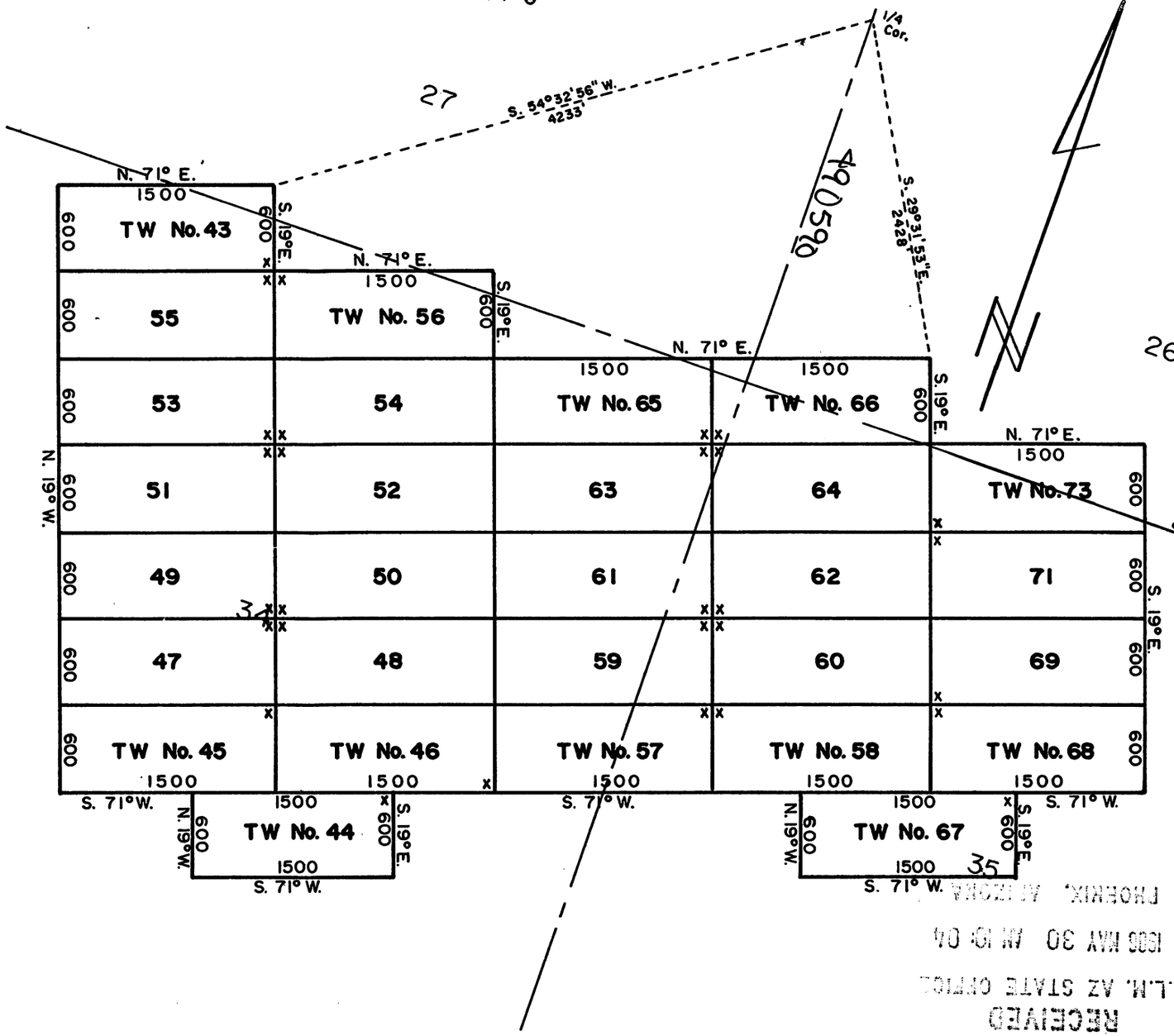
Harvey W. Smith, E.M.
Del Tierra Engineering
& Mining Corporation

Note: ● - denotes location monument
All monuments are 2" x 2" x 48" wood posts.

RECEIVED
B.L.M. AZ STATE OFFICE
1987 DEC -4 PM 2:57
PHOENIX, ARIZONA

497000

A MC 253273



MINING CLAIMS

of

KENNECOTT
Ray Mines Division
P. O. Box 8
Hayden, AZ 85235

known as

TW Nos. 43-69, 71 & 73
lodes

situate in

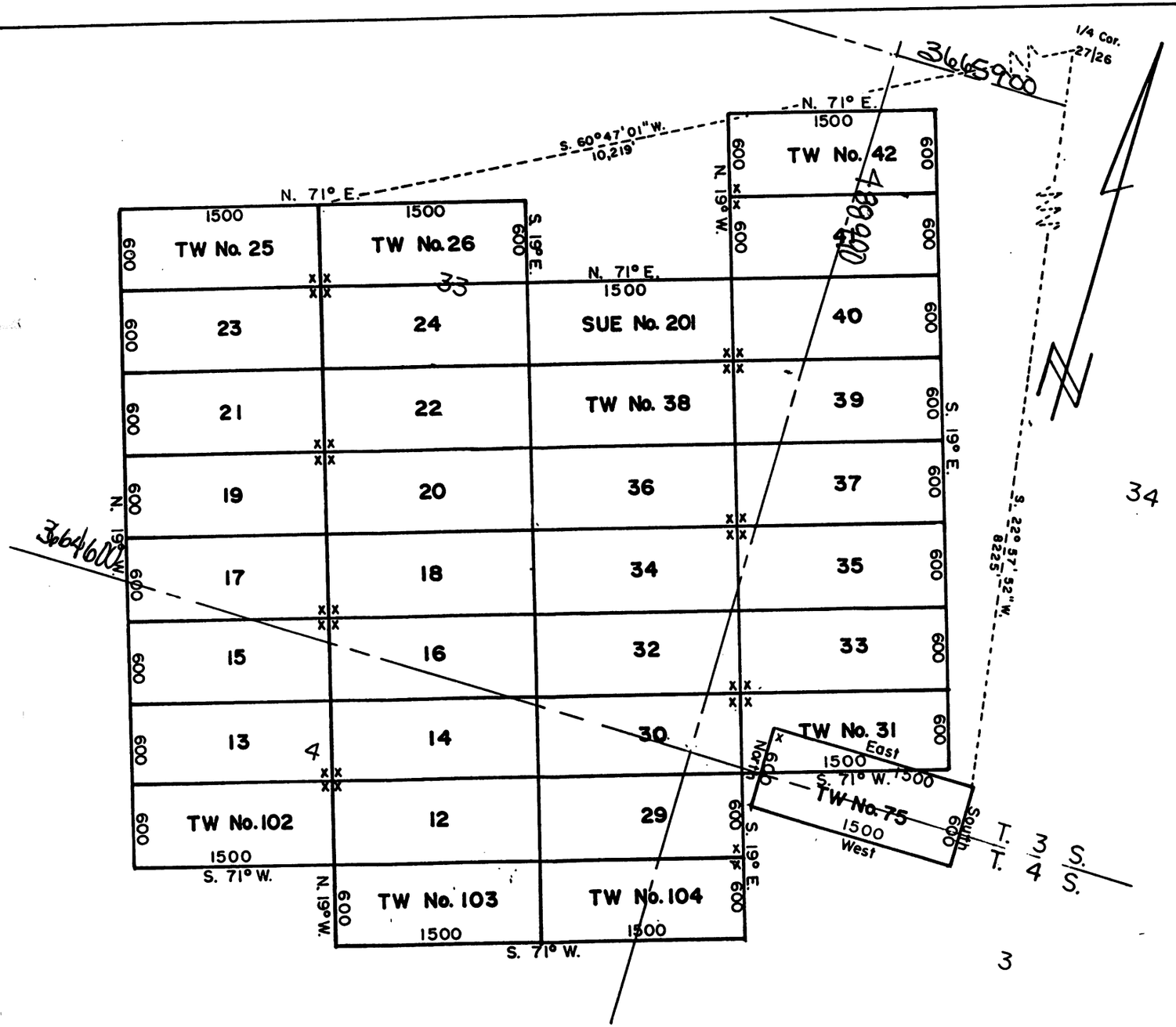
Secs. 26, 27, 34 & 35
T.3 S., R.12 E., G.& S.R.M.

Mineral Creek Mining District

Pinal County Arizona
Scale 1" = 1000' May 7, 1986

Note: x denotes location monument.
All mons. are 2"x 2"x 4'6" wood posts.

RECEIVED
BLM, AZ STATE OFFICE
1986 MAY 30 AM 10 04
PHOENIX, ARIZONA



MINING CLAIMS

of

KENNECOTT
Ray Mines Division
P. O. Box 8
Hayden, AZ 85235

known as

TW Nos. 12-26, 29-42, 75 & 102-104
and
SUE No. 201
lodes

situate in

Secs. 33 & 34, T.3 S., R.12 E.
and
Secs. 3 & 4, T.4 S., R.12 E.
G.& S.R.M.

Mineral Creek Mining District

Pinal County — Arizona
Scale 1" = 1000' — May 7, 1986

Note: x - denotes location monument.
All mons. are 2"x 2"x 4'6" wood posts.

A 111100

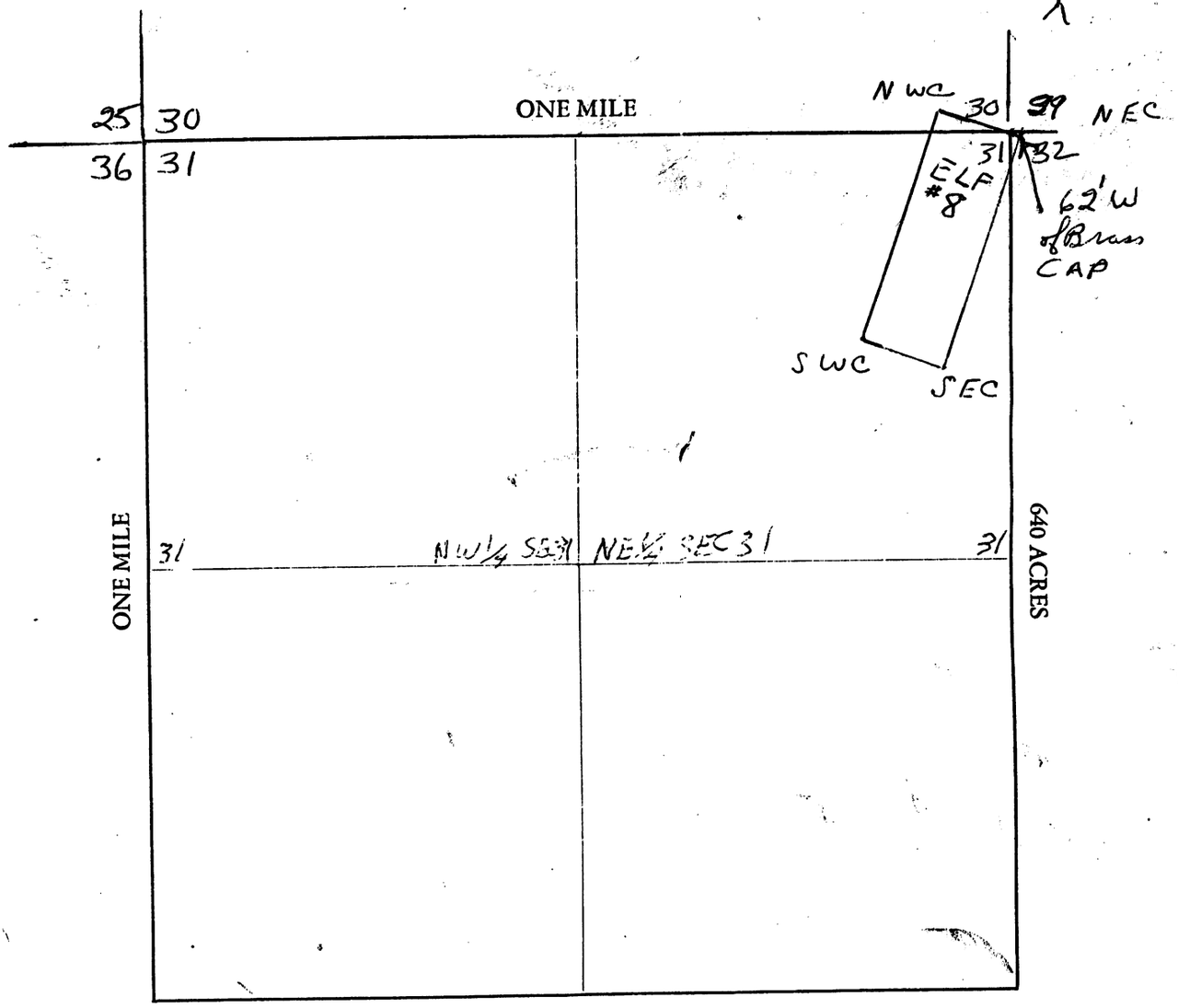
1016-300

RECEIVED
BLM ARIZONA STATE OFFICE
SEP 9 11 42 AM '80
PHOENIX, ARIZONA

MAP

One inch = One thousand feet

North Arrow
14°



Section 31 Range 13 EAST Township 3 South, G&SRB&M

Date 6-14-1980
L.B.F.

Lawrence D. Friend
Signature

1016-299 (2)300

651100

STATE OF ARIZONA, County of _____ } ss.

I hereby certify that the within instrument was filed and recorded _____, 19____, at _____M.

In Docket No. _____, Page _____, at the request of _____

Fee No.:

When recorded mail to:

Witness my hand and official seal.

_____ County Recorder

By _____ Deputy Recorder

Fee: $

RECEIVED BLM AZ STATE OFFICE SEP 9 11 42 AM '80 PHOENIX, ARIZONA

A MC 111100

02-1-61

MAP OF MINING CLAIM LOCATION

1. ☒ Location ☐ Amendment ☐ Relocation

2. ☐ Placer ☒ Lode ☐ Millsite ☐ Tunnelsite

3. The name of the claim is ELF #8

The name of the locator is LAWRENCE D. FRENCH

4. The location of the claim is in Section 31, Township 3 SOUTH Range 13 EAST G&SRB&M, COPPER BUTTE Mining District, PINAL County, Arizona.

The _____ corner of the claim is _____ feet in a _____ direction to a survey monument or permanent natural object described as _____

5. The type of Location monument is

R 12 E	R 13 E
25	30
36	31

GSM - STONE + 2"x2"x6'

The type of corner and end monuments are 2"x2"x6' ABOVE GROUND

6. The bearing and distance between the corners of the claim are beginning at the SOUTHWEST corner of the claim, 1500 feet in a NORTH 20° direction to the NORTHWEST corner,

*** CERTIFICATE OF RECORDING ***

SEAL OF PINAL COUNTY ARIZONA

STATE OF ARIZONA, COUNTY OF PINAL (SS)
I HEREBY CERTIFY THAT THE WITHIN INSTRUMENT WAS FILED FOR RECORD IN PINAL COUNTY, STATE OF ARIZONA. WITNESS MY HAND AND OFFICIAL SEAL.

NO: 651100 0900 23JUN80 FEE PAID $003.00 DKT/PAGE 1016-299

WILLIAM S. TRUMAN
PINAL COUNTY RECORDER, BY Lorraine Brumage .....DEPUTY

FROM: FRENCH, LAWRE TO: ELF #8 CLAIM 002 PAGES

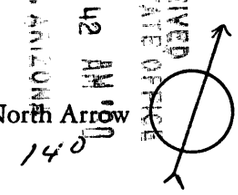
A MC 111099

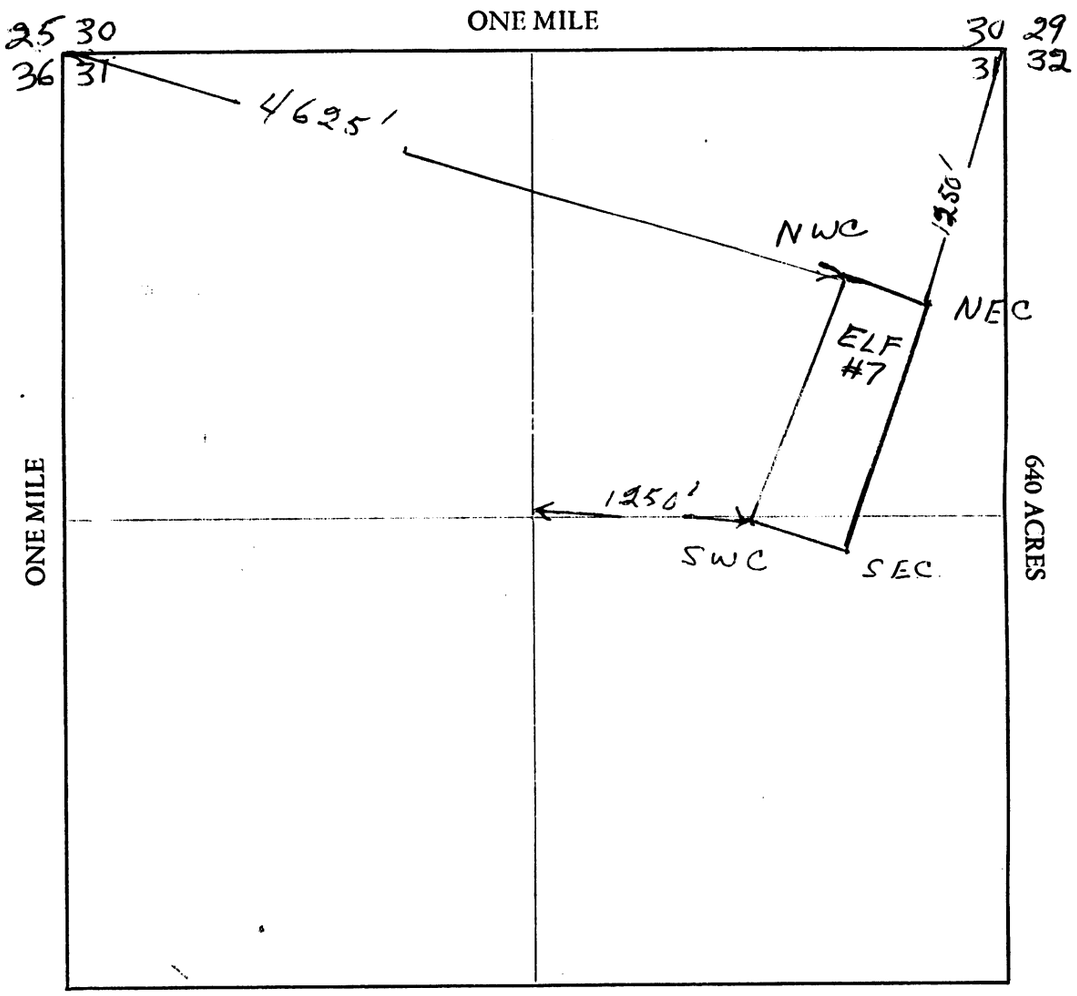
1016-298

MAP

One inch = One thousand feet

North Arrow





Section 31 Range 13 EAST Township 3 SOUTH, G&SRB&M

Date 6 - 14 - 1980

L.S.F.

Lawrence S. French

Signature

651099

1016-297

STATE OF ARIZONA, } ss.
County of _____

I hereby certify that the within instrument was filed and recorded _____, 19____, at _____M.

In Docket No. _____, Page _____, at the request of

Fee No.:

When recorded mail to:

Witness my hand and official seal.

County Recorder

By _____ Deputy Recorder

RECEIVED
BLM
AZ STATE OFFICE
SEP 9 11 12 AM '80
PHOENIX, ARIZONA
Fee: $

A MC 111099

MAP OF MINING CLAIM LOCATION

1. ☒ Location ☐ Amendment ☐ Relocation

2. ☐ Placer ☒ Lode ☐ Millsite ☐ Tunnelsite

3. The name of the claim is ELF#7

The name of the locator is LAWRENCE D. FRENCH

4. The location of the claim is in Section 31, Township 3 South, Range 13 EAST G&SRB&M, Copper Butte Mining District, PINAL County, Arizona.

The _____ corner of the claim is _____ feet in a _____ direction to a survey monument or permanent natural object described as _____

5. The type of Location monument is GSM - STONE & 2"x2"x6'

R12E | R13E
25 | 30
36 | 31

The type of corner and end monuments are 2"x2"x6' ABOVE GROUND

6. The bearing and distance between the corners of the claim are beginning at the SOUTHWEST corner of the claim, 1500 feet in a NORTH 26° direction to the NORTHWEST corner, [illegible] EAST direction to the NORTHEAST corner, then

*** CERTIFICATE OF RECORDING ***

STATE OF ARIZONA, COUNTY OF PINAL (SS)
I HEREBY CERTIFY THAT THE WITHIN INSTRUMENT WAS FILED FOR RECORD IN PINAL COUNTY, STATE OF ARIZONA. WITNESS MY HAND AND OFFICIAL SEAL.

NO: 651099 0900 23JUN80 FEE PAID $003.00 DKT/PAGE 1016-297

WILLIAM S. TRUMAN
PINAL COUNTY RECORDER, BY. Lorraine Burnaz .....DEPUTY

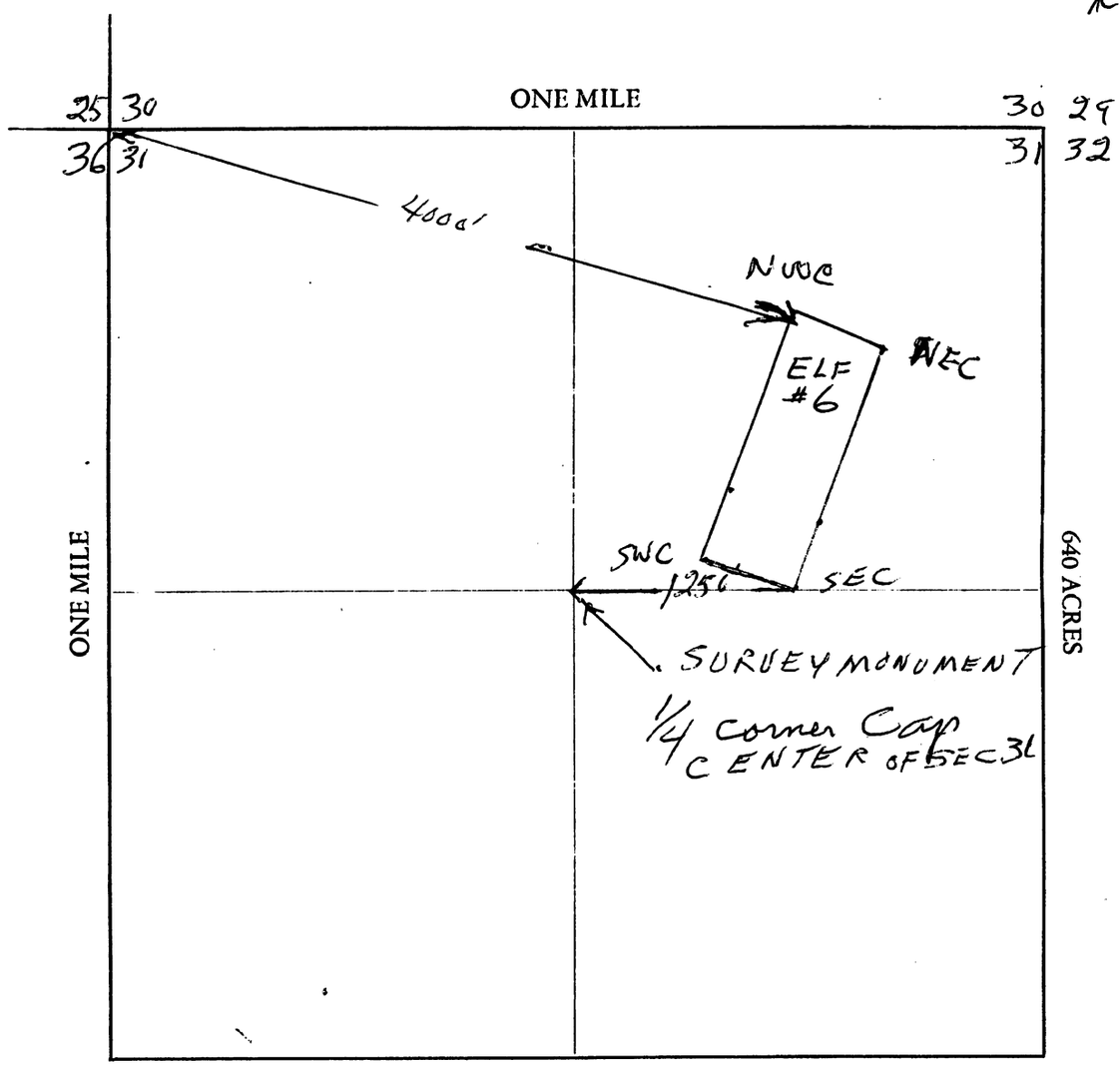
FROM: FRENCH, LAWRE TO: ELF #7 CLAIM 002 PAGES

A MC 111098 1016-296

MAP

One inch = One thousand feet

North Arrow
14°



Section 31 Range 13 EAST Township 3 South, G&SRB&M

Date 9-11-1980

L.D.S.

Lawrence D. French
Signature

(2) 3.00 1016-295 651098

STATE OF ARIZONA, } ss.
County of _____

I hereby certify that the within instrument was filed and recorded _____, 19____, at _____M.

In Docket No. _____, Page _____, at the request of _____

When recorded mail to:

Witness my hand and official seal.

_____ County Recorder

By _____ Deputy Recorder

Fee No.:

RECEIVED BLM AZ STATE OFFICE SEP 9 11 42 AM '80

FILED IN PINAL COUNTY, ARIZONA

12-1-80 WC

A MC 111098

MAP OF MINING CLAIM LOCATION

1. ☒ Location ☐ Amendment ☐ Relocation

2. ☐ Placer ☒ Lode ☐ Millsite ☐ Tunnelsite

3. The name of the claim is ELF #6

The name of the locator is LAWRENCE D. FRENCH

4. The location of the claim is in Section 31, Township 3 South, Range 13 EAST G&SRB&M, Copper Butte Mining District, PINAL County, Arizona. The NORTWEST corner of the claim is 4125 feet in a WESTERLY direction to a survey monument or permanent natural object described as _____

5. The type of Location monument is Lode 25'20 R 12E / R 13E 36 / 31 GSM - STONE 2x2x6' The type of corner and end monuments are 2"x2"x6' ABOVE GROUND

6. The bearing and distance between the corners of the claim are beginning at the SOUTH WEST corner of the claim, 1500 feet in a NORTH 20° direction to the NORTH WEST corner,

*** CERTIFICATE OF RECORDING ***

STATE OF ARIZONA, COUNTY OF PINAL (SS)
I HEREBY CERTIFY THAT THE WITHIN INSTRUMENT WAS FILED FOR RECORD IN PINAL COUNTY, STATE OF ARIZONA. WITNESS MY HAND AND OFFICIAL SEAL.

NO: 651098 0900 23JUN80 FEE PAID $003.00 DKT/PAGE 1016-295

WILLIAM S. TRUMAN
PINAL COUNTY RECORDER, BY.. Lorraine Brumage .....DEPUTY

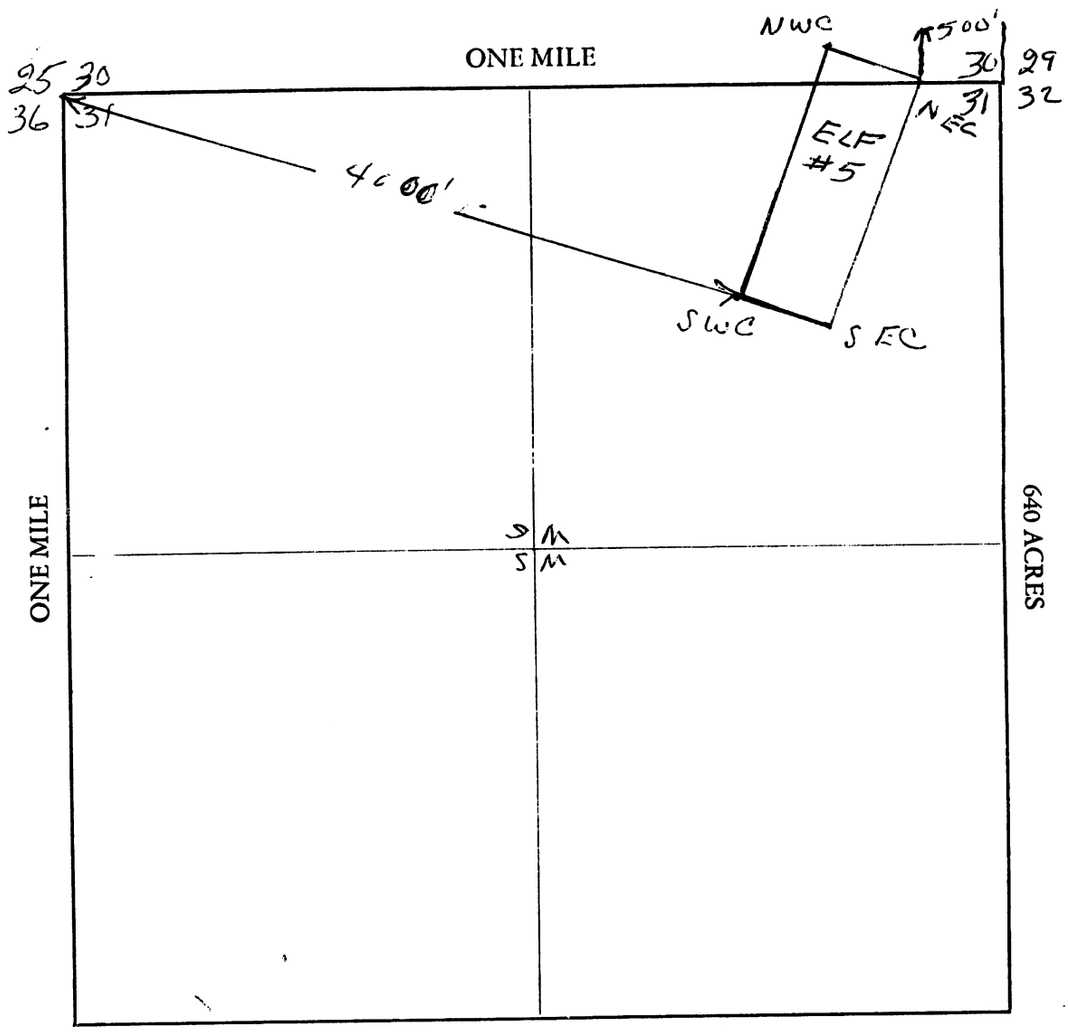
FROM: FRENCH, LAWRE TO: ELF #6 CLAIM 002 PAGES

A MC 111097 1016-294

MAP

One inch = One thousand feet

North Arrow
140



Section 31 Range 13 EAST Township 3 SOUTH, G&SRB&M

Date 6-11-1980
L.B.F

Lawrence McFrank
Signature

651097

1016-293

STATE OF ARIZONA, County of _____ } ss.

I hereby certify that the within instrument was filed and recorded _____, 19____, at _____M.

In Docket No. _____, Page _____, at the request of _____

Fee No.:

When recorded mail to:

Witness my hand and official seal.

_____ County Recorder

By _____ Deputy Recorder

SEP 9 11 49 AM '80

Fee: $

RECEIVED BLM AZ STATE OFFICE PHOENIX, ARIZONA

A MC 111097

MAP OF MINING CLAIM LOCATION

1. ☒ Location ☐ Amendment ☐ Relocation

2. ☐ Placer ☒ Lode ☐ Millsite ☐ Tunnelsite

3. The name of the claim is ELF #5

   The name of the locator is LAWRENCE B. FRENCH

4. The location of the claim is in Section 31, Township 3 South, Range 13 EAST G&SRB&M, Copper Butte Mining District, PINAL County, Arizona.

   The _____ corner of the claim is _____ feet in a _____ direction to a survey monument or permanent natural object described as _____

5. The type of Location monument is R13E / R13E: 25 / 30, 36 / 31 GSM - STONE 2'x 2'x 6'

   The type of corner and end monuments are 2'x 2'x 6' ABOVE GROUND

6. The bearing and distance between the corners of the claim are beginning at the SOUTH WEST corner of the claim, 1500 feet in a NORTH 26° direction to the NORTH WEST corner

*** CERTIFICATE OF RECORDING ***

STATE OF ARIZONA, COUNTY OF PINAL (SS)
I HEREBY CERTIFY THAT THE WITHIN INSTRUMENT WAS FILED FOR RECORD IN PINAL COUNTY, STATE OF ARIZONA. WITNESS MY HAND AND OFFICIAL SEAL.

NO: 651097 0900 23JUN80 FEE PAID $003.00 DKT/PAGE 1016-293

WILLIAM S. TRUMAN
PINAL COUNTY RECORDER, BY Lorraine Brumage .....DEPUTY

FROM: FRENCH, LAWRE TO: ELF #5 CLAIM 002 PAGES

A MC 111096

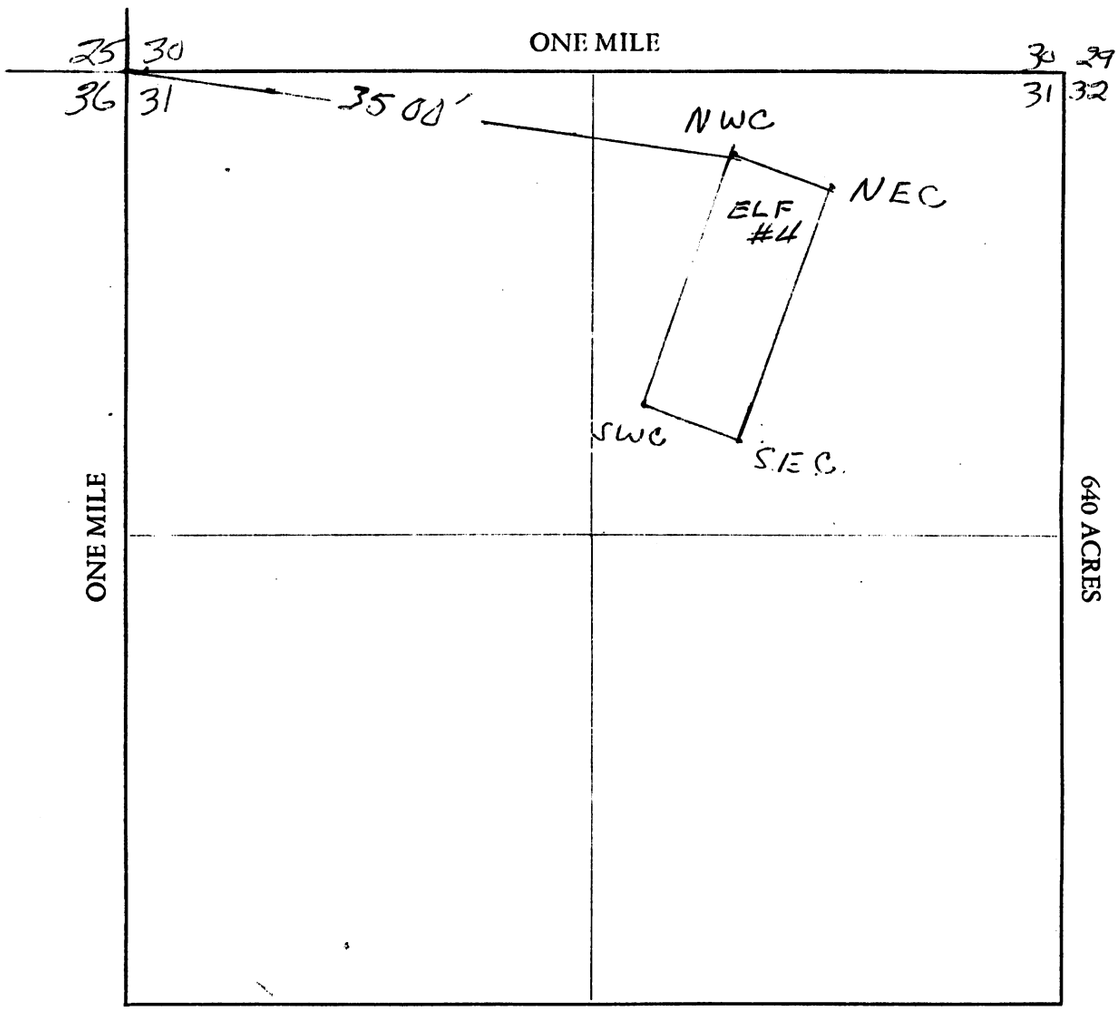
1016-292

RECEIVED
BLM
SEP 9 11 41 AM '86
PHOENIX, ARIZONA
STATE OFFICE

MAP

One inch = One thousand feet

North Arrow
14°



Section 31 Range 13 EAST Township 3 SOUTH, G&SRB&M

Date 6-12-1986
2.85

Lawrence D. French
Signature

1016-291 (6 30) 651096

STATE OF ARIZONA, County of _____ } ss.

I hereby certify that the within instrument was filed and recorded _____, 19____, at _____ M.

In Docket No. _____, Page _____, at the request of _____

Fee No.:

When recorded mail to:

Witness my hand and official seal.

_____ County Recorder

By _____ Deputy Recorder

RECEIVED AZ STATE OFFICE PHOENIX, ARIZONA SEP 9 11 41 AM '80 Fee: $

A MC 111096

MAP OF MINING CLAIM LOCATION

1. ☒ Location ☐ Amendment ☐ Relocation

2. ☐ Placer ☒ Lode ☐ Millsite ☐ Tunnelsite

3. The name of the claim is ELF #4

The name of the locator is LAWRENCE D. FRENCH

4. The location of the claim is in Section 31, Township 3 South, Range 13 EAST G&SRB&M, Copper Butte Mining District, PINAL County, Arizona. The N.W. CORNER corner of the claim is 3500 feet in a WEST direction to a survey monument or permanent natural object described as _____

5. The type of Location monument is R12E | R13E 25 | 30 36 | 31 GSM – STONE + 2"x2"x6' The type of corner and end monuments are 2" x 2" x 6' ABOVE GROUND

6. The bearing and distance between the corners of the claim are beginning at the SOUTH WEST corner of the claim, 1500 feet in a NORTH 20° direction to the NORTH WEST corner, [illegible] EAST direction to the NORTH EAST corner, then

*** CERTIFICATE OF RECORDING ***

STATE OF ARIZONA, COUNTY OF PINAL (SS)
I HEREBY CERTIFY THAT THE WITHIN INSTRUMENT WAS FILED FOR RECORD IN PINAL COUNTY, STATE OF ARIZONA. WITNESS MY HAND AND OFFICIAL SEAL.

NO: 651096 0900 23JUN80 FEE PAID $003.00 DKT/PAGE 1016-291

WILLIAM S. TRUMAN
PINAL COUNTY RECORDER, BY. Loraine Burnage .....DEPUTY

FROM: FRENCH, LAWRE TO: ELF #4 CLAIM 002 PAGES

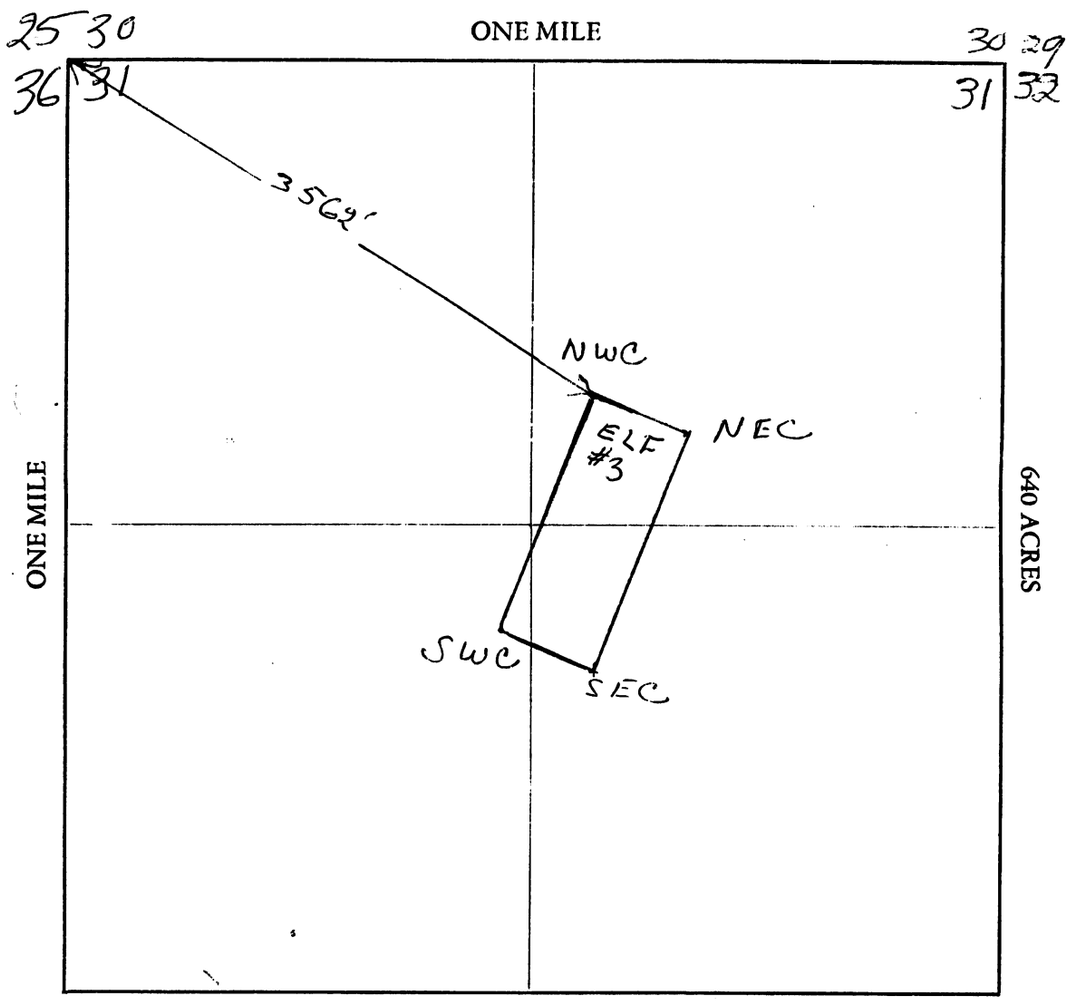
A MC 111095

1016-290

MAP

One inch = One thousand feet

North Arrow
14°



Section 31 Range 13 East Township 3 South, G&SRB&M

Date 6-12-1980
2.0.2.

Lawrence D. French
Signature

2 300 1016-289 651095

STATE OF ARIZONA, County of _____ } ss.

I hereby certify that the within instrument was filed and recorded _____, 19____, at _____ M.

In Docket No. _____, Page _____, at the request of _____

Fee No.: 12-1-80 120A MC 111095

When recorded mail to:

Witness my hand and official seal.

_____ County Recorder

By _____ Deputy Recorder

PINAL COUNTY, ARIZONA

RECEIVED BLM AZ STATE OFFICE SEP 6 11 41 AM '80

Fee: $

MAP OF MINING CLAIM LOCATION

1. ☒ Location ☐ Amendment ☐ Relocation

2. ☐ Placer ☒ Lode ☐ Millsite ☐ Tunnelsite

3. The name of the claim is ELF#3

The name of the locator is LAWRENCE D. FRENCH

4. The location of the claim is in Section 31, Township 3 South, Range 13EAST G&SRB&M, Copper Butte Mining District, PINAL County, Arizona.

The _____ corner of the claim is _____ feet in a _____ direction to a survey monument or permanent natural object described as _____

5. The type of Location monument is R12E | R13E / 25 | 30 / 36 | 31 GSM - STONE 12X12-6'

The type of corner and end monuments are 2X2 - 6 ABOVE GROUND

6. The bearing and distance between the corners of the claim are beginning at the SOUTHWEST corner of the claim, 1500 feet in a NORTH 20° direction to the NORTHWEST corner,

*** CERTIFICATE OF RECORDING ***

STATE OF ARIZONA, COUNTY OF PINAL (SS)
I HEREBY CERTIFY THAT THE WITHIN INSTRUMENT WAS FILED FOR RECORD IN PINAL COUNTY, STATE OF ARIZONA. WITNESS MY HAND AND OFFICIAL SEAL.

NO: 651095 0900 23JUN80 FEE PAID $003.00 DKT/PAGE 1016-289

WILLIAM S. TRUMAN
PINAL COUNTY RECORDER, BY. Loraine Brumage .....DEPUTY

FROM: FRENCH, LAWRE TO: ELF #3 CLAIM 002 PAGES

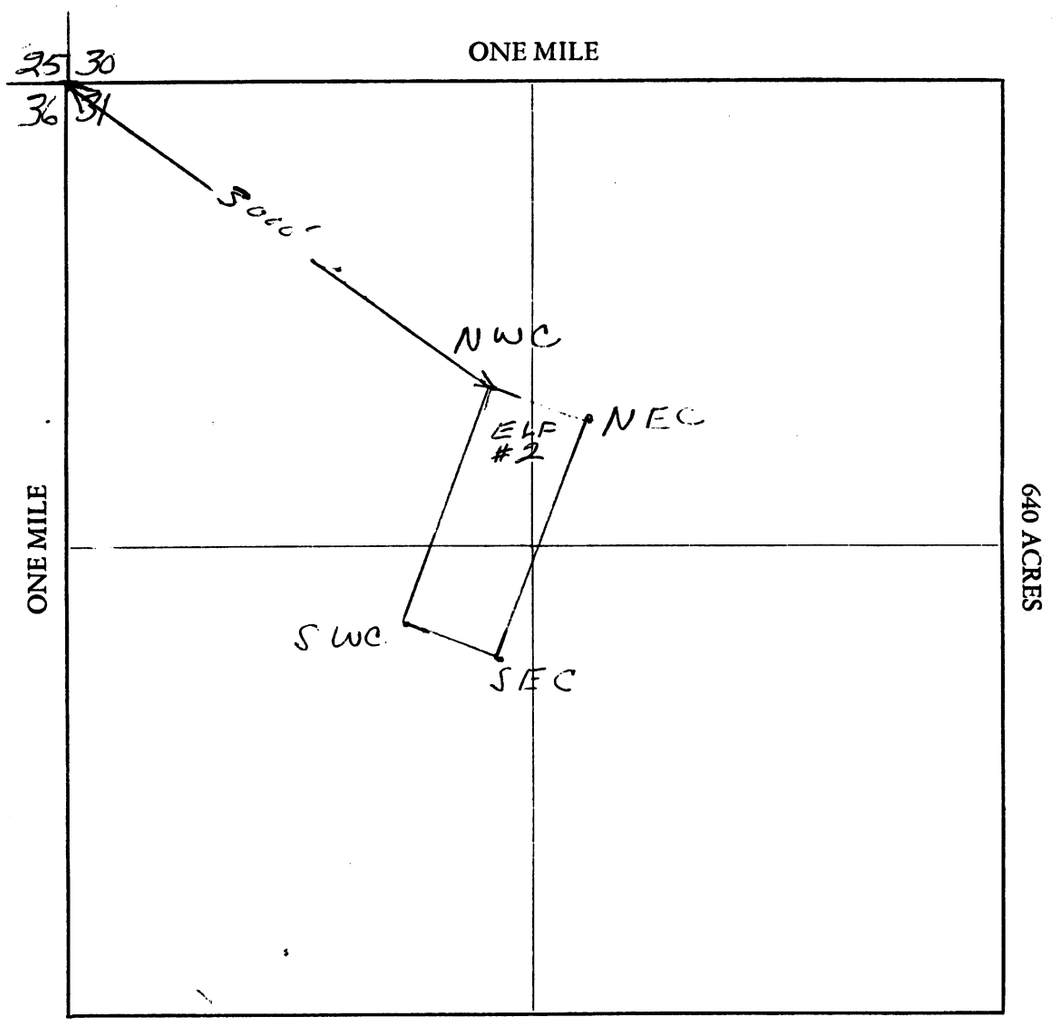
A MC 111094

1016-288

MAP

One inch = One thousand feet

North Arrow 14°



Section 31 Range 13 EAST Township 3 SOUTH, G&SRB&M

Date 6-12-1980

L.D.F.

Lawrence D. Frank

Signature

1016-287 300 651094

STATE OF ARIZONA, County of _____ } ss.

I hereby certify that the within instrument was filed and recorded _____, 19____, at _____ M.

In Docket No. _____, Page _____, at the request of _____

Fee No.:

When recorded mail to:

Witness my hand and official seal.

_____ County Recorder

By _____ Deputy Recorder

RECEIVED AT STATE OFFICE PHOENIX, ARIZONA SEP 9 1 41 PM '80

Fee: $

MAP OF MINING CLAIM LOCATION

A NC 111094

1. ☒ Location ☐ Amendment ☐ Relocation

2. ☐ Placer ☒ Lode ☐ Millsite ☐ Tunnelsite

3. The name of the claim is ELF #2

The name of the locator is LAWRENCE D. FRENCH

4. The location of the claim is in Section 31, Township 3 SOUTH, Range 13 EAST G&SRB&M, COPPER BUTTE Mining District, PINAL County, Arizona. The N.W. CORNER corner of the claim is 3000 feet in a N.WEST direction to a survey monument or permanent natural object described as _____

5. The type of Location monument is

R 12E	R13E
25	30
36	31

GSM - STONE 4 2"x2"x6'

The type of corner and end monuments are 2x2x6' ABOVE GROUND

6. The bearing and distance between the corners of the claim are beginning at the SOUTHWEST corner of the claim, 1500 feet in a NORTH 26° direction to the NORTHWEST

*** CERTIFICATE OF RECORDING ***

STATE OF ARIZONA, COUNTY OF PINAL (SS)
I HEREBY CERTIFY THAT THE WITHIN INSTRUMENT WAS FILED FOR RECORD IN PINAL COUNTY, STATE OF ARIZONA. WITNESS MY HAND AND OFFICIAL SEAL.

NO: 651094 0900 23JUN80 FEE PAID $003.00 DKT/PAGE 1016-287

WILLIAM S. TRUMAN
PINAL COUNTY RECORDER, BY.. Lorraine Burnash ....DEPUTY

FROM: FRENCH, LAWRE TO: ELF #2 CLAIM 002 PAGES

SEAL OF PINAL COUNTY ARIZONA 1875

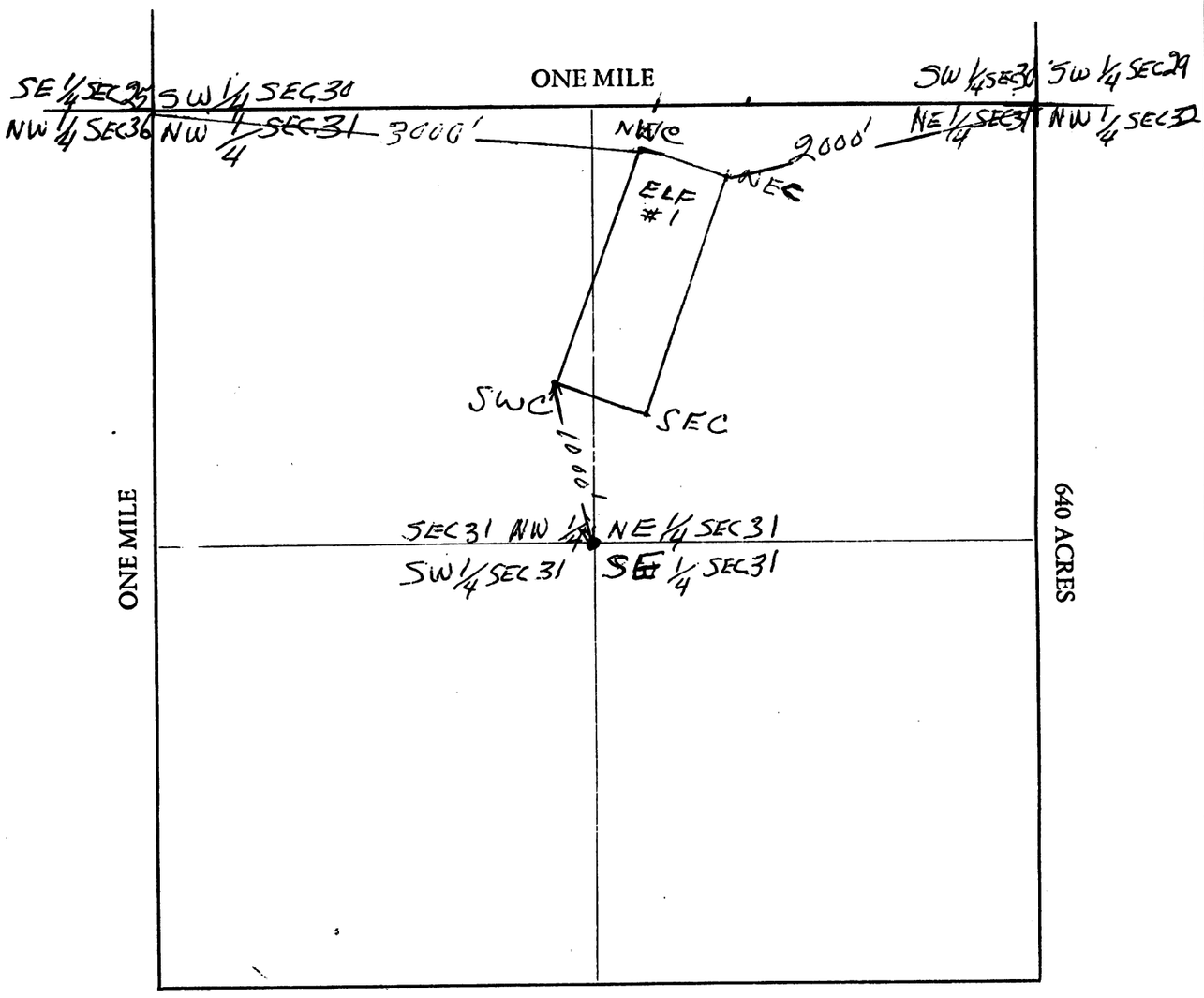
A MC 111093

1016-286

MAP

One inch = One thousand feet

North Arrow



Section 31 Range 13 EAST Township 3 SOUTH, G&SRB&M

Date 6-12-1980
L.D.F.

Lawrence D. French
Signature

A MC 111093

L D FRENCH
P O BOX 2132
GRASS VALLEY, CA 95945

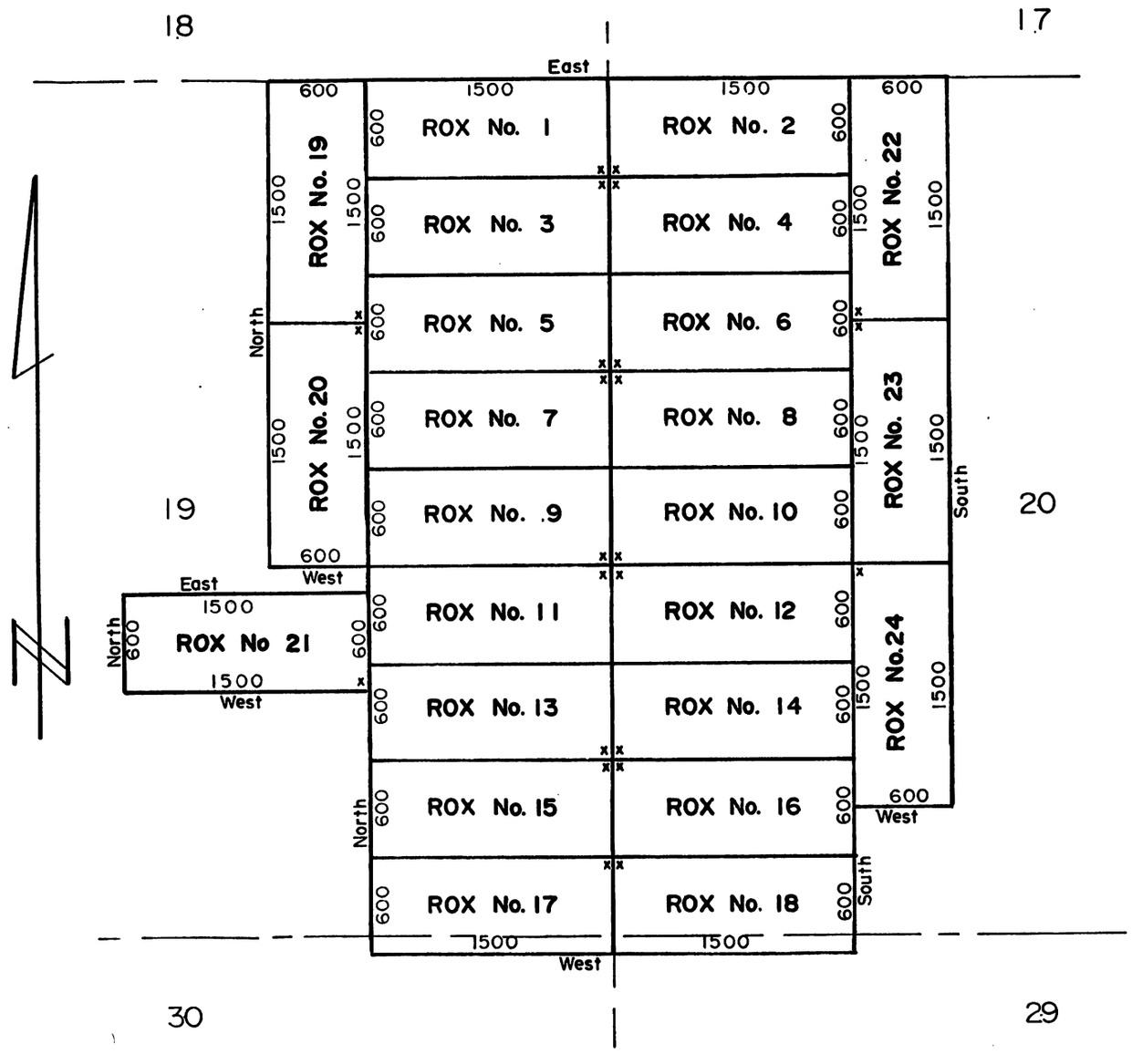
ZIP95954

RECEIVED
SEP 9 11 42 AM '80
PHOENIX, ARIZONA

DATE: 08/05/80

THE FOLLOWING RECORDED INSTRUMENTS ARE HEREWITH RETURNED TO YOU BY WILLIAM S. TRUMAN, PINAL COUNTY RECORDER:

FEE #	TIME/DATE RECORDED	CAPTION	A/CC	FROM	TO
651093	0900 23/JUN/80	CLAIM	0	FRENCH, LAWRE	ELF #1
651094	0900 23/JUN/80	CLAIM	0	FRENCH, LAWRE	ELF #2
651095	0900 23/JUN/80	CLAIM	0	FRENCH, LAWRE	ELF #3
651096	0900 23/JUN/80	CLAIM	0	FRENCH, LAWRE	ELF #4
651097	0900 23/JUN/80	CLAIM	0	FRENCH, LAWRE	ELF #5
651098	0900 23/JUN/80	CLAIM	0	FRENCH, LAWRE	ELF #6
651099	0900 23/JUN/80	CLAIM	0	FRENCH, LAWRE	ELF #7
651100	0900 23/JUN/80	CLAIM	0	FRENCH, LAWRE	ELF #7



MINING CLAIMS

OF

KENNECOTT COPPER COMPANY

Ray Mines Division
P. O. Box 8
Hayden, Arizona 85235

KNOWN AS

ROX Nos. 1 - 24 lodes

SITUATE IN

Secs. 19, 20, 29 & 30, T. 3 S., R. 13 E., G.& S.R.M.
Mineral Creek Mining District
PINAL County Arizona

scale 1" - 1000' **May 7, 1986**

NOTE: x - denotes location monuments. All monuments are 2"x 2" x 4'6" wood posts.

GARY

MAY 16 1990

05/14/90

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: COPPER BUTTE

ALTERNATE NAMES:
WALLACE SHAFT
JUNE BUG
COCHISE
OLD FRED MITCHELL PROPERTY
JAMES INCLINE
POOR MAND WASH PROPERTY

PINAL COUNTY MILS NUMBER: 172

LOCATION: TOWNSHIP 3 S RANGE 13 E SECTION 30 QUARTER N2
LATITUDE: N 33DEG 08MIN 54SEC LONGITUDE: W 111DEG 03MIN 44SEC
TOPO MAP NAME: TEAPOT MTN - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
COPPER
SILICON
SILVER
GOLD

BIBLIOGRAPHY:
BLM MINING DISTRICT SHEET 636 MS 2602
CLAIMS EXTEND INTO SEC. 19
ADMMR COPPER BUTTE MINE FILE
PHELPS, HARLOW A., EXPORATION OF THE COPPER BUTTE MINE MINERAL CREEK MINING DISTRICT PINAL CO., AZ. USBM RI 3914, 1946
WEED, WALTER H. MINES HNDBK. 1916, 391-392
ADMMR U FILE

EXECUTIVE SUMMARY

White Canyon -- AZ-02-187

WSA Acreage 6,968 Acres

BLM Proposal - No Wilderness

Acres suitable	0
Not suitable	6,968
Private mineral rights	0
Private land	0
Active mining claims	419

The Bureau of Land Management's Final Environmental Impact Study recommended no wilderness for the White Canyon area.

Location

The White Canyon WSA is located approximately 5 miles west of the mining complex at Ray, Arizona, and within the Arizona porphyry copper belt.

Mineral Potential

Three major copper deposits, the Copper Butte, Buckeye East and Buckeye West are currently under development along the southern boundary of this WSA. Proven economic copper ore reserves at the Copper Butte deposit are 22 million tons. Proven reserves at the Buckeye East deposit are 20 million tons with a potential resource of 40 million tons. Copper reserves in the Buckeye West deposit are currently being assessed. These deposits are located within eight patented and 190 unpatented mining claims held by ASARCO Incorporated. Other mining companies have 81 claims located within the WSA.

Copper mineralization occurs on the surface and in drill holes throughout the WSA. All indications are that the WSA contains favorable exploration targets.

If the White Canyon WSA is designated a wilderness area, significant mineral resources and favorable exploration targets will be lost.

AMA Recommendation

The Arizona Mining Association supports the BLM recommendation of no wilderness for the White Canyon WSA and recommends that the area be released for multiple-use management.

In addition to the mapped locations of mines and prospects within and near the White Canyon WSA which the AMA has identified as very high mineral potential, the area should be returned to multiple-use for the following reasons:

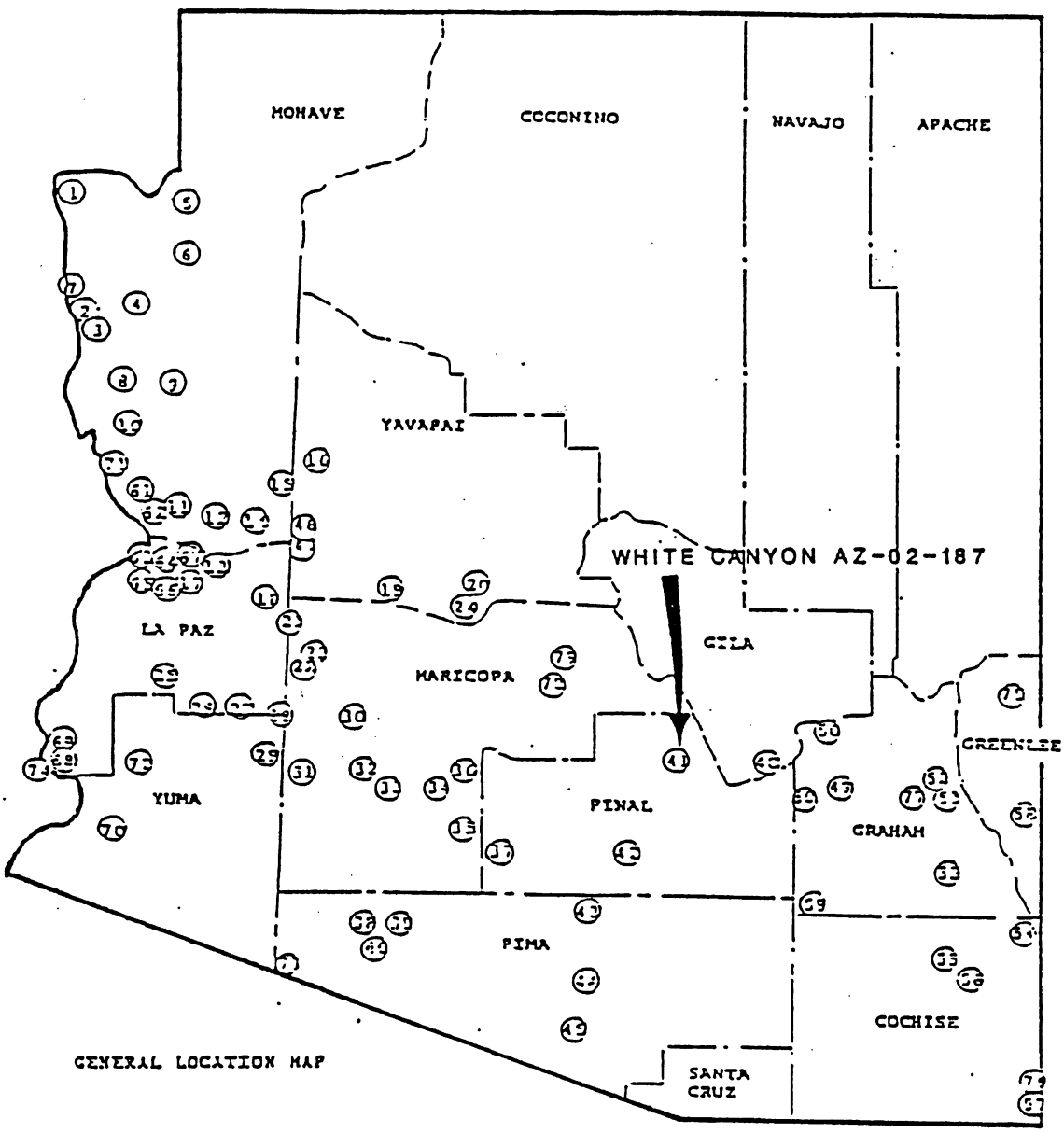
1. The unit occurs within the highly mineralized copper and precious metal zones of Arizona.

2. The unit occurs within the significant Metallic Mineral Districts of Arizona as defined by the Arizona Bureau of Geology and Mineral Technology.

Arizona Mining Association's Mineral Rating

White Canyon (02-187)

VERY HIGH MINERAL RATING



WHITE CANYON AZ-02-187

Introduction

The White Canyon WSA is located on the most favorable geologic trend for the discovery of economic mineral deposits in the state of Arizona. It is unfortunate that the forces that combine to make scenic areas are the same which create economic mineral deposits. Like the need for wilderness, the need for a viable mineral industry is paramount to maintaining the future of this free land. Reserves at the existing copper mines will be depleted within 50 to 75 years. Future generations need access to the deeper and as yet undiscovered deposits which will supply them with copper.

Two mineral deposits which have been discovered by industry exploration efforts and will be developed into mines are located along the southern bounday of the WSA. Evidence of mineralization has also been found within the WSA. Noise of mining, barren rock dumps, roads, and activity at the developing mines, as well as at the existing Ray Mine, will be easily sensed from within the WSA.

As stated in the BLM Phoenix District Final Environmental Statement, "Nondesignation would allow development of the WSA's extensive copper deposits. Development of these copper deposits is expected to result in a large scale copper mine described as world class. Development of this mine would provide needed jobs and income to the local economy.

The proven copper ore deposits along the southern edge of the BLM White Canyon WSA are located within eight (8) patented and 190 unpatented mining claims held by Asarco Incorporated. Other mining companies have 81 mining claims within the WSA. Location of the WSA, mineral deposits, mining claims, exploration holes, and planned open pits are shown on Figure 1. Additional roads and diamond drill holes within the WSA are also shown. Copper Butte and Buckeye East are the deposits drilled well enough to plan mining operations. Buckeye West is an area where wide spaced drilling indicates extensive sulfide mineralization.

This document presents site specific information on the mineral deposits and mineral potential of the WSA. Proven and potential deposits demonstrate the significance of the White Canyon WSA to the future mineral self sufficiency of our nation.

Although federal land management regulations recognize valid existing mineral rights within and near wilderness areas, the additional requirements of operating within or near a designated wilderness area completely alter the economics of mineral deposits and can regulate previously viable ore bodies out of existence. Wilderness designation also precludes exploration for mineral deposits. Thus, hidden deposits which may exist but are merely awaiting technological advances in exploration techniques to become apparent to the prospector will not be found if the area is designated as wilderness.

Geologic Description

General Geology

The White Canyon WSA is a region of complex geology, only a brief outline of which is presented here. The reader is referred to the comprehensive geological articles listed in the bibliography for a more complete geological understanding. Most of the geological units favorable for the development of mineral deposits are covered by younger unmineralized rock.

Precambrian Age

Pinal Schist

Pinal schist is the oldest rock type in the WSA. It is of older Precambrian Age and is a strongly foliated metasedimentary rock exposed as exhumed hills on the east edge of the study area. This unit which hosts much of the mineralization at the Ray deposit is the basal rock beneath most of the WSA as evidenced by numerous diamond drill holes which bottom in this formation, and the basement rocks exposed in windows through the more recent formations. Unaltered and unmineralized Pinal schist is a gray-green chlorite, muscovite schist.

Ruin Granite

Ruin Granite is a coarse-grained porphyritic rock of older Precambrian age intruded into Pinal schist. The boundary between Pinal schist and a major body of Ruin Granite extends from the Gila River at the southwest of the WSA to the Ray deposit. This contact probably controlled the location of the igneous intrusive rocks which generated the Ray copper deposit and is a prime zone along which to hunt for other mineral deposits.

Apache Group

Rocks of the Apache group outcrop as steeply dipping sedimentary beds intruded by diabase dikes and sills along the northern edge of the WSA. These units also host much of the mineralization in the Ray Mine. Faulting and folding have prepared them for mineralization.

Paleozoic Rocks

Paleozoic rocks outcrop with the Apache group rocks along the northern edge of the WSA. Most of these units are limestone which is an excellent host for mineralization. Extensive limestone replacement deposits exist in the Magma mine at nearby Superior.

Tertiary Rocks

Granite Mountain Porphyry

The Granite Mountain Porphyry is exposed along the eastern edge of the WSA and in several drill holes. This biotite quartz granodiorite with a coarse crystalline, granitoid texture is felt to be the igneous intrusion which created the hydrothermal system responsible for deposition of the Ray deposit. Hydrothermal quartz-pyrite veins are present at the intrusive contact with Pinal schist. A copper deposit was generated on the east edge of this intrusion. The other peripheral areas remain unexplored. More work is needed to fully explore this potential.

Whitetail Conglomerate

After intrusion of the Granite Mountain Porphyry, 61 - 63 million years ago, erosion began wearing away the mountains. A canyon with at least 2000 feet of relief was cut beneath the Copper Butte, Buckeye East and Buckeye West areas.

This canyon filled with conglomerate during mid-tertiary time, 33 to 21 million years ago. A part of the conglomerate fill was debris flows of mineralized and partially oxidized, leached capping and secondary enrichment blanket from a nearby porphyry copper system. The only known deposit is the Ray deposit some four miles away. It is reasonable to expect that a sulfide deposit exists closer to the exotic copper deposit, probably to the north.

Following the filling of the canyon with Whitetail conglomerate, normal Basin and Range type faulting offset various portions of the Whitetail Conglomerate Basin. Tilting of the individual basins in the typical east side down fashion accompanied the faulting. The fault block furthest to the east, stretching from the Ray deposit to the Copper Butte deposit, was rotated and elevated and the Whitetail conglomerate eroded away. Copper Butte rests on the remains of the smallest fault block. Buckeye East is in the adjacent block and is offset between 1000 and 1500 feet by faulting. Another offset basin exists to the west of the Buckeye West deposits.

Apache Leap Tuff

Faulting, erosion and deposition left a rugged surface in the area. Onto the surface the Apache Leap Tuff was deposited by massive volcanic eruptions of ash and tuff. This material fell as a hot glowing cloud upon the surface and individual pieces were welded by the retained heat into a relatively dense rock. The Apache Leap Tuff is up to 1500 feet thick, covering the northern portion of the WSA.

Gila Conglomerate (Big Dome Formation)

Following deposition of the Apache Leap Tuff, erosion and deposition resumed. Deposition of the Big Dome Conglomerate was restricted to the lowlying basins with thicknesses varying from 0 to 1000 feet. Normal faulting continued during deposition resulting in several landslide blocks of older rocks.

Rhyolite Tuff

The youngest major geologic unit still remaining is rhyolite tuff. This formation lies with angular unconformity on all of the older units. Thickness varies from 0 to 400 feet. The tuff is a series of air fall volcanic ash units of rhyolite composition. Uplift and erosion have been the major geologic forces at work during the past 10 million years.

Mineral Potential

Copper Butte Deposit

The small inactive mine workings at Copper Butte represent only the fringe of the deposit. A map of the diamond drill holes, pit outline and ore zone is shown as Figure 2. This is a copper deposit which will yield much copper to the economy of our country. Asarco, Incorporated is going ahead with plans, laid years ago, to immediately place this mine into production.

Origin of the copper within the Copper Butte deposit is debris flows which came off of a combined leached-capping, secondary enrichment blanket into the Whitetail conglomerate basin. Following deposition of these debris flows which consisted almost totally of mineralized Pinal schist, the contained copper was mobilized by acid generated from residual pyrite within the mineralized rock. Groundwater moved the copper out of the mineralized rock into adjacent rocks with contained acid neutralizing minerals. The copper dropped out at the sites of neutralization and formed an exotic copper deposit. Exotic copper deposits are those formed by copper moved from the original site to a second site by mechanical (debris flow) and/or chemical (acid groundwater) means.

Proven mineable reserves at Copper Butte are 22,000,000 tons with a grade of 1.09 percent copper or 240,000 tons of contained copper. Because the contained copper occurs as oxide and silicate minerals, recovery of copper from these minerals is by the leaching process. Leaching and electrowinning do not require smelting to recover nearly pure copper.

Buckeye East is the faulted and folded continuation of the Copper Butte deposit. The debris flows probably thinned and narrowed as they continued down the canyon. Buckeye East is more constrained within the old canyon bottom. Proven tonnage and grade of mineralization is 20,000,000 tons at 0.65 percent copper (Figure 3). Projections of indicated reserves of that much more mineralized rock give a potential resource of 40,000,000 tons.

250,000 tons Cu

Buckeye West exhibits sulfide enrichment in Pinal schist. This resource covers a large area and is one of the reasons for the speculation that a world class porphyry copper deposition may exist in the covered rocks to the north of the canyon cut into the older rocks. Figure 1 shows the location of sulfide mineralization found in the bedrock beneath the gravels. This mineralization is secondary enrichment of copper within a large low grade system. Location of the higher grade center is not known. This is to be a major emphasis of exploration in the area in the future.

Mineralization Within the WSA

Mineralization consisting of copper is indicated throughout the WSA. Success in finding the large deposit which is felt to be present has not materialized. Active exploration was stopped in the main body of the WSA by the regulations related to wilderness study. Exploration at a slower pace than previously conducted was forced upon the mining companies by the recently ended depression of copper prices. Assessment work requirements of 100 dollars per year per claim caused most mining companies, already strapped for cash, to drop blocks of mining claims they would have liked to have kept valid. Only the most favorable deposits were retained. Thus, the proven mineral resources along the southern edge of the WSA were retained. The search for a large deposit was put on the back burner.

Evidence for the large deposit consists of:

1. Mineralized rock found in small areas where erosion has removed the post-mineral cover. These areas are mostly in Pinal schist and are found along the Gila River at the old Cochran area and on the east and west edges of the WSA.

2. Pebbles and cobbles of mineralized rock of types not found at the Ray mine discovered while conducting geological mapping of the conglomerates which eroded off the highlands now covered by volcanic rock.

3. Sulfide mineralization found in several diamond drill holes drilled near the WSA. Asarco Incorporated does not have all the results from holes drilled by competitors, but evidence is available to encourage further exploration.

These evidences have been favorable enough for several mining companies to expend sizeable sums of money in making geological and geophysical surveys, building roads in rough terrain, and drilling diamond drill holes. Unfortunately, geologists cannot see through rocks any better than the next man. They must deal with scientific projection, not certainties. Geophysical methods are not overly effective at "seeing" through rock such as the post-mineral rocks of the WSA. The only way to be sure is to drill expensive holes at the most logical and favorable sites. Thus far, the results have been encouraging but not definitive. Exploration has found mineralization in the covered areas. This

mineralization is evidence enough to convince the mining companies that a large deposit may exist.

Recommendations

Mineable minerals are extremely rare and randomly distributed in nature. Extensive exploration is necessary to locate and define deposits and their potential for economic development. The same geologic forces that create areas suitable as wilderness are also responsible for the formation of ore deposits.

White Canyon WSA has a very high potential for the discovery of a large economic mineral deposit. This potential is sufficient to retain the area in a multiple use classification. If the planned exploration is successful, the mineral potential will be wisely utilized. Wise utilization of all our nation's resources is essential to keeping the nation we love strong, and the standard of living we enjoy high. White Canyon should not be designated as wilderness in whole or in part, but should be released to multiple use for all the citizens to use not just the small group of people who have the time, money, and health to visit the wilderness.

Proposed Expansion of The White Canyon WSA

Some groups are advocating that the area of proposed wilderness be expanded into Tonto National Forest land which borders the White Canyon WSA to the north. Size of the proposed wilderness is enlarged from 6,968 acres to 16,464 acres. This is an increase to two and one-third times the original. All the statements made concerning the mineral potential of the WSA apply to the expanded area. Presence of mineralization and a high mineral potential is attested to by 206 unpatented mining claims held by twelve (12) individuals, partnerships, and corporations located in the proposed expansion area. The number of mining claims per section is shown in Figure 5. Enlargement of the proposed wilderness is rigorously opposed by the Arizona Mining Association and all the affected parties.

References

Asarco Incorporated file reports.

Bear Creek Mining Company file reports.

Creasey, S. C., Peterson, D. W. and Gambell, N. A., 1983, Geologic Map of the Teaport Mountain Quadrangle, Pinal County, Arizona, U.S. Geological Survey Map GQ 1559.

Keith, W. J. and Theodore, T. G., 1979, Tertiary Volcanic Rocks of the Mineral Mountain and Teapot Mountain Quadrangles, Pinal County, Arizona, U.S. Geological Survey Open-file Report 79-716, P. 10-11.

Kennecott Copper Corporation file reports.

Kennecott Exploration Services file reports.

Phelps, H. D., 1946, Exploration of the Copper Butte Mineral Creek Mining District, Pinal County, U. S. Bureau of Mines, R.I. 3914.

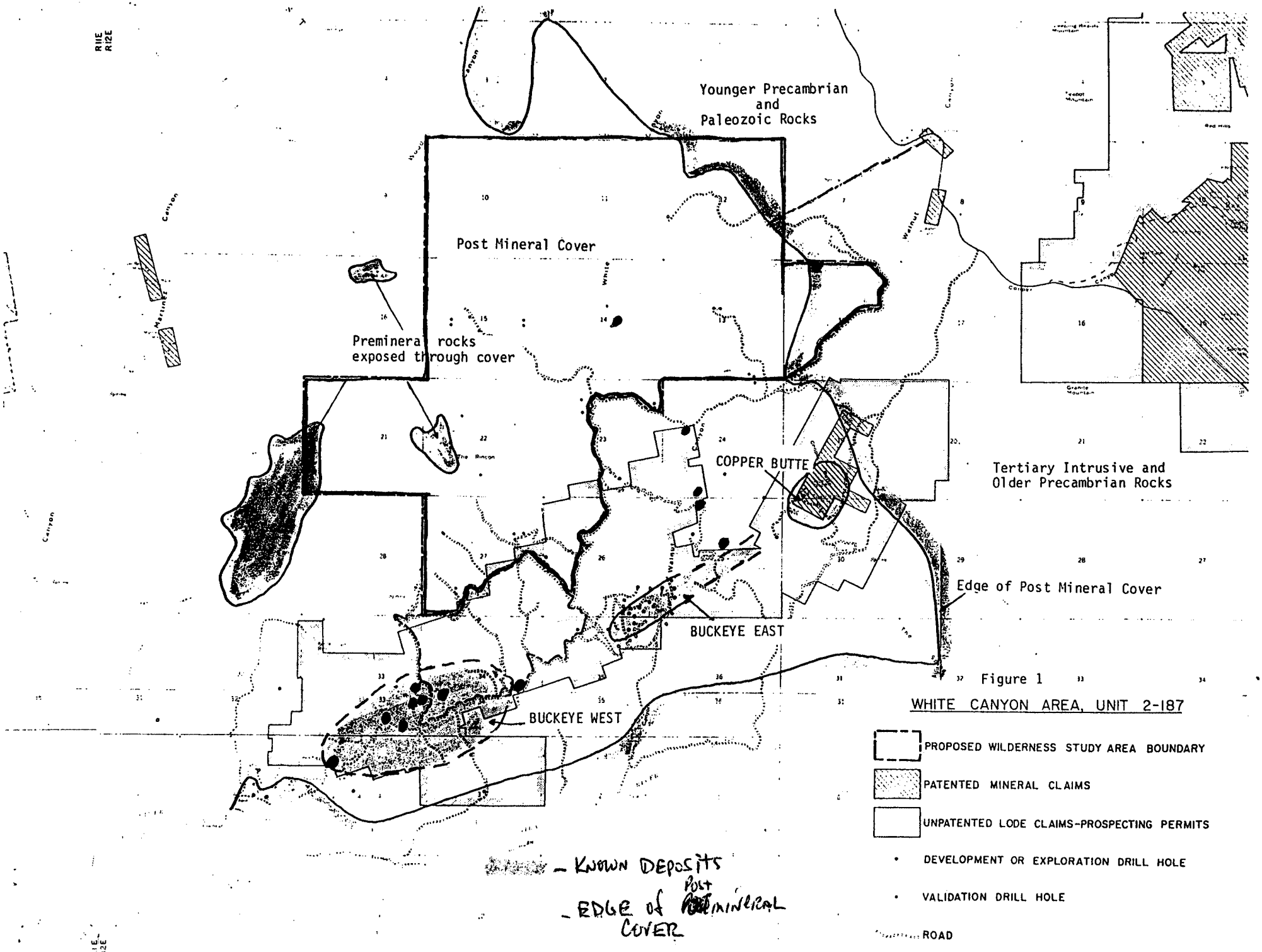
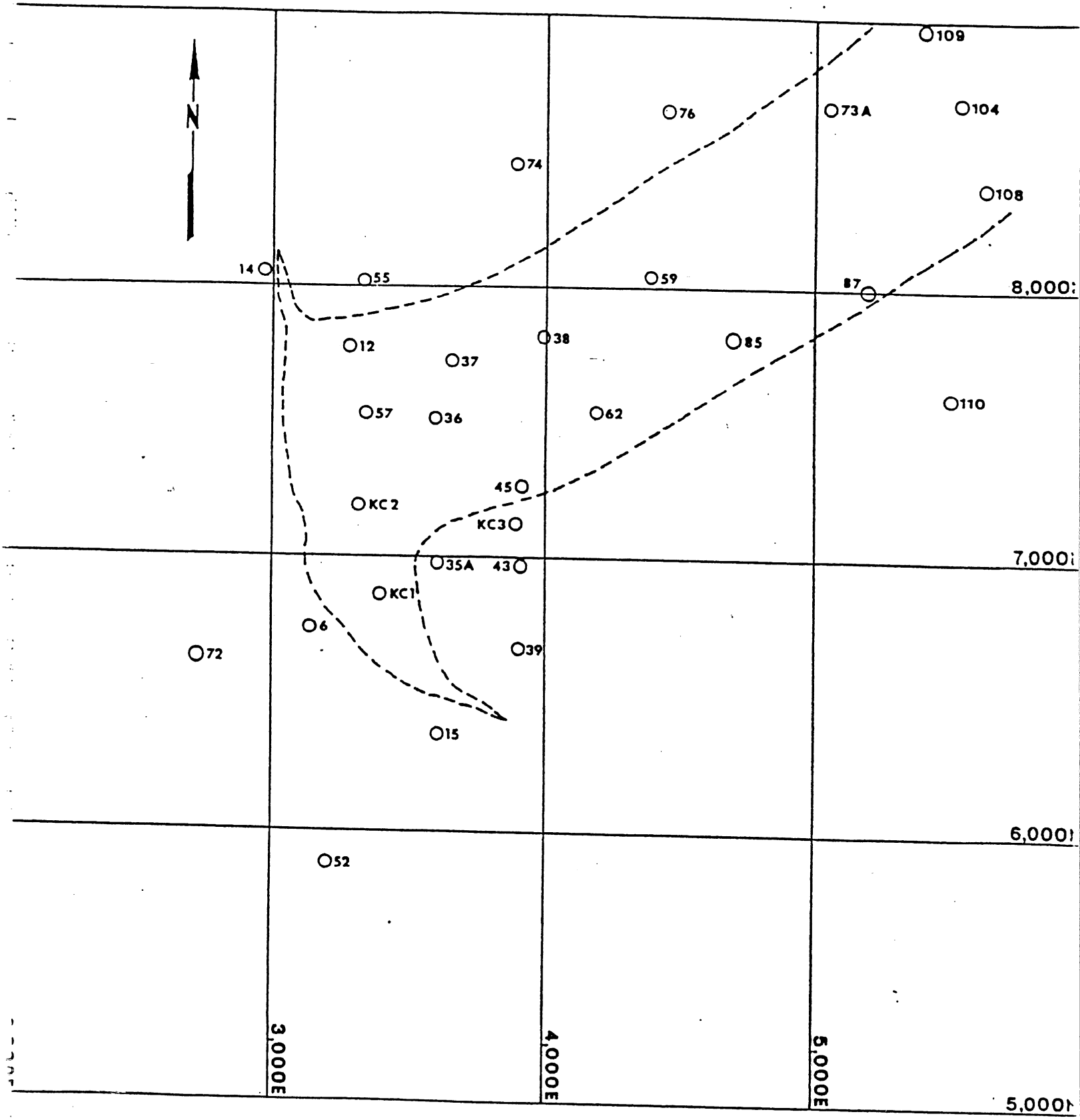
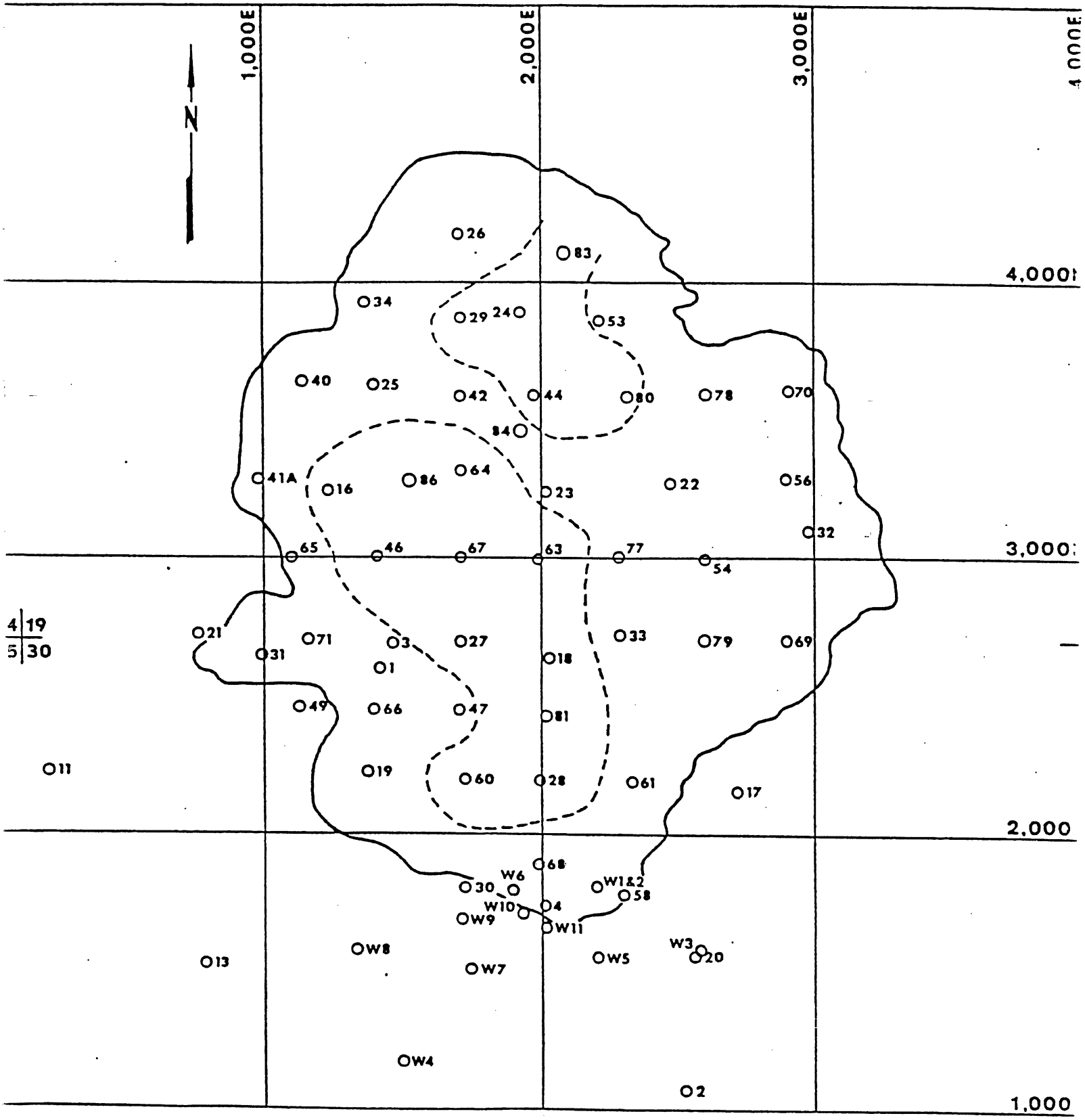

R11E
R12E
Younger Precambrian
and
Paleozoic Rocks
Post Mineral Cover
Preminera rocks
exposed through cover
COPPER BUTTE
Tertiary Intrusive and
Older Precambrian Rocks
Edge of Post Mineral Cover
BUCKEYE EAST
BUCKEYE WEST
- KNOWN DEPOSITS
- EDGE of Post MINERAL COVER
WHITE CANYON AREA, UNIT 2-187
PROPOSED WILDERNESS STUDY AREA BOUNDARY
PATENTED MINERAL CLAIMS
UNPATENTED LODE CLAIMS-PROSPECTING PERMITS
DEVELOPMENT OR EXPLORATION DRILL HOLE
VALIDATION DRILL HOLE
ROAD

Figure 1



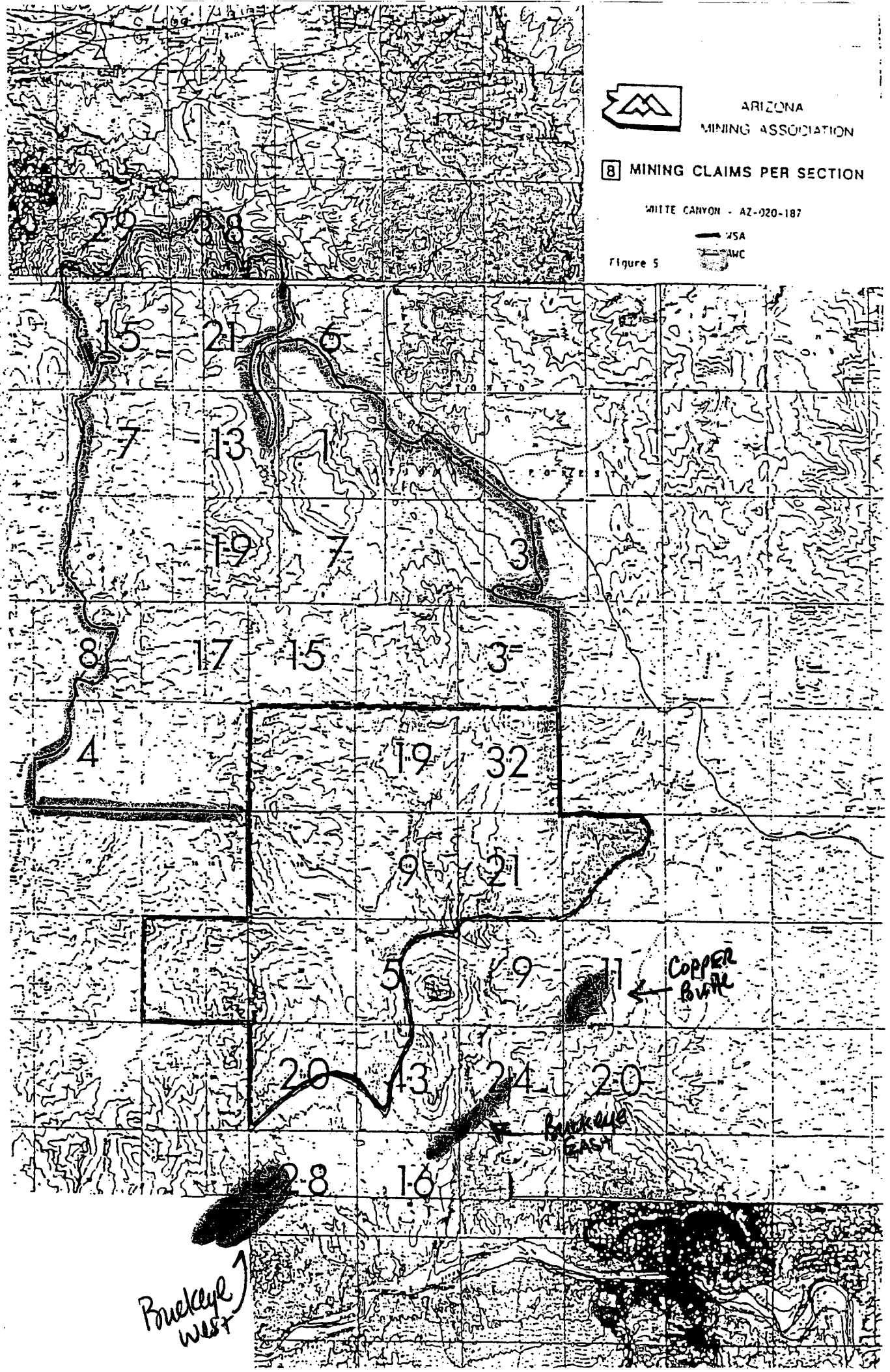
BUCKEYE EAST

O DRILL HOLE



COPPER BUTTE

O DRILL HOLE


ARIZONA
MINING ASSOCIATION
8 MINING CLAIMS PER SECTION
WHITE CANYON - AZ-020-187
WSA
AMC
Figure 5
29
28
15
21
6
7
13
1
19
7
3
8
17
15
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4
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COPPER BUTTE
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BUCKEYE EAST
28
16
Buckeye West

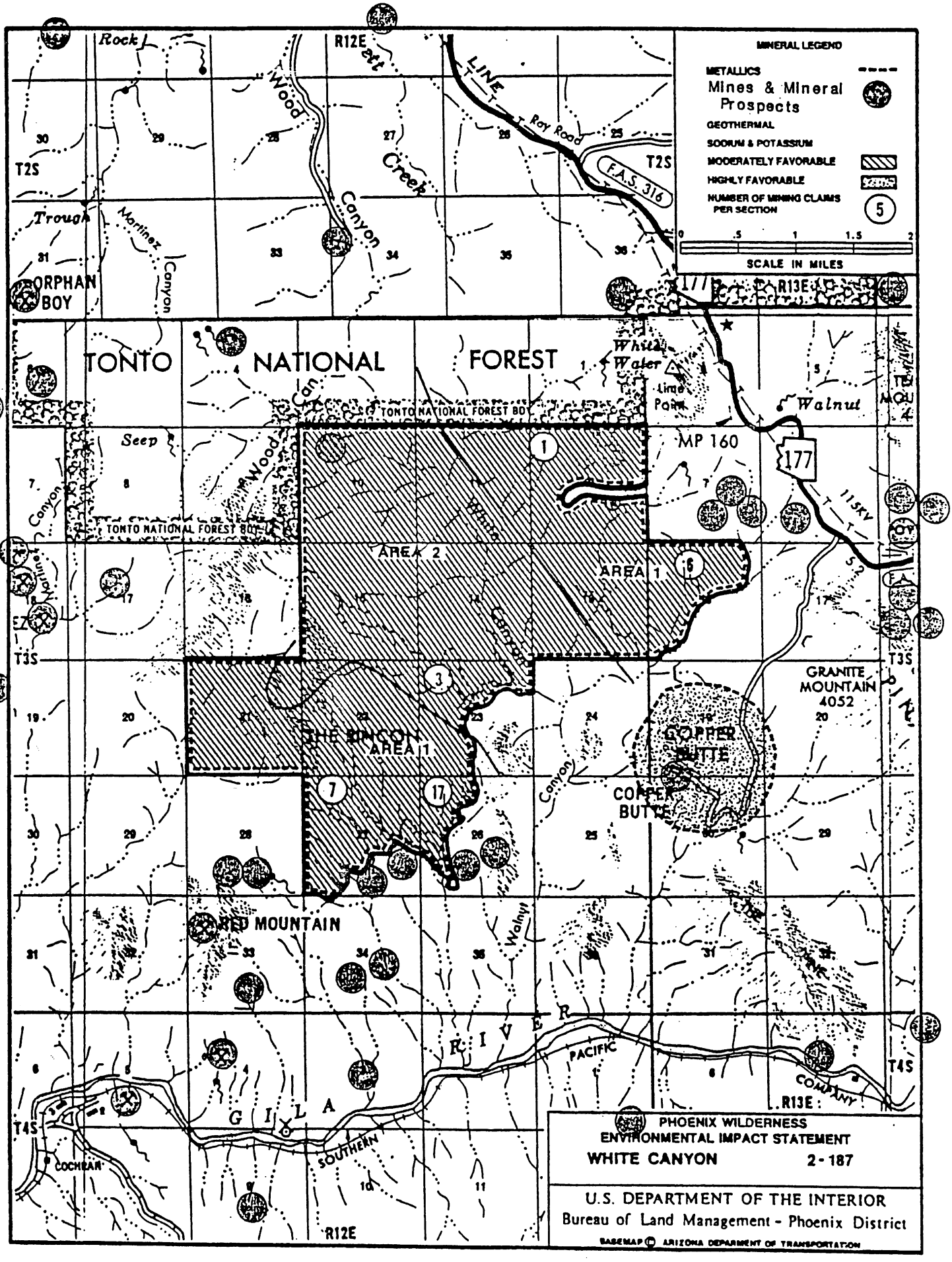
MINERAL LEGEND
METALLICS
Mines & Mineral Prospects
GEOTHERMAL
SODIUM & POTASSIUM
MODERATELY FAVORABLE
HIGHLY FAVORABLE
NUMBER OF MINING CLAIMS PER SECTION
5
0 .5 1 1.5 2
SCALE IN MILES
TONTO NATIONAL FOREST
R12E
R13E
T2S
T3S
T4S
LINE
Roy Road
F.A.S. 316
Rock
Wood
Creek
Canyon
Trough
Mortinez
ORPHAN BOY
White Water
Lime Point
Walnut
MP 160
177
115KV
Seep
TONTO NATIONAL FOREST BDY
AREA 2
AREA 1
THE RINCON AREA
GRANITE MOUNTAIN 4052
COPPER BUTTE
RED MOUNTAIN
GILA RIVER
PACIFIC
SOUTHERN
COMPANY
COCHEAR
PHOENIX WILDERNESS
ENVIRONMENTAL IMPACT STATEMENT
WHITE CANYON 2-187
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management - Phoenix District
BASEMAP © ARIZONA DEPARTMENT OF TRANSPORTATION

figure 6

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

TO ACCOMPANY MAP GQ-1206

GEOLOGIC MAP OF THE GRAYBACK QUADRANGLE, PINAL COUNTY, ARIZONA

By H. R. Cornwall and M. H. Krieger

GENERAL GEOLOGY

The Pinal Schist, of Precambrian X age, is the oldest formation that crops out in the Grayback quadrangle. The east half of the quadrangle is largely underlain by the Ruin Granite, of early Precambrian Y age, which intruded the Pinal Schist. This intrusive relationship is evident in other, nearby areas, the Sonora quadrangle, for example (Cornwall and others, 1971). The Ruin Granite was intruded by diabase dikes and sills of late Precambrian Y age. The Precambrian rocks have been intruded by the Tortilla Quartz Diorite of Late Cretaceous age and the Tea Cup Granodiorite, a large Paleocene pluton. These two plutons have themselves been intruded by Paleocene and younger Tertiary dikes of andesite, rhyodacite, quartz latite, and rhyolite. On the basis of intrusive relationships, most of the dikes are dated as Paleocene and younger; however, two types (TKmr and TKrh) do not intrude the Tea Cup Granodiorite and may therefore be older than the others. The dikes diminish in number and terminate westward across the quadrangle. Most have east-west trends with steep to vertical dips, but some change trend to northwest in the southeastern quarter of the quadrangle.

The Whitetail Conglomerate, a gently eastward dipping Oligocene conglomerate in the northwest corner of the quadrangle, unconformably overlies older rocks, is cut by younger rhyolite dikes, and is overlain by younger flows. A graben in Ripsey Wash, along the eastern edge of the quadrangle, contains east-dipping conglomerate, sandstone, and tuff. These terrestrial deposits were derived from surrounding highlands as the basin subsided during the early Miocene. In the Quaternary, gravels have been shed westward onto an alluvial plain from the higher, central part of the quadrangle. The Gila River, a major regional stream, flows west across the northern part of the quadrangle and is flanked by older Quaternary gravel terraces.

ECONOMIC GEOLOGY

A number of fissure zones with limonite, quartz, and, in many places, copper oxides crop out in the east half of the quadrangle. The zones dip steeply, range in strike from east-northeast through east to west-northwest, and transect most of the rocks in the area, including the Ruin Granite, diabase sills and dikes, Tea Cup Granodiorite, Tortilla Quartz Diorite, and rhyodacite dikes. Many of the zones have been explored by pits, trenches, and shafts, and a few by drill holes.

The most intensive exploration has been in secs. 8 and 9, T. 4 S., R. 13 E., an area where a steeply dipping protrusion of the Tea Cup Granodiorite, roughly 500 feet thick, extends eastward more than half a mile into the Ruin Granite. The deposit indicated on the map by a shaft in the southeast corner of sec. 8, T. 4 S., R. 13 E., is reported to contain copper and molybdenum sulfides. It has been explored by several mining companies. There is abundant chalcocite (Cu_2S) and pyrite (FeS_2) on dumps near two shafts located 1,600 feet east of the shaft mentioned above. Several limonitic shear zones that extend north of these two shafts for half a mile have been explored by pits and shafts. The Tea Cup Granodiorite in secs. 7 and 18, T. 4 S., R. 13 E., contains widespread disseminated malachite, chrysocolla, and limonite, indicating the original presence of copper and iron sulfides.

The Golden Bell mine in the NE¼ sec. 7, T. 4 S., R. 13 E., explored northeast-trending, steeply dipping fissure zones, 1–5 feet thick, that on the surface contain chrysocolla, malachite, limonite, and quartz. The Wooley mine in the N½ sec. 33, T. 4 S., R. 13 E., consists of a shaft, adit, and opencuts that explored a steeply dipping east-west-trending fissure and breccia zone half a mile long and 50–200 feet wide. Outcrops of the zone contain disseminated chrysocolla, malachite, limonite, and quartz. A shaft and several pits explore two east-trending, vertical shear zones in the SW¼ sec. 30 and NW¼ sec. 31, T. 4 S., R. 13 E. These zones contain 1- to 5-foot veins of quartz with chrysocolla, malachite, and limonite. Pits, trenches, and a diamond drill hole in the SE¼ sec. 10, T. 5 S., R. 13 E., explore fissure zones containing malachite, chrysocolla, and limonite.

The deposits described above are the most notable ones explored in the quadrangle. Copper and molybdenum were the principal metals found. Other mineralized areas are indicated on the map by additional fissure zones and exploration pits and trenches. There is no recorded production of copper or other metals from this quadrangle.

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REPORT DATE: MAY 3, 1991
ADMINISTRATIVE STATE: ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

-LEGAL DESCRIPTION- TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
4 S	12 E	4	N2	21	2	253368*LD	TW #14		ASARCO	253273		4/30/1986	1990	
			N2	21		253369*LD	TW #15			253273		4/30/1986	1990	
			N2	21		253370*LD	TW #16			253273		4/30/1986	1990	
			NW	21		253371*LD	TW #17			253273		4/30/1986	1990	
			NE	21		253381*LD	TW #29			253273		4/30/1986	1990	
			NE	21		253382*LD	TW #30			253273		4/29/1986	1990	
			N2	21		253428*LD	TW #102			253273		4/30/1986	1990	
			NE	21		253429*LD	TW #103			253273		4/30/1986	1990	
			NE	21		253430*LD	TW #104			253273		4/30/1986	1990	
			NW	21		288920*LD	BEVEROCK #6 SECT 4		BEVERSDORF FRANK	288915	1553:0809	9/06/1988	0000	4/17/1990
			NW	21		288921*LD	BEVEROCK #7 SECT 4			288915	1553:0807	9/06/1988	0000	4/17/1990
			W2	21		288922*LD	BEVEROCK #8 SECT 4			288915	1553:0803	9/04/1988	0000	4/17/1990
			SW	21		288923*LD	BEVEROCK #9 SECT 4			288915	1553:0805	9/04/1988	0000	4/17/1990
		5	NE	21		50121*LD	BEVEROCK #2			50120	783:289	4/23/1975	1986	4/06/1988
			NW	21		50127*LD	BEVEROCK #13			50120	783:309	4/23/1975	1986	4/06/1988
			NE	21		50128*LD	BEVEROCK #14			50120	783:311	4/23/1975	1986	4/06/1988
			NE	21		59643 LD	TW 3		KENNECOTT CORP	59548	513:718	8/07/1967	1984	4/17/1986
			NE	21		59645 LD	TW 7			59548	513:722	8/07/1967	1984	4/17/1986
			NE	21		59711 LD	TW 100			59548	804:621	9/17/1975	1984	4/17/1986
			N2	21		288917*LD	BEVEROCK #2		BEVERSDORF FRANK	288915	1553:0811	9/06/1988	0000	4/17/1990
			N2	21		288926*LD	BEVEROCK #13 SECT 5			288915	1553:0813	9/04/1988	0000	4/17/1990
			NE,S2	21		288927*LD	BEVEROCK #14 SECT 5			288915	1553:0815	9/06/1988	0000	4/17/1990
		6	S2	21		288915*LD	BEVEROCK #2A			288915	1553:0817	9/04/1988	0000	4/17/1990
			ALL	21		288918*LD	BEVEROCK #3 SECT 6			288915	1553:0819	9/04/1988	0000	4/17/1990
			ALL	21		288919*LD	BEVEROCK #4 SECT 6			288915	1553:0823	9/04/1988	0000	4/17/1990
			ALL	21		288924*LD	BEVEROCK #10 SECT 6			288915	1553:0821	9/04/1988	0000	4/17/1990
		31	SE	21		129251 LD	CAMPSITE NO 1		FOSTER CLIFF CORNELL BILL			5/01/1981	1982	4/03/1986
			SE	21		129252 LD	CAMPSITE NO 2		FOSTER CLIFF CORNELL BILL	129251		5/01/1981	1982	4/03/1986
			SE	21		250292*LD	CAMPSITE 1		CORNELL WILLIAM FOSTER H C	250292	1393:303	4/08/1986	1988	2/08/1990
			SE	21		250293*LD	CAMPSITE 2		CORNELL WILLIAM FOSTER H C	250292	1393:305	4/08/1986	1988	2/08/1990
			SE	21		301206*LD	CAMPSITE #1		FOSTER H C	301206		1/31/1990	0000	
			SE	21		301207*LD	CAMPSITE #2		CORNELL WM A FOSTER H C CORNELL WM A	301206		1/31/1990	0000	
5 S	12 E	1	NE	21		76588*LD	QUANA #5		HARRIS B WAYLON	76587	779:758	3/23/1975	1986	5/16/1988
			NE	21		76595*LD	QUANA #12			76587	786:431	5/24/1975	1986	5/16/1988
			NE	21		76597*LD	QUANA #14			76587	786:433	5/24/1975	1986	5/16/1988
6 S	12 E	12	NW	21		38178 LD	CW-55		EXXON COAL AND MINER	38124	950:456	2/13/1979	0000	10/02/1980
			NW	21		38179 LD	CW-56			38124	950:457	2/13/1979	0000	10/02/1980
			NW	21		38180 LD	CW-57			38124	950:458	2/13/1979	0000	10/02/1980

* DISCLOSURE* * ALL INFORMATION RECEIVED IN THIS OFFICE MAY NOT YET BE LISTED ON THIS REPORT. NAMES AND ADDRESSES ARE ENTERED AS THEY APPEAR ON THE LOCATION NOTICE OR ARE ABBREVIATED TO FIT LIMITED SPACE; THEREFORE THEY MAY NOT APPEAR IN THE EXPECTED SEQUENCE. A BLANK LATEST ASSESSMENT YEAR IN THIS REPORT DOES NOT CONSTITUTE AN ABANDONED CLAIM. * AFTER S/N INDICATES LAND STATUS CHECKED.

8-132 X 64 10-6

4 S 13 E 8 S2

0 12

REPORT DATE: MAY 3, 1991
ADMINISTRATIVE STATE: ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PAGE NO: 12238
PCN: LT892PP1

GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

--LEGAL DESCRIPTION-- TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK;PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
4 S	13 E	8	S2	21	2	313364*LD		ANDREA #21	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0228	1/29/1991	0000	
			S2	21		313365*LD		ANDREA #22	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0230	1/29/1991	0000	
			S2	21		313366*LD		ANDREA #23	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0232	1/29/1991	0000	
			S2	21		313367*LD		ANDREA #24	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0234	1/29/1991	0000	
			ALL	21		313368*LD		ANDREA #25	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0236	1/29/1991	0000	
			N2	21		313369*LD		ANDREA #26	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0238	1/29/1991	0000	
			NE	21		313370*LD		ANDREA #27	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0240	1/29/1991	0000	
			E2	21		313371*LD		ANDREA #28	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0242	1/29/1991	0000	
			SE	21		313372*LD		ANDREA #29	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0244	1/29/1991	0000	
			SE	21		313373*LD		ANDREA #30	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0246	1/29/1991	0000	
			SE	21		313374*LD		ANDREA #31	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0248	1/29/1991	0000	

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B-132 X 64 10-6

GARC4

MAY 16 1990

05/14/90

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

GQ1559

PRIMARY NAME: COPPER BUTTE

ALTERNATE NAMES:
WALLACE SHAFT
JUNE BUG
COCHISE
OLD FRED MITCHELL PROPERTY
JAMES INCLINE
POOR MAND WASH PROPERTY

PINAL COUNTY MILS NUMBER: 172

LOCATION: TOWNSHIP 3 S RANGE 13 E SECTION 30 QUARTER N2
LATITUDE: N 33DEG 08MIN 54SEC LONGITUDE: W 111DEG 03MIN 44SEC
TOPO MAP NAME: TEAPOT MTN - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
COPPER
SILICON
SILVER
GOLD

BIBLIOGRAPHY:
BLM MINING DISTRICT SHEET 636 MS 2602
CLAIMS EXTEND INTO SEC. 19
ADMMR COPPER BUTTE MINE FILE
PHELPS, HARLOW A., EXPORATION OF THE COPPER BUTTE MINE MINERAL CREEK MINING DISTRICT PINAL CO., AZ. USBM RI 3914, 1946
WEED, WALTER H. MINES HNDBK. 1916, 391-392
ADMMR U FILE

STATE OF ARIZONA
DEPARTMENT OF MINES & MINERAL RESOURCES
MINERAL BUILDING
FAIRGROUNDS
PHOENIX, ARIZONA 85007

NYAL J. NIEMUTH
MINING ENGINEER

PHONE
(602) 255-3791

EXECUTIVE SUMMARY

White Canyon -- AZ-02-187

WSA Acreage 6,968 Acres

BLM Proposal - No Wilderness

Acres suitable	0
Not suitable	6,968
Private mineral rights	0
Private land	0
Active mining claims	419

The Bureau of Land Management's Final Environmental Impact Study recommended no wilderness for the White Canyon area.

Location

The White Canyon WSA is located approximately 5 miles west of the mining complex at Ray, Arizona, and within the Arizona porphyry copper belt.

Mineral Potential

Three major copper deposits, the Copper Butte, Buckeye East and Buckeye West are currently under development along the southern boundary of this WSA. Proven economic copper ore reserves at the Copper Butte deposit are 22 million tons. Proven reserves at the Buckeye East deposit are 20 million tons with a potential resource of 40 million tons. Copper reserves in the Buckeye West deposit are currently being assessed. These deposits are located within eight patented and 190 unpatented mining claims held by ASARCO Incorporated. Other mining companies have 81 claims located within the WSA.

Copper mineralization occurs on the surface and in drill holes throughout the WSA. All indications are that the WSA contains favorable exploration targets.

If the White Canyon WSA is designated a wilderness area, significant mineral resources and favorable exploration targets will be lost.

AMA Recommendation

The Arizona Mining Association supports the BLM recommendation of no wilderness for the White Canyon WSA and recommends that the area be released for multiple-use management.

In addition to the mapped locations of mines and prospects within and near the White Canyon WSA which the AMA has identified as very high mineral potential, the area should be returned to multiple-use for the following reasons:

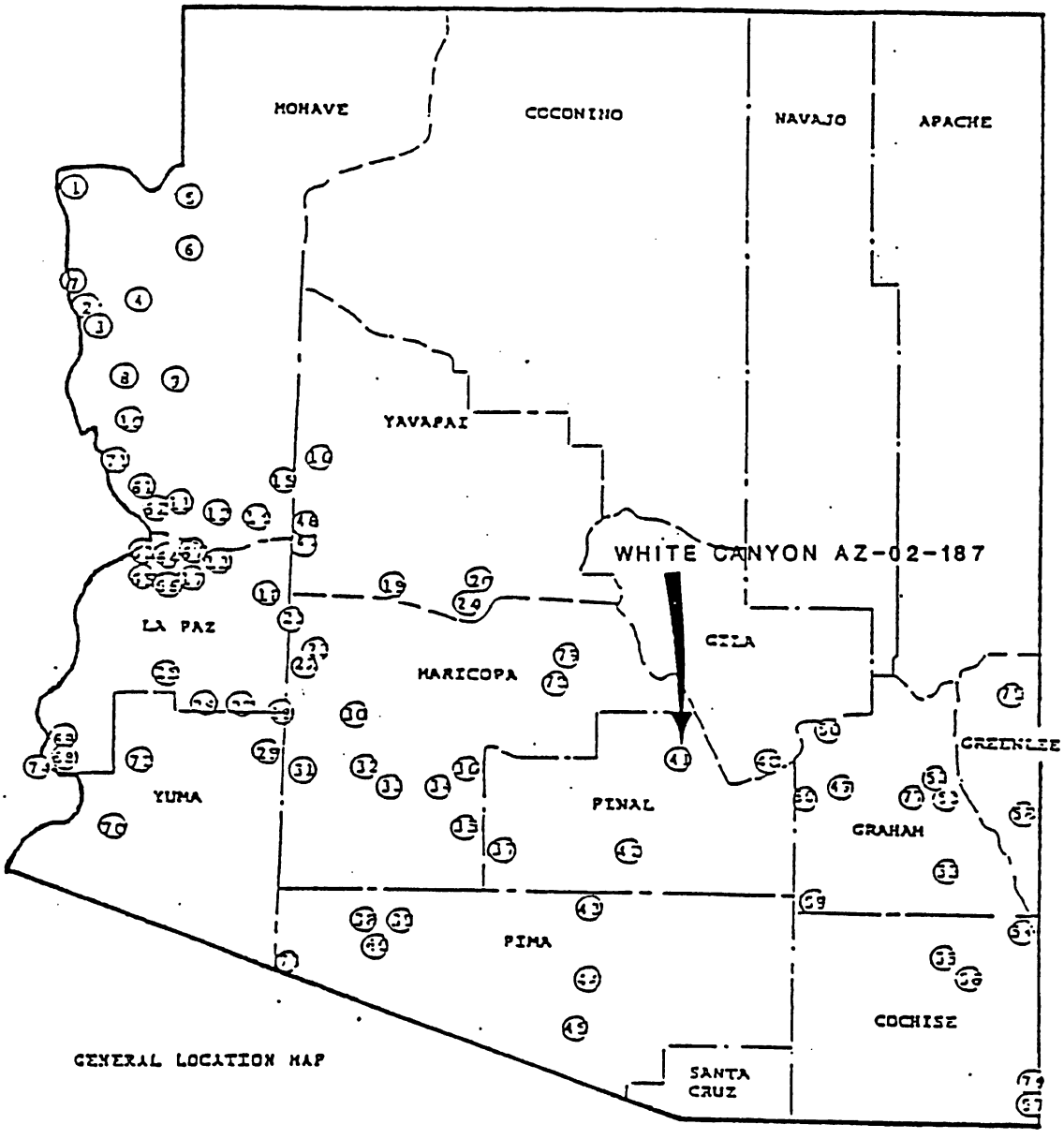
1. The unit occurs within the highly mineralized copper and precious metal zones of Arizona.

2. The unit occurs within the significant Metallic Mineral Districts of Arizona as defined by the Arizona Bureau of Geology and Mineral Technology.

Arizona Mining Association's Mineral Rating

White Canyon (02-187)

VERY HIGH MINERAL RATING



WHITE CANYON AZ-02-187

Introduction

The White Canyon WSA is located on the most favorable geologic trend for the discovery of economic mineral deposits in the state of Arizona. It is unfortunate that the forces that combine to make scenic areas are the same which create economic mineral deposits. Like the need for wilderness, the need for a viable mineral industry is paramount to maintaining the future of this free land. Reserves at the existing copper mines will be depleted within 50 to 75 years. Future generations need access to the deeper and as yet undiscovered deposits which will supply them with copper.

Two mineral deposits which have been discovered by industry exploration efforts and will be developed into mines are located along the southern bounday of the WSA. Evidence of mineralization has also been found within the WSA. Noise of mining, barren rock dumps, roads, and activity at the developing mines, as well as at the existing Ray Mine, will be easily sensed from within the WSA.

As stated in the BLM Phoenix District Final Environmental Statement, "Nondesignation would allow development of the WSA's extensive copper deposits. Development of these copper deposits is expected to result in a large scale copper mine described as world class. Development of this mine would provide needed jobs and income to the local economy.

The proven copper ore deposits along the southern edge of the BLM White Canyon WSA are located within eight (8) patented and 190 unpatented mining claims held by Asarco Incorporated. Other mining companies have 81 mining claims within the WSA. Location of the WSA, mineral deposits, mining claims, exploration holes, and planned open pits are shown on Figure 1. Additional roads and diamond drill holes within the WSA are also shown. Copper Butte and Buckeye East are the deposits drilled well enough to plan mining operations. Buckeye West is an area where wide spaced drilling indicates extensive sulfide mineralization.

This document presents site specific information on the mineral deposits and mineral potential of the WSA. Proven and potential deposits demonstrate the significance of the White Canyon WSA to the future mineral self sufficiency of our nation.

Although federal land management regulations recognize valid existing mineral rights within and near wilderness areas, the additional requirements of operating within or near a designated wilderness area completely alter the economics of mineral deposits and can regulate previously viable ore bodies out of existence. Wilderness designation also precludes exploration for mineral deposits. Thus, hidden deposits which may exist but are merely awaiting technological advances in exploration techniques to become apparent to the prospector will not be found if the area is designated as wilderness.

Geologic Description

General Geology

The White Canyon WSA is a region of complex geology, only a brief outline of which is presented here. The reader is referred to the comprehensive geological articles listed in the bibliography for a more complete geological understanding. Most of the geological units favorable for the development of mineral deposits are covered by younger unmineralized rock.

Precambrian Age

Pinal Schist

Pinal schist is the oldest rock type in the WSA. It is of older Precambrian Age and is a strongly foliated metasedimentary rock exposed as exhumed hills on the east edge of the study area. This unit which hosts much of the mineralization at the Ray deposit is the basal rock beneath most of the WSA as evidenced by numerous diamond drill holes which bottom in this formation, and the basement rocks exposed in windows through the more recent formations. Unaltered and unmineralized Pinal schist is a gray-green chlorite, muscovite schist.

Ruin Granite

Ruin Granite is a coarse-grained porphyritic rock of older Precambrian age intruded into Pinal schist. The boundary between Pinal schist and a major body of Ruin Granite extends from the Gila River at the southwest of the WSA to the Ray deposit. This contact probably controlled the location of the igneous intrusive rocks which generated the Ray copper deposit and is a prime zone along which to hunt for other mineral deposits.

Apache Group

Rocks of the Apache group outcrop as steeply dipping sedimentary beds intruded by diabase dikes and sills along the northern edge of the WSA. These units also host much of the mineralization in the Ray Mine. Faulting and folding have prepared them for mineralization.

Paleozoic Rocks

Paleozoic rocks outcrop with the Apache group rocks along the northern edge of the WSA. Most of these units are limestone which is an excellent host for mineralization. Extensive limestone replacement deposits exist in the Magma mine at nearby Superior.

Tertiary Rocks

Granite Mountain Porphyry

The Granite Mountain Porphyry is exposed along the eastern edge of the WSA and in several drill holes. This biotite quartz granodiorite with a coarse crystalline, granitoid texture is felt to be the igneous intrusion which created the hydrothermal system responsible for deposition of the Ray deposit. Hydrothermal quartz-pyrite veins are present at the intrusive contact with Pinal schist. A copper deposit was generated on the east edge of this intrusion. The other peripheral areas remain unexplored. More work is needed to fully explore this potential.

Whitetail Conglomerate

After intrusion of the Granite Mountain Porphyry, 61 - 63 million years ago, erosion began wearing away the mountains. A canyon with at least 2000 feet of relief was cut beneath the Copper Butte, Buckeye East and Buckeye West areas.

This canyon filled with conglomerate during mid-tertiary time, 33 to 21 million years ago. A part of the conglomerate fill was debris flows of mineralized and partially oxidized, leached capping and secondary enrichment blanket from a nearby porphyry copper system. The only known deposit is the Ray deposit some four miles away. It is reasonable to expect that a sulfide deposit exists closer to the exotic copper deposit, probably to the north.

Following the filling of the canyon with Whitetail conglomerate, normal Basin and Range type faulting offset various portions of the Whitetail Conglomerate Basin. Tilting of the individual basins in the typical east side down fashion accompanied the faulting. The fault block furthest to the east, stretching from the Ray deposit to the Copper Butte deposit, was rotated and elevated and the Whitetail conglomerate eroded away. Copper Butte rests on the remains of the smallest fault block. Buckeye East is in the adjacent block and is offset between 1000 and 1500 feet by faulting. Another offset basin exists to the west of the Buckeye West deposits.

Apache Leap Tuff

Faulting, erosion and deposition left a rugged surface in the area. Onto the surface the Apache Leap Tuff was deposited by massive volcanic eruptions of ash and tuff. This material fell as a hot glowing cloud upon the surface and individual pieces were welded by the retained heat into a relatively dense rock. The Apache Leap Tuff is up to 1500 feet thick, covering the northern portion of the WSA.

Gila Conglomerate (Big Dome Formation)

Following deposition of the Apache Leap Tuff, erosion and deposition resumed. Deposition of the Big Dome Conglomerate was restricted to the lowlying basins with thicknesses varying from 0 to 1000 feet. Normal faulting continued during deposition resulting in several landslide blocks of older rocks.

Rhyolite Tuff

The youngest major geologic unit still remaining is rhyolite tuff. This formation lies with angular unconformity on all of the older units. Thickness varies from 0 to 400 feet. The tuff is a series of air fall volcanic ash units of rhyolite composition. Uplift and erosion have been the major geologic forces at work during the past 10 million years.

Mineral Potential

Copper Butte Deposit

The small inactive mine workings at Copper Butte represent only the fringe of the deposit. A map of the diamond drill holes, pit outline and ore zone is shown as Figure 2. This is a copper deposit which will yield much copper to the economy of our country. Asarco, Incorporated is going ahead with plans, laid years ago, to immediately place this mine into production.

Origin of the copper within the Copper Butte deposit is debris flows which came off of a combined leached-capping, secondary enrichment blanket into the Whitetail conglomerate basin. Following deposition of these debris flows which consisted almost totally of mineralized Pinal schist, the contained copper was mobilized by acid generated from residual pyrite within the mineralized rock. Groundwater moved the copper out of the mineralized rock into adjacent rocks with contained acid neutralizing minerals. The copper dropped out at the sites of neutralization and formed an exotic copper deposit. Exotic copper deposits are those formed by copper moved from the original site to a second site by mechanical (debris flow) and/or chemical (acid groundwater) means.

Proven mineable reserves at Copper Butte are 22,000,000 tons with a grade of 1.09 percent copper or 240,000 tons of contained copper. Because the contained copper occurs as oxide and silicate minerals, recovery of copper from these minerals is by the leaching process. Leaching and electrowinning do not require smelting to recover nearly pure copper.

Buckeye East is the faulted and folded continuation of the Copper Butte deposit. The debris flows probably thinned and narrowed as they continued down the canyon. Buckeye East is more constrained within the old canyon bottom. Proven tonnage and grade of mineralization is 20,000,000 tons at 0.65 percent copper (Figure 3). Projections of indicated reserves of that much more mineralized rock give a potential resource of 40,000,000 tons.

250,000 tons Cu

Buckeye West exhibits sulfide enrichment in Pinal schist. This resource covers a large area and is one of the reasons for the speculation that a world class porphyry copper deposition may exist in the covered rocks to the north of the canyon cut into the older rocks. Figure 1 shows the location of sulfide mineralization found in the bedrock beneath the gravels. This mineralization is secondary enrichment of copper within a large low grade system. Location of the higher grade center is not known. This is to be a major emphasis of exploration in the area in the future.

Mineralization Within the WSA

Mineralization consisting of copper is indicated throughout the WSA. Success in finding the large deposit which is felt to be present has not materialized. Active exploration was stopped in the main body of the WSA by the regulations related to wilderness study. Exploration at a slower pace than previously conducted was forced upon the mining companies by the recently ended depression of copper prices. Assessment work requirements of 100 dollars per year per claim caused most mining companies, already strapped for cash, to drop blocks of mining claims they would have liked to have kept valid. Only the most favorable deposits were retained. Thus, the proven mineral resources along the southern edge of the WSA were retained. The search for a large deposit was put on the back burner.

Evidence for the large deposit consists of:

1. Mineralized rock found in small areas where erosion has removed the post-mineral cover. These areas are mostly in Pinal schist and are found along the Gila River at the old Cochran area and on the east and west edges of the WSA.

2. Pebbles and cobbles of mineralized rock of types not found at the Ray mine discovered while conducting geological mapping of the conglomerates which eroded off the highlands now covered by volcanic rock.

3. Sulfide mineralization found in several diamond drill holes drilled near the WSA. Asarco Incorporated does not have all the results from holes drilled by competitors, but evidence is available to encourage further exploration.

These evidences have been favorable enough for several mining companies to expend sizeable sums of money in making geological and geophysical surveys, building roads in rough terrain, and drilling diamond drill holes. Unfortunately, geologists cannot see through rocks any better than the next man. They must deal with scientific projection, not certainties. Geophysical methods are not overly effective at "seeing" through rock such as the post-mineral rocks of the WSA. The only way to be sure is to drill expensive holes at the most logical and favorable sites. Thus far, the results have been encouraging but not definitive. Exploration has found mineralization in the covered areas. This

mineralization is evidence enough to convince the mining companies that a large deposit may exist.

Recommendations

Mineable minerals are extremely rare and randomly distributed in nature. Extensive exploration is necessary to locate and define deposits and their potential for economic development. The same geologic forces that create areas suitable as wilderness are also responsible for the formation of ore deposits.

White Canyon WSA has a very high potential for the discovery of a large economic mineral deposit. This potential is sufficient to retain the area in a multiple use classification. If the planned exploration is successful, the mineral potential will be wisely utilized. Wise utilization of all our nation's resources is essential to keeping the nation we love strong, and the standard of living we enjoy high. White Canyon should not be designated as wilderness in whole or in part, but should be released to multiple use for all the citizens to use not just the small group of people who have the time, money, and health to visit the wilderness.

Proposed Expansion of The White Canyon WSA

Some groups are advocating that the area of proposed wilderness be expanded into Tonto National Forest land which borders the White Canyon WSA to the north. Size of the proposed wilderness is enlarged from 6,968 acres to 16,464 acres. This is an increase to two and one-third times the original. All the statements made concerning the mineral potential of the WSA apply to the expanded area. Presence of mineralization and a high mineral potential is attested to by 206 unpatented mining claims held by twelve (12) individuals, partnerships, and corporations located in the proposed expansion area. The number of mining claims per section is shown in Figure 5. Enlargement of the proposed wilderness is rigorously opposed by the Arizona Mining Association and all the affected parties.

References

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Keith, W. J. and Theodore, T. G., 1979, Tertiary Volcanic Rocks of the Mineral Mountain and Teapot Mountain Quadrangles, Pinal County, Arizona, U.S. Geological Survey Open-file Report 79-716, P. 10-11.

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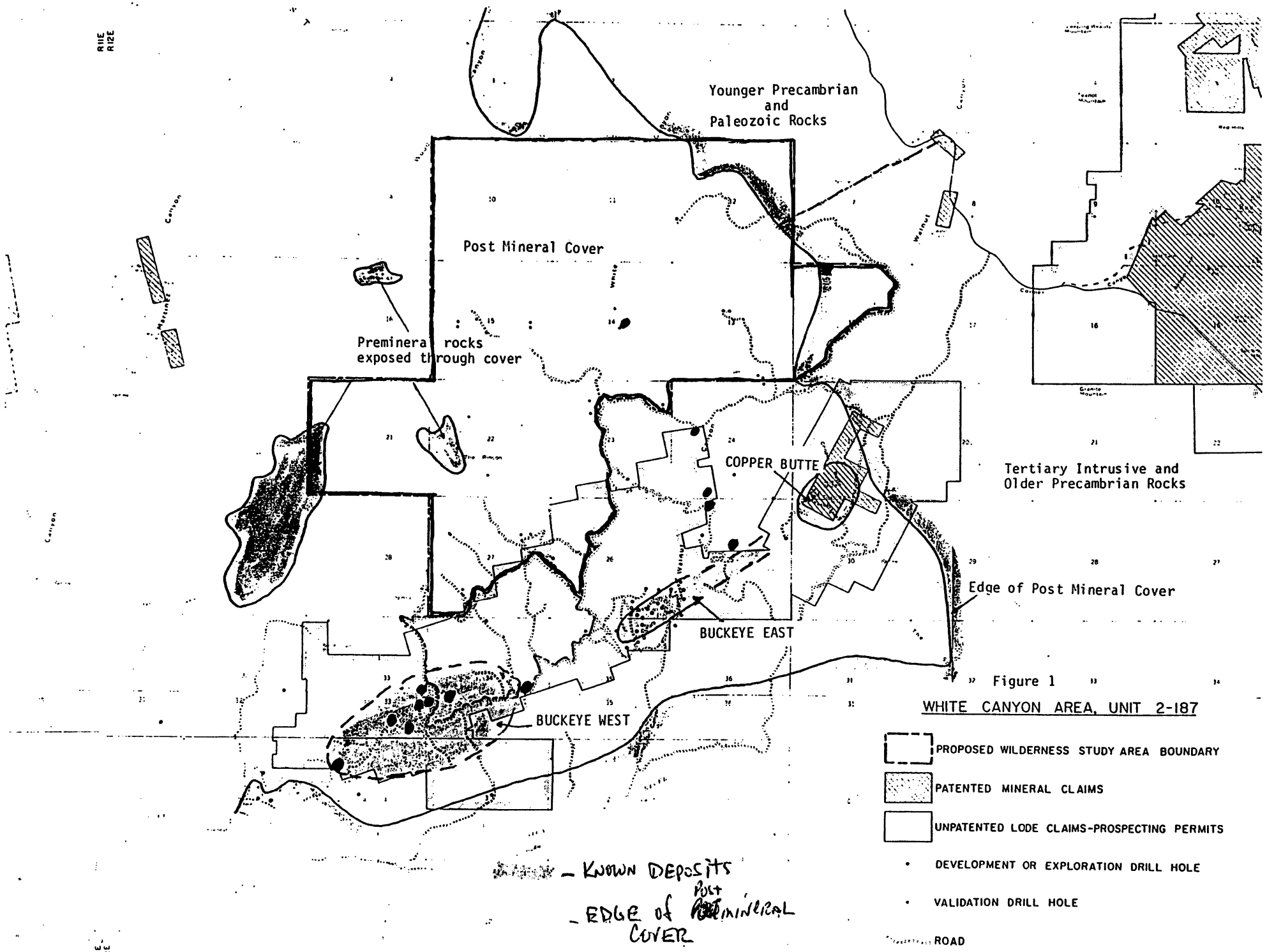
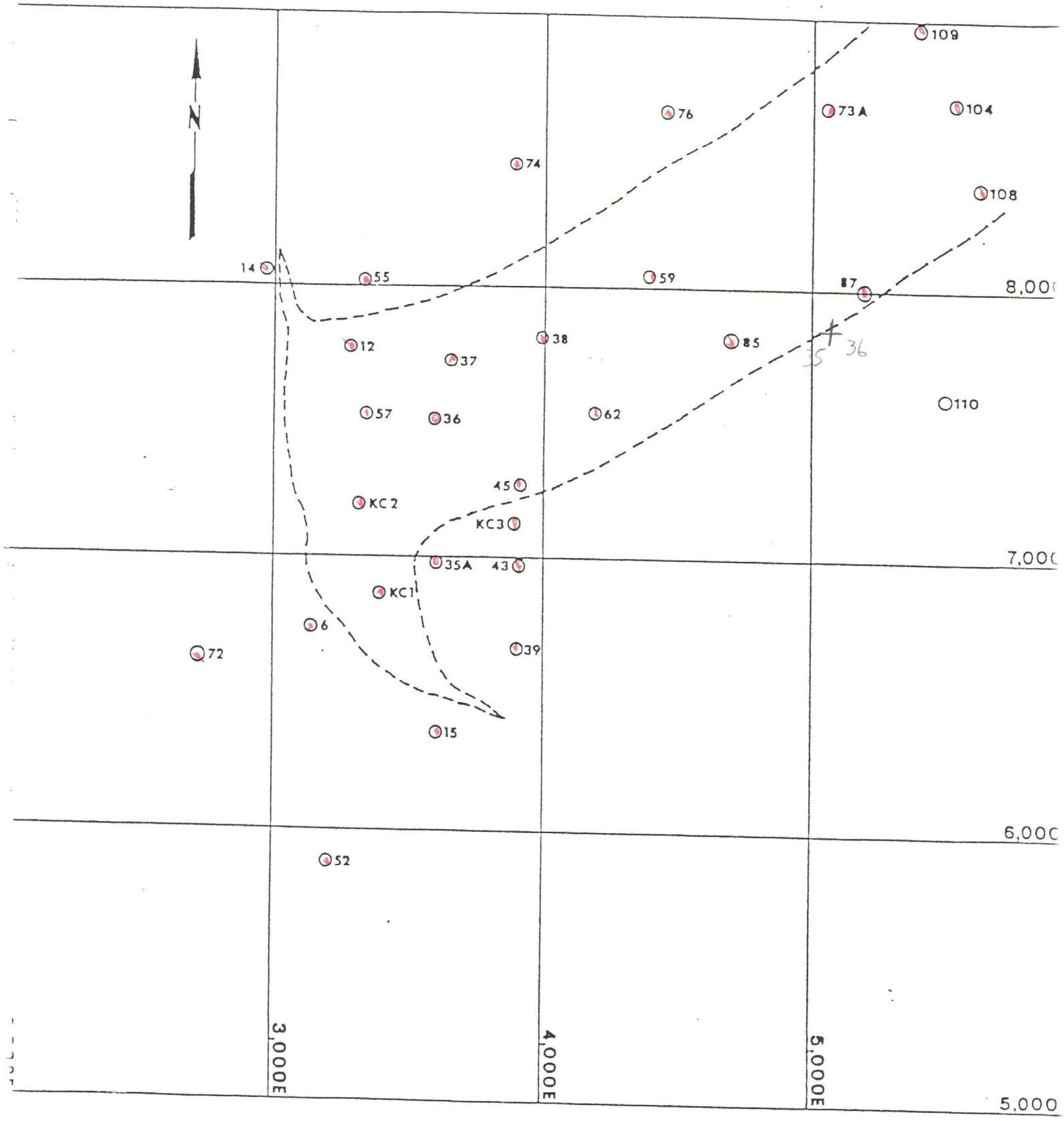
Kennecott Exploration Services file reports.

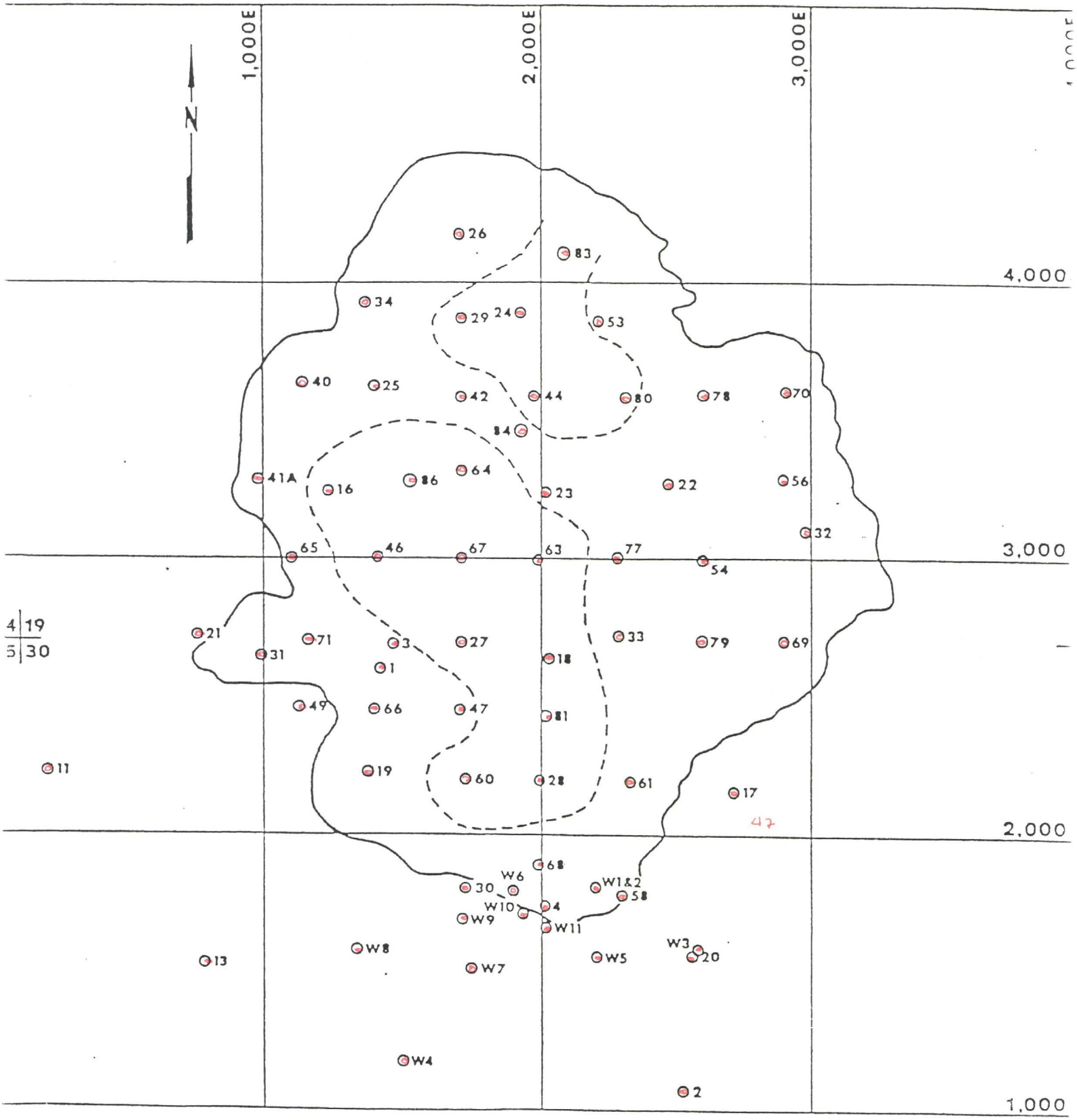
Phelps, H. D., 1946, Exploration of the Copper Butte Mineral Creek Mining District, Pinal County, U. S. Bureau of Mines, R.I. 3914.


R11E
R12E
Younger Precambrian
and
Paleozoic Rocks
Post Mineral Cover
Preminera rocks
exposed through cover
COPPER BUTTE
Tertiary Intrusive and
Older Precambrian Rocks
Edge of Post Mineral Cover
BUCKEYE EAST
BUCKEYE WEST
Figure 1
WHITE CANYON AREA, UNIT 2-187
PROPOSED WILDERNESS STUDY AREA BOUNDARY
PATENTED MINERAL CLAIMS
UNPATENTED LODE CLAIMS-PROSPECTING PERMITS
DEVELOPMENT OR EXPLORATION DRILL HOLE
VALIDATION DRILL HOLE
ROAD
- KNOWN DEPOSITS
- EDGE of Post MINERAL COVER



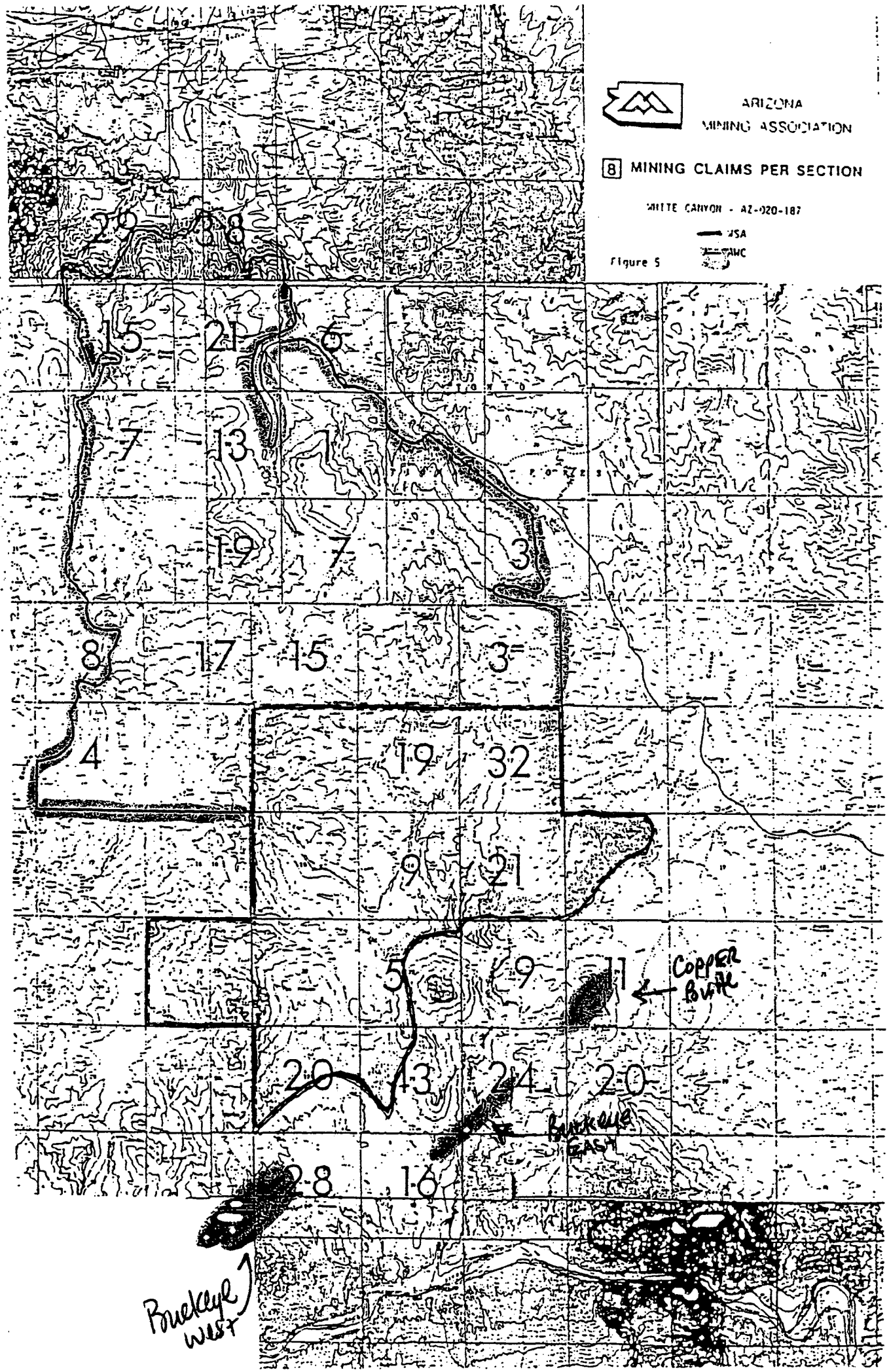
BUCKEYE EAST

○ DRILL HOLE 28



COPPER BUTTE

○ DRILL HOLE 65 total


ARIZONA
MINING ASSOCIATION
8 MINING CLAIMS PER SECTION
WHITE CANYON - AZ-020-187
USA
AMC
Figure 5
29
28
15
21
6
7
13
1
19
7
3
8
17
15
3
4
19
32
9
21
5
9
11
COPPER BOTTLE
20
13
24
20
BUCKEYE EAST
28
16
Buckeye West

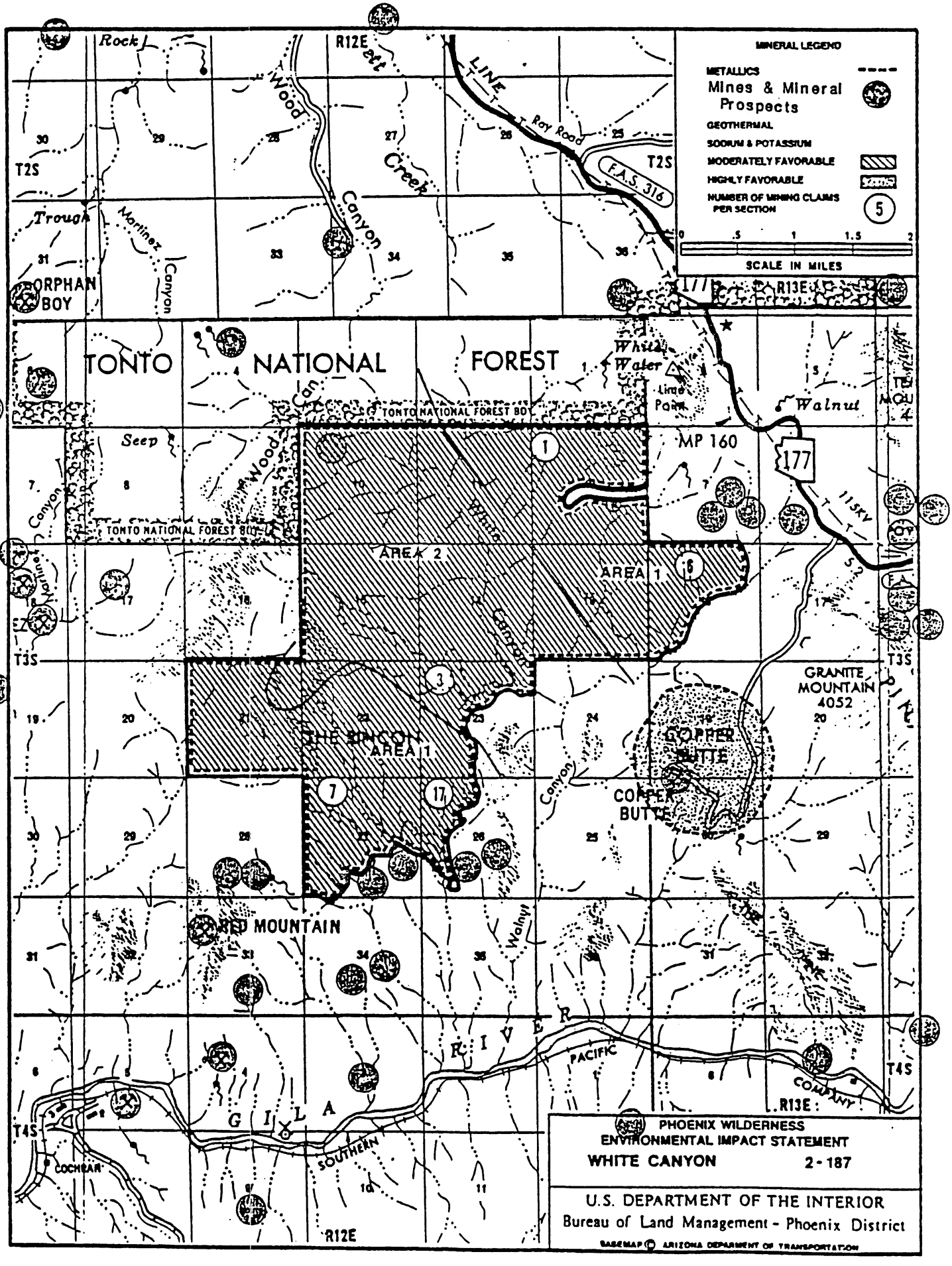

MINERAL LEGEND
METALLICS
Mines & Mineral Prospects
GEOTHERMAL
SODIUM & POTASSIUM
MODERATELY FAVORABLE
HIGHLY FAVORABLE
NUMBER OF MINING CLAIMS PER SECTION
5
0 .5 1 1.5 2
SCALE IN MILES
TONTO NATIONAL FOREST
TONTO NATIONAL FOREST BDY
AREA 1
AREA 2
THE SINCON AREA
MP 160
177
115KV
Walnut
Seep
Wood Canyon
Rock
Trough
Martinez Canyon
Roy Rood
F.A.S. 316
Creek
Canyon
ORPHAN BOY
White Water
Lime Point
Camp
GRANITE MOUNTAIN 4052
COPPER BUTTE
RED MOUNTAIN
GILA RIVER
PACIFIC
SOUTHERN
COCHRAN
R12E
R13E
T2S
T3S
T4S
PHOENIX WILDERNESS
ENVIRONMENTAL IMPACT STATEMENT
WHITE CANYON 2-187
U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management - Phoenix District
BASEMAP © ARIZONA DEPARTMENT OF TRANSPORTATION

figure 6

– Sandrock Rock Tools.

– this does not include the current tailings, are very basic, have no acid generating potential

New Mexico Environmental ~~Dept~~ Division – evaluated recently the entire Chino, – Hanover area as superfund site, but after review, was not warranted

~~With the exception~~

The intent was not to tie up areas needed for contined mining, new mining w/ environmental stuff and/or liability indemnities – these areas are excluded, all liability to ~~transfer~~ etc/ new owners

---

3/26/92 Talk w/ Sal Anzalone ASARCO, Tucson (602) 792-3010

re. Copper Butte

– said that he thinks that Ray has some future plans for it, but not really know what fits in, acknowledge that they be pre-occupied w/ Superfund, etc.

– gave name, phone #, etc., said he would inquire up there and see if there is any possibility of a JV, purchase, etc. on the property and get back to me.

GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
4 S	13 E	9	SW	21	2	63540*LD		GRAY COPPER NO 6	JOHNSON ARNOLD EST JOHNSON JOHN M	63496	129;584	6/27/1955	1986	5/26/1988
			S2	21		63541*LD		GRAY COPPER NO 7	JOHNSON ARNOLD EST JOHNSON JOHN M	63496	129;585	6/27/1955	1986	5/26/1988
			SW	21		63548*LD		RARE METALS NO 7	JOHNSON ARNOLD EST JOHNSON JOHN M	63496	186;127	9/01/1957	1986	7/07/1988
			SW	21		63549*LD		RARE METALS NO 8	JOHNSON ARNOLD EST JOHNSON JOHN M	63496	186;128	9/01/1957	1986	7/07/1988
			S2	21		63550*LD		RARE METALS NO 9	JOHNSON ARNOLD EST JOHNSON JOHN M	63496	186;129	9/01/1957	1986	7/07/1988
			Sw	21		313378*LD		ANDREA #35	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0256	1/29/1991	0000	
			Sw	21		313379*LD		ANDREA #36	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0258	1/29/1991	0000	
			SW	21		313380*LD		ANDREA #37	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0260	1/29/1991	0000	
			SW	21		313381*LD		ANDREA #38	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0262	1/29/1991	0000	
			W2	21		313382*LD		ANDREA #39	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0264	1/29/1991	0000	
			NW	21		313383*LD		ANDREA #40	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0266	1/29/1991	0000	
			N2	21		313384*LD		ANDREA #41	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0268	1/29/1991	0000	
			ALL	21		313385*LD		ANDREA #42	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0270	1/29/1991	0000	
			S2	21		313386*LD		ANDREA #43	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1723;0272	1/29/1991	0000	

* * DISCLOSURE * * ALL INFORMATION RECEIVED IN THIS OFFICE MAY NOT YET BE LISTED ON THIS REPORT. NAMES AND ADDRESSES ARE ENTERED AS THEY APPEAR ON THE LOCATION NOTICE OR ARE ABBREVIATED TO FIT LIMITED SPACE; THEREFORE THEY MAY NOT APPEAR IN THE EXPECTED SEQUENCE. A BLANK LATEST ASSESSMENT YEAR IN THIS REPORT DOES NOT CONSTITUTE AN ABANDONED CLAIM. * AFTER S/N INDICATES LAND STATUS CHECKED.

9-132 E 84 10-6

4 S 13 E 9 S2

C 13

REPORT DATE: MAY 3, 1991
ADMINISTRATIVE STATE: ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PAGE NO: [illegible]
PCN: LTB[illegible]

GEOGRAPHIC INDEX

MERIDIAN: GILA-SALT R.

4 S 13 E 17 SW

M 13

REPORT DATE: MAY 3, 1991
ADMINISTRATIVE STATE: ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PAGE NO: 12251
PCN: LT892PP1

GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

LEGAL DESCRIPTION TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLA DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK:PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
4 S	13 E	17	SW	21	2	313351•LD		ANDREA #8	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1737:0743	3/18/1991	0000	
			SW	21		313352•LD		ANDREA #9	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1737:0745	3/18/1991	0000	
			SW	21		313353•LD		ANDREA #10	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1737:0747	3/18/1991	0000	
			SW	21		313354•LD		ANDREA #11	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1737:0749	3/18/1991	0000	
			SW	21		313355•LD		ANDREA #12	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1737:0751	3/18/1991	0000	
			SW	21		313356•LD		ANDREA #13	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1737:0753	3/18/1991	0000	
			SW	21		313357•LD		ANDREA #14	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1737:0755	3/18/1991	0000	
			SW	21		313358•LD		ANDREA #15	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1737:0757	3/18/1991	0000	
			NW	21		313359•LD		ANDREA #16	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1737:0759	3/18/1991	0000	
			NW	21		313360•LD		ANDREA #17	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1737:0761	3/18/1991	0000	
			NW	21		313361•LD		ANDREA #18	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1737:0763	3/18/1991	0000	

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8-132 X 64 10-6

GEOGRAPHIC INDEX
ALL CLAIMS

MERIDIAN: GILA-SALT R.

TWNSHP	RANGE	SEC	SUBDV	GEO CTY	BLM DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK;PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
4 S	13 E	18	E2	21	2	76292	LD	SIDEVIEW #51	RUIZ JOE BATEMAN JAY WASKO DENNIS CHAVEZ MANUEL SALAS FRANK	76204	516;302	5/29/1967	1985	4/29/19
			ALL	21		76293	LD	SIDEVIEW #52	RUIZ JOE BATEMAN JAY WASKO DENNIS CHAVEZ MANUEL SALAS FRANK	76204	516;303	5/29/1967	1985	4/29/19
			SE	21		313347*LD		ANDREA #4	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1737;0735	3/18/1991	0000	
			SE	21		313348*LD		ANDREA #5	GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM ALSTON LANOY	313344	1737;0737	3/18/1991	0000	
			SE	21		313349*LD		ANDREA #6	ALSTON LANOY GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM	313344	1737;0739	3/18/1991	0000	
			SE	21		313351*LD		ANDREA #8	TUCKER TIM ALSTON LANOY GRIFFITH BRUCE MECHAM WALLACE	313344	1737;0743	3/18/1991	0000	
			SE	21		313352*LD		ANDREA #9	MECHAM WALLACE TUCKER TIM ALSTON LANOY GRIFFITH BRUCE	313344	1737;0745	3/18/1991	0000	
			SE	21		313353*LD		ANDREA #10	ALSTON LANOY GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM	313344	1737;0747	3/18/1991	0000	
			SE	21		313354*LD		ANDREA #11	TUCKER TIM ALSTON LANOY GRIFFITH BRUCE MECHAM WALLACE	313344	1737;0749	3/18/1991	0000	
			E2	21		313355*LD		ANDREA #12	ALSTON LANOY GRIFFITH BRUCE MECHAM WALLACE TUCKER TIM	313344	1737;0751	3/18/1991	0000	
			19 NE	21		76278	LD	SIDEVIEW #37	RUIZ JOE BATEMAN JAY WASKO DENNIS CHAVEZ MANUEL SALAS FRANK	76204	516;288	5/29/1967	1985	4/29/1

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8-132 X 64 10-6

TEST MT-YR	CASE CLOSED
986	5/26/1988
986	5/26/1988
986	7/07/1988
986	7/07/1988
986	7/07/1988
)000	
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ARE ENTERED AS
ECTED SEQUENCE.
TUS CHECKED.

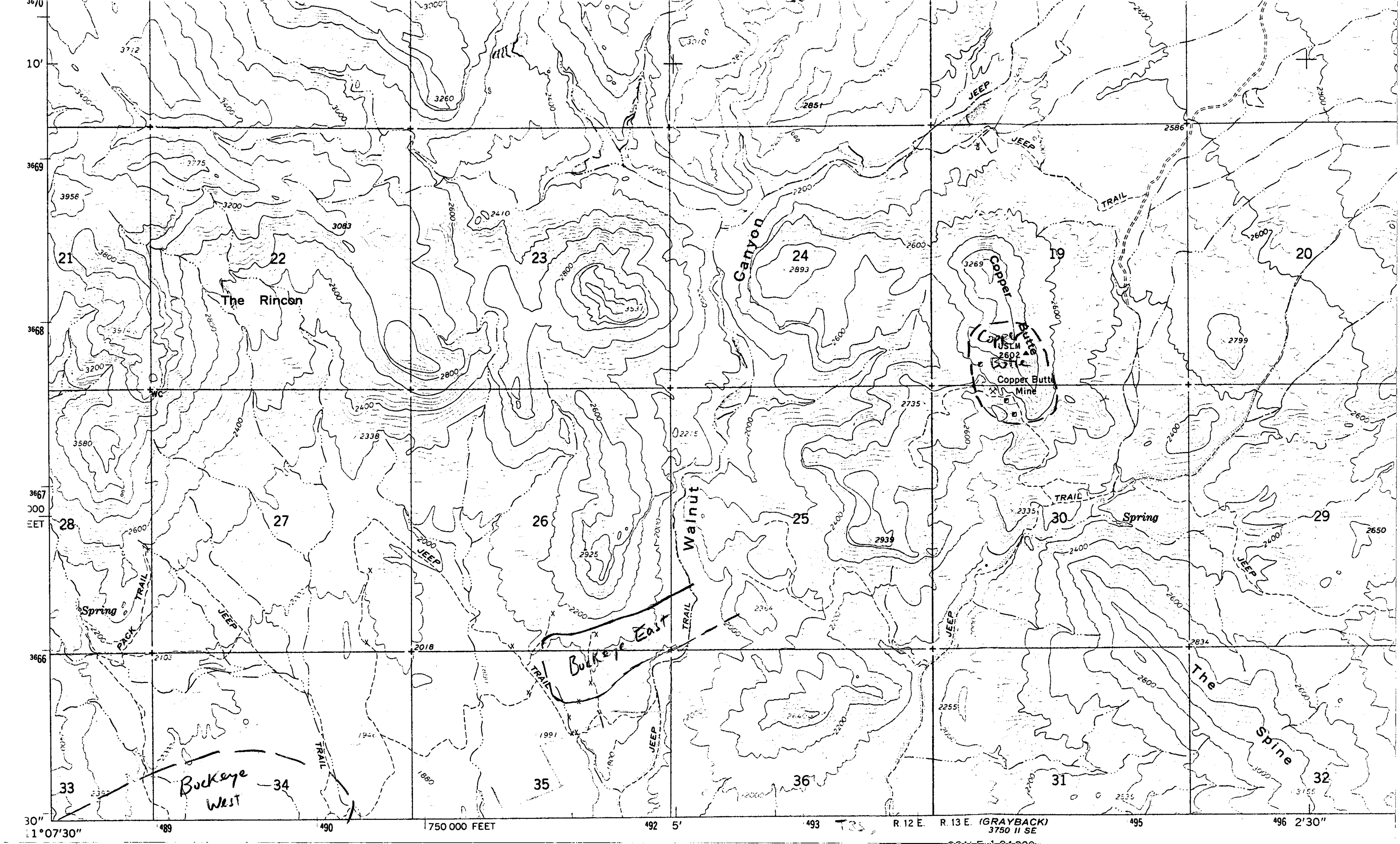
2, 32, 16, 36

T4SR12E Sec. 11 - no claims

T4SR13E Sec. 7, 8, 9, 16, 17, 18

all closed

not all closed, for current



Copper Butte
Copper Butte Mine
USLM
Site
The Spine
Spring
TRAIL
JEEP
PACK TRAIL
Canyon
Walnut
The Rincon
Buckeye East
Buckeye West
R. 13 E.
R. 12 E.
(GRAYBACK)
3750 II SE
750 000 FEET
2'30"
5'
1°07'30"
10'
19
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