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James Doyle Sell Mining Collection

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WARREN M. MALLORY, P.E.
Engineering Consultant
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OCEANSIDE, CA 92054
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July 26, 1994

Mr. James D. Sell, Manager
ASARCO Exploration
P. O. Box 5747
Tucson. AZ 85703-0747

Dear Jim:

It was good to talk with you last week and appreciate your continued interest in our Lost Basin gold/copper property that Russ Corn inspected and sampled in the spring of 1991 for ASARCO.

Enclosures: My enclosed brochure of 3/15/90 was updated on 5/23/91 by my "First Addendum", then later on 9/1/93 in the text and on the claim maps (Figs. 2, 6, and 7) when we dropped some periphery claims. Also, several additional suspected buried episyenitic gold pipes are outlined in Fig. 4. The only updating of the enclosed 1991 Tour Guide was to mark on the photo overlays where some episyenitic float rock and some formations of water-laid volcanic ash containing gold nuggets were recently found. Also enclosed are the recent drill logs and assays on drill hole LB-10 at the Copper Blow-Out, and a summary description of our property.

Copper Blow-Out: As seen in the enclosed data on Drill hole LB-10, the first 45 feet of 0.69% oxidized copper as well as the first 185 feet of 0.212% copper certainly ties in with both the center of Lost Basin's geophysical magnetic low and the center of the copper zone of the mineral zoning pattern of Lost Basin. Obviously, this drill hole did not follow this mineralized fluid vent to its source at depth. Also, the USGS and several consultants have related the Copper Blow-Out and Lost Basin to the Ithaca Peak porphyry copper deposit and Mineral Park (about 40 miles south of Lost Basin), except that the Copper Blow-Out is estimated to be about 600 feet higher on the buried intrusive system. Probably, if the Lost Basin Range had not down-dropped, the Copper Blow-Out, the pediment gravels of Grapevine Mesa, and the bedrock under the gravels would have eroded down to a similar level of intrusive exposure as Mineral Park's.

Gold Targets: The following are suspected buried sources of the rough gold nuggets and gold attached to various types of rock particles found in the pediment gravels of Grapevine Mesa for 8 miles along a N-S line dividing the exposed down-dropped western range bedrock and the eastern gravels, and from 1 to 3 miles to the east in Grapevine Mesa's gravels. These gold targets buried under the pediment gravels have never been drilled:

8 mile long buried N-S fault and breccia zones.
Paralleling large eluvial gold deposit to the east from erosion of the foregoing.
9 suggested buried episyenitic gold pipes in and to the east of the eluvial deposit.

Eluvial Gold Deposit: The pediment gravels next to the N-S 8-mile long buried faults and and breccia structures, and the suspected buried episyenitic gold pipes contain extremely rough (unrounded by wear) gold nuggets. However, it is estimated that from 50% to 70% of the gold values in the pediment gravels are gold particles attached to, or contained within ankerite, hematite, limonite, chalcopyrite, and quartz in the gravels. It is obvious that, when viewing under a microscope, these eluvial particles with gold attached (as well as uneroded crystals of various minerals) have travelled only a very short distance from their bedrock source. Several different companies over the years have drilled many holes

in this eluvial bench and then processed the cuttings through convential wet gravity separators to recover the free gold. To our knowledge, head assays of the drill cuttings before gravity separation were never made to compare with the concentrate assays. However, in most of the holes drilled by two different companies during the past 5 years, the gold and black-sand concentrates assayed considerably less in gold than the assays of their heads! Also, subsequent assays of the tailings left from the gravity separators showed that most of the gold was lost to the tailings because the gold was attached to sand and gravel particles! As described on pages 13, 14, and 15 of the brochure, limited drilling and surface sampling of the eluvial bench deposit suggests that the eluvial gold and other minerals may be economically mined as the pediment gravels are removed to expose the buried gold and copper bedrock deposits for their eventual mining.

Drilling Program: During 1992, a Canadian company drilled 11 reverse-circulation holes at random ¼ to ½ mile apart before conducting an aerial geophysical survey. One of these holes was LB-10 previously described. In 1993, after an aerial survey, they drilled 7 additional holes in the southern exposed bedrock of the western range about 1½ miles south of the Copper Blow-Out. Since they, apparently, were not interested in copper, no more drilling was done in the area of LB-10. I have on file the logs and assays of all 18 holes and over 2,600 sacks of drill cuttings of 5 foot sections are in storage in Arizona.

Recent Geophysics: An extensive aerial geophysical survey by Dighem covering all of Lost Basin (western range and Grapevine Mesa) was conducted recently which included magnetics, resistivity, radiometrics (potassium, thorium, uranium, and total), VLM, and EM profiles. I have on file the compressed digital data on 12 disks comprising the total airborne survey data.

Seismic Survey: Such a survey has never been conducted over the pediment gravels of Grapevine Mesa to determine the topography of the buried bedrock surface. I believe that such a survey would be very useful for both future gold and copper exploration of the buried bedrock.

Meeting in Oceanside, CA: Before visiting Lost Basin, I am sure it would be of benefit to you to meet with me for 3 to 4 hours in my office. I am only about a 40 minute drive from the San Diego airport and can give you directions over the phone. I have hundreds of cataloged gold, copper, and other mineralized rock samples along with many country-rock samples, eluvial gold sands (view under microscope), large stereo aerial photos, a 2 foot high stack of geological, geophysical, and geochemical reports (see "Applicable References" in brochure, pages 22-24), and many large rough gold nuggets.

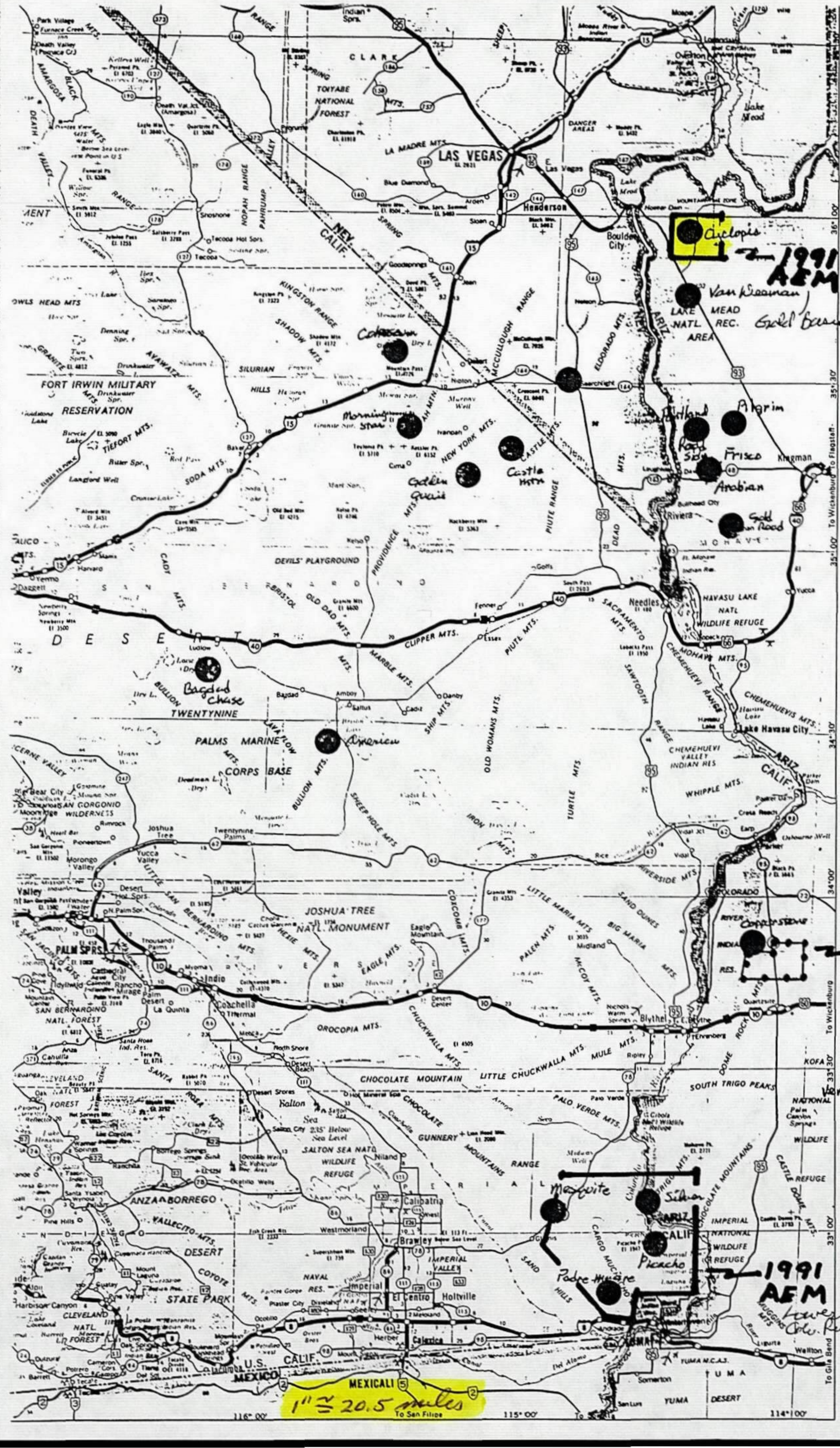
Thank you for your interest and I certainly hope you can meet with me here in Oceanside in the near future.

Cordially,

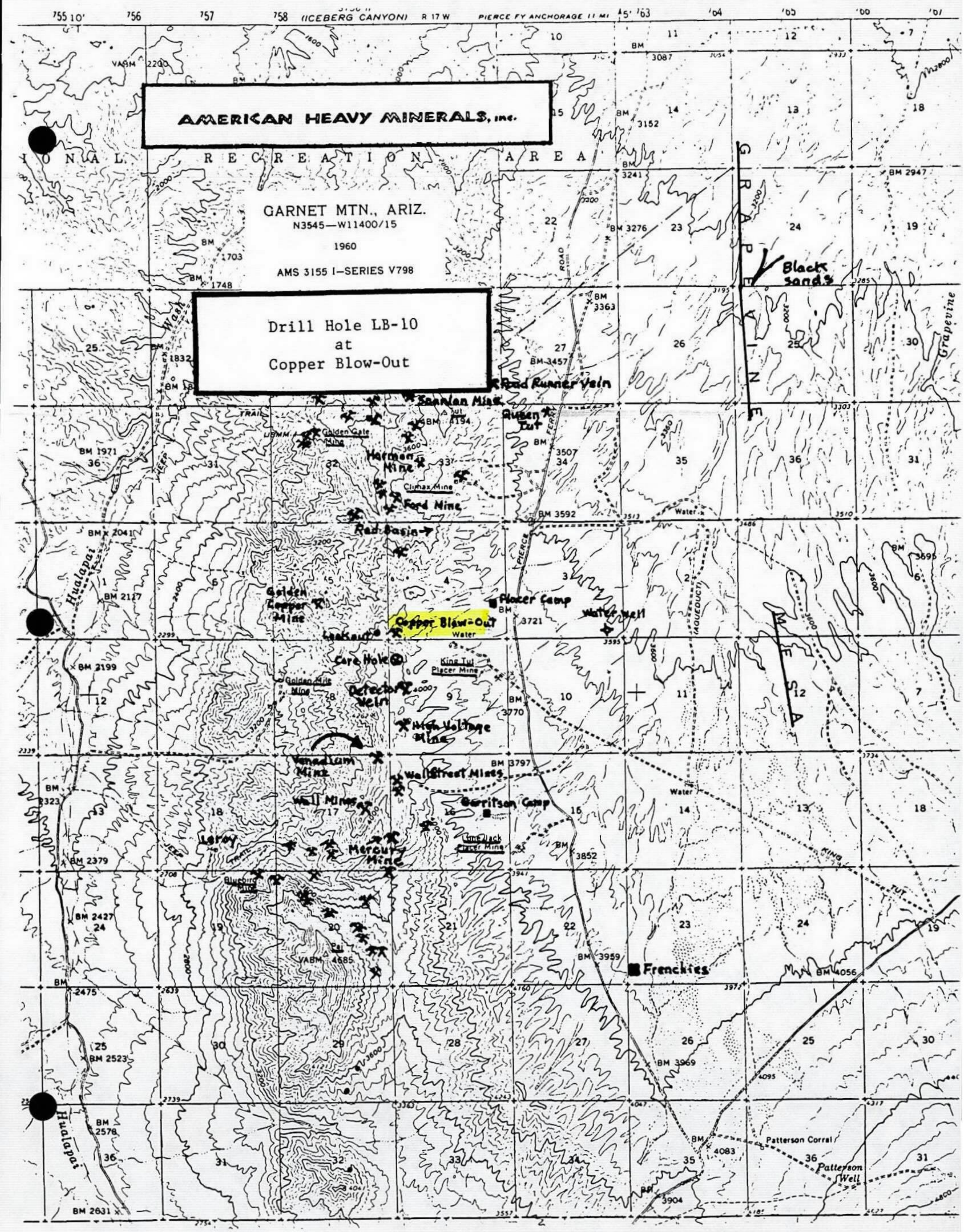
Warren M. Mallory, General Manager of
American Heavy Minerals

Enc.

PS: I just found out that an IP line (E-W) across the Copper-Blowout shows a probable anamoly to the east where we have found a lot of copper rock float and some copper bedrock outcrops in the pediment gravels. This is east of drill hole LB-10. The IP line was run in 1968 by a company looking for gold.



Cities & Towns


AMERICAN HEAVY MINERALS, inc.
GARNET MTN., ARIZ.
N3545—W11400/15
1960
AMS 3155 I—SERIES V798
Drill Hole LB-10
at
Copper Blow-Out
(ICEBERG CANYON)
R 17 W
PIERCE FY ANCHORAGE 11 MI
RECREATION AREA
GRAPEVINE
Black sands
Road Runner Vein
Spanian Mine
Queen Tut
Golden Gate Mine
Harmon Mine
Climax Mine
Ford Mine
Red Basin
Golden Copper Mine
Placer Camp
Water Well
Copper Blow-Out
Lookout
Core Hole
King Tut Placer Mine
Golden Mile Mine
Detector Vein
High Voltage Mine
Vanadium Mine
Wall Street Mines
Well Mines
Garritson Camp
Leroy
Mercury Mine
Lone Jack Placer Mine
Bluebird Mine
Pai
VABM 4685
Frenchies
MESA
AQUEDUCT
PIERCE FERRY ROAD
KING TUT
Hualapai
Wash
JEEP TRAIL
Grapevine
Patterson Corral
Patterson Well
Water

HOLE NO.

LB-10 Vertical, 1000' total depth

DEPTH	INTERVAL	Au ppb	Cu ppm	DESCRIPTION
0-130'	130'			Dark Precambrian schist with locally strong red-brown limonite, generally weak to moderate orange-brown limonite. Locally moderate quartz and CuOx to 50'
130-235'	95'			Mostly light colored intrusive with minor Precambrian schist fragments. Weak orange-brown limonite after sulfides.
235-510'	275'			Dark Precambrian with weak to moderate limonite. 500-510' strong limonite.
510-515'	5'			Pale green quartz rich zone.
515-600'	85'			Dark gray Precambrian with strong orange-brown limonite.
600-660'	60'			Precambrian continues but local trace pyrite observed, no limonite.
660-785'	125'			Precambrian with moderate to locally strong limonite.
785-895'	110'			Precambrian with weak limonite.
895-910'	15'			Precambrian with strong limonite.
910-1000'	90'			Precambrian with weak limonite except the interval 965-990' which contains moderate limonite.

SCALE: 1" = 20'
LOGGED BY: DLG 9/12/92

PROJECT: LOST BASIN HOLE NO. LB-10 PAGE 1 OF 5

ROCK TYPE	ALTERATION BIO	ALTERATION Rock	ALTERATION REMARKS	GANGUE Veins	GANGUE REMARKS	METALLIZATION G	H	J	MnO	Py		DEPTH	% REC	Graphic Col.	DETAIL	ASSAYS Au ppb	Ag	Cu
DARK pre cambrian schist											Strong red-brown lim.	0				816		
												5			Weak Cu oxide on fractures.	14		
											Weak or. brown lim.	10				6		
												20				6		
											Moderate orange br. lim.	20				7		
												30				<		
												35				<		
					35													
					Moderate Qtz. 40							40				<		
																<		
												50			50	<		
																<		
												60				<		
					65											106		
					Moderate Qtz 70							70				<		
																<		
												80				<		
																<		
												90			6	<		
												95				<		
											Strong red-brown Limonite	100				9		
																6		
												110			31	27		
					115											35		
					Moderate Qtz. 120							120				16		
																5		
											Weak or. br. lim on fractures and alter sulfides	130				22		
130' Mostly lt. Colored intrusive with mica precambrian schist fragments.	+															15		
	+											140				12		
	+															5		
	"											150				12		
	+															10		
	+											160				<		
	"															6		
	+											170				<		
	+															<		
	+											180				<		
	+														5	<		
	+											190				<		
	+															<		
												200				8		

SCALE: 1" = 20'
LOGGED BY: DLG 9/12/92 PROJECT: Lost Basin HOLE NO. LB-10 PAGE 2 OF 5

ROCK TYPE	ALTERATION BIO	ALTERATION Rock	ALTERATION REMARKS	GANGUE Veins	GANGUE REMARKS	METALLIZATION G	H	J	MnO	Py	DEPTH	% REC	Graphic Col.	DETAIL	ASSAYS Au, ppb	Ag.
											200				6	
															<	
											210				7	
															<	
											220				33	
														33.5	34	
											230				<	
235																
Dark pre-Cambrian											240				<	
															<	
											250				<	
															11	
											260				9	
															<	
											270				<	
															<	
											280			5	25	
															<	
											290				7	
															<	
300											300				<	
Lighter color. May be rock change															<	
											310				<	
															<	
325											320				<	
Dark pre-Cambrian															<	
											330				<	
															<	
											340				<	
															<	
											350				<	
															<	
											360				<	
															<	
											370				<	
														<	<	
											380				<	
															<	
											390				<	
															<	
											400				<	

SCALE: 1" = 20'
LOGGED BY: DLG

PROJECT: LOST BASIN HOLE NO. LB-10 PAGE 3 OF 5

ROCK TYPE	ALTERATION BIO	ALTERATION Rock	ALTERATION REMARKS	GANGUE Veins	GANGUE REMARKS	METALLIZATION G	H	J	MnO	Py	DEPTH	% REC.	Graphic Col.	DETAIL	ASSAYS Au ppb	ASSAYS Ag
DARK GRAY Precambrian continues											400				<	
															<	
											410				<	
															<	
											420				<	
															10	
											430				<	
															<	
											440				6	
															<	
											450				19	
														28	36	
											460				8	
															<	
											470				<	
															6	
											480				<	
															5	
											490				<	
															<	
											500				22	
															<	
											510				35	
510 PALE Green Material 515														31	27	
DARK GRAY Precambrian											520				22	
															40	
											530				<	
															19	
											540				20	
															15	
											550				12	
															225	
											560			132	38	
														22	15	
											570				21	
															10	
											580				13	
															<	
											590				<	
															8	
											600				10	

500' Intervals of strong orange brown Limonite to 600'

SCALE: 1" = 20'
LOGGED BY: DLG 9/13/92

PROJECT: LOST BASIN HOLE NO. LB-10 PAGE 4 OF 5

ROCK TYPE	ALTERATION · BIO	ALTERATION · Rock	ALTERATION · REMARKS	GANGUE · Veins	GANGUE · REMARKS	METALLIZATION · G	H	J	MnO	Py		DEPTH	% REC.	Graphic Col.	DETAIL	ASSAYS · Au ppb	Ag
												600				34	
											Local py					12	
												610				<	
																9	
620 Pale green color.												620				<	
																<	
												630				<	
												640				<	
645																<	
												650				6	
																9	
											660	660				<	
											Moderate orange brown limonite					7	
												670				10	
																8	
680 Pale green color.												680				<	
																216	
												690				154	109
695																34	
												700				32	
																15	
											705 mod. to strong orange br. limonite	710				<	
																<	
												720				10	
																<	
												730				<	
																<	
												740				<	
																<	
												750				21	
																<	
												760				8	
																38	
												770				<	
																21	
												780				<	
																21	
											785' weak to absent orbr lim on fract.	790				26	23
																22	
												800				<	

SCALE: 1" = 20'
LOGGED BY: DLG - 9/13/92

PROJECT: LOST BASIN

HOLE NO. LB-10

ROCK TYPE	ALTERATION . BIO	ALTERATION . Rock	ALTERATION . REMARKS	GANGUE Veins	GANGUE REMARKS	METALLIZATION G	H	J	MnO	Py	DEPTH	% REC.	Graphic Col.	DETAIL	ASSAYS Au ppb	Ag
											800					
															<	
											810				<	
															6	
											820				<	
															30	
											830				<	
															<	
835 local greenish 840 color											840				<	
															<	
											850				<	
															28 <	
											860				16	
															18	
											870				<	
															<	
875 local pale greenish color 885											880				22	
															<	
											890				<	
											895				<	
											900			Strong oxidation br. Lim.	12	
															248	
											910				16	
															<	
											920				<	
															<	
930 Zone bleached											930				8	
															<	
											940				<	
															<	
											950				<	
															<	
											960				<	
															<	
											965					
											970			Moderate oxidation br lim	31	
975 Precambrian looks bleached. Altered??															28	
											980				<	
															23	
990											990				17	
															5	
											1000				<	

SAMPLE RECORD

SAMPLER: PROJECT DRILL HOLE NO. LB-10 PAGE 1 OF 4

DATE DRILLED	BIT SIZE	RECOVERY Ft.	RECOVERY Lbs.	RECOVERY %	SAMPLE NUMBER	DRILL RUN From	DRILL RUN To	INTERVAL	ASSAYS ppb Au	ASSAYS Ag			REMARKS
					59343	0	5		816				✓
					59344	5	10		14				
					59345	10	15		6				
					59346	15	20		6				
					59347	20	25		7				
					59348	25	30		<				
					59349	30	35		<				
					59350	35	40		<				
					59351	40	45		<				
					59352	45	50		<				
					59353	50	55		<				
					59354	55	60		<				
					59355	60	65		106				
					59356	65	70		<				
					59357	70	75		<				
					59358	75	80		<				
					59359	80	85		<				
					59360	85	90		<				
				*	59361	85	90		6				Dup Smpl
					59362	90	95		<				
					59363	95	100		9				
					59364	100	105		6				
					59365	105	110		27				
					59366	110	115		35				
					59367	115	120		16				✓
					59368	120	125		5				
					59369	125	130		22				
					59370	130	135		15				
					59371	135	140		12				
					59372	140	145		5				
					59373	145	150		12				
					59374	150	155		10				
					59375	155	160		<				
					59376	160	165		6				
					59377	165	170		<				
					59378	170	175		<				
					59379	175	180		<				
					59380	180	185		<				
				*	59381	180	185		5				Dup Smpl
					59382	185	190		<				
					59383	190	195		<				
					59384	195	200		8				
					59385	200	205		6				
					59386	205	210		<				
					59387	210	215		7				✓
					59388	215	220		<				
					59389	220	225		33				
					59390	225	230		34				
					59391	230	235		<				
					59392	235	240		<				
					59393	240	245		<				
					59394	245	250		<				
					59395	250	255		11				
					59396	255	260		9				
					59397	260	265		<				
					59398	265	270		<				
					59399	270	275		<				
					59400	275	280		25				
				*	59401	275	280		5				Dup Smpl
					59402	280	285		<				

SAMPLE RECORD

SAMPLER:

PROJECT

DRILL HOLE NO. 28-10 PAGE 2 OF 4

DATE DRILLED	BIT SIZE	RECOVERY Ft.	RECOVERY Lbs.	RECOVERY %	SAMPLE NUMBER	DRILL RUN From	DRILL RUN To	INTERVAL	ASSAYS ppb Au	ASSAYS Ag			REMARKS
					59403	285	290		7				
					59404	290	295		<				
					59405	295	300		<				
					59406	300	305		<				
					59407	305	310		<				
					59408	310	315		<				
					59409	315	320		<				
					59410	320	325		<				
					59411	325	330		<				
					59412	330	335		<				
					59413	335	340		<				
					59414	340	345		<				
					59415	345	350		<				
					59416	350	355		<				
					59417	355	360		<				
					59418	360	365		<				
					59419	365	370		<				
					59420	370	375		<				
				*	59421	370	375		<				Dup Smpl
					59422	375	380		<				
					59423	380	385		<				
					59424	385	390		<				
					59425	390	395		<				
					59426	395	400		<				
					59427	400	405		<				
					59428	405	410		<				
					59429	410	415		<				
					59430	415	420		<				
					59431	420	425		<				
					59432	425	430		10				
					59433	430	435		<				
					59434	435	440		<				
					59435	440	445		6				
					59436	445	450		<				
					59437	450	455		19				
					59438	455	460		36				
					59439	460	465		8				
					59440	465	470		<				
				*	59441	465	470		<				Dup Smpl
					59442	470	475		6				
					59443	475	480		<				
					59444	480	485		5				
					59445	485	490		<				
					59446	490	495		<				
					59447	495	500		22				
					59448	500	505		<				✓
					59449	505	510		35				
					59450	510	515		27				
					59451	515	520		22				
					59452	520	525		40				
					59453	525	530		<				
					59454	530	535		19				
					59455	535	540		20				
					59456	540	545		15				
					59457	545	550		12				
					59458	550	555		275				
					59459	555	560		38				
					59460	560	565		15				
				*	59461	560	565		22				Dup Smpl
					59462	565	570		21				

SAMPLE RECORD

SAMPLER:

PROJECT

DRILL HOLE NO. LB-10 PAGE 3 OF 4

DATE DRILLED	BIT SIZE	RECOVERY Ft.	RECOVERY Lbs.	RECOVERY %	SAMPLE NUMBER	DRILL RUN From	DRILL RUN To	INTERVAL	ASSAYS ppb Au	ASSAYS Ag			REMARKS
					59463	570	575		10				
					59464	575	580		13				
					59465	580	585		<				
					59466	585	590		<				
					59467	590	595		8				
					59468	595	600		10				
					59469	600	605		34				
					59470	605	610		12				
					59471	610	615		<				
					59472	615	620		9				
					59473	620	625		<				
					59474	625	630		<				
					59475	630	635		<				
					59476	635	640		<				
					59477	640	645		<				
					59478	645	650		6				
					59479	650	655		9				
					59480	655	660		<				
				*	59481	655	660		<				Dup Smpl
					59482	660	665		7				
					59483	665	670		10				
					59484	670	675		8				
					59485	675	680		<				
					59486	680	685		216				✓
					59487	685	690		154				
					59488	690	695		34				
					59489	695	700		32				
					59490	700	705		15				
					59491	705	710		<				
					59492	710	715		<				
					59493	715	720		10				
					59494	720	725		<				
					59495	725	730		<				
					59496	730	735		<				
					59497	735	740		<				
					59498	740	745		<				
					59499	745	750		21				
					59500	750	755		<				
				*	59501	750	755		<				Dup Smpl
					59502	755	760		8				
					59503	760	765		38				
					59504	765	770		<				
					59505	770	775		21				
					59506	775	780		<				
					59507	780	785		21				
					59508	785	790		26				
					59509	790	795		22				
					59510	795	800		<				
					59511	800	805		<				
					59512	805	810		<				
					59513	810	815		6				
					59514	815	820		<				
					59515	820	825		20				
					59516	825	830		<				
					59517	830	835		<				
					59518	835	840		<				
					59519	840	845		<				
					59520	845	850		<				
				*	59521	850	855		<				Dup Smpl
					59522	850	855		28				

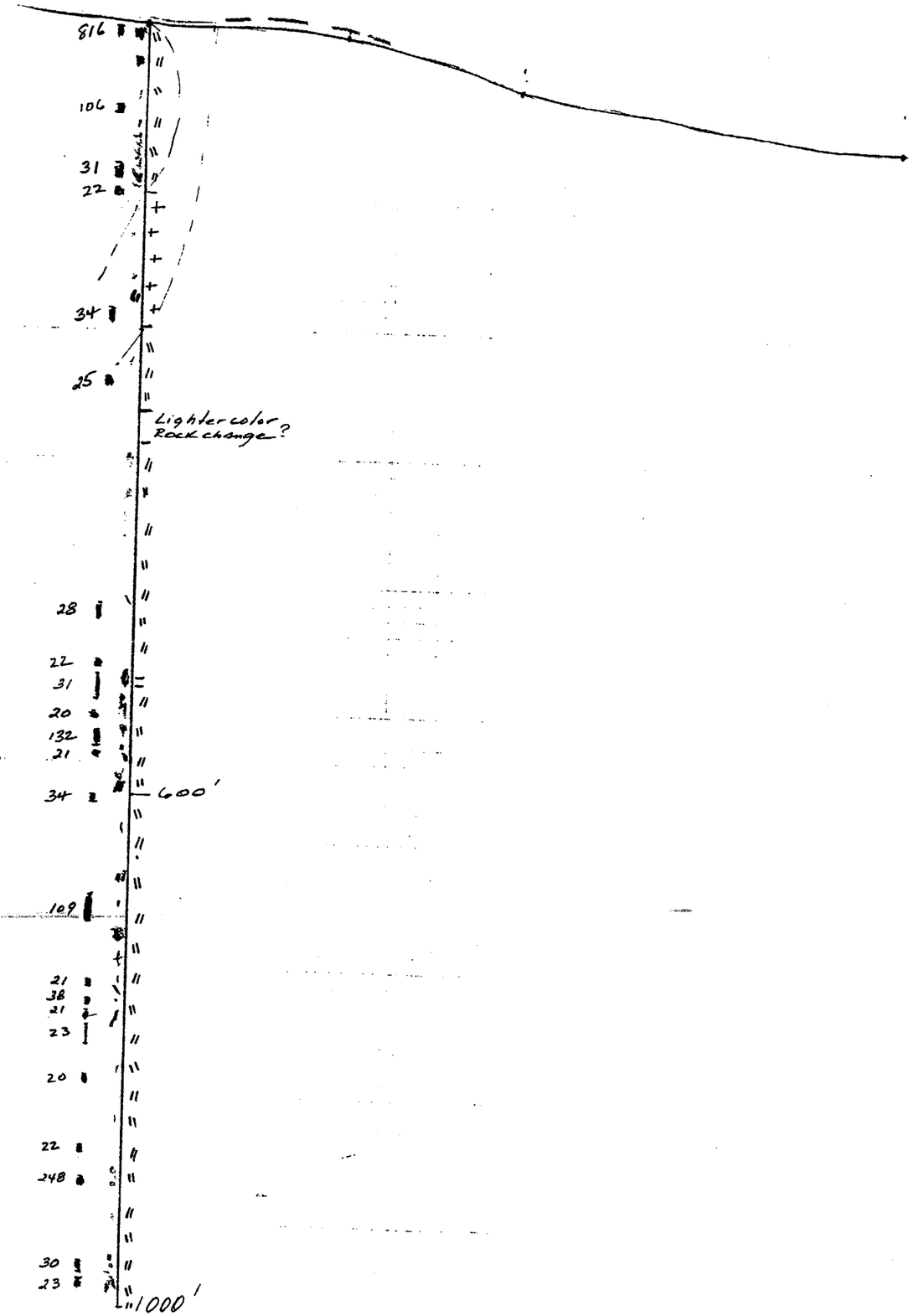
SAMPLE RECORD

SAMPLER:

PROJECT

DRILL HOLE NO. LB-10 PAGE 4 OF 4

DATE DRILLED	BIT SIZE	RECOVERY Ft.	RECOVERY Lbs.	RECOVERY %	SAMPLE NUMBER	DRILL RUN From	DRILL RUN To	INTERVAL	ASSAYS ppb Au	ASSAYS Ag			REMARKS
					59523	855	860		16				
					59524	860	865		18				
					59525	865	870		<				
					59526	870	875		<				
					59527	875	880		22				
					59528	880	885		<				
					59529	885	890		<				
					59530	890	895		<				
					59531	895	900		12				✓
					59532	900	905		248				✓
					59533	905	910		16				
					59534	910	915		<				
					59535	915	920		<				
					59536	920	925		<				
					59537	925	930		8				
					59538	930	935		<				
					59539	935	940		<				
					59540	940	945		<				
				*	59541	940	945		<				Dup: Sm01
					59542	945	950		<				
					59543	950	955		<				
					59544	955	960		<				
					59545	960	965		<				
					59546	965	970		31				
					59547	970	975		28				
					59548	975	980		<				
					59549	980	985		23				
					59550	985	990		17				
					59551	990	995		5				
					59552	995	1000		<				



4050'

LB-10
COPPER BLOW OUT AREA
EAST-WEST SECTION
LOOKing North

LOST BASIN Project
1"=100'

iPL
INTERNATIONAL PLASMA LABORATORY LTD.

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iPL Report: 9200783 T Granges Inc. | In: Sep 17, 1992 | Page 3 of 12 | Section 1 of 1
Project: Lost Basin | Out: Sep 23, 1992 | 460 RC Cutting | Certified BC Assayer David Chiu

Sample Name		Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Hg ppm	Mo ppm	Tl ppm	Bi ppm	Cd ppm	Co ppm	Ni ppm	Ba ppm	W ppm	Cr ppm	V ppm	Mn ppm	La ppm	Sr ppm	Zr ppm	Sc ppm	Ti %	Al %	Ca %	Fe %	Mg %	K %	Na %	P %
59318	C	5	<	12	3	153	<	<	<	3	<	<	<	9	12	61	<	196	58	533	3	33	<	6	0.03	1.06	1.13	2.88	0.81	0.16	0.10	0.02
59319	C	<	0.1	19	5	78	6	5	<	6	<	<	<	39	31	67	116	225	24	543	4	28	<	6	0.03	1.12	1.03	2.78	0.92	0.23	0.07	0.03
59320	C	<	<	13	<	51	10	<	<	4	<	<	<	2	6	67	<	159	4	251	12	49	<	1	<	0.41	1.17	1.07	0.15	0.17	0.07	0.01
59321	C	<	0.1	11	2	120	<	5	<	6	<	<	<	3	7	97	<	214	6	364	12	59	<	2	<	0.53	1.49	1.39	0.21	0.24	0.07	0.01
59322	C	<	<	8	<	39	<	5	<	3	<	<	<	5	10	51	<	266	17	374	5	35	<	5	0.02	0.65	0.93	2.42	0.32	0.12	0.10	0.01
59323	C	<	<	9	<	49	<	8	<	6	<	<	<	7	13	44	6	222	21	416	4	37	<	6	0.02	0.69	1.14	2.26	0.40	0.11	0.09	0.02
59324	C	<	<	7	<	45	5	5	<	3	<	<	<	6	11	57	<	240	19	437	5	49	<	6	0.02	0.75	1.35	2.38	0.40	0.14	0.10	0.01
59325	C	<	<	10	<	187	<	<	<	4	<	<	<	6	9	64	<	227	16	455	5	39	<	5	0.02	0.72	1.14	2.66	0.36	0.15	0.10	0.02
59326	C	<	0.2	11	<	36	<	<	<	2	<	<	<	7	11	49	<	190	25	684	5	49	1	9	0.02	0.78	2.02	2.04	0.60	0.17	0.08	0.01
59327	C	<	<	16	<	32	<	<	<	5	<	<	<	6	10	49	<	175	17	379	5	28	<	6	0.03	0.64	0.92	2.03	0.38	0.12	0.08	0.01
59328	C	<	<	11	2	43	<	<	<	3	<	<	<	6	9	64	<	192	19	426	7	37	<	6	0.03	0.76	1.07	2.30	0.39	0.14	0.10	0.01
59329	C	<	<	17	9	703	<	7	<	4	<	<	0.1	6	10	56	<	342	15	430	5	35	<	4	0.02	0.75	0.98	2.53	0.38	0.11	0.09	0.01
59330	C	<	<	17	18	818	27	<	<	3	<	<	<	293	14	68	515	343	22	547	4	41	<	6	0.03	0.90	1.33	2.66	0.64	0.13	0.09	0.02
59331	C	8	<	14	<	122	9	7	<	6	<	<	<	13	19	104	29	181	44	854	7	81	<	10	0.01	1.73	2.05	3.30	1.11	0.15	0.07	0.02
59332	C	<	0.1	6	<	84	<	<	<	3	<	<	<	12	19	87	7	218	50	844	5	59	1	12	0.03	1.51	2.06	3.19	1.46	0.21	0.14	0.02
59333	C	<	0.2	6	2	98	<	7	<	2	<	<	<	11	20	72	<	310	47	576	2	33	1	13	0.04	1.24	1.44	2.73	1.29	0.20	0.16	0.02
59334	C	<	<	7	3	75	<	7	<	3	<	<	<	13	17	56	24	246	36	699	3	35	1	11	0.03	1.09	1.57	2.66	1.09	0.15	0.11	0.02
59335	C	<	<	5	<	66	<	8	<	5	<	<	<	11	20	32	<	242	40	656	2	41	1	10	0.03	1.16	1.73	2.67	1.18	0.12	0.12	0.02
59336	C	<	<	5	<	36	<	5	<	2	<	<	<	5	8	30	<	212	16	327	4	24	<	5	0.02	0.60	0.72	2.41	0.34	0.12	0.09	0.01
59337	C	<	<	5	<	36	<	<	<	2	<	<	<	5	5	38	<	187	16	290	4	28	<	4	0.02	0.68	0.59	2.36	0.33	0.11	0.07	0.01
59338	C	<	<	12	<	32	<	<	<	3	<	<	<	6	7	38	9	154	14	267	4	26	<	3	0.02	0.68	0.66	1.85	0.39	0.12	0.07	0.02
59339	C	<	<	34	<	52	<	8	<	6	<	<	<	6	20	68	<	240	21	410	5	41	<	4	0.03	0.98	1.03	2.24	0.61	0.16	0.10	0.05
59340	C	6	0.2	92	5	55	<	9	<	3	<	<	<	9	23	86	<	276	25	605	6	59	1	6	0.04	1.15	1.26	2.97	0.69	0.14	0.09	0.04
59341	C	6	<	81	5	63	<	9	<	2	<	<	<	10	30	91	<	310	31	635	7	64	1	6	0.06	1.42	1.34	3.23	0.94	0.18	0.11	0.05
59342	C	19	<	33	44	125	22	<	<	6	<	<	<	0.1%	22	169	423	397	27	633	7	54	<	5	0.01	1.13	1.41	3.21	0.55	0.17	0.10	0.02
59343	C	816	3.2	8119	55	1799	22	6	<	9	<	<	3.5	35	38	1126	25	124	46	715	9	59	1	6	0.03	1.79	0.55	5.37	0.73	0.15	0.04	0.04
59344	C	14	0.1	8047	15	2017	8	7	<	5	<	<	9.2	45	55	1023	7	140	76	1076	6	44	1	9	0.07	1.96	1.09	3.62	1.51	0.14	0.06	0.04
59345	C	6	1.5	13287	7	1370	<	6	<	3	<	<	3.1	52	59	846	<	112	105	1284	5	47	2	11	0.12	2.35	1.06	4.38	1.94	0.11	0.07	0.06
59346	C	6	1.6	2213	3	442	<	<	<	2	<	<	0.3	29	43	138	51	116	96	451	2	29	3	9	0.12	1.97	1.11	4.02	1.61	0.09	0.08	0.04
59347	C	7	0.8	1898	4	412	5	<	<	4	<	<	<	14	24	513	<	104	71	302	5	49	1	10	0.06	2.24	0.42	5.06	1.42	0.21	0.04	0.03
59348	C	<	<	999	<	123	<	5	<	6	<	<	<	4	9	507	<	139	13	145	6	50	<	4	0.01	1.76	0.09	3.26	0.93	0.24	0.03	0.01
59349	C	<	0.1	17410	8	1026	<	5	<	4	<	<	2.2	65	51	1756	29	153	17	1823	11	45	<	6	0.01	1.38	0.15	2.92	0.92	0.29	0.05	0.04
59350	C	<	<	5011	<	1514	<	7	<	4	<	<	7.2	42	64	1569	<	149	107	1339	7	67	1	12	0.08	2.41	1.81	4.86	1.85	0.25	0.06	0.05
59351	C	<	<	5130	<	637	<	7	<	3	<	<	1.4	44	68	174	<	152	135	1033	4	49	2	10	0.20	2.54	1.47	4.92	2.16	0.12	0.09	0.07
59352	C	<	0.1	1621	<	391	<	7	<	5	<	<	1.1	34	49	134	<	179	88	768	9	32	1	8	0.12	1.90	1.13	3.71	1.62	0.13	0.08	0.05
59353	C	<	0.1	661	5	567	<	7	<	3	<	<	3.0	51	51	517	20	169	86	1035	4	43	2	9	0.13	1.97	2.08	3.44	1.65	0.14	0.09	0.04
59354	C	<	0.1	113	3	93	<	5	<	3	<	<	<	23	54	172	<	189	79	585	3	36	2	8	0.12	1.98	1.87	3.14	1.87	0.13	0.09	0.04
59355	C	106	<	373	2	258	<	6	<	4	<	<	0.3	28	60	731	<	233	106	813	2	86	3	13	0.11	2.17	3.69	3.90	2.31	0.24	0.07	0.03
59356	C	<	0.1	277	<	172	<	6	<	4	<	<	0.3	28	78	1539	<	226	85	757	5	61	2	11	0.09	2.18	2.82	3.78	2.18	0.18	0.07	0.03
Min Limit		5	0.1	1	2	1	5	5	3	1	10	2	0.1	1	1	2	5	1	2	1	2	1	1	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Max Reported*		9999	99.9	20000	20000	20000	9999	9999	9999	9999	999	999	99.9	999	999	9999	999	9999	999	9999	9999	9999	999	99	1.00	99.99	99.99	99.99	9.99	9.99	5.00	5.00
Method		FAAA	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP

LB-4 — LB-10 — 45' Avg. 0.69% Cu

---=No Test ins=Insufficient Sample S=Soil R=Rock C=Core L=Silt P=Pulp U=Undefined m=Estimate/1000 %=Estimate % Max=No Estimate

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iPL Report: 9200783 T Granges Inc. | In: Sep 17, 1992 | Page 4 of 12 | Section 1 of 1
Project: Lost Basin | Out: Sep 23, 1992 | 460 RC Cutting | Certified BC Assayer David Chiu

Sample Name		Au	Ag	Cu	Pb	Zn	As	Sb	Hg	Mo	Tl	Bi	Cd	Co	Ni	Ba	W	Cr	V	Mn	La	Sr	Zr	Sc	Ti	Al	Ca	Fe	Mg	K	Na	P
% surface		ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%	%	%	%	%	%
59357	C	<	<	625	<	186	<	<	<	2	<	<	0.4	17	17	1612	17	142	27	431	8	39	<	7	0.04	1.43	0.75	2.43	1.41	0.32	0.05	0.01
59358	C	<	<	31	<	48	<	5	<	3	<	<	<	6	6	187	<	144	16	360	6	13	<	6	0.04	1.49	0.43	2.53	1.46	0.42	0.05	0.03
59359	C	<	<	15	<	167	<	5	<	8	<	<	<	6	11	326	<	194	15	625	6	10	<	6	0.02	2.05	0.40	3.28	1.99	0.30	0.04	0.02
59360	C	<	0.1	129	22	158	<	6	<	4	<	<	0.3	12	16	1446	13	173	34	1021	7	32	<	8	0.02	2.03	0.77	3.63	1.97	0.29	0.03	0.01
~~59361~~ Dup.	C	~~6~~	~~<~~	~~104~~	15	153	<	5	3	3	<	<	0.2	10	17	1475	<	169	35	953	6	33	<	8	0.02	2.02	0.94	3.52	1.88	0.29	0.03	0.01
59362	C	<	0.3	214	303	568	35	8	<	4	<	<	1.0	18	33	1216	<	161	74	1154	6	36	1	9	0.06	2.18	1.08	4.46	1.95	0.23	0.04	0.02
59363	C	9	0.3	490	259	936	66	7	<	9	<	<	0.9	18	12	1885	<	162	8	561	6	36	<	6	0.01	2.07	0.12	5.28	1.73	0.27	0.02	<
64	C	6	0.3	501	710	622	100	7	<	4	<	<	0.5	16	11	619	19	191	9	973	10	13	<	6	0.01	2.17	0.07	3.56	1.97	0.33	0.03	<
65	C	27	0.5	1297	688	495	284	8	<	6	<	<	2.1	28	20	347	<	188	6	508	8	16	<	4	<	1.50	0.03	3.13	1.12	0.30	0.02	0.01
59366	C	35	0.3	988	215	409	114	<	<	9	<	<	2.9	30	12	296	<	125	7	711	4	17	<	2	<	0.39	0.05	8.20	0.08	0.24	0.02	0.01
59367	C	16	0.3	1035	22	338	12	<	<	7	<	<	3.7	18	13	754	<	164	3	740	8	27	<	2	<	0.54	0.51	2.98	0.09	0.20	0.06	<
59368	C	5	<	1990	17	903	6	6	4	6	<	<	3.1	79	24	182	6	144	4	1847	6	19	<	6	0.01	2.74	0.35	3.96	2.57	0.34	0.02	0.01
59369	C	22	<	2005	17	501	<	5	<	4	<	<	1.5	36	16	187	<	145	13	1298	7	11	<	5	0.01	2.08	0.12	3.65	1.90	0.31	0.02	0.02
59370	C	15	0.2	705	89	809	8	<	<	4	<	<	3.3	8	10	820	<	127	2	940	8	26	<	3	<	1.21	1.66	2.00	0.95	0.32	0.02	<
59371	C	12	0.7	426	572	3120	90	10	<	11	<	<	1.9	8	9	228	<	159	4	941	8	12	<	4	<	1.49	0.20	2.95	1.21	0.30	0.03	0.01
59372	C	5	0.3	203	379	797	54	6	<	4	<	<	3.1	8	6	154	<	127	4	752	9	10	<	6	0.01	1.90	0.76	3.00	1.79	0.44	0.03	<
59373	C	12	0.9	668	3111	3636	603	14	<	49	<	<	1.1	31	19	1373	<	164	9	724	6	25	<	6	0.01	1.60	0.06	2.91	1.40	0.30	0.03	0.01
59374	C	10	0.6	450	1652	3324	192	15	<	16	<	<	6.6	30	58	986	<	218	63	1689	4	47	<	12	0.03	2.79	1.39	4.68	3.07	0.33	0.03	0.03
59375	C	<	0.5	193	452	575	84	8	<	7	<	<	2.3	9	19	357	<	172	17	1113	8	13	<	6	<	1.93	0.61	3.06	1.95	0.31	0.03	0.01
59376	C	6	0.9	305	911	5050	81	15	<	7	<	<	0.5	12	30	151	<	180	38	1138	6	10	<	9	0.01	2.28	0.11	3.89	2.28	0.24	0.02	0.01
59377	C	<	0.3	383	638	1208	40	12	<	7	<	<	6.1	25	44	2258	<	176	39	1481	3	55	1	10	0.02	2.31	2.28	3.68	2.46	0.18	0.03	0.03
59378	C	<	0.2	220	518	717	19	7	<	4	<	<	3.4	16	39	1130	<	184	44	1078	5	35	<	9	0.02	2.21	1.28	3.46	2.12	0.31	0.03	0.02
59379	C	<	0.1	76	45	242	<	6	<	5	<	<	0.6	9	34	141	<	191	28	752	7	17	<	7	0.02	1.90	1.03	2.84	1.58	0.27	0.04	0.01
~~59380~~ Dup	C	~~<~~	~~0.4~~	~~215~~	199	343	31	5	<	3	<	<	1.0	13	13	438	10	245	11	719	8	19	<	5	0.01	1.46	0.62	1.83	0.87	0.42	0.06	0.02
59381	C	5	0.3	366	254	414	43	7	<	4	<	<	1.0	16	16	712	<	191	14	791	8	26	<	5	0.01	1.52	0.70	2.28	1.07	0.34	0.06	0.02
82	C	<	0.1	71	36	178	14	5	<	3	<	<	0.7	5	11	275	<	223	9	325	9	18	<	4	0.01	1.27	0.62	1.69	0.72	0.41	0.08	<
59383	C	<	<	50	20	131	<	7	<	7	<	<	0.4	4	15	302	<	244	11	326	7	18	<	5	0.01	1.16	0.66	1.70	0.66	0.35	0.07	<
59384	C	8	0.2	61	13	135	<	<	<	3	<	<	0.7	7	10	764	<	131	29	361	16	27	<	4	0.01	0.86	1.00	1.77	0.52	0.27	0.05	0.01
59385	C	6	0.1	45	12	140	<	<	<	7	<	<	0.3	4	8	448	<	128	6	400	11	18	<	5	<	1.04	0.81	1.98	0.68	0.30	0.05	<
59386	C	<	0.1	45	5	144	<	11	<	6	<	<	0.1	22	148	551	<	432	91	1196	5	71	<	13	0.03	2.12	3.18	3.93	2.47	0.40	0.04	0.02
59387	C	7	<	25	4	69	<	5	<	5	<	<	<	6	57	210	<	254	9	812	9	29	<	5	<	1.00	2.09	2.00	0.75	0.35	0.04	<
59388	C	<	<	27	5	215	<	7	<	3	<	<	<	10	30	488	<	165	30	549	7	16	<	6	<	1.98	1.23	2.87	1.88	0.33	0.03	0.01
59389	C	33	<	12	<	235	<	7	<	7	<	<	0.3	4	12	854	<	200	6	375	8	22	<	4	<	1.01	1.14	1.85	0.67	0.30	0.06	<
59390	C	34	0.2	11	2	165	<	5	<	4	<	3	0.2	4	12	791	<	193	7	261	8	21	<	4	<	0.84	0.79	1.76	0.53	0.27	0.07	<
59391	C	<	<	28	<	343	<	8	<	4	<	<	0.4	19	66	845	<	236	57	730	5	52	<	12	0.03	2.30	2.05	3.62	2.38	0.27	0.04	0.02
59392	C	<	<	17	<	104	<	7	<	6	<	<	<	9	23	322	<	195	27	650	5	19	<	9	0.03	1.66	0.82	3.14	1.32	0.30	0.06	0.01
59393	C	<	<	30	<	146	<	7	<	3	<	<	<	10	14	496	<	136	27	714	5	18	<	9	0.02	2.36	0.77	3.30	2.31	0.41	0.04	0.01
59394	C	<	<	57	<	211	<	<	<	3	<	<	<	17	25	112	<	177	70	692	4	15	<	10	0.05	2.53	0.75	3.95	2.67	0.37	0.03	0.02
59395	C	11	<	43	3	138	<	10	<	6	<	<	<	12	77	140	<	277	26	583	4	18	1	8	0.05	1.93	1.01	3.03	2.06	0.41	0.05	0.01
Min Limit		5	0.1	1	2	1	5	5	3	1	10	2	0.1	1	1	2	5	1	2	1	2	1	1	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Max Reported*		9999	99.9	20000	20000	20000	9999	9999	9999	9999	999	999	99.9	999	999	9999	999	9999	999	9999	9999	999	99	1.00	99.99	99.99	99.99	9.99	9.99	5.00	5.00
Method		FAAA	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP

Avg. 0.212% Cu 185'

LB-10

--=No Test ins=Insufficient Sample S=Soil R=Rock C=Core L=Silt P=Pulp U=Undefined m=Estimate/1000 %=Estimate % Max=No Estimate

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iPL Report: 9200783 T Granges Inc. | In: Sep 17, 1992 | Page 5 of 12 | Section 1 of 1
Project: Lost Basin | Out: Sep 23, 1992 | 460 RC Cutting | Certified BC Assayer | David Chiu

Sample Name		Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Hg ppm	Mo ppm	Tl ppm	Bi ppm	Cd ppm	Co ppm	Ni ppm	Ba ppm	W ppm	Cr ppm	V ppm	Mn ppm	La ppm	Sr ppm	Zr ppm	Sc ppm	Ti %	Al %	Ca %	Fe %	Mg %	K %	Na %	P %
59396	C	9	0.1	27	2	102	<	7	<	3	<	<	<	13	49	121	<	184	31	415	4	23	<	6	0.05	1.66	1.07	2.58	1.61	0.26	0.05	0.01
59397	C	<	0.1	28	2	91	<	6	<	2	<	<	<	17	41	61	<	164	55	523	4	23	1	7	0.07	2.23	1.41	3.19	2.59	0.23	0.04	0.02
59398	C	<	<	3	<	103	<	<	3	3	<	<	<	17	28	63	<	137	72	648	8	18	<	12	0.04	3.14	1.43	4.20	4.10	0.38	0.03	0.03
59399	C	<	0.1	20	<	90	<	8	<	4	<	<	<	24	76	64	<	160	100	618	4	28	<	11	0.04	3.54	1.58	4.70	4.90	0.24	0.03	0.03
59400	C	25	<	14	<	81	<	9	<	3	<	<	<	10	22	1538	<	156	28	477	7	31	<	6	0.01	1.98	1.25	2.73	2.27	0.25	0.03	0.01
59401	C	5	<	14	<	81	<	8	<	3	<	<	<	9	22	1467	<	175	28	453	6	29	<	6	0.01	1.96	1.17	2.66	2.19	0.27	0.02	0.01
59402	C	<	<	46	2	70	<	15	<	4	<	<	<	19	157	387	<	615	35	777	4	41	<	7	0.02	1.66	2.38	2.49	2.53	0.19	0.02	0.02
03	C	7	<	41	<	54	<	23	<	3	<	<	<	26	276	135	<	991	35	877	5	43	<	6	0.02	1.80	2.76	2.59	3.26	0.16	0.02	0.01
04	C	<	<	84	2	72	<	12	<	3	<	<	<	18	129	2316	<	460	31	694	5	65	<	9	0.02	2.05	1.91	2.98	2.52	0.24	0.04	0.01
59405	C	<	<	58	3	66	<	7	<	6	<	<	<	7	26	836	<	193	12	446	7	36	<	7	0.03	1.65	1.57	2.46	1.43	0.40	0.04	0.01
59406	C	<	0.1	72	2	68	<	5	<	2	<	<	<	8	20	655	<	182	21	516	6	27	<	7	0.03	1.58	0.72	2.76	1.18	0.33	0.05	0.01
59407	C	<	0.1	16	<	94	<	7	<	3	<	<	<	16	45	84	<	223	54	764	5	39	1	10	0.05	1.94	2.07	3.50	1.66	0.22	0.04	0.02
59408	C	<	<	21	2	42	<	6	<	6	<	<	0.1	8	22	802	<	176	12	673	7	34	<	6	<	1.03	1.97	1.90	0.62	0.25	0.04	0.01
59409	C	<	0.1	36	<	65	<	5	<	2	<	<	<	7	15	1833	<	158	7	462	6	35	<	5	0.01	1.40	0.97	2.50	1.08	0.30	0.05	0.01
59410	C	<	<	39	4	78	<	7	<	3	<	<	<	14	122	1715	<	310	20	695	6	68	<	6	0.01	1.66	2.02	2.63	1.80	0.27	0.05	0.01
59411	C	<	0.2	26	3	52	<	5	<	3	<	<	<	5	9	768	<	169	7	359	8	29	<	6	0.03	1.27	0.53	2.41	0.81	0.43	0.07	<
59412	C	<	<	18	<	54	<	11	<	5	<	<	<	10	51	885	<	323	22	555	6	48	<	8	0.02	1.60	1.34	2.78	1.62	0.32	0.05	0.01
59413	C	<	0.2	29	<	68	<	7	<	3	<	<	<	10	38	416	<	242	21	712	8	36	<	9	0.01	1.67	1.74	2.95	1.62	0.41	0.05	0.01
59414	C	<	<	52	<	59	<	6	3	3	<	<	<	18	37	121	<	156	82	863	24	44	1	12	0.03	2.00	2.86	3.68	1.86	0.20	0.08	0.03
59415	C	<	<	144	<	46	<	<	<	3	<	<	<	21	26	37	<	125	103	695	2	39	2	12	0.04	1.84	2.04	3.76	1.92	0.14	0.12	0.03
59416	C	<	<	48	<	46	<	5	<	4	<	<	<	16	24	490	<	130	76	853	14	53	1	11	0.03	1.65	2.25	3.16	1.46	0.18	0.11	0.03
59417	C	<	<	129	<	53	<	5	3	2	<	<	<	20	33	53	<	118	90	1093	3	36	1	12	0.05	1.99	2.57	3.70	2.07	0.17	0.12	0.05
59418	C	<	<	90	<	66	<	<	<	2	<	<	<	24	29	2329	<	107	124	1074	3	126	1	15	0.05	2.31	2.61	4.47	2.26	0.17	0.10	0.04
59419	C	<	<	71	<	65	<	7	<	4	<	<	<	23	31	463	<	116	111	956	2	50	1	13	0.05	2.24	2.16	4.23	2.36	0.14	0.11	0.04
59420	C	<	0.2	60	<	80	<	5	<	2	<	<	<	23	30	101	<	127	129	1006	9	42	1	13	0.06	2.47	1.98	4.48	2.72	0.17	0.08	0.03
1	C	<	0.2	63	<	84	<	<	<	3	<	<	<	24	31	105	<	137	133	1040	6	41	1	13	0.07	2.55	1.98	4.63	2.81	0.17	0.08	0.03
59422	C	<	<	119	<	83	<	5	<	2	<	<	<	22	25	85	<	107	103	708	5	40	1	11	0.07	2.36	1.50	3.99	2.36	0.21	0.10	0.02
59423	C	<	<	146	<	102	<	7	<	4	<	<	<	24	33	80	<	185	95	692	25	34	1	10	0.10	2.64	1.31	4.35	2.61	0.28	0.09	0.02
59424	C	<	0.2	165	36	98	<	5	<	3	<	<	<	25	31	104	<	138	100	983	<	23	1	8	0.06	2.52	1.29	4.50	2.83	0.12	0.06	0.03
59425	C	<	0.1	155	15	98	<	5	<	4	<	<	<	22	17	1442	<	137	45	708	5	36	<	10	0.03	2.28	0.52	3.98	2.41	0.34	0.05	0.03
59426	C	<	0.1	124	<	106	<	<	4	3	<	<	<	27	35	689	<	99	119	1227	2	43	<	10	0.03	2.90	1.89	4.80	3.16	0.18	0.03	0.03
59427	C	<	<	117	<	140	<	7	4	2	<	<	<	32	42	405	<	113	182	1412	2	29	<	11	0.08	3.58	2.00	5.71	4.48	0.11	0.03	0.03
59428	C	<	0.3	82	<	93	<	<	3	3	<	<	<	26	35	191	<	125	140	1343	<	33	<	12	0.04	2.96	2.32	5.01	3.49	0.11	0.04	0.03
59429	C	<	<	58	<	115	<	6	3	4	<	<	<	33	44	2196	<	110	158	1490	2	97	<	14	0.05	3.51	2.55	5.80	3.97	0.12	0.04	0.03
59430	C	<	<	112	<	96	<	5	<	3	<	<	<	30	38	1483	<	99	148	1220	2	85	1	15	0.05	2.84	2.25	5.19	2.83	0.14	0.06	0.03
59431	C	<	<	67	<	90	<	5	<	4	<	<	<	26	46	1678	<	137	131	1065	2	107	2	13	0.10	2.38	2.79	4.46	2.32	0.15	0.07	0.04
59432	C	10	<	83	3	107	<	<	<	2	<	<	<	33	44	517	<	129	168	1311	3	85	1	20	0.02	3.23	3.82	5.65	3.49	0.09	0.04	0.03
59433	C	<	0.1	50	<	117	<	<	<	4	<	<	<	25	37	219	<	127	144	1079	3	32	<	17	0.02	3.54	1.65	5.47	4.80	0.20	0.04	0.02
59434	C	<	<	129	<	117	<	<	<	2	<	<	<	26	35	633	<	94	141	1396	3	69	1	16	0.03	2.69	2.50	4.98	3.03	0.12	0.05	0.03
Min Limit		5	0.1	1	2	1	5	5	3	1	10	2	0.1	1	1	2	5	1	2	1	2	1	1	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Max Reported*		9999	99.9	20000	20000	20000	9999	9999	9999	9999	999	999	99.9	999	999	9999	999	9999	999	9999	9999	9999	999	99	1.00	99.99	99.99	99.99	9.99	9.99	5.00	5.00
Method		FAAA	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP

--=No Test ins=Insufficient Sample S=Soil R=Rock C=Core L=Silt P=Pulp U=Undefined m=Estimate/1000 %=Estimate % Max=No Estimate

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iPL Report: 9200783 T Granges Inc. In: Sep 17, 1992 Page 6 of 12 Section 1 of 1
Project: Lost Basin Out: Sep 23, 1992 460 RC Cutting Certified BC Assayer David Chiu

Sample Name		Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Hg ppm	Mo ppm	Tl ppm	Bi ppm	Cd ppm	Co ppm	Ni ppm	Ba ppm	W ppm	Cr ppm	V ppm	Mn ppm	La ppm	Sr ppm	Zr ppm	Sc ppm	Ti %	Al %	Ca %	Fe %	Mg %	K %	Na %	P %
59435	C	6	<	99	<	159	<	6	<	4	<	<	<	26	37	1180	<	102	131	1121	2	118	1	15	0.04	2.52	2.51	4.61	2.86	0.14	0.06	0.03
59436	C	<	<	61	<	121	<	5	<	3	<	<	<	22	29	736	<	77	110	846	<	57	1	11	0.06	2.20	1.85	3.86	2.43	0.10	0.08	0.03
59437	C	19	0.1	143	2	86	<	<	<	3	<	<	<	21	29	1276	<	90	100	701	7	100	1	10	0.06	1.97	1.68	3.45	1.87	0.11	0.09	0.03
59438	C	36	0.2	82	3	44	<	<	<	5	<	<	<	12	10	1962	<	68	24	851	16	135	<	8	0.01	0.95	3.15	2.62	0.89	0.27	0.04	0.03
59439	C	8	<	92	<	65	<	<	<	4	<	<	<	11	11	1271	<	114	30	637	11	55	<	6	0.01	1.35	1.46	3.12	0.97	0.26	0.05	0.03
59440	C	<	<	26	5	59	<	<	<	3	<	<	<	7	8	264	<	95	20	603	10	46	<	4	0.01	1.31	1.95	2.36	1.00	0.31	0.04	0.02
59441	C	<	0.1	21	7	58	<	<	<	5	<	<	<	7	10	258	<	109	20	588	9	45	<	4	0.01	1.25	1.88	2.27	0.95	0.31	0.04	0.02
59442	C	6	<	46	<	77	6	11	5	4	<	<	<	13	19	2065	<	157	31	808	13	107	<	6	0.02	1.78	1.85	3.29	1.33	0.37	0.07	0.06
59443	C	<	<	31	3	45	<	5	<	3	<	<	0.2	6	11	2384	<	142	7	346	5	94	<	3	0.02	0.92	0.64	1.81	0.62	0.18	0.06	0.01
59444	C	5	<	11	2	67	<	<	<	3	<	<	<	6	8	431	<	114	9	377	3	22	<	4	0.03	1.08	0.59	2.51	0.80	0.25	0.05	0.01
59445	C	<	<	26	<	53	<	<	<	5	<	<	<	6	8	764	<	111	8	365	3	30	<	4	0.02	0.95	0.52	2.46	0.63	0.27	0.06	0.01
59446	C	<	<	15	<	63	<	<	<	3	<	<	<	5	8	501	<	112	6	484	7	33	<	4	0.01	1.21	0.89	2.38	0.97	0.23	0.05	0.01
59447	C	22	0.1	17	<	58	<	6	<	2	<	<	<	17	73	166	<	216	54	642	6	52	1	7	0.07	1.77	2.42	2.77	2.03	0.14	0.06	0.02
59448	C	<	<	11	<	40	<	<	<	4	<	<	0.1	4	8	172	<	135	3	725	6	52	<	3	<	0.67	2.12	1.95	0.56	0.31	0.04	0.01
59449	C	35	0.2	46	3	66	<	6	<	8	<	<	<	8	10	153	<	152	8	780	5	41	<	5	<	0.89	1.85	2.40	0.81	0.27	0.07	0.01
59450	C	27	0.1	20	2	30	<	5	<	4	<	4	0.1	4	7	554	<	85	3	549	4	98	<	3	<	0.45	1.83	1.42	0.37	0.27	0.05	0.01
59451	C	22	<	20	<	61	<	<	<	3	<	<	<	4	7	194	<	111	4	390	5	35	<	4	0.02	0.86	0.98	1.82	0.58	0.27	0.07	0.01
59452	C	40	0.3	45	13	316	<	8	<	9	<	<	0.2	6	19	447	<	271	14	398	11	45	<	5	0.01	1.08	1.44	1.98	0.78	0.32	0.07	0.01
59453	C	<	<	18	<	91	<	<	<	4	<	<	<	7	9	122	<	125	13	388	7	21	<	6	0.04	1.43	0.74	2.60	1.24	0.51	0.06	0.01
59454	C	19	<	149	<	309	<	<	<	3	<	<	<	27	15	431	<	79	157	1170	2	58	1	14	0.08	2.68	1.75	5.48	2.53	0.35	0.06	0.03
59455	C	20	<	88	<	110	<	<	<	5	<	<	<	25	19	1319	<	72	134	907	6	85	<	13	0.04	2.04	2.41	5.14	1.48	0.23	0.05	0.04
59456	C	15	<	73	<	115	<	5	<	7	<	<	<	19	21	209	<	118	99	785	13	59	1	13	0.07	2.08	1.91	4.86	1.63	0.56	0.05	0.03
59457	C	12	<	48	<	106	<	6	<	6	<	<	<	12	23	619	<	120	43	713	10	48	<	9	0.05	1.78	1.85	4.75	1.36	0.47	0.05	0.04
59458	C	225	<	11	<	48	<	5	<	3	<	<	<	5	7	2025	<	102	18	423	6	55	<	5	<	0.77	1.74	2.37	0.41	0.22	0.06	0.03
59459	C	38	<	10	<	53	<	5	<	3	<	<	<	4	7	154	<	95	12	412	5	28	<	4	0.01	0.96	1.23	2.35	0.48	0.24	0.05	0.03
59460	C	15	0.2	19	<	74	<	7	<	6	<	<	<	6	9	230	<	120	11	601	8	34	<	5	0.01	0.95	1.59	2.50	0.70	0.32	0.05	0.01
59461	C	22	0.1	19	<	69	<	<	<	4	<	<	<	6	7	218	<	112	11	631	8	34	<	5	0.01	0.94	1.67	2.51	0.67	0.32	0.05	0.01
59462	C	21	<	18	<	32	<	<	<	4	<	<	0.1	3	5	134	<	130	4	322	18	25	<	2	<	0.54	0.99	1.31	0.31	0.22	0.06	0.01
59463	C	10	0.2	67	<	73	<	5	<	5	<	<	<	4	8	138	<	118	4	411	5	13	<	3	0.01	0.93	0.34	2.13	0.65	0.23	0.05	0.01
59464	C	13	<	26	<	42	<	<	<	3	<	<	0.1	4	8	53	<	107	9	354	13	29	<	3	0.01	0.70	0.99	1.50	0.51	0.16	0.05	0.01
59465	C	<	<	29	<	247	<	<	<	3	<	<	<	24	18	89	<	62	171	1836	4	60	1	17	0.05	3.55	2.36	5.92	4.32	0.63	0.03	0.02
59466	C	<	<	32	<	58	<	5	<	4	<	<	<	6	8	196	<	105	13	899	6	42	<	5	<	0.97	2.04	2.26	0.96	0.31	0.03	0.02
59467	C	8	0.1	24	<	58	<	<	<	6	<	<	<	6	11	486	<	141	14	449	11	32	<	5	0.01	0.91	1.06	2.06	0.73	0.30	0.05	0.01
59468	C	10	0.2	39	<	44	<	<	<	3	<	<	0.1	4	7	235	<	106	7	486	6	25	<	4	<	0.69	1.05	1.74	0.59	0.19	0.05	0.01
59469	C	34	<	60	<	47	<	<	<	5	<	<	0.1	5	9	104	<	112	15	521	5	28	<	4	<	0.78	1.07	1.94	0.64	0.21	0.05	0.01
59470	C	12	0.1	56	<	85	<	<	<	6	<	<	<	6	11	87	<	132	13	611	7	9	<	4	0.01	1.62	0.15	2.90	1.64	0.24	0.02	<
59471	C	<	<	34	<	134	<	5	<	4	<	<	<	11	18	203	<	118	52	888	6	13	<	8	0.01	2.59	0.32	4.12	2.88	0.19	0.03	0.01
59472	C	9	0.1	37	<	103	<	6	<	4	<	<	<	9	13	669	<	150	32	700	5	24	<	6	0.01	1.87	0.63	3.17	2.02	0.16	0.03	0.01
59473	C	<	0.1	14	<	94	<	<	<	5	<	<	<	6	10	78	<	113	18	479	5	9	<	3	0.01	1.59	0.46	2.52	1.49	0.20	0.03	0.01
Min Limit		5	0.1	1	2	1	5	5	3	1	10	2	0.1	1	1	2	5	1	2	1	2	1	1	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Max Reported*		9999	99.9	20000	20000	20000	9999	9999	9999	9999	999	999	99.9	999	999	9999	999	9999	999	9999	9999	9999	999	99	1.00	99.99	99.99	99.99	9.99	9.99	5.00	5.00
Method		FAA	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP

---=No Test ins=Insufficient Sample S=Soil R=Rock C=Core L=Silt P=Pulp U=Undefined m=Estimate/1000 %=Estimate % Max=No Estimate

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iPL Report: 9200783 T Granges Inc. In: Sep 17, 1992 Page 7 of 12 Section 1 of 1
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Sample Name		Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Hg ppm	Mo ppm	Tl ppm	Bi ppm	Cd ppm	Co ppm	Ni ppm	Ba ppm	W ppm	Cr ppm	V ppm	Mn ppm	La ppm	Sr ppm	Zr ppm	Sc ppm	Ti %	Al %	Ca %	Fe %	Mg %	K %	Na %	P %
59474	C	<	<	23	<	76	<	<	<	2	<	<	<	6	9	302	<	93	16	537	4	9	<	3	0.01	1.53	0.25	2.52	1.45	0.17	0.03	0.01
59475	C	<	<	47	<	62	<	<	<	3	<	<	<	6	7	206	<	98	13	555	3	9	<	2	0.01	1.45	0.11	2.55	1.33	0.16	0.04	0.02
59476	C	<	<	52	<	72	<	<	<	3	<	<	<	7	11	96	<	135	29	633	3	6	<	5	0.01	1.62	0.05	2.73	1.79	0.18	0.03	0.01
59477	C	<	0.1	47	4	67	<	5	3	3	<	<	<	9	16	37	<	150	45	499	4	9	<	6	0.01	1.52	0.28	2.61	1.64	0.16	0.04	0.01
59478	C	6	<	26	<	57	<	<	<	3	<	<	<	8	16	38	<	106	40	423	4	13	<	4	0.01	1.41	0.65	2.34	1.41	0.16	0.05	0.02
59479	C	9	<	44	<	284	<	8	<	3	<	<	<	19	40	40	<	151	79	1046	3	26	<	10	0.04	2.62	1.42	3.82	3.26	0.26	0.04	0.02
59480	C	<	<	46	<	198	<	<	<	4	<	<	<	12	22	110	<	114	63	815	8	17	<	10	0.02	2.08	0.83	3.26	2.62	0.30	0.05	0.02
59481	C	<	0.2	48	<	207	<	<	<	4	<	<	<	13	22	111	<	111	66	833	7	17	<	10	0.02	2.13	0.82	3.36	2.71	0.32	0.05	0.01
59482	C	7	0.1	173	17	150	<	7	<	6	<	<	<	12	27	50	<	119	36	641	14	11	<	8	<	1.79	0.50	3.74	1.96	0.13	0.06	0.01
59483	C	10	<	91	11	132	<	5	<	4	<	<	<	6	33	30	<	137	25	684	7	10	<	6	<	1.40	0.61	3.02	1.33	0.08	0.05	0.01
59484	C	8	<	57	<	137	<	7	3	6	<	3	<	12	63	171	<	191	24	681	10	20	<	7	<	1.70	0.94	3.13	2.08	0.15	0.04	0.01
59485	C	<	0.2	49	<	91	<	7	<	3	<	<	<	6	17	61	<	97	14	613	7	10	<	5	<	1.80	0.50	3.33	1.74	0.14	0.03	0.01
59486	C	216	0.1	22	4	79	<	5	<	4	<	3	<	9	9	1666	<	94	6	432	20	37	<	6	<	1.80	0.41	2.23	2.02	0.16	0.04	0.01
59487	C	154	<	24	<	71	<	<	<	4	<	<	<	10	25	136	<	109	23	509	29	13	<	7	0.01	2.04	0.72	2.44	2.31	0.17	0.05	0.01
59488	C	34	<	12	<	57	<	<	<	5	<	<	0.1	7	13	390	<	108	9	323	21	15	<	4	<	1.78	0.34	1.70	1.99	0.15	0.07	0.01
59489	C	32	<	59	<	65	<	<	<	4	<	<	<	8	9	103	<	100	7	596	17	8	<	7	0.01	1.97	0.21	3.71	1.76	0.17	0.03	<
59490	C	15	0.2	87	<	62	8	<	<	4	<	<	<	6	7	1239	<	93	5	387	10	26	<	4	0.01	1.91	0.06	3.74	1.68	0.15	0.03	<
59491	C	<	<	43	<	60	<	<	<	4	<	<	<	2	7	137	<	104	2	383	8	8	<	3	<	1.27	0.23	2.12	1.18	0.19	0.05	<
59492	C	<	0.1	30	<	50	8	<	<	3	<	<	<	2	6	151	<	113	3	434	7	12	<	4	<	0.87	0.57	1.88	0.78	0.20	0.05	<
59493	C	10	<	40	3	52	18	9	<	4	<	<	0.1	12	135	146	<	262	12	831	8	65	<	6	<	0.89	2.46	2.58	1.85	0.19	0.05	0.01
59494	C	<	0.1	14	<	79	<	19	<	6	<	<	0.2	28	322	419	<	705	45	1607	5	155	1	11	0.04	1.81	5.08	3.54	4.46	0.47	0.03	0.01
59495	C	<	<	99	<	55	<	13	<	3	<	<	<	20	177	389	<	396	30	473	3	45	1	6	0.06	1.60	1.73	2.68	2.49	0.24	0.05	0.01
59496	C	<	0.2	14	<	52	<	10	<	3	<	<	<	14	114	1133	<	338	24	439	6	47	<	5	0.03	1.39	1.86	2.15	1.94	0.20	0.06	0.02
59497	C	<	<	18	2	46	8	<	<	5	<	<	<	5	20	1565	<	150	6	266	22	40	<	3	<	0.84	0.64	2.03	0.62	0.21	0.05	0.01
59498	C	<	<	26	<	50	<	11	<	2	<	<	<	18	159	129	<	429	40	754	2	57	1	7	0.04	1.55	3.24	2.51	2.42	0.11	0.07	0.03
59499	C	21	<	49	<	56	<	8	<	3	<	<	<	10	37	436	<	173	29	484	14	35	<	6	0.02	1.28	1.39	3.02	1.15	0.22	0.06	0.03
59500	C	<	0.1	25	<	64	<	24	<	3	<	<	0.1	29	339	226	<	889	52	1042	5	100	<	12	0.05	2.20	3.07	3.33	4.68	0.65	0.03	0.01
59501	C	<	0.1	25	<	69	<	25	<	5	<	<	<	30	348	261	<	949	52	1098	5	105	<	12	0.06	2.22	3.10	3.43	4.72	0.68	0.04	0.01
59502	C	8	0.2	26	<	67	<	19	<	3	<	<	0.1	26	254	391	<	682	50	1374	4	97	1	12	0.04	2.09	3.71	3.77	4.38	0.58	0.03	0.02
59503	C	38	<	10	<	61	<	<	<	5	<	<	<	7	27	1279	<	163	15	446	5	37	<	5	<	0.88	1.07	2.36	0.76	0.18	0.05	0.01
59504	C	<	0.1	67	<	89	<	33	<	5	<	<	0.1	46	505	631	<	1407	69	1964	<	143	1	12	0.07	2.25	5.08	4.51	6.04	0.88	0.02	0.02
59505	C	21	<	51	<	74	<	24	<	4	<	<	<	41	387	225	<	1083	63	1547	<	137	2	11	0.07	1.74	4.55	3.80	4.79	0.85	0.02	0.02
59506	C	<	<	18	<	77	<	6	<	3	<	<	<	11	63	158	<	229	22	691	4	42	<	7	0.03	1.24	1.43	3.00	1.51	0.33	0.04	0.02
59507	C	21	<	55	12	125	<	7	<	6	<	<	<	7	28	305	<	165	19	516	6	44	1	6	0.01	1.15	1.78	2.40	0.92	0.29	0.07	0.04
59508	C	26	<	93	24	175	<	5	<	4	<	<	<	12	39	316	<	185	42	620	8	66	2	8	0.02	1.66	2.06	3.02	1.65	0.29	0.09	0.03
59509	C	22	<	66	16	122	<	5	<	6	<	<	<	12	36	330	<	185	38	583	8	60	1	7	0.04	1.54	2.02	2.63	1.39	0.26	0.09	0.02
59510	C	<	<	18	3	60	<	9	<	3	<	<	<	9	54	355	<	203	28	472	9	50	<	6	0.02	1.22	1.55	2.39	1.34	0.27	0.05	0.02
59511	C	<	<	9	<	41	<	<	<	5	<	<	<	6	33	299	<	158	15	558	9	30	<	4	0.01	0.90	1.56	1.82	0.85	0.24	0.04	0.01
59512	C	<	0.1	16	<	66	<	10	<	3	<	<	<	14	88	151	<	280	32	641	4	37	<	8	0.04	1.78	1.45	3.13	1.96	0.39	0.04	0.01
Min Limit		5	0.1	1	2	1	5	5	3	1	10	2	0.1	1	1	2	5	1	2	1	2	1	1	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Max Reported*		9999	99.9	20000	20000	20000	9999	9999	9999	9999	999	999	99.9	999	999	9999	999	9999	999	9999	9999	9999	999	99	1.00	99.99	99.99	99.99	9.99	9.99	5.00	5.00
Method		FAAA	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP

--=No Test ins=Insufficient Sample S=Soil R=Rock C=Core L=Silt P=Pulp U=Undefined m=Estimate/1000 %=Estimate % Max=No Estimate

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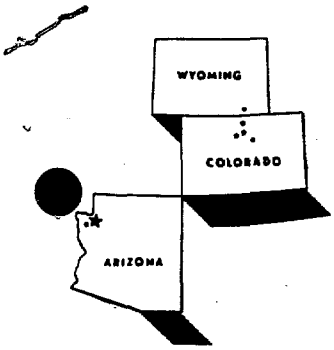
iPL Report: 9200783 T Granges Inc. In: Sep 17, 1992 Page 8 of 12 Section 1 of 1
Project: Lost Basin Out: Sep 23, 1992 460 RC Cutting Certified BC Assayer David Chiu

Sample Name		Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Hg ppm	Mo ppm	Tl ppm	Bi ppm	Cd ppm	Co ppm	Ni ppm	Ba ppm	W ppm	Cr ppm	V ppm	Mn ppm	La ppm	Sr ppm	Zr ppm	Sc ppm	Ti %	Al %	Ca %	Fe %	Mg %	K %	Na %	P %
59513	C	6	0.1	20	<	62	<	<	<	6	<	2	<	9	27	328	<	101	24	632	4	29	1	5	0.02	1.20	1.20	10.36	1.10	0.18	0.04	0.17
59514	C	<	<	47	<	69	<	<	<	4	<	<	0.2	11	38	679	<	97	27	676	5	37	1	7	0.02	1.71	1.31	11.70	1.66	0.16	0.03	0.21
59515	C	20	<	9	<	67	<	<	<	6	<	<	<	5	10	280	<	115	11	491	5	19	<	6	0.01	1.28	0.68	2.85	1.00	0.25	0.05	0.02
59516	C	<	0.1	7	<	67	<	5	<	3	<	<	<	4	7	748	<	95	4	533	4	24	<	6	0.01	1.26	0.51	2.78	1.02	0.20	0.04	0.01
59517	C	<	<	14	<	55	<	<	<	4	<	<	<	4	6	157	<	84	4	493	4	15	<	5	0.01	1.03	0.57	2.22	0.78	0.18	0.04	0.01
59518	C	<	<	15	<	30	<	<	<	3	<	<	<	4	19	411	<	101	5	276	7	21	<	2	<	0.72	0.91	1.25	0.58	0.19	0.06	0.01
59519	C	<	<	32	<	75	<	9	<	3	<	<	<	12	70	775	<	279	28	628	5	35	<	7	0.01	1.74	1.64	3.11	1.89	0.25	0.04	0.02
59520	C	<	<	22	<	56	<	<	<	3	<	<	<	5	15	416	<	104	8	448	6	20	<	6	0.01	1.26	0.96	2.49	1.16	0.24	0.04	0.01
59521	C	<	<	24	<	60	<	<	<	3	<	<	<	6	17	432	<	105	9	446	6	21	<	6	0.01	1.23	0.99	2.51	1.17	0.22	0.04	0.01
59522	C	28	0.2	38	3	40	<	5	<	3	<	<	0.1	6	28	517	<	132	11	558	6	38	<	6	0.01	0.87	2.19	1.99	0.86	0.21	0.05	0.01
59523	C	16	<	21	<	38	<	<	<	3	<	<	0.2	3	6	64	<	87	4	396	5	19	<	3	0.01	0.77	0.74	1.69	0.52	0.17	0.05	0.02
59524	C	18	<	38	<	81	<	5	<	4	<	<	<	5	12	47	<	114	6	445	5	17	<	5	0.01	1.13	0.59	2.44	0.95	0.16	0.05	0.01
59525	C	<	<	13	<	88	<	<	<	3	<	<	<	4	7	31	<	90	4	611	5	12	<	4	0.01	1.23	0.57	2.53	1.06	0.18	0.04	0.01
59526	C	<	<	23	<	64	<	<	<	3	<	<	<	5	7	902	<	96	5	458	3	22	<	5	0.01	1.08	0.35	2.67	0.83	0.17	0.05	0.02
59527	C	22	<	19	<	73	<	5	<	3	<	<	<	5	18	117	<	119	12	577	5	13	<	5	0.01	1.75	0.62	2.82	1.87	0.22	0.03	0.02
59528	C	<	0.1	138	7	83	5	5	<	4	<	<	0.1	11	14	309	<	147	33	620	7	14	<	6	<	1.71	0.59	3.06	1.69	0.21	0.04	0.01
59529	C	<	<	106	<	69	<	<	<	3	<	<	<	9	11	128	<	91	29	561	3	11	<	5	0.01	1.75	0.10	3.49	1.43	0.25	0.03	<
59530	C	<	<	46	<	69	<	<	<	4	<	<	<	8	16	100	<	97	30	519	3	18	<	6	0.03	1.49	0.57	2.95	1.41	0.30	0.05	0.01
59531	C	12	<	25	<	51	7	9	4	4	<	<	0.8	5	10	108	<	137	9	584	9	30	<	5	0.01	0.89	1.40	2.08	0.81	0.26	0.07	0.01
59532	C	248	0.1	29	<	56	<	<	<	6	<	<	0.4	5	7	60	<	103	9	521	5	22	<	5	<	0.68	1.29	1.78	0.77	0.15	0.06	0.01
59533	C	16	<	10	<	72	<	5	3	4	<	<	<	6	19	514	<	90	6	591	4	16	<	4	<	1.81	0.68	2.91	2.13	0.18	0.03	0.01
59534	C	<	<	4	<	81	<	9	<	3	<	<	<	5	7	185	<	96	6	636	6	11	<	5	0.01	2.33	0.33	3.38	2.76	0.21	0.03	0.01
59535	C	<	0.2	12	<	79	<	5	<	3	<	<	<	7	9	50	<	83	20	608	5	18	<	5	0.02	2.07	0.50	3.27	2.28	0.20	0.03	0.02
59536	C	<	0.1	41	3	77	<	<	<	5	<	<	<	17	25	66	<	133	42	561	4	43	1	6	0.08	1.96	1.02	3.23	1.85	0.23	0.07	0.04
59537	C	8	0.1	15	<	79	<	<	<	3	<	<	<	12	12	92	<	83	36	801	4	36	<	10	0.05	1.94	1.12	3.80	1.93	0.25	0.05	0.03
59538	C	<	0.1	15	4	51	<	5	<	4	<	<	<	5	18	133	<	127	12	367	24	22	<	5	0.01	1.02	0.92	2.04	0.94	0.20	0.06	0.02
59539	C	<	<	12	<	71	<	<	<	2	<	<	<	9	13	55	<	108	16	550	4	26	<	6	0.05	1.56	0.81	2.75	1.49	0.34	0.05	0.02
59540	C	<	<	20	<	73	<	6	<	5	<	<	<	17	24	65	<	147	37	673	4	64	<	6	0.03	2.03	1.62	3.26	2.01	0.17	0.05	0.04
59541	C	<	<	20	3	71	<	6	<	5	<	<	<	17	23	57	<	143	37	648	3	59	1	6	0.03	1.98	1.53	3.20	1.98	0.16	0.05	0.04
59542	C	<	<	13	<	65	<	5	<	3	<	<	<	9	19	43	<	138	21	464	12	31	<	6	0.05	1.48	0.97	2.79	1.31	0.38	0.05	0.02
59543	C	<	<	30	<	82	<	<	<	3	<	<	<	13	18	137	<	114	33	523	9	36	<	7	0.07	1.70	0.83	3.26	1.54	0.49	0.05	0.04
59544	C	<	0.1	23	<	105	<	<	<	3	<	<	<	15	19	127	<	121	43	846	9	48	<	10	0.04	1.95	1.34	3.80	1.98	0.36	0.04	0.05
59545	C	<	0.1	13	<	81	<	<	<	4	<	<	<	8	7	64	29	98	7	494	4	14	<	5	0.02	0.98	0.46	2.97	0.73	0.26	0.05	0.02
59546	C	31	0.1	55	7	73	<	<	<	4	<	<	<	11	14	90	<	106	36	739	10	29	<	8	0.03	1.17	1.56	3.94	0.95	0.31	0.05	0.03
59547	C	28	0.5	84	8	53	<	<	<	3	<	<	<	9	13	164	<	125	35	566	8	32	<	6	0.01	1.00	1.58	2.93	0.84	0.25	0.05	0.02
59548	C	<	0.2	32	<	37	<	<	<	2	<	<	0.2	4	7	343	<	138	6	341	7	25	<	3	<	0.76	0.87	1.70	0.51	0.25	0.06	0.01
59549	C	23	0.2	48	12	115	<	<	<	4	<	<	<	7	14	237	14	117	16	459	10	32	<	4	0.01	0.87	1.14	2.11	0.81	0.22	0.06	0.02
59550	C	17	0.5	31	3	77	<	9	<	4	<	<	<	10	87	195	<	294	20	740	7	62	<	7	0.02	1.22	1.68	2.75	1.70	0.42	0.06	0.02
59551	C	5	0.4	19	<	58	<	<	<	3	<	<	<	7	23	109	<	121	13	511	5	21	<	5	<	0.92	0.94	2.37	0.97	0.19	0.05	0.02
Min Limit		5	0.1	1	2	1	5	5	3	1	10	2	0.1	1	1	2	5	1	2	1	2	1	1	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Max Reported*		9999	99.9	20000	20000	20000	9999	9999	9999	9999	999	999	99.9	999	999	9999	999	9999	999	9999	9999	9999	999	99	1.00	99.99	99.99	99.99	9.99	9.99	5.00	5.00
Method		FAAA	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP

--=No Test ins=Insufficient Sample S=Soil R=Rock C=Core L=Silt P=Pulp U=Undefined m=Estimate/1000 %=Estimate % Max=No Estimate



AMERICAN HEAVY MINERALS, inc.

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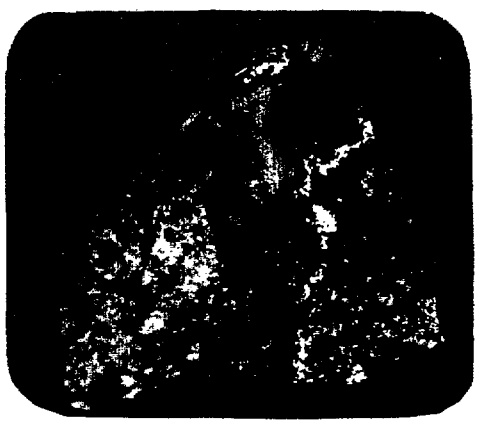
LARGE ARIZONA GOLD PROPERTY

Lost Basin Mining District, Mohave County, Arizona

Property: Contains minable gold deposits in a 7 mile long gold-bearing breccia fault zone, a large suggested buried episyenitic gold-bearing alteration pipe, many gold and silver veins, a large gold-bearing banded-iron formation, a suggested buried copper/molybdenum porphyry, and about 3,000 acres of gold-bearing fanglomerates and alluvial drainages. Located in northwest Arizona, just south of the east end of Lake Mead and the mouth of the Grand Canyon, and just west of the Grand Wash Cliffs (Colorado Plateau) in T29 & 30N, R17W, American Heavy Minerals owns 10.2 square miles (6,540 acres) composed of 129 lode claims (20 acres each) and 42 placer claims (80 to 160 acres each) which cover nearly all of the Lost Basin Mining District.

Area Geology: An 8 mile length of northeasterly trending Lost Basin mountain range in the Basin and Range province of Precambrian gneisses and schists and post-Paleozoic intrusives is paralleled on its east side by a 7 mile long breccia fault zone which, in turn is paralleled on its east side by a 7 mile length of uplifted gold bearing fanglomerates of Miocene/Pliocene age extending east through Grapevine Mesa to the Grand Wash Cliffs. The mountain range's gneisses and schists are dominantly biotitic and/or amphibolitic and in many places are intruded by coarse locally pegmatitic granite and quartz-carbonate veins. Tertiary volcanic conglomerates, water-laid tuffs, and magmatic hydrothermal ore deposits are present. A volcanic caldera is suggested under the gravels between the present southern extent of the Lost Basin Range and Garnet Mountain to the southeast. Age dating and geological data indicate several different (possibly as many as 6) geologic periods and environments of gold mineralization. **Of economic significance is that the bedrock surface is high on the buried intrusive system and has not eroded to any appreciable depth where the unmined mineralization is more consistent and prevalent.** Six different comprehensive geological field studies have been conducted on the property by the U.S. Geological Survey, graduate students of three universities, and two independent consulting geologists. (See Reports Available on page 4).

Gold Breccia Fault Zone Deposits: Excellent potential for future lode mining is believed to be in the large breccia fault zone (7 miles long and up to several hundred feet wide) which is suggested as **being the source of much of the locally derived larger gold nuggets** and which parallels the bulk of the richer fanglomerates to the east. A backhoe trench cut into this fault (1/2 mile directly west of the old King Tut placer mine) recently uncovered an ore pocket that has gold (along with limonite and ankerite) filling the quartz breccia fractures and openings up to 1/4 inch (unlike the gold flakes found in the crystalline vugs in most of the quartz veins in the range to the west). Samples of the breccia with visible chunks of gold (see photo) assayed from 20 to 110 ounces gold per ton. Two miles north of this cut in the same breccia fault, a gold bearing quartz breccia vein at the old Climax Gold Mine has been drilled and sampled indicating a probable reserve at this one location of 12,800 tons grading 0.51 ounces gold per ton. Geochemical, seismic and other appropriate surveys followed by drilling the 7 mile long breccia fault zone is suggested.



Large Suggested Buried Gold Pipe: In the northern area of the eastern fanglomerates a possible episyenitic gold bearing alteration pipe, 0.2 mile in diameter, buried under fanglomerate

gravels at a speculated depth of 100 to 300 feet, has been recently suggested by insertcolor-enhanced infrared satellite photos, the junction of three known major cross-cutting mineralized faults, a mineral zoning pattern, and the ground surface distribution of **abundant gold-bearing quartz gravel float and sharp, angular large gold nuggets with distinct vugs of ankerite, or hematite along with large black sand particles**, all in a logical erosion pattern surrounding the pipe. Four rotary drill holes, 20 to 40 feet deep, in a fanglomerate near to the pipe assayed from 0.015 to 0.44 oz. gold/ton. From all indications this suggested buried high-grade gold bedrock deposit has the potential of being developed into a large open-pit lode gold mining operation. Seismic and other appropriate surveys followed by drilling this suggested buried gold pipe is recommended.

Veins in Mountain Range: Fifty-two different gold quartz veins from 6 inches to 14 feet wide have been found to contain visible native gold. **In fact, over 6,000 rocks with visible gold in vugs have been collected from exposed outcrops.** Also, several hundred other veins contain silver, copper, mercury, tungsten, vanadium, uranium, zinc and lead. A small vein of mercury sulfide assayed 2,200 ppm of mercury, which was identified by the USGS, not as cinnabar, but as a rare, high mercury content sulfide previously only found in Central America. Also, most gold and copper veins contain highly anomalous amounts of mercury. Anomalous platinum/palladium (1.5 ppm) was assayed from 22 feet of cuttings from a drill hole in the bottom of a canyon. Twelve small mines dot the mountain range (old Spanish mines with burro haulage trails along the steep mountain sides and arrastres for grinding ore, and mines of the late 1890's). The ground on the whole was little more than prospected during these early times, or since then, due to the remoteness of the area and lack of water. The visible vein gold consists of thin flakes, most just barely visible to the naked eye, with occasional flakes as large as 1/16 in diameter, usually found in red or brown hematite after chalcopyrite and pyrite in spongy boxworks of vuggy quartz, and are seldom seen in fractures and voids like the chunky gold found in the previously described breccia fault zone to the east. Assays show gold values from a few dollars up to several hundred dollars per ton of ore shoots. Because the veins are very high in the buried intrusive system and have not eroded to any appreciable depth (like the much deeper erosion of Mineral Park, the White Hills, and Oatman), the mineralizing solutions have not penetrated the wall rock near to the ground surface. Therefore, the alteration and mineralization should increase with depth which is indicated by some veins exposed in the canyons to a depth of over 200 feet and which have been reported to yield "good" milling ore from the mountain tops down to the bottom of the gulches.

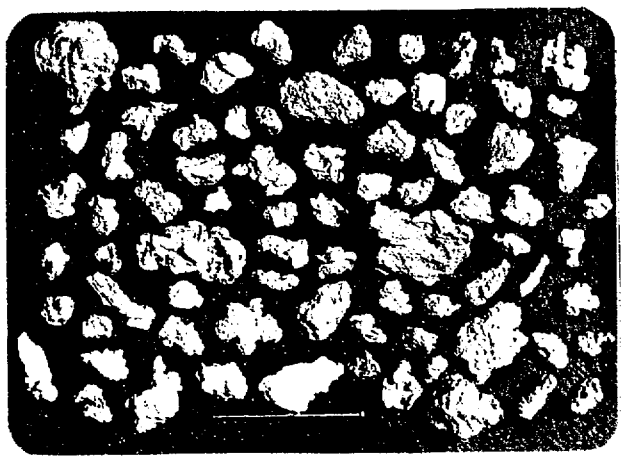
Banded Iron Formation: This gold bearing formation from 5 to 50 feet thick, outcrops throughout the 8 mile length of the Lost Basin mountain range. Sometimes referred to as a "Precambrian Placer," this metamorphosed rock consists of layers of black magnetite and hematite particles (and occasional fine gold) cemented in cherty silica. Limited gold assays vary from "nil" to 0.24 oz. gold/ton.

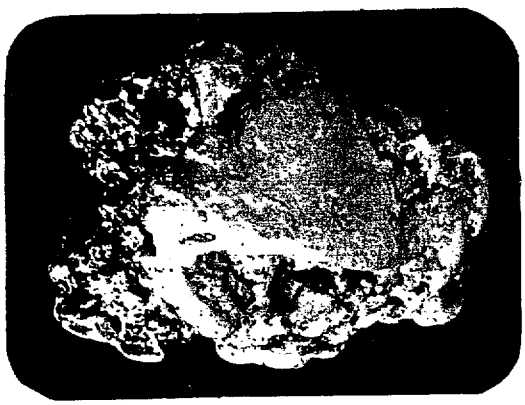
Copper/Molybdenum Porphyry: A copper zone surrounded by a silver-lead-zinc zone and an outer gold halo is located in the center of the 8 mile long Lost Basin mountain range, and several indicators such as a mineral zoning pattern, aeromagnetic pattern, spectrochemical analysis of trace metals in native gold samples, isotopic age dating of gold (Laramide), laboratory identification of a porphyry particle of native copper and extensive geologic and mineralization studies (by the USGS, two consulting geologists, and a graduate student of the Colorado School of Mines) all suggest a buried copper/molybdenum porphyry similar to the Duval Pennzoil porphyry at Mineral Park (38 miles directly south of AHM's property) which has been eroded about 600 feet deeper than AHM's property. Since free gold is found so widely distributed in Lost Basin over such a large area (in both lode and fanglomerates), a "gold crown" is suggested that is typical of the gold-rich outer halo of a copper/molybdenum porphyry that has not yet eroded down to the copper/molybdenum core, which further enhances the possibility for finding large uneroded gold bedrock deposits with depth.

Ore Samples: American Heavy Minerals (AHM) has collected and cataloged many thousands of ore and wallrock samples which are stored in its Arizona field office and are available for inspection. Sample locations are plotted on large (4" = 1 mile) aerial photos.

Fanglomerate Gold Potential: The fanglomerates contain gold carried by mud-flows from as far as 40 miles distant from the Virgin Mountains to the north in Utah, from the Cerbat Range to the south, and from the White Hills to the southwest, as well as gold eroded from veins and breccia zones in the adjacent Lost Basin mountain range to the west. Subsequently, the Muddy Creek gravels which had formed in a trough deeper than 1,000 feet, were uplifted and tilted due to block faulting and were left as a mesa with minimal subsequent erosion, thus preserving this huge gold placer deposit. (Also, drainages from this mesa to the south and southwest contain reworked gold bearing gravels.) Sampling data has been collected from 140 backhoe trenches (5 feet deep) and several small gold placer operations (all surface alluvium), and from a water well 1,340 feet deep and several hundred drill holes 50 to 100 feet deep (no evaluation of the ultra-fines in any holes and significant coarse and fine gold was left in the bottom of many holes). **In 1968, the U.S. Geological Survey estimated the resources "may exceed 500 million cubic yards of gravel averaging 0.01 to 0.02 oz. gold per cubic yard," (5 to 10 million ounces), but this did not include fine and ultra-fine gold.**

Gold Nuggets: In addition to the fine and ultra-fine gold, silver and other minerals in the fanglomerates, many visible gold nuggets (first discovered in 1931) are found in surface drainages over an area of 14 square miles (about 9,000 acres). The majority of nuggets are about 1/16 to 1/8 inch diameter with a few 1/4 to 1/2 inch and, occasionally, 2 ounce nuggets are recovered (even the 8-1/2 ounce nugget shown below!). Most have sharp, ragged surfaces indicating limited travel from their sources such as the breccia fault zone and buried episynenitic gold bearing pipes. All contain varying amounts of silver, mercury, and numerous "signature" minerals.





8-1/2 oz. nugget (actual size)
found by metal detector

Heavy Black Sands: In the fanglomerate alluvial drainages, unusually large quantities of heavy black sands are found (up to 24 pounds of plus 0.1 mm particles per cubic yard of gravels). The sands consist of magnetite, hematite (with occasional attached gold and silver), limonite, ilmenite, pyrite, mercury, tungsten, uranium, garnet, tin, and occasional platinum/palladium. Balls of mercury with enclosed gold particles are occasionally seen in the black sands. An assay showed 5.4 pounds of tin per ton of black sands which is believed to have been introduced into the fanglomerates from sea-floor limestone deposition during an extended embayment of the Gulf of California to the mesa.

Water: A 1,340 foot deep, eight inch water well was drilled in the fanglomerates. Engineering estimates indicate a capacity of 4,000 gallons per minute, but the small diameter and present pump capacity limit the flow to about 200 gallons per minute. A buried pipeline runs from the well to a recent mill-site 1-1/2 miles distant. Also, another source of water about 10 miles distant is a mountain spring which could supply about 150 gallons per minute of water by gravity (a 1,000 foot drop) via a pipeline to the property.

Power: Single and three phase power which is supplied to two nearby rural communities, is available from a transmission line along the east side of the property.

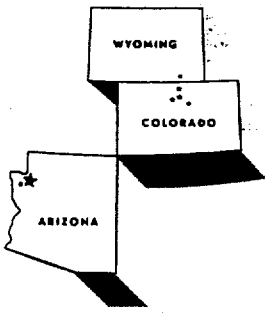
Reports Available: In addition to assays of lode and fanglomerate drill holes, rock chip channel samplings, and bulk gravel samplings, American Heavy Minerals (AHM) has available for inspection many different reports containing the various surveys and studies either conducted by AHM and its consultants, or by groups such as the USGS, Arizona Bureau of Mines, Pennsylvania State University, New Mexico Institute of Mineral Technology and the Colorado School of Mines and includes six different geological studies, color stereo aerial photography (1967 and 1986), black and white stereo aerial photography (1958, 1973 and 1980), enhanced-color infrared satellite photography, total intensity airborne magnetic and scintillation surveys, induced polarization survey of 7 lines, gravity meter profile, metal zoning survey, soil survey, petrochemistry studies of crystalline rocks in relation to mineralization, fluid inclusion studies, gold signatures (trace element) studies, surveys, cyanide leaching tests, and evaluations of two of the old lode mines.

Adjoining Properties: Three square miles (1,920 acres) of adjoining mineralized bedrock mountain range to the west is available for lease from the U.S. Park Service, as are several adjoining alluvial placer sections whose mineral rights are owned by Santa Fe Railroad and a half section of State land leased by Garritson Mining Enterprises.

Claim Jumpers: For several years many different groups of claim jumpers have been removed from the property. In fact, every weekend many amateur gold hunters with dry washers and metal-detectors sneak on to the property and adjoining Santa Fe and State land and have absconded with an estimated total of several thousands of ounces of gold nuggets. Several jumpers have been associated with fraudulent stock promotions. Recently $24,000 of gold ore was stolen overnight and hauled out of state. Of course, the major thefts and fraudulent operations have been reported to appropriate law enforcement and governmental agencies. In 1981, a court judgement was obtained against a group of jumpers who were required to pay all costs (plus interest), including court, attorney, and plaintiff.

Investment of American Heavy Minerals: Approximately $4.58 million was spent during the past 30 years in acquiring, exploring, and maintaining AHM's placer and lode claims. AHM's goal was to delineate potential mining targets that would interest experienced mining operators to complete the exploration and development. Of the foregoing, $2.30 million was spent by AHM and its associate, Apache Oro Company (AO), and an estimated additional $2.28 million was spent by other groups (motivated by AO or AHM) that produced a considerable amount of valuable information and data on the property. This included various geological and geochemical surveys and studies by Masters Degree candidates at two universities, as well as drilling, limited geophysical surveys, and a placer gravity recovery and heap leaching operation. $4.58 million total investment does not include inflation, nor the several million dollars spent by the U.S. Geological Survey in their 16 years of research in the area.

Proposal: Because the major investors and officers of American Heavy Minerals (a small privately held corporation) are either past, or rapidly approaching retirement age, it is their desire to sell this large gold property outright. Seriously interested prospective purchasers should first contact Warren M. Mallory, General Manager of AHM, to arrange a meeting to study the various reports, stereo aerial photos and ore samples before visiting the property. AHM asks that no visits be made to the property before meeting with Mr. Mallory, or one of his associates.



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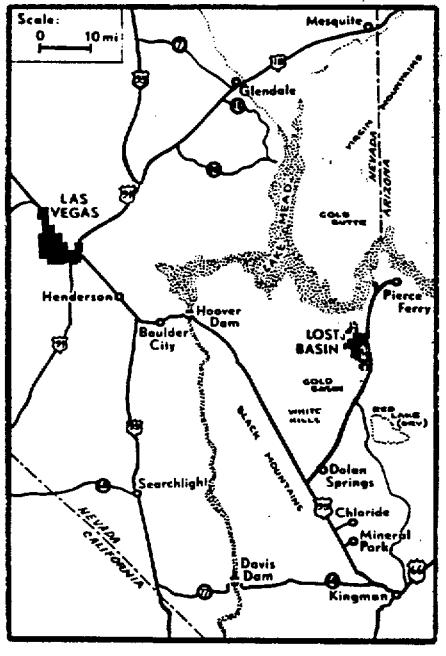
LARGE ARIZONA GOLD PROPERTY

Lost Basin Mining District
Mohave County, Arizona



by

Warren M. Mallory, P.E.
Engineering Consultant

March 15, 1990

→ NOTE: On 9/1/93 several periphery placer and a few lode claims were dropped as shown by claim status revisions on Page 1 ("Property") and in Figures 2, 6 and 7. Also please note the addendums in the rear pocket of this folder.

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LARGE ARIZONA GOLD PROPERTY
Lost Basin Mining District, Mohave County, Arizona

Property (as of 9/1/93): Contains minable gold deposits in a 7 mile long gold-bearing breccia fault zone, large suggested buried episyenitic gold-bearing alteration pipes, many gold and silver veins, a large gold-bearing banded-iron formation, a suggested buried copper/molybdenum porphyry, and about 3,000 acres of gold-bearing fanglomerates and alluvial drainages. Located in northwest Arizona, just south of the east end of Lake Mead and the mouth of the Grand Canyon, and just west of the Grand Wash Cliffs (Colorado Plateau) in T29 & 30N, R17W, American Heavy Minerals (AHM), owns 10.2 square miles (6,540 acres) composed of 129 lode claims (20 acres each) and 42 placer claims (80 to 160 acres each) which cover nearly all of the Lost Basin Mining District. See appended area photo of Figure 4, and maps, Figures 1, 2, 3, 6 and 7.

Adjoining Properties: As shown in figure 2, three square miles (1,920 acres) of adjoining mineralized bedrock mountain range to the west ("PS") is available for lease from the U.S. Park Service, as are several adjoining alluvial placer sections whose mineral rights are owned by Santa Fe Railroad ("SF") and a half section (320 acres) of state land ("AZ") presently leased by Garritson Mining Enterprises.

Area Geology: An 8 mile length of northeasterly trending Lost Basin mountain range in the Basin and Range province of Precambrian gneisses and schists and post-Paleozoic intrusives is paralleled on its east side by a 7 mile long breccia zone which, in turn is paralleled on its east side by a 7 mile length of uplifted gold bearing fanglomerates of Miocene/Pliocene age extending east through Grapevine Mesa to the Grand Wash Cliffs. The mountain range's gneisses and schists are dominantly biotitic and/or amphibolitic and in many places are intruded by coarse locally pegmatitic granite and quartz-carbonate veins. Tertiary volcanic conglomerates, water-laid tuffs, and magmatic hydrothermal ore deposits are present. A volcanic caldera is suggested under the gravels between the present southern extent of the Lost Basin Range and Garnet Mountain to the southeast. Age dating and geological data indicate several different (possibly as many as 6) geologic periods and environments of gold mineralization. Six different comprehensive geological field studies have been conducted on the property by the U.S. Geological Survey, graduate students of three universities, and two independent consulting geologists. See Figures 4 and 5 and Applicable References of Andreen, Arizona Bureau of Mines (B 137), Deaderick, Krish, Lucchitta, Post (3/1/70 Report), Smith, and the U.S. Geological Survey (B 397 and P 1361).

Mineralization in the Lost Basin Mountains: The following relates to the mineralization and old mines in the 8 mile N-S curve of western exposed bedrock of the Lost Basin mountains which dip westerly into Hualapai Wash. This down-dropped mountain range is immediately west of the 7 mile long paralleling breccia fault zone and uplifted eastern gold bearing fanglomerate mesa. **Of economic significance is that the bedrock surface is high on the buried intrusive system and has not eroded to any appreciable depth where the unmined mineralization is more consistent and prevalent.**

1A) Mineralized Veins: Apache Oro Company (AHM's associate) found 52 different quartz veins in the western exposed bedrock that contain visible native gold. Also, over 100 other veins contain silver, copper, zinc, lead, and vanadium. According to the Arizona Bureau of Mines, the old Golden Mile silver mine in Section 8, T29N, R17W (see Figure 3), contains considerable uranium ore. A small vein of mercury sulfide (see "Mercury Mine" in Figure 3) assayed 2,200 ppm of mercury, which was identified by the USGS, not as cinnabar, but as a rare, high mercury content sulfide previously only found in Central America. Also, most gold and copper veins contain highly anomalous amounts of mercury. Anomalous platinum/palladium (1.5 ppm) was assayed from the 72 to 94 foot depth in a drill hole in Bluebird Canyon, 1/2 mile directly east of the Bluebird mine. Also, tungsten (scheelite) was found in a vein outcrop about 1/4 mile NE

of the Bluebird mine. Over 100 outcrops of the various minerals in the Lost Basin Range occur at and near the junctions on N-S veins and NW-SE fault structures except the Bluebird and Wall mine veins in southern Lost Basin which appear to be mineralized over extensive NW-SE distances. Over 6,000 rocks with visible gold in vugs and fractures have been collected from exposed outcrops. The visible vein gold consists of thin flakes, most just barely visible to the naked eye, with occasional flakes as large as 1/16 in diameter, usually found in red or brown hematite after chalcopyrite and pyrite in spongy boxworks of vuggy quartz, and are seldom seen in fractures and voids like the chunky gold found in the breccia fault described in the following page. Assays show gold values from a few dollars up to several hundred dollars per ton of ore in quartz veins a few inches to over fourteen feet in width. **Because the veins (as well as the breccia fault zone and episyenitic pipes) are very high in the buried intrusive system and have not eroded to any appreciable depth (like the much deeper erosion of Mineral Park, the White Hills, and Oatman), the mineralizing solutions have not penetrated the wall rock near to the ground surface. Therefore, the alteration and mineralization should increase with depth** which is indicated by some veins exposed in the canyons to a depth of over 200 feet and which have been reported to yield "good" milling ore from the mountain tops down to the bottom of the gulches. The veins average from 4 to 6 feet in width and several are from 10 to 14 feet in width and from 1 to 2 miles in length. However, the veins on the whole have been little more than prospected since the early high-grading by the Spaniards due to the remoteness of the area and lack of water. See Applicable References of Apache Oro Company (Vein & Soil Assays), Arizona Bureau of Mines (B 137), and U.S. Geological Survey (B 397, 4/30/68 Letter, and P 1361).

2A) Banded Iron Formation: This gold bearing formation from 5 to 50 feet thick, outcrops throughout the 8 mile length of the Lost Basin mountain range. Sometimes referred to as a "Precambrian Placer," this metamorphosed rock consists of layers of black magnetite and hematite particles (and occasional fine gold) cemented in cherty silica. Limited gold assays vary from "nil" to 0.24 oz. gold/ton. See Applicable Reference of Apache oro Company (Vein & Soil Assays).

3A) Mineral Zoning Pattern: As a result of collecting and cataloging ore samples from over one hundred veins in the Lost Basin mountain range, Apache Oro Company (AHM's associate) developed a zoning pattern consisting of a gold-rich outer halo with an inner halo of silver-lead-zinc veins, centered on a band of copper mineralization (see Figure 2). The copper band is believed to extend under the eastern fanglomerates nearly to the summit of the Grand Wash Cliffs where the copper is reported to be associated with limestone. In general, the northern gold halo contains quartz with gold associated mainly with abundant chalcopyrite, whereas in the southern gold halo the gold is associated mainly with abundant pyrite. Since the veins are very high in the buried intrusive system, considerable gold is also found in the silver-lead-zinc halo as well as in the middle copper band. Also, gold, silver, and copper outcrops have been found in the extreme southern part of the range (see Figure 2), but the adjoining bedrock areas (uncolored lodes) have not been prospected by AHM. See Applicable References of Mallory (Mineralization Plot), Post (3/1/70 Report), and U.S. Geological Survey (B 397 and P 1361).

4A) Old Mines: Eighteen small mines and many prospect holes dot the mountain range. The largest mines were the Bluebird, the Golden Copper, and the Golden Gate, each of which drifted about 1,000 feet into the mountains (see Figure 3).

Mineralization in the Lost Basin Mountains (Continued)

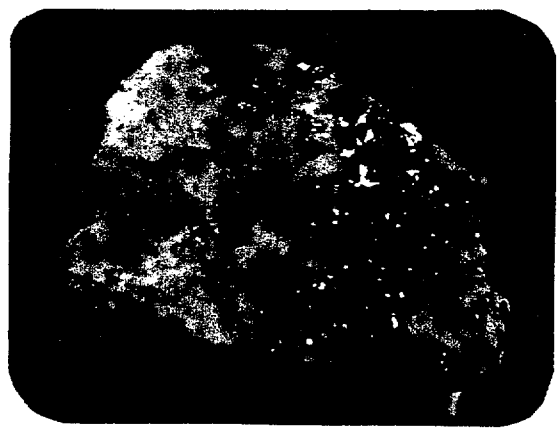
Old Spanish rock houses are evident in the gulches with burro haulage trails on riprap foundations winding up the steep mountain sides to the high-grade gold "Scanlon" mine (now called the "Empire-Manhattan") and the "Ford" mine, and possibly to the "Bluebird" mine before modern-day prospectors widened some of the trails and mined additional ore. In the area of the old Patterson water well (SE of AHM's property) two old Spanish arrastres used for grinding the gold ores have been identified. In 1974, Apache Oro Company (AHM's associate) commissioned Albert F. Trites, a consulting geologist, to sample and evaluate the Ford mine. The USGS in 1909 reported that Lost Basin's "ore contains principally gold and silver and a little copper, but no copper of commercial value and not enough to interfere with cyaniding." In 1981, gold ore from the Leroy prospect (see Figure 3) was successfully tested for amenability to cyanide leaching. See Applicable References, of Apache Oro Company (Vein & Soil Assays), Arizona Bureau of Mines (B 137), Leroy, Trites, and U.S. Geological Survey (B 397).

5A) Santa Fe Mining: In January of 1986, Santa Fe Mining (SFM) leased American Heavy Mineral's lode claims after one of SFM's geologists had sampled some gold vein outcrops in the canyon from 1/2 to 1 mile directly east of the Bluebird mine (see Figure 2). The assays were reported to be unusually high in gold. SFM had color stereo aerial photos (2-1/2"=1 mile) taken of the Lost Basin Range and conducted some geophysical and geochemical surveys in the Pai Mountain area and a couple of small areas farther north. However, before SFM could expand their studies into the more mineralized bedrock areas of Lost Basin, Santa Fe Railroad's merger with Southern Pacific Railroad was blocked by the Interstate Commerce Commission in August of 1986, and as a result, SFM immediately dropped its lease with AHM as well as leases with other companies on several other mineral properties in the western United States. See Applicable Reference of Santa Fe Mining.

Gold Bearing Fault Breccia Zones: A 7 mile long, 1/4 mile wide curved band of gold bearing fault breccia bedrock lies to the west of the eastern fanglomerate bed as indicated in Figure 2. This highly fractured and brecciated bedrock was caused by major faulting with subsequent magmatic hydrothermal mineralization. Gold bearing quartz stringers, ankerite, limonite, and free gold (in some instances) fills the fractures and voids in the breccia (unlike the gold flakes in the vugs of the quartz veins in the down-dropped mountains to the west). This long breccia band has been divided into five zones which coincide with the five mineral zones shown in Figure 2:

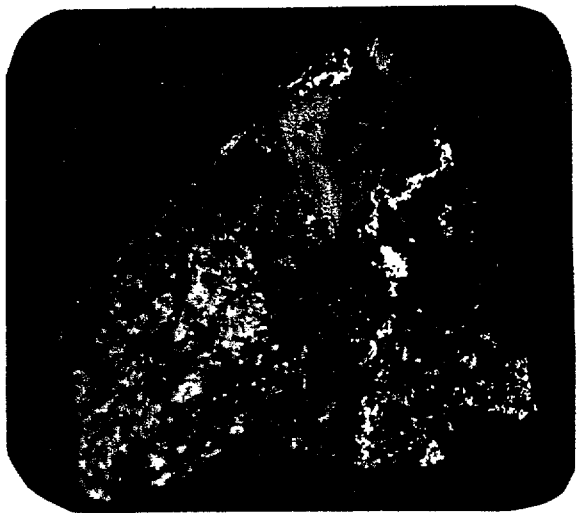
1B) Southern Breccia Zone: This zone (dotted lines) coincides with the orange southern gold halo and is covered with pediments from westward erosion of Grapevine Mesa. (Note in Figure 4 the three mile long NW-SE crest of the mesa whose gulches back-up into space due to the westward erosion toward this breccia zone). See Applicable References of Deaderick, Lucchitta, Smith, and U.S. Geological Survey (P 1361).

2B) Wall Street Breccia Zone: This zone coincides with the blue southern silver-lead-zinc halo of Figure 2 and contains three shallow old mine shafts (the Wall Street mines, the High Voltage mine) as shown in Figure 3, and many prospect holes on mineralized outcrops. **As shown in the accompanying photo, the gold is associated with galena, native**



silver, vanadinite, and some chalcopyrite and pyrite. Between the two Wall Street mines is a prospect hole that contains chunky gold (up to 1/8") and sheet gold in fractures with limonite and quartz. Also, on nearby structures are the Mercury mine (see 1A, page 1), the Wall mines (silver on the side of the gulch and gold and chalcopyrite on the top of the mountain), and the Vanadium mine. As shown on both Figure 4 and page , one-quarter mile south of the Mercury mine the USGS found a syenitic aplite pyrite-bearing dike and, further north, a few hundred feet west of the Wall Street shafts, the USGS located an episyenitic aplite body with disseminated pyrite. See Applicable References of Apache Oro Company (Vein & Soil Assays, and Drill Assays & Logs), Deaderick, Lucchitta, Mallory (Mineralization Plot), RIP, Smith, and U.S. Geological Survey (4/30/68 Letter, and P 1361).

3B) **Copper Blow-Out Breccia Zone**: This zone coincides with the green middle copper band of Figure 2. At the "Copper Blow-Out" (see Figure 3) the zone contains two shallow shafts, a short adit, and many prospect holes on outcrops of secondary copper minerals such as azurite, chrysocolla, and malachite. About 600 feet directly west of these two shafts is a prospect hole with chalcopyrite in schist. Half-way between these two points (shafts and prospect hole) a quartz vein containing visible gold is exposed on the ground surface. Highly alterated bedrock with secondary copper minerals and some opal exposed in several dozer cuts and prospect holes extends from the Copper Blow-Out about 1/2 mile south and north about 1/4 mile. Drill sludge from a 240 foot deep "Core Hole" (see Figure 3) as sampled by the USGS assayed 0.083 oz. gold/ton. (The mineralized sections of the cores from this hole were thrown away by the inexperienced driller, so only assay of the sludge was conducted.) Recently, a backhoe trench cut into the breccia zone at the "Detector Vein" exposed an ore pocket with gold (along with limonite and ankerite) filling the quartz breccia fractures and openings up to 1/4 inch. **As shown in the accompanying photo, chunks of breccia with visible gold assayed from 20 to 110 ounces per ton.** This ore pocket is 1/2 mile directly west of the head of a series of 11 old King Tut gulches feeding an arroyo about one mile long located about 1/4 mile SE of the King Tut tailings pile. The immediate area surrounding this ore pocket was probably the source of many of the larger rough gold nuggets found in the King Tut gulches. As mentioned previously, this section of the breccia zone which coincides with the "copper zone" of the mineral zoning pattern, is high on the buried intrusive system (possible copper-molybdenum core at depth) and should, therefore, still contain widespread gold from the upper gold and the silver-lead-zinc halos that have only partially eroded and which were the source of much of the larger gold nuggets found in the eastern fanglomerates. See ApplicableReferences of Apache Oro Company (Vein & Soil Assays, and Drill Assays & Logs), Deaderick, Krish, Lucchitta, Mallory (Mineralization Plot), Post (3/1/70 Report), RIP, Smith, and U.S. Geological Survey (P 1361).



Gold Bearing Breccia Zones (Continued)

4B) **Red-Basin Breccia Zone**: This zone which coincides with the blue northern silver-lead-zinc halo of Figure 2, is on the eastern edge of "Red Basin" which was formerly erroneously called "Copper Basin" by a prospector that found a quartz vein with a small amount of green secondary copper staining! The basin's red iron-stained Proterozoic metasediments cover an area of about 1/2 mile long (N-S) and 1/4 mile wide (E-W). An 86 foot deep percussion drill hole near the center of this red area (west of the breccia zone) averaged 0.05 oz. gold/ton over the entire 86 feet. Another drill hole closer to the breccia zone to the east, assayed 0.02 oz. gold/ton over its 86 foot depth. Much of the breccia zone east of Red Basin is covered with fanglomerates. However, three 50 foot percussion drill holes by Resources International Partners (RIP) in bedrock on a road just west of the center of Section 4 (which is immediately south of Red Basin), where drill cuttings were blown out in piles on top of the ground contained considerable fine gold when samples were wet panned. See Applicable References of Apache Oro Company (Vein & Soil Assay, and Drill Assays & Logs), Deaderick, Krish, Lucchitta, Mallory (Mineralization Plot), Post (3/1/70 Report), RIP, Smith, and U.S. Geological Survey (P 1361).

5B) **Northern Breccia Zone**: This zone coincides with the orange northern gold halo of Figure 2. It contains the Climax Mine (described in the following 6B) and extends northerly through the Road Runner vein outcrop (see page 8, 5C, lineament "E"). On the east side of the Climax quartz breccia vein is a paralleling 27 foot wide north-south ankerite zone which is exposed at least 1/4 mile to the north of the Climax shaft. The USGS reports that trace elements in the free gold found in the Northern breccia zone are noticeably different than at the "Harmon Mine" (just over the top of the mountain, see Figure 3) indicating different original sources of mineralization. See Applicable Reference of U.S. Geological Survey (P 1361).

6B) **Climax Gold Mine**: This 105 foot shaft was dug in the northern breccia zone after World War II. On the ground surface the vein varies from 6 inches to 4 feet in width. At the bottom of the shaft the vein is 10 feet wide. A 600 foot length of the vein was explored by drilling to a depth of 50 feet, giving a probable reserve of 12,800 tons grading 0.51 oz. gold/ton. Drilling at an exposure about 500 feet farther north on the vein shows comparable values. Surface onyx exposed near the 60 foot wide horsetailed south end of the vein assayed from "nil" to "trace" to 0.06, 0.20, and 0.50 oz. gold/ton. The average of the mill production records from the Climax mine was 6.0 oz. gold/ton. See Applicable References of Climax and U.S. Geological Survey (P 1361).

Suggested Gold Bearing Episyenitic Pipe: Because of several ground surface indicators, such as related distribution patterns of gold bearing quartz float, sharp and angular gold nuggets, fanglomerate gravels, cross-cutting lineaments and mineralized vein structures, aeromagnetic low, and the area's mineral zoning pattern, a large buried gold mineralized pipe is strongly suggested in the NE corner of Section 4, T29N, R17W. As a result of this suggestion, color-enhanced infrared satellite photos were made (page 7) which show a circular form at the same location as the suggested pipe and a fan of fanglomerate gravels which appear to have possibly eroded to the SE from this pipe. The USGS had previously identified an episyenitic aplite ("E") and a syenitic aplite ("S") outcrop in the Wall Street breccia zone area, both of which show similar gravel coloring as the gravels in the photo SE of the suggested buried pipe. This pipe appears to be the source of much of the surficial rock types and large gold nuggets found within at least a 1 mile distance to the SE. The pipe's bedrock surface is estimated to be buried at a depth under the fanglomerate gravels of from 100 feet to, perhaps, 300 feet. See Applicable References of Mallory (11/1/86 Summary, 2/1/87 and

8/25/87 Addenda) and U.S. Geological Survey (P 1361). The following observations and studies certainly point to a buried gold mineralized bedrock source about 0.2 mile in diameter which has the potential of being developed into a large open-pit gold mining operation:

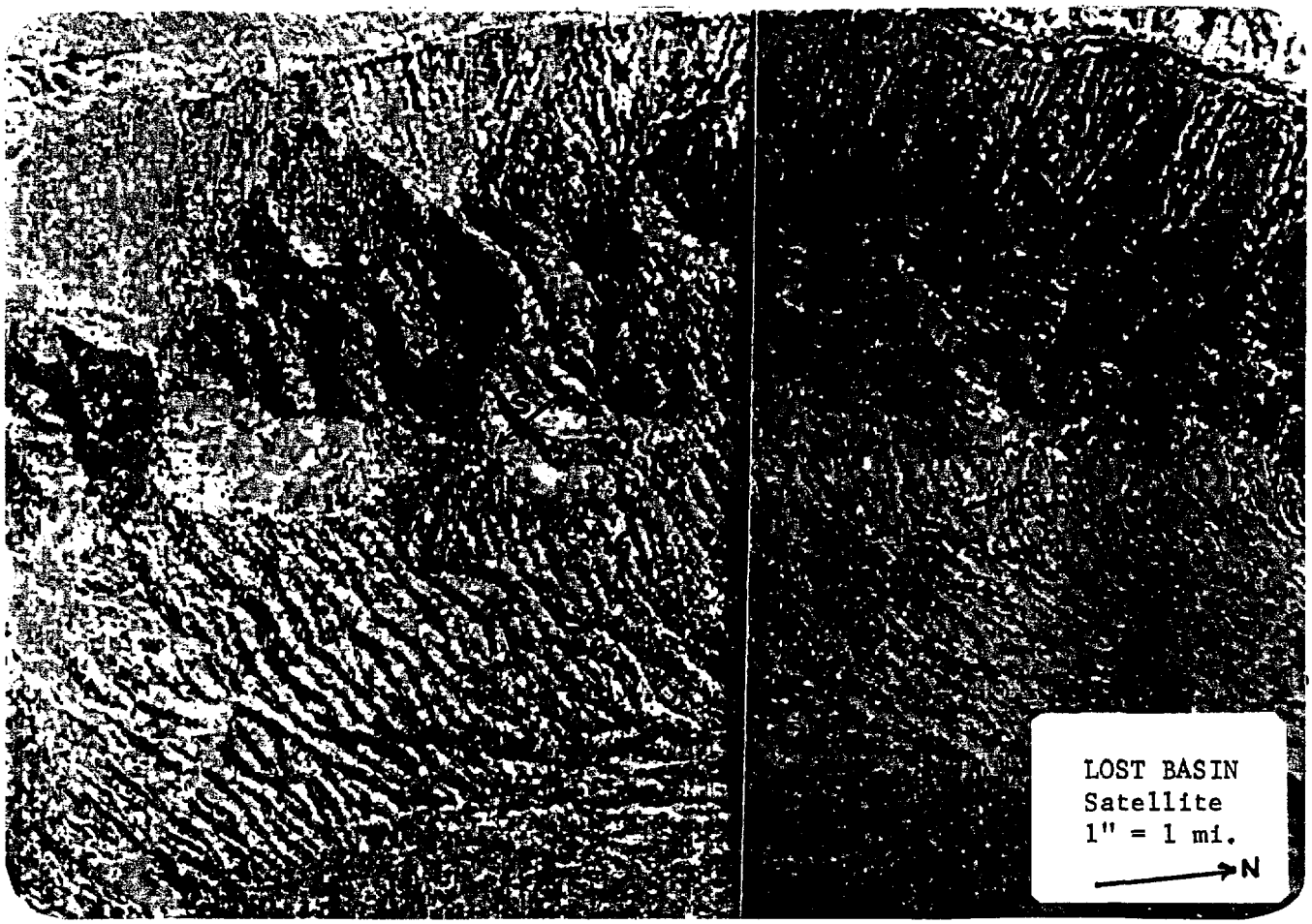
1C) **Quartz Float**: A significant indicator is that the fanglomerate gravels covering the suspected buried pipe contain abundant small (1 inch and smaller) white and colored quartz particles, and as one walks radially away from this spot, abundant large quartz rocks (mineralized and bull, 3 to 12 inches diameter and larger) cover the ground. Often the breaking with a rock hammer of pieces of this quartz rock float reveals visible free gold in vugs of hematite, or ankerite. Also, upon inspecting the surrounding area, it is obvious that the bulk of this quartz float (both small and large) has been deposited to the SE (a distance of at least 1 mile) and becomes more diluted with fanglomerate gravels the greater the distance from the suspected pipe. To the north and west, the larger quartz rocks and abundant quartz gravels are evident in the fanglomerate gravels only for about 1/4 to 1/2 mile. However, to the northeast (present surface drainage) abundant quartz float is found over a distance of at least two miles.

2C) **Gold Distribution**: Another significant indicator of a possible buried mineralized bedrock pipe are the eluvial gold nuggets found in the vicinity which are very sharp and angular (not traveled more than a few hundred feet) with distinct vugs of ankerite, or hematite, and usually are large (1/16 to 3/4 inch diameter), and appear to have been eroded out of a large mineralized structure. See nugget "A" of photo on page 13. The black sand concentrate particles (after wet panning) are larger than the black sands found elsewhere in the fanglomerates. Also, free gold attached to rough hematite and quartz particles is usually found in the black sand concentrates.

3C) **Satellite Color-Enhanced Infrared Photos**: After various ground observations suggested a buried gold pipe in bedrock with initial erosion to the SE (instead of the present-day drainage to the NE), the color-enhanced infrared photos (next page) were made which, to the surprise of all concerned, show a rounded anomaly at the same location as the suggested buried pipe "P" and erosion appears to have been to the SE! These photos distinguish (in general) by absorption and reflection, different rock types such as granites, volcanics, and both newer and older fanglomerate gravels and pediments. On the photo note the yellow/brown/-red/orange colored band which shows recent gold bearing fanglomerate gravels that appear to have originated in the area of the pipe "P" and flowed SE to the end of Lost Basin ridge (in the lower left hand corner), a total distance of about 4-1/2 miles and a width of about 1 mile. This gold bearing gravel band probably extends about 1-1/2 miles to the north of the arrow, but is covered by more recent flows of pediment gravels (the blue color) from the steep erosional slopes of Tut Mountain on the west. Note that this multi-colored band plus its extension under the north pediments covers the primary areas of surface gold bearing gravels where various gulches were placered for gold by the King Tut and others during the past 50 years (see Figure 4). However, because bedrock (which underlies this eastern fanglomerate mesa) dips to the north (100 feet in 3 miles) it is difficult to justify erosion of a mineralized pipe any great distance to the SE. Possibly, the colored gravels beyond those eroded from the pipe (say 1 mile SE of "P") are a result of erosion from episyenitic pipes such as "E" and syenitic dikes such as "S" (marked on photo in the Wall Street area) as well as several other possible similar structures not yet identified in the Lost Basin Range, or under the fanglomerates. Of course, these very recent gravels (colored band) are mixed

Suggested Gold Bearing Episvenitic Pipe (Continued)

with older pediment gravels from the range to the west and the underlying Muddy Creek formation.



4C) **Pediment Gravels**: Obviously, SE of the buried pipe the pediment gravels (blue band) between the curved N-S Lost Basin ridge and the eastern fanglomerate band were primarily derived from the Lost Basin Range to the west (before the eastern gravels were uplifted) which left the eastern gold fanglomerate deposits protected from further rapid erosion especially in the southern and central parts. Field inspection of these pediment gravels shows a subtle change in rock types to the east where the pediment meets the colored gravels in the photo.

5C) **Lineaments**: (See Figure 8). In studying color stereo aerial photos flown in 1967 and 1986, along with black and white USGS stereo photos flown in 1958, 1973 and 1980, five predominant lineaments (A,B,C,D,E) intersect at the suspected buried mineralized bedrock pipe. Each lineament viewed in the pediment and fanglomerate gravels extends to the SE, W, and NW into bedrock lineaments of known exposures of veins, breccia zones, faults, or shear zones. Close inspection of the photos as well as walking over the ground surrounding the buried pipe, shows lineaments to be desert plants and trees, or changes in surface relief, or subtle differences such as soil coloring and changes in rock types in the gravels.

Suggested Gold Bearing Episyenitic Pipe (Continued)

See Applicable References of Cooper Aerial Surveys, Santa Fe Mining, and U.S. Geological Survey (Photos GS-VVB-58, 73165-73, and 351416-HAP-80), and Figure 8:

"A": This lineament is a major shear zone about 1/2 mile wide. Also, as mentioned in subparagraph 1C, abundant quartz float is found on (and feeding off of) the ridge from the suspected buried pipe along lineament "A" to the northeast (to the lower right-hand corner of photo).

"B": A very predominant pediment lineament.

"C": A major shear zone NW-SE. At most junctions with cross-cutting N-S structures in the Lost Basin Range to the west, mineralization is concentrated. At the junction of lineament "C" with "D" and "E" (location of buried pipe), mineralization should be extensive.

"D": A major structure that extends NW to the mouth of Hualapai Wash at Lake Mead. In reference to the short section of the lineament which is shown in Figure 8, the middle part (covering 3/4 mile) of this section is the western limit of where good placer gold concentrations are found in the gulches. To the north of this middle section there are bedrock exposures of mineralized structures, and to south the placer gold distribution appears to be directly related to the buried pipe rather than to this lineament.

"E": The Road Runner, "RR", gold/silver vein which is in the northern breccia zone, appears to dip under the pediment gravels and follow this lineament southerly toward the buried pipe. This vein is exposed at point "RR" which is in Park Service withdrawn land (SE corner of Section 28) about 1/4 mile north of AHM's claims. An average appearing grab ore sample from this vein with no visible free gold showing, reportedly assayed 39.1 oz. gold/ton and 35.4 oz. silver/ton!

"QH": Quartz Hill is covered with large quartz float (mineralized and bull, 3 to 12 inches diameter and larger) 1/4 mile NW of the suspected buried pipe. This quartz float is part of the uniform radial deposition which surrounds the buried pipe. Four percussion drill holes from 20 to 40 feet deep in the pediment gravels were drilled 100 feet apart, about 1/4 mile west of the NE corner of Section 4. The reported average oz. gold/ton for the 20 foot hole was 0.015, for the 30 foot hole 0.44, for the first 40 foot hole was 0.02 and the other 40 foot hole 0.19. See Applicable Reference of Climax.

"X": Recent rock chip channel sampling was conducted near to the lower edge of a cemented riverbed gravel layer of Muddy Creek Formation about 20 feet thick which is about 100 feet east of the 86 foot deep drill hole near the center of "Red Basin" (see 4B, page 4). The cemented sands assayed 0.009 oz. gold/ton. Red rock inclusions (same rock types as in Red Basin) in this cemented layer assayed less than 0.001 oz. gold/ton. It is believed that these cemented sands came directly from the area of the suspected buried mineralized pipe to the east, since the positioning of many flat rocks in this layer indicates original drainage to the west. The red iron staining in Red Basin is believed by several consultants to have originated to the east under the fanglomerate gravels, possibly from the

Suggested Gold Bearing Episyenitic Pipe (Continued)

suggested buried mineralized pipe. See Applicable Reference of Apache Oro Company (Vein & Soil Assays).

"Y": This point is the junction of Lineament "C" and the cross-cutting northern breccia zone. Channel sampling assayed 0.006 oz. gold/ton. See Applicable References of Apache Oro Company (Vein & Soil Assays).

6C) **Additional Considerations**: The suggested buried gold pipe (in the NE corner of Section 4) is covered by the extension of the northern gold halo and is located (as shown in Figure 10) at the neck of the magnetic low that encircles the "Copper Blow-Out" and the adjoining magnetic "low-low" covering Sections 34 and 27 to the NE. On the long NE-SW ridge immediately SW of the buried pipe, a cable-tool drill hole was started by Western Nuclear, but abandoned when the driller thought he hit bedrock at about 10 feet. It is suspected that older bedrock could be still higher than the adjoining mineralized pipe which would have eroded much faster than the older bedrock through which the pipe was intruded. See Applicable References of Heinrichs' Airborne Magnetic and Scintillation Survey, and Western Nuclear.

Possible Buried Episyenitic Pipes in Southern Area: Two other possible large buried mineralized bedrock deposits are suggested by lineaments and surrounding fanglomerate occurrences of sharp, angular eluvial gold nuggets along with fine gold. Both suspected bedrock deposits are separated in a NW-SE direction by a distance of about 3/4 mile as shown in Figure 9 (which is a copy of the southern area of the color-enhanced satellite photos on page 7). Even though this area does not have as many of the obvious indicators as observed around the northern suspected buried pipe, further consideration and studies are warranted:

1D) **NW Corner of Section 22, T29N, R17W**: The old Lone Jack Placer mine is 1/4 mile directly north and other old major placer diggings are directly to the east of this suspected deposit. Also, a curved lineament 2 miles long in the fanglomerate gravels on the west and several cross-cutting lineaments which intersect in the general area are especially obvious on the 1967 color stereo aerial photos. A white spot (about 0.05 inch in diameter) is seen on the color-enhanced satellite infrared photo (page 7, marked "22") which directly coordinates with two of the aforementioned cross-cutting orange lineaments (N30°E and N80°E) shown in Figure 9. See Applicable Reference of Cooper Aerial Surveys.

2D) **E Center of E-1/2 Section 16, T29N, R17W**: This is in the 1/2 section State of Arizona lease of the Garritsons', in the area of the trench described in 2F on page 15, and is marked as "16" on the color-enhanced satellite infrared photo on page 7. Also, this point is at the junction of two long major purple lineaments shown in Figure 9. One purple lineament, N60°E, has been previously identified as a major fault. The other purple lineament, N30°E, covers a distance of about 9 miles, which is an obvious linear structure, at least in the northern 4 mile length where it intersects with the aforementioned identified fault.

Other Observations Regarding Intrusives: In the eastern fanglomerates other indications of mineralized bedrock intrusives into, and possibly up through the Muddy Creek formation have been observed. For example, at or near the upper (western) end of gulches placered by the King Tut and others over the eastern fanglomerate gravels, the color aerial photos occasionally show short SE-NW, or S-N lineaments crossing the gulches near their upper ends. On the ground upon inspecting the bottom of the gulches directly below these crossings, many times float of ankerite, a green schist with black mica, and gold bearing

Other Observations Regarding Intrusives (Continued)

quartz rocks are found. Occasionally, pegmatite float is found. Ankerite and this particular green schist and pegmatite are not common as float in the surrounding alluvial gravels. In other words, these three particular rock types appear to have eroded from some structure directly related to the crossing lineament. Near the head of one gulch on the north edge of the "Placer Camp" shown in Figure 3, large boulders of pegmatite are buried in a N-S line down the N side of the fanglomerate ridge suggesting a nearby pegmatite dike. This lineament also appears on the 1967 color stereo aerial photos. At the head of an old placer gulch west of the King Tut tailings pile, a rock was found with a matrix of weakly metamorphosed red sands (easily crumbles) and an intruded crystalline quartz vein. Also, a cross-cutting lineament is seen in the color stereo aerial photos at this same point. Two cable-tool drill holes were drilled by Western Nuclear in two gulches, one about 1/4 mile E and, the other about 1/4 mile NE of the "Copper Blow-Out" (see Figure 3) to sample the gravels in the bottoms of the gulches. In both holes, drilling was stopped when bedrock was hit at 30 feet. The driller later reported that the bedrock chips were "blood red" but no samples were saved or assayed. See Applicable References of Cooper Aerial Surveys and Western Nuclear.

Suggested Copper/Molybdenum Porphyry: The following observations suggest a buried copper/molybdenum porphyry similar to the Duval Pennzoil porphyry at Mineral Park (38 miles directly south of Lost Basin), but which has eroded about 600 feet less than Mineral Park (leaving Lost Basin about 600 higher on the buried intrusive system):

1E) **Mineral Zoning Pattern**: As described in 3A on page 2, and as shown in Figure 2, the NW-SE copper (green) band covers the "Copper Blow-Out" and the "Golden Copper" mines.

2E) **Aeromagnetics**: An aeromagnetic pattern (see Figure 10) consisting of a magnetic low, in part, centered on the exposed "Copper Blow-Out" area and surrounded by a discontinuous band of aeromagnetic highs apparently produced by epigenetic introduction of magnetite, along with vein quartz. This magnetic discontinuity has been confirmed at high altitude by USGS. See Applicable References of Heinrichs' Airborne Magnetic and Scintillation Survey and U.S. Geological Survey (GP-757).

3E) **Age Dating**: An isotopic age dating on vein material indicated that the veins are of Laramide age (approximately 70 million years old)--the same general age as that of many porphyry copper deposits of the southwestern United States. See Applicable References of U.S. Geological Survey (P 1361).

4E) **Anomalous Minerals**: In many rock and soil samples from the property of geochemically anomalous amounts of gold, silver, copper, lead, zinc, molybdenum, nickel, chromium, barium, arsenic, vanadium, mercury, indium, cadmium, antimony, thallium, manganese, and tellurium are present.

5E) **Native Copper**: Recently, a "porphyry particle" of native copper from surface gravels east of the "Copper Blow-Out" was identified under a 250,000 power mineral identification microscope.

6E) **Mercury**: The existence of anomalous amounts of mercury associated with gold veins and with the few exposed copper occurrences suggests that both types of deposits are genetically related and younger than Precambrian.

Suggested Copper/Molybdenum Porphyry (Continued)

7E) **Green Gold Nuggets**: An observation made by a local prospector is that many of the gold nuggets found in gulches to the east of the "Copper Blow-Out" have a "greenish tint" (secondary copper?) unlike the nuggets in other areas.

8E) **Research by the USGS**: The U.S. Geological Survey spent 16 years in researching the geology and mineralization of Lost Basin. These studies included the petrochemistry of crystalline rocks, fluid-inclusion studies and spectrochemical analysis of accessory metal (signatures) in native bedrock and placer gold samples, and their relations to the geology. See Applicable Reference of U.S. Geological Survey (P 1361).

9E) **Geological Studies**: After Apache Oro Company (an associate of American Heavy Minerals) had developed the mineral zoning pattern and realized its relationship to the aeromagnetic pattern, Ed Post, a consultant, in 1970 studied and reported on the porphyry copper potential. Subsequently in 1974, a student of the Colorado School of Mines in comparing the relationship of trace element distribution to the level of erosion in some producing porphyry copper deposits (Silver Bell and Esperanza) in Arizona with prospects (Lost Basin, Arizona, and Bella Esperanza, Mexico) showed a definite correlation in mineral zoning between Lost Basin and the two producing porphyry copper deposits. In 1980, a graduate student of the New Mexico Institute of Mining and Technology conducted further studies followed in 1984 by Lawrence Smith, Consultant, all of which further substantiated the potential of a copper/molybdenum porphyry at depth. See Deaderick, Krish, Mallory (3/18/70, 6/10/70, and 1/1/71 Memos), Post (3/1/70 Report), Smith, and U.S. Geological Survey (P 1361).

Geochemical Mineral Indicators: Desert plants such as Princesplume (which absorbs selenium from the soil) are often found in mineralized zones of both bedrock and the fanglomerate gravels. Also, some desert plants contain small amounts of cyanide. Anomalous mercury occurs throughout the fanglomerate gravels and bedrock in Lost Basin. These and other organic and mineral indicators (such as mercury vapor) may possibly be used to advantage in prospecting for buried mineral deposits in Lost Basin. See Applicable References of Mallory (3/3/70 Letter and 6/1/75 Map), Post (2/25/70, 2/26/70, 3/4/70, and 3/25/70 Letters), and U.S. Geological Survey (4/30/68 Letter and C 562).

Previous Bedrock Exploration: In addition to the research by the USGS, and the exploration and studies mentioned in the foregoing pages which included geologic, color aerial stereo photos, aeromagnetics, mineral zoning, evaluations of vein gold potentials, assay of sludge from a 240 feet deep core hole, various drilling (percussion, hammer, and rotary), and leaching, the following has also been conducted by, or for Apache Oro Company (an associate of American Heavy Minerals):

Total intensity airborne scintillation survey.
Induced polarization survey, 7 lines in Red Basin and Migmatite Valley.
Gravity meter profile, north-south on Pierce Ferry Road.
24 percussion drill holes, (average 80 feet deep) and 21 holes (average 30 feet deep) in exposed bedrock.
Construction of more than 35 miles of roads.

See Applicable References of Apache Oro Company (Drill Assays & Logs and 7/19/72 Gravity Profile), and Heinrichs' (Airborne Magnetic and Scintillation Survey, and Electrical Geophysical Survey). The goal of Apache Oro Company was to conduct geological, geophysical, and geochemical surveys to narrow down the area into potential mining targets that would sufficiently interest outside mining operators to complete the exploration and

development. However, all of the drilling and associated sampling was conducted and controlled by outside groups, most of whom had little or no previous gold exploration experience. In fact, all drilling was at random and was not preceded by any geophysical, or geochemical studies to delineate possible targets. Most of the gold was left in the bottom of the holes, or was lost in air-blowing of the drill chips onto the bare ground, or lost in processing. In other words, Lost Basin bedrock needs to have careful, systematic, scientific exploration and pilot plant studies, combined with the data from the past sporadic attempts, to assure proper development.

Ore Samples: American Heavy Minerals (AHM) has collected and cataloged many thousands of ore and wallrock samples which are stored in its Arizona field office and are available for inspection. Sample locations are plotted on large (4" = 1 mile) aerial photos.

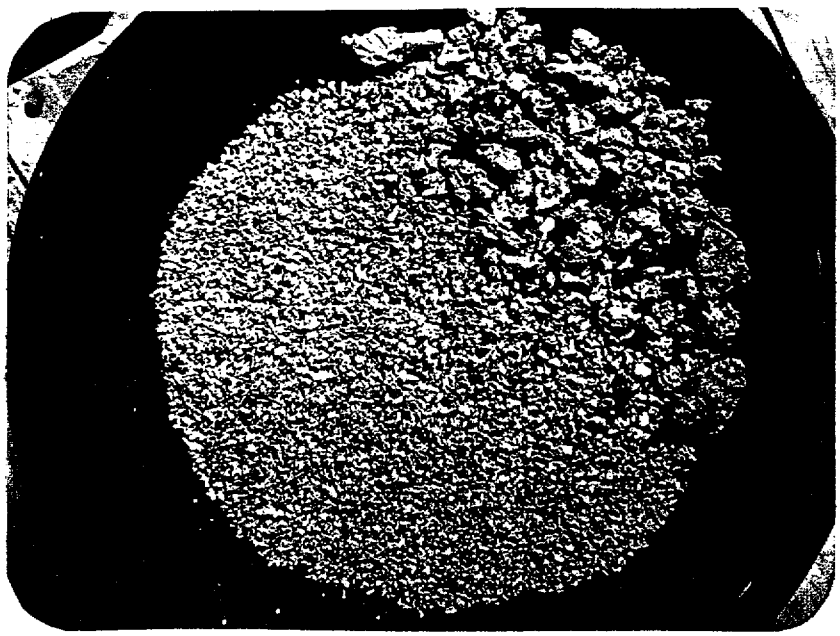
Future Exploration of Bedrock: Before anymore "blind," random drilling is done in the bedrock, effective geological, geochemical, and geophysical surveys should be conducted over all targets. Where bedrock is covered extensively by alluvial gravels (in areas of suspected buried pipes) the major lineaments observed in the aerial photos should first be mapped in detail, including the plotting of the identification, distribution and directions of flow of different placer formations in the various exposed layers (sides of gulches and road cuts).

Gold Bearing Fanglomerates: The eastern gold bearing fanglomerates are contained in an area about 7 miles long and 2 to 3 miles wide, and cover the steeply dipping eastern slope of the Lost Basin Range. They consist of Tertiary Muddy Creek formations derived from various gold bearing mountain ranges at least 40 miles distant, and are covered and intermixed with gravels eroded directly from the Lost Basin mountain range to the west. In 1983, American Heavy Minerals (AHM) commissioned a consulting geologist to study the area and review all previous research conducted on the property. His report (see Applicable Reference of Smith) ties together the findings of the U.S. Geological Survey and the several independent geologists who have studied the area, and explains the detailed geologic history of the property and region. Three different types of gold deposits in the eastern fanglomerates were identified:

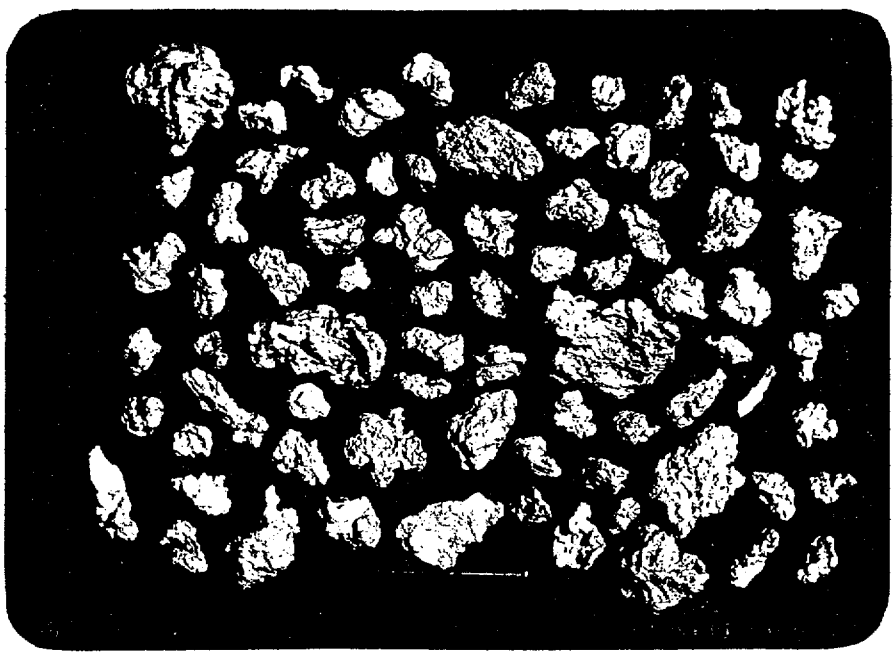
1. Buried residual fossil gold deposit.
2. Buried fossil gold channels from residual deposit.
3. Surface alluvial gold deposits.

Fanglomerate Gold Potential: The fanglomerates contain gold carried by mud-flows from as far as 40 miles distant from the Virgin Mountains to the north in Utah, from the Cerbat Range to the south, and from the White Hills to the southwest, as well as gold eroded from veins and breccia zones in the adjacent Lost Basin mountain range to the west. Subsequently, the Muddy Creek gravels which had formed in a trough deeper than 1,000 feet, were uplifted and tilted due to block faulting and were left as a mesa with minimal subsequent erosion, thus preserving this huge gold deposit. (Also, drainages from this mesa to the south and southwest contain reworked gold bearing gravels.) Sampling data has been collected from 140 backhoe trenches (5 feet deep) and several small gold placer operations (all surface alluvium), and from a water well 1,340 feet deep and several hundred drill holes 50 to 100 feet deep (no evaluation of the ultra-fines in any holes and significant coarse and fine gold was left in the bottom of many holes). **In 1968, the U.S. Geological Survey estimated the resources "may exceed 500 million cubic yards of gravel averaging 0.01 to 0.02 oz. gold per cubic yard," (5 to 10 million ounces)**, but this did not include fine and ultra-fine gold, because the hand-operated dry-washer used for sampling by the Survey geologist could not possibly have recovered any meaningful amount of fine gold values. See Figures 2, 4 and 6 and Applicable References of Apache Oro Company (Drill Assays & Logs), Dragg, Gray, RIP, Smith, and U.S. Geological Survey (C 560, P 650-A, and P 1361).

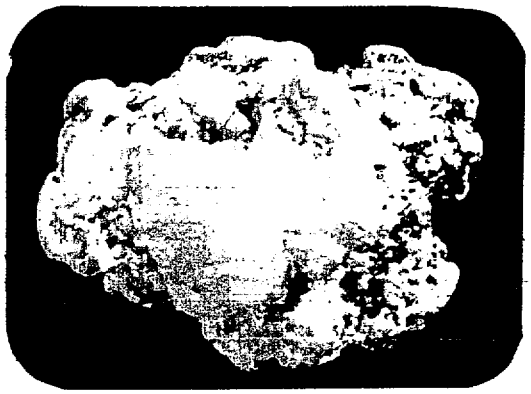
Gold Nuggets: In the alluvial gravels of the eastern fanglomerates (in addition to the ultra-fine and micron size gold, silver and other minerals), many visible gold nuggets are found, all of which contain mercury and silver plus various "signature" minerals. The majority of the nuggets are about 1/16 to 1/8 inch diameter with a few from 1/4 to 1/2 inch (see photo below), and most have sharp, ragged surfaces indicating limited travel from their source. Occasionally 2 ounce nuggets are recovered. The nuggets are believed to have been formed either from hydrothermal deposition in voids and fractures in nearby breccia fault zones and episyenitic pipes (note "A" nugget in lower photo formed in ankerite), or from precipitation of micron gold out of meteoric water by mercury in the fanglomerates (or by bacteria, or fungi) in "growing" nuggets around river-worn and metamorphosed sand particles found inside the nuggets (note surface-rounded "B" nugget with round sand-grain in lower photo). Gold nuggets attracted by a magnet are found to contain rounded magnetite crystals. The USGS spent 16 years in researching the geology and gold mineralization in the Lost Basin and adjoining Gold Basin mining districts as reported in Applicable Reference of U.S. Geological Survey (P 1361).



Note ratio of coarse to average size nuggets and sharp, ragged surfaces. (Photo 50% actual size.) From surface gulches in eastern fanglomerates in E-1/4 of Section 33 (about 1,000 feet east of northern breccia fault zone).



A = Nugget with ankerite crystal vugs from nearby breccia zone. B = Nugget containing rounded sand grain. (Photo about 75% actual size). From surface gulches in eastern fanglomerates in NW-1/4 of Section 10. (about 1-1/2 miles east of copper blow-out breccia fault zone).



Large nugget (actual size). Weighs 8.53 Troy ounces (almost 3/4 pound) with 7.34 ounces of gold content. Named "The Apache Oro Nugget," it was found by Frank Snow about 1-1/4 miles east of the breccia fault zone.

Heavy Black Sands: In the fanglomerate alluvial drainages, unusually large quantities of heavy black sands are found (up to 24 pounds of plus 0.1 mm particles per cubic yard of gravels). The sands consist of magnetite, hematite (with occasional attached gold and silver), limonite, ilmenite, pyrite, mercury, tungsten, uranium, garnet, tin, and occasional platinum/-palladium. Balls of mercury with enclosed gold particles are occasionally seen in the black sands. An assay showed 5.4 pounds of tin per ton of black sands which is believed to have been introduced into the fanglomerates from sea-floor limestone deposition during an extended embayment of the Gulf of California to the mesa. See Applicable References of Mallory (1967 Report), and U.S. Geological Survey (P 1361).

Buried Residual Fossil Deposit: Is laid down in a curved band of fanglomerates about 6 miles long and is believed to be from 1/2 mile to 3/4 mile wide, and several hundred feet deep on its eastern side. See Figure 4. The fossil deposit is covered with caliche-cemented gravels from 5 to 20 feet thick (pediment and recent surface erosion). The fossil gravels are products of cyclic reworking of the Muddy Creek fanglomerates and of erosional products from the adjacent breccia fault zone and mountain range. Also, erosion from nearby known and suggested episyenitic alteration pipes have contributed to the deposit. The fossil deposit formation consists of various horizontal layers of both loose and cemented sands and gravels which appear to have very small gold particles distributed with some uniformity throughout the layers (much of the small gold being cemented to the gravels) with, of course, more concentration of both small and larger gold particles on top of and in various red and brown layers of higher clay content sands and on caliche zones that act as false-bedrock horizons. In viewing the heavy black sand concentrates from recently exposed top layers of the fossil deposit under a 40-power stereo microscope, the particles of gold, silver, hematite, magnetite, quartz, and other minerals along with gold attached to hematite and quartz particles are very rough and have not been rounded by travel and do not appear to have been materially attacked by chemical solutions like the more rounded and coated back sands and gold found in the surface alluvial gravels. The viewer gets the impression that the heavy sands from this upper strata of the fossil deposit appear to be similar to eluvial particles from a freshly crushed ore vein, and probably were eroded directly from adjoining bedrock sources. With depth, the sand and gravel layers should contain increasing quantities of cyclic reworked Muddy Creek gravels. This residual fossil deposit might be appropriately called a "fossil bench placer" since it is several hundred feet higher than the mesa's bedrock trough and is in a long band resting upon the steeply dipping eastern flank of the Lost Basin range. Only 5 to 20 feet of overburden would have to be removed to expose this residual fossil deposit for open-pit mining.

1F) Drilling the Fossil Deposit: This deposit was never explored or mined until 1986 when Andy and Ken Garritson, owners of the State of Arizona mining lease of the E-1/2 of Section 16, T29N, R17W, commissioned some holes to be drilled on their lease, as well as on AHM's property. Using a 6 inch rotary air drill, five 50 foot and one 95 foot deep evenly spaced holes were drilled along an E-W ridge

Buried Residual Fossil Deposit (Continued)

from the western edge of the fossil bench placer about 0.3 mile to the east in the middle of the E-1/2 of Section 16. Also, two 35 foot and one 50 foot deep holes were drilled into the bench along an E-W ridge over a distance of about 0.2 mile in the middle of the W-1/2 of adjoining Section 22 to the SE, and one 35 foot hole (probably drilled into a fossil channel) in the center NW-1/4 of adjoining Section 10 to the NE. These holes were drilled primarily to locate the fossil deposits; but, because of the lack of sample control by the driller, no quantitative assays were made. However, Andy and Ken Garritson, each wet-panned one pan of cuttings and sand from every 5 foot drill section of material from the hole. All holes were reported to show visible fine gold in several of the 5 foot drill sections, but nearly every drill section in all holes were reported to show very fine gold under a 30-power field microscope. Also, gold attached to both hematite and quartz particles was observed. More gold was observed in the most western holes than in those to the east in the fossil bench in both Sections 16 and 22. The drill hole material contained very fine pink, brown and white quartz sands and abundant hematite. The amount of magnetite was low as compared with that in surficial alluvial sands. An accompanying multiple line magnetometer survey was conducted by Heinrichs Geoexploration Company, but only minimal coordination with the drill holes appeared possible. See Applicable References of Apache Oro Company (Drill Assays & Logs), Garritson, and Mallory (8/25/87 Addendum).

2F) Leaching the Fossil Deposit: In the E-1/2 of Section 16, on a ridge just north of the ridge with E-W line of six drill holes (mentioned previously), a D-9 dozer dug a 10 foot deep N-S trench through the crest of the ridge, exposing the top layers of the fossil bench under a caliche-cemented pediment gravel overburden. The layers were made up of weakly cemented sand and gravel, interfingered with red and brown clay layers as well as some caliche-enriched layers. Two 50 pound samples were taken by the Garritsons from these layers, just above a red clay layer on the bottom. Five pounds were split from each sample and placed in a cyanide leach that was occasionally agitated (helped clean off desert-varnish on the gold particles). Assays of the gold recovered were 0.06 and 0.24 oz. per ton. As mentioned previously, the gold in the upper layers of the fossil bench consists of free particles as well as gold attached to hematite and quartz sands. Consequently, 100 tons was dug from the foregoing exposed fossil bench and was trucked about 20 miles west to a closed circuit cyanide heap-leaching plant in Gold Basin by the Garritsons. However, it was found that either organic material, or desert varnish (manganese, or iron oxide) which coated the free gold, as well as the gold on the hematite and quartz prevented the cyanide from attacking much of the gold in the unagitated heap. Subsequently, caustic soda was found to effectively clean off the coating on the gold; however, by that time control of the leaching test was lost and results were meaningless. No subsequent leaching tests have been conducted on this ore. It is believed that successful leaching of this fossil deposit can be accomplished by first recovering the coarser gold nuggets by conventional gravity separation methods and at the same time screening out the larger gravels, making sure to not throw away the fine and ultra-fine gold. The resulting screened material should then be adequately crushed and ground to liberate and clean the ultra-fine minerals before leaching. Caustic soda, or other cleaning agents will have to be added to remove the organic coatings and desert varnish. Also, cement may have to be added to improve percolation. Of course, before any large-scale leaching operation is attempted, the particular volume of the fossil bench placer to be mined must be adequately explored, and a pilot plant study conducted. See Applicable Reference of Mallory (8/25/87 Addendum).

Buried Fossil Gold Channels: Slow erosion produced fossil channels flowing outward from the fossil bench placer. These channels are buried under present surface pediment alluvial gravels and are exposed in several spots by incised present-day gulches. Both the fossil bench and the outward flowing fossil channels contain anomalous amounts of hematite and limonite, and the resulting reddish-brown staining of the fossil channels is usually apparent where present-day gulches have cut the fossil channels, especially as seen in color stereo aerial photos and after a rain. Using this coloring as an indicator, the location of fossil channels can be implied up to about two miles from the residual fossil layer. See Applicable Reference of Cooper Aerial Surveys.

Present-Day Surface Alluvial Gold Gravels: All placer mining (wet and dry) in the eastern fanglomerates has been conducted in the surface gravels which were formed from erosion and reconcentration of sands and gravels from the fossil bench deposit and outflowing fossil channels, along with recent erosion from the Lost Basin Range. Also, placer mining on the western slope of the Lost Basin Range has occurred at, and several hundred feet west of the mouths of the canyons that drain into Hualapai Wash. These shallow western alluvial deposits are fed by erosion from veins and breccia zones in the Lost Basin mountains and by westward erosion of the eastern uplifted fanglomerate mesa. In the eastern fanglomerates, larger gold nuggets are found nearer to the fossil bench and channels, with gold particles becoming smaller and more uniformly distributed in the drainages to the east and north and, also, in the drainages to the southwest (Gold Basin) area. Large quantities of black sands and widely disseminated fine gold are found in these outer drainages where the rate of flood water flow suddenly decreased. Both color and black and white aerial photos indicate widespread heavy black sand concentrations at these points of sudden flood flow rate change. An airborne scintillation anomaly (2 to 3-1/2 times background) about 1/2 mile long occurs in the W-1/2 of Section 6, T28N, R17W, which covers the N-S width of the black sand concentration in the southwest (Gold Basin) area where radioactive particles would be expected to concentrate in their westward migration. See Figures 3, 4, and 10 and Applicable References of Cooper Aerial Surveys, Heinrichs' Airborne Magnetic and Scintillation Survey, and U.S. Geological Survey (Photos GS-VVB-58, and 351416-HAP-80).

Former Alluvial Placer Operations: Since all of the old lode gold mines (before 1930) had westerly downward erosion and drainage into Hualapai Wash on the west side of Lost Basin Range, and since these mines were geographically lower than the west side of the uplifted eastern fanglomerate mesa, the prospectors probably were not led to look for placer gold in the uplifted eastern fanglomerates. As a likely result, gold nuggets were not discovered in this eastern mesa until 1931--not by prospectors, but by a rancher's wife who picked up a golf ball size gold nugget! Three years later the first placer operation (King Tut) was launched, followed in the next 50 years by other smaller operations and hundreds of "weekenders" and a few serious prospectors using hand-operated dry-washers and metal-detectors during recent years.

1G) **King Tut Placer Mine**: After considerable sampling of surface arroyo and gulch bottoms, in 1934 the King Tut placer operation was launched in the NE-1/4 of Section 9. A pipeline was installed to bring water (for sluicing) to nearby water tanks by gravity from mountain springs about 10 miles to the southeast. A small power-shovel dug into the arroyo and gulch bottoms but was limited by hard caliche to a maximum depth of 6 feet. Dump trucks hauled the shoveled gravels from Sections 3, 4, 9 and 10 to the sluice. The reported yield was 1,175 troy ounces of gold averaging 0.035 oz./cu.yd.; however, several persons involved in the operation have since revealed that more than 2,000 ounces were produced with the missing gold having been high-graded by employees who sold the nuggets in Chloride, Kingman, and Las Vegas. None of the gold was mined directly from the residual fossil bench, or its buried channels. Figure 4 shows the gulches

Former Alluvial Placer Operations (Continued)

placered by the King Tut and others up to 1958. See Applicable Reference of Mallory (1967 Report).

2G) Lone Jack and Queen Tut Mines: As seen in Figure 3, the Lone Jack placer is 1-1/2 miles directly south of the King Tut and the Queen Tut placer 2-1/2 miles north. Both wet and dry washing operations were tried at these placers after the King Tut closed down.

3G) RIP's Alluvial Placer Operation: In 1976, American Heavy Minerals (AHM) leased its properties to Resources International partners (RIP). In 1978, RIP set up a wet placer system using water piped from a nearby 1,340 foot well. Alluvial gravels from two narrow gulches in the eastern fanglomerates of the N-1/4 of Section 10, T29N, R17W, to a maximum depth of 10 feet onto the caliche-cemented bottom, were dug by a front-end loader and then dumped onto a conveyor feeding a wet classifier from which (-)3/4" material was sluiced. Later, jigs were added at the output of the sluice. After about five months of placering, RIP reported a recovery of 113 troy ounces of free gold, plus abundant black sands.

Previous Attempts in Drilling the Fanglomerates: The only successful drill employed to date (see page 14, Drilling the Fossil Deposit), that appeared to capture most of the fanglomerate gold is the rotary air drill with reverse circulation. Percussion air drills appear to force some of the gold into the drill walls and, if the air pressure is insufficient, the large gold particles tend to remain in the bottom of the hole. So far, drills that use water instead of air appear to be worthless, such as the following described cable tool and churn drills. Perhaps a heavy mud might be effective in capturing and bringing the gold to the surface. American Heavy Minerals (AHM) had no control over the drilling and sampling which was conducted by outside groups who either had leased the property, or were considering a lease. Most groups were inexperienced in fanglomerate placer gold sampling. Some or all of the coarse and fine gold particles were left in the bottom of the holes, and most of the ultra-fines were lost in dust clouds or wash water. In many instances, the drill cuttings were blown, or dumped on top of the bare ground (into sand, gravel, and weeds), then the samples for assay were taken from the top of the pile! In several cases, considerable values were lost in the subsequent sample handling and gravity recovery operations. The following describes some of the difficulties encountered in drilling and sampling the fanglomerates:

1H) Cable Tool Drilling in the Fanglomerates: In 1969, Western Nuclear drilled 10 seven-inch cable tool holes 100 feet deep using water in widely scattered locations in the eastern fanglomerates. The samples representing 5 foot intervals were first dried in large wooden trays (with narrow cracks between the boards), then shoveled into barrels which were trucked to Colorado for wet gravity concentration in a Denver Gold-Saver. Only four samples yielded more than six visible gold flakes! It was suspected that only gold flakes which were churned up in the water would be caught by the input valve which was about 8 inches above the bottom of the cable tool bit. The following year to check this supposition, grab samples from the bottoms of several holes (by dropping down the holes an 8 foot long, 4 inch diameter steel pipe on a cable) proved that considerable gold particles and black sands (both fine and coarse) were left in the bottom of the holes by this

Previous Attempts in Drilling the Fanglomerates (Continued)

ineffective drill baler. Needless to say, no credibility should be given to Western Nuclear's tests. See Applicable References of Smith and Western Nuclear.

2H) **Churn Drilling in the Fanglomerates:** In 1986, Channel Mining drilled 32 churn drill holes using water to an average depth of 30 feet in easily accessible spots in the eastern fanglomerates and southern alluvial gravels. All holes were reported as "blank" (no gold seen). AHM personnel who witnessed the drilling, sample recovery, and gravity concentration reported that all coarse gold was probably left in the bottom of the holes, and the fines and ultra-fines were either lost in the drill water, or in the wash water of the gravity concentrator. The president of Channel Mining later wrote AHM that "Churn Drills are not the answer." See Applicable Reference of Channel Mining.

3H) **Percussion Drilling in the Fanglomerates:** Resources International Partners (RIP) from 1976 to 1979 reportedly drilled 551 percussion air holes 50 feet deep at random in the eastern fanglomerates which were said to have averaged 0.0174 oz. gold/ cu.yd.

4H) **Hammer Drilling in the Fanglomerates:** In 1980, RIP and AMAX contracted for 16 hammer drill holes by Becker Drilling and sampled the fanglomerates in areas previously drilled by RIP. When assays reportedly did not match RIP's related adjoining holes, the project was abandoned. However, shortly thereafter RIP and AMAX determined that the sampling/assaying technique used did not qualitatively determine the free gold in the fanglomerates. Subsequently in 1981, RIP and Charter Gold Corporation contracted another sampling program in the NE-1/4 of Section 4, T29N, R17W, by Becker Drilling and set up a gravity test plant using Reichert spirals. No report on the drilling and test results has been obtained by American Heavy Minerals (AHM).

Previous Trenching the Alluvial Gravels: In 1974 and 1975, bulk sampling of 140 backhoe trenches was conducted by Vanguard Partners and Western Contracting. Most trenches were dug in recent bottom drainage alluvium, but included some trenches dug into the slopes and tops of adjoining ridges. The sampling covered the eastern fanglomerate area from the Lone Jack mine 3-1/2 miles to north of the King Tut mine and between the contact with bedrock on the west and the old Pierce Ferry road on the east. The one cubic yard samples were processed through a Denver Gold-Saver and a 6 foot Hungarian riffle-box. The coarse gold bearing drainages varied from 0.02 to 0.03 oz. gold/cu.yd. and appear to have eroded from the fossil bench, or channels. Gravels from the overlying and reworked pediments varied from zero to less than 0.01 oz. gold/cu.yd. However, the sampling did not recover the ultra-fine gold and other minerals which were thrown out with the wash water and tailings. See Applicable References of Dragg, Gray, and Smith.

Former Leaching of the Alluvial Gravels: In 1977, Resources International Partners (RIP) set up a cyanide leaching operation (at "Placer Camp" in Figure 3), in an attempt to leach the gold nuggets and the fine gold particles as well as the gold in the vugs and fractures of the loose surface alluvial gravels. A leach pile (about 20 feet high and covering 4 acres) was constructed from the loose alluvial gravels covering nearby ridges and gulches. It was reported due to compaction, that the cyanide solution would not uniformly flow through the gravels. Also, the organic material that had been mixed in the gravels impaired the leaching. Thus, many problems were reported to have been encountered in obtaining uniform and consistent wetting of the high and large leach pile and overcoming the detrimental effects of carbon and manganese from the gravels and of a cyanide polymer which was formed. Also, several reported problems were encountered in obtaining satisfactory separation of the gold and other metals from the pregnant solution. An ion exchange process and a zinc separation method were attempted with little reported success. Subsequently, leaching attempts were abandoned. RIP's pioneering efforts to leach Lost Basin's alluvial gravels certainly have revealed several additional problems that will be encountered by others in the future when leaching such gravels, as compared with the standard methods of leaching crushed bedrock.

Future Development of the Fanglomerates: American Heavy Minerals (AHM) recommends that an initial pilot plant study be conducted on the residual fossil bench after first removing the 5 to 20 feet thick covering of pediment cemented gravels. Possibly, as a first step, the oversize gravels should be washed with caustic soda (to remove desert varnish) and screened, and the larger gold and other mineral particles recovered by gravity separation. Then the representative finer fossil sands should be experimentally crushed and ground to determine the fineness for optimum mineral recovery employing such methods as leaching, flotation, and gravity. Also, the eluvial and alluvial placer formations should be mapped in detail (from drill hole samplings and exposed sides of gulches and road cuts), including the plotting of the distribution and directions of flows of different placer rock types. Of course, a drilling program also coordinated with appropriate geophysical surveys should be conducted. Later the studies should be expanded to the fossil channels and other areas of the fanglomerates.

Water: A 1,340 foot deep water well was drilled by RIP in the SE corner of Section 3, T29N, R17W. Engineering estimates indicated a capacity of 4,000 gallons per minute. The 8 inch well diameter and the present pump capacity limit the flow to about 200 gallons per minute through a buried pipeline to RIP's recent mill-site ("Placer Camp" in Figure 3) 1-1/2 miles distant. The well was located over an indicated major fault zone suggested by ERTS high altitude infrared satellite photographs. Several water wells drilled in the alluvial gravels about one mile to the east of this fault zone have produced water at depths from 450 to 900 feet and at pumping rates from 20 to an estimated capacity of 300 gallons per minute. The 1,340 foot deep well was entirely in the alluvial gravels and did not reach bedrock. Assays of the well to its bottom were reported to average 0.0174 oz. gold per cubic yard. Another source of about 150 gallons per minute of water would be to replace the old King Tut pipeline which began at springs east of Garnet Mountain and by gravity (a 1,000 foot drop) was routed through the Smith ranch, then NW to the King Tut mine's storage tanks NW of the tailings pile, a total distance of about 10 miles.

Power: Single and three phase power which is supplied to two nearby rural communities, is available from a transmission line along the east side of the property and is owned by Citizens Utilities of Kingman, Arizona.

Misleading Monument: On the paved highway 6 miles north of the King Tut mine, just west of Meadview and north of the Lake Mead Ranger Station in a gravel parking lot that overlooks Lake Mead to the west (in the direction of the old Scanlon Ferry and the mouth of Hualapai Wash) is a monument of cemented rocks with an engraved metal plaque as follows:

Misleading Monument (Continued)

"Lost Basin"

The legendary tale about Lost Basin in the 1880's led prospectors to the discovery of gold. The Golden Gate, King Tut, Golden Mile, Lone Jack, Bluebird, and other mines produced precious metals. Placer gold is still found in the area. Pierce, Scanlon, and Gregg's ferries were then in operation on the Colorado River and an active Mormon trail crossed the area. Erected by the Meadview Bicentennial Committee, July 4, 1976

Because this monument is on the edge of a very deep basin immediately to the west, anyone (who does not know that the mentioned mines and where placer gold is found, is an area from 3 to 9 miles south of the monument) gets the impression that the deep basin they are looking down into is "Lost Basin". The only place mentioned that can be seen from the monument is the general area where the old Scanlon Ferry was located which was near to the mouth of Hualapai Wash. Pierce Ferry is about 8 miles to the northeast and Gregg's Ferry about 8 miles to the west. Obviously, this misleading monument should either be moved to the area of the King Tut, or should be completely reworded.

Claim Jumpers: For the past 30 years many different groups of claim jumpers have been removed from the property. In fact, every weekend during the past 20 years many amateur gold hunters with dry washers and metal-detectors have been sneaking onto the property and adjoining Santa Fe and state land and have absconded with an estimated total of several thousands of ounces of gold nuggets. Several jumpers have been associated with fraudulent stock and gold promotions. Recently $24,000 of gold breccia ore was stolen overnight and hauled out of state. Of course, the major thefts and fraudulent operations have been reported to appropriate law enforcement and governmental agencies. In 1981, a court judgement was obtained against a group of jumpers who were required to pay all costs (plus interest), including court, attorney, and plaintiff.

History of Property Ownership: Incorporated in Arizona in 1960, Apache Oro Company (AO) headquartered in Laramie, Wyoming, is a privately held company engaged in minerals exploration and its assets consist almost entirely of various mining properties in Arizona and Colorado. The company relied upon consultation and direction from independent professional geologists and engineers. Apache Oro company owned the Lost Basin property from 1960 to 1976, at which time it transferred the property to American Heavy Minerals, Inc. (AHM) and Lost Basin Mining (LBM), a limited partnership. Stockholders own the same percentage interests in all three companies. These are privately held companies and the stock is not traded on the public market. IDEAS, Inc. is one of the stockholders (of about 255) and has furnished most of the capital to finance the three mineral development companies.

Investment of American Heavy Minerals: Approximately $4.58 million was spent during the past 30 years in acquiring, exploring, and maintaining AHM's 13,740 acres of placer and lode claims. AHM's goal was to delineate potential mining targets that would interest experienced mining operators to complete the exploration and development. Of the foregoing, $2.30 million was spent by AHM and its associate, Apache Oro Company (AO), and an estimated additional $2.28 million was spent by other groups (motivated by AO or AHM) that produced a considerable amount of valuable information and data on the property. This included various geological and geochemical surveys and studies by Masters Degree candidates at two universities, as well as drilling, limited geophysical surveys, and a placer gravity recovery and heap leaching operation. $4.58 million total investment does not include inflation, nor the several million dollars spent by the U.S. Geological Survey in their 16 years of research in the area.

Proposal: Because the major investors and officers of American Heavy Minerals (a small privately held corporation) are either past, or rapidly approaching retirement age, it is their desire to sell this large gold property outright. Seriously interested prospective purchasers should first contact Warren M. Mallory, General Manager of AHM and President of Apache Oro Company, in Laramie, Wyoming (phone 307-742-6668) to arrange a meeting to study the various reports, stereo aerial photos and ore samples before visiting the property with Mr. Mallory. AHM asks that no visits be made to the property without the presence of Mr. Mallory, or one of his associates.

APPLICABLE REFERENCES

LARGE ARIZONA GOLD PROPERTY

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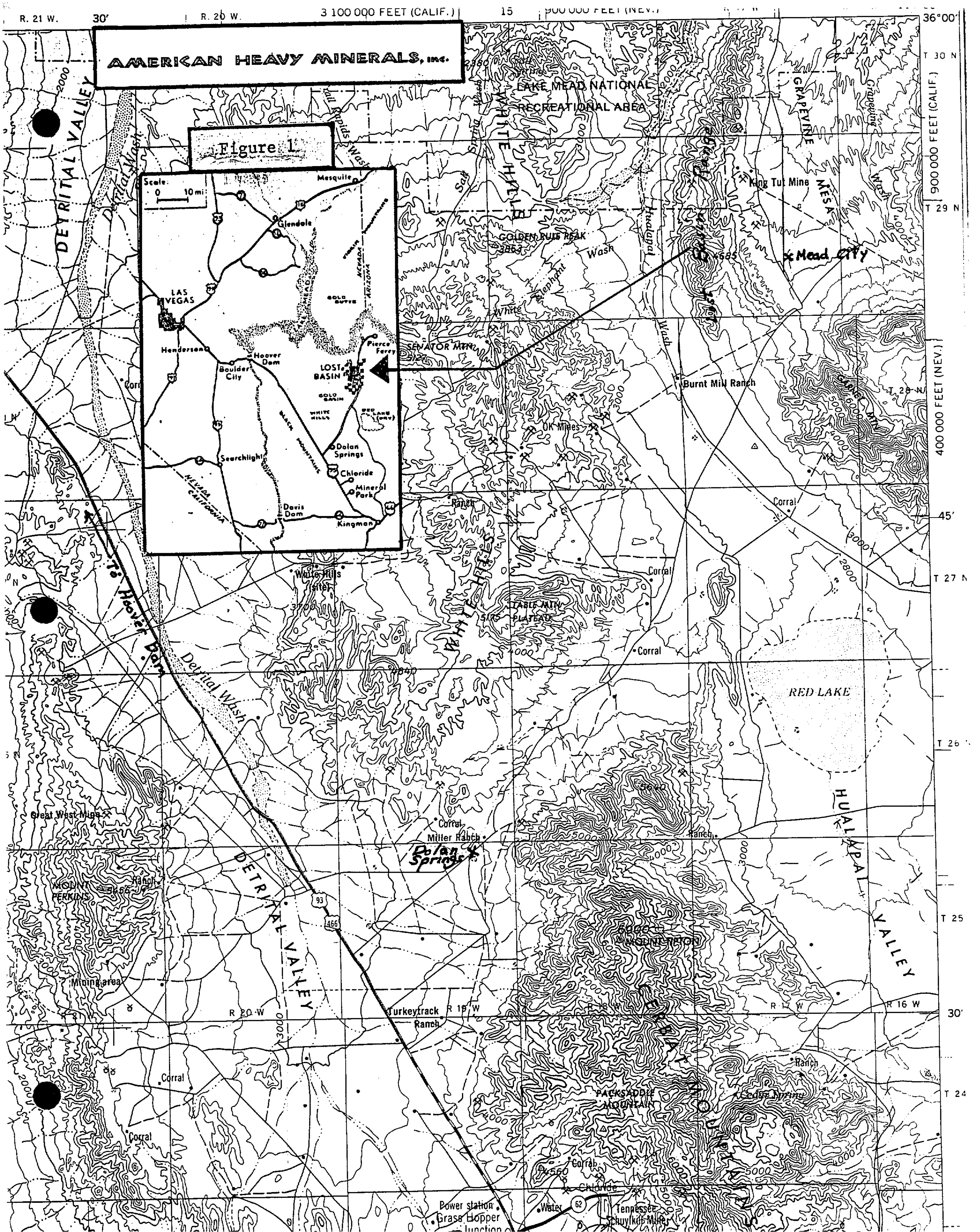
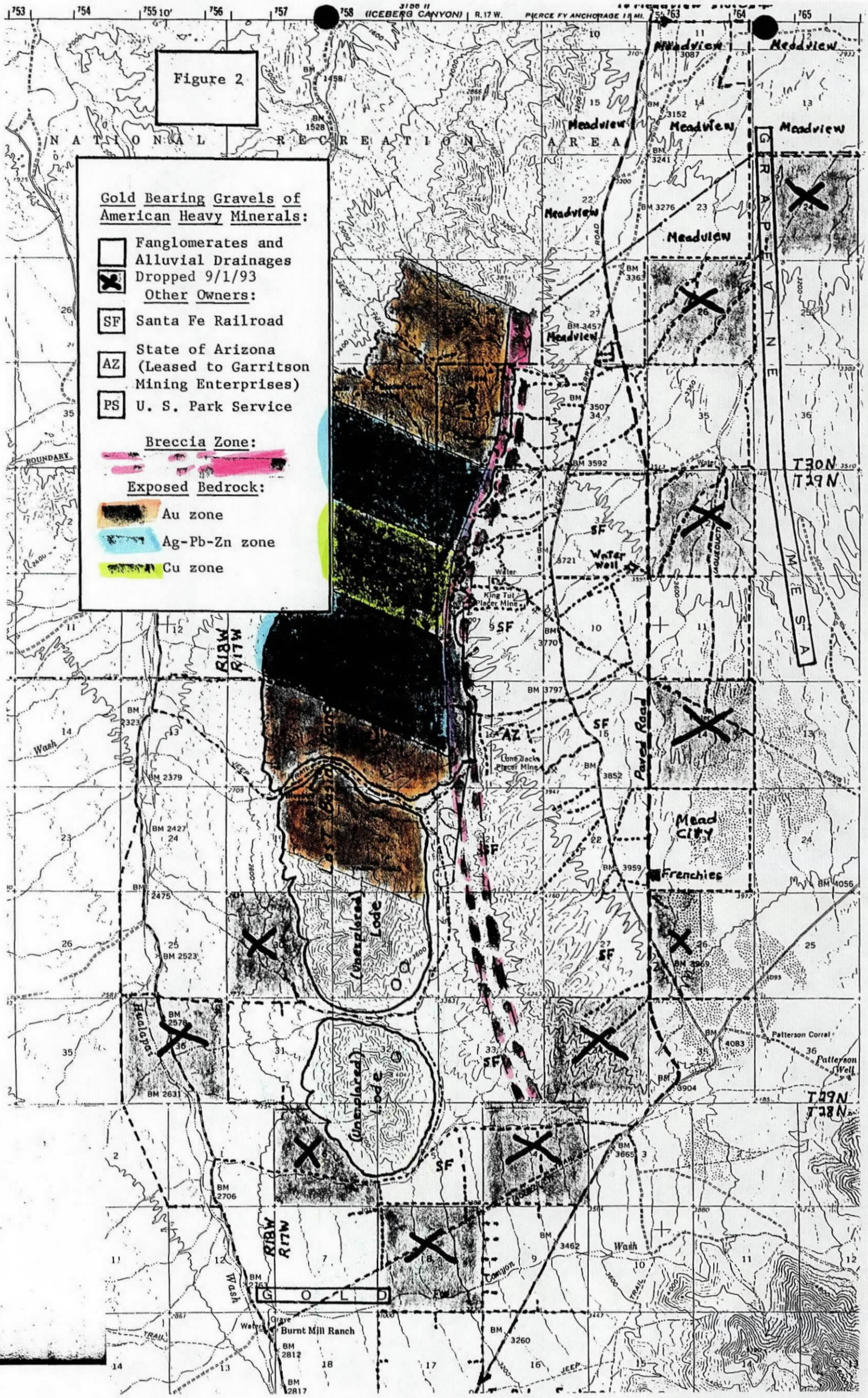
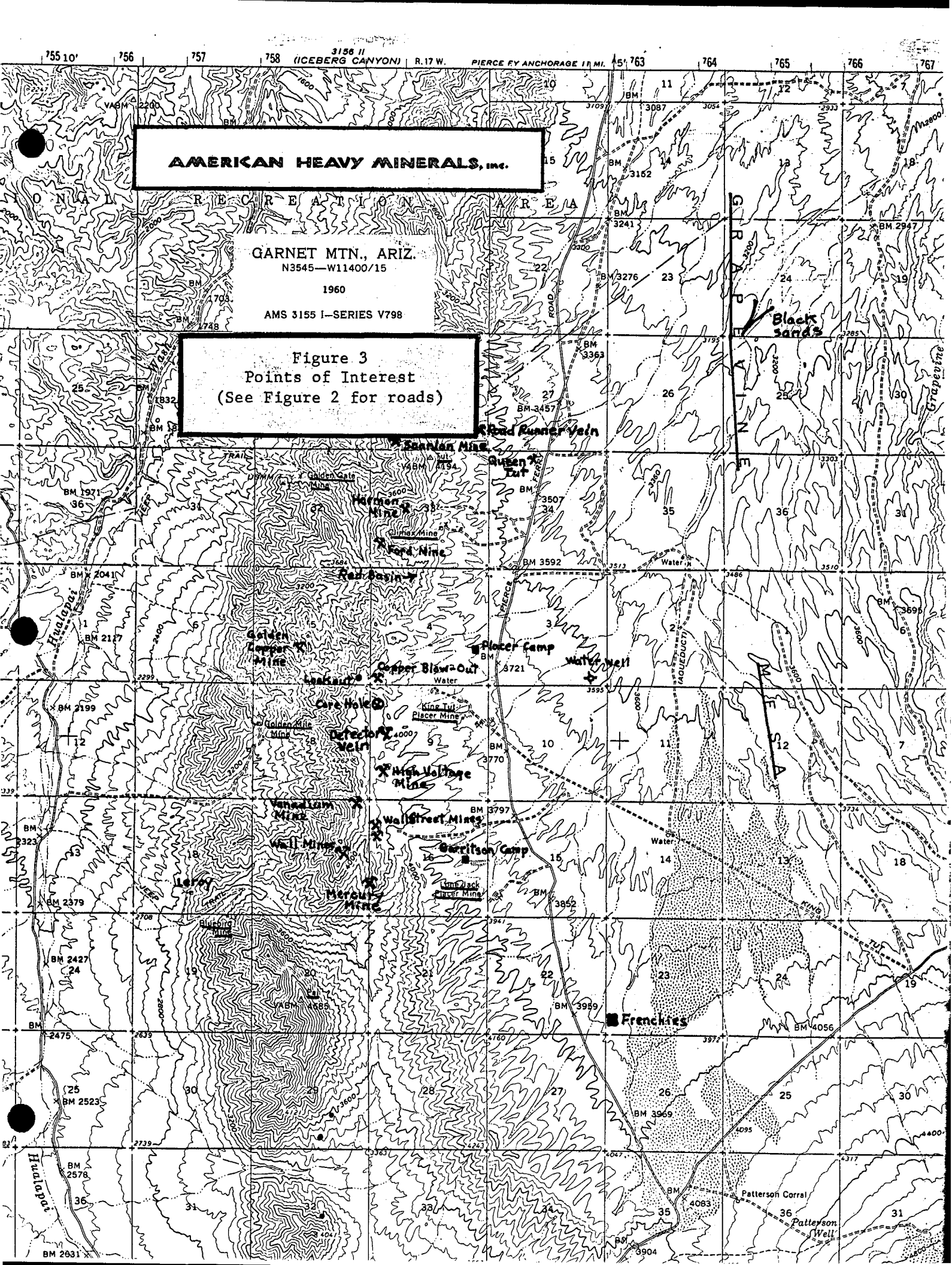

AMERICAN HEAVY MINERALS, inc.
Figure 1
R. 21 W.
30'
R. 20 W.
3 100 000 FEET (CALIF.)
15
900 000 FEET (NEV.)
36°00'
T 30 N
T 29 N
T 28 N
T 27 N
T 26
T 25
T 24
45'
30'
900 000 FEET (CALIF.)
400 000 FEET (NEV.)
LAKE MEAD NATIONAL
RECREATIONAL AREA
GRAPEVINE MESA
King Tut Mine
Mead City
GOLDEN RULE PEAK
Elephant
Wash
White
Hualapai
SENATOR MTN
Burnt Mill Ranch
GARNET MTN
OK Mines
WHITE HILLS
DETRITAL VALLEY
Detrital Wash
To Hoover Dam
White Hills (site)
TABLE MTN PLATEAU
Corral
Ranch
RED LAKE
HUALAPAI VALLEY
Great West Mine
Corral
Miller Ranch
Dolan Springs
MOUNT PERKINS
Ranch
93
466
Mining area
R 20 W
R 19 W
R 18 W
R 17 W
R 16 W
Turkeytrack Ranch
CERBAT MOUNTAINS
PACKSADDLE MOUNTAIN
Cedar Spring
Corral
Chloride
Power station
Grass Hopper Junction
Water
62
Tennessee
Schuylkill Mine
Scale
0
10 mi
Mesquite
Glendale
LAS VEGAS
Henderson
Hoover Dam
Boulder City
GOLD BUTTE
NEVADA
ARIZONA
Pierce Ferry
LOST BASIN
GOLD BASIN
WHITE HILLS
RED LAKE (DRY)
BLACK MOUNTAINS
Dolan Springs
Chloride
Mineral Park
Searchlight
NEVADA
CALIFORNIA
Davis Dam
Kingman

Figure 2


Gold Bearing Gravels of American Heavy Minerals:
Fanglomerates and Alluvial Drainages
Dropped 9/1/93
Other Owners:
SF Santa Fe Railroad
AZ State of Arizona (Leased to Garritson Mining Enterprises)
PS U. S. Park Service
Breccia Zone:
Exposed Bedrock:
Au zone
Ag-Pb-Zn zone
Cu zone
NATIONAL RECREATION AREA
Meadview
GRAPEVINE MESA
Paved Road
Mead City
Frenchies
Patterson Corral
Patterson Well
Burnt Mill Ranch
King Tut Placer Mine
Lone Jacks Placer Mine
Water Well
Hualapai
Wash
Canyon
JEEP TRAIL
BOUNDARY
T30N
T29N
T28N
R18W
R17W
(ICEBERG CANYON)
PIERCE FY ANCHORAGE 19 MI.


AMERICAN HEAVY MINERALS, inc.
GARNET MTN., ARIZ.
N3545—W11400/15
1960
AMS 3155 I—SERIES V798
Figure 3
Points of Interest
(See Figure 2 for roads)
(ICEBERG CANYON)
R.17 W.
PIERCE FY ANCHORAGE 11 MI.
Road Runner Vein
Shanlan Mine
Queen Tut
Golden Gate Mine
Harmon Mine
Climax Mine
Ford Mine
Red Basin
Golden Copper Mine
Placer Camp
Water Well
Copper Blow-Out
Leakout
Care Hole
King Tut Placer Mine
Golden Mile Mine
Detector Vein
High Voltage Mine
Vanadium Mine
Wall Street Mines
Mill Mine
Garrison Camp
Lone Jack Placer Mine
Leroy
Mercury Mine
Bluebird Mine
Frenchies
Patterson Corral
Patterson Well
Black sands
Grapevine
GRAPEVINE MESA
KING TUT
Hualapai
Water
JEEP TRAIL
ROAD
PIERCE
(AQUEDUCT)

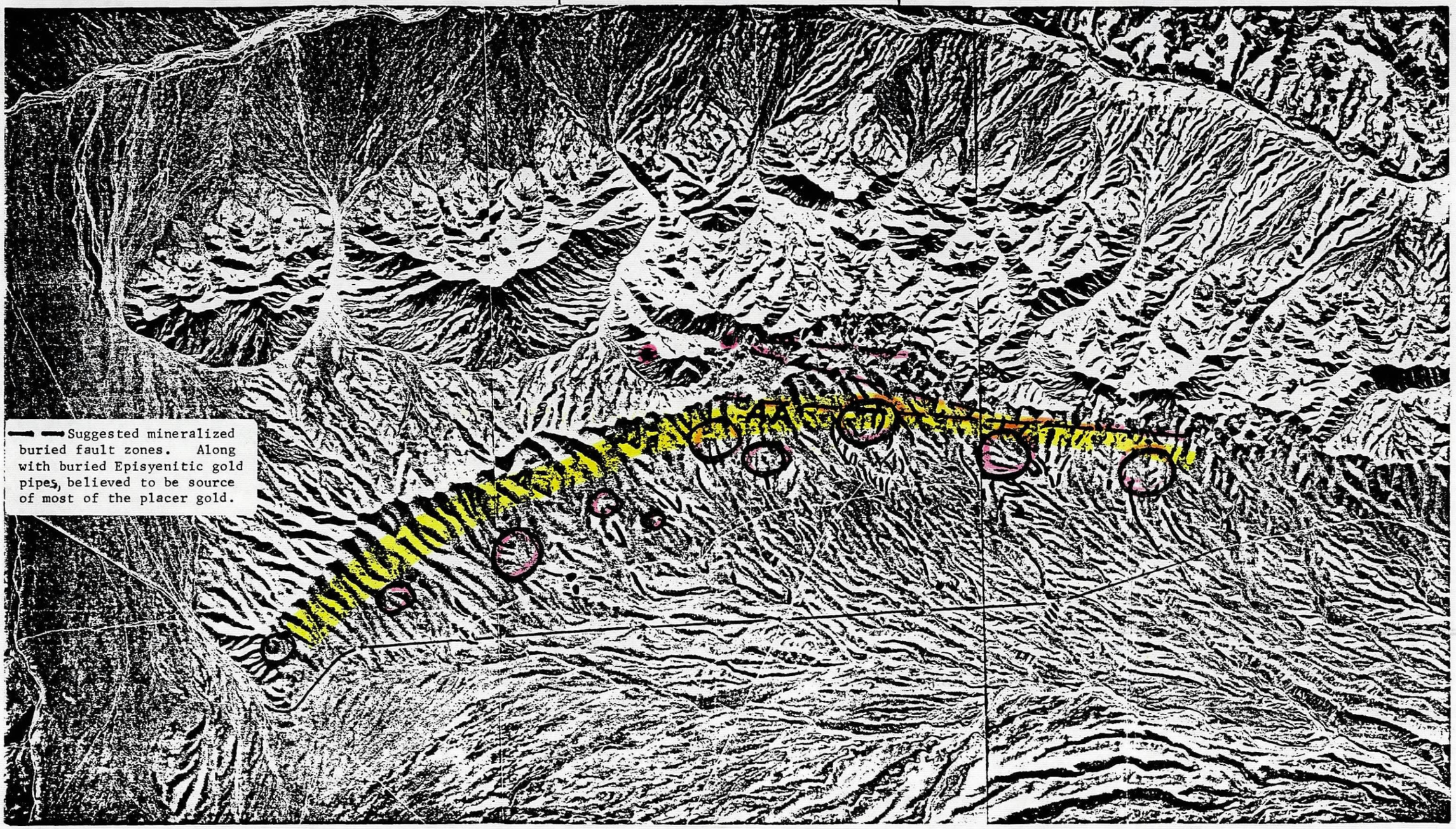
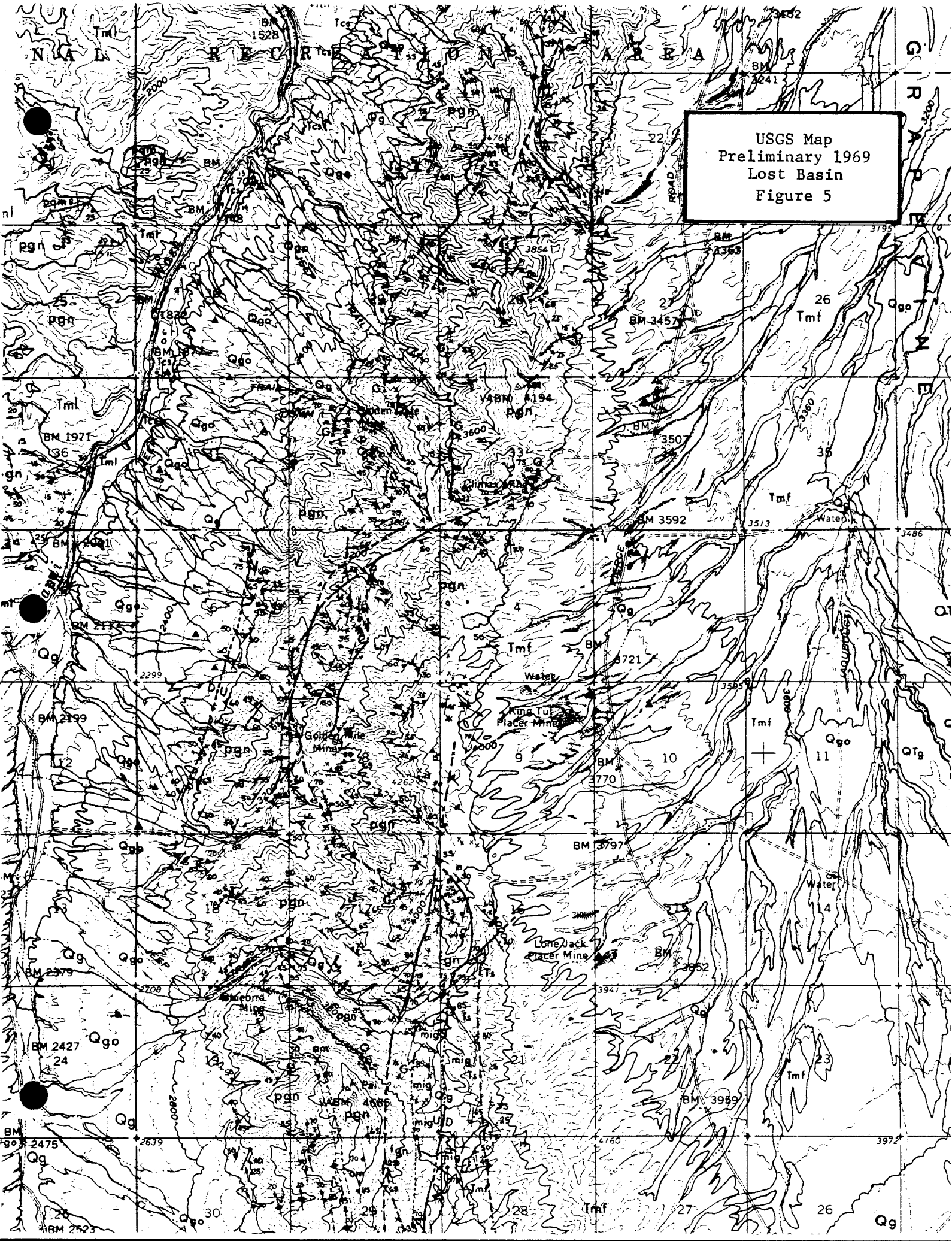


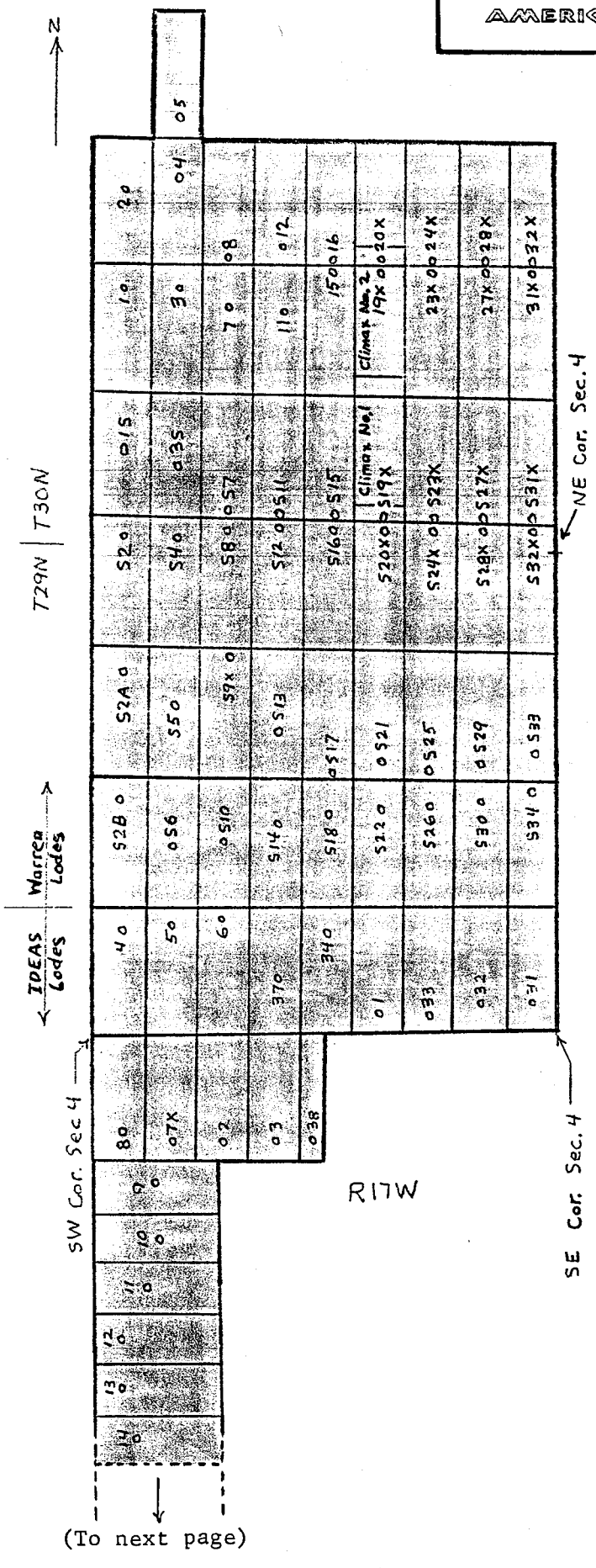
Figure 4

Scale: 1½" = 1 mile.

(USGS 1958)


USGS Map
Preliminary 1969
Lost Basin
Figure 5

AMERICAN HEAVY MINERALS, INC.



Lode Claims
o = Location Post
Scale: 1mm:73 feet

Figure 7 (North)

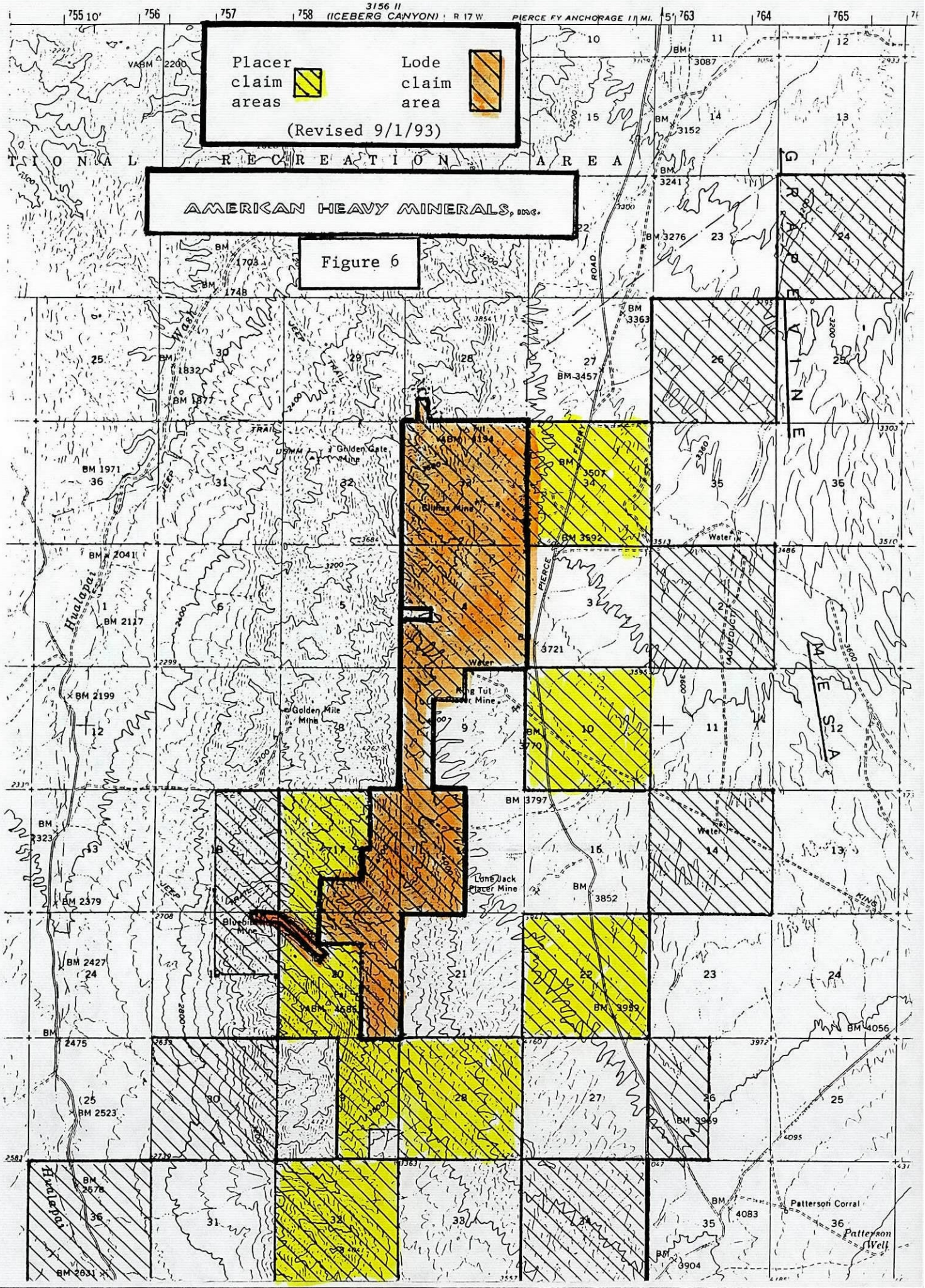
(Revised 9/1/93)

(To previous page)

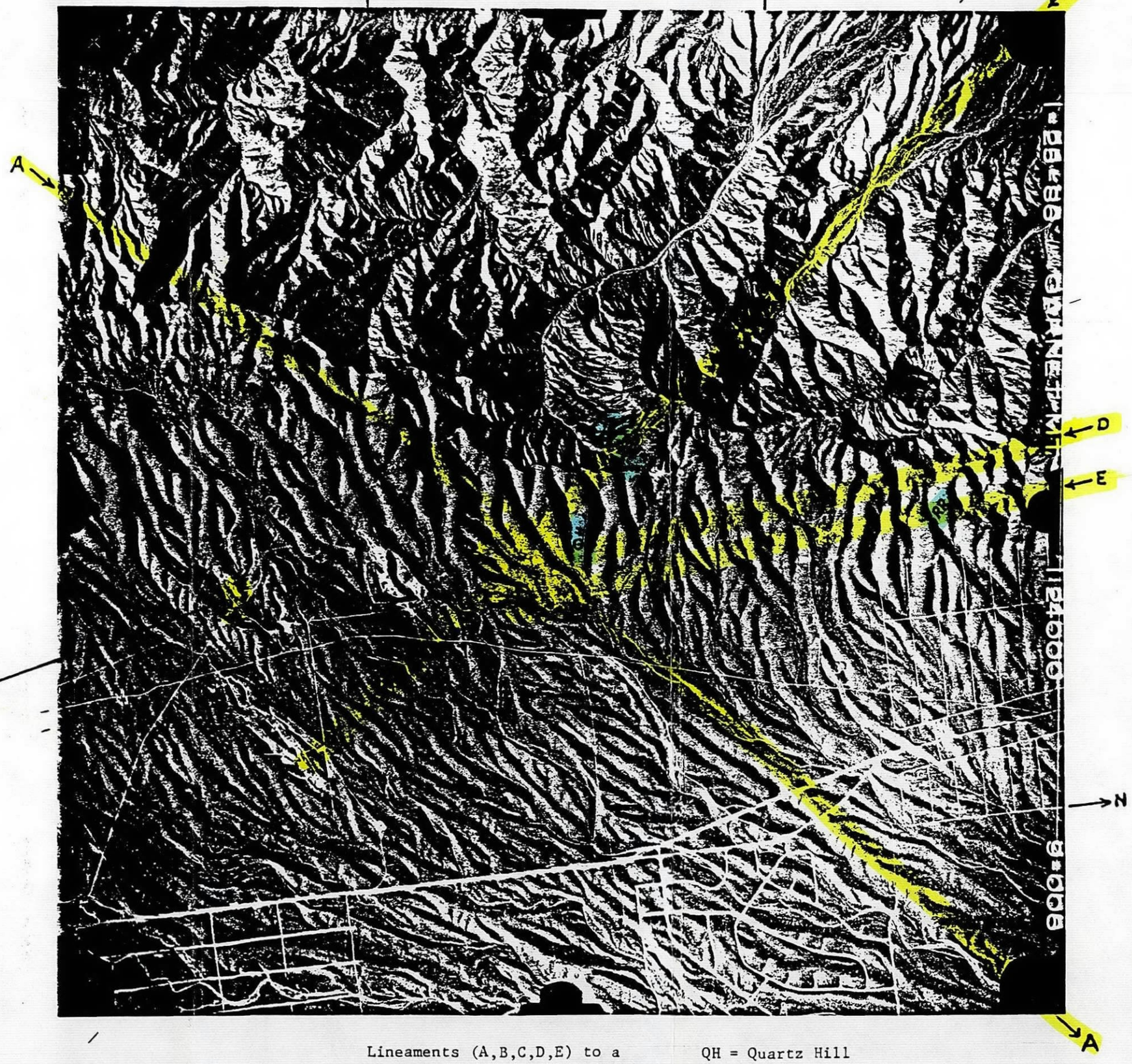
AMERICAN HEAVY MINERALS, inc.

Figure 7 (South)

(Revised 9/1/93)


Placer claim areas
Lode claim area
(Revised 9/1/93)
AMERICAN HEAVY MINERALS, INC.
Figure 6
3156 II (ICEBERG CANYON)
R 17 W
PIERCE FY ANCHORAGE 11 MI.
755 10'
756
757
758
763
764
765
Golden Gate Mine
Golden Mile Mine
King Tut Placer Mine
Lone Jack Placer Mine
Bluebird Mine
Patterson Corral
Patterson Well
Hualapai
PIERCE FERRY ROAD
JEEP TRAIL
AQUEDUCT
KINGMAN
MESA
GRAPEVINE

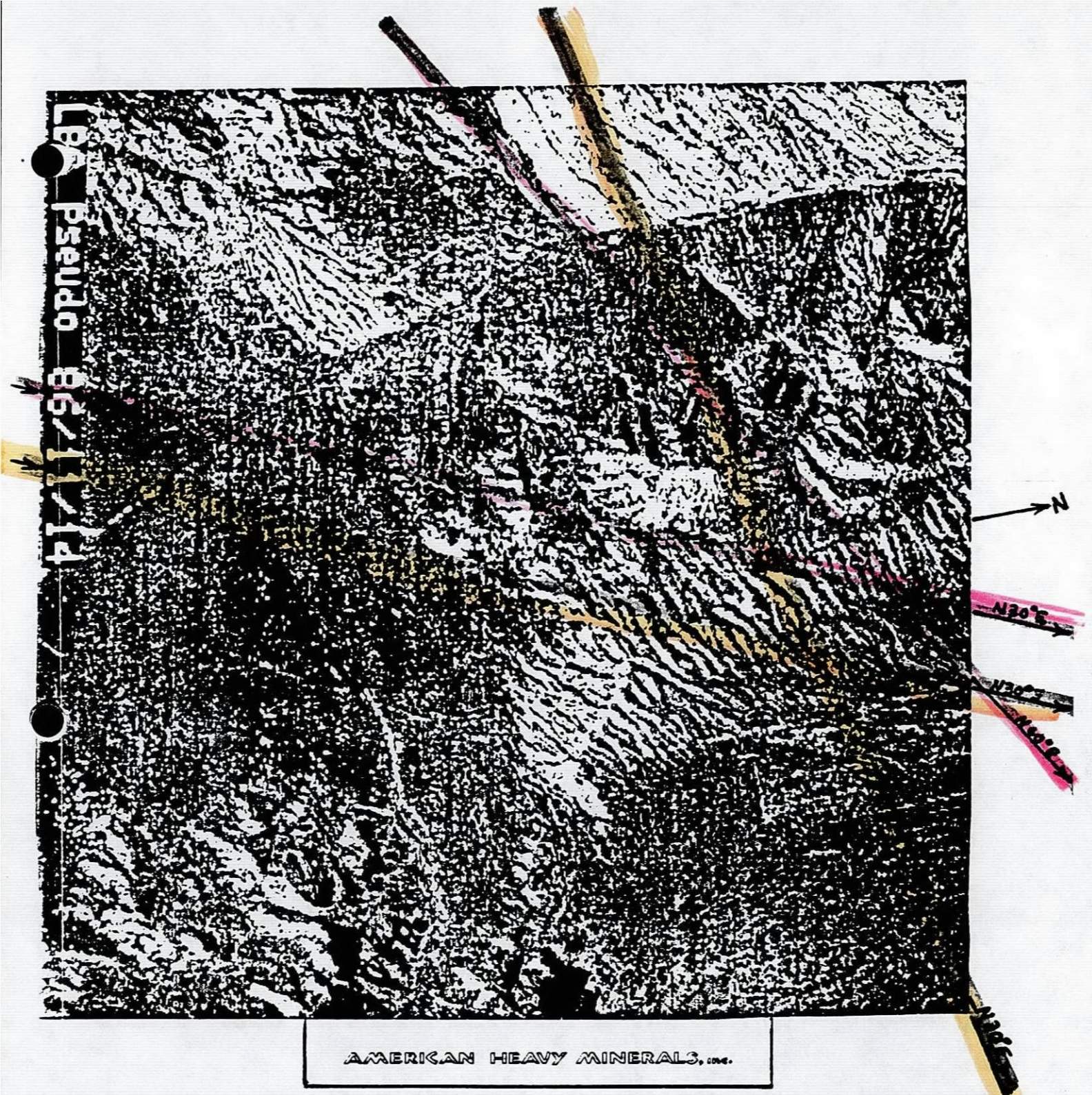
AMERICAN HEAVY MINERALS, inc.



Lineaments (A,B,C,D,E) to a suggested buried episyenitic gold bearing bedrock pipe at NE corner Sec. 4, T29N, R17W.

QH = Quartz Hill
RR = Road Runner Vein
X = Muddy Creek sampling
Y = Breccia zone sampling

Figure 8
(See pages 7 to 9)



Possible Buried Episyenitic Gold Bearing Pipes in the Southern Area (See page 9).

Orange lines:

Crosscutting lineaments near to center of NW¼ of Sec. 22, T29N, R17W.

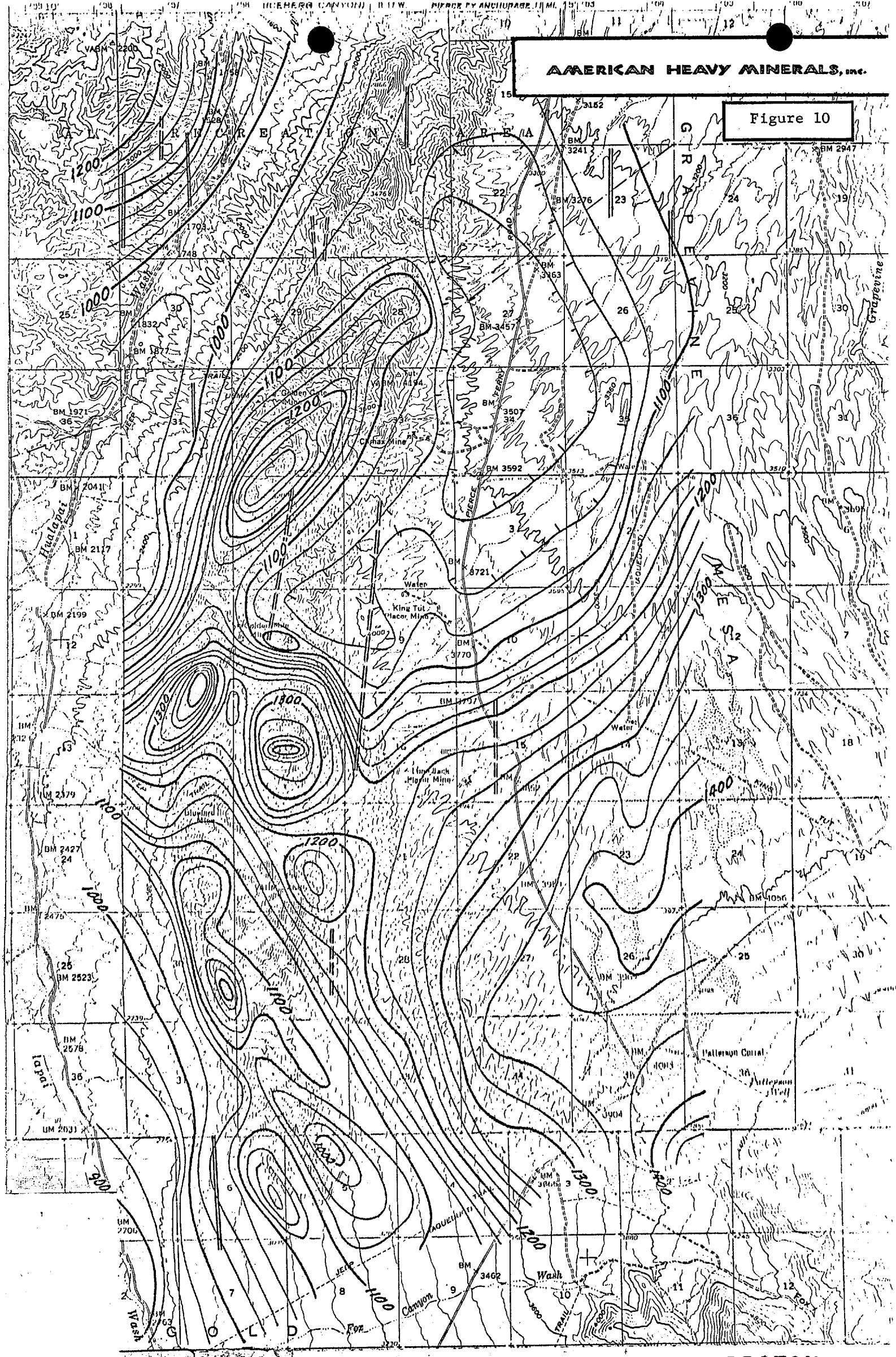
Purple lines:

Crosscutting lineaments near to E center of E½ of Sec. 16, T29N, R17W. (State lease of Garritson Mining Enterprises).

Figure 9

AMERICAN HEAVY MINERALS, inc.

Figure 10



LEGEND

Flight elev. = 500' above terrain
Contour interval = 25 gammas

SCINTILLATION ANOMALIES

==== 1 1/2-2 times background
═══ 2-3 1/2 times background

AIRBORNE PROTON TOTAL MAGNETIC INTENSITY & SCINTILLATION SURVEY

WARREN M. MALLORY, P.E.
Engineering Consultant

Post Office Box 1815
Laramie, Wyoming 82070
Phone: (307) 745-5130

May 23, 1991

FIRST ADDENDUM TO MARCH 15, 1990 REPORT:

It is my opinion and that of several geologists (both independent and some USGS personnel) that the potential for large scale gold mining in Lost Basin lies in the gold fault zones buried under the eastern pediment gravel mesa and in the large eluvial gold deposit adjacent to the faults (and possible buried pipe) and not in the exposed gold veins to the west, nor in the outlying alluvial placer gravels. Even though the alluvial gold placer area of surface drainages which cover about 9,000 acres where visible gold nuggets have been found, has seemed to attract considerable interest during the past 60 years, it is my personal opinion that the alluvial gold is too close to its source and has not had a chance to travel sufficient distance to concentrate into minable alluvial placer deposits.

Also, serious consideration should be given to the potential of the suggested copper/molybdenum porphyry deposit described in the brochure on pages 10 and 11. Note in Figure 5 the circular faults centering on the "Copper Blow-Out" which is in the SW corner of Section 4 west of the "King Tut."

Surface samples of exposed country rock to the west of where it dips under the eastern pediment gravels (Tour Guide points "A" through "G"), in general, give low gold values because the bedrock is still high on the outer gold shell which accounts for weak surface alteration and mineralization. Of course, exposed gold veins and mineralized shear zones give high gold values. The following suggest what may be expected with depth:

Bedrock Drill holes: Enclosed is a map showing the location of drillholes whose assays are given in the accompanying Appendix C of Deaderick's (Alfred J.) Thesis (page 22 of brochure). Please note that I have filled in the drill hole circles whose assays were listed. I do not know whether or not assays were made on the other drill holes shown on the map. Note that most of these drill holes are very near to the most western red dashed line of a suggested mineralized fault zone shown in Figure 4 of the brochure.

Mineralization with depth: Schraeder in USGS Bulletin B-397 (page 24 of brochure) mentioned that the miners in Lost Basin reported much greater alteration and mineralization with depth. As I mentioned in "E3" on page 5 of the Tour Guide, in the Golden Copper and Bluebird mines abundant pyrite is disseminated in the country rock with depth, giving the impression that such mineralization exists at not too great a depth in Lost Basin.

Episyenitic pipe: The USGS identified such a pipe as shown at point "E" of the satellite photo on page 7 of the brochure and as shown at point "G1" on the Tour Guide. An assay of a channel sample of this outcrop assayed 0.009 oz. gold/ton.

The following are some considerations of the bedrock mineralization under the eastern pediment mesa:

Buried mineralized structures: Some geologists believe that the bedrock buried underneath the eastern pediment gravels is the same as the exposed Lost Basin Range. However, the USGS and several other geologists have expressed the opinion that the block faults in the eastern mesa contain much wider and intense mineralization than the down-dropped exposed narrow vein systems to the west. Such conclusions have been substantiated by inspections of at least 70 E-W pediment ridges in the 6 mile long N-S 1/4 mile wide band just east of the contact of bedrock and the pediment gravels in the north half of the band, and east of the pediment gravel break in the south half. Subtle apparent bedrock exposures and float from nearby bedrock was observed at one or more points along many of the ridges. Note on the enclosed Deaderick map, his suggested N-S fault exposure through the alluvial pediments 1/2 mile SW of the King Tut. Also, much wider and abundant ankerite dikes are believed to exist in the eastern mesa. The USGS found different ages of mineralization and entirely different signature minerals in the lode gold from the Ford vein (in the western range) in relation to the Climax vein in the quartz breccia zone 1/2 mile to the east (next to the eastern mesa). I believe that the USGS told me that the Climax mineralization was much more recent than the Ford. The USGS did not test the chunky gold that fills the fractures and voids in the brecciated country rock at the Detector (lens?) at point "E8" of the Tour Guide (3/4 mile SW of the King Tut) since this gold was discovered only two years ago which was several years after the USGS concluded its research in the area. An inspection of several gold nuggets recently found with a metal detector shows the gold attached to fractured, brecciated country rock, hematite, quartz, ankerite and other rock particles which obviously would have had to been formed in fault zones. This chunky gold attached to fractured, brecciated rock is completely unlike the tiny thin flakes of gold seen in the small vugs in over 6,000 quartz rocks collected from the narrow, tight veins in the Lost Basin Range to the west. I'll never forget Frank Coolbaugh, the renowned mining engineer, about 20 years ago suggesting to me that exploration to the east of the line where exposed bedrock dips under the pediment gravels would be the "best place to start." We have tried to get this 1/4 mile wide N-S band explored and drilled ever since then, but this bedrock buried under the pediment gravels has never been drilled or mapped. Only the two placer drill holes at points "E4A" and "E4B" of Tour Guide, which were through 25 feet of alluvial gravels in gulch bottoms have hit bedrock in this N-S band (which was "blood red" at these two points as reported by the driller, but not assayed).

Buried eastern faults: As shown in red on Figure 4 in the brochure and on the photo-overlays of the Tour Guide, two "eastern N-S fault zones" buried under pediment gravels have been recently suggested and are believed to be the primary source (along with the adjacent suggested buried gold pipe) of most of the eluvial and alluvial placer gold in Lost Basin. This resulted from a study of five different sets of stereo-aerial photos (1958 to 1986), analysis of assays of pediment gravels from several former placer drill holes, four E-W ground magnetometer lines, the research of the USGS, and field observations of the pediment gravels. In other words, Lost Basin's bedrock "gold sleeper" probably is composed of one, or more of the buried faults and buried pipe which are believed to be the source of most of the 5 to 10 million ounces of gold resources previously estimated by the USGS as described on page 12.

Buried fault "AA": The most easterly red-dotted line (Figure 4 in the brochure and line "AA" in the Tour Guide overlays and Deaderick's suggested N-S fault exposure) has been recently suggested as being a major mineralized fault zone that has eroded in place, thus forming the so-called "buried residual fossil eluvial (gold) deposit" described on page 14. In situ erosion appears to have formed this deposit. A recently completed microscopic study of placer concentrates from an exposed fossil red-clay channel about 600 feet east from the fault (see top of page 16) revealed that the concentrates are primarily composed of angular, sharp cornered crystals and fragments of quartz, hematite (after pyrite), specularite, and other minerals not rounded by appreciable travel. Angular gold nuggets with vugs after pyrite and ankerite are abundant, as well as quartz and hematite particles with attached gold.

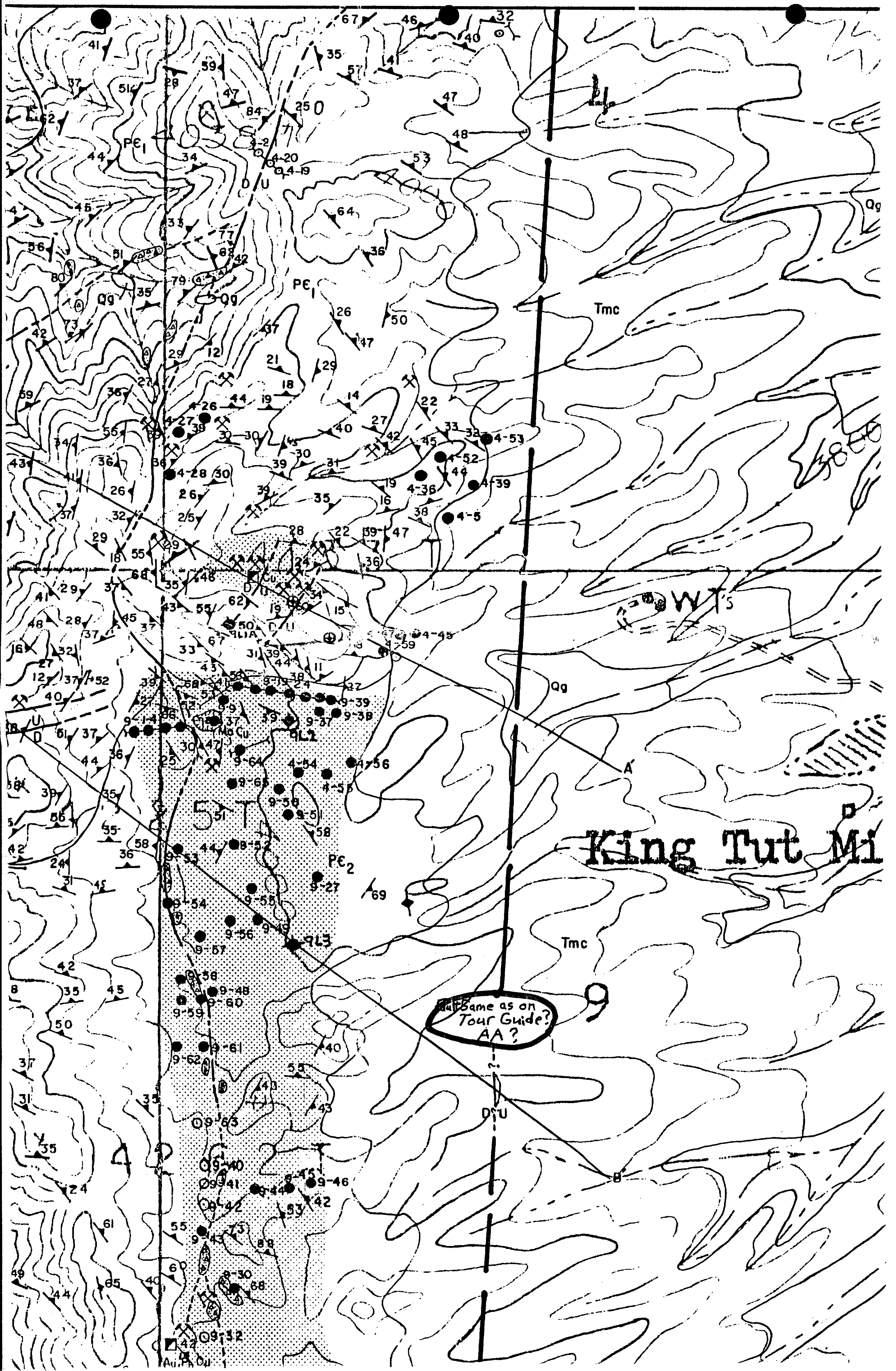
Anamolous mercury: Tests by the USGS showed anamolous mercury in the eluvial and alluvial placer gold from Lost Basin's eastern pediments. Also, widespread surface soil pediment samples show anamolous mercury. As noted at the bottom of page 1 of the brochure and at point "G5" in the Tour Guide, a vein of a rare mercury sulfide has been found in exposed bedrock just to the west of the eastern pediment mesa.

Red-clay fossil channels: As I mentioned previously, a study of the eluvial concentrates from a red-clay fossil channel (point "01" of Tour Guide about 600 feet east of suggested fault "AA") strongly suggests in situ erosion of the fault from which the red-clay outflowing fossil channels are derived. The exploration in following these red-clay channels to the west under the pediment gravels would certainly be of great value. Perhaps, they may eventually be found to terminate at the "blood red" bedrock zone!

Eluvial gold bench: A series of drill holes in the eluvial gravels in both Sections 16 and 22, showed higher and more consistent gold values with depth in going from east to west. I believe this strongly suggests that an in situ source is close by to the west. Also, results from these holes did suggest an average of 0.03 oz. gold/ton in the eluvial bench which has been identified in Sections 22, 16, 9, 10, 4, and 33 and should contain at least 6 million ounces of gold which certainly is in line with the USGS's previous estimate of 5 to 10 million ounces of gold resources.

Breccia pipe: The suggested buried gold bearing episyenitic pipe described on pages 5 to 9 of the brochure may be a quartz breccia pipe instead of episyenitic. Such might be concluded from the large quantity of quartz float found in the pediments surrounding the pipe and in a probable fossil drainage to the south and present-day drainage for several miles to the northeast. The conjecture that the pipe is episyenitic was from viewing the color enhanced satellite photo on page 7 which shows the same coloring of pediments flowing southward from the pipe "P" as the thin alluvial cover in the "Wall Street" area just to the north of the known episyenitic pipe at "E" described previously.

Surveys: I wonder if a seismic survey would give a plot of the bedrock surface contours under the pediments? Perhaps such results might be coordinated with a surface geochemical (mercury?) survey and possibly with IP and magnetics?


King Tut Mi
Same as on Tour Guide? AA?
Tmc
Tmc
Qg
Qg
Qg
PЄ1
PЄ1
PЄ2
D U
D U
U D
A'
B'
9-39
9-38
9-37
9-64
9-65
9-58
9-51
9-52
9-53
9-54
9-55
9-56
9-57
9-49
9-27
9-48
9-60
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9-61
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9-42
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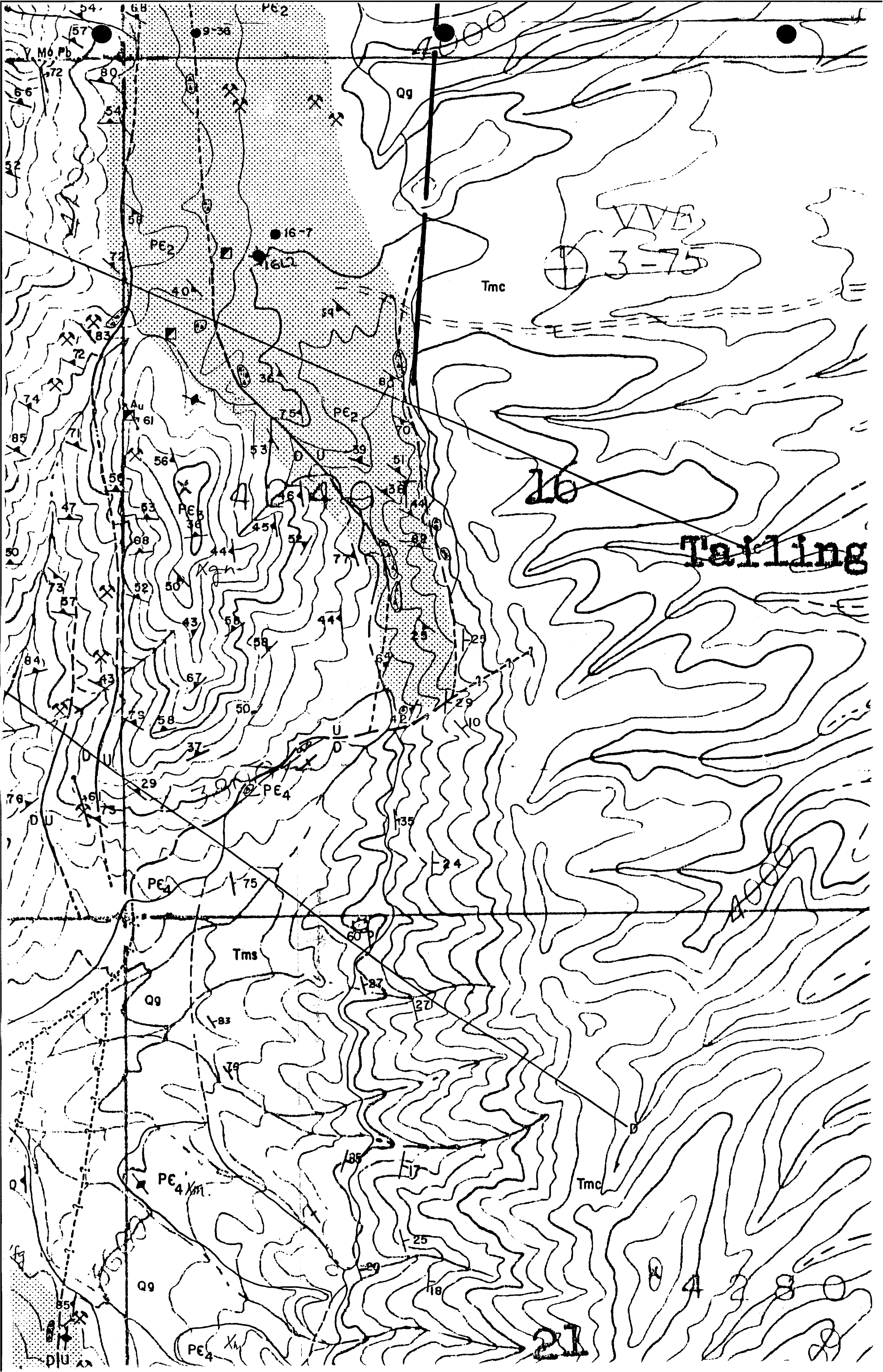
9-46
9-30
9-32
4-19
4-20
4-26
4-27
4-28
4-36
4-39
4-5
4-52
4-53
4-54
4-55
4-56
4-59
4-45
Mo Cu
Cu
Au, Pb Cu



Mo Pb
9-38
PЄ2
Qg
16-7
16L2
Tmc
Au
PЄ3
Xgn
16
Tailing
PЄ4
Tms
PЄ4 Xm
21
D
U

Appendix C

DRILL HOLE ASSAYS

Provided by Resources International, Run by
C.D.C. Associates Inc. Boulder, Colo.

Section No./ Drill Hole No.	Footage Intervals (from collar)	Au oz/ton	Ag oz/ton
4/5	0-15	0.014	0.048
	15-25	0.014	0.078
4/26	0-15	0.017	0.032
	15-25	0.009	0.032
	25-35	0.009	0.032
	35-45	0.017	0.016
	45-55	0.020	0.049
4/27	0-15	0.003	0.016
	15-25	0.038	0.049
4/28	0-15	0.016	0.081
	15-25	0.023	0.081
	25-35	0.039	0.354
	35-45	0.020	0.049
	45-50	0.020	0.049
4/36	0-15	0.012	0.034
	15-25	0.007	0.044
4/39	0-15	0.012	0.049
	15-25	0.012	0.024
	25-35	0.012	0.042
4/45	0-15	0.015	0.053
	15-25	0.012	0.042
	25-35	0.023	0.042
4/47	0-15	0.022	0.038
	15-25	0.015	0.038
	25-35	0.015	0.051
4/52	0-15	0.002	0.030
	15-25	0.005	0.030
4/53	0-15	0.002	0.040
	15-28	0.005	0.070
4/54	0-15	0.007	0.030
	15-25	0.011	0.030
	25-35	0.022	0.040
	35-45	0.002	0.030
	45-55	0.007	0.030

Section No./ Drill Hole No.	Footage Intervals (from collar)	Au oz/ton	Ag oz/ton
4/55	0-15	0.005	0.030
	15-25	0.007	0.030
	25-35	0.009	0.030
4/56	0-15	0.005	0.031
	15-25	0.005	0.031
4/59	0-15	0.024	0.028
9/1	0-15	0.006	0.032
	15-25	0.004	0.044
9/2	0-15	0.004	0.044
	15-25	0.007	0.010
	25-35	0.012	0.032
	35-45	0.007	0.058
	45-55	0.007	0.058
9/3	0-15	0.007	0.058
	15-25	0.007	0.058
9/4	15-25	0.016	0.049
9/8	0-15	0.023	0.049
	15-25	0.017	0.049
9/9	0-15	0.014	0.044
	15-25	0.014	0.117
	25-35	0.012	0.073
	35-45	0.004	0.058
	45-55	0.012	0.032
9/19	0-15	0.012	0.045
	15-25	0.009	0.045
9/20	0-15	0.014	0.024
	15-25	0.009	0.024
9/21	0-15	0.014	0.024
	15-25	0.024	0.024
9/22	0-15	0.017	0.024
9/23	0-15	0.019	0.036
	15-25	0.004	0.036
9/24	0-15	0.017	0.024
	15-25	0.017	0.024
9/27	0-15	0.034	0.036
	15-25	0.009	0.036

Section No./ Drill Hole No.	Footage Intervals (from collar)	Au oz/ton	Ag oz/ton
9/30	0-15	0.017	0.036
	15-25	0.017	0.036
9/36	0-15	0.005	0.029
	15-25	0.007	0.044
9/37	0-15	0.005	
9/38	0-15	0.003	
	15-25	0.001	
	25-35	0.007	
	35-45	0.001	
	45-55	0.001	
	55-65	0.005	
9/39	0-15	0.001	
	15-25	0.001	
	25-35	0.003	
	35-45	0.003	
	45-55	0.003	
9/43	0-15	0.023	0.036
	15-25	0.010	0.036
	25-35	0.017	0.022
	35-45	0.007	0.036
	45-55	0.026	0.036
9/44	0-15	0.020	0.036
	15-25	0.020	0.036
	25-35	0.016	0.027
	35-45	0.010	0.036
	45-55	0.029	0.046
9/45	0-15	0.029	0.036
	15-25	0.130	0.036
9/46	0-15	0.020	0.036
	15-25	0.016	0.036
	25-35	0.023	0.036
	35-45	0.013	0.036
	45-55	0.013	0.036
	55-65	0.009	0.032
9/48	0-15	0.026	0.036
	15-25	0.016	0.036
	25-35	0.036	0.036
	35-45	0.013	0.036
	45-55	0.010	0.036
9/49	0-15	0.016	0.036
	15-25	0.036	0.036
	25-35	0.013	0.036
	35-45	0.010	0.036
	45-55	0.010	0.036

Section No./ Drill Hole No.	Footage Intervals (from collar)	Au oz/ton	Ag oz/ton
9/50	0-15	0.008	0.035
	15-25	0.004	0.022
	25-35	0.022	0.035
	35-45	0.022	0.027
	45-55	0.022	0.018
9/51	0-15	0.011	0.028
	15-25	0.022	0.035
	25-35	0.013	0.035
	35-45	0.026	0.042
	45-55	0.018	0.028
	55-65	0.011	0.028
	65-75	0.015	0.028
	75-85	0.015	0.021
	85-95	0.024	0.028
	95-105	0.015	0.035
9/52	0-15	0.003	0.031
	15-25	0.005	0.031
	25-35	0.005	0.031
	35-45	0.012	0.054
	45-55	0.014	0.054
9/53	0-15	0.007	0.023
	15-25	0.003	0.015
	25-35	0.003	0.015
	35-45	0.002	0.015
	45-55	0.010	0.023
9/54	0-15	0.012	0.015
	15-25	0.010	0.023
	25-35	0.012	0.023
	35-45	0.003	0.023
	45-55	0.005	0.023
9/55	0-15	0.003	0.031
	15-25	0.014	0.031
	25-35	0.014	0.153
	35-45	0.009	0.023
	45-55	0.007	0.031
9/56	0-15	0.010	0.023
	15-25	0.009	0.023
	25-35	0.015	0.031
	35-45	0.014	0.015
	45-55	0.009	0.031
9/57	0-15	0.009	0.015
	15-25	0.014	0.023
	25-35	0.007	0.023
	35-45	0.012	0.034
	45-55	0.005	0.026

Section No./ Drill Hole No.	Footage Intervals (from collar)	Au oz/ton	Ag oz/ton
9/58	0-15	0.007	0.034
	15-25	0.012	0.034
	25-35	0.010	0.034
	35-45	0.012	0.026
	45-55	0.007	0.026
9/59	0-15	0.012	0.026
	15-25	0.007	0.034
	25-35	0.019	0.026
9/60	0-15	0.019	0.034
	15-25	0.029	0.026
	25-35	0.017	0.034
	35-45	0.027	0.034
	45-55	0.015	0.034
9/61	0-15	0.008	0.021
	15-25	0.017	0.021
	25-35	0.017	0.028
	35-45	0.004	0.028
	45-55	0.015	0.028
9/62	0-15	0.006	0.021
	15-25	0.004	0.014
	25-35	0.006	0.021
	35-45	0.004	0.014
	45-55	0.002	0.014
9/64	0-15	0.012	0.021
	15-25	0.010	0.021
	25-35	0.012	0.021
	35-45	0.008	0.028
	45-55	0.019	0.028
9/65	0-15	0.002	0.021
	15-25	0.019	0.028
	25-35	0.004	0.111
16/7	0-15	0.003	0.032
	15-25	0.003	0.032

Appendix D

GEOCHEMICAL ANALYSIS OF HEAVY MINERAL SANDS
Qualitative Spectrographic Analysis Determined by Emission Spectrography--Rocky Mtn. Geochemical Corp. Tuscon, AZ.

Sample	Major(+1%)	Minor (1%-.01%)	Trace(>.01%)
G-1	Aluminum Calcium Iron Magnesium Manganese Silicon Titanium	Copper Potassium Sodium Strontium Uranium	Barium Chromium Cobalt Lead Molybdenum Nickel Vanadium Zinc Zirconium
G-2	Aluminum Calcium Iron Magnesium Manganese Silicon Titanium	Copper Potassium Sodium Strontium Uranium	Barium Chromium Cobalt Lead Molybdenum Nickel Vanadium Zinc Zirconium
G-3	Aluminum Calcium Iron Magnesium Manganese Silicon Titanium	Copper Potassium Sodium Uranium Zinc Zirconium	Barium Chromium Cobalt Lead Nickel Strontium Vanadium Cerium (?) Ytterbium (?)
G-4	Aluminum Calcium Iron Magnesium Manganese Silicon Titanium	Copper Potassium Sodium Strontium Uranium Zinc	Chromium Cobalt Lead Nickel Zirconium Ytterbium (?)
G-5	Aluminum Calcium Iron Magnesium Manganese Silicon Titanium	Copper Potassium Uranium Zinc Zirconium	Barium Chromium Cobalt Lead Nickel Vanadium Yttrium (?) Cerium (?) Lanthanum Ytterbium (?)

C.D.C.
Associates, Inc.
5401-B WESTERN AVE.
BOULDER, COLORADO 80301
(303) 442-8361

December 15, 1975

Apache Oro
c/o Mike Wendell
2525 Eldridge
Golden, Co 80401

Assay by Atomic Absorption

CDC #	Customer Designation	Au oz/t		Ag oz/t
4600	9L3 6-12	0.02		0.060
4601	9L3 12-24	0.02		0.040
4602	9L3 24-36	0.02		0.050
4603	9L3 36-48	0.02		0.050
4604	9L3 48060 ←	0.44	.59/8	0.040
4605	9L3 60-72	0.02		0.040
4606	9L3 72-84	0.02	= 0.0175 avg	0.292
4607	9L3 84-94	0.02		0.040
4608	16L2 6-12	0.02		0.050
4609	16L2 12-24	0.02		0.050
4610	16L2 24-36	0.02		0.050
4611	16L2 36-48	0.04		0.061
4612	16L2 48-60	0.02	.36/8	0.061
4613	16L2 60-72 ←	0.190	=0.045	0.050
4614	16L2 72-84	0.02		0.046
4615	16L2 84-94	0.03		0.422
4616	9L2 2-12	0.02		0.230
4617	9L2 12-24	0.03		0.300
4618	9L2 24-36 ←	0.04		0.046
4619	9L2 36-48	0.02	.21/8	0.077
4620	9L2 48-60	0.02		0.215
4621	9L2 60-72	0.02	= 0.026 avg	0.353
4622	9L2 72-84	0.02		0.046
4623	9L2 84-94	0.04		0.054
4624	9L1A 2-12	0.02		0.130
4625	9L1A 12-24	0.02		0.050
4626	9L1A 24-36	0.03		0.046
4627	9L1A 36-48	0.03	.22/8	0.046
4628	9L1A 48-60	0.03		0.215
4629	9L1A 60-72 ←	0.04	= 0.0275 avg	0.046
4630	9L1A 72-84	0.03		0.200
4631	9L1A 84-94	0.02		0.050
4632	8Dâä	0.03		0.077
4633	8Dâb	0.05		0.077
4634	8Dac	0.07		0.046
4635	8Dad	0.02		0.284

apache Oro's split samples

?

J. Michael Connell

JMC/lb

Vol. 103, No. 12

THE MINING RECORD

WESTERN MI
AND INTERNA

Wednesday, March 18, 1992, Denver, CO

Mountain View Acquires Twin Dome Mine In Nevada

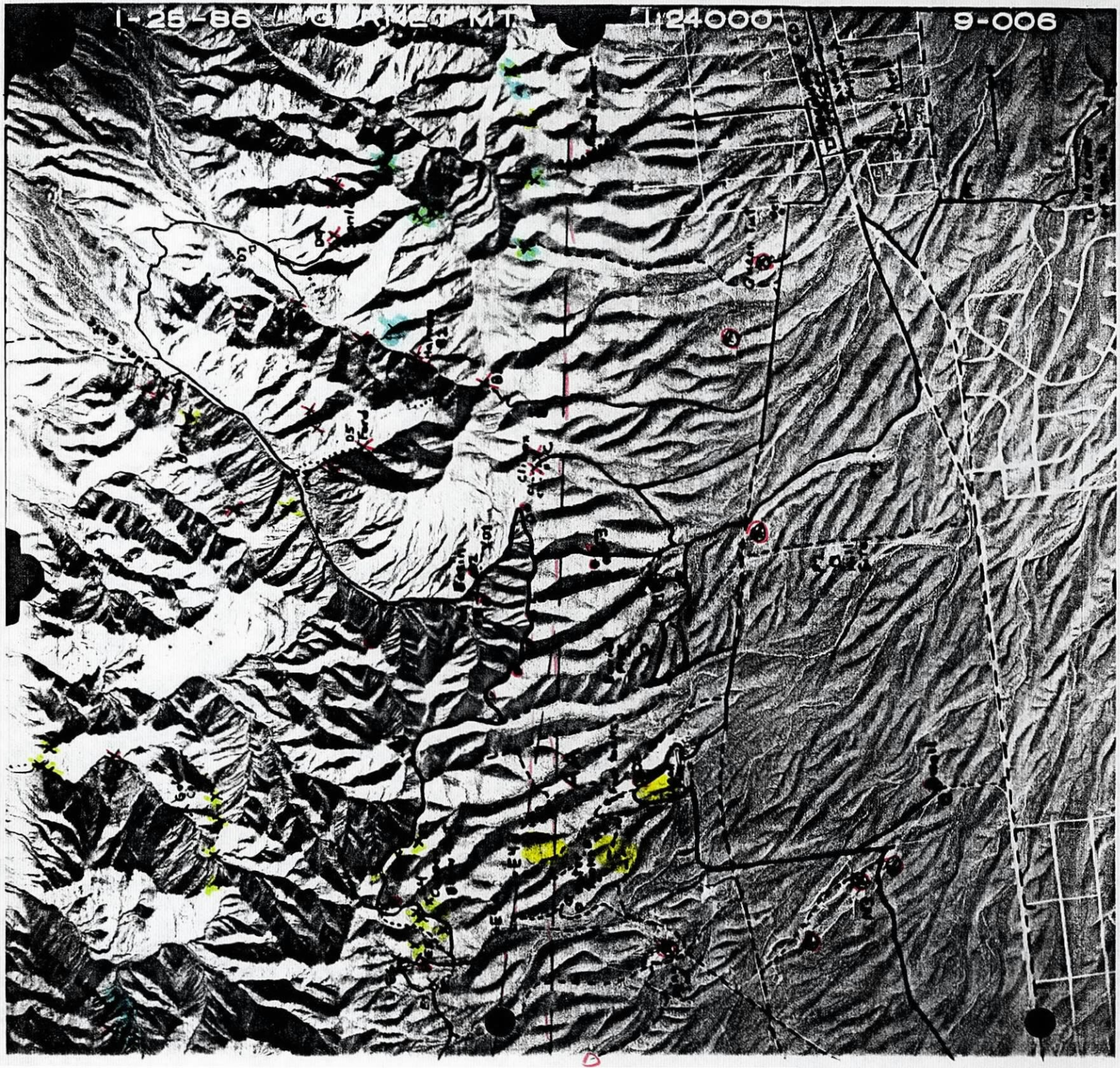
RENO, NV — Mountain View Exploration reported that it has purchased the Twin Dome mine located approximately 15 miles northeast of the town of Imaly in Pershing County, Nevada. The property which consists of 20 unpatented claims, lies on the western pediment of the East Range.

Mountain View President Raymond Wittkopp said that mineral character of the land adjacent to the mine has been evident for a number of years, since portions of the property were excluded from the railroad patent. The mine has had prior production of approximately 2,000 ounces of gold from several open pits. Ore grade averaged from between 0.50 and 0.75 ounce per ton.

The style of mineralization at the Twin Dome mine is unique to this portion of Nevada and would best be classified as an episyenite gold deposit, Wittkopp said. Episyenite gold mineralization has been reported at the Salve mine in Spain, the Oriental mine at Alleghany, California and at several gold prospects in the Gold Basin—Lost Basin district of Arizona.

Management has outlined an aggressive exploration program for this property.

The company's address is 100 West Grove Street, Reno, NV 89509, (702) 826-4011.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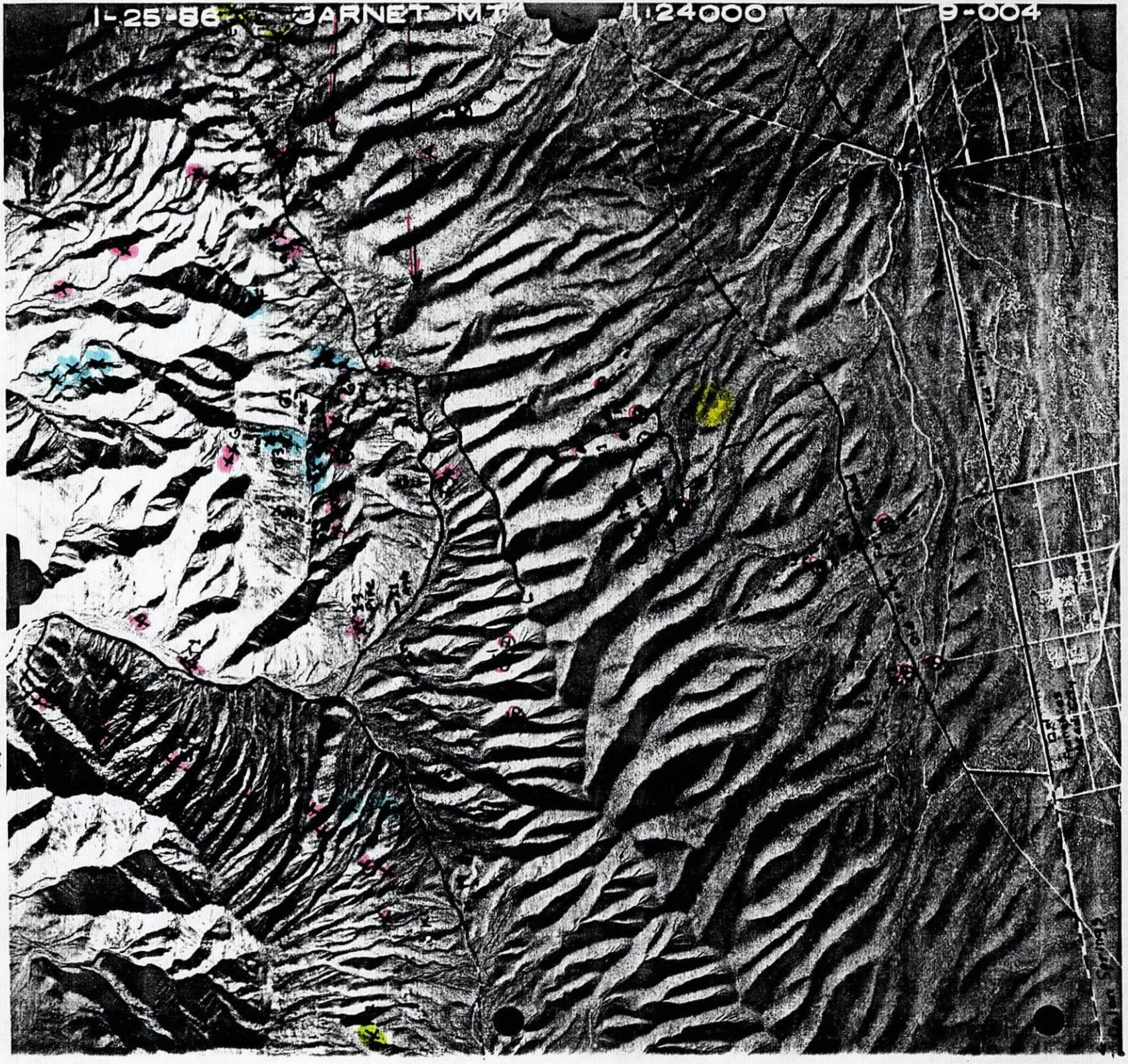
1-25-86
GARNET MT.
1:24000
9-004

WARREN M. MALLORY, P. E.
Engineering Consultant

Post Office Box 1815
Laramie, Wyoming 82070
Phone: (307) 745-5130

TWO DAY INSPECTION OF LOST BASIN, AZ

The tour is primarily to points related to the long breccia zone, the adjacent eluvial fossil placer bench (which was believed to have been deposited mainly from the erosion of the breccia zone), and to the suggested buried episyenitic gold pipe. It is the opinion of several professionals that the gold veins in the Lost Basin Range as well as the alluvial gold placers hold far less potential for economical development than the breccia zone and the buried pipe, but that the surrounding country rock and the distribution patterns of gold and other minerals in the veins and the alluvium are excellent "periphery indicators" of the potential and for the exploration of the breccia zone and the buried pipe.

The following refers to the accompanying copies of 4 stereo aerial photos (9-004 to 007) and 2 transparent overlays. The symbols on the two overlays signify the following:

Prospects and mines (adits and shafts). **Color indicates:**

- = Lode gold (visible gold).
- = Lode silver.
- = Lode copper.
- = Eluvial, or alluvial.
- = Light tan episyenitic float rock found.

= Cuts, dikes, or other linear structures.

= Other points of interest.

Inspection of the following points in alphabetical sequence (letter symbols on the photo overlays) is suggested, as well as reference to the pages and figures in the yellow brochure, "LARGE ARIZONA GOLD PROPERTY":

Starting at the Meadview Company office building in the southern center of Section 27, T30N, R17W, on the paved highway between Meadview and Mead City drive to:

A: (Roadrunner vein). Park and walk to the vein in the bottom of the gulch which contains galena, silver, copper, and gold in quartz. An ore sample assayed 39.1 oz. gold/ton and 35.4 oz. silver/ton. (See page 8, "E"). Walking further west (**A1**) up the canyon, observe outcrops of the quartz breccia zone. Note that there are four outcrops further west on the N-S ridge in a line (4 blue "x") of silver, galena, and copper (and probably gold). This line of outcrops and the Roadrunner vein appear to continue southerly about two miles to intersect the suggested buried episyenitic gold pipe. (See Figure 8).

AA: (Major fault). Much of the placer gold in Lost Basin is believed to have originated from a highly mineralized fault (N-S red lines on overlay) buried under the pediment gravels. The fault extends from the Road Runner vein (A), to behind the King Tut, through the canyon to the south at point (I), to the obvious N-S fault between Pai Mountain and the west flank of the southern Lost Basin pediments. A recent study of five different sets of

TWC

stereo aerial photos (1958 to 1986), plus a comparison of assays of pediment gravels from former placer drill holes, plus many years of on-the-ground observations of the pediments, all suggest such a buried structure from which much of the eluvial and alluvial placer gold has eroded.

B: (Bulldozer cut). Note this cut which was believed to be into the northern extension of the Northern breccia zone of the Climax Mine. (See page 5, "5B" and "6B").

B1: (Harmon saddle). At the turn-around spot on the saddle, note the steel cable to the Harmon prospect at **B2**. Also note the prospect-cut (about 100 feet west of the turn-around) that contains free-gold with chalcopyrite.

B2: (Harmon prospect). If you have time, you might hike along the foot trail to the Harmon prospect; however, you will be driving to the Golden Gate Mine (**D6**) where the dump has gravels with mineralization identical to that of the Harmon prospect as well as most other gold veins in the northern gold halo. Several hundred quartz rocks with visible free-gold in vugs of hematite after chalcopyrite have already been collected from the Harmon tailings. **Note that**, as observed by the USGS, the chalcopyrite in the northern gold-rich halo of the mineral-zoning pattern contains, or contained (before erosion), most of the gold originally deposited, unlike much of the gold in the southern halo that was formed in association with abundant pyrite. The USGS age-dating of the Harmon gold showed a different date than the gold at the nearby Climax Mine, or that of the alluvial placer gold in the eastern fanglomerates.

C: (Climax Mine). Recorded mill production from the 105 foot shaft averaged 6.0 oz. gold/ton. Subsequent nearby drilling in this quartz breccia zone indicated probable reserves of 12,800 tons of 0.5 oz. gold/ton, and more recent drilling about 500 feet further north showed comparable values. (See page 5, "6B"). In the cut on the bank just west of the road turn-around, several rock samples have been found that contained patches of fine particles of visible gold. A report, "CLIMAX GOLD MINE," giving the drilling assays, a description of the shaft's wallrock and quartz veining, the surrounding geology, and a description of the paralleling ankerite pipe is available for loan from Warren Mallory.

C1: (Climax saddle). Walk to the saddle (about 400 feet south of the Climax road turn-around) and note the white onyx which contains anamolous gold. Also note to the south, the iron-staining in Red Basin. (See page 5, "6B"). It is believed that the Northern breccia zone extends southward underneath the pediment gravels and is about 600 feet east of Red Basin's eastern ridge and exposed bedrock further south. Abundant quartz pediment float appears to have eroded from this north-south trending quartz breccia zone presently covered by gneiss and schist pediment gravels from the Lost Basin Range.

C2: (Ankerite dike, or pipe). About 300 feet southwest on the road from the Climax wooden house, chunks of ankerite float can be found. This ankerite was from a north-south dike, or pipe, up to 30 feet thick, just under the loose gravel on the bank along the western side of the road. The dike, or pipe, was exposed by a backhoe cut several years ago, but was subsequently covered by tailings from bulldozing above. (See page 5, "6B", and "CLIMAX GOLD MINE").

C3: (Quartz hill). As you drive up Quartz Hill note the abundant quartz float (mineralized and bull), some of which show visible gold when broken. Note that the quartz float was probably not only derived from a north-south breccia zone cutting this ridge on the west, but also was a result of radial deposition from the suspected buried gold pipe. Four percussion drill holes (20 to 40 feet deep) and about 100 feet apart half-way up the hill averaged from 0.015 to 0.44 oz. gold/ton. (See page 8, "QH", and "CLIMAX GOLD MINE").

D: (Shear zone). Channel chip sampling over a distance of about 50 feet along the red-stained fracture zone on the east side of the road showed an average of only 0.01 ppm gold.

D1: (Copper outcrop). If you have the time, you might walk about 400 feet up the trail to a leveled spot where a quartz vein with secondary copper was found by a prospector many years ago. He mistakenly named the red basin as "Copper Basin," and as a result a couple of mining companies sampled and drilled the basin for copper with discouraging results. About 30 feet northwest of the leveled spot is a small banded-iron formation outcrop.

D2: (Drill hole). At the junction of the road down the gulch and the road to the south, an 86-foot percussion drill hole averaged 0.02 oz. gold/ton which is believed to have been caused by secondary enrichment from the quartz breccia zone and/or buried gold pipe to the east.

D3: (Muddy Creek Formation). At the leveled turn-around spot an 86-foot percussion drill hole averaged 0.05 oz. gold/ton which also is believed to have been enriched from bedrock sources to the east. From this spot walk east up the ridge about 350 feet where a large exposure of the Muddy Creek formation fills a gulch cut into the red-stained wall rock. A study of the formation indicated that original drainage through the gulch was westerly. It is suggested that the red-iron staining of the Precambrian rock complex in Red Basin may have resulted from a sudden break down of ferromagnesian silicate minerals in the rock complex due to intense heat, or chemical action from the intrusion of the buried pipe to the east. If this break down of ferromagnesian silicate minerals had occurred as a normal geological event over a long period of time, as some geologists believe, and not accelerated as a result of some catastrophic effect, such as an adjacent intrusive, why are many like rock complexes several miles to both the north and south in the Lost Basin Range not red-stained like Red Basin? Channel sampling of the lower part of the Muddy Creek assayed 0.009 oz. gold/ton. Pieces of the red-stained country rock (removed from the Muddy Creek channel samples) assayed less than 0.001 oz. gold/ton. (See page 5, "4B" and page 8, "X", and Figure 8, "x").

D4: (Houses and cable). As you approach this spot, note the various white quartz veins on the surrounding mountain slopes. Stop at the Spanish house which is on the right (smooth walls), and "lazy-man's" house is on the left (rounded rocks piled on top of each other). In looking eastward up the canyon, the Ford Mine dump is visible. Also, a steel cable for hauling ore during the 1930's was run from the mine, over an A-frame half-way down the canyon, and across the road to an anchor in front of "lazy'man's" house. A

few years ago the cable was removed and hauled over to the Harmon prospect at B2.

D5: (Ford Mine). If you can take the time, you might hike about 1/4 mile up the gulch to the Ford Mine, which is a northerly trending drift 350 feet long with three stopes and a winze. Mineralization is basically the same as the Harmon prospect and the Golden Gate mine. (See pages 2 and 3, "4A").

D6: (Golden Gate Mine). Drive to and park in front of the Golden Gate Mine adit. This southerly-trending drift is about 1,100 feet long with several stopes. Mineralization is the same as the Harmon prospect and the Ford Mine. It is suggested that you spend at least a 1/2 hour on the dump looking for free gold with a 10-power magnifier in the vugs of quartz rock particles about 1" diameter, or less. Normally, one can find 6 to 8 during this time. (Over 1,000 rock particles with visible gold have recently been found on this dump). On the photo overlay, about 600 feet southeast of the Golden Gate Mine, the green "x" is where green beryl crystals, 1/2" diameter and 1 1/2" long have been found.

D7: (Building). Another Spanish building with smooth walls is alongside the road on the right.

D8: (Half-Way Mine). Drive to the turn-around spot just east of the Half-Way Mine dump. Note that essentially no mineralized quartz was left behind on the dump by the miners. Note the Spanish burro trail on the north side of the canyon about 200 feet to the east. In looking further up the canyon to the skyline, note the saddle at B1. (See pages 2 and 3, "4A").

D9: (Scanlon Mine). It is suggested that you park at an easy turn-around on the right which is about 150 feet down the canyon from the Scanlon Mine (now called the Empire and Manhattan adits). The mineralization is very similar to the other gold quartz veins in the northern gold halo (such as the Harmon, Ford, and Golden Gate), except occasional small vanadinite crystals are present.

After returning to D: Continue on the southerly road along the crest between Red Basin and the eastern fanglomerates. Note the contrast between the down-dropped Lost Basin mountains to the west and the eastern fanglomerate mesa. Undoubtedly, because the majority of the Lost Basin gold veins were lower in altitude than this mesa, the old timers did not look for placer gold in these eastern fanglomerates until 1931---when a rancher's wife picked up a golf-ball size gold nugget! (See page 16).

E: (Drill holes). Alongside the road four percussion holes were drilled several years ago. A 100 foot hole a few feet south of E averaged 0.13 oz. gold/ton and the other three (two 20 foot deep and on 50 foot deep) averaged 0.08 oz. gold/ton. (See "CLIMAX GOLD MINE").

E1: (Andesite dike). Along the ridge to the northwest between the road and the knob, a Post-Precambrian NE-SW andesite dike was identified by Krish in his comparison of Lost Basin with some other porphyry copper deposits and prospects in the U.S. and Mexico (See page 11, "9E", and page 23, "Krish).

E2: (Northern edge of copper-zone). To the left (at the turn in the road) is the most northerly exposure of highly altered bedrock (which some call "burnt rock") with secondary copper similar to the Copper Blow-Out. This outcrop appears to be on the north edge of the copper-zone of Lost Basin's mineral-zoning pattern. (See page 10, "1E", and Figure 2). Similar outcrops occur at prospect holes about 200 and 400 feet from this spot to the southwest on the left and right hand slopes from the road (2 green "x").

E3: (Look-Out). From this point (just west of the top of the knob) note that you look down onto the tops of several peaks of the down-dropped Lost Basin Range. You can see the N-S ridge behind the adit of Golden Copper. This mine drifts about 1,200 feet eastwardly, crosscutting the Precambrian bedding dipping steeply to the west. In addition to abundant copper minerals in the quartz, considerable iron pyrite is disseminated in the schist and gneiss wall rock. This mine and the Bluebird Mine are the only spots in the Lost Basin Range where abundant pyrite has been found to be disseminated in the country rock. Since both mines crosscut the steeply dipping bedding of the Range, the drifting (in effect) was toward the deep original source of the intrusive (before the mountains down-dropped and dipped to the west). Therefore, because Lost Basin is high on the intrusive system and has not eroded appreciably (like Mineral Park and Oatman), alteration of the wall rock and mineral deposition should become more prevalent with depth (as previously observed by the "old-timers" in mining vein out-crops down Lost Basin's mountain sides). (See pages 1 and 2, "1A"). The Golden Mile silver and uranium mine to the southwest is hidden from view at this Look-Out due to an intervening E-W ridge.

E4: (Copper Blow-Out). In driving from the Look-Out east to the shafts of the Copper Blow-Out, immediately after crossing the road where you turned to the Look-Out, note the small prospect-cut on the left that contains chalcopyrite and secondary copper minerals in quartz and schist. Further east about 200 feet on the left near the summit of the knob is a prospect-cut (red "x") on a quartz outcrop that contains the only visible gold found in the copper-band of the zoning pattern (except for a small visible gold outcrop at the red "x" on the overlay, down the canyon to the west from the Golden Copper Mine). Further east, the tailings on the surface surrounding the two shafts, several years ago contained abundant blue and green secondary copper minerals, but "rock-hounds" have since cleaned them out. Assays of channel sampling of the "burnt rock" give an average of 0.006 oz. gold/ton. Note the additional prospect-cuts on this ridge, such as the adit with azurite tailings (down the hill to the east of the shafts), as well as the second cut (southwest of the southern shaft and east of the trench) where the USGS found several chunks of opal. A magnetic-low envelops this general area, suggesting a possible copper porphyry core at depth. (See page 4, "3B", pages 10 and 11, and Figures 2 and 10).

E4A and **E4B:** (Old drill holes). These are the only holes in Lost Basin's alluvial gravels that have hit bedrock. The bedrock chips were reported by the driller (in 1969) to be "blood-red". The holes were located in the bottom of the two gulches and bedrock was hit by the placer cable-tool drill at 25 feet. Since sampling was for placer only, no "blood-red" bedrock chips were saved, or assayed. It is believed that these two points are on a highly mineralized N-S fault that extends through the canyon to the south between points G1, G2, G3, and G5.

E5: (Core hole). On the leveled ground (trenches to the west and north), sludge from a 240 foot core drill hole was collected by the USGS and assayed 0.083 oz. gold/ton. (The mineralized sections that crumbled had been thrown out into the trash away from the sludge by the inexperienced driller, so only the sludge was assayed). The two long trenches show the highly fractured bedrock at this spot. (See page 4, "3B").

E6: (Exposed bedrock). This scraped-off area and the adjoining trench also shows copper mineralization and "burnt rock".

E7: (Southern edge of copper-zone). This shaft prospect (to the north of the road) with copper-zoning minerals is near to the southern edge of the copper-zone.

E8: (Detector Vein). The trench on this vein (or lens, or faulted structure) shows little visual evidence of gold mineralization, especially on the southern sloping bank which produced chunks of breccia with gold filling seams up to 1/4 inch wide. (See page 4, "3B", and photo of gold in breccia). This spot was explored two years ago with a metal-detector by a claim-jumper who hauled out about $25,000 of ore to a smelter in Las Vegas before he was caught. Eluvial and alluvial gold drainages to the east from this spot as well as many other spots along the 7 mile-long fault breccia zone are directly related to the breccia zone and, therefore, strongly suggest rich bedrock gold deposits underneath the thin gravel ground-cover in this zone.

E9: (High-Voltage Shaft). Most of the mineralized surface tailings have been recently removed by "rock-hounds". Even though visible free-gold and secondary copper minerals are occasionally found in this dump, the abundance of galena and silver indicates this quartz vein to be in the southern silver-lead-zinc band of Lost Basin's mineral-zoning pattern. Also, occasional tiny vanadinite crystals are seen. Note the small prospect on the vein about 200 feet up the hill to the north. (See page 3, "2B"). It is believed that the N-S breccia fault zone divides into two arms somewhere east of this vein, one arm going directly south along the base of the ridge through, or near to points **G, G2** and **G5**, and the other arm to the southeast through points **H** and **I**. Also, note the white plastic pipe of a claim-jumper, "Mina de Oro", which covers the steel post (originally with American Heavy Minerals' yellow warning sign which "Mina de Oro" tore off a few weeks ago. You will see several of these pipes on our claims. "Mina de Oro" has been notified of their trespass and is going to be held responsible by appropriate law-enforcement agencies for their damage and/or theft of at least 14 signs.

F: (Vanadium Mine). From the turn-around at the summit look about 20° north of west across the basin and you will see the road going around a hill to the Golden Mile silver and uranium mine. Walk southwest on a foot trail about 200 feet to the Vanadium dump and adit. On top of the dump and on the rock-wall on the east, look for 1/2 inch diameter, or smaller pieces of rock with vanadinite crystals and other rocks with black oxidized silver and galena.

G: (Carl prospect). This is a cut in the southern bank (narrow hump in road) that contains visible free-gold with galena, native silver, vanadinite, and some chalcopyrite and pyrite. (See page 3, "2B", and photo).

G1: (Episyenitic Pipe). In driving west from the Carl prospect, note the Wall Street Mine shaft and dump on the right. From the turn-around at the end of the road to the west, walk about 100 feet south to a highly fractured exposure of a small episyenitic pipe as identified by USGS. (See page 6, "3C" and page 7, point "E" on satellite photo). Also, note to the southeast the several prospect holes on the slope of the mountain across the gulch.

G2, G3, G4 and G5: (Various Mines). In driving up the ridge, note the prospect-shaft along the west side of the road and other prospects in the small basin immediately to the east. At the turn-around at the end of the road, note the three Wall Adits (G3) on the steep mountain slope directly west. On this same E-W structure (cross-cuts the Precambrian bedding) over the saddle and down on the west side about 200 feet from the top are two old prospect-diggings (G4) of quartz with free-gold and chalcopyrite. Directly south of where you are parked, there are a series of prospect holes in a N-S line where free-gold was found. The most southern prospect is the Mercury Mine (G5), a drift about 10 feet deep on a quartz vein and a narrow 1" wide vein of rare mercury sulfide as identified by the USGS as having several times the amount of mercury as contained in cinnabar. (See page 1, "1A"). Also, it should be noted that most gold and copper veins in Lost Basin, as well as the top soil and placer gold, all contain anamolous amounts of mercury.

H: (Mineralized ~~breccia~~ Shear zone). The road crosses over a mineralized ~~brecciated~~ zone. Visible free-gold has been found in quartz-stringers in this zone.

I: (Quartz-stringers). Drive to where a yellow sign of American Heavy Minerals stands just to the west of the road (assuming claim-jumpers have not torn it down in the past few days). On the north bank a few feet from the road, a brown highly-altered bedrock outcrop contains quartz-stringers (about 1/2" wide). Visible free-gold has been found in several of these stringers. About 100 feet further up the gulch on the north slope is a prospect-cut where visible free-gold and chalcopyrite have been found. Further east up the gulch, you will see an exposure of white bedrock near to the crest of the ridge.

I1: (Volcanic-ash bedding). Note the up-turned white volcanic-ash with several distinct layers of water-cemented ash with included rock and gravel particles.

I2: (Standing volcanic-ash). In driving about 50 to 200 feet west from I1, two other up-turned volcanic-ash formations which stand about 10 feet above the ground surface, come into view to the southeast.

I3: (Syenitic dike). Note two small prospects that contain free-gold and pyrite in quartz. Somewhere near to these prospects is a syenitic dike as identified by the USGS. (See page 6, "3C", and page 7, "S" on satellite photo).

J: (Pyrite). At this prospect note the abundant pyrite. Visible free-gold has been found in association with the pyrite.

J1: (Pyrite and banded-iron). At these two prospects note the abundant pyrite which is associated with occasional visible free-gold. Unusually high assays of gold in these two prospects and the prospect at J, encouraged Santa Fe Mining in 1986 to lease the claims. However, six months later, after they had barely started their exploration, they were forced to withdraw the lease (as well as several other exploration projects in the western U.S.) due to severe financial problems caused by the ICC's blockage of their merger with Southern Pacific Railroad. Also note at the eastern prospect the formation of banded-iron which is quite magnetic. A percussion drill hole on the pad at the mouth of the gulch (between the two prospects) showed anamolous platinum/palladium and gold. Before leaving, note high-up on the north slope of Pai Mountain, the prospects at **J4**. These prospects and several others are on the SE-NW long (1 1/4 mile) structure of the Bluebird veining system that extends to the eastern foot of Pai.

J2: (Scheelite). Tungsten in the form of scheelite was found at this prospect.

J3 and J4: (Bluebird Mine). The drift is about 1,200 feet long. Note the pyrite that is disemminated in the schist and gneiss on the dump. At the stope opening about 30 feet above the adit, considerable free-gold associated with chalcopyrite has been found in rock samples. As mentioned previously, the Bluebird veining structure extends to the east through **J4** to the foot of Pai Mountain. In returning eastwardly up Bluebird Canyon, note the extensive down-dropping and dipping of the Lost Basin Range in relation to the ridge of the eastern fanglomerate mesa.

K: (Pink granite). Note the large exposure of Laramide pink granite in Migmatite Valley.

K1: (Gneiss). Note the altered Laramide gneiss surrounding the foot of Pai Mountain.

K2: (Sulphur vent). Secondary copper was found at this prospect. Somewhere within about a 1,000 foot radius of this point, a gas vent, at various times, spews out foul-smelling sulphur gas.

L: (Ridge drive). After returning to Wall Street Basin, drive on the road to the south along the top of the ridge which gives an excellent view of Pai Mountain, Migmatite Valley, and the eastern fanglomerates. At the end of the road in looking to the north, consider that sizeable rough gold nuggets have been found in the fanglomerates from where you are standing to beyond Tut Mountain (about 4 miles to the north), as well as 3 miles to the south (from where you are), which suggests a 7 mile long gold breccia zone as the source.

L1 & L2:

M: (Eluvial cut). Drive to the 10 foot deep N-S cut through the E-W fanglomerate ridge. This area is on the east half of Section 16, which is a State of Arizona lease to the Garritsons. Note that the cut is through the caliche layer immediately below the contour of the ridge which exposes the eluvial fossil bench gravels that are believed to have been eroded from a nearby buried breccia zone to the west. Note the red and brown clay layers

L1: Water laid volcanic ash - sample with no visible gold assayed 1.8oz Au/Ton

L2: " " " " - sample with 4 gold nuggets.

in the banks that contain disseminated free-gold as well as gold attached to hematite and quartz, and even silver. The heavy sands under a 30-power microscope appear to be similar to rough, jagged eluvial particles from a freshly crushed ore vein. One hundred tons of these eluvial sands were successfully leached after treatment with caustic soda to clean off the desert varnish (manganese, iron oxide, and organic). (See pages 14 and 15).

M1: (Eluvial drill-holes). Up the E-W ridge (south of cut), six rotary holes were drilled (most 50 feet deep). Every 5 foot section of chips was blown onto the ground in separate piles. Instead of assaying, the Garritsons wet-panned a pan of chips from each pile and found visible gold (under a 30-power field-microscope) in nearly every pan sample. Of significance, is that the quantity of gold increased in each hole to the west, with the most gold in the most western hole. In an eluvial placer deposit, such would usually be expected as the source is approached. (See pages 14 and 15, "1F").

N: (Lone Jack). This is the old placer mine shown on the USGS topag maps.

N1 and N2: (Placer diggings). In driving down the old Pierce Ferry Road, note the various placer diggings. Also, unusually large Joshua trees cover a circular area about 1 mile in diameter, centered between **N1** and **N2**, and extending into Mead City to the east. A circular red spot on an infrared satellite photo coincides with, and is the same size as the circular pattern of the large Joshua trees, suggesting a buried desert aquifer.

N3: (Placer trenches). This area was one of many trenched by the King Tut operation in the eastern fanglomerates during the early 1930's. Alluvial gravels in the bottoms of the gulches, just above the first caliche layer, were trucked to behind the King Tut tailings pile and wet-sluiced, and the tailings carried off by a conveyor-belt. Since that time many small placer operations in these and many other gulches (above the caliche bottom) have been conducted by various groups. (The gold nuggets shown in the bottom photo on page 13 and the 0.71 lb. nugget on page 14 were found in this general area). (See pages 12 through 19).

O: (Water well). This 1,340 foot water well is entirely in alluvial gravels, bedrock not being reached. (See page 19). A buried PVC pipe-line runs from the well along the road to a collapsed galvanized-iron water tank southwest of the old RIP leaching pad near **O1**, and a branch line to the tailings ponds northeast of the pad.

O1: (Fossil gold channel). On the south slope of the ridge near to the foot (just east of a recent gravel-fill in the gulch), an exposed brown and red clay layer contains considerable gold nuggets averaging about 1 mm diameter. (See page 12). Also, in this area note the abundant quartz float which is believed to have originated from the buried pipe, **P**, to the north, as well as from the quartz breccia zone to the west. Free-gold has been found in some freshly broken quartz rocks in the area.

P: (Buried pipe). In driving through this spot, the only indicators (which are very subtle) of a possible buried pipe at depth, are abundant small quartz gravels, and the Joshua trees are somewhat larger than the surrounding area (suggesting a buried aquifer). Also during the Spring, desert ground plants are noted to grow faster and the spot more "alive" due to the presence of more water than in surrounding areas. Remember that the pipe was first suggested from surrounding large, jagged gold nuggets and both mineralized quartz float (some with visible gold when broken) and bull quartz, all of which appear to have been distributed to both the south and the north, as well as to the east. Also, lineaments in the pediments as shown on aerial photos, as well as several known faults, shear zones, and veins in the exposed bedrock of the Lost Basin Range (when drawn as extensions into the fanglomerates), intersected in the area of the suggested pipe. Subsequently, a color-enhanced infared satellite photo showed a distinct circular-form exactly where the pipe had been suggested. (See pages 5 to 9, especially the satellite photo on page 7).

P1: (Quartz piles). Drive past the old prospector's rock cabin (visible free-gold in one of the rocks) to the north side of the old placer trench where there is a small pile of quartz rocks and gravels. Note that many are somewhat mineralized. Free-gold has been found inside a couple of freshly broken rocks. Similar abundant quartz float is found radiating out from the buried pipe (such as described previously at point **O1**). (The gold nuggets shown in the upper photo on page 13 were recovered from a gulch about 1,000 feet north of this point).

P2: (Crushing mill site). In the vicinity of an old concrete pad, many years ago, a crushing mill processed mineralized quartz gravels hauled from surrounding pediments to liberate the free-gold in the quartz. It is believed that the crushed material was then dry gravity-concentrated and hauled to a Colorado River mill (in the canyon below the present Lake Mead) for final recovery. Of significance, is that this spot is in the primary north-eastern drainage from the buried pipe, P (about 3/4 mile to the west).

P3: (Yellow sign). The sign on a brightly colored post is of a claim-jumper who recently died. He had been officially notified of his trespass, as well as having been convicted in court for other infractions of the law.

P4: (Northeastern drainage). This ridge is a continuation of the primary northeastern drainage (almost 2 miles from the buried pipe, P). Note the abundant quartz float on this ridge.

P5: (Dry riverbed). At this point, leave the road and drive down the dry riverbed to the N-S main graveled road through the northeast corner of Section 26, continuing on directly north to Meadview.

Future exploration: It is believed you will agree that effective geochemical and geophysical surveys should be conducted before any drilling, inorder to delineate the targets in the gold bearing long breccia fault zone and the suggested buried episyenitic gold pipe, as well as the buried eluvial bench placer.

Ore samples: If you desire to further inspect typical ore samples, gold nuggets, or eluvial mineral concentrates from Lost Basin, please contact Warren mallory. Also, American Heavy Minerals has in storage thousands of cataloged ore samples whose locations are marked on large aerial photos, as are Lost Basin's aerial magnetics and scintillation contours, and mineral zoning indicators.

References: Many of the publications listed on pages 22 to 24 of the yellow brochure, "LARGE ARIZONA GOLD PROPERTY", are in Warren Mallory's files.

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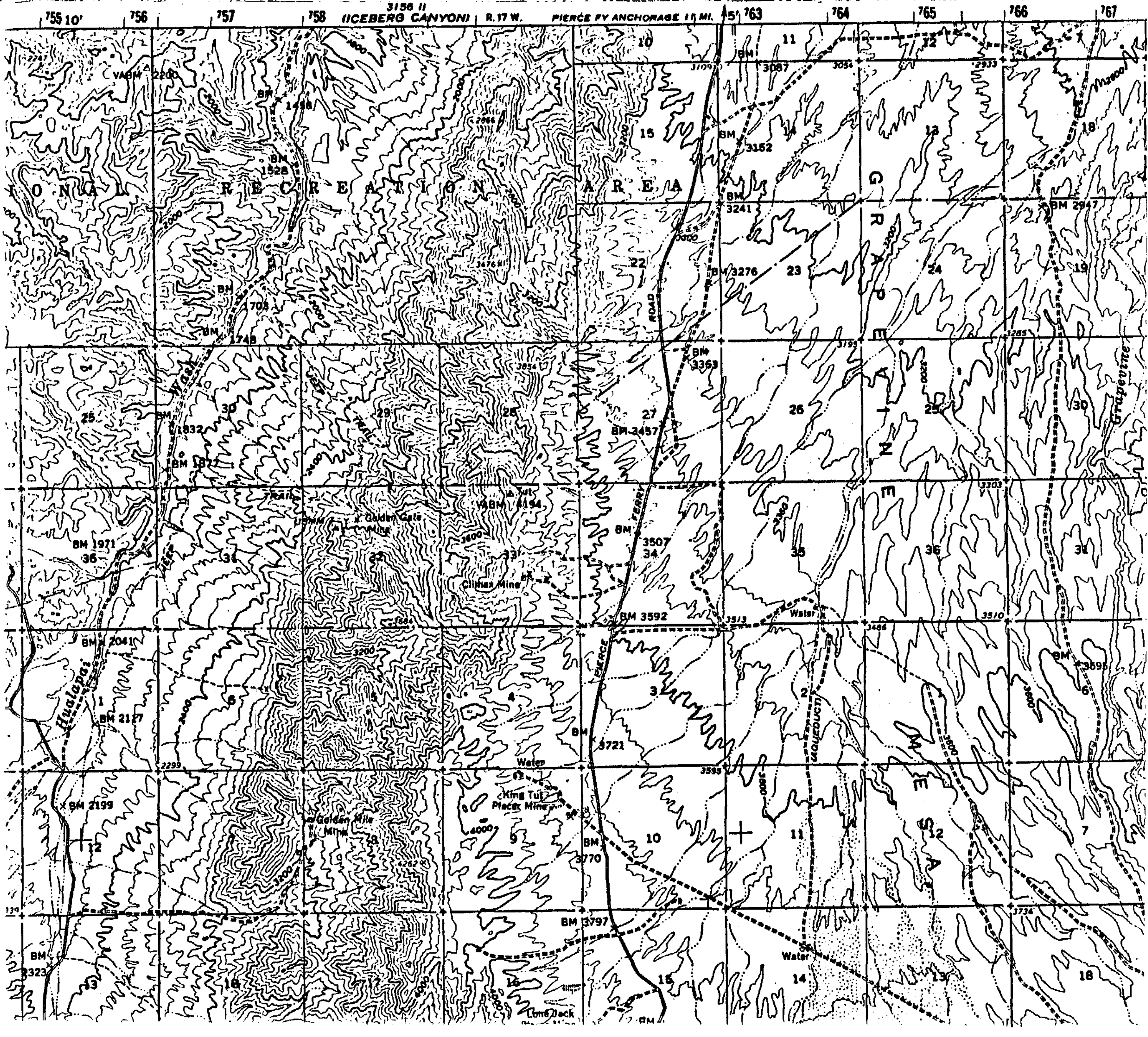

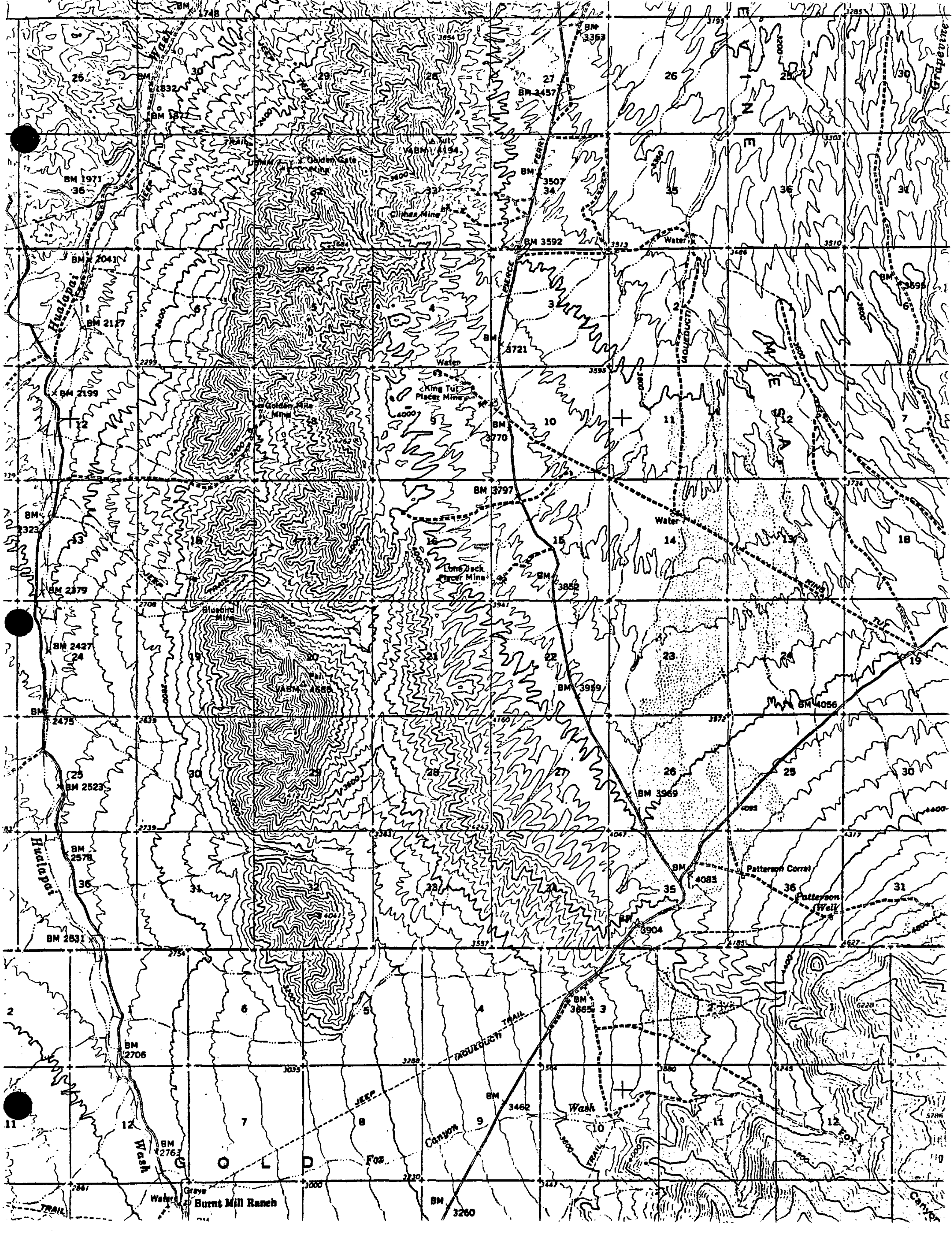
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Bluebird Mine
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BM 4686
Tut
BM 4194
Patterson Corral
Patterson Well
Burnt Mill Ranch
Grave
Water
Fox
Canyon
Grapevine
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UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Discussion of Ultramafic and Mafic Rocks and Platinum-Group Element Analyses from the Lost Basin Mining District, Northwestern Arizona

By

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ABSTRACT

Proterozoic amphibolite that crops out in the Lost Basin Range, Mohave County, Arizona is derived from both sedimentary and igneous protoliths. Those amphibolites derived from igneous protoliths are characterized by high Ni and Cr contents, high MgO contents, low SiO_2 contents and the presence of palladium and platinum. Compositions, textures and stratigraphic considerations suggest that the protoliths varied from ultramafic komatiite to basaltic komatiite to tholeiite. If these represent the actual protoliths, then this Precambrian terrane could be of interest in terms of Cu-Ni sulfide mineralization associated with komatiites.

INTRODUCTION

The Lost Basin mining district, predominantly a gold producing one in northwestern Arizona, is located in Mohave County, 120km southeast of Las Vegas, Nevada, and about 95km north of Kingman, Arizona (Fig. 1), mostly in the Garnet Mountain 15' quadrangle east of the Gold Basin district. The Lost Basin district lies east of Hualapai Wash and west of the Grand Wash Cliffs and extends southward for a distance of 32 km from the Colorado River at the mouth of the Grand Canyon. The Proterozoic rocks in the Lost Basin Range that were mapped by Blacet (1975) and Deaderick (1980) and described by Theodore and others (1982) in detail contain occurrences of metmorphosed ultramafic and mafic rocks whose composition and platinum-group element (PGE) contents are the focus of this report.

GEOLOGICAL SETTING

Proterozoic X rocks form most of the Lost Basin Range and consist of presumably 1,750 m.y. paragneiss and orthogneiss. In adjacent areas, coarse-grained porphyritic monzogranite of Garnet Mountain and medium-grained leucocratic monzogranite intrude the gneiss and most likely were emplaced 1,660 m.y. ago (Wasserburg and Lamphere, 1965). The rocks were regionally metamorphosed as high as upper amphibolite facies assemblages, and complexly deformed syntectonically and multiply, during the older Proterozoic X Mazatzal orogeny which occurred 1,650 to 1,750 m.y. ago (Theodore and others, 1982). Within the Lost Basin Range the Proterozoic terrance includes mappable units of migmatite, migmatitic gneiss, feldspathic gneiss, a widespread unit of variably metamorphosed quartzofeldspathic gneiss, and amphibolite. The amphibolite originated from several different protoliths. In addition, the quartzofeldspathic gneiss unit contains metaquartzite, thin lenses of marble, calc-silicate gneiss, banded iron-formation and chert. Figure 2 is a sketch map of the Lost Basin Range which shows the distribution of the major Proterozoic units and the locations of samples discussed in this report.

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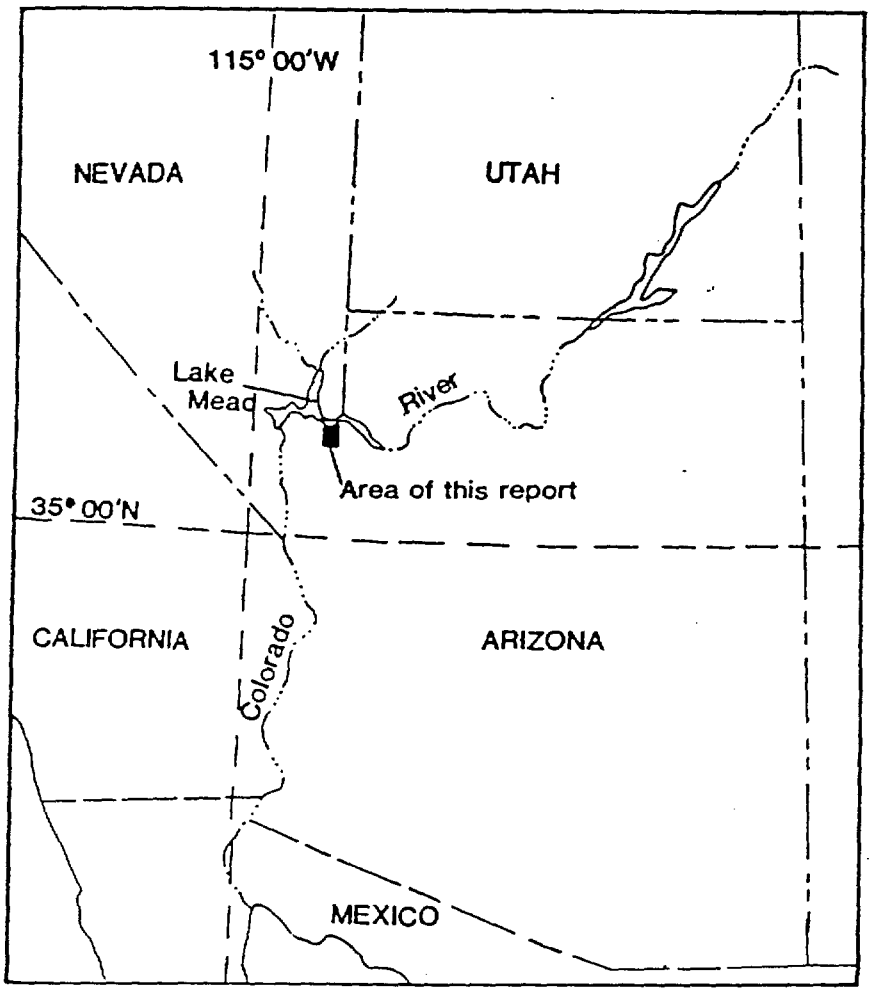

Figure 1.--Index map showing location of Lost Basin Range.

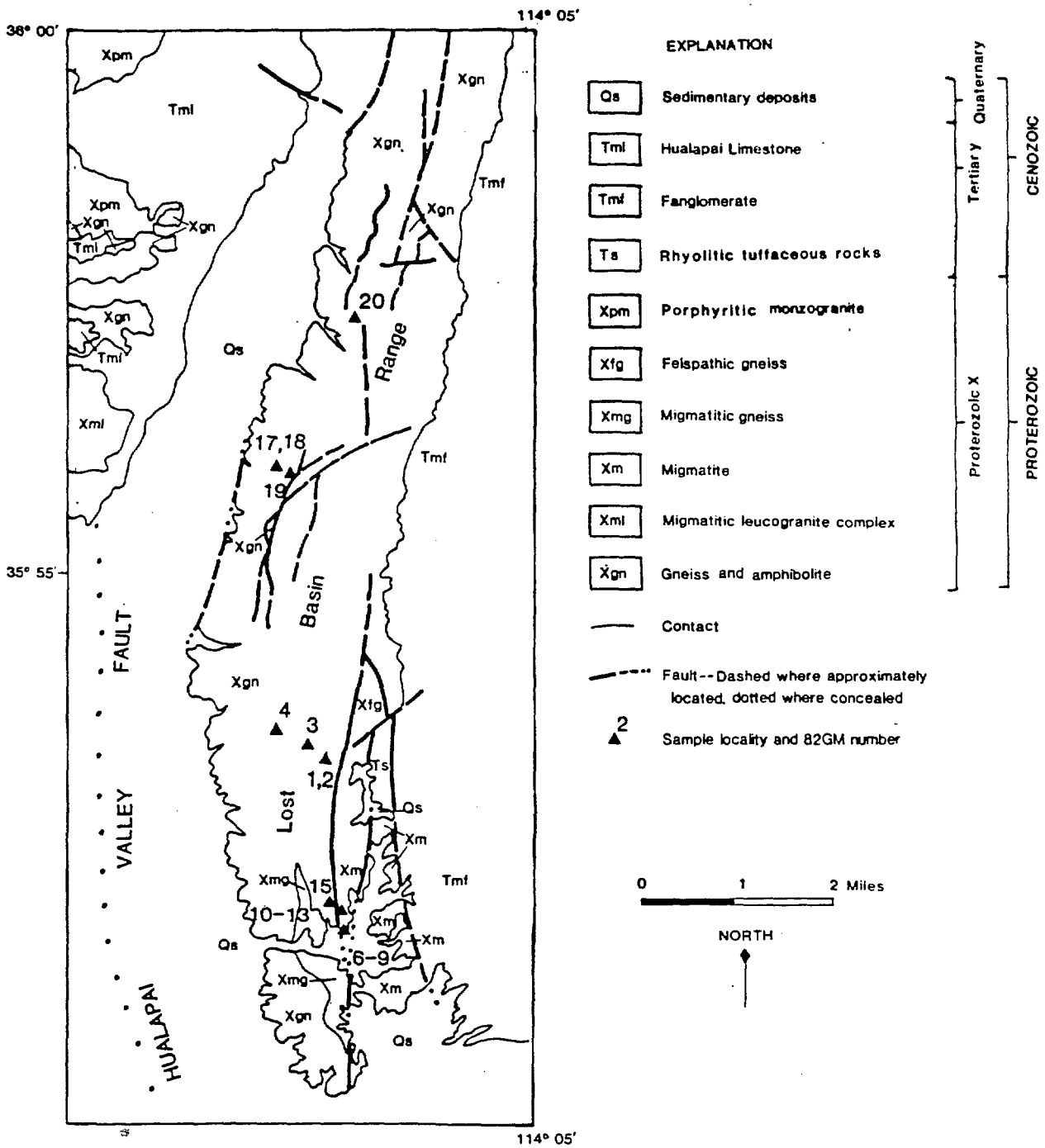

Figure 2.--Geologic sketch map of the Lost Basin Range showing locations of samples analyzed after Theodore and others (1982).

Highly deformed and lithologically complex sequences that commonly grade or change abruptly into one another across short distances are characteristic of the widespread Proterozoic X gneiss unit. Although quartzofeldspathic gneiss is the most abundant rock type in the gneiss unit, it is complexly interlayered with many other lithologies including a wide variety of pelitic schist and gneiss as well as amphibolite on the scale of an outcrop. Thick sequences of quartzofeldspathic gneiss grade by changes in proportion of the two rock types into sequences of mostly amphibolite along strike. Further, in many outcrops, there is an overall banded appearance resulting from close interlayering of quartzofeldspathic gneiss and amphibolite. Pervasive injection of the gneiss by Proterozoic X granitic magmas complicated the outcrop pattern further by producing migmatitic complexes near the southern extent of the Lost Basin Range.

Most of the metamorphic rocks contain prograde assemblages of upper amphibolite facies that have been retrograded partly or completely to greenschist assemblages as shown by Theodore and others (1982). In addition, especially near faults and gold-bearing quartz veins, propylitic, phyllitic and potassic alteration assemblages have been superimposed locally on the retrograded assemblages. Details of the petrochemistry of the rocks in the area are described by Theodore and others (1982).

The diverse kinds of gneisses probably represent a diversity of protoliths and it is by approximating the primary lithologic character of these protoliths that some aspects of the Proterozoic geologic setting may be modelled. The pelitic schists and gneisses probably represent shales and other fine-grained clastic rocks that were interbedded with graywackes with low contents of lithic volcanic detritus (Theodore and others, 1982). The graywackes are represented by the quartzofeldspathic gneiss. Locally, some carbonate-rich environments developed as represented by the minor amounts of marble and calc-silicate. Limited amounts of chert and oxide-facies banded iron formation associated with metarhyolite, all interlayered with amphibolite, suggest the development of chemical precipitates perhaps related to volcanic activity. The amphibolite represents several different protoliths including amphibolite derived from a sedimentary protolith as shown by relict beds of marble and calc-silicate minerals. However, the major portion of the amphibolite interbanded in the quartzofeldspathic gneiss probably represents basaltic (tholeiitic(?)) to andesitic igneous protoliths based on the textures, mineralogy and chemistry given in Theodore and others (1982). Other masses of amphibolite represent mafic and ultramafic protoliths as described below. Protoliths such as these inferred for rocks in the Lost Basin Range are similar to the assemblage of protoliths in other Precambrian greenstone belts except for an apparently larger volume of quartzofeldspathic material present in the Lost Basin Range than in other greenstone belts. The southern part of the range contains a greater proportion of amphibolite than the northern part.

PETROCHEMISTRY OF THE PROTEROZOIC X AMPHIBOLITES

Amphibolite occurs in a variety of structual and stratigraphic situations in the Lost Basin Range, but most amphibolite occurs within the quartzofeldspathic gneiss unit and because of the mapping scale few of these are shown on geologic map by Blacet (1975). Lesser amounts of amphibolite occur as scattered inclusions and pendants in Proterozoic X igneous rocks. Other amphibolites crosscut lithologic layering in the enclosing gneisses and schists and locally show finer grained borders interpreted as chilled margins of dikes and sills. Amphibolites in the quartzofeldspathic gneiss unit consists of several types: (1) Fine-grained amphibolite, generally foliated, with relict cal-silicate layers that is delicately interlayered with quartzofeldspathic gneiss and is derived from a sedimentary protolith (2) foliated amphibolite that is derived from a sedimentary protolith as indicated by a significant proportion of quartz in the rock, some of which has premetamorphic as shown by relict textures (Theodore and others, 1982); (3) massive to locally foliated and layered, dense, highly magnetic, ultramafic amphibolite that usually

contains 40 to 50 volume percent of cummingtonite and that occurs as layers, lenses, and pods in the gneiss; (4) amphibolite interlayered with gneiss that was derived from a gabbroic or volcanic protolith and contains brown hornblende and plagioclase, locally with ophitic to subophitic relict textures, and abundant iron-oxide minerals; and (5) interlayered amphibolite similar to (4) but containing quartz. In addition, talc-tremolite schists and hornblendites are interlayered with the quartzofeldspathic gneiss. This report discusses types (3), (4), (5) and the sills and dikes which appear to be the most abundant types in the Lost Basin Range; the other types are discussed in detail in Theodore and others (1982).

Massive amphibolite, type (3), contains combinations of cummingtonite, plagioclase, serpentine, talc, relict clinopyroxene, hercynitic spinel, brown-semi-translucent spinel (chromite?), and magnetite. Most of the mineralogy is formed by prograde metamorphism except for perhaps serpentine and talc. Cummingtonite and serpentine form 80 to 90 percent by volume of most type (3) amphibolites. Granular to slightly foliated textures suggest serpentine developed from olivine. Locally, intergrowths of fibrous amphibole and serpentine form textures reminiscent of spinifex textures in komatiitic rocks but also could represent late fibrous amphibole replacing serpentine. Varying amounts of tremolite-actinolite, chlorite, epidote, green hornblende, carbonate and sericite are developed as retograde metamorphic minerals. Table 1 gives whole rock, platinum-group element, and semiquantitative spectrographic analyses of amphibolites from the Lost Basin Range and whose locations are shown on figure 2; other amphibolite analyses are given in Theodore and others (1982). The relatively high Cr and Ni contents, low SiO_2 contents and high MgO contents confirm an ultramafic protolith for the massive amphibolites.

Amphibolite interlayered with gneiss, type (4), contains predominantly brown hornblende, plagioclase, iron oxide minerals and minor amounts of biotite as prograde metamorphic phases. One sample contained relict clinopyroxene. Brown hornblende alters to greenish hornblende and tremolite-actinolite, plagioclase to sericite, chlorite, and epidote, and biotite to chlorite during retrograde processes. Talc and carbonate are also common. Textures range from granular to foliated metamorphic ones to relict ophitic, subophitic, poikiolitic and gabbroic ones. Rocks with similar textures and mineral assemblages may also contain minor quartz and thus form type (5) amphibolites. These rocks tend to occur at the contacts of the type (4) amphibolites and biotite-hornblende-(garnet) quartzofeldspathic gneisses and may represent reaction products between the more mafic protoliths and the sedimentary protoliths. Moderate Cr and Ni contents, low SiO_2, MgO contents between 5 and 9 weight percent (Table 1) support a mafic protolith if not a basaltic composition protolith for type (4) and (5) amphibolites.

Dike and sills consist predominantly of calcic plagioclase and brown hornblende and have ophitic to subophitic textures and variable grain size. Biotite and iron oxide minerals are accessories. Chlorite, epidote, sericite, carbonate, and tremolite-actinolite form retrograde alteration assemblages. Textures and cross-cutting relations support a diabasic or gabbroic protolith for these rocks as does the chemistry shown in Table 1.

Most diagrams developed to discriminate among chemical compositions of extrusive and intrusive igneous rocks assume that the rock analyzed represents a magmatic liquid or at least a magmatic liquid plus crystals. Except for the dikes and sills in the Lost Mountain Range, the evidence is sparse that the chemical composition for amphibolites represent liquids. Nevertheless, because of the resemblance of the compositions to basaltic rocks, the analyses are plotted in figure 3 as weight percent MgO, Al_2O_3 and CaO. The diagram shows that the CaO to Al_2O_3 ratios approximate 1 to 1 for the type 3 amphibolites and this combined with MgO contents above 18 dry weight percent suggest that the rocks could be related to komatiites (Arndt and Nisbet, 1982b). Analyses for amphibolites given by Theodore and others (1982) and those in Table 1 were used in the plots. The amphibolite analyses recast as cation percentages and plotted on a Jensen diagram (Jensen, 1976), which has been used to classify komatiitic rocks gives a clear

Table 1: Chemical, platinum-group, and semiquantitative spectorgraphic analyses of amphibolites from the Lost Basin Range, Mohave County, Arizona. [x-ray spectroscopy by J. S. Wahlberg, A. Bartel, J. Taggart, J. Baker; FeO, H_2O, CO_2 by H. Neiman, G. Mason, J. Ryder; PGE by L. Bradley, R. Moore, J. McDade; Ag and Au by P. Briggs, R. Moore, semiquantitative analyses by L. Bradley.]

	82GM1	82GM3	82GM4	82GM6	82GM7	82GM8	82GM9	82GM10	82GM11	82GM13	82GM15	82GM16	82GM17	82GM18	82GM19	82GM20
SiO_2	44.6	68.5	45.6	43.6	39.5	50.2	39.8	49.3	51.5	47.1	47.3	47.6	49.5	48.8	44.7	47.0
Al_2O_3	16.1	13.2	9.44	7.63	6.28	4.43	5.61	7.06	5.99	13.9	16.5	13.5	6.14	14.1	12.6	13.8
Fe_2O_3	3.73	2.89	2.09	4.76	8.44	3.23	8.17	1.45	1.78	3.12	3.29	3.56	1.27	4.09	4.89	4.41
FeO	10.14	2.83	6.70	7.41	7.16	6.90	6.60	8.14	9.02	10.78	7.84	9.12	7.66	8.22	11.71	9.89
MgO	6.60	1.73	18.8	21.7	25.2	20.7	26.0	18.8	18.9	6.90	5.49	7.69	19.2	8.43	10.8	6.20
CaO	9.53	4.72	10.8	7.44	5.20	8.77	4.89	10.2	9.95	10.4	14.1	12.0	11.0	10.4	9.90	11.3
Na_2O	2.52	2.52	10.2	0.27	<0.15	0.63	<0.15	0.82	0.67	1.95	1.20	1.77	0.59	2.22	1.14	1.92
K_2O	1.62	0.73	0.52	0.06	0.06	0.14	0.07	0.20	0.03	1.19	0.16	0.58	0.13	0.89	0.57	0.92
TiO_2	1.64	0.37	0.61	0.67	0.81	0.60	0.68	0.08	0.07	1.63	1.03	1.30	0.44	0.98	0.24	2.14
P_2O_5	0.17	0.10	0.06	0.06	0.07	0.08	0.07	<0.05	0.05	0.15	0.11	<0.10	<0.05	0.10	0.06	0.19
MnO	0.23	0.08	0.22	0.17	0.24	0.15	0.22	0.19	0.20	0.22	0.19	0.23	0.24	0.22	0.45	0.21
H_2O+	2.60	1.81	3.50	5.44	6.03	3.53	7.21	3.47	1.52	2.50	2.46	2.38	3.29	2.26	3.07	1.93
CO_2	0.40	0.22	0.08	0.13	0.13	0.44	0.04	0.02	0.10	0.19	0.24	0.43	0.09	0.07	0.02	0.12
Total	100.04	99.88	99.54	99.56	99.41	99.91	99.67	99.85	99.81	100.20	100.05	100.33	99.63	100.88	100.27	100.19
Fire-assay-atomic absorption-emission spectrographic analyses, parts per billion																
Pd	1	1	3	1	6	2	6	6	7	3	1	2	3	7	10	8
Pt	10	16	11	7	15	10	11	20	21	8	7	11	9	15	26	15
Rh	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ir	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ru	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Semiquantitative spectrographic analyses, parts per million																
Mn	1000	700	1000	700	700	700	700	1000	1000	1000	1000	1000	1000	1000	1500	1000
Ba	300	300	20	30	15	30	15	15	20	300	70	50	30	300	70	300
Co	50	10	50	50	70	70	70	30	30	30	30	30	30	30	15	30
Cr	70	3	2000	1000	1500	1500	1500	1500	1500	50	150	150	1500	300	300	70
Cu	7	15	50	30	150	70	70	3	5	70	50	100	50	30	70	100
Nb	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ni	70	7	300	500	700	700	700	300	300	50	70	70	500	70	50	70
Pb	<10	<10	15	<10	10	<10	<10	<10	<10	10	<10	<10	15	<10	<10	<10
Sc	30	30	30	15	15	15	15	30	30	30	30	30	15	<10	<10	<10
Sr	150	200	20	15	30	15	30	7	10	200	150	150	15	150	30	150
V	200	70	150	150	150	100	150	150	150	200	300	200	100	300	200	300
Y	20	15	15	<10	<10	<10	<10	<10	<10	20	15	15	<10	15	15	30
Zr	70	70	30	15	15	30	15	15	10	70	70	30	15	50	10	70

82GM1: Dike of amphibolite
82GM3: Finer-grained margin of dike of amphibolite
82GM4: Amphibolite type (3)
82GM6: Amphibolite type (3)
82GM7: Amphibolite type (3)
82GM8: Amphibolite or hornblendite type (3)
82GM9: Amphibolite type (3)
82GM10: Amphibolite type (3)
82GM11: Amphibolite type (3)
82GM13: Amphibolite type (4)
82GM14: Amphibolite type (4)
82GM15: Amphibolite type (4)
82GM16: Amphibolite type (5)
82GM17: Talc-tremolite schist type (3)
82GM18: Amphibolite type (5)
82GM19: Amphibolite type (4)
82GM20: Biotite-hornblende-potassium-feldspar-plagioclase-quartz gneiss

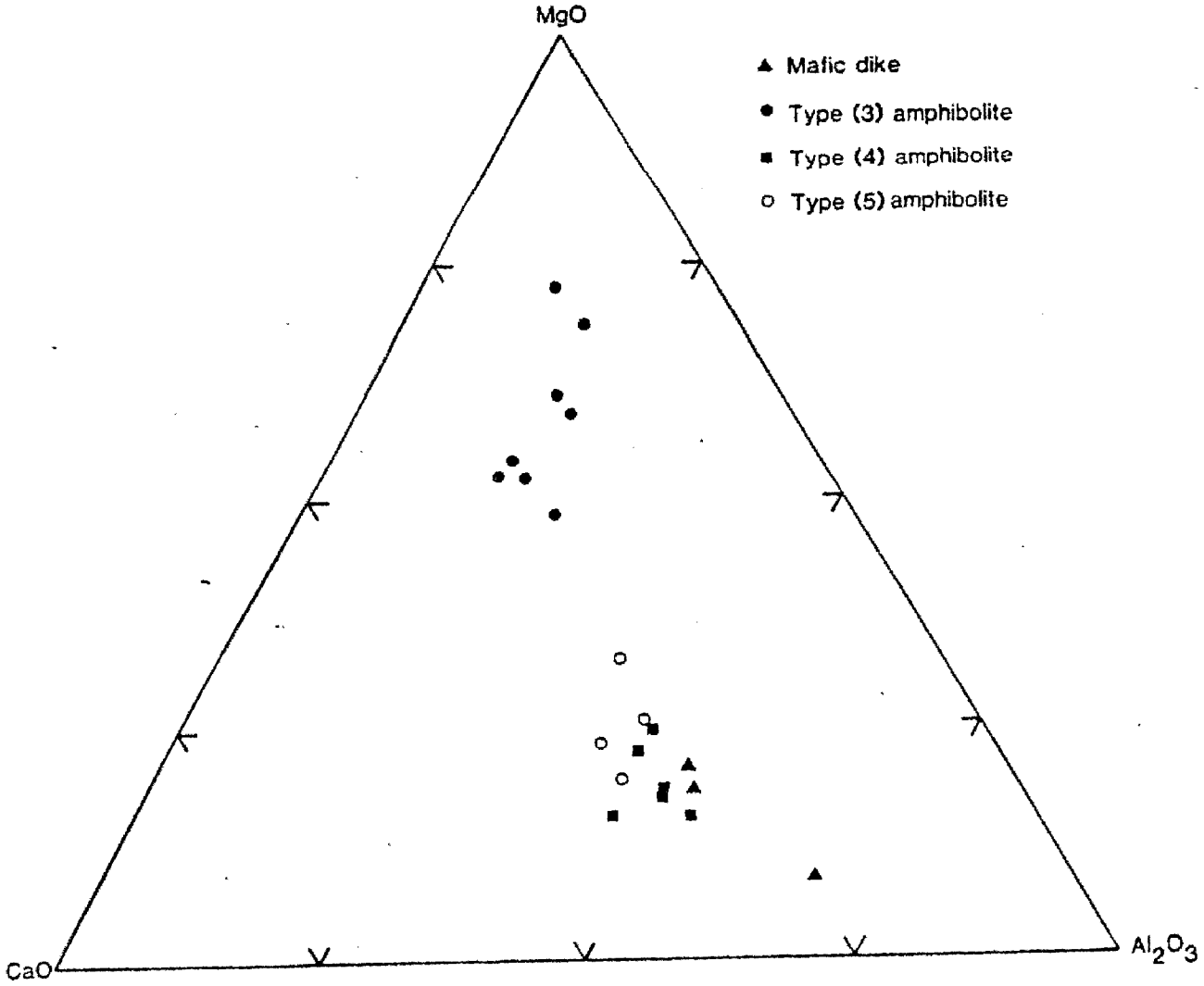

Figure 3.--Ternary diagram showing compositions of amphibolites from the Los' Range in terms of weight percentage CaO, MgO, and Al_2O_3

picture of the variation in the amphibolite analyses with respect to MgO, Al_2O_3, and $FeO+Fe_2O_3+TiO_2$ (Fig. 4). Type (3), (4), (5), and dike and sill amphibolites appear to show a compositional trend from ultramafic komatiite (type 3) through basaltic komatiite and tholeiite. Of course comparison of the chemical analyses of amphibolites to other masses of chemical data on komatiites that are not as highly metamorphosed (various chapters in Arndt and Nisbet, 1982a) supports the compositional similarities including the relatively low levels of TiO_2 and high levels of Cr and Ni. However, as yet, the convincing textural requirements for showing that the rocks are ultramafic volcanic rocks have not been found.

PLATINUM-GROUP ELEMENT GEOCHEMISTRY

The platinum-group element analyses in Table 1 and the seven analyses of amphibolites reported in Theodore and others (1982, Table 8, p. 82) were done by fire-assay-atomic absorption for platinum, palladium and rhodium using techniques described by Haffty and others (1977) and Simon and others (1978) and those for iridium and ruthenium by a fire-assay-spectrochemical technique described by Haffty and others (1980). These data form the basis for this discussion. Rhodium, iridium, and ruthenium contents are below the detection limits of 1, 20, and 100 ppb (parts per billion), respectively of this method. Palladium content ranges from less than 1 to 29 ppb and platinum content ranges from 7 to 33 ppb in the amphibolites; Table 2 summarizes the PGE information on the amphibolites by types. Types 4 and 5 are slightly higher in platinum and palladium on the average than type 3 amphibole. Examination and comparison of MgO content in weight percent and palladium in ppb for type 3 amphibolites suggests that samples with higher MgO contents tend to have lower palladium contents.

Average PGE contents in spinifex textured komatiites from Western Australia and Munro Township are estimated as palladium, 9.2 ppb; platinum, 8.2 ppb; iridium, 1.47 ppb; and ruthenium, 5.5 ppb by Keays (1982). These average contents of palladium and platinum are comparable with the data for type (3) amphibolites (Table 2). Keays (1982) also observed an inverse correlation between MgO content and palladium in dunitic komatiites which is similar to that observed for type (3) amphibolites. Within the range of 30 to 17 weight percent MgO, the palladium content varies from about 11 ppb to 5 ppb which is similar to the type (3) amphibolites from the Lost Basin Range. Keays (1982) also reported an average palladium content for komatiitic basalts of 15.5 and 19.3 ppb from Kambalda and Warren Township respectively that are comparable with type (4) and (5) amphibolites. Although the PGE comparison in contents are slightly different between komatiitic rocks and the amphibolites from the Lost Basin Range the overall patterns of variation appear similar.

A POSSIBLE PROTOLITH FOR AMPHIBOLITES IN THE LOST BASIN RANGE

Three different groups of observations support the possibility that (3), (4), (5) and dikes and sills amphibolites represent tholeiitic to basaltic komatiitic to ultramafic komatiitic protoliths. The first group of observations involve the overall stratigraphic content of the Lost Basin Range which includes rocks with interpretative protoliths of quartz-rich graywacke, shale, mudstone, banded iron-formation, rhyolitic volcanic, and mafic and ultramafic rocks. These protoliths are similar to those that appear in greenstone belts elsewhere with komatiites as exemplified in a schematic cross section of the geologic setting for Western Australia (Martson and others, 1981). The second set of observations include textural indications and bulk rock compositions of the type (3), (4) and (5) amphibolites in comparison with komatiitic rocks. They appear to be similar. Thirdly, the platinum-group element geochemistry of the amphibolites compares with that of known komatiites. In conclusion, three groups of observations suggest that

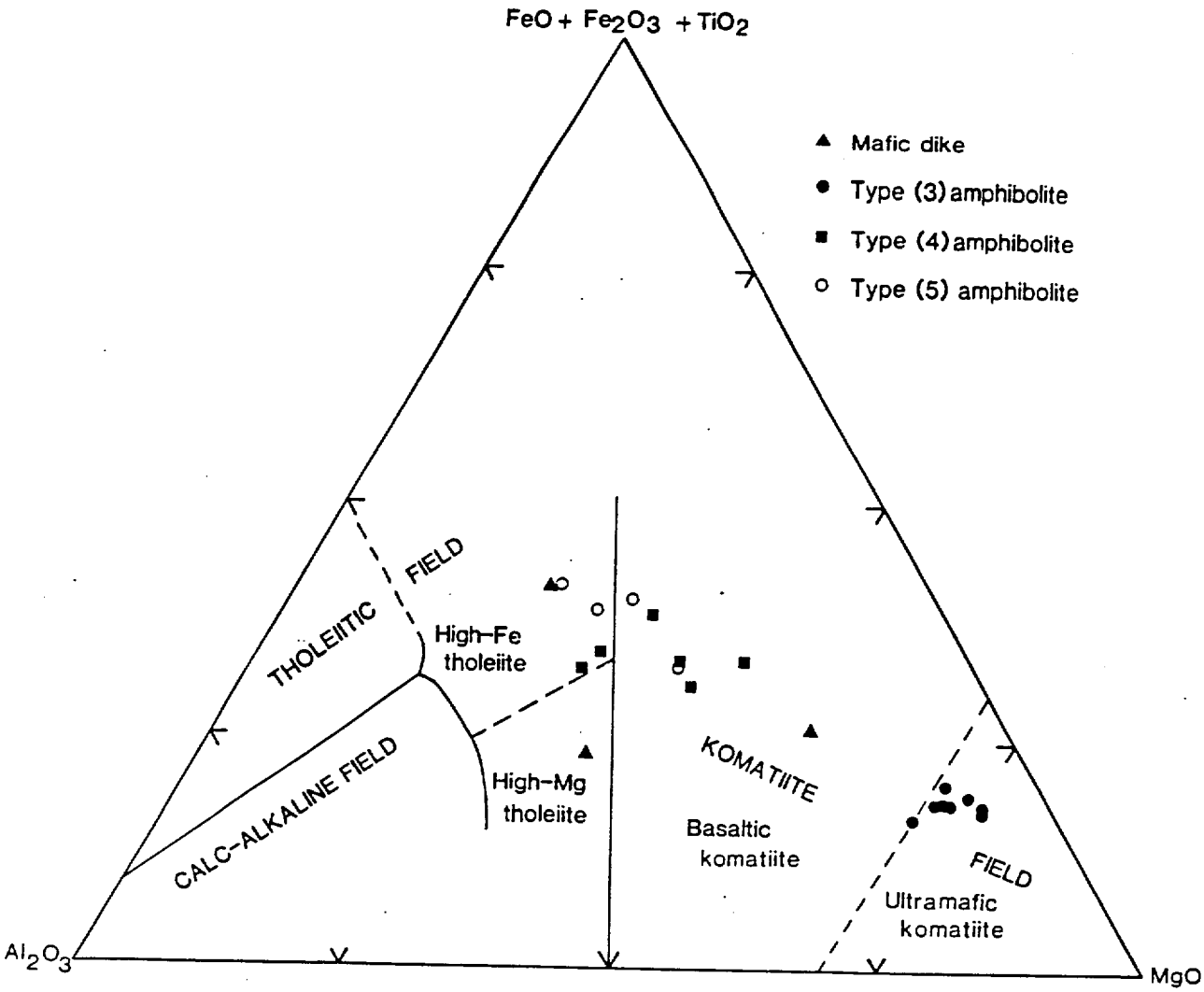

Figure 4.--Ternary diagram after Jensen (1976) showing compositions of amphibolites from the Lost Basin Range in terms of cation percentage Al_2O_3, MgO, and $FeO+Fe_2O_3+TiO_2$ and comparing compositions with those of komatiitic and tholeiitic rocks.

Table 2:--Summary of averages and standard deviations for palladium and platinum content in parts per billion and platinum to platinum plus palladium ratios for amphibolites from the Lost Basin Range, Arizona. $\bar{x}$=averages, σ= one standard deviation, N=number of samples with unqualified values, *Average with high value removed

	Palladium			Platinum			
ROCK TYPE	$\bar{x}$	σ	N	$\bar{x}$	σ	N	Pt/Pt+Pd
All amphibolites	5.0	6.1	21	16.9	8.0	24	0.77
	3.8*	2.8	20				
Type (3)	4.3	2.5	8	13.0	5.2	8	0.75
Type (4) and (5)	6.1	8.6	10	20.1	9.1	13	0.77
	3.6*	3.1	9				
Dikes	1.0	-	2	13.0	-	2	0.93

the protoliths for some amphibolites in the Lost Basin Range maybe komatiite-associated, however the appropriate field and rock textures and structures to support this contention have not yet been found. Such an assemblage suggests that this terrane in the Lost Basin Range may have the potential for Cu-Ni sulfide mineralization associated with komatiites. Further, the apparent marked increase from north to south of the amount of komatiitic protolith in the Proterozoic rocks here suggests that similar rocks may occur in fairly widespread abundances south of the Lost Basin Range.

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9/83 JDS

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MAPCO MINERALS CORPORATION

subsidiary of mapco inc.

MEMO

TO: David M. Snyder

FROM: Valton D. Landrum

DATE: September 14, 1983

RE: Results of Initial Drilling - Owens Mine Project, Mohave County, Arizona

SUMMARY

The analytical results from the eighteen initial drill holes at the Owens Mine show the area to contain significant, if low grade, gold mineralization. The results are summarized below, utilizing two cutoff grades (0.3 and 1.0ppm).

	0.3ppm (.01oz/T) Cut Off			1.0ppm (.03oz/T) Cut Off		
Hole #	Depth (ft.)	Thick. (ft.)	Grade (oz/T)	Depth (ft.)	Thick. (ft.)	Grade (oz/T)
OM83-4	27	33	.019	30	3	.038
				48	6	.033
OM83-5	36	39	.023	45	3	.035
				63	9	.047
OM83-6	51	36	.021	66	3	.077
				84	3	.041
OM83-7	60	36	.024	75	18	.039
OM83-8	120	9	.056	123	6	.078
OM83-9	108	24	.055	114	12	.096
OM83-10	27	39	.039	30	9	.122
	81	15	.032	84	6	.062
OM83-11	0	15	.032	6	6	.051
	69	24	.018	72	3	.057
OM83-12	3	48	.029	3	18	.036
				36	3	.080
				48	3	.039

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	0.3ppm (.01oz/T) Cut Off			1.0ppm (.03oz/T) Cut Off		
Hole #	Depth (ft.)	Thick. (ft.)	Grade (oz/T)	Depth (ft.)	Thick (ft.)	Grade (oz/T)
OM83-16	Scattered			Anomalies		
OM83-19	Anomalous			Zone 192' - 207'		
OM83-23	Anomalous			Zone 21'-69'		
OM83-28	45	3	.015	In Anomalous zone 33'-93'		
OM83-29	99	3	.013	In Anomalous zone 75'-111'		
OM83-33	12	3	.011	In Anomalous zone 3'-36'		
	153	3	.015	In Anomalous zone 60'-162'		
OM83-34	108	3	.030	In Anomalous zone 33'-126'		
	138	3	.010	In Anomalous zone 138'-147'		
OM83-35	48	3	.010	In Anomalous zone 12'-99'		
	Anomalous			Zone 123'-144'		
OM83-S-1	Anomalous			Zone 240'-279'		

NOTE: Values of less than 0.3 and 1.0ppm entered into the calculations when they appeared as a zone not greater than 6 feet in thickness and bounded by values exceeding the respective cut off.

Reserves at the Owens Mine were computed at 268,000 tons at 0.029 oz/T (or 94,000 tons at 0.058 oz/T) in the zone of interest (holes OM83-4 through OM83-12). The calculations are based on the 0.3ppm and 1.0ppm cut offs, the area computations shown in enclosure 1 and the assumption that there is no change in either grade or thickness within the computed area of influence. Depth to mineralization is variable, ranging from the surface at holes OM83-11 and OM83-12 to a maximum of 120 feet at OM83-8. Average depth to mineralization is 48 feet.

CHARACTERISTICS OF THE MINERALIZED ZONE

The mineralized zone, as interpreted from outcrop and drilling data, is a wedge shaped zone of altered (feldspar, quartz, biotite) gneiss that strikes about N80W and dips about 20 degrees north at the bottom and 50 degrees north at the top.

(See enclosures 2, 3 and 4). The mineralized zone, as shown on cross-section B-B' (enclosure 4), can be sub-divided into two distinct zones. The lower zone, which outcrops in the mine area proper, is characterized by bleached gneiss with localized areas of intense alteration, silicification and copper/gold mineralization along structures. Some pods of unaltered gneiss remain in the lower zone where the lack of open structures has protected the rock from alteration.

The upper zone (the zone of interest) is characterized by clay-altered and intensely iron-stained (red to orange/red) rock with pervasive and relatively higher grade gold mineralization. This zone has an apparent maximum outcrop width of about 60 feet but may be somewhat wider beneath the float and alluvial cover. At present, the zone appears to be thickest between drill holes OM83-10 and OM83-11 (90 foot intercept or 80 foot true thickness). Projection of the zone from the drill hole intercepts to the line of Section A'A' (See cross-section A'A, enclosure 4) indicates equally thick intercepts may be expected along that line between OM83-6 to OM83-9 at much shallower depths.

The true thickness of the zone of interest and the grade of mineralization probably vary in response to cross-cutting structures. Such structures would have increased the permeability and the surface area exposed to mineralizing fluids. At the present time, no off sets to the mineralization have been documented but off sets to the host rock can be inferred along an apparent northeast structural trend.

CONCLUSIONS AND RECOMMENDATIONS

Analysis of the available data indicates that the ore reserve calculations presented are conservative, in that the zone of interest may be wider and thicker than the dimensions used in the ore reserve computations. This area requires some

additional drilling in order to make a better evaluation of the "zones", geometry and grade of gold mineralization.

Drilling will also be required along strike to the east and to the west to determine the limits and location of significant gold mineralization. The structural contour maps showing the top and bottom of mineralization, while highly conjectural due to the number of data points, indicates that the zone is pinching or narrowing to the east and west. This narrowing could signal an end to mineralization in both directions but may occur to the east as the zone veers more to the southeast and is again covered by float and/or alluvium (See map). To the west, the narrowing may be a response to the lack of clay alteration and/or cross-cutting structures which left the outcrops in the drainage resistant enough to escape erosion. Past these outcrops, to the west, the area is again free of outcrop which may indicate faulting and an associated widening of the zone.

Even further west, the last outcrops show clay alteration with some very low-grade gold mineralization. This is an indication that the zone continues at least that far. West of this area, outcrop is again lost and drilling will be necessary to ascertain whether the zone continues or is faulted off.

One final area also needs to be examined by drilling. This is an area near OM83-S-1. About 40 feet of weakly anomalous rock was encountered there in 60 feet of iron-stained and clay-altered rock. The depth to the top of mineralized rock is 240 feet. This area could possibly be another zone parallel to the zone of interest. A few drill holes here would help to evaluate this area.

An exploratory drilling program at the Owens Mine has been planned to evaluate each of the areas as outlined above. The drilling will be air rotary (hammer) along fences approximately perpendicular to strike and about 300 feet apart.

The drill hole spacing along each fence will be 50 feet with 250 feet as the depth per drill hole. When drilling begins, this spacing and depth should adequately test the zone of interest and for significant mineralization along structures in excess of 80 degrees. After the geometry of the zone of target is established, it may be possible to drill shallower holes, although at least two holes on each fence should go the full 250 feet to minimize the chance that significant mineralization is overlooked. No hole will be bottomed in clay-altered and iron-stained rock regardless of depth.

The three foot sample interval used previously worked well and will be used again. There seems to be little reason, however, to send all of the samples for analysis when the zone of interest can be visually identified. The analysis of the zone, the twenty feet above and below the zone and every third sample should be adequate. All samples should be prepared for analysis, just in case mineralization occurs as "a surprise" outside of iron-stained and clay-altered rock.

The only problems that may be forseen in the proposed program will involve road-building to the west. As shown on the map, approximately 3200 feet will be necessary. So far, the Arizona State Land Department has not been contacted but the Bureau of Land Management has indicated that this will not be an insurmountable problem.

Maxfield and Harris, who contracted for the initial drilling, were a bit high in cost per foot drilling but will be available in January. Drilling costs can probably be kept lower during this phase of drilling as they now know what is necessary to get through the alluvium.

A Plan of Operations will go out to the Arizona State Land Department and to the Bureau of Land Management as soon as possible after this proposal has been approved.

Costs expected in this program are as follows:

Drilling (incl. mob. & de-mob.)	$74,250
Lab	17,325
Sample Prep (incl. overweight)	19,595
Shipping	8,660
Bulldozer	1,000
Sample Bags & Misc.	600
TOTAL:	$121,430

Expensed incurred thus far are summarized below.

Drilling	$19,736.34
Lab (and Sample Prep)	9,337.35
Salaries	5,138.00
Lease/Rental	5,615.00
Travel	1,920.00
TOTAL:	$41,747.09

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JDS

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MAPCO MINERALS CORPORATION

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MEMO

TO: David M. Snyder

FROM: Valton D. Landrum

DATE: March 12, 1984

RE: OWENS MINE PROJECT - FINAL REPORT

Drilling at the Owens Mine has shown that there is significant gold mineralization (385,000 tons at 0.026 oz/T) extending from the surface to 130 feet. The mineralization occurs along an intensely altered, east-west trending shear zone which dips north at 30 to 75 degrees. The zone has a strike length of at least 700 feet and a true thickness that varies from 25 to over 60 feet. Grades have been encountered of up to 0.21 oz/T.

Mineralization to the east is terminated by a northwest trending, high angle fault which offsets the geology about 400 feet to the north. No drilling has been done east of this fault, leaving the mineralization open in that direction.

Drilling along the small wash to the west failed to intercept the zone but 51 feet of 0.023 oz/T, encountered in drill hole OM84-43, indicates the zone does continue to the west. Considering the grade and thickness of mineralization, the zone would have to continue uninterrupted for 12,000 feet to meet our target objectives. Since this is not likely, I recommend that we not pursue exploration in the Owens Mine Area.

VDL/cb

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OWENS MINE PROJECT - SUMMARY

HOLE #	0.01 o/T CUT-OFF TRUE THICKNESS (ft)	0.01 o/T CUT-OFF AVG. GRADE (oz/T)		0.03 o/T CUT-OFF TRUE THICKNESS (ft)	0.03 o/T CUT-OFF AVG. GRADE (oz/T)
OM83-S-1	Anomalous Zone	240-279			
OM83-4	28	.019	30°	8	.035
OM83-5	33	.023	30°	10	.044
OM83-6	31	.021	30°	5	.059
OM83-7	30	.024	30°	15	.039
OM83-8	7	.056	10°	5	.078
OM83-9	17	.055	44°	8	.096
OM83-10	28	.037	60°	8	.098
OM83-11	26	.023	60°	6	.053
OM83-12	36	.029	45°?	18	.042
OM83-16	Not Anomalous			---	----
OM83-19	Not Anomalous			---	----
OM83-23	Not Anomalous			---	----
OM83-28	3	.015	30°	---	----
OM83-29	3	.013	30°	---	----
OM83-33	2	.011	60°	---	----
OM83-34	4	.020	40°	---	----
OM83-35	2	.010	40°	---	----
OM84-36	8' ~~16~~	.033 .029	60°	~~26~~	~~.050~~ .048
OM84-37	~~37~~ 17	~~.043~~ .063	60°	11'	~~.085~~ .092
OM84-38	~~16~~ 7	~~.023~~ .029	60°	~~8~~ 4'	.039
OM84-39	Not Anomalous			---	----
OM84-40	Not Anomalous			---	----
OM84-41	Not Anomalous			---	----
OM84-42	2	.011	50°	---	----
OM84-43	37	.023	50°	18	.037
OM84-44	56	.011	30°	6	.037
OM84-45	13	.012	30°	---	----
OM84-46	~~10~~ 37' width	~~.246~~ .209	J (33' zone at .169) 60°	~~3~~ 12' width	.815 .447
OM84-47	Not Anomalous			---	----
OM84-48	Not Anomalous			---	----
OM84-49	3	.014	30°	---	----

update 2 Nov 84

OWENS MINE PROJECT - SUMMARY

HOLE #	0.01 oz/T Cut-off TRUE THICKNESS (ft)	0.01 oz/T Cut-off AVG. GRADE (oz/T)	0.03 oz/T Cut-off TRUE THICKNESS (ft)	0.03 oz/T Cut-off AVG. GRADE (oz/T)
OM 83-S-1	Anomalous Zone 240-279			
OM83-4	24	.022	8	.035
OM83-5	26	.028	8	.051
OM83-6	26	.024	5	.059
OM83-7	31	.028	13	.046
OM83-8	7	.056	5	.078
OM83-9	15	.063	8	.096
OM83-10	24	.041	8	.098
OM83-11	24	.023	5	.053
OM83-12	28	.034	13	.052
OM83-16	Not Anomalous		--	--
OM83-19	Not Anomalous		--	--
OM83-23	Not Anomalous		--	--
OM83-28	3	.015	--	--
OM83-29	3	.013	--	--
OM83-33	3	.013	--	--
OM83-34	5	.020	2	.030
OM83-35	2	.010	--	--
OM84-36	9	.029	3	.048
OM84-37	20	.063	12	.092
OM84-38	8	.028	5	.039
OM84-39	Not Anomalous		--	--
OM84-40	Not Anomalous		--	--
OM84-41	Not Anomalous		--	--
OM84-42	2	.011	--	--
OM84-43	29	.029	13	.042
OM84-44	31	.019	5	.037
OM84-45	16	.012	--	--
OM84-46	17	.188	8	.392
OM84-47	Not Anomalous		--	--
OM84-48	Not Anomalous		--	--
OM84-49	3	.014	--	--

JDS

MAPCO MINERALS CORPORATION
subsidiary of mapco inc.

COPY

MEMO

TO: D. M. Snyder

FROM: Valton D. Landrum

DATE: March 5, 1984

RE: OWENS MINE PROJECT; SUMMARY REPORT

The second phase of drilling at the Owens Mine was completed on the 23rd of February. Approximately $11,440 was spent on the 1890 feet of additional drilling.

Without the benefit of analytical results, some precision may be lost in trying to determine the geometry of the mineralized zone. The better grades (greater than 0.03 oz/T) are generally found in bleached, clay altered and hematite stained intervals, so an approximation of the geometry can be made at this point.

The mineralized zone seems to be a shear zone, more or less concordant with foliation, trending N60W on the east, about east-west in the middle and probably about east-west on the western side of the Mean Annie claims. The zone also appears just north of a dike (andesite?) not previously broken out as a separate, mappable unit. The dike is complexly intruded on the east but appears to become a single, thicker unit toward the west side of the claim block (see geologic map). The significance of this dike is unclear but apparently marks a zone of weakness trending parallel to the mineralized zone. Hematite staining, alteration and weak gold mineralization indicates the dike was emplaced prior to mineralization.

The mineralized zone still appears to dip toward the north as previously reported but is known to dip more steeply (about 75°) on the east end. The zone apparently swells near drill holes OM83-10 and OM83-11 in response to N10-20W trending faults. The true width of the mineralized zone in this area is probably about 60 50 feet (see cross section A-A'). Farther west, around drill holes 84-44, 84-45 and 83-7, the zone appears to dip northward at about 35° and to have a true width of about 26 feet (see cross section B-B'). Proceeding west, the zone diminishes somewhat near drill hole OM83-4 and was not conclusively identified in any of the drill holes along the wash. Simple projection would have resulted in an intercept at drill hole OM84-40 but nothing resembling the mineralized zone was encountered there. If there is a continuation of the mineralized zone, it is offset and/or greatly diminished in true width.

The westernmost drill holes (OM 84-42 and OM84-43) intercepted altered and hematite stained rock more characteristic of the mineralized zone. OM84-42 is most zonelike from 3 to 41 feet and OM84-43 being even more altered and hematite stained from 30 to 90 feet. No offsets to these holes were possible without site preparation.

Conclusions drawn from this phase of drilling are: 1) That significant changes in reserves, while possible, are unlikely on the east side of the claims; 2) The absence of a clearly recognizeable zone in the vicinity of the wash to the west decreases the probability of significant reserves on the west side of the claims; 3) The true width of the mineralized zone is less than previously considered.

Further work on this project would involve considerable expenditures in road construction and drilling while trying to extend the mineralized zone under cover to the west. Thickness

and grade encountered thus far do not warrant this expense. Some possibility exists for parallel zones to the north but this would also prove to be expensive in that exploration would be solely by drilling in an area where cover is likely to be greater than 100 feet. If a parallel structure were found, grades would have to be significantly higher to justify the cost of mining.

Unless there are some real surprises coming from the laboratory, I recommend that MAPCO not undertake further exploration on the Owens Mine Project.

VDL/cb

OM-Series

Owens Area MAPCO Drill Holes.

Hole No.	Depth - Thickness - Grade using 0.01 oot cut-off.
83-1	
83-2	
83-3	
83-4	27-33-0.019
83-5	36-39-0.023
83-6	51-36-0.021
83-7	60-36-0.024
83-8	120-9-0.056
83-9	108-24-0.055
83-10	27-39-0.039 46-51=0.005 81-15-0.032
83-11	0-15-0.032 15-69-0.007 69-24-0.018
83-12	3-48-0.029
83-13	
83-14	
83-15	
83-16	Not Anomalous
83-17	
83-18	
83-19	Not Anomalous
83-20	
83-21	
83-22	
83-23	Not Anomalous
83-24	
83-25	
83-26	

Hole No.	Depth - Thickness - Grade
83-27	
83-28	45-3-0.015
83-29	99-3-0.013
83-30	
83-31	
83-32	
83-33	12-3-0.011 153-3-0.015
83-34	108-3-0.030 138-3-0.010
83-35	48-3-0.010
84-36	6-~~8~~ 5-0.025 105-12=0.03
84-37	18-~~17~~ 21-~~0.023~~ 0.059
84-38	~~36-7-0.028~~ 27-18-0.023
84-39	Not anomalous
84-40	Not anomalous
84-41	Not anomalous
84-42	24-3-0.011
84-43	42-~~37-0.023~~ 48-0.027
84-44	33-~~56-0.014~~ 42-0.014
84-45	~~3-13-0.012~~ 30-4-0.012
84-46	102-27-0.209
84-47	Not anomalous
84-48	Not anomalous
84-49	6-3-0.014
84-50	138-6-0.028
84-51	21-15-0.031

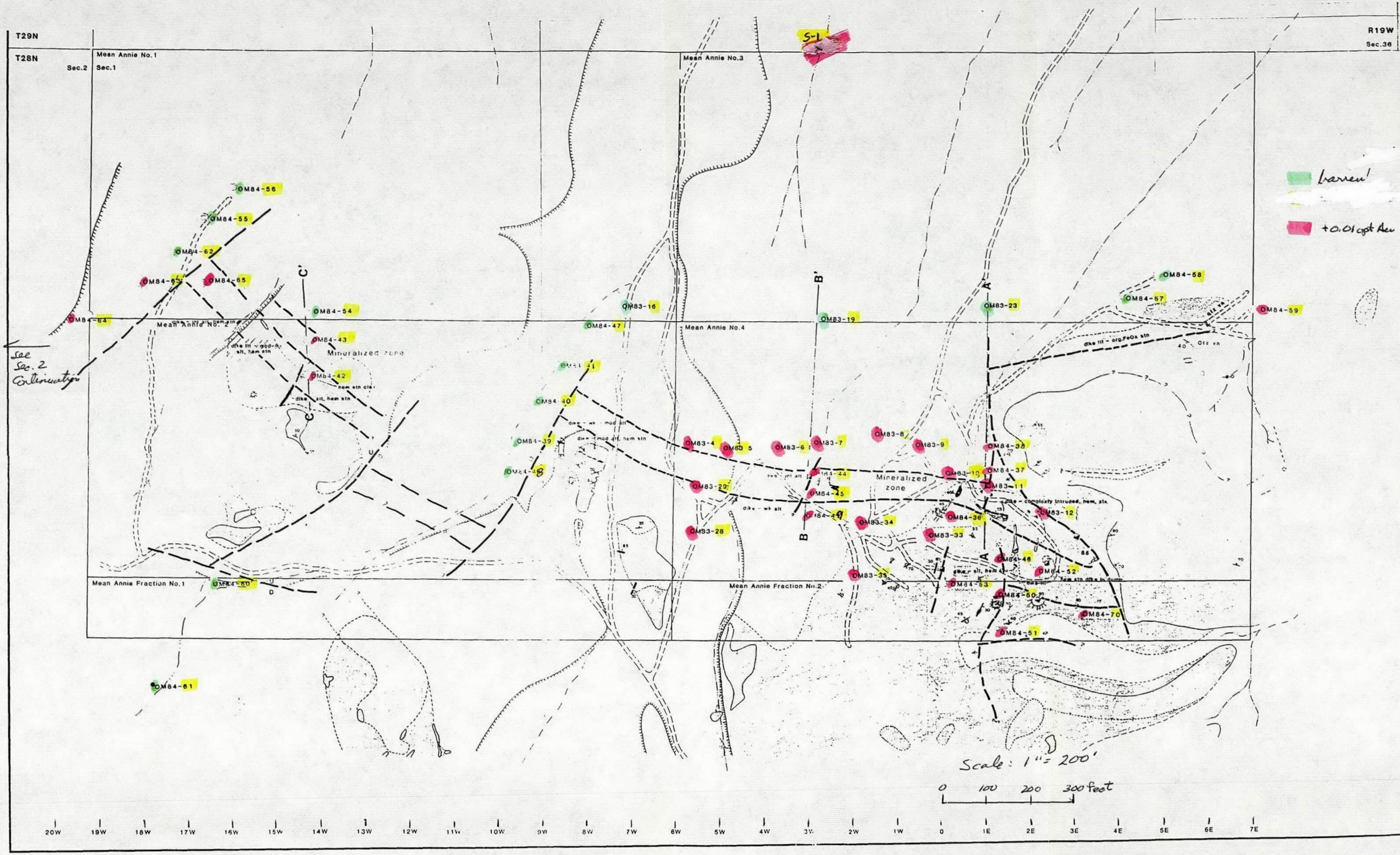
Hole No	Depth-Thickness-Grade	Hole No.	Depth-Thickness-Grade
84-52	42-6-0.028		
84-53	84-6-0.011 111-3=0.038		
84-54	Not anomalous		
84-55	Not anomalous		
84-56	Not anomalous		
84-57	Not anomalous		
84-58	Not anomalous		
84-59	35-5-0.012		
84-60	Not anomalous		
84-61	Not anomalous		
84-62	Not anomalous		
84-63	150-10-0.011		
84-64	104-6-0.010		
84-65	20-30-0.015 20-20=0.018		
84-66	6-9-0.018 170-15=0.013		
84-67	60-9-0.015		
84-68	69-6-0.010		
84-69	Not anomalous		
84-70	21-6-0.010		
83-5-1.	252-3'-0.010 Anomalous ~~240-249~~ 240-255		

OM-84-46

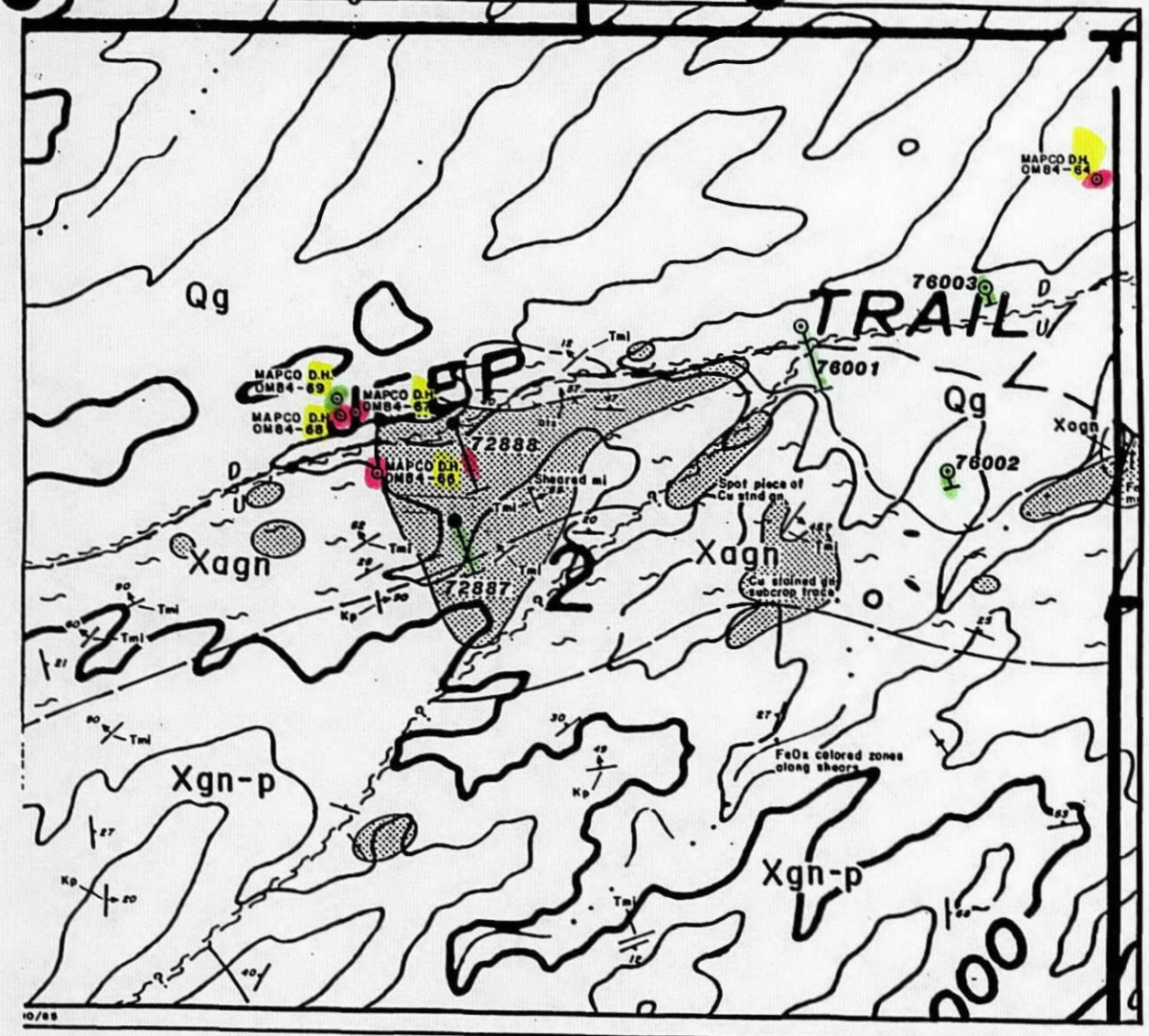
Footage	opt Au
102'-105'	0.170
-108	0
-111	0
-114	0.010
114-117	0.030
-120	1.55
-123	0
-126	0.085
-129	0.078
-132	0.020
-135	0
-138	0.085
-141	0.010
-144	0.025
144-147	0.040
-150	0
-153	0.005

102-147 = 45' = 2.103/15 = = 0.1402 opt

114-147 = 33' = 1.923/11 = 0.17[48] opt.



T29N
T28N
R19W
Sec.36
Sec.2
Sec.1
Mean Annie No.1
Mean Annie No.3
Mean Annie No. 2
Mean Annie No.4
Mean Annie Fraction No.1
Mean Annie Fraction No.2
S-1
barren
+0.01 opt Au
See Sec. 2 Continuation
Mineralized zone
Mineralized zone
dike - wk alt
dike flt - org FeOx stn
Qtz vn
dike - complexly intruded, hem, stn
hem stn dike in dump
OM84-56
OM84-55
OM84-62
OM84-63
OM84-65
OM84-64
OM84-54
OM84-43
OM84-42
OM84-41
OM84-40
OM84-39
OM84-48
OM84-47
OM83-16
OM83-19
OM83-23
OM84-57
OM84-58
OM84-59
OM83-4
OM83-5
OM83-6
OM83-7
OM83-8
OM83-9
OM84-38
OM84-37
OM83-10
OM83-11
OM83-12
OM84-44
OM84-45
OM83-29
OM83-28
OM83-34
OM84-36
OM83-33
OM84-46
OM84-52
OM83-35
OM84-53
OM84-50
OM84-70
OM84-51
OM84-60
OM84-61
A
A'
B
B'
C
C'
Scale: 1" = 200'
0 100 200 300 feet
20W 19W 18W 17W 16W 15W 14W 13W 12W 11W 10W 9W 8W 7W 6W 5W 4W 3W 2W 1W 0 1E 2E 3E 4E 5E 6E 7E



American Copper and Nickel Company, Inc.
ACNC - NDCO

SECTION 2
DRILL HOLE LOCATIONS

Owens Mine Property
Mohave County, Arizona

⊙ 1987 Drill hole location

● 1985 Drill hole location

Gold in soil anomalies >50 ppb

For explanation of geology, please refer to Plate 1, "Geology of the Owens Mine Propert ."

-N-

600 0 500 1000
FEET

Scale ± 1" = 840'

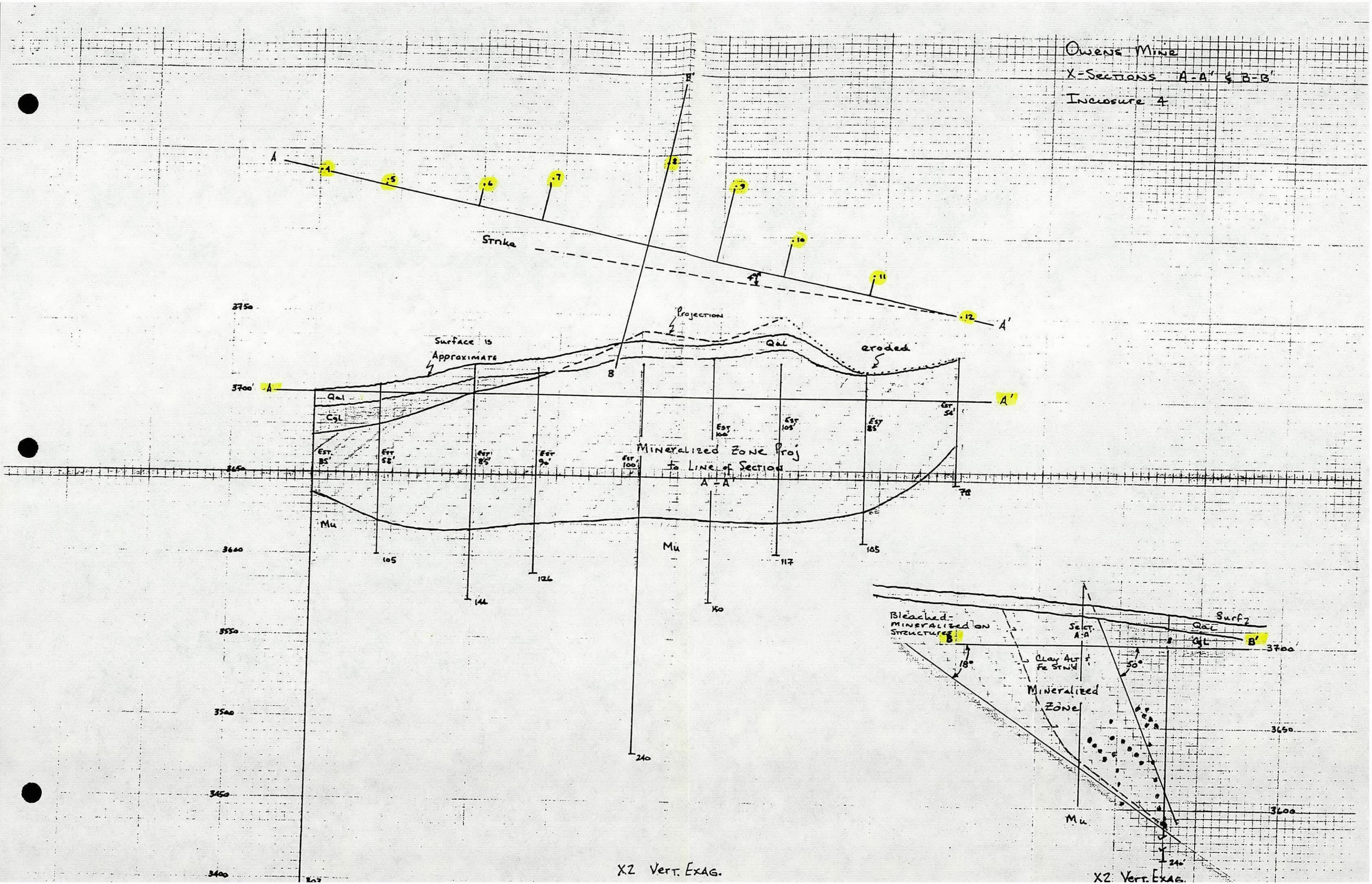
Area Computations for reserve calculation.

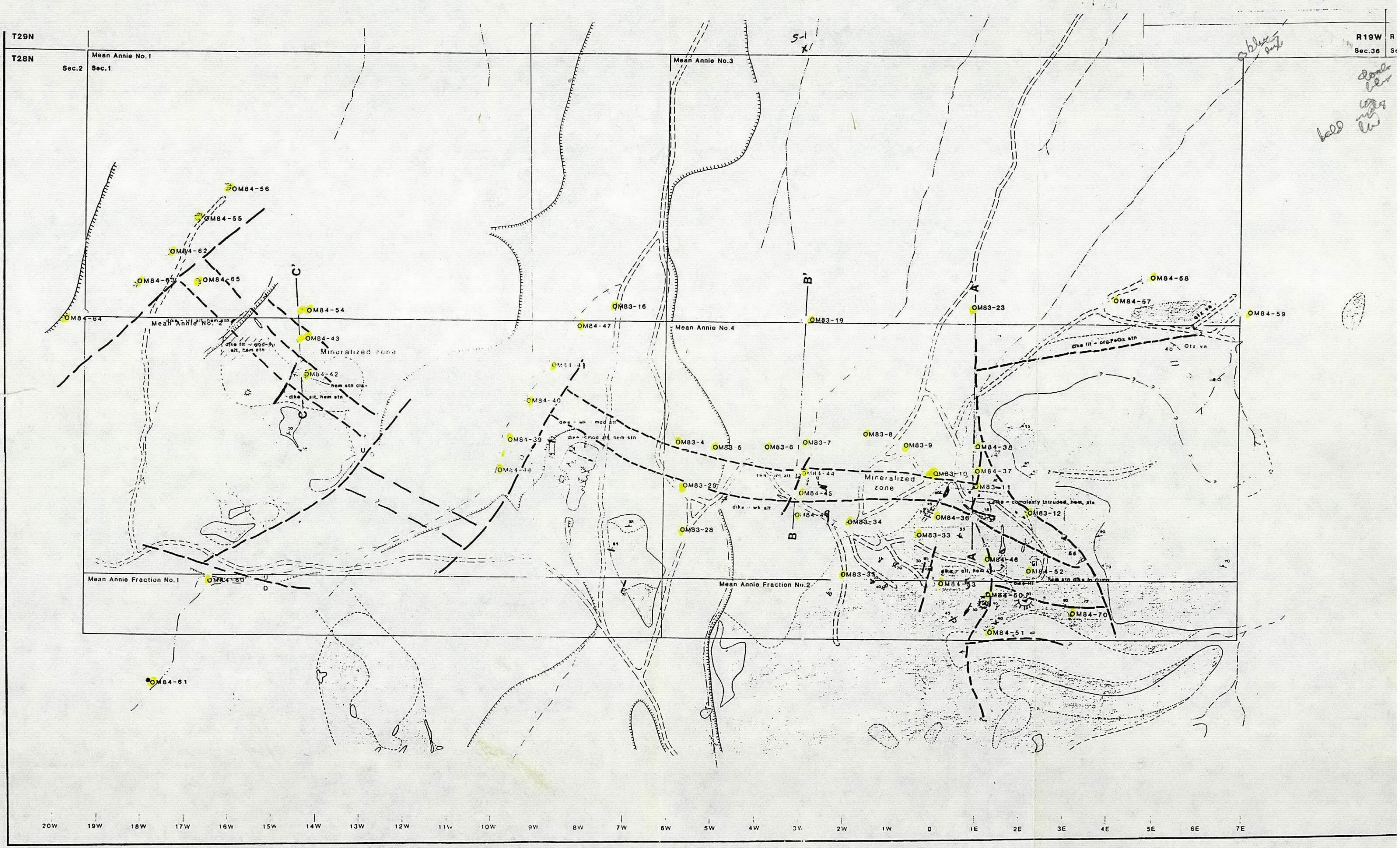
Enclosure 1

Owens Mine

X-Sections A-A' & B-B'

Inclosure 4




T29N
T28N
Sec.2
Sec.1
R19W
Sec.36
Mean Annie No.1
Mean Annie No.2
Mean Annie No.3
Mean Annie No.4
Mean Annie Fraction No.1
Mean Annie Fraction No.2
Mineralized zone
Mineralized zone
OM84-56
OM84-55
OM84-62
OM84-63
OM84-65
OM84-64
OM84-54
OM84-43
OM84-42
OM84-40
OM84-39
OM84-47
OM83-16
OM83-19
OM83-23
OM84-58
OM84-57
OM84-59
OM83-4
OM83-5
OM83-6
OM83-7
OM83-8
OM83-9
OM84-38
OM84-37
OM83-10
OM83-11
OM83-29
OM84-44
OM84-45
OM83-28
OM83-34
OM84-36
OM83-12
OM83-33
OM84-46
OM84-52
OM83-35
OM84-53
OM84-50
OM84-70
OM84-51
OM84-60
OM84-61
dike - alt, hem stn
hem stn clx
dike - wk - mod alt
dike - mod alt, hem stn
dike - wk alt
dike fill - org-FeOx stn
Qtz vn
dike - complexly intruded, hem. stn.
hem stn dike in dump
A
A'
B
B'
C
C'
X'
20W
19W
18W
17W
16W
15W
14W
13W
12W
11W
10W
9W
8W
7W
6W
5W
4W
3W
2W
1W
0
1E
2E
3E
4E
5E
6E
7E

1" = 200'

[redacted]

SE Cor NICK 1 (RR tie + 2x2's.

272 / 7.5 / 1360   141 / 5 / 7080   240 / 800

36|31 flagged dull blue ridge.
S-1 big mesquite W of rd. wash.
S36 1/4 Corner flagged blue low on slope
S1-S2 corner flagged blue side of hill 1/2 w.

48.50
47.30
1.20
.5
7.80

2.6 miles top wash to Owens.

19 x 6

4.5

49.80
7.00
1.70

1.2
5280 Wood - Xgn
720
8500 1.6

OM-1 Shatter FW ends Xgn w/ hem stain paint, some reddish FeOx

old flags on RMC — OM-2 Shatter HW Xgn, somewhat massive but highly fractured. FeOx on fracture schistosity, fault faces. Ch Oct claims EMC report Elgin Shear

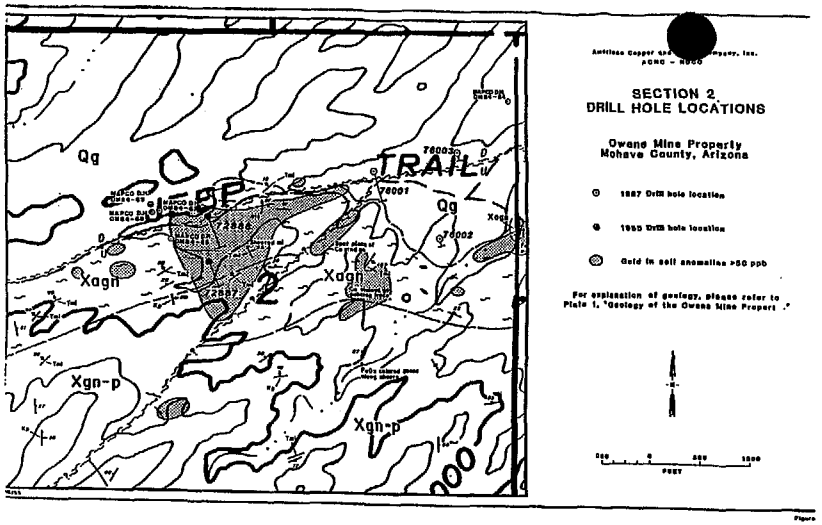
OM-3 (fault 14?E) face along Lead-edge. Gray-brown to red brown FeOx in Xgn. in upper part of zone? or lower HW?

Bulk of Sec 31 anomaly in bedrock, at the NW trend and dichotomy in the fault zone.

SM 2-12-162 Xgn in darker dts, ... w/ orange brown FeOx on faces (... folded & sheared NE, NW, and ... dip NE, SW etc

OM-4. 30' cut across top of bench red FeOx seams w/ yellow-orange brown in Xgn & ... (some staff South across wash!)

OM-5 N. Section Tank Xgn ... which yellow brown FeOx on fracture



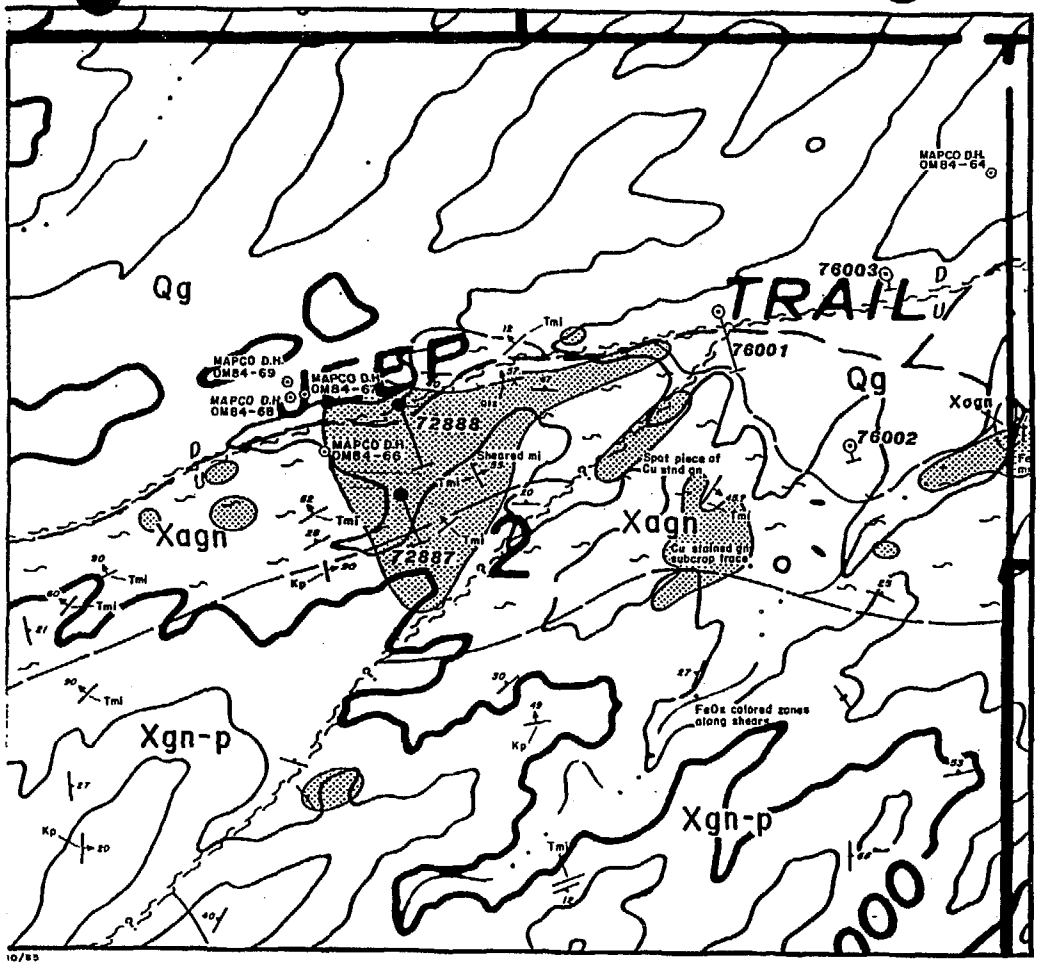
SECTION 2
DRILL HOLE LOCATIONS

Owens Mine Property
Mohave County, Arizona

- 1987 Drill hole location
- 1989 Drill hole location
- Gold in soil anomalies >50 ppb

For explanation of geology, please refer to Plate 1, "Geology of the Owens Mine Property."

1" = 2000'



American Copper and Nickel Company, Inc.
ACNC - NDCO

SECTION 2
DRILL HOLE LOCATIONS

Owens Mine Property
Mohave County, Arizona

⊙ 1987 Drill hole location

● 1985 Drill hole location

◌ Gold in soil anomalies >50 ppb

For explanation of geology, please refer to Plate 1, "Geology of the Owens Mine Propert ."

-N-

500 0 500 1000
FEET

Figure

1" = 1000'

5/84 JDS

DRILLING RESULTS

GOLD BASIN PROSPECT

MOHAVE COUNTY, ARIZONA

Corn & Ahern

May 1984

DRILLING RESULTS
GOLD BASIN PROSPECT
MOHAVE COUNTY, ARIZONA

SUMMARY

The potential for widespread bulk-tonnage gold mineralization at Gold Basin was tested with 16 shallow drill holes. The drilling results indicate that gold mineralization within the widespread sub-horizontal zone of shearing is restricted to elongate, relatively narrow zones and that the prospect does not have potential for major bulk-tonnage gold reserves. A 50 to 100 foot wide zone of mineralization with a probable potential of less than one million tons of .03 to .05 oz. gold was indicated by the drilling and sampling on PCMI's claims. The drilling results also suggest that the adjacent mineralized zone on the Cyclopic property is similarly limited and may contain only several million tons. Disposal of the prospect through a farmout or by abandonment is recommended.

GENERAL

At Gold Basin, northern Mohave County, Arizona, widespread diffuse gold mineralization is localized in a thick sub-horizontal zone of crushing and shearing, an environment similar to that hosting the gold mineralization at Goldfield Corp's Mesquite deposit in southeastern California. PCMI holds 90 unpatented claims at Gold Basin that were staked in March 1982. These claims are adjacent to the Cyclopic mine property and are interspersed with alternate fee sections owned by the Santa Fe Railroad. News reports in March 1984 stated that Saratoga Mining Company, of Black Hawk, Colorado, had acquired the Cyclopic property and planned to initiate production from the old mine.

Sixteen reverse circulation air/hammer drill holes positioned along four separate drill hole fences and totalling 5,645 feet were drilled in November and December 1983 to test the prospect. The holes were relatively dry and recovery from the shattered and sheared rocks was very good. Representative splits of the drill hole cuttings were sent

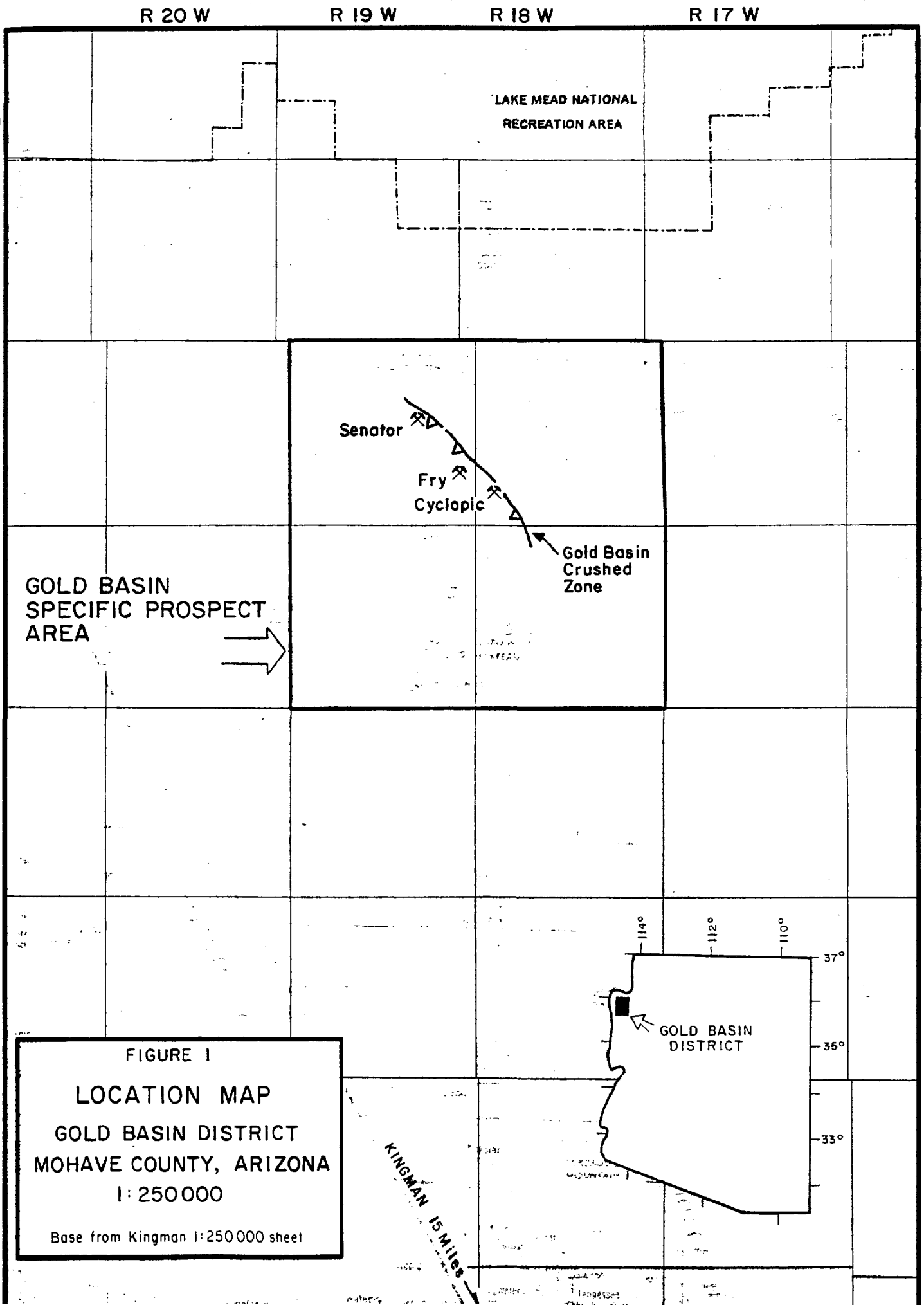


FIGURE 1

LOCATION MAP

GOLD BASIN DISTRICT

MOHAVE COUNTY, ARIZONA

1:250000

Base from Kingman 1:250000 sheet

to U.S. Borax Research Corporation in Anaheim, California for assays. The drilling results are summarized in this report and are presented on the accompanying map and sections with detailed lithologic logs, composite assay logs, and screen test results included in the appendix.

DRILLING RESULTS

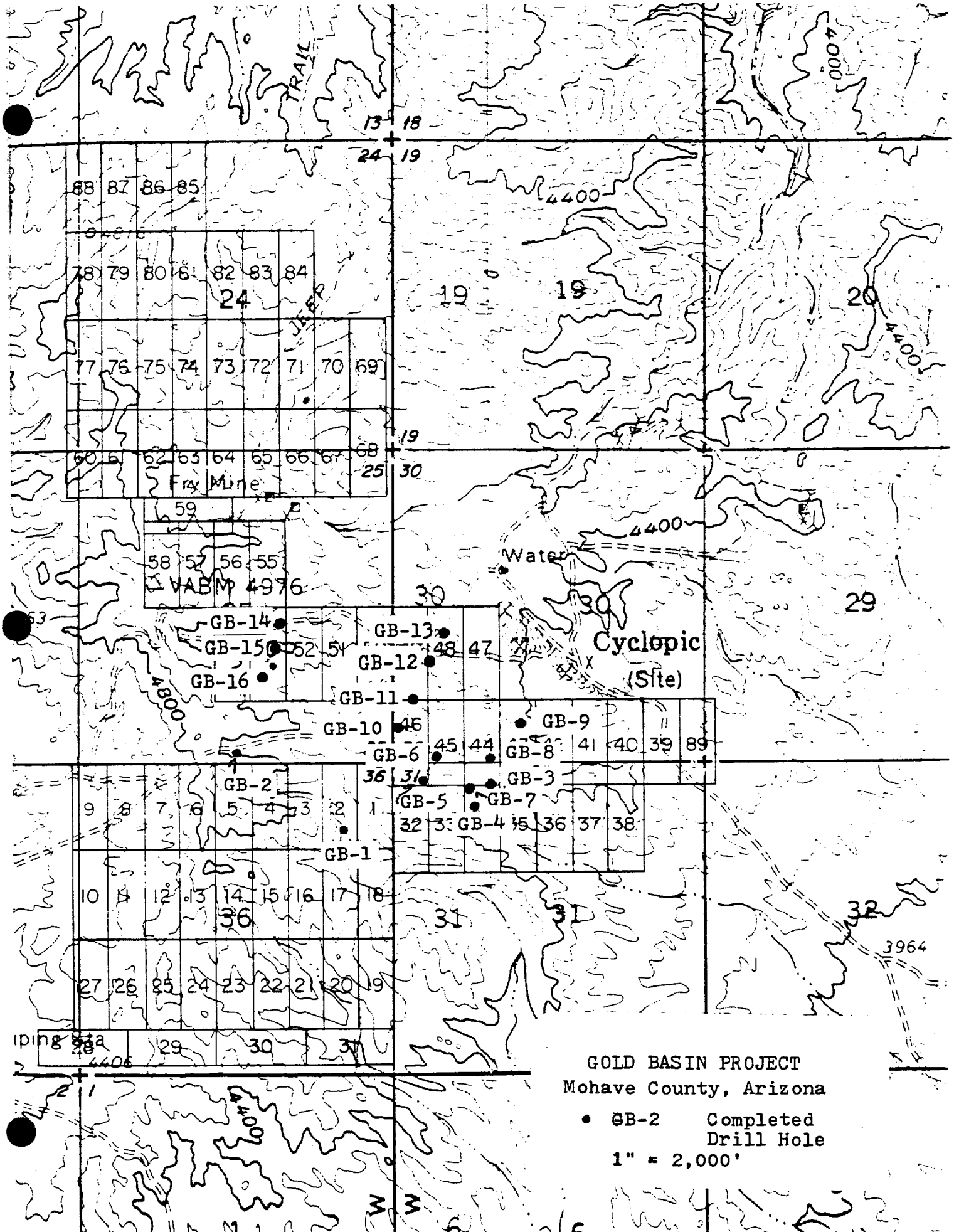
The drilling at Gold Basin was designed to test the extent and grade of gold mineralization within a "Middle Plate" interval of intensely sheared and crushed rock that is sandwiched between unmineralized Upper Plate units and competent Lower Plate rocks. Samples were generally taken at 5 foot intervals. Recovery was very good and the assayed split of the drill cuttings is believed representative of the material drilled.

GEOLOGIC RELATIONSHIPS

The drill holes penetrated 100 to 200 feet of intensely sheared and crushed granite and granite gneiss. Although major shear zones were encountered at depth in several drill holes, the Lower Plate rocks were more competent and often exhibited darker colors and black chloritic alteration in contrast to the clay and siderite that was common in the "crushed zone." These general geologic relationships and the distribution of mineralization are illustrated on the accompanying sections.

GOLD MINERALIZATION

Seven of the sixteen holes drilled at Gold Basin encountered anomalous gold mineralization and substantial intervals with gold values in excess of .30 ppm were intersected in drill holes GB-5, GB-7, and GB-16. The mineralized intervals generally correlate with the "crushed zone" and adjacent sheared Middle Plate rocks and are near the surface. Gold values are relatively erratic, and range up to a 5 foot interval of 8.80 ppm gold. The mineralization is associated with more abundant clays, siderite, limonite derived from very fine-grained pyrite, and anomalous mercury and tungsten values.



GOLD BASIN PROJECT
Mohave County, Arizona

• GB-2 Completed Drill Hole

1" = 2,000'

Drill hole intercepts with more than .30 ppm gold include:

Drill Hole	Intercept	Interval	PPM Gold
GB-5	80-90	10'	.31
	110-130	20'	.85
GB-7	0-5	5'	1.61
	60-75	15'	3.54
	130-165	35'	.86
GB-11	145-150	5'	2.31
	270-275	5'	.89
GB-12	185-190	5'	.56
GB-13	110-115	5'	.99
GB-16	55-75	20'	.48

Drill holes 5, 7, and 16 are positioned on and near an elongate west-northwest trending zone of mineralization. These vertical holes do not adequately define the grade of the gold mineralization but do indicate the relative intensity and extent of mineralization. Representative surface samples taken along a road cut across this zone show a 60 foot width that averages 1.66 ppm gold with an adjacent 60 feet that averages .27 ppm gold. Additional surface samples show that the mineralized zone continues westward for several thousand feet through hole GB-5 and toward hole GB-16. This data and the drilling results indicate that the better gold mineralization is restricted to an elongate 50 to 100 foot wide zone with a probable potential of less than one million tons averaging .03 to .05 oz. gold. Mineralization at the Cyclopic Mine is similarly localized in an elongate, west-northwest zone of limited width with a probable tonnage potential of only several million tons.

CONCLUSION AND RECOMMENDATION

The drilling results at Gold Basin indicate that better-grade gold mineralization occurs in elongate, west-northwest trending zones of limited width and tonnage potential. The mineralized zone indicated by PCMI's drilling has an estimated potential of less than one million tons of .03 to .05 oz. gold and that at the adjacent Cyclopic Mine is estimated at probably less than several million tons. The exploration potential for

major bulk-tonnage gold reserves elsewhere on the prospect appears limited and we recommend disposal of the prospect through a farmout to others or by abandonment.

Respectfully submitted,

Richard Ahern

Russell M. Corn

RA/RMC:lan

APPENDIX A

SIEVE TEST
Gold Basin Drill Cuttings
Mohave County, Arizona

Sieve tests were run on selected samples representing the anomalous and mineralized intervals in the two best holes from the recent drilling at Gold Basin. The results, summarized on Table 1 suggest that the gold values contained in the more readily captured coarse fraction (>80 mesh) are equal to or sometimes greater than the gold content of the fine fraction (<80 mesh), which is more readily lost from the sample collection system.

The improved recovery of fines by a reverse circulation drill is illustrated by comparing the percentage of fines to coarse from the Gold Basin drilling to that from other projects where conventional drilling methods were used. The reverse circulation drill at Gold Basin produced samples containing from 10% to 30% <80 mesh material where as samples from a conventional rig on another project contained from 2.6% to 17% <80 mesh material. The suggestion here is that the conventional drilling system lost from 10% to 20% of the fines.

The above comments and the data on Table 1 indicate that while loss of fines was not a problem at Gold Basin, it would not have significantly affected the results if fines had been lost.

Table 1. Sieve Test - Gold Basin Drill Cuttings Mohave County, Arizona

Drill Hole	Interval	Size Distribution		Gold Distribution				Total Gold	
		% >80	% <80	>80		<80		Calc. Head	Assay Head
				PPM Au	% Total	PPM Au	% Total	PPM Au	PPM Au
GB-5	80-90	71.0	29.0	.05	52.5	.11	47.5	0.07	.50
	90-100	81.4	18.6	<.02	98.0	.05	2.0	0.05	.06
	100-110	82.0	18.0	.72	95.9	.14	4.1	0.61	.21
	110-120	81.4	18.6	.47	79.2	.44	20.8	0.48	.24
	120-130	76.8	23.2	.63	88.8	.27	11.2	0.54	.55
GB-7	0-5	88.1	11.9	1.05	89.8	1.0	10.2	1.03	1.61
	60-65	83.1	16.9	10.2	96.2	2.31	3.8	8.80	2.69
	65-70	79.9	20.1	1.86	93.4	.54	6.6	1.59	.78
	70-75	78.5	21.5	1.26	88.7	.47	11.3	1.11	1.03
	125-130	82.0	18.0	.08	68.0	.17	32.0	0.10	.13
	130-135	74.2	25.8	2.21	94.3	.38	5.7	1.73	1.76
	135-140	78.4	21.6	1.34	80.8	1.14	19.2	1.30	1.71
	140-145	81.8	18.2	1.77	91.6	.72	8.4	1.58	.67
	145-150	68.3	31.7	.45	76.2	< .02	23.8	0.40	.58

2/87 JDS

OWENS PROPERTY

MOHAVE COUNTY, ARIZONA

GOLD PROPERTY

35° 50' 10" N Latitude
114° 17' 27" W Longitude

Mel Lahr and Steve Mornis
American Copper & Nickel Co.
February 1987

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FIGURES

INTRODUCTION

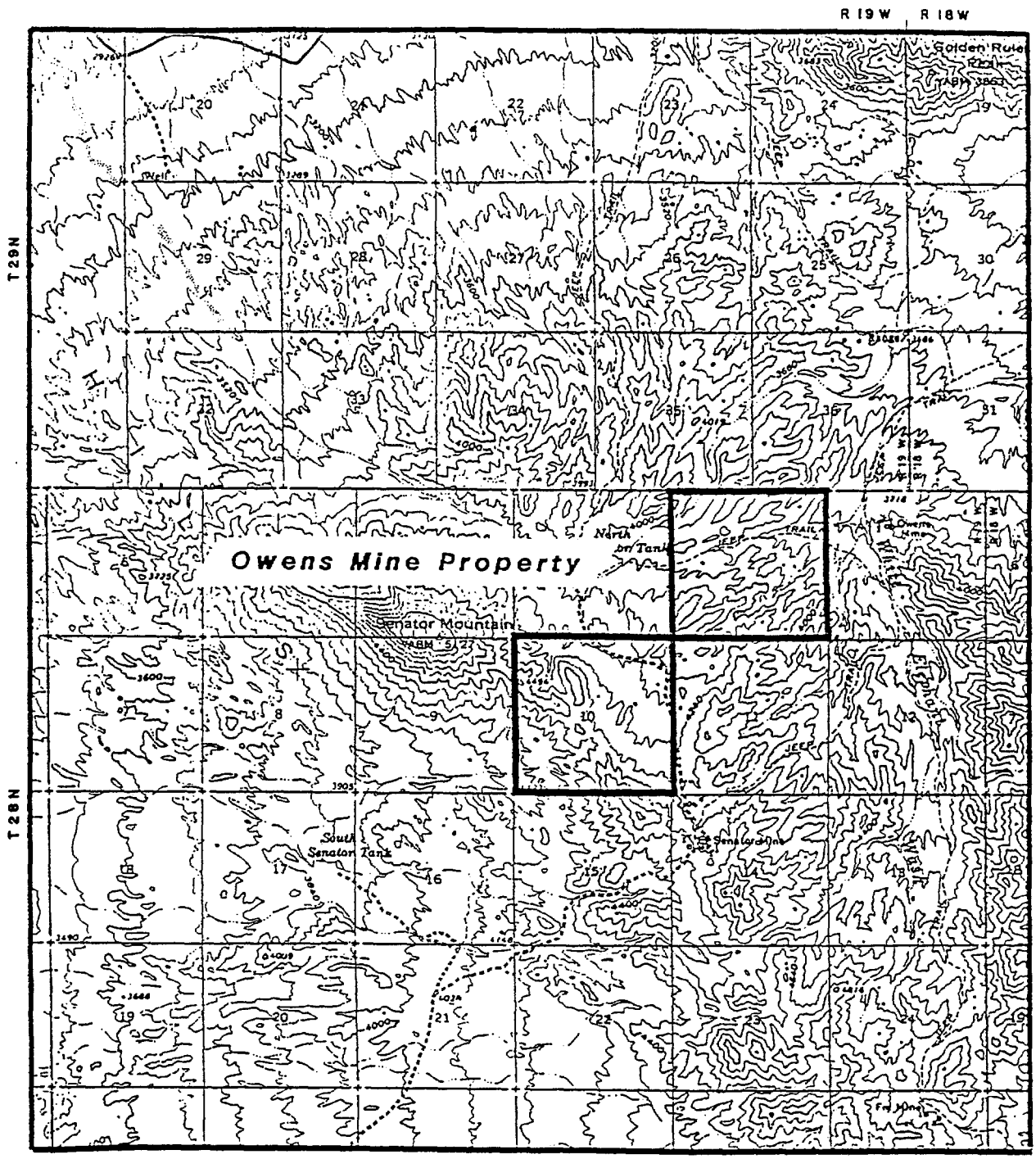
American Copper & Nickel Company (ACNC) acquired control of the Owens property in April, 1985 through the provisions of the PA Joint Venture Agreement with Nerco Minerals. The property consists of one leased state section and thirty-six (36) unpatented federal lode mining claims in the Gold Basin mining district of northwestern Arizona. ACNC can earn a 50% interest in the property by funding $400,000 of exploration by the end of 1988. The property is underlain predominantly by Proterozoic orthogneisses, Cretaceous two-mica granite, and Tertiary-Quaternary fanglomerate and gravel. The structural regime is dominated by two faults; a north-trending Tertiary low-angle (detachment) fault and an east-trending high-angle normal fault. Both structures are accompanied by shearing and quartz veining $\pm$ gold mineralization. Since acquiring the claims, ACNC has carried out geological mapping, soil sampling, IP and magnetic surveys, and drilled four reverse-circulation holes totalling 1,375 feet during 1985.

No work was required during 1986 to keep the property valid. Discussions were held with Nerco regarding combining the Owens property into the RM joint venture or reducing the 1986 expenditure requirement since the property size was reduced in late 1985; a final decision is expected in February, 1987.

LOCATION AND ACCESS

The Owens Mine property is located in the Gold Basin Mining District of the White Hills in northwestern Arizona. The property consists of federal and state land in section 2 and 10, Township 28 North, Range 19 West, Mohave County, Arizona. The center of the property is at latitude 35° 50' 10" and at longitude 114° 17' 27". Map coverage is provided by the Kingman 2-degree quadrangle and the Senator Mountain 15-minute quadrangle.

The property is accessible from Kingman, Arizona via paved U.S. Highway 93 and a series of unimproved dirt roads; a distance of approximately 55 miles.



American Copper and Nickel Company, Inc.

ACNC-NDCO

PA JOINT VENTURE III

Owens Mine Property

Mohave County, Arizona

10/88

PROPERTY STATUS

The property consists of thirty-six (36) unpatented federal lode mining claims on BLM-administered federal land and one leased state section. The property was acquired by Mapco Minerals Corporation as part of a larger property which included one additional state section, two additional staked federal sections, and a 160-acre private lease. These lands were subsequently dropped by ACNC in late 1985. Recordation information for the property is listed below:

Section	Claims/Lease	BLM Serial No.	Location Date
10	BF 1-36	AMC 226267-226302	6/11/84
2	AZ Permit #86368		6/22/84

The property was acquired by Nerco Minerals through their Mapco-DeLamar Silver Mine acquisition in 1984. In April, 1985, the property was acquired by ACNC has part of the PA Joint Venture. ACNC can earn a 50% interest in the property by funding $400,000 of exploration costs by the end of 1988. To date, $115,000 has been expended on the property.

In 1986, a work commitment of $55,000 was required for the property to remain in the joint venture under provisions of the original joint venture agreement. However, discussions are ongoing with Nerco regarding reducing this committment or including the Owens property into the RM joint venture. This includes the 1986 rental and assessment requirements for the State lease. These requirements total $13,550. The state also retains a 5% NSR production royalty for section 2. An expenditure of $25-30,000 is planned for 1987.

HISTORY

Production from the Gold Basin mining district is variously estimated at 6,000 oz. gold and 5,000 oz. silver from six mines (Theodore, 1982 and Butler, 1933). These mines contained small tonnages of free milling, gold-quartz ores with an average grade of 0.5-3.0 oz/ton gold. The most productive of these, the Cyclopic mine, is located about four miles south and is the closest both spatially and geologically to the Owens Mine property.

The Owens Mine (Section 1), formerly under joint venture control, is reported to have been a small copper, iron and possibly gold producer (Theodore, et al, 1982). No production records are known for the mine but Mapco reports indicate less than 1,000 tons of ore were taken.

Prior to being acquired by NERCO, Mapco Minerals Corporation became interested in the southern Gold Basin area and acquired the current Owens Mine property. Their work concentrated on the Owens Mine where they drilled 46 holes and calculated 385,000 tons of 0.026 oz/ton gold. Four additional holes were drilled in Section 2 to test the western extension of mineralization. Mapco also completed geological mapping (1:12,500) and limited rock sampling over the remainder of the properties.

To expand upon Mapco's work, ACNC has completed geological mapping at 1:6000 scale across the properties, taken 56 rock samples, 856 soil samples, completed IP and magnetic surveys and drilled 1,375 feet in four rotary holes.

As a result of 1985 work, ACNC has narrowed the area of interest to just two of the former Owens Mine properties (Section 2 & 10). All other properties including the Owens Mine, reverted back to Nerco Minerals. Negotiations with Santa Fe Minerals for Section 3 (adjacent to section 2 and 10) were suspended in 1986 when Sante Fe would only J. V., and not option, the ground. Hence, the terms were not acceptable to ACNC. No other work was done in 1986, as sufficient monies were spent in late 1985 to satisfy state and federal assessment requirements.

REGIONAL GEOLOGY

The Gold Basin mining district is within the Basin and Range province less than 20 miles west of the Colorado Plateau. Proterozoic X (1.75 g.a.) gneisses are the dominant rock type throughout the district. Lithologies include mostly quartzo-feldspathic gneiss with lesser cordierite gneiss, biotite-garnet-sillimanite schists and amphibolite. Intruding the gneiss are several upper Cretaceous leucocratic granititic stocks, described as two-mica monzogranites (Theodore, et al, 1982). Associated with the intrusives are numerous pegmatites and quartz veins.

The oldest Tertiary rocks in the district are rhyolitic tuffaceous sediments and fanglomerates which crop out to a limited extent in the southern portion of the district. Overlying these rocks is the widespread Miocene-Pliocene Muddy Creek Formation which consists of conglomerate, claystone, mudstone, basalt tuff and an upper carbonate member. Muddy Creek Formation fanglomerates overlie large areas of Precambrian gneiss across the district. Tertiary-Quaternary gravels cover large sections of the district, occurring as dissected alluvial fans and unconsolidated sediment.

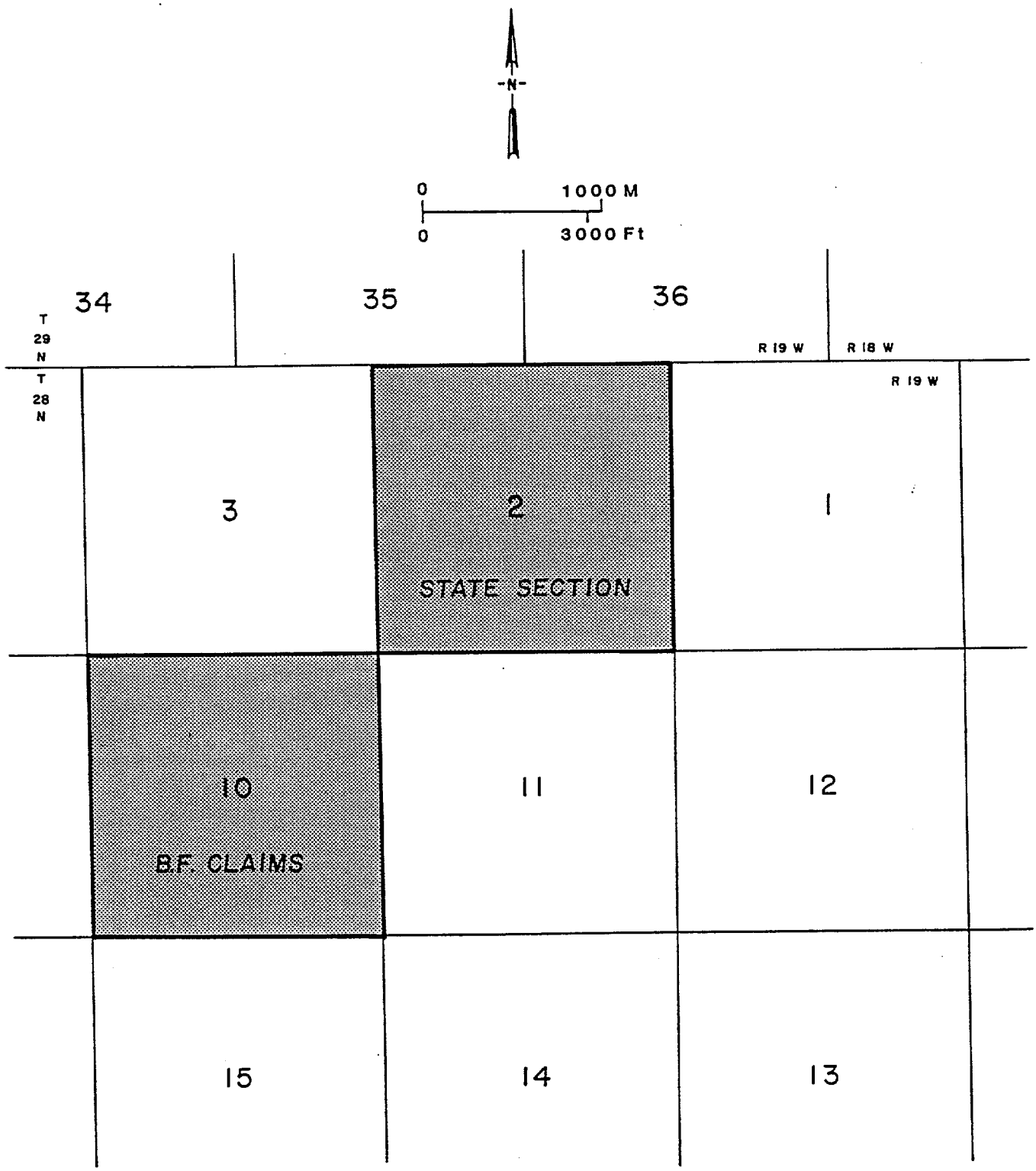
The gneisses exhibit intense folding and locally shearing and cataclasis, resulting from several episodes of deformation, which may range in age from Proterozoic to Tertiary. Miocene east-west extension resulted in the high-angle normal faulting which defines the Basin and Range topography observed today. A seven-mile long, low-angle structure occurring in the southern portion of the district is defined as a Miocene detachment fault by the USGS (Theodore, et al, 1982). The Cyclopic Mine (four miles south-east of the property) and several prospects occur along the structure, which crosses the Owens property in Section 10. The structural zone contains pervasive iron-oxide staining, gouge zones, shearing and zones of brecciated quartz.

Mineralization in the Gold Basin mining district is hosted by Proterozoic to Cretaceous quartz veins and by brecciated quartz associated with the Miocene detachment fault. Mineralization varies but typically includes gold with pyrite, ferroan calcite, galena, and chalcopyrite. Free gold reportedly occurs with fluorite-bearing veins in the area (Theodore, et al, 1982). In addition to the vein occurrences, placer gold occurs throughout the region.Myers (1984) states that mineralization ranges in age from Cretaceous to Tertiary, and that some of the mineralization associated with the low-angle fault is Tertiary in age and associated with iron alteration.

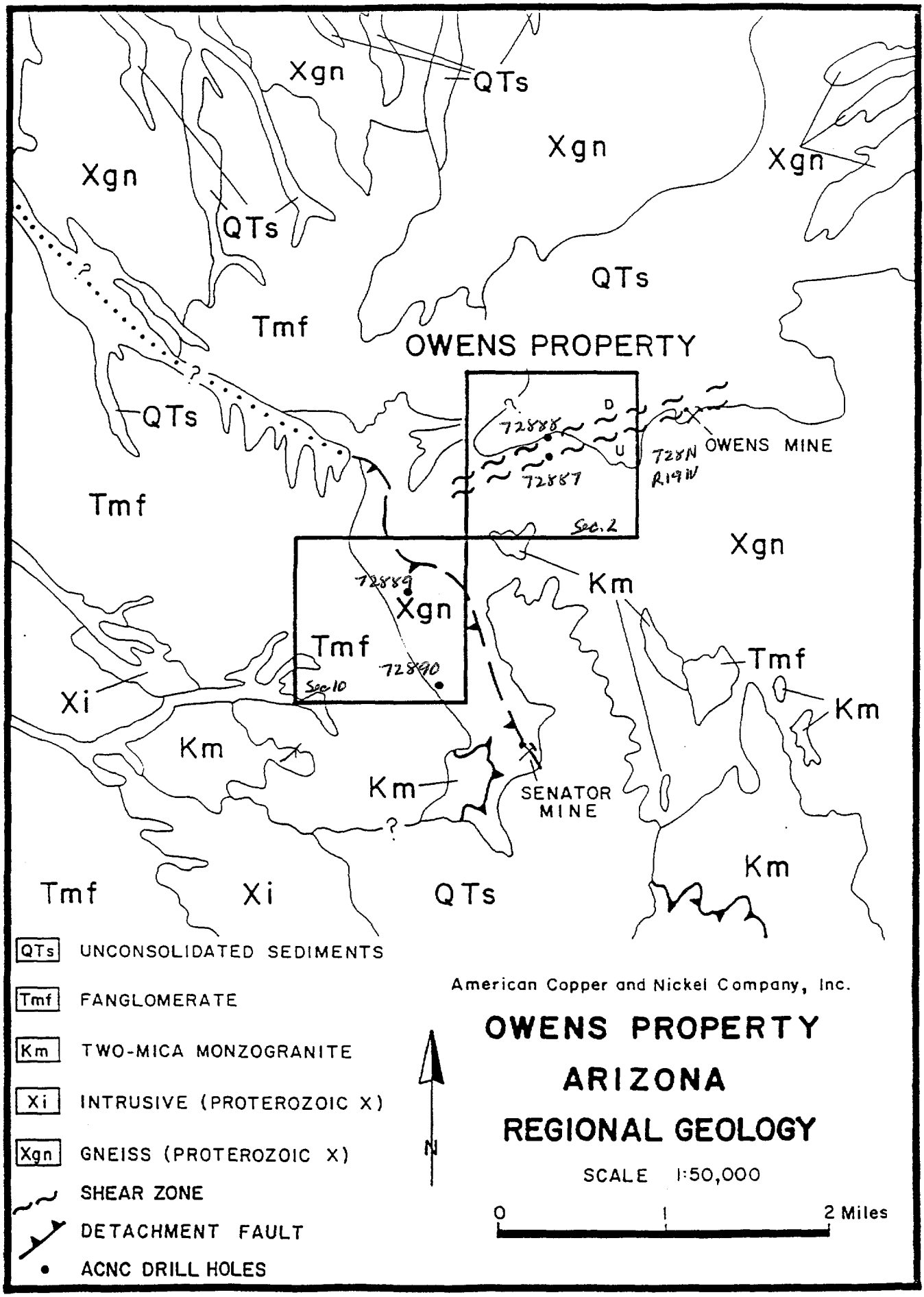
American Copper & Nickel Company, Inc.

OWENS MINE PROPERTY CLAIMS

Mohave County, Arizona



June 1987


Xgn
QTs
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QTs
Tmf
OWENS PROPERTY
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72888
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T28N
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OWENS MINE
72887
Sec. 2
Tmf
Xgn
Km
72889
Xgn
Tmf
72890
Sec 10
Tmf
Km
Xi
Km
Km
SENATOR
MINE
Km
Tmf
Xi
QTs
QTs UNCONSOLIDATED SEDIMENTS
Tmf FANGLOMERATE
Km TWO-MICA MONZOGRANITE
Xi INTRUSIVE (PROTEROZOIC X)
Xgn GNEISS (PROTEROZOIC X)
SHEAR ZONE
DETACHMENT FAULT
ACNC DRILL HOLES
American Copper and Nickel Company, Inc.
OWENS PROPERTY
ARIZONA
REGIONAL GEOLOGY
SCALE 1:50,000
N
0
1
2 Miles

Figure 2.

PROPERTY GEOLOGY

The most notable features within the property are structural zones manifested as color anomalies due to iron-oxide staining and zones of shearing and cataclastic fracturing of the rock. Section 2 contains a west-trending zone, dipping 50 degrees to the north, and section 10 contains a shallowly dipping structure which is the Tertiary detachment fault.

Section 2

The northern third of the section consists of unconsolidated Quarternary gravels and the southern two-thirds consists primarily of Precambrian gneiss. A Cretaceous leucogranite, (reported to be two-mica, Theodore, et al, 1982) intrudes the gneiss in the southwestern portion of the section. Numerous pegmatites occur within one-half mile of the intrusive.

The gneiss and Quarternary gravel are separated by a high-angle normal fault(s) trending east-northeast and dipping approximately 50 degrees to the north. This fault is the western extension of the mineralized structural zone at the Owens Mine (Section 1). A zone up to 1,500 feet wide south of the fault, within the footwall, contains gneisses that are sheared and contain iron-staining, propylitic alteration, mafic dikes, quartz veining and scattered copper mineralization. The mafic dikes are 3-20 feet wide and generally trend north-northwest, parallel to regional foliation. The dikes are presumably Cretaceous or younger in age.

Quartz veining up to three feet in width occurs in this structural zone along with altered gneissic wallrock. Samples of these veins and altered zones contain up to 60 ppm gold, often associated with iron-oxides, chalcocite and copper carbonates.

Section 10

The west half of the section consists of unconsolidated Quaternary gravels overlying Muddy Creek fanglomerate. The east half contains predominantly Precambrian quartz-feldspathic gneisses. The regional low-angle structure (detachment fault, Theodore, et al, 1982) trends northerly through the east-central portion of Section 10. Coincident with the fault is a wide zone of abundant iron-oxide coloration, shearing, moderate-to-low-grade propylitic alteration, mafic dikes and scattered quartz and gouge zones. The mafic dikes are similar to those in Section 2.

Quartz occurs within the structural zone both as steeply dipping veins and masses of brecciated quartz. Most of the veins are massive white quartz although two veins have been found which contain quartz, secondary K-spar, sooty iron-oxide, calcite, siderite, and barite. The masses of brecciated quartz often contain iron-stained silica between breccia fragments and is similar to the auriferous quartz at the Cyclopic mine. Most samples of the brecciated quartz in Section 10 contain less than detection (70 ppb) values for gold, but a few sample contain up to 0.8 ppm gold.

RESULTS

Geochemistry

A total of 56 rock chip samples, 19 stream sediment sample, and 856 soil samples were collected on the Owens Mine properties (including properties dropped) in 1985. Of the 29 rock samples collected from currently held properties, values ranged from below detection (22 samples) to 60 ppm. Of the 673 soil samples collected, the highest gold value is 550 ppb (in section 2). Several anomalous (greater than 50 ppb) areas were defined by soil sampling, but the majority of high values are surrounded by background values (<2-20 ppb). The largest anomalous area (1,000 feet x 2,000 feet) is associated with the high-angle fault zone in section 2.

Geophysics

About six line-miles of IP and magnetic surveys were conducted on sections 2 and 10. Results are generally inconclusive and only weakly reflect changes in lithology.

Drilling

Four reverse circulation drill holes totalling 1,375 feet were drilled in November, 1985. Two were drilled in section 10 and were targeted to intercept the detachment zone in areas of iron staining and quartz veining. Slightly anomalous gold mineralization was intersected (up to 0.34 ppm). In section 2, two holes were drilled into the footwall of the east-west-trending fault zone. Both holes were collared in an area containing 50-550 ppb gold in soil samples. Anomalous gold was intersected in both holes. The highest value encountered is 0.96 ppm over 5 feet, within a 30-foot interval assaying 0.62 ppm gold.

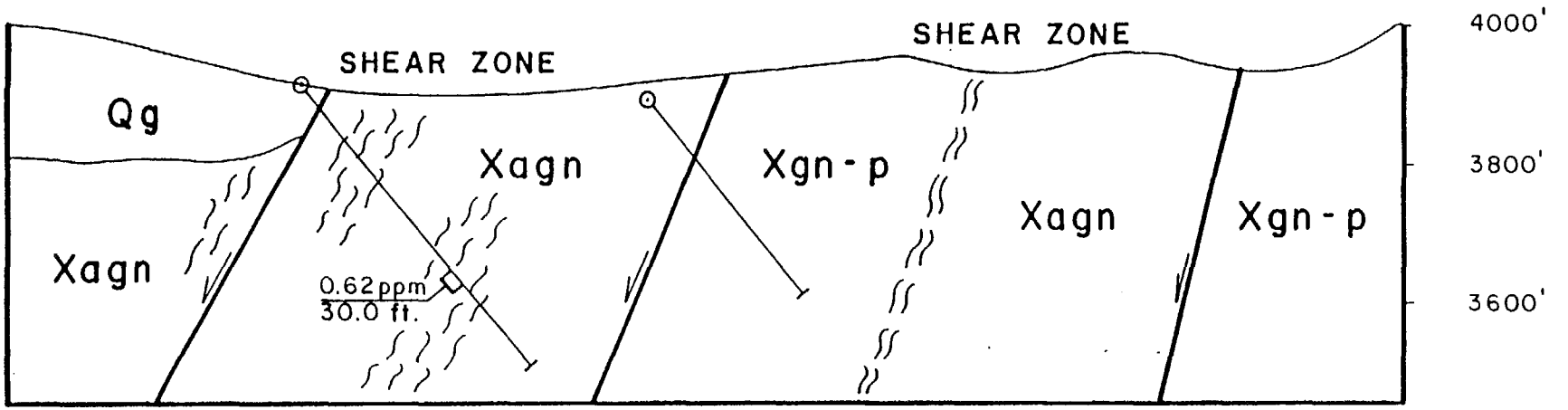
American Copper and Nickel Company, Inc.

OWENS MINE PROPERTY

NORTH

Generalized Section, Section 2

SOUTH



Qg — QUARTERNARY GRAVELS

Xagn — ALTERED GNEISS -- QUARTZ, PYRITE, CALCITE

Xgnp — GNEISS WITH PEGMATITES

SHEARING ± QUARTZ VEINS

0 250 500

FEET

Figure 3

PROPOSED EXPLORATION PROGRAM

Limited additional mapping and sampling will be done in section 2, which contains an area of anomalous gold values in soil. RCR drilling will test the anomaly where it was not drilled in 1985. A decision regarding further work will be made after drill results are reviewed.

Budget:

Salaries and Benefits	
ACNC Geologist, 2 man-months	$ 18,000
Field Subsistence, 1 man-month	1,500
Travel, vehicle	1,500
Dozer, 10 hours @ $110/hour	1,100
Drilling, 1,000 feet @ $11/foot	11,000
Analytical, 200 @ $15/each	3,000
Supplies, Consumables, Freight	500
SUBTOTAL:	$ 26,600
Redistributed Overhead, 6%	700
15%	2,000
TOTAL:	$ 29,300

EXPENDITURE SUMMARY

	1985*	1986*	Total*
Property	$ 42,000		$ 42,000
Drilling	19,000		19,000
Geol. & Geochem	54,000	3,480	57,480
TOTAL:	$115,000	$3,480	$118,480

* does not include administration overhead charges

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Butler, G. M., 1933, Arizona Gold Placers and Placering: Arizona Bureau of Mines Bulletin No. 135.

Myers, I. A. and Smith, E. I., 1984: Structural Control of Ore Deposition in the Gold Basin District, Mohave County, Arizona: GSA Abstracts, Vol.16, No. 6

Theodore, T. G., et al, 1982: Preliminary Report on the Geology and Gold Mineralization of the Gold Basin-Lost Basin Mining Districts, Mohave County, Arizona: U.S.G.S. Open File Report 82-1052

American Copper & Nickel Company, Inc.

ACNC-NDCO

DRILL SECTION

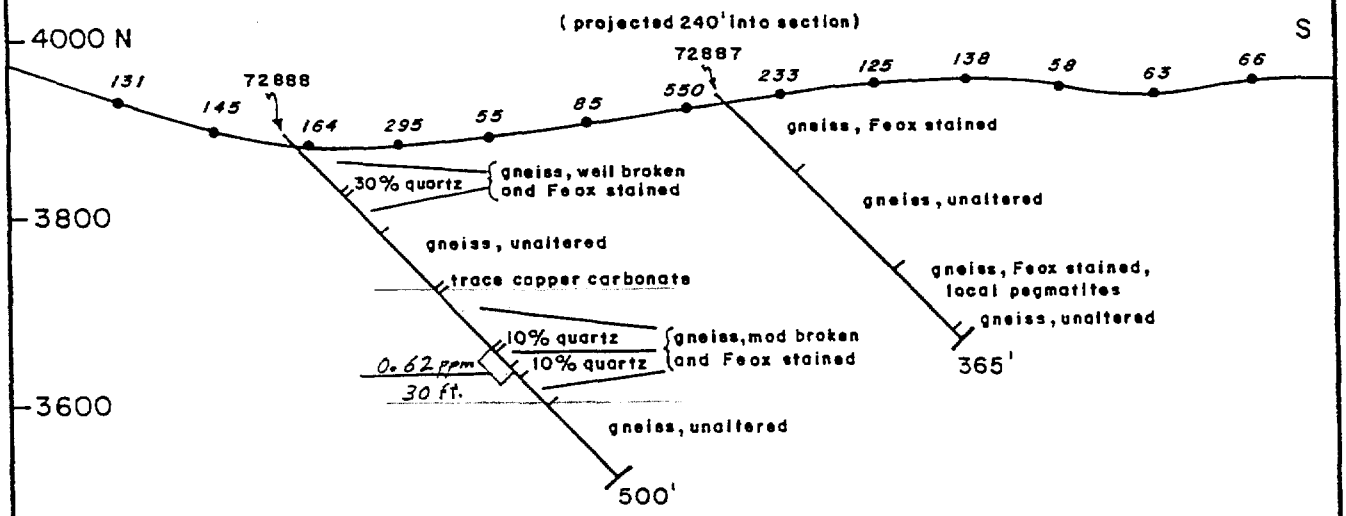
Drill Holes 72888 & 72887

OWENS MINE PROPERTY

Mohave, Arizona

PREPARED BY: STEVE MORNIS

Section:2 Township:28N Range:19W



Section 160° / Looking East

● Soil sample sites projected 200'E into section, values in ppb gold.

0 100 200

FEET

KNS 12/85

American Copper & Nickel Company, Inc.

ACNC-NDCO

DRILL SECTION

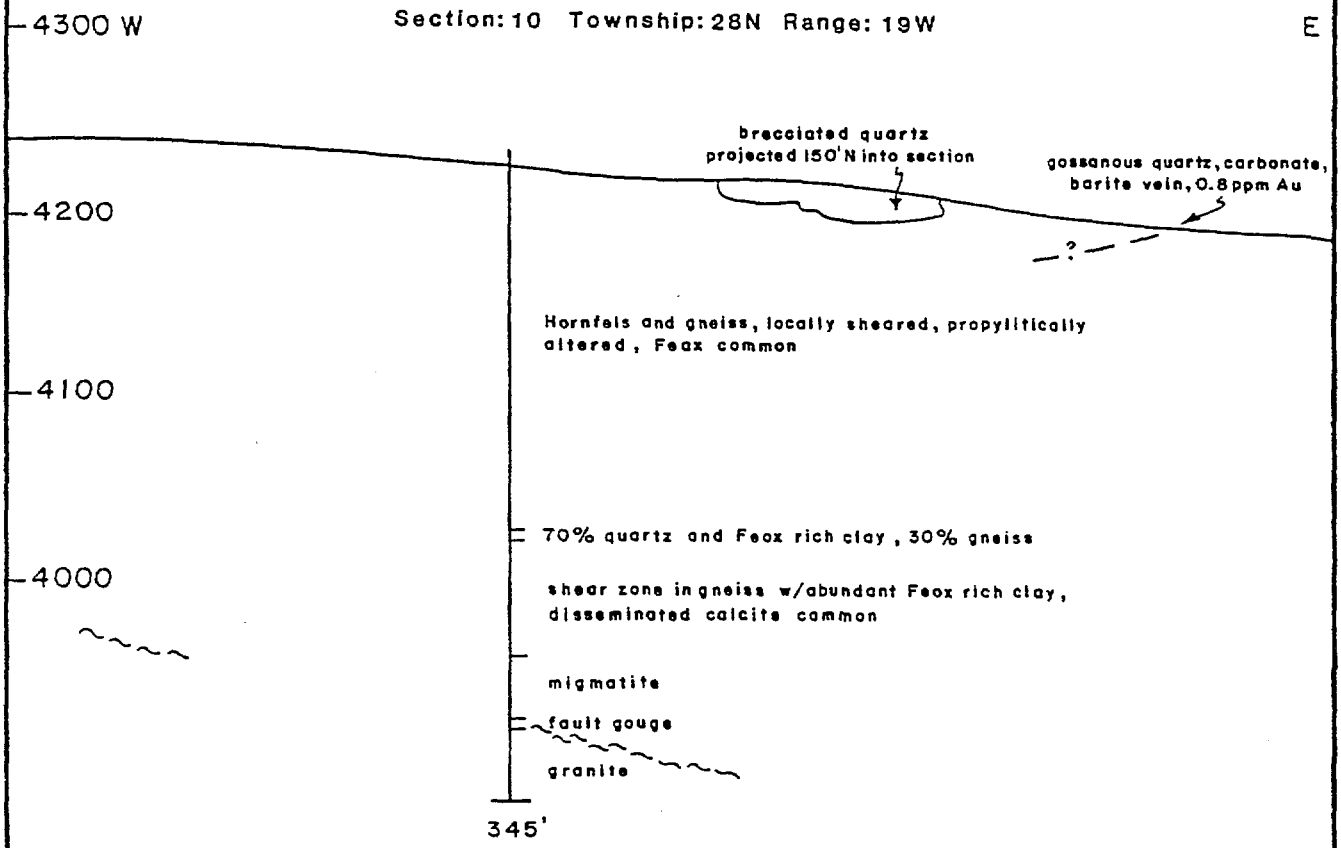
Drill Hole 72889

OWENS MINE PROPERTY

Mohave, Arizona

PREPARED BY: STEVE MORNIS

Section: 10 Township: 28N Range: 19W



Section 60° / Looking North

0 50 100

FEET

KNS 12/85

American Copper & Nickel Company, Inc.

ACNC-NDCO

DRILL SECTION

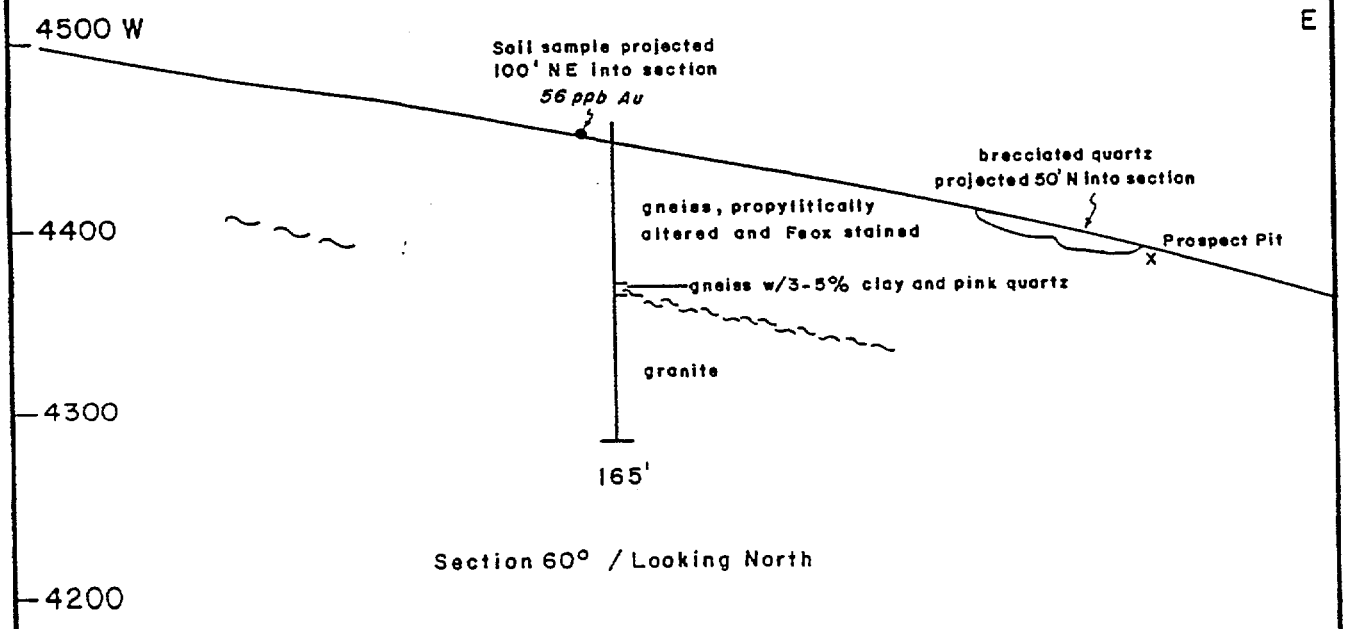
Drill Hole 72890

OWENS MINE PROPERTY

Mohave, Arizona

PREPARED BY: STEVE MORNIS

Section:10 Township: 28N Range: 19W



Section 60° / Looking North

0 50 100

FEET

KNS 12/85

ASSAYS CHK'D.....
DATE.....

BOREHOLE	PROPERTY	PROP#	LEVEL	DEPTH FEET	AZIMUTH DEG MIN	DIP DEG MIN	CO-ORD SYSTEM	LATITUDE FEET	DEPARTURE FEET	ELEVATION FEET	STARTED MO DY YR	COMPLETED MO DY YR
72887-0	OWENS MINE		SURF	365.00	161 00	-45 00		N 10640.	E 12560.	3940.	11 10 85	11 11 85

LOGGED BY STEVE MORNIS NTS # COUNTRY IS USA PROV/STATE IS ARIZONA GRD BRNG IS 181 00 SHT# ANOM#

ASSAY FOR * AU

COMMENTS

DRILLED RCR BY TONTO IN SEC 2. T28N, R19W, MOHAVE COUNTY.
ASSAYS DETERMINED FROM ONE ASSAY TON OF SAMPLE.

DEPTH FEET	LENGTH FEET	SAMPLE	MIN	ROCK	DESCRIPTION	ANG DEG	ELEMENT AU OZS
0.0	0.0				COLLAR		
5.00	5.00	FX169202		GN	GRANITIC GNEISS, FEOX STAINING 50%-90% OF SAMPLE, DISS CALC IN 10-20% OF FRAGS.GENERALLY IN ASSOC W/ FEOX.		-0.002
10.00	5.00	FX169203		GN	AS ABOVE		0.010
15.00	5.00	FX169204		GN	AS ABOVE		0.005
20.00	5.00	FX169205		GN	AS ABOVE WITH 30% MAFIC RICH GNEISS		-0.002
25.00	5.00	FX169206		GN	AS ABOVE		0.002
30.00	5.00	FX169207		GN	GRANITIC GNEISS, SLI BLEACHING OF MICAS, ALL FRAGS WELL FEOX STAINED		-0.002
35.00	5.00	FX169208		GN	AS TO 20FT, ALL FRAGS WELL FEOX STND		0.004
40.00	5.00	FX169209		GN	AS ABOVE		0.005
45.00	5.00	FX169210		GN	AS ABOVE		0.012
50.00	5.00	FX169211		GN	AS ABOVE		0.004
55.00	5.00	FX169212		GN	AS ABOVE		0.003
60.00	5.00	FX169213		GN	AS ABOVE		0.002
65.00	5.00	FX169214		GN	AS ABOVE		0.003
70.00	5.00	FX169215		GN	AS ABOVE		0.002
75.00	5.00	FX169216		GN	AS ABOVE, 1% FRESH GN		0.006
80.00	5.00	FX169217		GN	AS ABOVE, 5% FRESH GN		-0.002
85.00	5.00	FX169218		GN	AS ABOVE		0.002
90.00	5.00	FX169219		GN	AS ABOVE		0.009
95.00	5.00	FX169220		GN	AS TO 75FT		0.003
100.00	5.00	FX169221		GN	AS ABOVE		0.007
105.00	5.00	FX169222		GN	AS ABOVE		0.009
110.00	5.00	FX169223		GN	AS TO 80FT		-0.002
115.00	5.00	FX169224		GN	25% FEOX STND GRANITIC TO MAFIC GN, 75% FRESH UNOXDD GN		0.004
120.00	5.00	FX169225		GN	75% FEOX STND, 25% FRESH GN		0.009
125.00	5.00	FX169226		GN	AS ABOVE		0.004
130.00	5.00	FX169227		GN	AS ABOVE		0.002
135.00	5.00	FX169228		GN	AS TO 115FT		0.003
140.00	5.00	FX169229		GN	AS TO 120FT		-0.002
145.00	5.00	FX169230		DIA	MAFIC DIKE, POSSIBLY DIABASE, 50% FEOX STND		-0.002
150.00	5.00	FX169231		DIA	AS ABOVE		-0.002
155.00	5.00	FX169232		GN	AS TO 120FT		-0.002
160.00	5.00	FX169233		GN	AS ABOVE		-0.002
165.00	5.00	FX169234		DIA	AS TO 145FT		-0.002
170.00	5.00	FX169235		GN	AS TO 120FT		0.004

DEPTH FEET	LENGTH FEET	SAMPLE	MIN	ROCK	DESCRIPTION	ANO DEG	ELEMENT AU OZS
175.00	5.00	FX169236		GN	AS ABOVE		-0.002
180.00	5.00	FX169237		GN	AS TO 115FT		-0.002
185.00	5.00	FX169238		GN	GRANITIC-MAFIC GNEISS, 10% FEOX STND		-0.002
190.00	5.00	FX169239		DIA	AS TO 145FT		-0.002
195.00	5.00	FX169240		GN	GRANITIC TO MAFIC GN, SLI ALTD MICAS WELL FEOX STND		-0.002
200.00	5.00	FX169241		GN	50% OXDD, 50% FRESH GN		-0.002
205.00	5.00	FX169242		GN	AS ABOVE		-0.002
210.00	5.00	FX169243		GN	AS ABOVE		-0.002
215.00	5.00	FX169244		GN	AS ABOVE		-0.002
220.00	5.00	FX169245		GN	50% AS ABOVE, 50% MAFIC DIKE		-0.002
225.00	5.00	FX169246		DIA	FRESH MAFIC DIKE		-0.002
235.00	10.00	FX169247		GN	AS TO 200FT		-0.002
240.00	5.00	FX169248		GN	AS ABOVE		-0.002
245.00	5.00	FX169249		GN	80% FRESH, 20% SLI FEOX STND GNEISS		-0.002
250.00	5.00	FX169250		GN	AS ABOVE		-0.002
255.00	5.00	FX169251		GN	AS ABOVE		0.002
260.00	5.00	FX169252		GN	HIGHLY FEOX STND, SLI BLEACHING OF MICAS		0.003
265.00	5.00	FX169253		GN	AS ABOVE		-0.002
270.00	5.00	FX169254		GN	30% AS ABOVE, 70% FRESH GNEISS		-0.002
275.00	5.00	FX169255		GN	AS ABOVE		-0.002
280.00	5.00	FX169256		GN	95% AS TO 260FT, 5% PEG		-0.002
285.00	5.00	FX169257		GN	AS TO 260FT		0.003
290.00	5.00	FX169258		GN	AS TO 280FT		0.006
295.00	5.00	FX169259		GN	AS TO 260FT		0.003
300.00	5.00	FX169260		GN	AS ABOVE, MINOR FRESH GN		0.006
305.00	5.00	FX169261		GN	50% AS ABOVE, 50% PEGMATITE		0.002
310.00	5.00	FX169262		GN	GRANITIC TO MAFIC GNEISS, 50-75% FEOX STND FRAGS.		-0.002
315.00	5.00	FX169263		GN	AS ABOVE		0.005
320.00	5.00	FX169264		GN	AS ABOVE		0.003
325.00	5.00	FX169265		GN	AS ABOVE		0.003
330.00	5.00	FX169266		GN	AS ABOVE		0.003
335.00	5.00	FX169267		GN	AS ABOVE		0.002
340.00	5.00	FX169268		GN	AS ABOVE, 20% PEG		0.002
345.00	5.00	FX169269		GN	50% GNEISS, 50% PEG		-0.002
350.00	5.00	FX169270		PEG	QTZ, K-SPAR, MUSCOVITE PEGMATITE		0.002
355.00	5.00	FX169271		GN	FRESH PLAG,QTZ,BIO,HBL GNEISS, 5% FEOX STND FRAGS		-0.002
360.00	5.00	FX169272		GN	AS ABOVE		0.002
365.00	5.00	FX169273		GN	AS ABOVE		-0.002
					END OF HOLE		

NOTE SYMBOLS USED ARE :
* AFTER ASSAY VALUE INDICATES VALUE FOR LOST CORE WAS CALCULATED FROM ADJACENT SAMPLES
- IN FRONT OF ASSAY VALUE INDICATES THE VALUE IS LESS THAN

SUMMARY OF MINERALIZATION AND ROCK TYPES

FROM FEET	TO FEET	LENGTH FEET	MNZN	ROCK
0.0	0.0	0.0		
0.0	140.00	140.00		GN
140.00	150.00	10.00		DIA
150.00	160.00	10.00		GN
160.00	165.00	5.00		DIA
165.00	185.00	20.00		GN
185.00	190.00	5.00		DIA
190.00	220.00	30.00		GN
220.00	225.00	5.00		DIA
225.00	345.00	120.00		GN
345.00	350.00	3.00		PEG
350.00	365.00	15.00		GN

ASSAYS CHK'D.....
DATE.....

BOREHOLE	PROPERTY	PROP#	LEVEL	DEPTH FEET	AZIMUTH DEG MIN	DIP DEG MIN	CO-ORD SYSTEM	LATITUDE FEET	DEPARTURE FEET	ELEVATION FEET	STARTED MO DY YR	COMPLETED MO DY YR
72888-0	OWENS MINE		SURF	500.00	157 00	-45 00		N 11070.	E 12800.	3910.	11 07 85	11 10 85

LOGGED BY STEVE MORNIS NTS # COUNTRY IS USA PROV/STATE IS ARIZONA GRD BRNG IS 180 00 SHT# ANOM#

ASSAY FOR * AU

COMMENTS

DRILLED RCR BY TONTO IN SEC 2, T28N, R19W, MOHAVE COUNTY.
ASSAYS DETERMINED FROM ONE ASSAY TON OF SAMPLE.

DEPTH FEET	LENGTH FEET	SAMPLE	MIN	ROCK	DESCRIPTION	ANG DEG	ELEMENT AU OZS
0.0	0.0				COLLAR		
5.00	5.00			DUMP	DUMP MATERILA, NO SAMPLE		
10.00	5.00	FX169103		GN	FELD-QTZ-BIO-CHR GNEISS, MOD PROP ALTD, FEOX COMMON, LOCL HIGHLY BRKN		0.002
15.00	5.00	FX169104		GN	AS ABOVE		0.002
20.00	5.00	FX169105		GN	AS ABOVE		0.004
25.00	5.00	FX169106		GN	AS ABOVE, 1% QTZ		-0.002
30.00	5.00	FX169107		GN	AS TO 10FT		0.006
35.00	5.00	FX169108		GN	AS ABOVE		-0.002
40.00	5.00	FX169109		GN	AS ABOVE		0.003
45.00	5.00	FX169110		GN	70% AS ABOVE, 30% UNOXDD GN		0.004
50.00	5.00	FX169111		GN	AS ABOVE		0.003
55.00	5.00	FX169112		GN	AS TO 10FT		0.004
60.00	5.00	FX169113		GN	AS ABOVE		-0.002
65.00	5.00	FX169114		GN	AS ABOVE, 1% GRN-WHITE QTZ		-0.002
70.00	5.00	FX169115		GN	AS TO 10FT, XTLN CALC COATING ON FRACS 1%		-0.002
75.00	5.00	FX169116		GN	AS TO 45FT		0.002
80.00	5.00	FX169117		GN	AS TO 10FT W/ 30% GRN-WHITE QTZ		0.003
85.00	5.00	FX169118		GN	AS TO 10FT		0.003
90.00	5.00	FX169119		GN	AS ABOVE		0.003
95.00	5.00	FX169120		GN	AS ABOVE		-0.002
100.00	5.00	FX169121		GN	AS ABOVE, DECREASED FEOX		-0.002
105.00	5.00	FX169122		GN	AS ABOVE		0.004
110.00	5.00	FX169123		GN	AS TO 10FT		0.003
115.00	5.00	FX169124		GN	AS ABOVE		0.002
120.00	5.00	FX169125		GN	AS ABOVE		0.002
125.00	5.00	FX169126		GN	AS ABOVE		0.004
130.00	5.00	FX169127		GN	AS ABOVE		0.005
135.00	5.00	FX169128		GN	AS ABOVE WITH DECREASED FEOX		-0.002
140.00	5.00	FX169129		GN	AS ABOVE, FEOX+CALC NOW ONLY ALONG FRACS, ROCK IS OTHERWISE FRESH		-0.002
145.00	5.00	FX169130		GN	AS ABOVE		-0.002
150.00	5.00	FX169131		GN	AS TO 10FT		0.005
155.00	5.00	FX169132		GN	AS TO 140 FT W/ 15% FE STND-CALC BEARING GN FRAGS		0.003
160.00	5.00	FX169133		GN	AS ABOVE		-0.002
165.00	5.00	FX169134		GN	AS TO 10FT.		0.004
170.00	5.00	FX169135		GN	AS ABOVE		0.004
175.00	5.00	FX169136		GN	AS TO 155FT, 1% QTZ		-0.002

DEPTH FEET	LENGTH FEET	SAMPLE	MIN	ROCK	DESCRIPTION	ANG DEG	ELEMENT AU	ELEMENT OZS
180.00	5.00	FX169137		GN	AS ABOVE, LESS THAN 1% QTZ			-0.002
185.00	5.00	FX169138		PEG	QTZ,K-SPAR, MUSCOVITE PEGMATITE			0.005
190.00	5.00	FX169139		GN	10% AS ABOVE, 90% AS TO 155FT			0.003
195.00	5.00	FX169140		GN	PLAG-QTZ-BIO-HBL? GNEISS, DISS CALC COMMON, 5% FEOX			-0.002
200.00	5.00	FX169141		GN	60% AS ABOVE, 40% PEG AS TO 185FT			-0.002
205.00	5.00	FX169142		GN	AS TO 155FT TO BIO SCHIST			-0.002
210.00	5.00	FX169143		GN	AS ABOVE			-0.002
215.00	5.00	FX169144		GN	AS TO 195 FT W/ 73% FEOX STND FRAGS 1% QTZ			0.005
220.00	5.00	FX169145		GN	AS TO 195FT 1% QTZ			-0.002
225.00	5.00	FX169146		GN	AS ABOVE, RARE PY NOTED			-0.002
230.00	5.00	FX169147		GN	AS TO 215FT W/ RARE SECONDARY COPPER CSRBONATE			0.005
235.00	5.00	FX169148		GN	AS TO 215FT W/ CALC COATINGS ON FRCS COMMON, MANY LARGE CHIPS, BROKEN RK.			-0.002
240.00	5.00	FX169149		GN	AS TO 195FT W/ 90% FEOX STND FRAGS, 1% QTZ+PEG			0.008
245.00	5.00	FX169150		GN	AS ABOVE, 15% QTZ+PEG			0.003
250.00	5.00	FX169151		GN	AS TO 195FT W/ 1% MAFIC DIKE			-0.002
255.00	5.00	FX169152		DIA	F.G. MAFIC ROCK, POSS DIABASE DIKE			-0.002
260.00	5.00	FX169153		DIA	AS ABOVE			-0.002
265.00	5.00	FX169154		GN	95% AS TO 215FT,5% LAMP			0.003
270.00	5.00	FX169155		GN	BIO RICH GN, 70% FEOX STND FRAGS W/ DISS CALC			-0.002
275.00	5.00	FX169156		GN	AS ABOVE, 5% FEOX STND FRAGS			-0.002
280.00	5.00	FX169157		GN	AS ABOVE, 15% FEOX STND FRAGS			0.002
285.00	5.00	FX169158		GN	AS ABOVE			-0.002
290.00	5.00	FX169159		GN	AS ABOVE W/ 50% FEOX STND FRAGS			-0.002
295.00	5.00	FX169160		GN	AS ABOVE W/ 40% FEOX STND FRAGS			0.002
300.00	5.00	FX169161		GN	AS TO 280FT			0.005
305.00	5.00	FX169162		GN	AS TO 295FT W/ 2% QTZ			-0.002
310.00	5.00	FX169163		GN	AS ABOVE			0.005
315.00	5.00	FX169164		GN	HIGHLY FEOX STND, SLI ARG ALTD BIO RICH GNEISS, 10% QTZ			0.007
320.00	5.00	FX169165		GN	AS ABOVE			0.023
325.00	5.00	FX169166		GN	BIO RICH GNEISS			0.016
330.00	5.00	FX169167		DIA	F.G. MAFIC ROCK,POSS DIABASE,HEM COMMON, 10% QTZ			0.016
335.00	5.00	FX169168		GN	25% AS ABOVE, 75% AS TO 280FT			0.012
340.00	5.00	FX169169		GN	50% FRESH, 50% FEOX STND GNEISS			0.010
345.00	5.00	FX169170		GN	HIGHLY FEOX STND, SLI ARG ALTD GN, 10% QTZ			0.028
350.00	3.00	FX169171		GN	AS ABOVE			0.006
355.00	5.00	FX169172		GN	AS ABOVE, 5% QTZ			0.002
360.00	5.00	FX169173		GN	AS TO 343FT			0.005
365.00	5.00	FX169174		GN	AS ABOVE W/ 2% QTZ			0.004
370.00	5.00	FX169175		GN	AS ABOVE			0.002
375.00	5.00	FX169176		GN	AS TO 340FT			0.004
380.00	5.00	FX169177		GN	BIO RICH GNEISS W/ 15% FE STND FRAGS			-0.002
385.00	5.00	FX169178		GN	AS TO 375FT			-0.002
390.00	5.00	FX169179		GN	AS TO 380FT,73% FE STND FRAGS, RARE XTLN CALC ON FRACS			-0.002
395.00	5.00	FX169180		PEG	50% PEG, 50% FRESH AND FE STND GN.			-0.002
400.00	5.00	FX169181		GN	FRESH GN, 2% FEOX, RARE CALC ON FRCS			-0.002

0.105/6 = 0.0175

DEPTH FEET	LENGTH FEET	SAMPLE	MIN	ROCK	DESCRIPTION	ANG DEG	ELEMENT AU OZS
405.00	5.00	FX169182		GN	AS ABOVE		-0.002
410.00	3.00	FX169183		GN	AS TO 400FT, 5% FEOX		-0.002
415.00	5.00	FX169184		GN	AS ABOVE, 15% FEOX STND FRGS		-0.002
420.00	5.00	FX169185		PEG	70% MUSCOVITE,K-SPAR,QTZ PEG, 30% AS ABOVE		-0.002
425.00	5.00	FX169186		GN	AS TO 340FT		-0.002
430.00	5.00	FX169187		GN	BIO RICH GN, 75% OF FRAGS FEOX STND		-0.002
435.00	5.00	FX169188		GN	AS ABOVE, 25% FEOX STND FRAGS		-0.002
440.00	5.00	FX169189		GN	AS ABOVE		-0.002
445.00	5.00	FX169190		GN	AS ABOVE		0.002
450.00	5.00	FX169191		MGMT	ALTERNATING BIO SCHIST AND GRANITIC ZONES		0.006
455.00	5.00	FX169192		MGMT	AS ABOVE		-0.002
460.00	5.00	FX169193		GN	PLAG-QTZ-BIO-HBL? GN, 2% FEOX STND		-0.002
465.00	5.00	FX169194		GN	AS ABOVE, MINOR FEOX		-0.002
470.00	5.00	FX169195		GN	AS ABOVE		-0.002
475.00	5.00	FX169196		GN	AS ABOVE		0.004
480.00	5.00	FX169197		GN	AS TO 460FT		-0.002
485.00	5.00	FX169198		GN	AS TO 435FT		-0.002
490.00	5.00	FX169199		GN	AS TO 465FT		-0.002
495.00	5.00	FX169200		GN	AS ABOVE		-0.002
500.00	5.00	FX169201		GN	AS ABOVE		-0.002
					END OF HOLE		

NOTE SYMBOLS USED ARE :
* AFTER ASSAY VALUE INDICATES VALUE FOR LOST CORE WAS CALCULATED FROM ADJACENT SAMPLES
- IN FRONT OF ASSAY VALUE INDICATES THE VALUE IS LESS THAN

SUMMARY OF MINERALIZATION AND ROCK TYPES

FROM FEET	TO FEET	LENGTH FEET	MNZN	ROCK
0.0	0.0	0.0		
0.0	5.00	5.00		DUMP
5.00	180.00	175.00		GN
180.00	185.00	5.00		PEG
185.00	250.00	65.00		GN
250.00	260.00	10.00		DIA
260.00	325.00	65.00		GN
325.00	330.00	5.00		DIA
330.00	390.00	60.00		GN
390.00	395.00	5.00		PEG
395.00	415.00	20.00		GN
415.00	420.00	5.00		PEG
420.00	445.00	25.00		GN
445.00	455.00	10.00		MGMT
455.00	500.00	45.00		GN

INCO LIMITED FIELD EXPLORATION BOREHOLE LOG DATE PROCESSED FEBRUARY 7, 1986

ASSAYS CHK'D.....
DATE.....

BOREHOLE	PROPERTY	PROP#	LEVEL	DEPTH FEET	AZIMUTH DEG MIN	DIP DEG MIN	CO-ORD SYSTEM	LATITUDE FEET	DEPARTURE FEET	ELEVATION FEET	STARTED MO DY YR	COMPLETED MO DY YR
72889-0	OWENS MINE		SURF	345.00	000 00	-90 00		N 13050.	E 10470.	4460.	11 06 85	11 06 85

LOGGED BY STEVE MORNIS NTS # COUNTRY IS USA PROV/STATE IS ARIZONA GRD BRNG IS 000 00 SHT# ANOM#

ASSAY FOR * AU

COMMENTS

DRILLED RCR BY TONTO IN SEC 10, T28N, R19W, MOHAVE COUNTY.
ASSAYS DETERMINED FROM ONE ASSAY TON OF SAMPLE.

DEPTH FEET	LENGTH FEET	SAMPLE	MIN	ROCK	DESCRIPTION	ANO DEG	ELEMENT AU OZS
0.0	0.0				COLLAR		
5.00	5.00	FX169034		GN	QTZ,PLAG,BIO,CHL GN, DISS CALC FROM MOD PROP ALTN, FEOX COMMON AS DISSEMINATIONS AND ALONG FRACS. ROCK OFTER EXHIBITS A SHEARED TEXTURE.		-0.002
10.00	5.00	FX169035		GN	AS ABOVE		0.002
15.00	5.00	FX169036		GN	AS ABOVE		0.003
20.00	5.00	FX169037		GN	AS ABOVE		-0.002
25.00	5.00	FX169038		GN	AS ABOVE		-0.002
30.00	5.00	FX169039		GN	AS ABOVE		-0.002
35.00	5.00	FX169040		GN	FINE GRAINED UNIFORM TEXTURED GREY-GRN ROCK OF MOSTLY FELD,BIO,CHL+HBL? 1% FEOX ALONG FRACS AND AS DISSEMINATIONS, CALC OFTER ASSOC W/ FEOX.		-0.002
40.00	5.00	FX169041		GN	AS ABOVE		0.010
45.00	5.00	FX169042		GN	AS ABOVE		-0.002
50.00	5.00	FX169043		GN	AS ABOVE		0.002
55.00	5.00	FX169044		GN	AS ABOVE W/ 20% FEOX STND FRAGS		0.004
60.00	5.00	FX169045		GN	AS ABOVE		0.002
65.00	5.00	FX169046		GN	AS ABOVE W/ 1% CALC		0.002
70.00	5.00	FX169047		GN	AS TO 35FT W/ 30% FEOX STND FRAGS		-0.002
75.00	5.00	FX169048		GN	AS ABOVE W/ 50% STND FRAGS		0.002
80.00	5.00	FX169049		GN	AS TO 35FT, 10% FEOX STND FRAGS		0.009
85.00	5.00	FX169050		GN	AS ABOVE		0.002
90.00	5.00	FX169051		GN	AS ABOVE		-0.002
95.00	5.00	FX169052		GN	AS TO 35FT W/ 3% FEOX STND FRAGS		-0.002
100.00	5.00	FX169053		GN	AS TO 35FT W/ 3% MILKY QTZ		0.002
105.00	5.00	FX169054		GN	AS ABOVE		-0.002
110.00	5.00	FX169055		GN	AS ABOVE		-0.002
115.00	5.00	FX169056		GN	AS ABOVE		-0.002
120.00	5.00	FX169057		GN	AS ABOVE		0.003
125.00	5.00	FX169058		GN	AS ABOVE		0.003
130.00	5.00	FX169059		GN	AS ABOVE		0.002
135.00	5.00	FX169060		GN	AS ABOVE		-0.002
140.00	5.00	FX169061		GN	AS ABOVE		-0.002
145.00	5.00	FX169062		GN	AS ABOVE		-0.002
150.00	5.00	FX169063		GN	AS ABOVE W/ 5% QTZ		-0.002
155.00	5.00	FX169064		GN	AS ABOVE W/ 20% QTZ		-0.002
160.00	5.00	FX169065		GN	AS ABOVE W/ 10% QTZ		-0.002
165.00	5.00	FX169066		GN	AS ABOVE		-0.002

DEPTH FEET	LENGTH FEET	SAMPLE	MIN	ROCK	DESCRIPTION	ANG DEG	ELEMENT AU OZS
170.00	5.00	FX169067		GN	AS TO 35FT W/ MOSTLY CHLR OVER BIO		-0.002
175.00	5.00	FX169068		GN	AS ABOVE W/ 10% MILKY QTZ		0.002
180.00	5.00	FX169069		GN	AS ABOVE		0.002
185.00	5.00	FX169070		GN	AS ABOVE		0.002
190.00	5.00	FX169071		GN	AS ABOVE		-0.002
195.00	5.00	FX169072		GN	BIO-CHLR-PLAG-QTZ? F.G. GNEISS , 1% QTZ, RARE PY.		-0.002
200.00	5.00	FX169073		GN	AS ABOVE		-0.002
205.00	5.00	FX169074		QTZ	30% AS ABOVE, 70% QTZ AND FE RICH CLAY		-0.002
210.00	5.00	FX169075		GN	AS TO 195FT		-0.002
215.00	5.00	FX169076		FLT	50% AS ABOVE 50% AS TO 220FT		-0.002
220.00	5.00	FX169077		FLT	HEM RICH F.G. COMPACT ROCK, EITHER COMPACT FAULT GOUGE OR F.G., HIGHLY ALTD GN, DISS CALC COMMON, 1% FEOX AND SID? VNLTS.		-0.002
225.00	5.00	FX169078		FLT	AS ABOVE		-0.002
230.00	5.00	FX169079		FLT	AS ABOVE		-0.002
235.00	5.00	FX169080		FLT	AS ABOVE		-0.002
240.00	5.00	FX169081		GN	GNEISS TO MIGMATITE, FEOX COMMON AS DISSEMINATIONS AND ALONG FRACS.		0.003
245.00	5.00	FX169082		GN	AS ABOVE		0.003
250.00	5.00	FX169083		FLT	MIXED BIO SCHIST, GRN-BRN CLAY & QTZ		-0.002
255.00	5.00	FX169084		FLT	AS ABOVE, FEOX COMMON		-0.002
260.00	5.00	FX169085		MGMT	MIX OF BIO SCHIST AND GRANITIC FRAGS FEOX&CALC COMMON IN SCHIST FRAGS		-0.002
265.00	5.00	FX169086		FLT	AS TO 255FT		-0.002
270.00	5.00	FX169087		MGMT	AS TO 260FT,		-0.002
275.00	5.00	FX169088		MGMT	AS TO 260FT W/ DECREASED FEOX&CALC		-0.002
280.00	5.00	FX169089		MGMT	AS ABOVE		-0.002
285.00	5.00	FX169090		MGMT	AS ABOVE		-0.002
290.00	5.00	FX169091		MGMT	AS ABOVE		-0.002
295.00	5.00	FX169092		MGMT	AS ABOVE		-0.002
300.00	5.00	FX169093		MGMT	AS ABOVE		-0.002
305.00	5.00	FX169094		FLT	HEM RICH F.G. UNIFORM ROCK,PROB FAULT GOUGE		-0.002
310.00	5.00	FX169095		GR	LIGHT GREEN MUSCOVITE-BIO GRANITE, SPOTTY FEOX AFTER BIOTITE		-0.002
315.00	5.00	FX169096		GR	AS ABOVE		-0.002
320.00	5.00	FX169097		GR	AS ABOVE		-0.002
325.00	5.00	FX169098		GR	AS ABOVE		-0.002
330.00	5.00	FX169099		GR	AS ABOVE		-0.002
335.00	5.00	FX169100		GR	AS ABOVE		-0.002
340.00	5.00	FX169101		GR	AS ABOVE		-0.002
345.00	5.00	FX169102		GR	AS ABOVE END OF HOLE		-0.002

NOTE SYMBOLS USED ARE :
* AFTER ASSAY VALUE INDICATES VALUE FOR LOST CORE WAS CALCULATED FROM ADJACENT SAMPLES
- IN FRONT OF ASSAY VALUE INDICATES THE VALUE IS LESS THAN

SUMMARY OF MINERALIZATION AND ROCK TYPES

FROM FEET	TO FEET	LENGTH FEET	MNZN	ROCK
0.0	0.0	0.0		
0.0	200.00	200.00		GN
200.00	205.00	5.00		QTZ
205.00	210.00	5.00		GN
210.00	235.00	25.00		FLT
235.00	245.00	10.00		GN
245.00	255.00	10.00		FLT
255.00	260.00	5.00		MGMT
260.00	263.00	5.00		FLT
265.00	300.00	35.00		MGMT
300.00	305.00	5.00		FLT
305.00	345.00	40.00		GR

ASSAYS CHK'D.....
DATE.....

BOREHOLE	PROPERTY	PROP#	LEVEL	DEPTH FEET	AZIMUTH DEG MIN	DIP DEG MIN	CO-ORD SYSTEM	LATITUDE FEET	DEPARTURE FEET	ELEVATION FEET	STARTED MO DY YR	COMPLETED MO DY YR
72890-0	OWENS MINE		SURF	165.00	000 00	-90 00		N 10600.	E 9400.	4460.	11 06 85	11 06 85

LOGGED BY STEVE MORNIS NTS # COUNTRY IS USA PROV/STATE IS ARIZONA GRD BRNG IS 000 00 SHT# ANOM#

ASSAY FOR * AU

COMMENTS
DRILLED RCR BY TONTO IN SEC 10, T23N, R19W, MOHAVE COUNTY.
ASSAYS DETERMINED FROM ONE ASSAY TON OF SAMPLE.

DEPTH FEET	LENGTH FEET	SAMPLE	MIN	ROCK	DESCRIPTION	ANG DEG	ELEMENT AU OZS
0.0	0.0				COLLAR		
5.00	5.00	FX169001		GN	TALUS OF GNEISS		-0.002
10.00	5.00	FX169002		GN	AS ABOVE		-0.002
15.00	5.00	FX169003		GN	AS ABOVE		0.002
20.00	5.00	FX169004		GN	QTZ,FELD,BIO,CHL GN, MOD PROP ALTD, MUCH OF THE BIO HAS BEEN ALTD TO CHL. FEOX COLORATION IS COMMON AS DISSEMINATIONS AND ALONG FRACS, ROCK OFTEN EXHIBITS A SHEARED TEXTURE.		0.013
25.00	5.00	FX169005		GN	AS ABOVE		0.006
30.00	5.00	FX169006		GN	AS ABOVE		0.004
35.00	5.00	FX169007		GN	AS ABOVE		-0.002
40.00	5.00	FX169008		GN	AS ABOVE		-0.002
45.00	5.00	FX169009		GN	AS ABOVE WITH 3% LIMO RICH CLAY		-0.002
50.00	3.00	FX169010		GN	AS ABOVE		0.007
55.00	5.00	FX169011		GN	AS ABOVE		-0.002
60.00	5.00	FX169012		GN	AS ABOVE		-0.002
65.00	5.00	FX169013		GN	AS ABOVE		0.004
70.00	5.00	FX169014		GN	AS ABOVE, DECREASING CHL/BIO RATIO		0.002
75.00	5.00	FX169015		GN	AS ABOVE		0.004
80.00	5.00	FX169016		GN	AS ABOVE		-0.002
85.00	5.00	FX169017		GN	AS ABOVE W/ 3-5% PINK QTZ, 10% CLAY		-0.002
90.00	5.00	FX169018		GR	QTZ RICH MUSCOVITE-BIOTITE GRANITE~		-0.002
95.00	5.00	FX169019		GR	AS ABOVE		-0.002
100.00	5.00	FX169020		GR	AS ABOVE		0.003
105.00	5.00	FX169021		GR	AS ABOVE		-0.002
110.00	5.00	FX169022		GR	AS ABOVE		-0.002
115.00	5.00	FX169023		GR	AS ABOVE		-0.002
120.00	5.00	FX169024		GR	AS ABOVE		-0.002
125.00	5.00	FX169025		GR	AS ABOVE		-0.002
130.00	5.00	FX169026		GR	AS ABOVE		0.003
135.00	5.00	FX169027		GR	AS ABOVE		0.003
140.00	5.00	FX169028		GR	AS ABOVE		0.002
145.00	5.00	FX169029		GR	AS ABOVE		0.004
150.00	5.00	FX169030		GR	AS ABOVE		0.003
155.00	5.00	FX169031		GR	AS ABOVE		-0.002
160.00	5.00	FX169032		GR	AS ABOVE		0.003
165.00	5.00	FX169033		GR	AS ABOVE		-0.002
					END OF HOLE		

NOTE SYMBOLS USED ARE :
* AFTER ASSAY VALUE INDICATES VALUE FOR LOST CORE WAS CALCULATED FROM ADJACENT SAMPLES

SUMMARY OF MINERALIZATION AND ROCK TYPES

FROM FEET	TO FEET	LENOTH FEET	MNZN	ROCK
0.0	0.0	0.0		
0.0	85.00	85.00		GN
85.00	165.00	80.00		GR

6/87 JDS

RESULTS OF 1987 DRILLING
OWENS PROJECT
MOHAVE COUNTY, ARIZONA
NDCO–ACNC JOINT VENTURE

Steve Mornis
ACNC-Denver
June 1987

SUMMARY

A total of 665 feet of reverse circulation rotary drilling in three holes was completed within the northeast quarter of Section 2 of the Owens Project Area during May, 1987. The holes were designed to test a gravel-covered portion of the major east-west fault zone in Section 2. This fault zone contains low-grade gold mineralization over about a mile of strike length, based on Mapco and ACNC drilling and sampling. Results of 1987 drilling indicate that gold mineralization does continue locally under gravel cover but at very low grades. DH 76001 intersects several 15-55 foot zones containing 0.05-0.17 ppm gold. DH 76002 values are all below detection, and DH 76003 contains four five-foot samples with 0.03-0.18 ppm gold.

With both the exposed ground and gravel-covered areas of Section 2 well tested, all portions of the original Owens Mine Property have now been deemed of no further interest. It is therefore recommended that the ACNC-NERCO PA Joint Venture be terminated.

INTRODUCTION

This report summarizes results of reverse circulation rotary drilling conducted within the Owens Mine Project Area during 1987. A review of regional and property geology and previous work conducted by ACNC is included in **Results of Exploration During 1985, Owens Mine Property, December 1985**, by Steve Mornis.

A total of 665 feet of drilling in three holes was completed between May 14, 1987 and May 21, 1987. The original proposal called for between 1,000 and 2,000 feet of drilling, but equipment problems and bad ground forced the abandonment of two 500-foot holes at approximately 100 feet each.

JUSTIFICATION

Drill holes in the main Owens Mine area (northwest quarter, section 1) and in central portion of section 2 have intersected disseminated gold mineralization in the footwall zone of the high-angle, east-west structure. At the Owens Mine, several Mapco holes contain up to 20 feet of 0.09 oz/ton gold, and ACNC's 1985 DH 72888 in section 2 contains 30 feet of 0.018 oz/ton. The exposed footwall gneisses between the two drilled areas commonly exhibits shearing, iron staining and propylitic alteration with extensive gold in soil anomalies (50-200 ppb). Rock samples from the zone contain up to 60 ppm gold but only in thin-quartz-copper veinlets. Chip samples of altered iron-stained gneiss contain background gold values.

The only area of Section 2 remaining with possible potential for higher grade, near surface mineralization is the gravel-covered projection of the footwall zone in the northeast quarter of Section 2.

1987 DRILL RESULTS

DH 76001, TD 455 feet, 11100N, 14300E, Bearing 160°, Dip 48°, (Figure 3)

Drill hole 76001 was drilled to test the intersection of the main east-west fault with a northeast trending cross fault below gravel cover. Both faults have coincident gold in soil anomalies which terminate at the gravel contact.

The hole encounters 132 feet of feldspar-quartz-biotite-hornblende gneiss within the hanging wall. The major east-west fault zone is intersected between 132 and 134 feet and consists of limonite-rich clay gouge. Below the fault zone (134-363 feet) are footwall gneisses, schists and a mafic dike (263-278)). The cross fault is intersected at 363 feet and also consists of limonite-rich clay gouge. Below this fault, to 455 feet, the hole intersects biotite schist and felsic gneiss.

Results of previous drilling have indicated that the hanging wall is not enriched in gold. This is confirmed in DH 76001 where the 132 feet of hanging wall gneiss contains less than detection limit gold values. From the fault down through the footwall, the hole contains slight gold enrichment with values ranging from below detection to 0.3 ppm. The best intervals are 0.16 ppm/75 feet, 0.17 ppm/28 feet and 0.14 ppm/55 feet with no distinguishing lithologic features noted.

DH 76002. TD 100 feet, 10700N, 15250E, Bearing 160°, Dip 54°, (Figure 4)

Drill hole 76002 was designed to test the southern portion of the foot-wall zone which hosts three anomalous rock samples (60.0, 0.45 and 0.16 ppm gold), several +50 ppb soil anomalies and scattered quartz vein subcrop. The hole is collared in Quaternary gravel. A total depth of 300-500 feet was intended for the hole, but bad ground forced abandonment at 100 feet.

DH 76002 encounters five feet of Quaternary gravels before intersecting 67 feet of feldspar-quartz-biotite-hornblende gneiss. A clay-rich fault zone occurs from 67 to 70 feet. Below the fault is another ten feet of gneiss and twenty feet of mafic dike to the bottom of the hole.

Gold values are below detection level throughout the hole.

DH 76003, TD 110 feet, 10300N, 14900E, Bearing 160°, Dip 55°, (Figure 5)

DH 76003 was drilled to test the east-west fault in an area with extensive gravel cover. Several Mapco holes drilled to the northeast of 76003 were barren but are believed to have been collared within the hanging wall. The total depth of DH 76003 was intended to be 300-500 feet, but bad ground forced abandonment after 110 feet of drilling.

The upper 25 feet of the hole consists of unconsolidated Quaternary gravel. From 25 to 40 feet are highly weathered gneisses with abundant limonite-rich clay and 10% quartz veinlets. Below the weathered gneisses, to the bottom of the hole are mafic and felsic gneisses with between 1% and 20% iron oxide coloration.

The upper gneiss with limonite-rich clay and quartz veinlets is slightly enriched in gold with three 5-foot samples containing 0.03, 0.12 and 0.05 ppm. Values throughout the remainder of the hole are below detection, except from 50-55 feet with 0.18 ppm gold.

DISCUSSION AND RECOMMENDATIONS

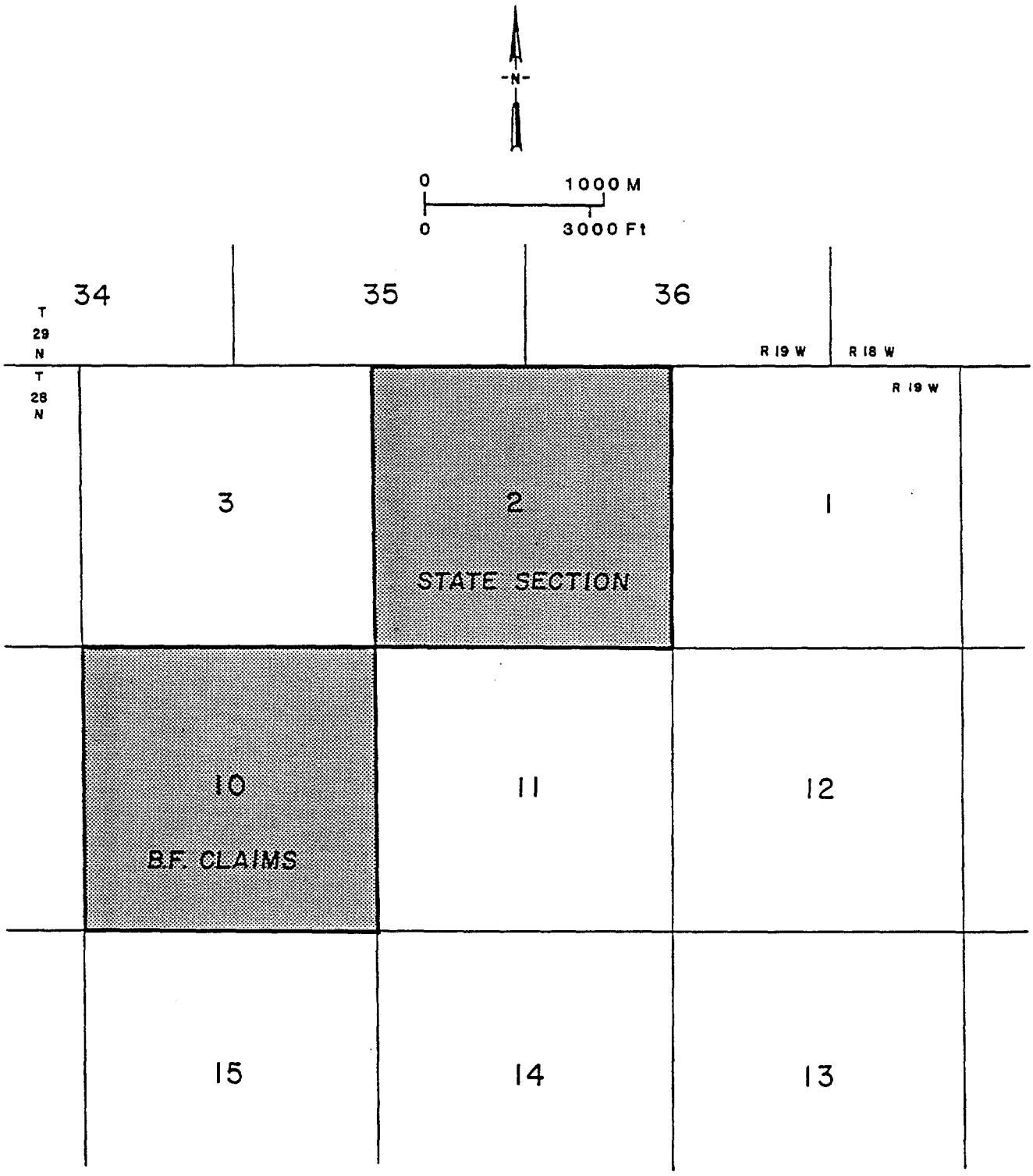
The 1987 Owens Property drill program was designed to test the gravel-covered areas between low-grade gold mineralization encountered at the Owens Mine area and central Section 2. Results of 1987 drilling range from less than detection to 0.009 oz/t. Even though drill holes 76002 and 76003 did not reach target depth, it is highly improbable that significant mineralization occurs in the gravel-covered area between the drill holes completed to date. With both the exposed ground and the gravel-covered areas tested, there is no remaining potential for significant gold mineralization within Section 2.

All of the ground within the original Owens Mine Project area has now been adequately tested and found to be of no further interest. It is therefore recommended that the ACNC-NERCO PA joint venture be terminated. Nerco was advised of ACNC's decision in early June.

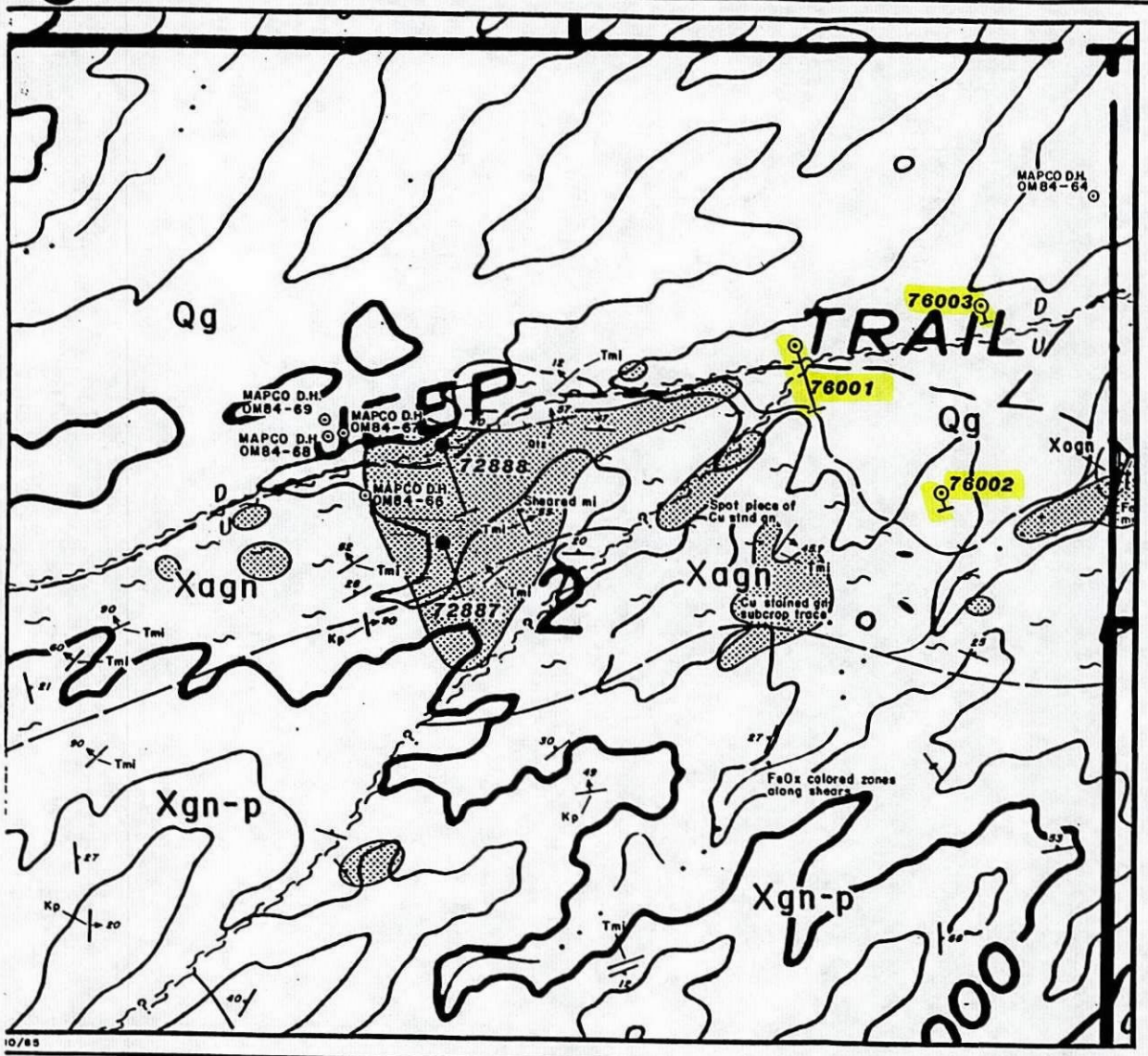
American Copper & Nickel Company, Inc.

OWENS MINE PROPERTY CLAIMS

Mohave County, Arizona



June 1987



American Copper and Nickel Company, Inc.
ACNC - NDCO

SECTION 2
DRILL HOLE LOCATIONS

Owens Mine Property
Mohave County, Arizona

⊙ 1987 Drill hole location

● 1985 Drill hole location

Gold in soil anomalies >50 ppb

For explanation of geology, please refer to Plate 1, "Geology of the Owens Mine Propert ."

-N-

500 0 500 1000
FEET

Figure

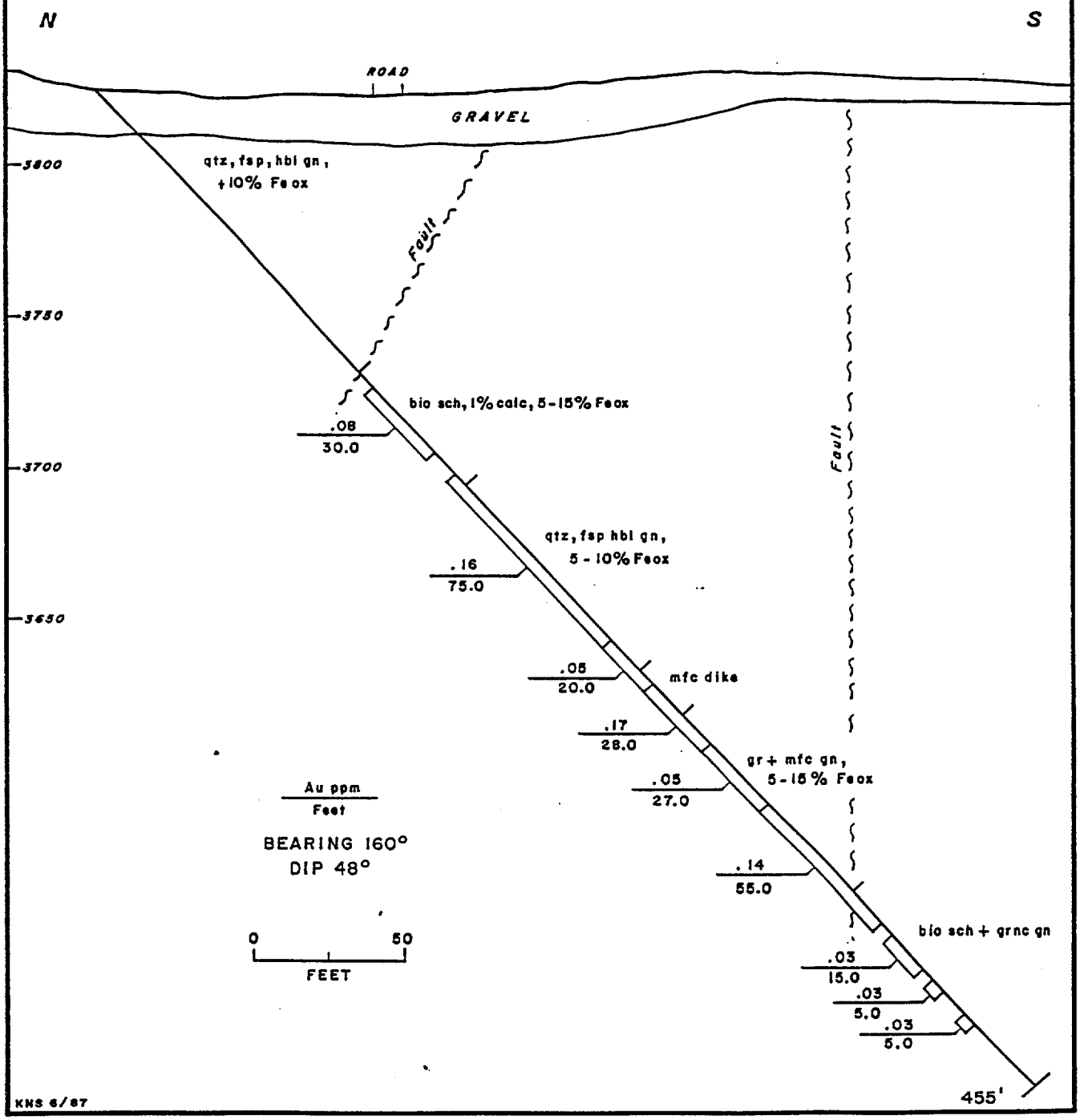
American Copper & Nickel Company, Inc.

ACNC-NDCO

DRILL SECTION
Drill Hole No. 76001

OWENS MINE PROPERTY
Mohave County, Arizona

PREPARED BY: STEVE MORNIS



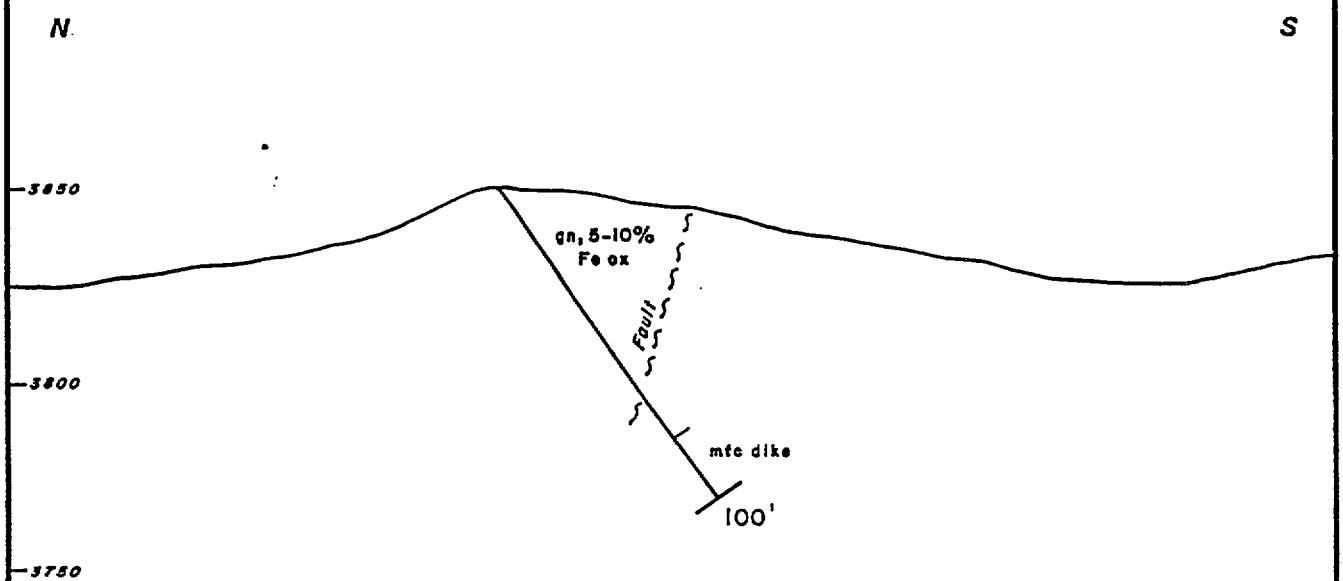
American Copper & Nickel Company, Inc.

ACNC–NDCO

DRILL SECTION
Drill Hole No. 76002

OWENS MINE PROPERTY
Mohave County, Arizona

PREPARED BY: STEVE MORNIS



BEARING 160°
DIP 54°

0 50
FEET

Note: All drill samples <.02 ppm Au.

KNS 6/87

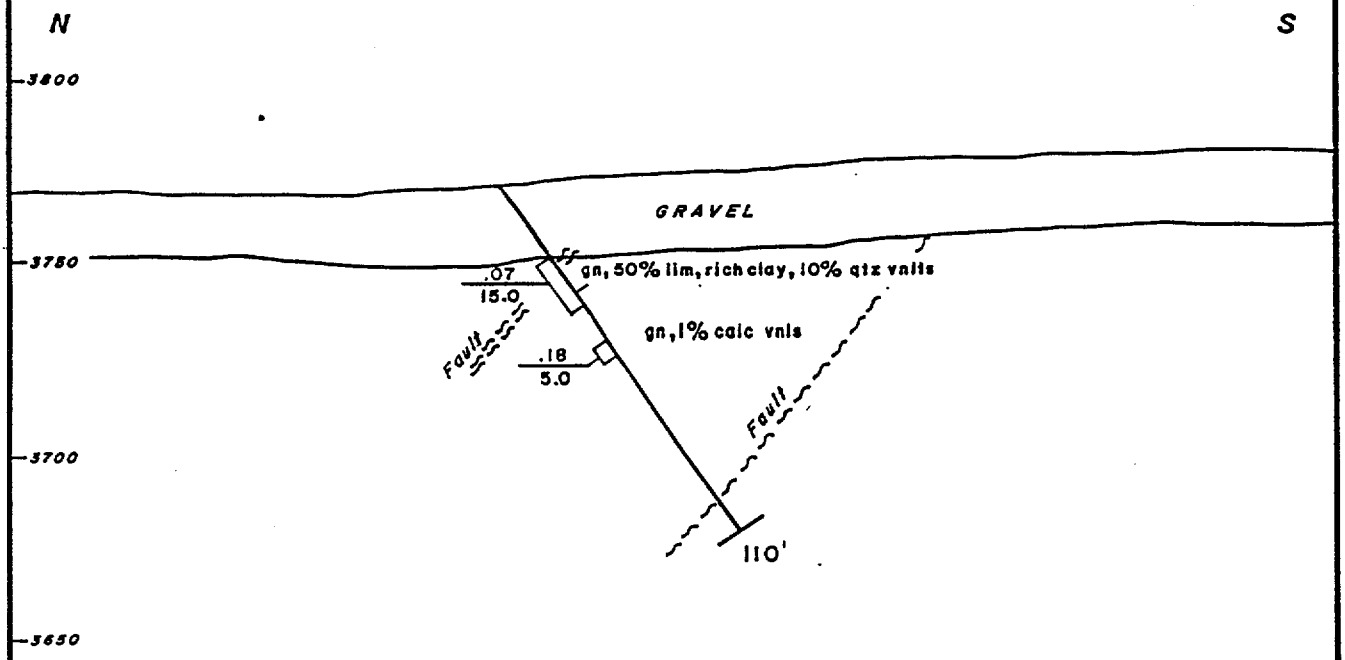
American Copper & Nickel Company, Inc.

ACNC-NDCO

DRILL SECTION
Drill Hole No. 76003

OWENS MINE PROPERTY
Mohave County, Arizona

PREPARED BY: STEVE MORNIS

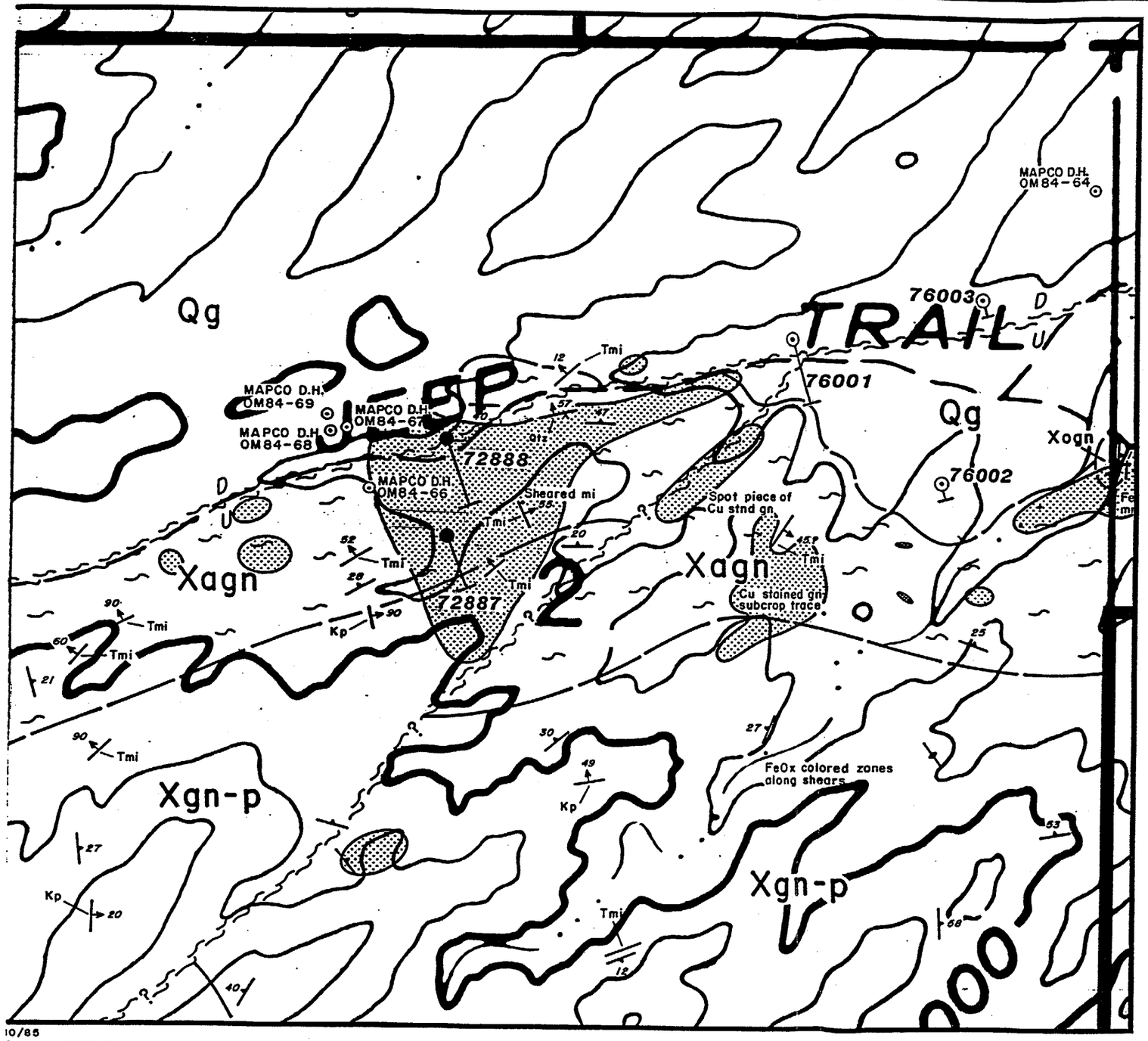


Au ppm
Feet

BEARING 160°
DIP 55°

0 .50
FEET

KNS 6/87



American Copper and Nickel Company, Inc.
ACNC - NDCO

SECTION 2
DRILL HOLE LOCATIONS

Owens Mine Property
Mohave County, Arizona

⊙ 1987 Drill hole location

● 1985 Drill hole location

Gold in soil anomalies >50 ppb

For explanation of geology, please refer to Plate 1, "Geology of the Owens Mine Propert ."

-N-

500 0 500 1000
FEET

Figure

OWENS PROJECT
1987 DRILLING, GOLD VALUES
****

HOLE NUMBER	FOOTAGE	SAMPLE #	Au PPM	REMARKS
76001	0-15	NO SAMPLE		Overburden gravels
	15-20	FX169830	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	20-25	FX169831	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	25-30	FX169832	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	30-35	FX169833	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	35-40	FX169834	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	40-45	FX169835	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	45-50	FX169836	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	50-55	FX169837	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	55-60	FX169838	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	60-65	FX169839	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	65-70	FX169840	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	70-75	FX169841	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	75-80	FX169842	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	80-85	FX169843	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	85-90	FX169844	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	90-95	FX169845	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	95-100	FX169846	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	100-105	FX169847	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	105-110	FX169848	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	110-115	FX169849	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	115-120	FX169850	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	120-125	FX169851	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	125-130	FX169852	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	130-135	FX169853	<.02	As above, clay rich fault 132-134 ft.
	135-140	FX169854	0.04	Bio-feld-qtz schist, 1% calc, 15% Feox
	140-145	FX169855	0.13	Bio-feld-qtz schist, 1% calc, 15% Feox
	145-150	FX169856	0.08	Bio-feld-qtz schist, 1% calc, 15% Feox
	150-155	FX169857	0.12	Bio-feld-qtz schist, 1% calc, 15% Feox
	155-160	FX169858	0.07	Bio-feld-qtz schist, 1% calc, 15% Feox
	160-165	FX169859	0.05	Bio-feld-qtz schist, 1% calc, 10% Feox
	165-170	FX169860	<.02	Bio-feld-qtz schist, 1% calc, 5% Feox
	170-175	FX169861	<.02	Bio-feld-qtz schist, 1% calc, 5% Feox
	175-180	FX169862	0.06	Bio-feld-qtz schist, 1% calc, 10% Feox
	180-185	FX169863	0.26	Qtz-feld-hbl-bio gneiss, 2% Feox
	185-190	FX169864	0.17	As above with 25% pegmatite
	190-195	FX169865	0.16	Qtz-feld-hbl-bio gneiss, 5-10% Feox
	195-200	FX169866	0.3	Qtz-feld-hbl-bio gneiss, 5-10% Feox
	200-205	FX169867	0.19	Qtz-feld-hbl-bio gneiss, 5-10% Feox
	205-210	FX169868	0.11	Qtz-feld-hbl-bio gneiss, 5-10% Feox
	210-215	FX169869	0.24	Qtz-feld-hbl-bio gneiss, 5-10% Feox
	215-220	FX169870	0.22	Qtz-feld-hbl-bio gneiss, 5-10% Feox
	220-225	FX169871	0.09	As above with 50% mafic dike fragments
	225-230	FX169872	0.17	Granitic gneiss, 25% Feox
76001	230-235	FX169873	0.1	Granitic gneiss, 25% Feox

OWENS PROJECT
1987 DRILLING, GOLD VALUES
****

HOLE NUMBER	FOOTAGE	SAMPLE #	Au PPM	REMARKS
76001	235-240	FX169874	0.2	Granitic gneiss, 15% Feox
	240-245	FX169875	0.05	Granitic gneiss, 25% Feox
	245-250	FX169876	0.11	As above with 50% mafic dike fragments
	250-255	FX169877	0.05	Granitic gneiss, 15% Feox
	255-260	FX169878	0.05	Granitic gneiss, 15% Feox
	260-265	FX169879	0.07	As above with 50% mafic dike fragments
	265-270	FX169880	0.04	Fine grained mafic dike
	270-275	FX169881	0.16	Fine grained mafic dike
	275-280	FX169882	0.21	As to 245 ft. w/ 50% mafic dike frags
	280-285	FX169883	0.22	Qtz-feld-hbl-bio gneiss
	285-290	FX169884	0.17	Qtz-feld-hbl-bio gneiss, 5% Feox
	290-295	FX169885	0.07	Qtz-feld-hbl-bio gneiss, 15% Feox
	295-298	FX169886	0.21	Qtz-feld-hbl-bio gneiss, 10% Feox
	298-300	FX169887	<.02	Qtz-feld-hbl-bio gneiss, 10% Feox
	300-305	FX169888	0.05	Qtz-feld-hbl-bio gneiss, 10% Feox
	305-310	FX169889	0.05	Qtz-feld-hbl-bio gneiss, 10% Feox
	310-315	FX169890	0.11	Qtz-feld-hbl-bio gneiss, 10% Feox
	315-320	FX169891	0.05	Qtz-feld-hbl-bio gneiss, 10% Feox
	320-325	FX169892	0.04	Qtz-feld-hbl-bio gneiss, 10% Feox
	325-330	FX169893	0.23	Qtz-feld-hbl-bio gneiss, 10% Feox
	330-335	FX169894	0.17	Qtz-feld-hbl-bio gneiss, 10% Feox
	335-340	FX169895	0.16	Qtz-feld-hbl-bio gneiss, 10% Feox
	340-345	FX169896	0.08	Qtz-feld-hbl-bio gneiss, 10% Feox
	345-350	FX169897	0.15	Qtz-feld-hbl-bio gneiss, 10% Feox
	350-355	FX169898	0.09	As above w/ 1% limo frac filling
	355-360	FX169899	0.09	Granitic gneiss and muscovite schist
	360-365	FX169900	0.11	As above with 1ft limo rich zone (fault ?)
	365-370	FX169901	0.07	Biotite schist and gneiss, 1% limo
	370-375	FX169902	0.06	Biotite schist and gneiss, .05% limo
	375-380	FX169903	0.28	Biotite schist and gneiss
	380-385	FX169904	<.02	Biotite schist and gneiss
	385-390	FX169905	0.03	Biotite schist and gneiss
	390-395	FX169906	0.04	Biotite schist and gneiss
	395-400	FX169907	0.02	Biotite schist and gneiss
	400-405	FX169908	<.02	Biotite schist and gneiss
	405-410	FX169909	0.03	Biotite schist and gneiss, poor recovery
	410-415	FX169910	<.02	Biotite schist and gneiss, 10% Feox
	415-420	FX169911	<.02	Biotite schist and gneiss, 10% Feox
	420-425	FX169912	0.03	Biotite schist and granitic gneiss, 10% Feox
	425-430	FX169913	<.02	Biotite schist and granitic gneiss, 2% Feox
	430-435	FX169914	<.02	Biotite schist and granitic gneiss, 1% Feox
	435-440	FX169915	<.02	Biotite schist and granitic gneiss
	440-445	FX169916	<.02	Biotite schist and granitic gneiss, 10% Feox
	445-450	FX169917	<.02	Biotite schist and granitic gneiss, 10% Feox
76001	450-455	FX169918	<.02	Biotite schist and granitic gneiss, 10% Feox

OWENS PROJECT
1987 DRILLING, GOLD VALUES
****

HOLE NUMBER	FOOTAGE	SAMPLE #	Au PPM	REMARKS
76002	0-5	FX169919	<.02	Gneiss and overburden gravel
	5-10	FX169920	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	10-15	FX169921	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	15-20	FX169922	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	20-25	FX169923	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	25-30	FX169924	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	30-35	FX169925	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	35-40	FX169926	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	40-45	FX169927	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	45-50	FX169928	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	50-55	FX169929	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	55-60	FX169930	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	60-65	FX169931	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	65-70	FX169932	<.02	As above with 3ft clay zone
	70-75	FX169933	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	75-80	FX169934	<.02	Feld-qtz-bio-hbl gneiss, 10% feox
	80-85	FX169935	<.02	Fine grained mafic dike, 10% Feox
	85-90	FX169936	<.02	Fine grained mafic dike, 5% Feox
	90-95	FX169937	<.02	Fine grained mafic dike, 3% Feox
76002	95-100	FX169938	<.02	Fine grained mafic dike, 25% Feox
76003	0-25	NO SAMPLE		Overburden gravels
	25-30	FX169939	0.03	Weathd gn, abdt limo rich clay, 10% qtz vlts
	30-35	FX169940	0.12	Weathd gn, abdt limo rich clay, 10% qtz vlts
	35-40	FX169941	0.05	Weathd gn, abdt limo rich clay, 10% qtz vlts
	40-45	FX169942	<.02	Feld-bio-qtz-hbl gn, 1% calc vnlts, 20% hem
	45-50	FX169943	<.02	Feld-bio-qtz-hbl gn, 1% calc vnlts, 15% hem
	50-55	FX169944	0.18	Feld-bio-qtz-hbl gn, 1% calc vnlts, 10% hem
	55-60	FX169945	<.02	Feld-bio-qtz-hbl gn, 1% calc vnlts, 5% hem
	60-65	FX169946	<.02	Feld-bio-qtz-hbl gn, 1% calc vnlts, 3% hem
	65-70	FX169947	<.02	Feld-bio-qtz-hbl gn, 1% calc vnlts, 2% hem
	70-75	FX169948	<.02	Feld-bio-qtz-hbl gn, 1% calc vnlts, 1% hem
	75-80	FX169949	<.02	Feld-bio-qtz-hbl gn, 1% calc vnlts, 15% hem
	80-85	FX169950	<.02	Feld-bio-qtz-hbl gn, 1% calc vnlts, 15% hem
	85-90	FX169951	<.02	Feld-bio-qtz-hbl gn, 1% calc vnlts, 10% hem
	90-95	FX169952	<.02	Feld-bio-qtz-hbl gn, 1% calc vnlts, 5% hem
	95-100	FX169953	<.02	Feld-bio-qtz-hbl gn, 1% calc vnlts, 10% hem
	100-105	FX169954	<.02	Feld-bio-qtz-hbl gn, 1% calc vnlts, 10% hem
	105-110	FX169955	<.02	Feld-bio-qtz-hbl gn, 1% calc vnlts, 1-2% hem

INCO METALS COMPANY

JOB AW5470

FIELD EXPLORATION BOREHOLE LOG (HEADER DATA)

BOREHOLE No. 76001 PAGE 01 of 5

BOREHOLE NUMBER	PAGE	SEQ NO.	TYPE	PROPERTY	PROP. NO.	LEVEL	FINAL DEPTH	AZIMUTH DEG.	AZIMUTH MIN.	DIP ±	DIP DEG.	DIP MIN	LOC SYS	N/S	LATITUDE	E/W	DEPARTURE	ELEVATION	START DATE MO.	START DATE DY.	START DATE YR.	COMPLETED DATE MO.	COMPLETED DATE DY.	COMPLETED DATE YR.	UNIT
1-6	8	8-9	10-11	12	13-23	24-26	27-30	31-36	37-39	40	42	43	45	47	49	50-55	56	57-62	63-67	68	70	72	74	76	78	
760010	0	01	00	0	OWENS		SURF	4550	00	160	00	-	48	00		N	111	00	E	14300	38200	05	14	87	05	15	87	F

INCLINATION AND TROPARI TESTS

SEQ. NO.	TYPE	DEPTH	AZIMUTH DEG.	AZIMUTH MIN.	DIP ±	DIP DEG.	DIP MIN.	DEPTH	AZIMUTH DEG.	AZIMUTH MIN.	DIP ±	DIP DEG.	DIP MIN.	DEPTH	AZIMUTH DEG.	AZIMUTH MIN.	DIP ±	DIP DEG.	DIP MIN.	DEPTH	AZIMUTH DEG.	AZIMUTH MIN.	DIP ±	DIP DEG.	DIP MIN.
10-11	12	13-17	18-20	21-22	23	24-25	26-27	28-32	33-35	36-37	38	39-40	41-42	43-47	48-50	51-52	53	54-55	56-57	58-62	63-65	66-67	68	69-70	71-72
05	2																								
10	2																								
15	2																								
20	2																								
25	2																								
30	2																								
35	2																								
40	2																								
45	2																								
50	2																								

TOP OF WEDGES

10-11	12	13 DEPTH 17	18 DEPTH 22	23 DEPTH 27	28 DEPTH 32	33 DEPTH 37	38 DEPTH 42	43 DEPTH 47	48 DEPTH 52	53 DEPTH 57	58 DEPTH 62	63 DEPTH 67	68 DEPTH 72
55	3												
60	3												
65	3												

LOCATION

10-11	12	13 LOGGED BY 26	27 N.T.S. NO. 36	37 COUNTRY 46	47 PROV/STATE 56	57 GRID BEARING 61	62 SHEET NO. 64	65 ANOM. NO. 68	69 72
70	4	STENE MORRIS		USA	ARIZONA	18000			

10 ASSAY FOR 72

75	4	AU

10 COMMENTS 72

80	4	DRILLED RCR BY BROWN DRILLING IN SEC 2, T28N, R19W. 350 FT
85	4	OF ROD AND HAMMER COST IN HOLE.
90	4	

FEX-003

INCO LIMITED

JOB AW5470

FIELD EXPLORATION BOREHOLE LOG (GEOLOGICAL DATA)

NOTE: HEADER DATA IS PAGE No. 1, THESE SHEETS MUST START WITH PAGE No. 2

BOREHOLE No. 76001 PAGE 2 of 5

12	DEPTH 13-18	SAMPLE No. 19-26	MINERAL 27-30	ROCK 31-34	OPTIONAL KEY WORD 35-42	DESCRIPTION 43-70	ANGLES 71-72
7	0.00				COLLAR		
7	15.00			OB	OVERBURDEN GRAVELS		
7	20.00	FX169830		GN	FELD-QTZ-BIO-HBL-CHLR GNEISS, ALTN		
7					MAFIC AND FELSIC BANDS, FEOX 10-20%,		
7					SLI PROP ALTN.		
7	25.00		31	GN	AS ABOVE		
7	30.00		32	GN	AS ABOVE		
7	35.00		33	GN	AS ABOVE		
7	40.00		34	GN	AS ABOVE		
7	45.00		35	GN	AS ABOVE		
7	50.00		36	GN	AS ABOVE		
7	55.00		37	GN	AS ABOVE		
7	60.00		38	GN	AS ABOVE		
7	65.00		39	GN	AS ABOVE		
7	70.00		40	GN	AS ABOVE		
7	75.00		41	GN	AS ABOVE		
7	80.00		42	GN	AS ABOVE		
7	85.00		43	GN	AS ABOVE		
7	90.00		44	GN	AS ABOVE		
7	95.00		45	GN	AS ABOVE		
7	100.00		46	GN	AS ABOVE		
7	105.00		47	GN	AS ABOVE		
7	110.00		48	GN	AS ABOVE		
7	115.00		49	GN	AS ABOVE		
7	120.00		50	GN	AS ABOVE		
7	125.00		51	GN	AS ABOVE		

NOTE: Description Uses Columns 35 to 70, However KEY WORDS Should be Entered in Columns 35 to 42 to Facilitate Retrieval.

FEX-004

INCO LIMITED

JOB AW5470

FIELD EXPLORATION BOREHOLE LOG (GEOLOGICAL DATA)

NOTE: HEADER DATA IS PAGE No. 1, THESE SHEETS MUST START WITH PAGE No. 2

BOREHOLE No. 76001 PAGE 3 of 5

12	DEPTH 13-18	SAMPLE No. 19-26	MINERAL 27-30	ROCK 31-34	OPTIONAL KEY WORD 35-42	DESCRIPTION 43-70	ANGLES 71-72
7	1300.00	FX16985 2		GN	AS ABOVE		
7	1350.00	53		GN	AS ABOVE, CLAY ZONE (FAULT) 132-134		
7					FT.		
7	1400.00	54		SCH	FINE TO MED GRND, MOD FOLIATED		
7					SCHISTOSE ROCK CONTAINING BIO, FELD		
7					AND QTZ, 1% CALC ON FRACS, 10-20%		
7					FEOX.		
7	1450.00	55		SCH	AS ABOVE		
7	1500.00	56		SCH	AS ABOVE		
7	1550.00	57		SCH	AS ABOVE		
7	1600.00	58		SCH	AS ABOVE		
7	1650.00	59		SCH	AS ABOVE, 5-10% FEOX		
7	1700.00	60		SCH	AS ABOVE, 5% FEOX		
7	1750.00	61		SCH	AS ABOVE		
7	1800.00	62		SCH	AS TO 165FT		
7	1850.00	63		GN	GNEISS AS THAT DESCRIBED TO 20FT, 1-3		
7					% FEOX		
7	1900.00	64		GN	AS ABOVE WITH 25% PEGMATITIC FRAGS		
7	1950.00	65		GN	AS TO 20FT, 5-10% FEOX		
7	2000.00	66		GN	AS ABOVE		
7	2050.00	67		GN	AS ABOVE		
7	2100.00	68		GN	AS ABOVE		
7	2150.00	69		GN	AS ABOVE		
7	2200.00	70		GN	AS ABOVE		
7	2250.00	71		GN	AS ABOVE WITH 50% MAFIC DIKE FRAGS		
7	2300.00	72		GN	GRANITIC GNEISS, 25% FEOX		

NOTE: Description Uses Columns 35 to 70, However KEY WORDS Should be Entered in Columns 35 to 42 to Facilitate Retrieval.

FEX-004
02/05/82

INCO LIMITED

JOB AW5470

FIELD EXPLORATION BOREHOLE LOG (GEOLOGICAL DATA)

NOTE: HEADER DATA IS PAGE No. 1, THESE SHEETS MUST START WITH PAGE No. 2

BOREHOLE No. 76001 PAGE 4 of 5

12	DEPTH 13-18	SAMPLE No. 19-26	MINERAL 27-30	ROCK 31-34	OPTIONAL KEY WORD 35-42	DESCRIPTION 43-70	ANGLES 71-72
7	235.00	FX169873		GN	AS ABOVE		
7	240.00	74		GN	AS ABOVE, 15% FEOX		
7	245.00	75		GN	AS ABOVE		
7	250.00	76		GN	AS ABOVE W/ 50% MAFIC DIKE FRAGS		
7	255.00	77		GN	AS TO 240FT		
7	260.00	78		GN	AS TO 240FT		
7	265.00	79		GN	AS TO 250FT		
7	270.00	80		DIO	FG MAFIC DIKE		
7	275.00	81		DIO	AS ABOVE		
7	280.00	82		GN	AS TO 250FT		
7	285.00	83		GN	QTZ, BIO, FELD, HBL GNEISS AND SCHIST		
7	290.00	84		GN	AS ABOVE W/ 5% FEOX		
7	295.00	85		GN	AS TO 285FT W/ 15% FEOX		
7	298.00	86		GN	AS TO 285FT, 10% FEOX		
8	300.00	87		FN	AS ABOVE		
8	305.00	88		GN	AS ABOVE		
7	310.00	89		GN	AS ABOVE		
7	315.00	90		GN	AS ABOVE		
7	320.00	91		GN	AS ABOVE		
7	325.00	92		GN	AS ABOVE		
7	330.00	93		GN	AS ABOVE		
7	335.00	94		GN	AS ABOVE		
7	340.00	95		GN	AS ABOVE		
7	345.00	96		GN	AS ABOVE		
7	350.00	97		GN	AS ABOVE		
7	355.00	98		GN	AS ABOVE WITH 1% LIMO FRAC FILL		

NOTE: Description Uses Columns 35 to 70, However KEY WORDS Should be Entered in Columns 35 to 42 to Facilitate Retrieval.

FEX-004

03/05/82

INCO LIMITED

JOB AW5470

FIELD EXPLORATION BOREHOLE LOG (GEOLOGICAL DATA)

NOTE: HEADER DATA IS PAGE No. 1, THESE SHEETS MUST START WITH PAGE No. 2

BOREHOLE No. Z6001 PAGE 5 of 5

	DEPTH	SAMPLE No.	MINERAL	ROCK	OPTIONAL KEY WORD	DESCRIPTION	ANGLES
12	13-18	19-26	27-30	31-34	35-42	43-70	71-72
7	360.00	FX169899		GN	GRANITIC GN + MUSCOVITE SCH, 1% LIMO		
7	365.00	FX169900		GN	AS ABOVE WITH 1-2FT LIMO RICH CLAY		
7	±				ZONE (FAULT?)		
7	370.00		01	SCH	BIOTITE SCHIST AND GNEISS, 1% LIMO		
7	375.00		02	SCH	AS ABOVE LESS THAN 1% LIMO		
7	380.00		03	SCH	AS ABOVE, NO LIMO		
7	385.00		04	SCH	AS ABOVE		
7	390.00		05	SCH	AS ABOVE		
7	395.00		06	SCH	AS ABOVE		
7	400.00		07	SCH	AS ABOVE		
7	405.00		08	SCH	AS ABOVE		
7	410.00		09	SCH	AS ABOVE POOR RECOVERY		
7	415.00	FX169910		SCH	BIOTITE SCHIST AND GNEISS, 10% FEOX		
7	420.00		11	SCH	AS ABOVE		
7	425.00		12	SCH	BIO SCHIST AND GRANITIC GN, 10% FEOX		
7	430.00		13	SCH	AS ABOVE, 2% FEOX		
7	435.00		14	SCH	AS ABOVE, 1% FEOX		
7	440.00		15	SCH	AS ABOVE		
7	445.00		16	SCH	AS ABOVE, 10% FEOX		
7	450.00		17	SCH	AS ABOVE		
7	455.00		18	SCH	AS ABOVE		
7							
7					END OF HOLE		
7							
7							
7							

NOTE: Description Uses Columns 35 to 70, However KEY WORDS Should be Entered in Columns 35 to 42 to Facilitate Retrieval.

FEX-004

02/05/82

INCO METALS COMPANY

JOB AW5470

FIELD EXPLORATION BOREHOLE LOG (HEADER DATA)

BOREHOLE No. 76002 PAGE 01 of 2

BOREHOLE NUMBER	PAGE	SEQ NO.	TYPE	PROPERTY	PROP. NO.	LEVEL	FINAL DEPTH	AZIMUTH DEG.	AZIMUTH MIN.	DIP ±	DIP DEG.	DIP MIN	LOC. SYS.	N/S	LATITUDE	E/W	DEPARTURE	ELEVATION	START DATE MO.	START DATE DY.	START DATE YR.	COMPLETED DATE MO.	COMPLETED DATE DY.	COMPLETED DATE YR.	UNIT
1-6	8r	8-9	10-11	12	13-23	24-26	27-30	31-36	37-39	40	42	43	45	47	49	50-55	56	57-62	63-67	68	70	72	74	76	78	
76002	0	01	0	OWENS		SURF	1000	160	09	-	54	00		N	11070	E	15250	3850	05	21	87	05	21	87	F

INCLINATION AND TROPARI TESTS

SEQ. NO.	TYPE	DEPTH	AZIMUTH DEG.	AZIMUTH MIN.	DIP ±	DIP DEG.	DIP MIN.	DEPTH	AZIMUTH DEG.	AZIMUTH MIN.	DIP ±	DIP DEG.	DIP MIN.	DEPTH	AZIMUTH DEG.	AZIMUTH MIN.	DIP ±	DIP DEG.	DIP MIN.	DEPTH	AZIMUTH DEG.	AZIMUTH MIN.	DIP ±	DIP DEG.	DIP MIN.
10-11	12	13-17	18-20	21-22	23	24-25	26-27	28-32	33-35	36-37	38	39-40	41-42	43-47	48-50	51-52	53	54-55	56-57	58-62	63-65	66-67	68	69-70	71-72
052																									
102																									
152																									
202																									
252																									
302																									
352																									
402																									
452																									
502																									

TOP OF WEDGES

10-11	12	13 DEPTH 17	18 DEPTH 22	23 DEPTH 27	28 DEPTH 32	33 DEPTH 37	38 DEPTH 42	43 DEPTH 47	48 DEPTH 52	53 DEPTH 57	58 DEPTH 62	63 DEPTH 67	68 DEPTH 72
553													
603													
653													

LOCATION

10-11	12	13 LOGGED BY 26	27 N.T.S. NO. 36	37 COUNTRY 46	47 PROV/STATE 56	57 GRID BEARING 61	62 SHEET NO. 64	65 ANOM. NO. 68	69 72
704		STEVE MORRIS		USA	ARIZONA	18000			

10 ASSAY FOR 72

754		AU

10 COMMENTS 72

804		DRILLED RCR BY BROWN DRILLING IN SEC 2, T28N, R19W
854		
904		

FEX-003

INCO LIMITED

JOB AW5470

FIELD EXPLORATION BOREHOLE LOG (GEOLOGICAL DATA)

NOTE: HEADER DATA IS PAGE No. 1, THESE SHEETS MUST START WITH PAGE No. 2

BOREHOLE No. 76003 PAGE 2 of 2

12	DEPTH 13-18	SAMPLE No. 19-26	MINERAL 27-30	ROCK 31-34	OPTIONAL KEY WORD 35-42	DESCRIPTION 43-70	ANGLES 71-72
7	0.00				COLLAR		
7	5.00	FX169919		GN	GRAVEL AND GNEISS		
7	10.00	20		GN	FELD, QTZ, BIO, HBL GNEISS, ALTN MAFIC		
7					AND FELSIC BANDS, 10% FEOX.		
7	15.00	21		GN	AS ABOVE		
7	20.00	22		GN	AS ABOVE		
7	25.00	23		GN	AS ABOVE		
7	30.00	24		GN	AS ABOVE		
7	35.00	25		GN	AS ABOVE		
7	40.00	26		GN	AS ABOVE		
7	45.00	27		GN	AS ABOVE		
7	50.00	28		GN	AS ABOVE		
7	55.00	29		GN	AS ABOVE		
7	60.00	30		GN	AS ABOVE		
7	65.00	31		GN	AS ABOVE		
7	70.00	32		GN	AS ABOVE, 3FT CLAY ZONE		
7	75.00	33		GN	AS TO 10FT		
7	80.00	34		GN	AS TO 10FT		
7	85.00	35		DIO	FINE GRAINED DIORITE DIKE, 10% FEOX		
7	90.00	36		DIO	AS ABOVE, 5% FEOX		
7	95.00	37		DIO	AS ABOVE, 3% FEOX		
7	100.00	38		DIO	AS ABOVE, 25% FEOX		
7							
7					END OF HOLE		
7							
7							

NOTE: Description Uses Columns 35 to 70, However KEY WORDS Should be Entered in Columns 35 to 42 to Facilitate Retrieval.

FEX-004
02/05/82

INCO METALS COMPANY

JOB AW5470

FIELD EXPLORATION BOREHOLE LOG (HEADER DATA)

BOREHOLE No. 76003 PAGE 01 of 2

BOREHOLE NUMBER (1-6)	BR (7)	PAGE (8-9)	SEQ NO. (10-11)	TYPE (12)	PROPERTY (13-23)	PROP. NO. (24-26)	LEVEL (27-30)	FINAL DEPTH (31-36)	AZIMUTH DEG. (37-39)	AZIMUTH MIN. (40)	DIP ± (42)	DIP DEG. (43)	DIP MIN (45)	LOC. SYS. (47)	N/S (49)	LATITUDE (50-55)	E/W (56)	DEPARTURE (57-62)	ELEVATION (63-67)	START DATE MO. (68)	START DATE DY. (70)	START DATE YR. (72)	COMPLETED DATE MO. (74)	COMPLETED DATE DY. (76)	COMPLETED DATE YR. (78)	UNIT
760030		01	10	00	OWENS		SURF	1100	160	00	-	55	00		N	10300	E	14900	3770	05	21	87	05	21	87	F

INCLINATION AND TROPARI TESTS

SEQ. NO. (10-11)	TYPE (12)	DEPTH (13-17)	AZIMUTH DEG. (18-20)	AZIMUTH MIN. (21-22)	DIP ± (23)	DIP DEG. (24-25)	DIP MIN. (26-27)	DEPTH (28-32)	AZIMUTH DEG. (33-35)	AZIMUTH MIN. (36-37)	DIP ± (38)	DIP DEG. (39-40)	DIP MIN. (41-42)	DEPTH (43-47)	AZIMUTH DEG. (48-50)	AZIMUTH MIN. (51-52)	DIP ± (53)	DIP DEG. (54-55)	DIP MIN. (56-57)	DEPTH (58-62)	AZIMUTH DEG. (63-65)	AZIMUTH MIN. (66-67)	DIP ± (68)	DIP DEG. (69-70)	DIP MIN. (71-72)
05	2																								
10	2																								
15	2																								
20	2																								
25	2																								
30	2																								
35	2																								
40	2																								
45	2																								
50	2																								

TOP OF WEDGES

SEQ. NO. (10-11)	TYPE (12)	DEPTH (13-17)	DEPTH (18-22)	DEPTH (23-27)	DEPTH (28-32)	DEPTH (33-37)	DEPTH (38-42)	DEPTH (43-47)	DEPTH (48-52)	DEPTH (53-57)	DEPTH (58-62)	DEPTH (63-67)	DEPTH (68-72)
55	3												
60	3												
65	3												

LOCATION

SEQ. NO. (10-11)	TYPE (12)	LOGGED BY (13-26)	N.T.S. NO. (27-36)	COUNTRY (37-46)	PROV/STATE (47-56)	GRID BEARING (57-61)	SHEET NO. (62-64)	ANOM. NO. (65-68)	(69-72)
70	4	STEVE MORRIS		USA	ARIZONA				

10 ASSAY FOR (13-72)

75	4	AU

10 COMMENTS (13-72)

80	4	DRILLED RCR BY BROWN DRILLING IN SEC 2, T28N, R19W. 20 FEET
85	4	OF CASING PLACED AND LEFT IN THE HOLE.
90	4	

FEX-003

INCO LIMITED

JOB AW5470

FIELD EXPLORATION BOREHOLE LOG (GEOLOGICAL DATA)

NOTE: HEADER DATA IS PAGE No. 1, THESE SHEETS MUST START WITH PAGE No. 2

BOREHOLE No. 76003 PAGE 2 of 2

12	DEPTH 13-18	SAMPLE No. 19-26	MINERAL 27-30	ROCK 31-34	OPTIONAL KEY WORD 35-42	DESCRIPTION 43-70	ANGLES 71-72
7	0.00				COLLAR		
7	25.00			OB	OVERBURDEN GRAVEL		
7	30.00	FX169939		GN	WEATHERED GNEISS, ABDT LIMO RICH		
7					CLAY, 1% QTZ VNLTS		
7	35.00		40	GN	AS ABOVE		
7	40.00		41	GN	AS ABOVE		
7	45.00		42	GN	MUCH LESS WEATHERED GNEISS OF FELD,		
7					BIO, QTZ, HBL. 1% CALC VNLTS. 20% HEm		
7	50.00		43	GN	AS ABOVE, 15% HEm		
7	55.00		44	GN	AS ABOVE, 10% HEm		
7	60.00		45	GN	AS ABOVE, 5% HEm		
7	65.00		46	GN	AS ABOVE, 3% HEm		
7	70.00		47	GN	AS ABOVE, 2% HEm		
7	75.00		48	GN	AS ABOVE, 1% HEm		
7	80.00		49	GN	AS ABOVE, 15% HEm		
7	85.00		50	GN	AS ABOVE		
7	90.00		51	GN	AS ABOVE, 10% HEm		
7	95.00		52	GN	AS ABOVE, 5% HEm		
7	100.00		53	GN	AS ABOVE, 10% HEm		
7	105.00		54	GN	AS ABOVE, 10% HEm, SOFT ORICCING		
7	110.00		55	GN	AS ABOVE, 1-2% CALC VNLTS		
7					END OF HOLE		

NOTE: Description Uses Columns 35 to 70, However KEY WORDS Should be Entered in Columns 35 to 42 to Facilitate Retrieval.

FEX-004
02/05/82

9/89 JDS

PROPOSED EXPLORATION PROGRAM

FOR THE

GOLD BASIN PROPERTY

MOHAVE COUNTY

ARIZONA

by

Brian W. Hester, Associate
P. Eng. (Ontario) #19438019
PGAC #1177

September 28, 1989
Golden, Colorado

TABLE OF CONTENTS

SUMMARY

Toltec Resources, Inc. is exploring the Gold Basin property where gold occurs in steeply dipping, northwesterly trending fault and breccia zones, as well as in the "crush" zone associated with a low-angle fault in Precambrian granite gneiss. The intersection of the two fault systems presents a target of particular interest.

Surface sampling, pre-World War II workings, and more recent drilling have established gold mineralization at a minimum of four locations. No ore reserves have yet been defined on the property as the result of work by Toltec Resources.

The best tested No. 1 zone is at least 1,800 feet long and about 75 feet wide. Samples range up to 0.3 oz. Au/ton. The No. 1 zone has a potential of 1.5 to 3 million tons grading on the order of 0.04 to 0.07 oz. Au/ton.

The No. 2 zone can be traced by outcrop and float for nearly 1,200 feet. Altered quartz-hematite breccia float suggest a width on the order of 60 to 100 feet. Assays of 0.03 oz. Au/ton have been returned from reconnaissance sampling.

The No. 3 zone, which has returned assays up to 0.85 oz. Au/ton, is an extension of the zone exploited by the past producing Cyclopic pit on an adjoining property.

The No. 4 zone has been shown to contain anomalous gold in an altered coarse-grained Precambrian biotite granite. Largely

covered by Tertiary fanglomerate, the No. 4 zone requires additional prospecting.

From the extent of mineralization mapped at surface and the small amount of drilling, the Gold Basin project is estimated to have the potential to contain 3 to 10 million tons of oxidized material with gold content sugggested by reconnaissance sampling of surface exposures to be grading on the order of 0.04 to 0.07 oz. Au/ton. To define and develop this potential, a three stage drilling program is recommended.

Phase I		
No. 1 zone	4,500 feet	
No. 2 zone	3,000 feet	
No. 3 zone	3,500 feet	
	11,000 feet	
Estimated all inclusive cost		$ 157,050
Phase II (if warranted by Phase I results)		
No. 1 zone	10,500 feet	
No. 2 zone	9,000 feet	
No. 3 zone	5,000 feet	
No. 4 zone	1,500 feet	
	26,000 feet	
Estimated all inclusive cost		$ 346,000

Phase III (if warranted by Phase II results)

No. 1 zone	12,000 feet	
No. 2 zone	12,000 feet	
No. 3 zone	10,500 feet	
	34,500 feet	
Estimated all inclusive cost		$ 459,000

INTRODUCTION

The Gold Basin mining district lies in northwestern Arizona about halfway between Las Vegas, Nevada and Kingman, Arizona. Production from the district has been principally from the Cyclopic, Fry, and Senator Mines developed along the outcrop of the low angle Cyclopic fault.

Toltec Resources, Inc., through option and lease, controls 1,820 acres adjacent to and down dip of the Cyclopic fault outcrop. Reconnaissance sampling and drilling around pre-World War II exploratory workings has indicated widespread gold mineralization.

Background and Commission

Mr. R. J. MacNeill of Toltec on August 31, 1988 commissioned Derry, Michener, Booth & Wahl, Inc. (DMBW) to prepare a review of Toltec's Gold Basin project and to recommend a program to explore, define, and develop the gold deposits at the property. On Wednesday, Sept. 14, 1989, I. S. Parrish of DMBW, Inc., accompanied by Toltec's on-site geologist Mr. Joe Sandberg, toured the property sampling mineralized outcrops (Table 1) and inspecting drill cuttings. MacNeill later provided DMBW with additional assay and geologic data. This report was prepared by B. W. Hester of DMBW, Inc., after discussions with I. S. Parrish.

TABLE 1

DMBW SAMPLES AND RESULTS

#	Oz. Au/ton	Comments
1	0.057	10' chip channel, 85-95' from 88-5 Drill Rd.
2	0.020	10' chip channel, -2' to 8' from TP 13 (Red Cloud Rd.)
3	0.006*	3' chip channel, grey clay fluorite pit
4	0.038	2' chip channel, red breccia fluorite pit
5	0.035	10' cuttings from 210-220 Hole 88-5
6	0.046	14' chip channel, road above Fox Hole

*Assay by AA, all others by Fire Assay. (See Appendix A)

Location, Access, and Topography

The Gold Basin project in Mohave County, in northwestern Arizona is 55 miles southeast of Las Vegas, Nevada and 50 miles northwest of Kingman, Arizona (Figure 1).

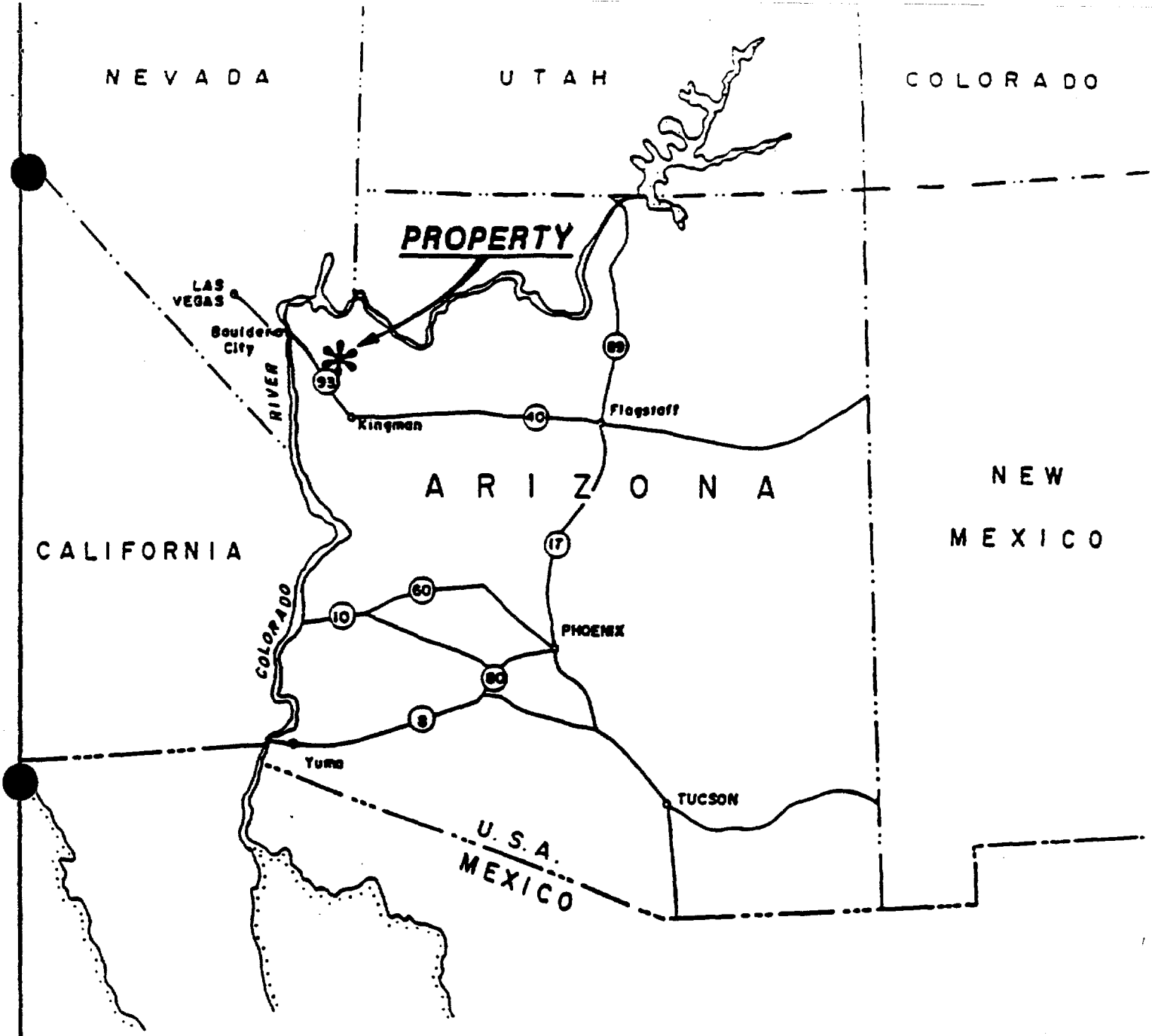
The project is in Sections 24, 25, and 36 of T28N, R19W and Sections 30 and 31, T28N, R18W. From Kingman the property is reached via U.S. 93 and the Dolan Springs road, thence, north along a four-wheel drive track following the power line just past Dolan Springs.

The project is covered by the Kingman 2^{o} topographic sheet.

Relief is moderate, ranging from about 4,000 to 4,800 feet. The area is arid with no flowing streams. Vegetation is sparse and includes varieties of desert grasses, sagebrush, and cacti.

History

The most productive mine in the Gold Basin district is the Cyclopic located just east of the Toltec properties (Figure 2). Past production of the Cyclopic Mine was estimated in 1982 to be about 60,000 tons grading 0.35 oz. Au/ton, in internal reports by United States Borax and Chemical Corporation. This production came mostly from an open pit dragline operation with minor additions from underground workings.



MILES
0 100 200

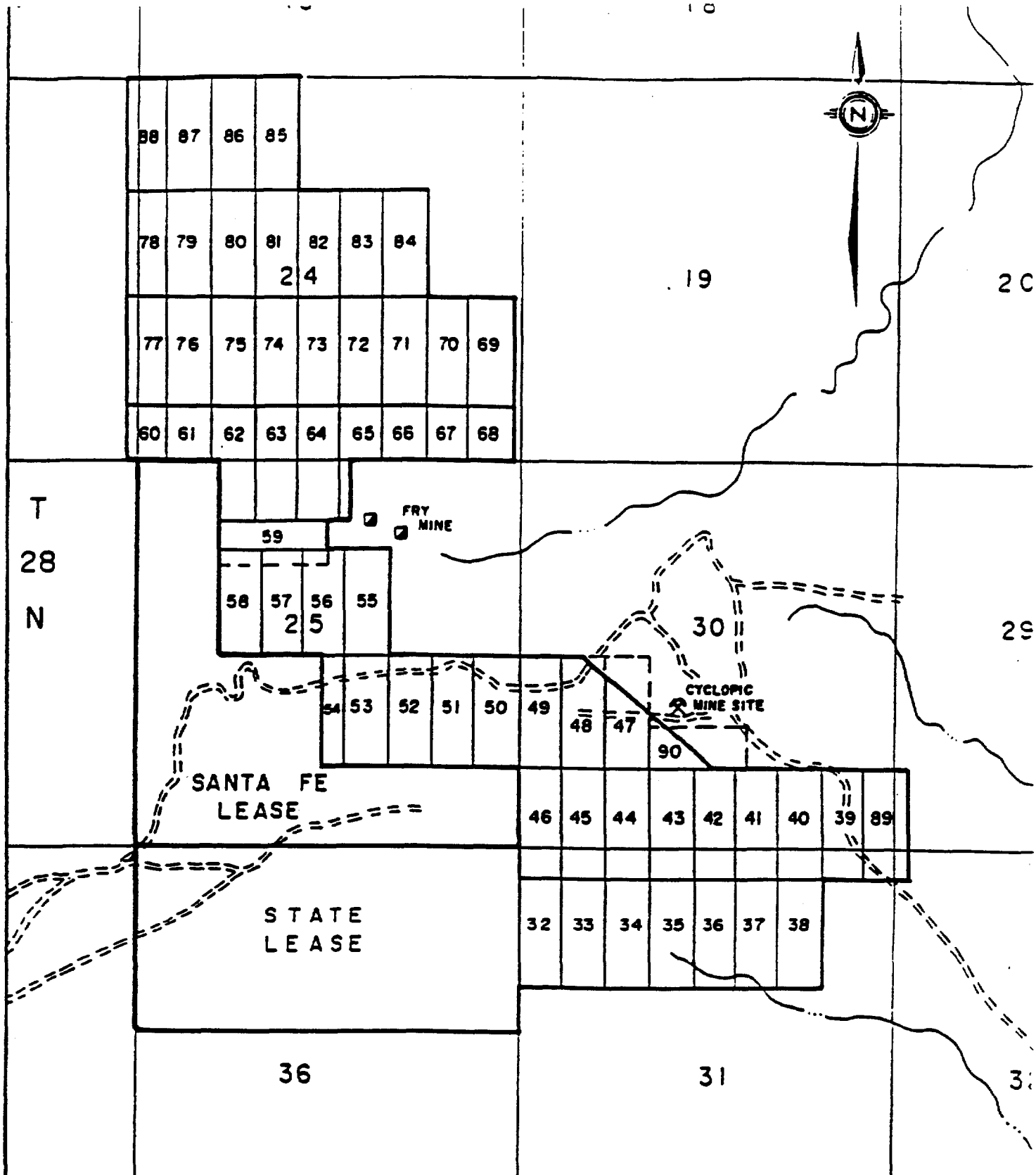
TOLTEC RESOURCES, INC.

GOLD BASIN PROJECT

MOHAVE COUNTY, ARIZONA

LOCATION MAP

DATE:	SCALE:	FIGURE No.
AUGUST, 1988	As Shown	1



TOLTEC RESOURCES, INC.

GOLD BASIN PROJECT

MOHAVE COUNTY, ARIZONA

CLAIM MAP

DATE:	SCALE:	FIGURE No.
AUGUST, 1988	1" = 2,000'	2

Other mines with past production include the underground Fry (Figure 2) and the Senator to the north of the Toltec project. Production records from these are incomplete.

During the mining of the Cyclopic deposit in the years preceding World War II, the area of Toltec's Gold Basin project was well prospected. Several trenches, short adits, and the Red Cloud shaft in Section 31, T28N, R18W bear evidence to this activity. Gold can be found in many of the diggings, but values were not deemed economic to develop at the then prevailing price of gold.

In the 1980's U.S. Borax, as part of their regional exploration program, prospected the Gold Basin district. Geologists R. Corn and R. Ahern acquired 59 unpatented claims of the GB group. A very limited drilling program, although meeting with some success, indicated to U.S. Borax that the claims were unlikely to contain the corporation's minimum target of two million ounces of gold. U.S. Borax quitclaimed the GB group to Corn and Ahern, who joined with a third geologist J. Loghry to seek funding to further explore the property.

Toltec Resources, Inc. in June of 1988 optioned the 59 GB claims and 320 acres of state ground from Corn, Ahern, and Loghry and subsequently expanded the project by leasing an additional 320 acres in Section 25, T28N, R19W (Figure 2) from a subsidiary of the Santa Fe and Pacific Railway. Having secured their desired land position, Toltec initiated a program of reconnaissance mapping, sampling, and drilling. Favorable

results from this program, plus the generally favorable geology of the area, prompted Toltec's decision to commission this report.

DMBW has not searched titles or verified Toltec's land position.

GEOLOGY

The best known and most studied gold deposit in the area, the Cyclopic Mine, is an oxidized deposit of Tertiary age in the "crush" zone of a low angle southwest dipping detachment fault in Precambrian granite gneiss. The gold is localized along N60°W "feeder-faults" that contain breccia veins and hematite-rich shear zones. There appear to be two or three hematite-bearing shear zones, all of which dip northerly into the underlying detachment fault. The feeder faults carry 0.1 to 0.4 oz. Au/ton, whereas, the adjacent rocks carry 0.01 to 0.10 oz. Au/ton forming a large low grade oxide gold deposit.

The Cyclopic and most of the smaller deposits of the district are in the plate immediately above the detachment fault. Gold is assumed to have been introduced along this fault and then to have concentrated along near vertical structures branching off into the rocks above the fault. Where ground conditions were favorable gold has impregnated the walls of these near vertical structures giving rise to large, low grade haloes around a higher grade, linear core zone.

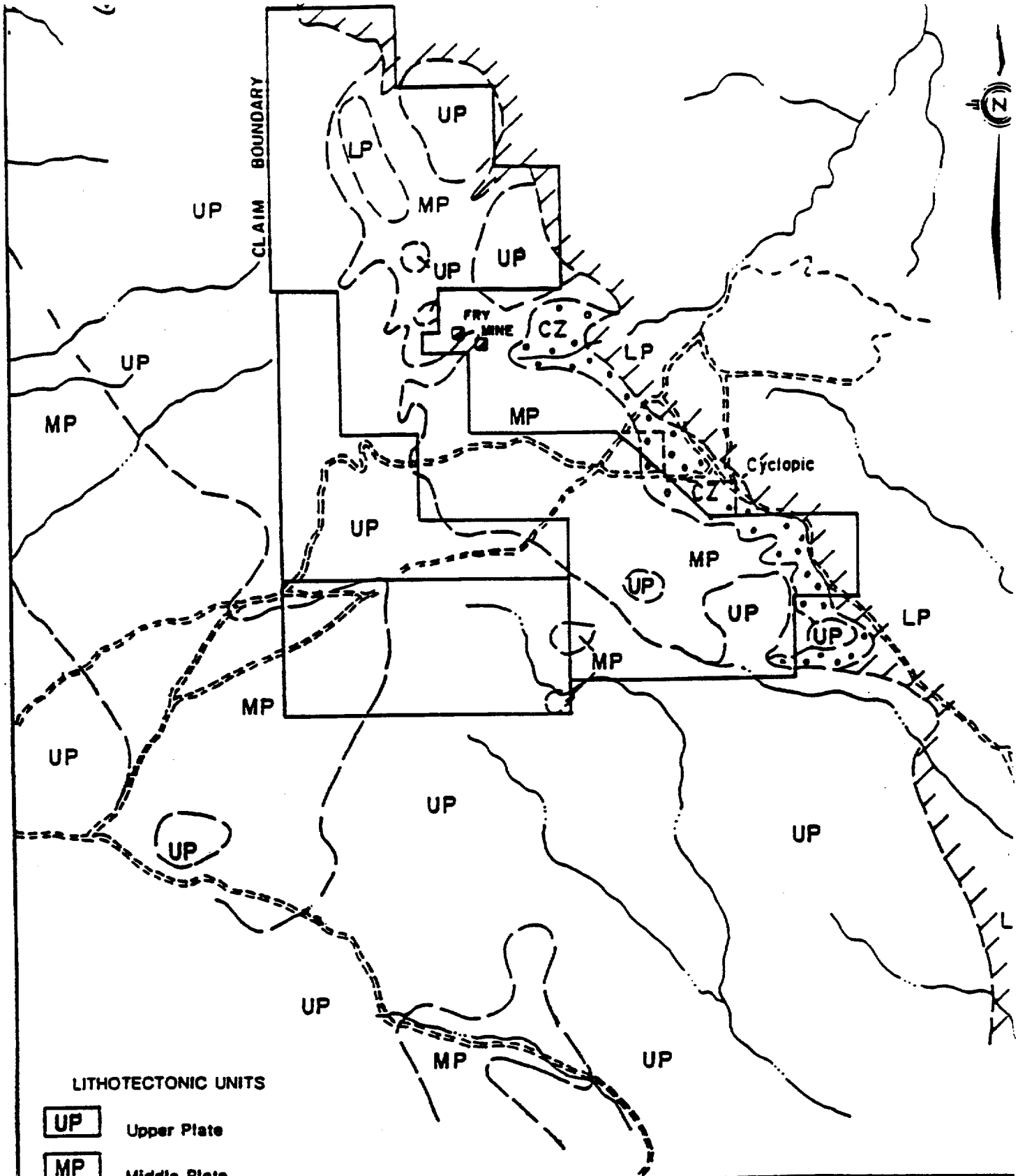
After gold deposition unmineralized Precambrian rocks and poorly consolidated Tertiary sediments were transported westward along low angle faults thereby covering the gold deposits. As a result the gold deposits are sandwiched between waste transported along a younger fault above them and waste lying below them against an older fault. The deposits, therefore, may be viewed as being in the middle plate.

This middle plate is made up of Precambrian granite gneiss. The upper plate contains Tertiary fanglomerates, tuffaceous sandstones, and Precambrian granitic rocks, as well as Quaternary alluvium.

Quaternary erosion has removed the upper plate waste exposing the Cylopic deposit. On the Toltec properties, however, erosion has not progressed as far and, thus, the potentially mineralized middle plate is exposed only at widely spaced intervals (Figure 3). It is at these exposures that Toltec's geologists have identified favorable target areas.

TARGET AREAS

Four target areas have been indicated (Figure 4) by results of a program of rock chip samples.



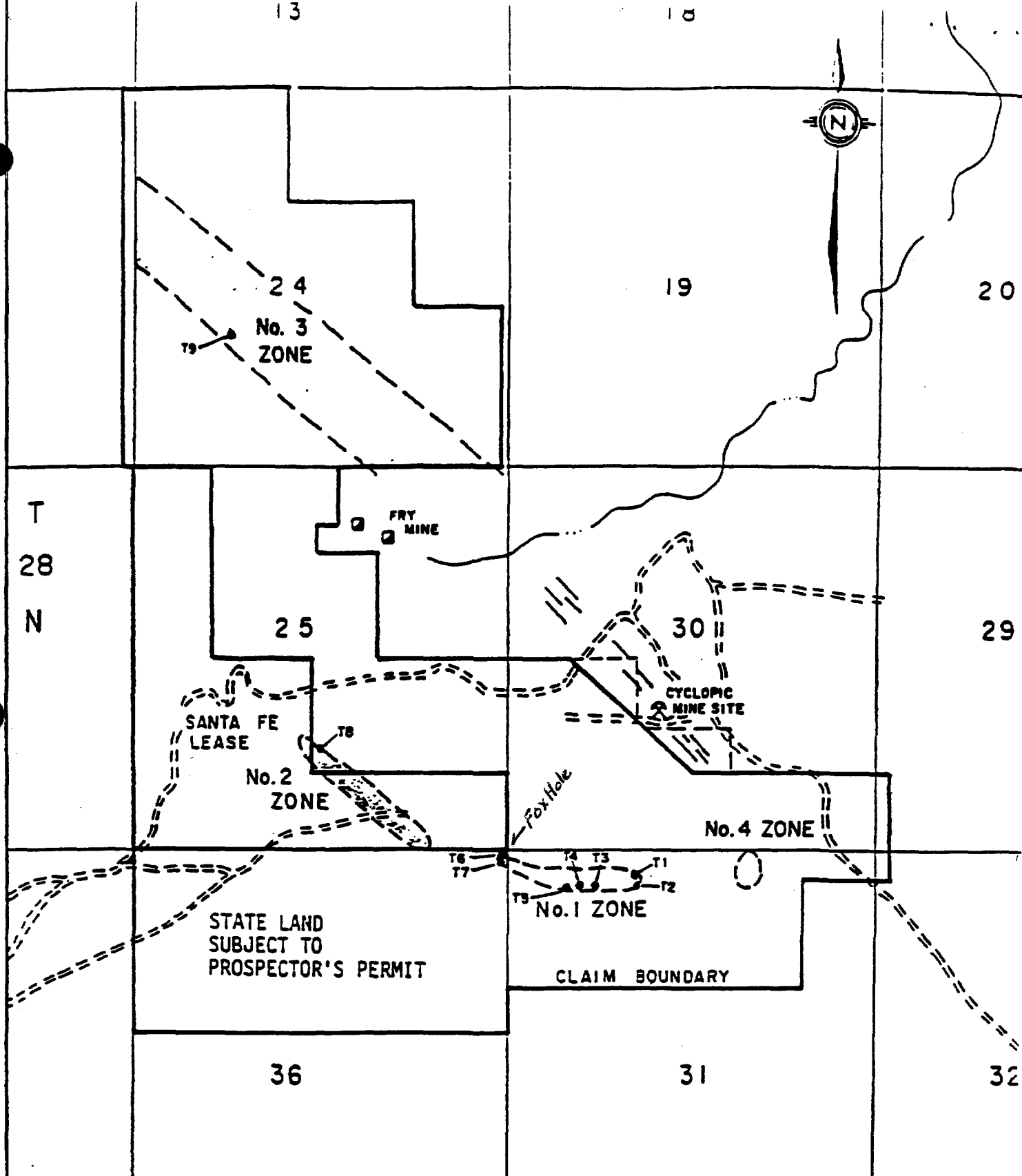
TOLTEC RESOURCES, INC

GOLD BASIN PROJEC

MOHAVE COUNTY, ARIZONA

REGIONAL GEOLOGY

DATE: AUGUST, 1988	SCALE: As Shown	FIGURE No. 3



TOLTEC RESOURCES, INC.

GOLD BASIN PROJECT

MOHAVE COUNTY, ARIZONA

GOLD EXPLORATION ZONES

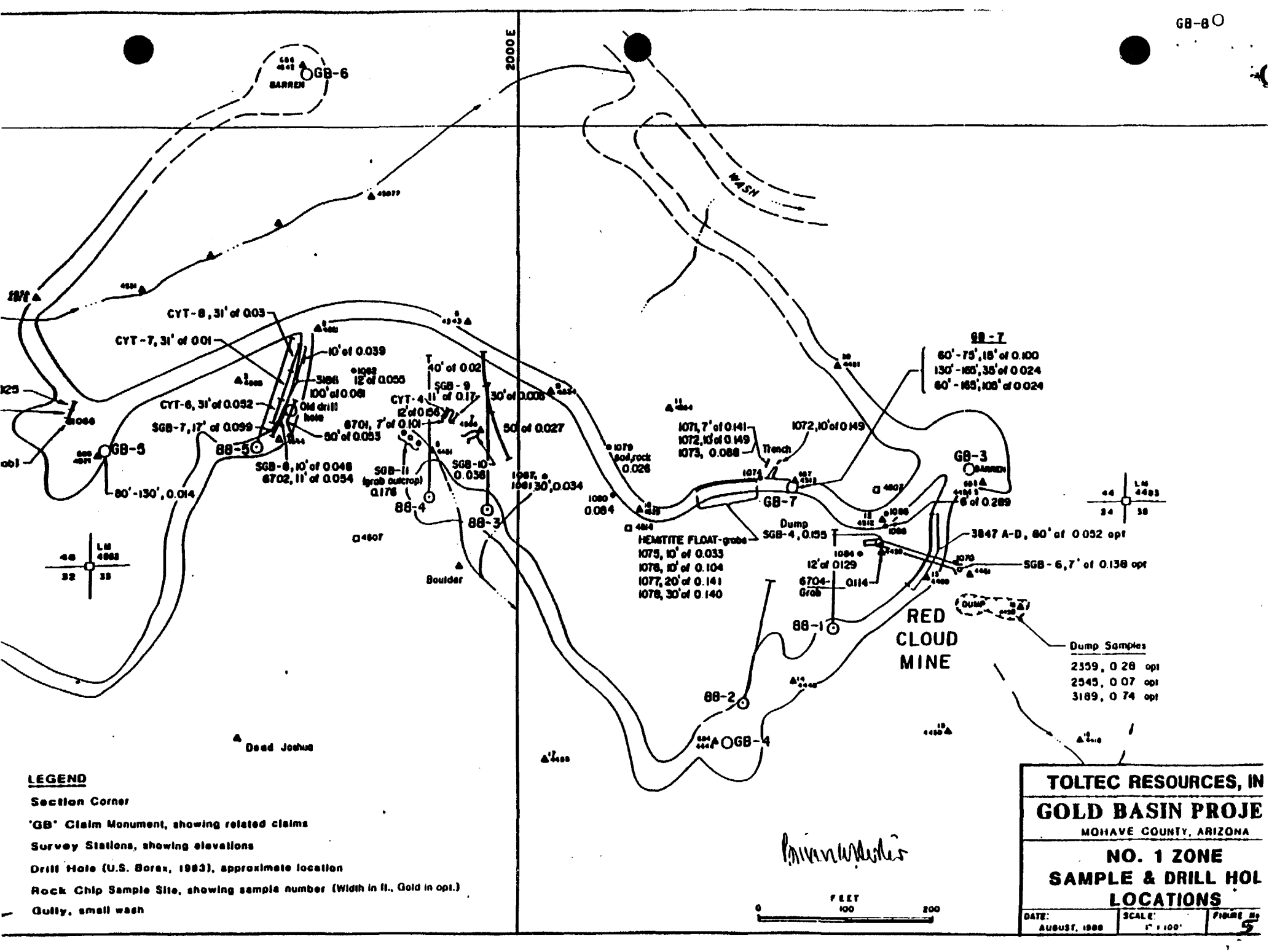
DATE:	SCALE:	FIGURE No.

No. 1 Zone (Red Cloud)

The No. 1 zone is in the NW 1/4 NW 1/4, Sec. 31, and NE 1/4 NE 1/4 Sec. 36 (Figure 4). The zone has been roughly defined by geologic mapping, surface sampling, trenching, old mine workings, and reverse circulation drilling by both U.S. Borax and Toltec (Figure 5). Samples from this west-northwest trending fault, or shear zone, have returned values up to 0.3 oz. Au/ton. DMBW check samples ranged from 0.02 to 0.057 oz. Au/ton (Table 1). The zone, which is marked by moderate to abundant hematite and quartz, is at least 1,800 feet long and on the order of 100 feet wide. Extensions below upper plate cover may double the strike length of the zone.

The southern end of the No. 1 zone is in the gulch just south of the Red Cloud Mine. Grab samples from the dump of this small exploration working returned up to 0.114 oz. Au/ton. DMBW cut a 10 foot long chip channel from the road side cutting through the zone. The sample (#2) returned 0.02 oz. Au/ton.

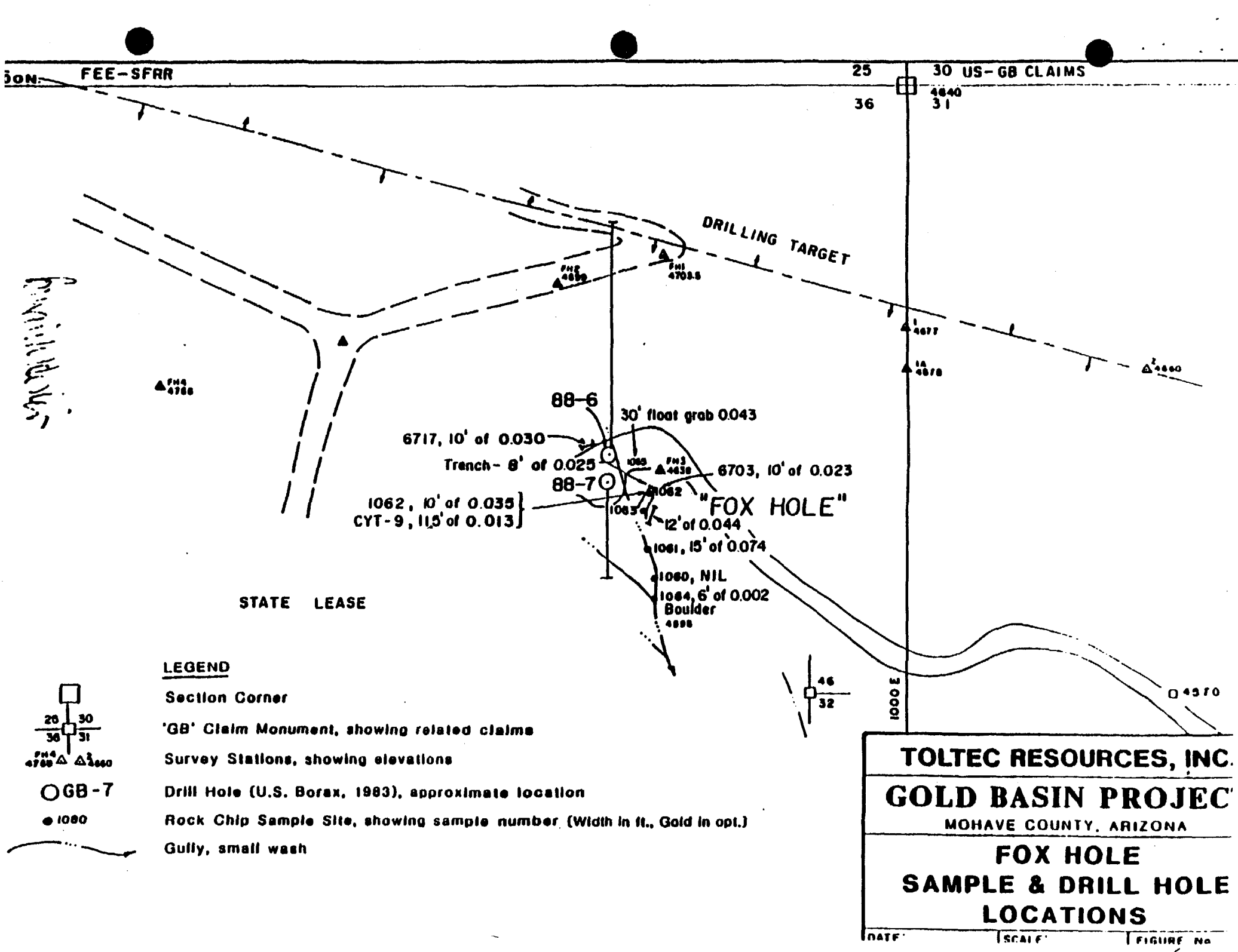
Reconnaissance holes 88-1 and 88-2 (Figure 5), drilled by Toltec in 1988 to confirm the geologic model near the Red Cloud shaft, cut mineralization in the targeted zone. Hole 88-1 from 90-120 feet returned 0.019 oz. Au/ton and from 140-160 feet returned 0.015 oz. Au/ton. Hole 88-2 was stepped back and intersected the edge of the zone with 40 feet of 0.018 oz. Au/ton from 150-190 feet.


GB-8
2000 E
GB-6
BARREN
WASH
CYT-8, 31' of 0.03
CYT-7, 31' of 0.01
10' of 0.039
3186
12' of 0.056
100' of 0.08
CYT-6, 31' of 0.052
Old drill hole
SGB-7, 12' of 0.099
50' of 0.053
GB-5
88-5
SGB-8, 10' of 0.048
6702, 11' of 0.054
80'-130', 0.014
40' of 0.02
SGB-9
CYT-4 11' of 0.17
12' of 0.56
6701, 7' of 0.101
30' of 0.008
50' of 0.027
SGB-11 (grab outcrop) 0.176
SGB-10 0.036
88-4
88-3
1087, 1081 30', 0.034
1079 sod, rock 0.026
1080 0.084
Boulder
GB-7
60'-75', 18' of 0.100
130'-160', 38' of 0.024
60'-169', 108' of 0.024
1071, 7' of 0.141
1072, 10' of 0.149
1073, 0.088
Trench
1072, 10' of 0.149
GB-3
BARREN
6' of 0.289
Dump SGB-4, 0.155
HEMITITE FLOAT-grabs
1075, 10' of 0.033
1076, 10' of 0.104
1077, 20' of 0.141
1078, 30' of 0.140
3847 A-D, 80' of 0.052 opt
SGB-6, 7' of 0.138 opt
12' of 0129
6704-Grab 0114
88-1
RED CLOUD MINE
DUMP
Dump Samples
2359, 0.28 opt
2545, 0.07 opt
3189, 0.74 opt
88-2
GB-4
Dead Joshua
LEGEND
Section Corner
'GB' Claim Monument, showing related claims
Survey Stations, showing elevations
Drill Hole (U.S. Borax, 1983), approximate location
Rock Chip Sample Site, showing sample number (Width in ft., Gold in opt.)
Gully, small wash
FEET
0
100
200
TOLTEC RESOURCES, IN
GOLD BASIN PROJE
MOHAVE COUNTY, ARIZONA
NO. 1 ZONE
SAMPLE & DRILL HOL
LOCATIONS
DATE: AUGUST, 1988
SCALE: 1" = 100'
FIGURE No 5

The central part of the zone has been tested by U.S. Borax hole GB 5 which returned 0.014 oz. Au/ton over the 50 feet from 80-130 feet in the hole. Toltec reconnaissance hole 88-5 also tested the central No. 1 zone and returned 0.018 oz. Au/ton from 0-240 feet. Included in this are enriched sections from 0-30 feet (0.033 oz. Au/ton), 80-110 feet (0.024 oz. Au/ton), and 200-240 feet (0.048 oz. Au/ton). DMBW's check split (#5) of the 210-220 interval returned 0.035 oz. Au/ton (Table 1). The cuttings were medium red in color and contained about 10% grey quartz. A DMBW 10 foot chip channel (#1 of Table 1) of a roadside cut ran 0.057 oz. Au/ton.

The north end of the zone lies just north of a showing called the Fox Hole. Samples taken from the Fox Hole by Toltec are reported to have returned up to 0.074 oz. Au/ton over 10 feet. A DMBW sample (#6 of Table 1) from a roadcut north of the Fox Hole returned 0.046 oz. Au/ton over 14 feet. Toltec's holes 88-6 and 88-7 (Figure 6) established a northerly dip for the mineralization. The zone is a minimum of 70 feet wide. Results from hole 88-6 indicate anomalous gold from the collar to 250 feet with the section 110-170 feet returning 0.019 oz. Au/ton.

Toltec reports 72 samples from outcrops, pits, trenches, dumps, and drill holes in the No. 1 zone. The assays ranged from 0.004 to 0.289 oz. Au/ton with an arithmetic average of 0.071 oz. Au/ton.


FEE-SFRR
25
30 US-GB CLAIMS
36
31
DRILLING TARGET
88-6
30' float grab 0.043
6717, 10' of 0.030
Trench- 8' of 0.025
88-7
6703, 10' of 0.023
1062, 10' of 0.035
CYT-9, 11.5' of 0.013
"FOX HOLE"
12' of 0.044
1061, 15' of 0.074
1060, NIL
1064, 6' of 0.002
Boulder
STATE LEASE
46
32
1000 E
4570
LEGEND
Section Corner
'GB' Claim Monument, showing related claims
Survey Stations, showing elevations
GB-7
Drill Hole (U.S. Borax, 1983), approximate location
1080
Rock Chip Sample Site, showing sample number (Width in ft., Gold in opt.)
Gully, small wash
TOLTEC RESOURCES, INC.
GOLD BASIN PROJEC
MOHAVE COUNTY, ARIZONA
FOX HOLE
SAMPLE & DRILL HOLE
LOCATIONS
DATE
SCALE
FIGURE No
6

The geology beneath the surface is known only from reverse circulation drill holes. The holes cut the Cyclopic detachment fault at depths of about 160 feet indicating that the fault has a 10 degree dip to the south. The down dip extent of the steeply dipping No. 1 zone from surface to the Cyclopic fault is on the order of 270 feet.

Enclosing the No. 1 zone are gneissic rocks that have been tectonically sheared and altered by quartz veining, dark red-brown hematite, chlorite, light green K-feldspar, limonite, and either ankerite or siderite. Mapping has shown that the alteration extends 200-250 feet north of the feeder fault. The No. 1 gold zone and alteration envelope terminate to the south against a fine-grained aplite, or granite, where there is either an intrusive contact or a fault.

The No. 1 zone is the best explored of the targets at Gold Basin. Although it is too early to estimate reserves, the extent and sample values of surface exposures of mineralization and the few drill holes suggest a potential of 1.5 to 3 million tons at a grade on the order of 0.04 to 0.07 oz. Au/ton.

No. 2 Zone

The No. 2 zone trends N35^{o}W in south central Section 25, T28S, R19W. It can be traced by outcrop and float for nearly 1,200 feet before being covered by Tertiary fanglomerate at its ends. A width of 60 to 100 feet is suggested by outcrop and

exposes siliceous hematitic rock over 45 feet of which Toltec has recorded samples averaging 0.030 oz. Au/ton.

DMBW sampled an old pit in which was exposed a grey hydrothermal fluorite-bearing clay and a siliceous band of dark red (hematite) quartz breccia. Sample #3 (Table 1) of the clay contained only 0.006 oz. Au/ton. Sample #4, a 24 inch chip channel of the breccia returned 0.038 oz. Au/ton.

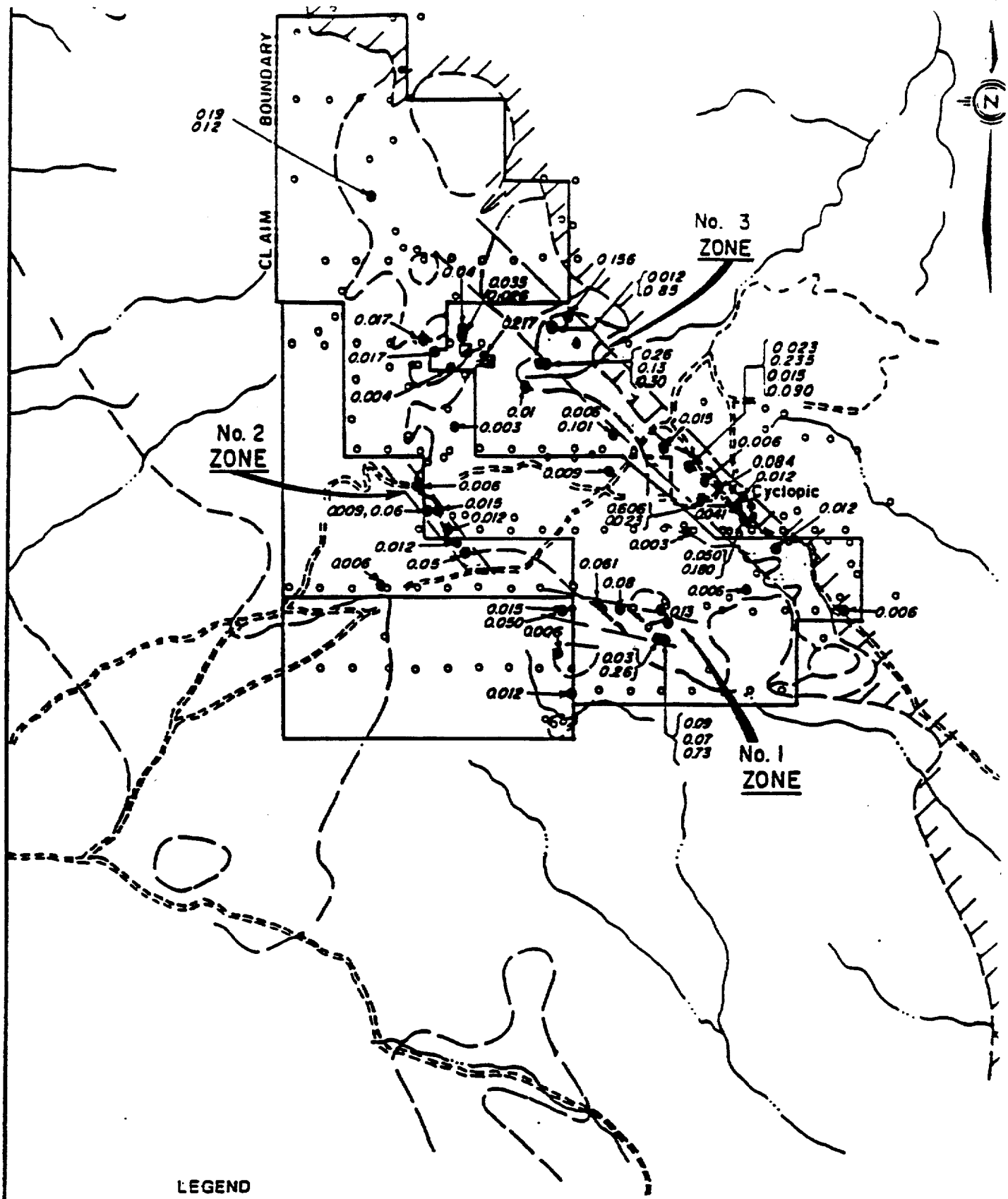
The alteration halo about the No. 2 zone extends at least 1,000 feet east of the central breccia suggesting a significant mineralizing event.

In September of 1988 Toltec drilled one reconnaissance hole to check stratigraphy and structure. The hole returned 0.01 oz. Au/ton from 90-130 feet and 0.011 oz. Au/ton from 260-290 feet.

No. 3 Zone

The No. 3 zone lies in the SE 1/4 of Section 24, T28N, R19W and along the strike extension of the Cyclopic Mine (Figures 4 and 7). Reconnaissance sampling along the Cyclopic trend by U.S. Borax and Toltec returned assays ranging from 0.002 to 0.85 oz. Au/ton.

The presence of upper plate waste has obscured much of this favorable zone. Drilling will be required to determine the extent of mineralization.



LEGEND

- Sample sites
- 0.73 Gold in opt

(Only values > 0.003 opt are shown)

FEET
0 2000 4000

TOLTEC RESOURCES, IN(

GOLD BASIN PROJEC

MOHAVE COUNTY, ARIZONA

GOLD DISTRIBUTION ROCK CHIP SAMPLES

DATE: SCALE: FIGURE 7

No. 4 Zone

The No. 4 zone is a poorly exposed area of altered coarse-grained Precambrian biotite granite and a low-angle lamprophyre dike that was prospected years ago by a cut and a caved adit, from which there is a fairly large dump. The altered rocks outcrop in a north-facing steep slope of a fanglomerate capped hill in the NW1/4 NE 1/4, Section 31, T28N, R18W, about 2,000 feet east of the Red Cloud (No. 1 Zone) gold deposits. Some of the samples taken from the outcrops and dumps are weakly anomalous in gold. The highest reported being 0.006 oz. Au/ton. This alteration patch, partly concealed under Tertiary fanglomerate, appears to be large and possibly reflects a concealed east trending feeder fault system several hundred feet to the south. It may be related to the No. 1 zone or it could be a separate zone.

RECOMMENDED PROGRAM

The presence of brecciation, extensive alteration, widespread anomalous gold assays, lengths of low grade and the occasional high grade gold assay are all suggestive of possible ore deposits. The proximity to and mirroring of the oxidized Cyclopic deposit offer a compelling model to be tested.

If one or more ore bodies are present, their discovery and definition will have to be by drilling. The burial of the potentially mineralized middle plate by the barren rocks of the upper plate of the overthrust makes surface prospecting ineffective.

DMBW, therefore proposes a three phase drill program testing each of the four target areas.

Phase I - No. 1 Zone

It is proposed that 15 reverse circulation exploration drill holes be designated to test a 2,000 foot strike length of potentially mineralized ground from the Red Cloud shaft to the Fox Hole. These 15 holes should be drilled to an average depth of 300 feet, for a total of 4,500 feet.

Phase II - No. 1 Zone

An additional 35 holes will be drilled in the No. 1 zone if the results of the initial 15 holes so warrant. At an average hole depth of 300', Phase II will consist of an additional 10,500 feet of drilling.

Phase III - No. 1 Zone

If encouraging results are obtained in Phase II, an additional 40 holes should be drilled for purposes of ore reserve

delineation. The average drilling depth is estimated at 300 feet for a total of 12,000 feet.

Phase I - No. 2 Zone

It is proposed that initially 10 reverse circulation holes be drilled at an angle into the No. 2 zone to test mineralization along the zone from the south end line of Section 25 to a few hundred feet west of the Fluorite Pit (Hole T8, Figure 4), a distance of some 2,000 feet. The average drilling depth would approximate 300 feet, total footage would be 3,000 feet.

Phase II - No. 2 Zone

If the results of the initial drilling so warrant, an additional 30 holes (9000 feet) will be drilled on the No. 2 zone.

Phase III - No. 2 Zone

If the Phase II drilling of the zone is successful, an additional 40 holes should be drilled for reserve delineation. Drilling depths should average 300 feet, total footage would be 12,000 feet.

Phase I - No. 3 Zone

It is proposed that initially 14 vertical exploration holes be drilled in Section 24. The average drilling depths in this zone are estimated to be 250 feet, total footage would be 3,500 feet.

Phase II - No. 3 Zone

An additional 20 holes (5000 feet) will be drilled in Section 24 if the results of the initial drilling so warrant.

Phase III - No. 3 Zone

With favorable drilling results in Phase II, the third phase will be designed to offset mineralized holes and to further define mineral trends within the area. Drilling depths are estimated at 250 feet per hole with an estimated 42 drill holes, for a total 10,500 feet.

Phase II - No. 4 Zone

An initial program of 6 vertical holes is recommended in this zone. Each hole should be 250 feet deep so that total footage would be 1,500 feet.

Summary Drilling Proposed

Phase I		Feet
No. 1 zone	15 holes @ 300' each	4,500
No. 2 zone	10 holes @ 300' each	3,000
No. 3 zone	14 holes @ 250' each	3,500
	TOTAL	11,000

Phase II		Feet
No. 1 zone	35 holes @ 300' each	10,500
No. 2 zone	30 holes @ 300' each	9,000
No. 3 zone	20 holes @ 250' each	5,000
No. 4 zone	6 holes @ 250' each	1,500
	TOTAL	26,000

Phase III		Feet
No. 1 zone	40 holes @ 300' each	12,000
No. 2 zone	40 holes @ 300' each	12,000
No. 3 zone	42 holes @ 250' each	10,500
	TOTAL	34,500

Phase I Budget

		US $
1.	Construction of drill access roads and drill sites, estimate 8,000 linear feet of road construction, 8 days or 80 hours @ $85/hour.....	6,800
2.	Reverse Circulation drilling, estimate 11,000 feet @ $10/foot.....	110,000
3.	Analytical work, 1,100 samples @ $12/sample	13,200
4.	Vehicle rental, maintenance, etc., 1.5 mos. work (two drill rigs) @ $1000/mo.....	1,500
5.	Geological time & expense, est. 1.5 mos. at $200/day fee and $50/day expenses.....	11,250
		142,750
	Contingencies @ 10%...	14,300
	TOTAL.....	157,050

Phase II Budget

1.	Construction of drill roads and drill sites estimate 70 hrs. @ $85/hr.....	5,950
2.	Reverse circulation drilling, estimate 26,000 feet @ $10/ft.....	260,000
3.	Analytical work, estimate 2,600 samples @ $12/sample.....	31,200

4.	Vehicle rental, maintenance etc., estimate 2 mos. @ $1000/month.....	2,000
5.	Geological fees & expenses, estimate 2 mos. @ $200/day fee & $50/day expenses....	15,000
		314,150
	Contingencies @ 10%...	31,400
	TOTAL SAY.....	346,000

Phase III Budget

1.	Construction of drill roads and drill sites estimate 100 hrs. @ $85/hr.....	8,500
2.	Reverse circulation drilling, estimate 34,500 feet @ $10/ft.....	345,000
3.	Analytical work, estimate 3,500 samples @ $12/sample.....	42,000
4.	Vehicle rental, maintenance etc., estimate 2.5 mos. @ $1000/month.....	2,500
5.	Geological fees & expenses, estimate 2.5 mos. @ $200/day fee & $50/day expenses....	18,750
		416,750
	Contingencies @ 10%...	42,000
	TOTAL SAY.....	459,000

Total Phase I, II and III Budget

A three phase program to explore and develop the potential of Toltec's Gold Basin project is estimated to cost as follows:

Phase I	$ 157,050
Phase II	346,000
Phase III	459,000
TOTAL	$ 962,050

CONCLUSION

Surface sampling and mapping of mineralized exposures at the Gold Basin project of Toltec Resources, Inc. suggest the property has the potential for containing up to ten million tons of oxidized gold-bearing material grading on the order of 0.04 to 0.07 oz. Au/ton. The target, being near surface, would be appropriate for low cost open pit mining and being oxidized would likely be amenable to heap leach methods of gold recovery.

A drill program to explore for and develop reserves is both warranted and justified. DMBW has proposed the program be implemented in three phases to allow for additions, modifications, or deletions during Phases II and III based upon results of the previous phase. The entire program is estimated to cost $962,050 and to require 5.5 to 6 months for completion.

No Appendix A with original (xerox) copy supplied by Lesley & Olsen.

CERTIFICATE OF QUALIFICATIONS

I, Brian Hester, residing at 14690 West 55th Place, Arvada, Colorado, do hereby certify that:

1. I am a consulting geologist employed by Derry, Michener, Booth & Wahl, Inc.

2. I am a graduate of the Royal School of Mines, London with the degree of B. Sc. in Mining Geology in 1950 and of the University of Toronto, Toronto, Ontario with the degree of M.A. Sc.

3. I have been practicing my profession for 39 years.

4. I am a Certified Professional Engineer of the Province of Ontario and a Fellow of the Geological Association of Canada

5. I have not received, nor do I expect to receive, any interests, directly or indirectly, in the stock of Toltec Resources, Inc.

6. I have no past or present, direct, indirect, or contingent interest in the property which is the subject of this report, or in any property within a radius of 10 kilometers of the subject property.

7. The statements contained in this report and the conclusions reached are based upon my review of unpublished data made available to me in a report by Irwin S. Parrish, Manager Derry, Michener, Booth & Wahl, Inc., who made a personal examination of the property on September 14, 1988.

Brian W. Hester, Associate
P. Eng. (Ontario) #19438019

DERRY, MICHENER, BOOTH & WAHL
(DMBW, INC.)

MINING AND GEOLOGICAL CONSULTANTS

- 13949 W. Colfax Ave., Suite 1
- Golden, Colorado 80401
- Telephone: (303) 233-8786
- Telex: 296466
- Telecopier: (303) 232-2586

July 19, 1990

The Directors
480-560 West Georgia Street
Vancouver, B.C.
V6B 4N9

Dear Sirs:

RE: Proposed Exploration Program
for the Gold Basin Property
Mohave County
Arizona
Dated September 28, 1989

This will confirm that I have examined the summary of my report dated September 28, 1989 on the gold Basin Property contained in the prospectus dated dated July 14, 1990 filed by Toltec Resources Ltd. I concur with the aforementioned summary and believe it to be a reasonable representation of the information and recommendations contained within my report on the subject property.

I hereby consent to the use of the above described report, wherein Phase I of an exploration program costing U.S.$124,700 is recommended, in a Prospectus, and the use of the name Brian W. Hester, by Toltec Resources Ltd.

Yours truly,

Brian W. Hester, Associate
P. Eng. (Ontario) #19438019
FGAC #1177

CERTIFICATES

The foregoing constitutes full, true and plain disclosure of all material facts relating to the securities offered by this Prospectus as required by Part 7 of the Securities Act and its regulations.

DATED: July 12, 1990

ISSUER

R. JOHN MACNEILL
President, Director
and Chief Executive Officer

G. ARNOLD ARMSTRONG
Director and
Chief Financial Officer

ON BEHALF OF THE BOARD OF DIRECTORS

CARL HUSTON
Director

KENNETH EWALD
Director

PROMOTERS

DEREK HUSTON

WILLIAM PYE

KENNETH EWALD

HARRY W. RANSPOT

AGENTS

To the best of our knowledge, information and belief, the foregoing constitutes full, true and plain disclosure of all material facts relating to the securities offered by this Prospectus as required by Part 7 of the Securities Act and its regulations.

DATED: July 16, 1990

L.O.M. WESTERN SECURITIES LTD.

Per: _____

Peter Brown