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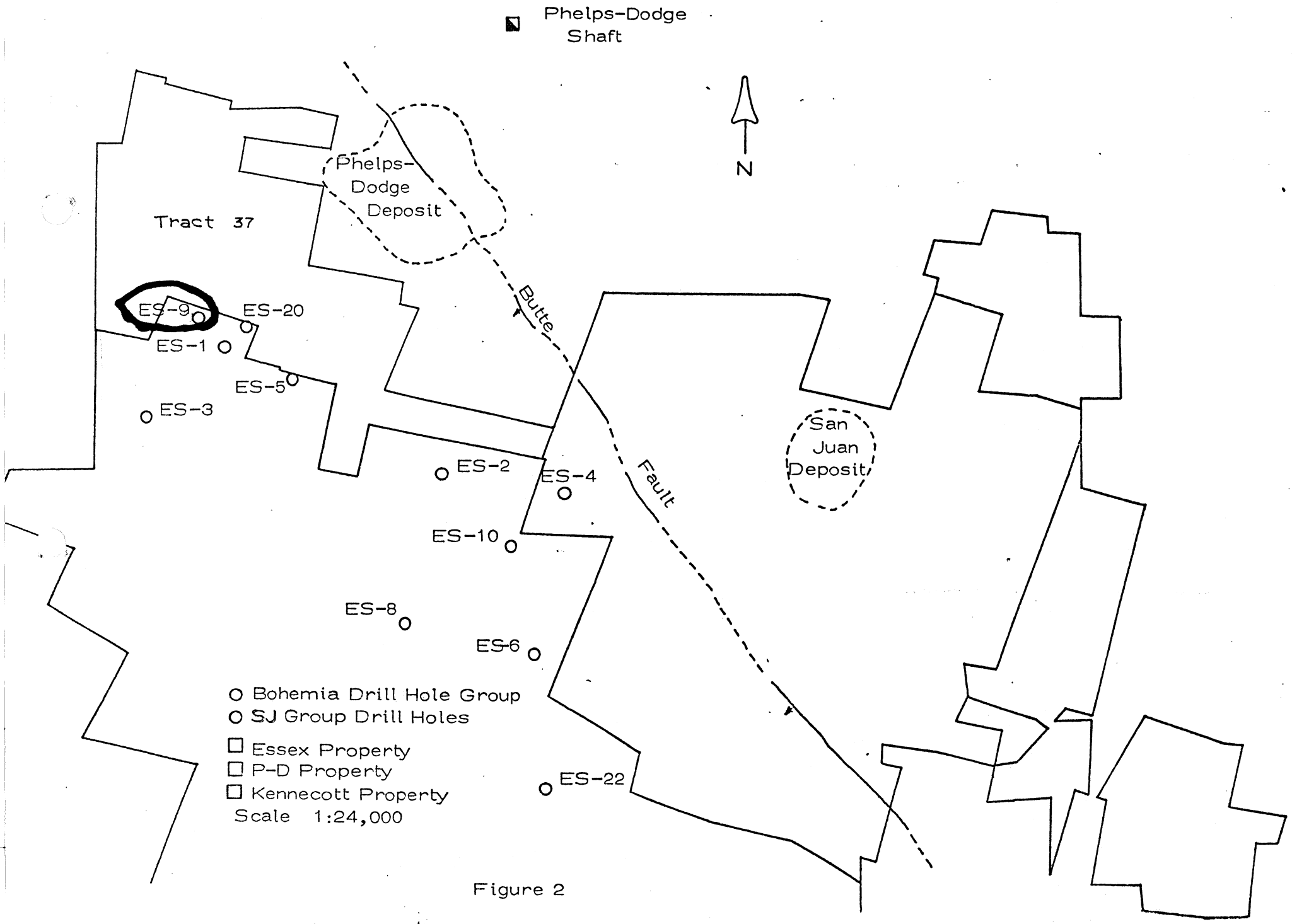
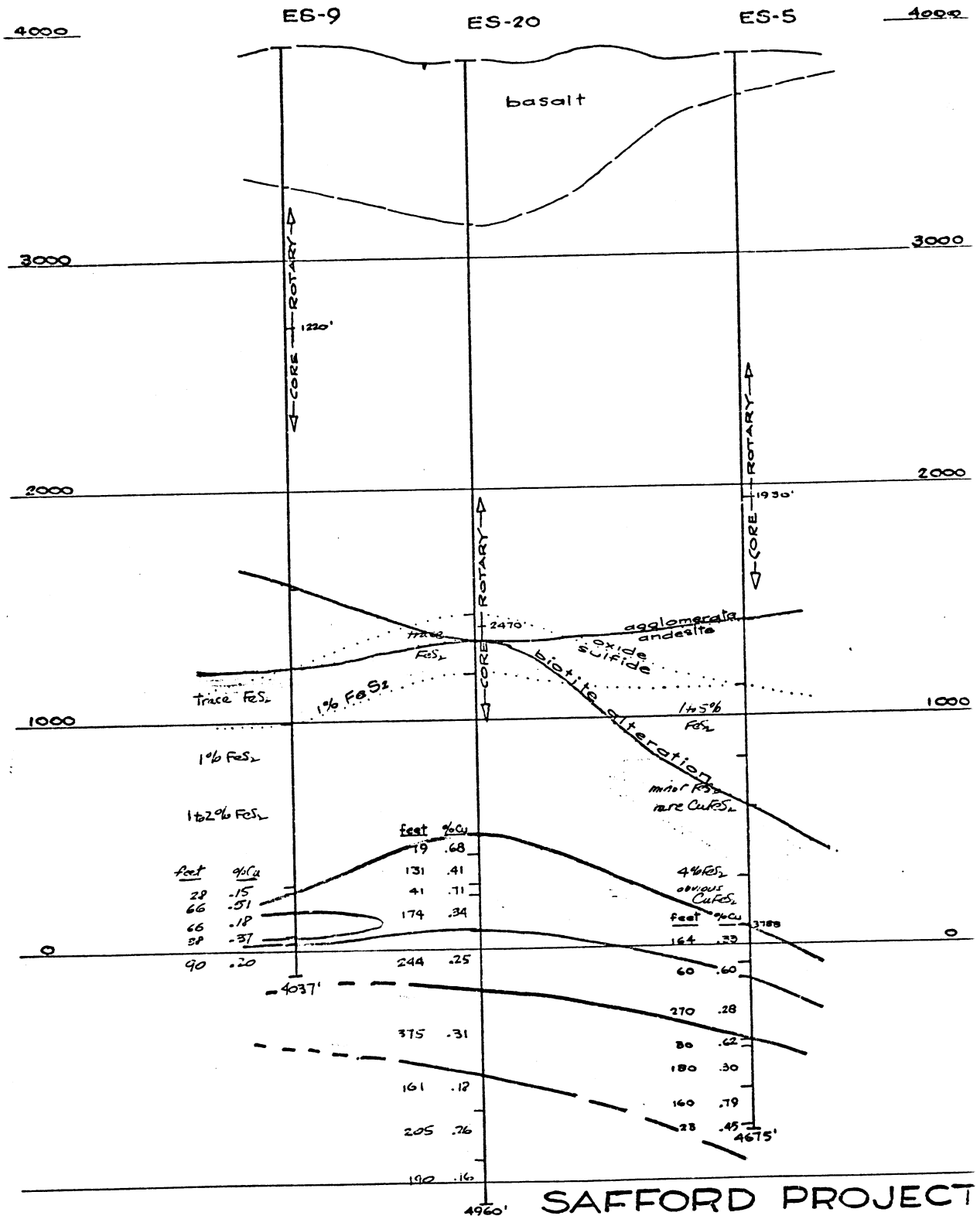

Phelps-Dodge
Shaft
N
Phelps-
Dodge
Deposit
Tract 37
Butte
Fault
San
Juan
Deposit
ES-9
ES-20
ES-1
ES-5
ES-3
ES-2
ES-4
ES-10
ES-8
ES-6
ES-22
Bohemia Drill Hole Group
SJ Group Drill Holes
Essex Property
P-D Property
Kennecott Property
Scale 1:24,000

Figure 2



SAFFORD PROJECT

CROSS SECTION

LOOKING NORTHERLY

SCALE: 1 inch = 500 feet

DRILL HOLE ES-9

SUMMARY LOG

0 - 170 Qal, alluvium

170 - 610 Tb, post-ore volcanic flows

610 - 2359 Kag, andesite agglomerate, green to green gray with some pale purple tones due to finely disseminated Fe oxide; propyllitic alteration with chlorite, epidote, calcite after plagioclase and in veins, and weak sericite (?) after plagioclase which appears to be stronger at top of section; mineralization consists of dark red limonite in small fissure veins, locally flooding the rock, but only rarely in disseminations; gold or gold brown limonite relatively rare; disseminated metallic gray Fe oxides may average 2%, magnetic attraction is weak.

2359 - 4037 Kan, andesite porphyry, medium gray to purplish, varies from very weak to very strong porphyry, fragmental structure and tuffaceous intervals common; 2359 - 2720 propyllitic alteration as above; 2720 - 3596 chlorite-biotite alteration with the two minerals tending to be mutually exclusive, first pyrite at 2722 veins are chlorite + calcite ± pyrite with bleached halo, plagioclase phenocrysts are cloudy but hard and shiny; 3596 - 4037 biotite alteration, minor chlorite after mafics or

as thin selvages in veins; veins are sulfides + quartz
± calcite ± chlorite with thin bleached halo;
3596 - 3660 total sulfides 2-3% and restricted to veins;
below 3622 chalcopyrite is present in nearly all veins;
3660 - 3768 less than 1% total sulfides; 3768 - 4037
chalcopyrite in veins is principal sulfide with minor pyrite,
total sulfides 1 - 1.5%; disseminated magnetite 2-4%
throughout Kan ~~and may occur as minor vein~~ with traces
in veins near bottom of hole

ES-9 - COLLARED 11/27/72

ROTARY : 0 - 1220'

NUMBER OF SHIFTS : 21

COST PER SHIFT : $410.53

AVG FOOTAGE PER SHIFT : 58

COST PER FOOT : $7.06

TOTAL COST : 8,621.20

DIAMOND : (1220 - 2500) - 1280' NX

NUMBER OF SHIFTS : 44

COST PER SHIFT : $373.09

AVG FOOTAGE PER SHIFT : 29

COST PER FOOT : $12.82

TOTAL COST : * 16,416.00

COMPLETE HOLE (TO 12/29/72) 2500'

NUMBER OF SHIFTS : 65

COST PER SHIFT : $385.18

AVG FOOTAGE PER SHIFT : 38

COST PER FOOT : $10.01

TOTAL COST * $25,037.20

* THIS IS TOTAL COST UP TO 12/29/72

DRILL HOLE SAMPLES — WORK SHEET

PAGE ___ OF ___

PROPERTY	DISTRICT	COUNTY	STATE	COUNTRY

HOLE NO.	CONTRACTOR	COLLAR COORD N E	COLLAR ELEV.
ES-9			

BEARING	INCLINATION	DEPTH	STARTED	STOPPED

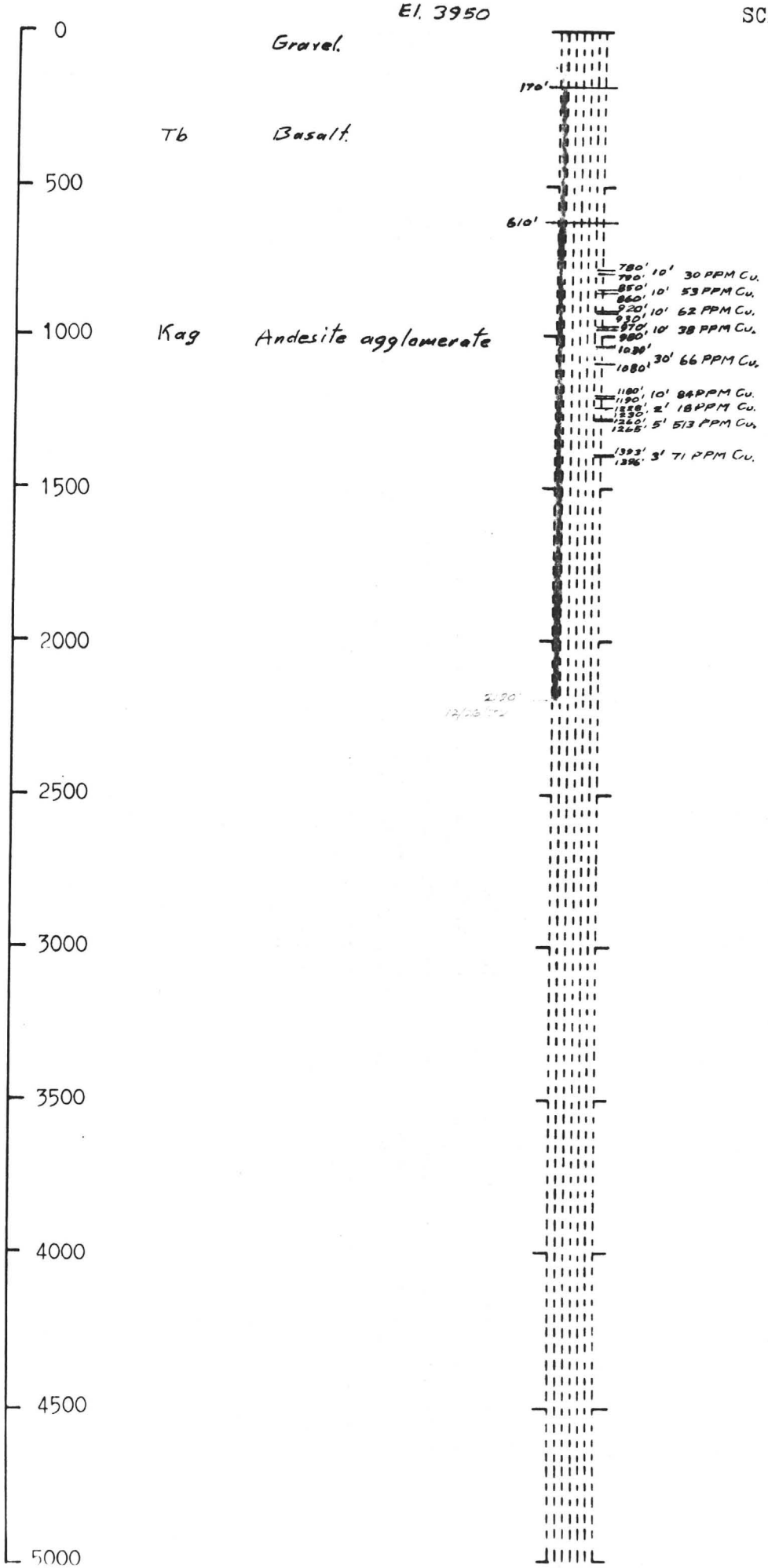
SAMPLE NUMBER	BIT SIZE	RECOVERY FEET	RECOVERY %	DRILL RUN FROM	DRILL RUN TO	INT	ASSAYS							REMARKS
5301	NX	3	100	3091	3094	3								
5302	"	5	100	3026	3031	5								
5303	"	8	100	3011	3019	8								
5304	"	7	100	3019	3026	7								
5305	"	5	100	3031	3036	5								
5306	"	6	100	3036	3042	6								
5307		5	100	3079	3084	5								
5308		7	100	3084	3091	7								
5309		9	100	3094	3103	9								
5310		5	100	3199	3199	5								
5311		5	100	3300	3305	5								
5312		5	100	3403	3408	5								
5313		4	80	3498	3503	5								
5314		8	100	3622	3630	8								
5315		9	100	3630	3639	9								
5316		10	100	3639	3649	10								
5317		10	100	3649	3659	10								
5318		9	100	[illegible]	3758	9	.15							
5319		10	100	3758	3768	10	[illegible]		28'	.15				
5320		9	100	3768	3777	9	.23							
5321		11	100	3777	3788	11	.53		21'	.53				
5322		9	90	3788	3798	10	.17							
5323		9	100	3798	3807	9	[illegible]					66'	0.51	
5324		10	100	3807	3817	10	.1[illegible]		29'	.27				
5325		10	100	3817	3827	10	.23							
5326		6	100	3827	3833	6	.64		16'	.54				
5327		10	100	3833	3843	10	.43							
5328		10	100	3843	3853	10	[illegible]							
5329		5	100	3853	3858	5	.26		37'	.16				
5330		5	100	3858	3863	5	.13							
5331	NX	7	100	3863	3870	7	.11					66'	.18	
5332	NX	10	100	3870	3880	10	.12							
5333	NX	4	100	[illegible]	3884	4	.26							
5334	BX	4	66	3884	3890	6	.23		29'	.20				
5335	BX	8	90	3890	3899	9	.24							
5336	BX	10	100	3899	3909	10	.13							
5337	BX	10	100	3909	3919	10	.37							
5338	BX	10	100	3919	3929	10	.38		38'	.37				
5339	BX	10	100	3929	3939	10	.39							
5340	BX	8	100	3939	3947	8	.31							
5341	BX	10	100	3947	3957	10	.19		20'	.19				
5342	BX	10	100	3957	3967	10	.19							
5343	BX	10	100	3967	3977	10	.28		20'	.26		90'	.20	
5344	BX	10	100	3977	3987	10	.23							
5345	BX	10	100	3987	3997	10	.16		20'	.14				
5346	BX	10	100	3997	4007	10	.12							
5347	BX	10	100	4007	4017	10	.24		30'	.22				
5348		10	100	4017	4027	10	.22							
5349		10	100	4027	4037	10	.21							

ES 9

Essex

El. 3950

SCALE: 1" = 500'



DRILL HOLE SAMPLES

PAGE	OF

PROPERTY	DISTRICT	COUNTY	STATE	COUNTRY

HOLE NO.	CONTRACTOR	COLLAR COORD. N E	COLLAR ELEV.
ES 9			

BEARING	INCLINATION	DEPTH	STARTED	STOPPED

SAMPLE NUMBER	BIT SIZE	RECOVERY FEET	RECOVERY %	DRILL RUN FROM	DRILL RUN TO	INT.	ASSAYS							REMARKS
5174				[illegible]	720	10		30						
5175				850	860	10		53						
5173				920	930	10		62						
5178				[illegible]	980	0		34						
5179				1030	1040	10		37						
5177				1050	1060	10		32						
5176				1070	1080	10		53						
[illegible]				[illegible]	1190	10		32						
[illegible]86				[illegible]	230	2		18						
6487				[illegible]	1267	5		513						
6482				[illegible]	1396	3		71						

ES-9

Boyles Bros.

	ROTARY	CORE
COLLARED:	11-27-72	12-8-73
COMPLETED:	12-5-72	4-6-73

DATE		DEPTH	MUD 2QE	QUICK FOAM	PORTLAND CEMENT	CMC	HY-SEAL	FIBERTEX	KWIK SEAL	CC-16	SODA ASH	CALCIUM CHLORIDE	PENEQUIK 460	FONDU	MUD SEAL	PLASTER	GEL		CEMENTING	WATER	COMMENTS
11/27	D	SET UP		CAL.																	
	S	0-40		3																	4 HRS SET UP
11/28	D	40-140		8	3										5				1	1	SET COLLAR PIPE
	S	140-280		6															1	1	" " "
	N	280-355		3																	4 HRS REPAIR
11/29	D	355-555		10																1	2 HRS REPAIR
	S	555-755		6																	
	N	755-935		8																	
11/30	D	935-1025		10																1	
	S	1025-1085																			
	N	—																			PULLED RODS, PREPARE FOR MUD
12/1	D	—																			8 HRS REPAIR ON PUMP & TRANSMISSION
	S	—	20			1														5	6 HRS LOST CIRC !! BULL! MIXING MUD.
	N	—	16				1													4	3 LOADS SAWDUST 8 HRS LOST CIRC.
12/2	D	—	8							1										2	5 HRS LOST CIRC.,
	S	—	5			1														1	STARTED IN HOLE
	N	—	4																	1	5 HRS LOST CIRC., WASHED TO BOTTOM, PULLED RODS
12/4	D		5				1	7	1		1									2	1 HR LOST CIRC
	S	1085-1160	18				2		2											2	
12/5	D	1160-1220	4															CASING		1	BROKE OUT STRING & MOVED
	S				24	24												8		1	CASED & CEMENTED 3 1/2" TO 1220
12-8	S																				SET UP
12-9	D	1220				1											~~ASTERC~~ 1			1	8 HRS CLEANING HOLE
12-10	D	1220-1257	3																	2	
12-11	D	1257-1309	6			1														1	
	N	1309-1325																			

ES-9

COLLA

DATE		DEPTH	MUD 20G	QUIK FOAM	PORTLAND	CMC	HY-SEAL	FIBERTEX	KWIK SEAL	CC-16	SODA ASH	CALCIUM CHLOR.	FONDU	MUD SEAL	PENEQUIK 460	PLASTER	GEL		CEMENTS	WATER	COMMENTS
2/12	N	1396 - 1448	9										1				CAUSTIC 1			2	1 HR LOST CIRCULATION
2/13	D	1448 - 1495	8																	1	
	S	1495 - 1540	3																	1	
	N	1540 - 1570	7																	1	
2/14	D	—	4																	2	1 HR REPAIR ROUND TRIP
	S	1570 - 1590	10			~~4~~	1											LUBE 1			2 HR "
	N	1590 - 1648	3																	2	
2/15	D	1648 - 1694	6			~~4~~	1													2	
	S	1694 - 1724	5			~~4~~	1											LUBE 1			2 HRS PUTTING UP SHACK
	N	1724 - 1730	2														CAUSTIC 1			2	1 HR WATER DELAY
2/16	D	—																		1	8 HRS CLEANING SUMP, HAULING TANKS, FIXING HOSES
	S	1730 - 1758	6														CAUSTIC 1			1	2 HRS CIRCULATION - MIXING NEW MUD
2/18	~~N~~	1758 - 1781	3														1			1	3 HRS REPAIR
	S	1781 - 1822	6														1	LUBE 1		1	
	N	1822 - 1857	3															1		1	
2/19	D	1857 - 1885	4													~~GELEX~~ 1					PULLED FOR BIT
	S	1885 - 1919	8															1		1	LOWERED RODS
~~2/20~~	~~D~~	1919 - 1953	5														1			1	
2/20	D	1953 - 1984	4															1			
	S	1984 - 2030	5										1					LUBE 1		2	
	N	2030 - 2068	3																	1	
2/2.	D	2068 - 2106	3																	1	
	S	2106 - 2155	7			~~4~~	1											LUBE 1		1	
	N	2155 - 2173	3																	1	2 HRS REPAIR
2/22	D	2173 - 2190	3															LUBE 1			4 HRS REPAIR
	S	2190 - 2201																			TRIP FOR MISLATCH, 2 HRS REPAIR
	N	2201 - 2218	1																	1	LOWERED RODS
2/23	D	2218 - 2235	2															LUBE 1			
	S	2235 - 2262	4																	1	
	N	2262 - 2270	1															LUBE 1			SHUT DOWN FOR HOLIDAY
2/26	D	2270 - 2289	6														CAUSTIC 1	LUBE 1		1	2 HRS REPAIR
	S	2289 - 2315	4														CLX 1	LUBE 1		2	
	N	2315 - 2342	3															LUBE 1			
2/27	D	2342 - 2378	8										1					LUBE 1		2	
	S	2378 - 2390	2															LUBE 1			
	N	2390 - 2394	2														CLX 1			1	LOWERED RODS, DRILLED BRIDGES

ES-9

DATE		DEPTH	MUD 20G	QUIK FOAM	PORTLAND	CMC	HY-SEAL	FIBERTEX	KWIK-SEAL	CC-16	SODA-ASH	CALCIUM CHLORIDE	FONDU	MUD SEAL	RENEQUIK 440	PLASTER	GEL		CEMENTING	WATER	
2/28	D	2394-2445	9								1							LUBE 1		3	
	S	2445-2495	3														CLX 1	LUBE 1		1	
2/29	D	2495-2520	6															1		2	2HRS REPAIR
	S	2520-2539	3										1					1		2	
	N	2539-2559	2														1	1			
2/30	D	2559-2577	4																	2	
1/2	D	~~2577-2595~~	5																	1	GOING IN HOLE; 3HRS REPAIR
	S	2577-2595	2																		2 HRS DRILLING CAVE
	N	2595-2616	2																	1	
1/3	D	2616-2633	2														CAUSTIC 1	LUBE 1	2		PULLED RODS TO CEMENT, 2 HRS REPAIR
	S	—																	8		PREPARING TO CEMENT
	N	—																	8		"
1/4	D	—	7		20												LIME 1		8	3	
	S	—																	8		
	N	—																	8		
1/5	D	—	6													SPERSENE 1			8		WASHING & DRILLING CEMENT
	S	—	5			1													8		DRILLED CEMENT & PULLED RODS
	N	—																	8		DRILLED & WASHED CEMENT CAVE
1/6	D	2633-2645	3														CAUSTIC 1	LUBE 1	4?	1	(4HRS DRILLING CAVE ISN'T CEMENT TIME!!)
	S	2645-2663	1															LUBE 1		1	
	N	2663-2697	4			1												LUBE 1			
1/7	D	2697-2740	2													SPERSENE 1					
	S	2740-2780																		1	
	N	2780-2820	1																		
1/8	D	2820-2848	1															LUBE 1		1	
	S	2848-2878																LUBE 1			
	N	2878-2900																LUBE 1			
1/9	D	2900-2925	6			1											CAUSTIC 1	LUBE 1	2?	1	PULLED RODS TO CEMENT (TRIP FOR BIT!!)
	S	2925—																	8?		TRYING TO GET BARREL TO BOTTOM
1/10	D	—																	8?		HOLE BLOCKED @ 2500, PULLED & PUT ON WASH ROD
	S	—																	8?		[illegible]
	N	—																	8?		" "
1/11	D				10												20	SALT	8		GOT WASH ROD TO 2506
	S		4																8	1	PULLED RODS, WASHED ROCK BIT TO 2000
	N																		8		[illegible]

ES-9

DATE		DEPTH	MUD 2QG	QUIK FOAM	PORTLAND	CMC	HY-SEAL	FIBERTEX	KWIK SEAL	CC-1L	CALCIUM CHLORIDE	MUD SEAL	RENEQUIK 440	PLASTER	GEL	CAUSTIC	BIT LUBE	CEMENTING	WATER	COMMENTS
1/12	D	—	4															8		WASH & DRILL CEMENT 2200 - 2350
	S	—	1															8	1	TESTING CEMENT
	N	—																8		
1/13	D	—	4																1	8 HRS CLEANING OUT SAND BELOW CEMENT
	S		2														SPERSENE 1			8 HRS " " " " "
1/15	D	#5	12		10	1											SALT 20#	16		DRILLED ROCK BIT TO 2525 - CEMENTED - PULLED BACK 330' FEET - STUCK RODS - BROKE CABLE
	N																	8		WORKED ON STUCK RODS
1/16	D																			8 HRS REPAIR, REMOVED TRANSMISSION FROM DRILL TRUCK
	S		2																	8 HRS REPAIR, INSTALLED TRANSMISSION, WASHED HOLE
1/17	D																			BACKED OFF DEEP, PULLED OUT BELLED RODS
	S																			MADE UP NEW WASH STRING
1/18	D		2																	HIT BAD JOINTS IN STUCK STRING, PULLED RODS OUT
	S																			REAMED BELLED JOINTS ALL THE WAY TO CORE BARREL.
1/19	D		4																	PULLED RODS, WENT BACK IN WITH CUTTER
	S																			PULLED CUTTER, LOWERED FISH & STARTED PULLING
1/20	D																			PULLED RODS + 135 FT. THAT WERE CUT YESTERDAY
	S																			MADE UP STRING & LOWERED MILLING TOOL TO 1200 FT.
1/22	D		3			1													2	LOWERED RODS, MILLED UP CORE BARREL, BIT CAME LOOSE
1/23	D																			TAPPED INTO LOST BIT & PULLED OUT, STARTED IN W/ NEW ROCK BIT
	S		2												1			8		LOWERED ROCK BIT & DRILLED 135 FEET HARD CEMENT
1/24	D		3															8		TRIP OUT ROCK BIT, TRIP W/ WASH ROD
	S		3															8	1	WASHED & DRILLED 135 FT CEMENT
1/25	D		2		10													12	1	CLEANED HOLE, CEMENTED, PULLED RODS
	S																	12	1	LOWERED BXX BIT, WAITING ON CEMENT
1/26	D																	8		WAITING ON CEMENT
	S																	8		STARTED TO WASH CEMENT NOT SET UP
1/27	D																	8		DRILLED 65' CEMENT ~~SAND LINE BROKE, MIXED MUD, 15 FT OFF BOTTOM, NO CAVE~~
	S		9			1												16	2	DRILLED 64' CEM., WASHED 15', 50' OF CAVE, CLEANED HOLE, TRIP OUT
1/30	D	2925 - 2935	2													2				LOWERED RODS SLOWLY
	S	2935 - 2958	1			1										1				
	N	2958 - 2983														1				
1/31	D	2983 - 3019																	1	
	S	3019 - 3060														1				
	N	3060 - 3099																		

ES-9

DATE		DEPTH	MUD 20G	QUIK FOAM	PORTLAND	CMC	HY-SEAL	FIBERTEX	KWIK SEAL	CC-16	CALCIUM CHLORIDE	MUD SEAL	PENGUIK 460	PLASTER	GEL	CAUSTIC	BIT LUBE		CEMENTING	WATER	COMMENTS
2/1	D	3099-3125																			
	S	3125-3156																			
	N	3156-3168																			1 HR REPAIR; PULLED FOR BIT
2/2	D	3168-3183																			1 HR REPAIR; LOWERED RODS
	S	3183-3215																		1	
	N	3215-3236	4			1														2	1 HR REPAIR HOIST CABLE
2/3	D	3236-3248	3																2		2 HRS REPAIR CSG, 1 HR REPAIR EQUIP
	S	3248-3261	1																	1	
	N	3261-3273																		1	
2/4	D	3273-3295	5								1									1	
	S	3295-3316	2			2														1	NO RETURN
	N	3316-3328	4																	2	NO RETURN
2/6	D	3328-3339	4																	1	PULLED FOR BIT
	S	3339-3346	1																		CHANGED BIT, LOWERED RODS
	N	3346-3368	1			1														1	
2/7	D	3368-3393	4														GREASE 1			1	
	S	3393-3419	2														CELLER 1			1	
	N	3419-3440	4																	1	
2/8	D	3440-3452	2																		1 HR REPAIR, PULL FOR BIT
	S	3452-3482	2														GREASE 1				CHANGED BIT, LOWERED RODS
2/9	D	3482-3489																		1	PROCURED AND INSTALLED ALTERNATE BEAM PUMP - BAD VIBES, MAN.
	S	3489-3521	1															1 LUBE			8 HOURS DRILLING
	N	3521-3547	1			1															" " "
2/10	D	3547-3567															1 CAN SKAP	3 LUBE			" " "
	S	3567-																			TRIP FOR BIT CHANGE
	N	3567-3585																	2 PEN QUICK		MIXED 2 lbs PEN QUICK IN MUD.
2/12	D	3585-3596	2									2#								1	2 HRS REPAIR - REPLACED CABLE
	S	3596-3612	1									1#						LUBE 1			1 HR REPAIR; STARTED OUT FOR MISLATCH
	N	3612- —																GREASE 1			TRIP FOR MISLATCH
2/13	D	3612-3617	2			1														1	2 HRS REPAIR
	S	3617-3639	2			1														2	
	N	3639-3675	2					1				2									
2/14	D	3675-3705	2									2#								2	
	S	3705-3728	1													1					
	N	3728-3755	2			1						2								1	
2/15	D	3755-3758														1					TRIP FOR BIT

ES-9

Date		Depth	Mud 200	Quik Foam	Portland	CMC	Hy Seal	Fiberfex	Kwik Seal	CC-16	Calcium Chlor	Mud Seal	Penebulk 460	Plaster	Gel	Caustic	Bit Lube		Cementing	Water	Comments
2/15	S	3758-3768	2									1								1	LOWERED REMAING RODS, BROKE WIRELINE
	N	3768-3777																			FINISHED TRIPPING RODS
2/16	D	3777-3791	5			1					1	2#								2	4 HRS REPAIR
	S	3791-3810	4			1			1			SACK 1								3	
	N	—									3						BENTONITE 5			3	6 HRS LOST CIRCULATION
2/17	D	—	3																		8 HRS LOST CIRCULATION (OR CEMENTING)
	S	—			15														8		
	N	—	3									SACK 1							8		
2/20	D	—	2			1											CAL OSEAL 15		8	1	HIT CEMENT 596' OFF BOTTOM
	S	—	2			1													8	1	DRILLED CEMENT 3250-3368
	N	—	4			1						SACK 1					DISPERSE 6		8	1	DRILLED 287' CEMENT - LOST CIRCULATION SAME PLACE
2/21	D	—	6				1		1										8	2	WASHING TO BOTTOM, PUMPED LOST CIRCULATION MATERIAL
	S	—	6			1														3	PULLED RODS BACK TO CEMENT AGAIN, NUMEROUS MECHANICAL FAILURES
2/22	N	DID NOT WORK	4			10													8	1	CEMENTED
	S	—	5																8		
	N	—																	8		
2/23	D	—	7			1						2#							8		lowered to 3510
	S		1																8		WASHED & DRILLED TO 30' OFF BOTTOM
	N	3810-3815	10								1	3 SX				2			5	2	LOST CIRCULATION BOTTOM OF HOLE
2/24	D	3815-3831	8			1					1	2 SX				1				3	NO RETURN
	S	3831-3843	6			1						3				1				2	"
	N	3843-3853	4								1	2								1	"
2/26	D		8				1		3		2	4				1	GREASE 5			3	REPAIR 1 HR 7 HRS LOST CIRCULATION
	S	3853-3863	15			1						2				1				4	4 HRS LOST CIRCULATION
	N	3863-3880	10			1						4					GREASE 1			4	
2/27	D	3880-3881	9		15	1													5		CEMENTED
	S	—	9																8	1	WASHED AT 3280 TILL MUD RETURNED
	N	—	2			1													8	1	STARTED WASHING TO BOTTOM
2/28	D	—	2														DISPERSE 2		8		WASHED & CHOPPED CEMENT TO 3770
	S	—																	3		TRYING TO PULL RODS STUCK ON PREVIOUS SHIFT
3/1	D	—																			UNSTUCK RODS, SERVICED EQUIP
	S	—																			WET PULL OUT; SAND IN CORE BARREL
3/2	D	—	3																	2	LOWERED RODS, SAND IN HOLE
	S	—	15			1														1	DRILLED AND WASHED TO 3716
	N		7								1	1								3	DRILLED SAND AND HIT CEMENT
			2 ST			1					1	1								6	

ES-9

DATE		DEPTH	MUD 20G	QUIK FOAM	PORTLAND	CMC	HY SEAL	FIBERTEX	KWIK SEAL	CC-16	CALCIUM CHLR	MUD SEAL	PENETRAK SEAL	PLASTER	GEL	CAUSTIC	BIT LUBE			CEMENTING	WATER	
3/3	D	—	12						1			2								5	2	3 HRS LOST CIRCUL.; LOST FLUID @ 3810
	S		12																	8	2	DRILLING CEMENT 30' OFF BOTTOM
	N	3881-3884	6																	4	1	REAMED TO BOTTOM
3/5	D	3	3																		1	8 HRS CSG; BREAKING OUT NX RODS
	N																					8 HRS CSG; FINISHED LAYING DOWN RODS
3/6	D	—										2										8 HRS RUNNING CASING
	S		1																		1	8 HRS CASING
	N		3																			8 HRS FINISHED CASING
3/7	D																					8 HRS MAKING BX STRING
3/8	D																					8 HRS " " " COMPLETED
3/9	D	3884-3890															1	1	1		1	
3/10	D	3890-3899															LUBE 1				1	
3/12	D	3899-3924													LUBE COTT 1		1	100	1		3	
3/13	D	3924-3947															1	40			3	
3/14	D	3947	2														LUBE 2					TRIPPED TUBES TWICE FOR BIT CHANGE (@#★!ING SNOW)
3/15	D	3947-3967	3												SEAL DIAL		LUBE 1	LO LOSS	LUBE RAID		3	ROCK HARD - DRILLING BLIND
3/16	D	3967-3987	4			1									1 CAN BIT		LUBE 1	LO LOSS	LUBE RAID	WOLF 1		
3/17	D	3987-4007																				
3/19	D	4007-4027	6																LUBE COTT 1		3	
3/20	D	4027-4047	4																		2	PULLED FOR BIT CHANGE
3	D	—	3																		1	TWISTED OFF AT 3300
3/22	D	—																				BROKE OUT BX STRING + LOADED
3/23	D	—																				MOVING PIPE + SUPPLIES
3/24	D	—																				MAKING UP NEW STRING + SPEAR
3/25	D		2																		1	PULLED SPEAR + LOWERED MILLING TOOL
3/27	D																					PULLED PART OF STRING, NEW BX STRING BROKE
3/28	D																					HOOKED BACK ONTO BOHLEN SPEAR, CANNOT PULL
3/29	D																					WORKING ON STUCK FISH
3/30	D																					FISHING STRING CAME LOSE END OF SHIFT
3/31	D																					PULLED STRING, LEFT 612 FT BX RODS, CORE BARRELS, BIT
4/2	D																					CUT CASING AT 3940
4/3	D																					PULLED CUTTER, LAYING DOWN RODS
4/4	D																					5 HRS STANDBY WAITING P-D DECISION on SURVEY; BEGAN PULLING CASING
4/5	D																					BROKE OUT BX CASING
4/6	D																					TEAR DOWN

Sample No. ES-9-1774

Hand Sample: Light colored fine grained heterogeneous rock. Rock fragments both darker and lighter in color than matrix are present.

Thin section texture: Porphyritic, fine grained groundmass.

Mineral

plagioclase
chlorite
epidote
carbonate
sericite
sphene
quartz
magnetite
hematite
glass
orthoclase

Plagioclase phenocrysts are variable in size. All show rather strong alteration to sericite, carbonate and epidote. Chlorite makes up 10-15% of the rock and occurs as phenocrysts. probably replacing original hornblende(?). A small amount of quartz is present. The groundmass is either very finely crystalline or contains some glass. The darker colored areas contain more glass. Fine grained magnetite is present (~1%) and most grains are partially or completely oxidized to hematite, often staining the rock around the grain. Sphene is a farily abundant accessory mineral. Trace amounts of orthoclase are present.

Rock name: Probably close to andesite.

Sample No. ES-9-1861

Hand Sample: Dark grey, fine to medium grained porphyry. Iron oxide stain on fractures.

Thin Section Texture: Porphyritic, fine grained groundmass with plagioclase phenocrysts up to 3 mm in length. Some suggestion of flow alignments.

Mineralogy
Plagioclase
Chlorite
Magnetite
Carbonate
Sericite
Epidote
Quartz
Orthoclase
Sphene

This rock is approximately 50% plagioclase. The plagioclase is subhedral and ranges in grain size from small microlites to phenocrysts 3mm in length. All of the larger grains show moderate to strong alteration to sericite, epidote, and carbonate. The three minerals are present in roughly equal amounts. Carbonate also occurs as fairly large irregular patches throughout the rock. Small patches of orthoclase also occur inside some of the larger plagioclase grains. Chlorite (penninite) is the second most abundant mineral and is scattered throughout the rock as irregular grains of various sizes. Magnetite makes up 2 to 3% of the rock. Most of the magnetite grains are rimmed by hematite and parts of the rock are stained a reddish color by the iron-oxide. Quartz is a minor constituent (<5%) and occurs as irregular grains sometimes in small pockets.

Rock Name: Andesite porphyry.

Sample No. ES-9-2492

Hand Sample: Light greenish grey, fine-grained homogeneous rock. Iron oxide stains on some small fractures. Carbonate coating along some larger fractures.

Thin section texture: Mostly fine grained, homogeneous. A few larger grains present.

Mineralogy
Plagioclase
chlorite
epidote
sericite
quartz
orthoclase
magnetite
Hematite
leucoxene

Plagioclase is mostly fine grained and moderately altered to epidote and some sericite. Chlorite makes up 20 to 30% of the rock as irregular mostly fine grained material. A few patches of coarser grained chlorite are present. Fine grained quartz makes up less than 5% of the rock. Orthoclase is slightly more abundant than in ES-9-1861 but only makes up about 5% of the rock. Sericite is abundant throughout all of the rock. The fine grained nature of most of the rock and the abundant sericite preclude identification and estimation of percentages of original minerals. When compared with ES-9-1861 this rock is much less porphyritic and contains less carbonate. Chlorite, epidote and sericite are abundant in both rocks. Opaque minerals are very sparse in ES-9-2492. The few present are very fine grained and are mostly leucoxene and hematite. Very minor magnetite is present.

Rock Name: ? Maybe andesite also. Much lighter in color than other andesites but does not appear to contain much orthoclase or quartz.

Sample No. ES-9-2609

Hand Samle: Bracciated and stained with iron oxides. The hand sample is soft and breaks easily.

Thin section texture: Fine grained, slightly porphyritic, highly fractured.

Mineral

plagioclase
chlorite
epidote
biotite
hematite
carbonate
sericite

In the center parts of the core fracturing seems to be a little more intense. In this area the rock consists of small scattered plagioclase phenocrysts in a groundmass of low birefringence, fine grained material that is probably feldspars with or without quartz. Scattered patches of fine grained biotite and epidote are present. Carbonate is abundant along fractures. Some hematite or possibly limonite is present in fractures also. Chlorite is present but not very abundant. Near the edges of the core chlorite is abundant and biotite is absent. Iron oxide staining is more intense in these areas.

Rock name: Probably andesite. The intense fracturing and iron oxide staining make mineral identification difficult.

Sample No. ES-9-2721

Hand SampleL Dark grey mostly fine grained, porphyritic rock. Small veinlet with minor amounts of sulfides.

Thin section texture: Mostly fine grained porphyritic.

Mineralogy
Plagioclase
hornblende
biotite
chlorite
epidote
quartz
sericite
carbonate
magnetite
orthoclase

Plagioclase occurs as subhedral crystals ranging in size from tiny microlites to phenocrysts up to 2mm in length. Alteration is variable. Some larger grains show epidote replacement. Sericite is a minor alteration product. Other grains are slightly cloudy. Carbonate alteration is present in some grains. Large phenocrysts of hornblende are present. These are euhedral and sometimes consist of radial masses of hornblende growing inward with centers containing abundant fine grained magnetite. Some epidote occurs in these sites. Some finer grained more irregular hornblende is also present. The groundmass consists of fairly fresh plagioclase microlites, the finer grained hornblende, fine-grained greenish brown biotite and abundant magnetite. A small amount of chlorite is present in the groundmass, but it is much less abundant than biotite. Quartz occurs as small grains or pockets of grains. A small veinlet cuts the rock and is composed mostly of quartz, calcite and minor sulfides. Pyrite, chalcopyrite and bornite are all present in the veinlet. Chlorite occurs along the edges of the veinlet in some areas. A large hornblende phenocryst is largely converted to chlorite on either side of the veinlet. Very minor orthoclase is present adjacent to the veinlet in some areas.

Rock name: Andesite. Appears similar to ES-9-1861 except for the presence of hornblende. Plagioclase is generally fresher in ES-9-2721 than in ES-9-1861 and ES-9-2721 contains abundant biotite and much less chlorite than 1861. Most of the chlorite in 2721 is associated with the quartz, carbonate, sulfide veinlet.

Sample No. ES-9-2786

Hand Sample: Very dark porphyritic rock. Fine grained groundmass with hornblende phenocrysts up to 6mm in length.

Thin section texture: porphyritic; fine grained groundmass with poorly developed flow texture.

Mineral	Estimated %
Plagioclase	50
hornblende	15-20
biotite	20-25
magnetite	2-3
quartz	
carbonate	
epidote	
chlorite (2)	
glass	

Plagioclase occurs as subhedral zoned crystals ranging in size from tiny microlites to phenocrysts 2mm in length. Most crustals are fresh, some appear to be altering to a fine grained biotite and a very small amount of epidote is present in a few places. Hornblende occurs as large euhedral phenocrysts. Most are fresh; in a few areas fine grained biotite is replacing the hornblende. Fine grained magnetite is concentrated along the margins of some crystals. Biotite is the other abundant mineral occuring throughout the groundmass as very fine grained greenish brown material. It fills the spaces between plagioclase microlites and in a few areas occurs as larger patches of fine grained material. A very minor amount of chlorite occurs in the groundmass. Fine grained magnetite is abundant throughout the groundmass. A small pocket or veinlet contains quartz, minor carbonate and acicular hornblende. A small amount of glass is present in the groundmass.

Rock Name: Andesite. Very similar to 2721. Plagioclase and hornblende appear fresher in 2786 and biotite appears to be slightly more abundant and coarser grained.

Sample No. ES-9-3001

Hand Sample: Dark gray, fine grained, porphyritic roxk. some fine grained sulfides. A small veinlet cuts the sample.

Thin Section Texture: Porphyritic fine grained groundmass, plagioclase phenocrysts up to 3mm in length. Poorly developed flow orientation.

Mineral	Est. %
plagioclase	~50
chlorite }	45
biotite }	
carbonate	
magnetite	
pyrite	
orthoclase	
quartz	

The rock is approximately 50% plagioclase. The size is variable and most of the larger crustals are zoned. Some alteration is present. Cloudiness in certain zones of some crystals (clay minerals?), chlorite in some grains and minor biotite (?) in some. Chlorite and biotite make up a large part of the groundmass. Biotite is greenish brown and very fine grained. Chlorite is coarser grained in some cases. Fine grained magnetite makes up 2-3% of the rock. A small veinlet cuts the rock. Chlorite is the most abundant mineral in this veinlet with some quartz and carbonate. Orthoclase is fairly abundant along the margins of the veinlet. A few grains of pyrite are in the veinlet.

Rock Name: Andesite. Differs from 9-2786 in that hornblende is absent. Chlorite is more abundant in 9-3001 and biotite is finer grained and maybe less abundant.

Sample No. ES-9-3295

Hand Sample: Dark grey, fine grained porphyry. Several small fractures cut the sample. Some of these are stained with red iron oxide and a few sulfide grains occur along or adjacent to the fractures.

Thin section texture: Porphyritic, fine grained groundmass with phenocrysts up to 2mm.

Mineral

plagioclase
biotite
chlorite
carbonate
sericite
orthoclase
magnetite
pyrite

Plagioclase makes up about 50% of the thin section. Most grains are fresh or only slightly cloudy. Minor sericitic alteration is present in some grains. Hornblende phenocrysts apparently were present but these have been converted to masses of fine grained brownish biotite but still retain the characteristic hornblende shape. Fine grained greenish brown biotite is abundant in the groundmass along with fine grained magnetite. Some fine and coarser grained chlorite is present. Several veinlets cut the thin section. These contain sericite, carbonate and quartz. Chlorite is present in some areas in and adjacent to these veinlets. Fine grained orthoclase is fairly abundant along the margins of veinlets in many areas. A few grains of sulfides are in the veinlets.

Rock Name: Andesite. Similar to 9-2786. Biotite appears to be a little coarser grained in 9-3295.

Sample No. ES-9-3339

Hand Sample: Medium grey porphyritic rock. Dark and light colored phenocrysts are present. Several small veinlets cut the sample.

Thin section texture: Porphyritic, fine grained groundmass

Mineral

plagioclase
biotite
chlorite
epidote
quartz
magnetite
orthoclase
sericite
sulfide
carbonate

Plagioclase and biotite are the two most abundant minerals. Plagioclase occurs as subhedral phenocrysts and as smaller crystals in the groundmass. most plagioclase is farily fresh; epidote is a very minor alteration product of plagioclase. Small irregular patches of orthoclase occur inside some of the larger plagioclase crystals. Fine grained biotite is evenly distributed throughout the groundmass. Hornblende phenocrysts apparently were present but have been replaced by biotite and chlorite. In some areas the hornblende sites are taken by fine grained biotite alone, in others chlorite is present along with biotite, commonly with chlorite in the center and biotite at the margins. Magnetite is usually present and orthoclase is occassionally present. Some fine grained magnetite also occurs in the groundmass (1-2% of rock). Several small veinlets are present. These are composed of quartz, sericite, carbonate and orthoclase. Chlorite is fairly abundant along the margins of veinlets. Orthoclase usually occurs where the veinlets cut plagioclase phenocrysts. Some pyrite is present in the veinlets.

Rock name: Andesite

Sample No. ES-9-3856

Hand sample: Dark grey fine grained rock. Small chalcopyrite veinlets.

Thin section texture: Fine grained slightly porphyritic, poorly developed flow orientation of plagioclase laths. A few lithic fragments (?) are present.

Mineral

plagioclase
biotite
hornblende
quartz
orthoclase
chlorite
carbonate
magneitie
pyrite
chalcopyrite

Plagioclase makes up 40-50% of the rock. It occurs as euhedral laths ranging in size from 0.1-1.5mm. Most grains are cloudy and fine grained biotite occurs in a few plagioclase sites. Irregular crystals of hornblende are up to 0.5mm in diameter but make up less than 5% of the rock. Variable amounts of fine grained quartz are present but when veins are excluded makes up less than 5% of rock. Fine grained greenish brown biotite makes up 35-40% of the rock and is fairly evenly distributed throughout the thin section. Magnetite is fine grained and not too abundant in most areas. A few lithic fragments are included in the thin section. These are very similar to the host rock consisting largely of closely packed plagioclase laths. Fine grained magnetite is much more abundant in the fragments. Several veinlets cut the thin section. Those are composed mostly of quartz with moderate amounts of orthoclase, carbonate and chlorite. The sulfides occur in these veinlets. One veinlet is slightly offset where it is cut by another one.

Rock name: Andesite

Sample No. ES-9 2357

Texture: Porphyritic, fine-grained groundmass.

Mineralogy

Plagioclase
Chlorite
Sericite
Magnetite
Hematite

Plagioclase phenocrysts make up 50% or more of the slide. The groundmass appears to be composed almost entirely of fine grained intergrown sericite and chlorite. Some coarser grained chlorite is present and magnetite is very abundant in the groundmass. Some is oxidized to hematite. A small amount of glass may be present.

DRILL HOLE SAMPLES

PAGE | OF

PROPERTY	DISTRICT	COUNTY	STATE	COUNTRY

HOLE NO.	CONTRACTOR	COLLAR COORD.	COLLAR ELEV.
ES-9		N E	

BEARING	INCLINATION	DEPTH	STARTED	STOPPED

SAMPLE NUMBER	BIT SIZE	RECOVERY FEET	RECOVERY %	DRILL RUN FROM	DRILL RUN TO	INT.	ASSAYS CU							REMARKS
5301		3	100	3091	3094	3	.62							
5302		5	"	3026	3031	5	1.62							
5303		8	"	3011	3019	8	.30							
5304		7	"	3019	3026	7	.05							
5305		5	"	3031	3036	5	.02							
5306		6	"	3036	3042	6	.02							
5307		5	"	3079	3084	5	.03							
5308		7	"	3084	3091	7	.09							
5309		9	"	3099	3103	9	.03							
5310		5	"	3194	3199	5	.04							
5311		5	"	3300	3305	5	.06							
5312		5	"	3403	3408	5	.03							
5313		4	80	3498	3503	5	.01							
5314		8	100	3622	3630	8	.23							
5315		9	"	3630	3639	9	.15	37' @ .22						
5316		10	"	3639	3649	10	.20							
5317		10	"	3649	3659	10	.31							
5318		9	100	3749	3758	9	.10							
5319		10	100	3758	3768	10	.12							
5320		9	100	3768	3777	9	.23							
5321		11	100	3777	3788	11	.53							
5322		9	90	3788	3798	10	1.17							
5323		9	100	3798	3807	9	.24							
5324		11	82	3807	3817	13	.27							
5325		10	100	3817	3827	10	.23							
5326		6	"	3827	3833	6	.64							
5327		10	"	3833	3843	10	.48							
5328		10	"	3843	3853	10	.19							

DRILL HOLE SAMPLES

PAGE | OF

PROPERTY	DISTRICT	COUNTY	STATE	COUNTRY
SAFFORD				

HOLE NO.	CONTRACTOR	COLLAR COORD.	COLLAR ELEV.
ES-9		N E	

BEARING	INCLINATION	DEPTH	STARTED	STOPPED

SAMPLE NUMBER	BIT SIZE	RECOVERY FEET	RECOVERY %	DRILL RUN FROM	DRILL RUN TO	INT.	ASSAYS Cu							REMARKS
5301		3	100	3091	3094	3	.62							
5302		5	"	3026	3031	5	1.62							

DRILL HOLE SAMPLES

PAGE	OF

PROPERTY	DISTRICT	COUNTY	STATE	COUNTRY

HOLE NO.	CONTRACTOR	COLLAR COORD. N E	COLLAR ELEV.
[illegible]			

BEARING	INCLINATION	DEPTH	STARTED	STOPPED

SAMPLE NUMBER	BIT SIZE	RECOVERY FEET	RECOVERY %	DRILL RUN FROM	DRILL RUN TO	INT.	ASSAYS							REMARKS
[illegible]				[illegible]	[illegible]	10		30						
5177				[illegible]	[illegible]	10		52						
5178				[illegible]	[illegible]	10		65						
5179				[illegible]	290	10		34						
5179				1080	1090	10		37						
5181				1090	1100	10		[illegible]						
5182				1100	1110	10		35						
5190				[illegible]	190	10		22						
[illegible]				[illegible]	220	[illegible]		19						
[illegible]				[illegible]	[illegible]	5		513						
[illegible]				[illegible]	1896	3		71						
6277				2520	2595	5		506						

DRILL HOLE SAMPLES

PAGE 1 OF 1

PROPERTY	DISTRICT	COUNTY	STATE	COUNTRY

HOLE NO.	CONTRACTOR	COLLAR COORD. N	E	COLLAR ELEV.
ES-9				

BEARING	INCLINATION	DEPTH	STARTED	STOPPED

SAMPLE NUMBER	BIT SIZE	RECOVERY FEET	RECOVERY %	DRILL RUN FROM	DRILL RUN TO	INT.	ASSAYS % Cu	ASSAYS	ASSAYS	ASSAYS	ASSAYS	ASSAYS	ASSAYS	REMARKS
5301	NX	3	100	3091	3094	3	.62			COMPOSITE				
5302		5	"	3026	3031	5	1.62		3194-3199					
5303		8	"	3011	3019	8	.30		3300-3305			% Cu	0.04	
5304		7	"	3019	3026	7	.05		3403-3408			% S	0.15	
5305		5	"	3031	3036	5	.02		3498-3503					
5306		6	"	3036	3042	6	.02							
5307		5	"	3079	3084	5	.03		3622-3659			% Cu	0.25	
5308		7	"	3084	3091	7	.09					% S	0.59	
5309		9	"	3094	3103	9	.03							
5310		5	"	3194	3199	5	.04		3728-3768			.09 Cu	.19 S	
5311		5	"	3300	3305	5	.06		3768-3815			.49 Cu	.44 S	
5312		5	"	3403	3408	5	.03		3997-4037			.20 Cu	.27 S	
5313		4	80	3498	3503	4	.01							
5314		8	100	3622	3630	8	.23							
5315		9	"	3630	3639	9	.15		37' @ .22			(0.59 % S)		
5316		10	"	3639	3649	10	.20							
5317		10	"	3649	3659	10	.31							
5504		6	"	3659	3665	6	.07							
5505		10	"	3665	3675	10	.09							
5506		8	95	3675	3683	8	.05							
5507		7	100	3683	3690	7	.10							
5508		7	"	3690	3697	7	.12							
5509		12	95	3697	3709	12	.04		109' @ .07					
5510		7	85	3709	3716	7	.03							
5511		12	85	3716	3728	12	.07							
5512		9	100	3728	3737	9	.02							
5513		12	"	3737	3749	12	.07							
5318		9	"	3749	3758	9	.10							
5319		10	"	3758	3768	10	.12							
5320		9	"	3768	3777	9	.23							
5321		11	"	3777	3788	11	.53							
5322		9	90	3788	3798	9	1.17							
5323		9	100	3798	3807	9	.24							3768-4037
5324		11	82	3807	3817	11	.27		90' @ .41					
5325		10	100	3817	3827	10	.23							269' @ .28
5326		6	"	3827	3833	6	.64							
5327		10	"	3833	3843	10	.48							
5328		10	"	3843	3853	10	.19							
5329		5	"	3853	3858	5	.26							
5330		5	"	3858	3863	5	.13							
5331		7	"	3863	3870	7	.11							
5332		10	"	3870	3880	10	.12							
5333	BX	4	"	3880	3884	4	.26		51' @ .15					
5334	BX	4	66	3884	3890	4	.23							
5335		8	90	3890	3899	8	.24							
5336		10	100	3899	3909	10	.13							
5337		10	"	3909	3919	10	.37							
5338		10	"	3919	3929	10	.38		38' @ .36					
5339		10	"	3929	3939	10	.39							
5340		8	"	3939	3947	8	.31							
5341		10	"	3947	3957	10	.19							
5342		10	"	3957	3967	10	.19							
5343		10	"	3967	3977	10	.28							
5344		10	"	3977	3987	10	.23							
5345		10	"	3987	3997	10	.16		90' @ .20					
5346		10	"	3999	4007	10	.12							
5347		10	"	4007	4017	10	.24							
5348		10	"	4017	4027	10	.22							
5349		10	"	4027	4037	10	.21							

DRILL HOLE ES-9
SUMMARY LOG

0 - 170 Qal, alluvium

170 - 610 Tb, post-ore volcanic flows

610 - 2359 Kag, andesite agglomerate, green to green gray with some pale purple tones due to finely disseminated Fe oxide; propyllitic alteration with chlorite, epidote, calcite after plagioclase and in veins, and weak sericite (?) after plagioclase which appears to be stronger at top of section; mineralization consists of dark red limonite in small fissure veins, locally flooding the rock, but only rarely in disseminations; gold or gold brown limonite relatively rare; disseminated metallic gray Fe oxides may average 2%, magnetic attraction is weak.

2359 - 4037 Kan, andesite porphyry, medium gray to purplish, varies from very weak to very strong porphyry, fragmental structure and tuffaceous intervals common; 2359 - 2720 propyllitic alteration as above; 2720 - 3596 chlorite-biotite alteration with the two minerals tending to be mutually exclusive, veins are chlorite + calcite ± pyrite with bleached halo, plagioclase phenocrysts are cloudy but hard and shiny; 3596 - 4037 biotite alteration, minor chlorite after mafics or

as thin selvages in veins; veins are sulfides + quartz ± calcite ± chlorite with thin bleached halo;
3596 – 3660 total sulfides 2-3% and restricted to veins, below 3622 chalcopyrite is present in nearly all veins;
3660 – 3768 less than 1% total sulfides; 3768 – 4037 ~~2%~~ chalcopyrite in veins is principal sulfide with minor pyrite, total sulfides 1 - 1.5%; disseminated magnetite 2-4% throughout Kan ~~and may occur as minor vein~~ with traces in veins near bottom of hole
2520 - 2538 zone of brecciation and fault gouge undoubtedly marks a significant structure but direction and displacement are unknown; P-D's so-called Valley Fault is thought to be in this general area but the structure could equally well trend northeast rather than west - northwest

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 1 OF 29

SCALE _____ STARTED _____ STOPPED _____ NOTES BY _____

DEPTH _____ BEARING _____ INCLINATION _____

PROPERTY _____ COUNTY _____ STATE _____ COLLAR COORD. N. _____ E. _____ COLLAR ELEV. _____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
				START OF CORE						
				1220						
			90				1222-1226 moderate shattering		propylitic alteration, strong chlorite after mafics, weak epidote, strong calcite in rock and on fxs, weak sericite after plagioclase	andesite agglomerate gray to green gray
	18 ppm			1230			1228-30 small fissure vein, badly shearing; moderate orange-red limonite as irregular disseminations and partly massive			
			100							
				1240						
			80							
				1248			1248-1259 dissem. rusty limonite mildly shattered some suggestion of original pyrite form			
			90							
				1257						
	513 ppm		75				1259-1265 massive dark red limonite w/ strong sericite; minor yellow limonite on either border			
				1265						
			85							
				1275						
			90							
			50	1285 1286						
			90							
				1295						
			70							

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 2 OF 29

SCALE ____ STARTED ____ STOPPED ____ NOTES BY ____

DEPTH ____ BEARING ____ INCLINATION ____

PROPERTY ____ COUNTY ____ STATE ____ COLLAR COORD. N. ____ E. ____ COLLAR ELEV. ____

ASSAYS % MO	ASSAYS % CU	% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
								Same	Same
		90							
			1304						
		90							
			1309						
		75							
			1313						
		50							
			1316						
		100							
			1318						
		35							
			1322						
		20							
			1325						
		50							
			1328						
		80							
			1333						
		85							
			1340						
		75							
			1344						
		90							
			1353						
		100							
			1361						
		100							
			1370					starting about 1370 good calcite stringers	
		100							
			1380			weak dark red limonite zone 1 FT			
		90				weak dark red limonite 8 INCHES			
			1387						
		60							
	71 ppm					1393-96 strongly shattered, strong dark red limonite			
			1396						
		50							

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 3 OF 29

SCALE 1" = 10' STARTED STOPPED NOTES BY

DEPTH BEARING INCLINATION

PROPERTY COUNTY COLLAR COORD. N. E. COLLAR ELEV. STATE

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
				1402						
			50							
				1405						
			90							
				1413						
			80							
				1418						
			100	1420						
			90							
				1430				2-3% diss. magnetite	propylitic - chlorite epidote-calcite	Kag andesite agglomerate
			95					trace chrysocolla on fx @ 1435	minor calcite veinlets	
				1439				weak reddish brown limonite on fxs		
			100							
				1448						
			100							
				1458						
			100							1461 - - - - below here rock appears tuffaceous, probably lithic tuff, fragments up to 3/4" but average < 1/4" green w/ considerable patchy purple due to finely dissem oxidized magnetite
				1468						
			100							
				1473						
			100							
				1482			3/4" dark red limonite calcite-clay fissure vein 30° to axis @ 1483			
			100							
				1488						
			100							
				1495						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 4 OF 29

SCALE _____ STARTED _____ STOPPED _____ NOTES BY _____

DEPTH _____ BEARING _____ INCLINATION _____

PROPERTY _____ COUNTY _____ COLLAR COORD. N. _____ E. _____ COLLAR ELEV. _____ STATE _____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
			100						Same	Same
				1503			1504-1506 weak pervasive dark red limonite			
			100							
				1511						
			100							
				1521						
			100							
				1531						
			100							
				1540						
			100							
				1550			attitude of 6 inch aphanitic section bedding 80° ± to core axis			
			100							
				1560						
			100							
				1570						
			95							
				1578						
			30	1580						
			100							
				1590						
			100							
				1600						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 5 OF 29

SCALE _____ STARTED _____ STOPPED _____ NOTES BY _____

DEPTH _____ BEARING _____ INCLINATION _____

PROPERTY _____ COUNTY _____ COLLAR COORD. N. _____ E. _____ COLLAR ELEV. _____ STATE _____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
									same weak epidote	same
			100							
				1610						
			100							
				1620						≈1620 rock structure changes slightly to more agglomerate; more diversity in fragment size w/ angular + subrounded pieces up to 3-4" in in fine matrix
			100							
				1628						
			100							
				1638						
			100							
				1648						
			100							
				1658						
			100							
				1668						
			100				1674 - 6" of gouge and gold limonite			
				1676						
			100							
				1684						
			100				1692 dark red limonite zone 1' long			
				1694						
			100							

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 6 OF 29

SCALE ____ STARTED ____ STOPPED ____ NOTES BY ____

DEPTH ____ BEARING ____ INCLINATION ____

PROPERTY ____ COUNTY ____ STATE ____ COLLAR COORD. N. ____ E. ____ COLLAR ELEV. ____

ASSAYS % MO	ASSAYS % CU	ASSAYS	% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
								2% magnetite oxidizing to orange-red hematite or limonite	Some matrix in many areas pinkish indicating newly fresh, unaltered rock and/or iron oxide after finely dissem magnetite	
				1704						
			100							
				1714						
			95							
				1724						
			100							
				1730						
			100							
				1739						
			100							
				1749						
			100							
				1758						
			100							matrix pale to medium purple color due to Fe oxides, clasts generally dark green
				1768			1770-74 thin seam calcite + golden brown limonite			
		T-SECTION	100							
				1776						
			100							
				1781						
			100							
				1786						
			100							
				1796						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 7 OF 29

SCALE _____ STARTED _____ STOPPED _____ NOTES BY _____

DEPTH _____ BEARING _____ INCLINATION _____

PROPERTY _____ COUNTY _____ STATE _____ COLLAR COORD. N. _____ E. _____ COLLAR ELEV. _____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
			95	1805					Same	Same
			100	1815						
			70	1822						
			95	1829						
			100	1837						
			100	1847						
			100	1857					weak chlorite in small clumps, traces epidote; plagioclase phenocrysts small, hard, shiny, clear to weakly cloudy; abundant finely dissemi hematite imparts purple color to rock and obscures other alteration	1857 good change in texture - below here fragmental teture very weak; matrix and barely discernible clasts both fine grained porphyritic, gray to purplish gray in color, dense
T-SECTION			100	1865						
			100	1870						
			100	1880					weak sericite and calcite	local intervals strongly clastic
			100	1885					calcite on fx s and veinlets with very minor brown or dark red limonite	
			80	1890						
			60	1892						
			100							

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 8 OF 29

SCALE ____ STARTED ____ STOPPED ____ NOTES BY ____

DEPTH ____ BEARING ____ INCLINATION ____

PROPERTY ____ COUNTY ____ STATE ____ COLLAR COORD. N. ____ E. ____ COLLAR ELEV. ____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
				1901				up to 4% very finely disem magnetite much of it oxidized		
			100							
				1909				much of the gray metallic material may be specular hematite; magnetic attraction is weak considering the amount present		
			100							
				1919						
			100							
				1929						
			65				weak reddish brown limonite			
				1937					propylitic, scattered large clots of epidote, calcite in rock and veins, tr coatings	poorly defined contact predominantly agglom below here
			60							
				1940						
			100							rock color gray, gray green, pale purple
				1945					weak chlorite in some veins with reddish brown limonite	
			95							
				1953						
			100							
				1960						
			90							
				1964						
			100							
				1968						
			100							
				1980						
			100							
				1984						
			100							
				1994						
		8	100							

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 9 OF 29

SCALE _____ STARTED _____ STOPPED _____ NOTES BY _____

DEPTH _____ BEARING _____ INCLINATION _____

PROPERTY _____ COUNTY _____ STATE _____ COLLAR COORD. N. _____ E. _____ COLLAR ELEV. _____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
									Same	Same
				2004						
			100							
				2021						
			95							
				2030						
			100							
				2040						
			95							
				2050						
			100							
				2060						
			100							
				2068						
			100							
				2078						
			100							
				2089						
			100							
				2098						

DIAMOND DRILL LOG

SCALE _____ STARTED _____ STOPPED _____ NOTES BY _____

DEPTH _____ BEARING _____ INCLINATION _____

HOLE No. ES-9 SHEET 10 OF 29

PROPERTY _____ COUNTY _____ STATE _____ COLLAR COORD. N. _____ E. _____ COLLAR ELEV. _____

ASSAYS % MO	ASSAYS % CU	% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
		100					scattered weak limonite on fx - dark red	same	same
			2106				orange-red hematite finely dissem after hematite/magnetite		predominantly agglomerate w/ a few short intervals of fine-grained porphyritic flows
		100							
			2116						
		100						generally more epidote as dissem spots and clumps	
			2125						
		100							
			2135						
		100							
			2145						
		100							
			2155						
		100				scattered weak limonite on fxs generally golden brown			
			2165						
		100							
			2173						
		95					4-6 % finely dissem magnetite w/ or hematite (it is weakly magnetic)		
			2180						
		100							
			2190						
		65							
			2193						
		15							

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 11 OF 29

SCALE ____ STARTED ____ STOPPED ____ NOTES BY ____

DEPTH ____ BEARING ____ INCLINATION ____

PROPERTY ____ COUNTY ____ COLLAR COORD. N. ____ E. ____ COLLAR ELEV. ____ STATE ____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
									Same	Same
				2203						
			100							
				2210						
			90					weak golden brown limonite		
				2218				mod. dark red limon w/ calcite on fxs		
			100							
				2225						
			100				2229 strong crackled zone	dark purple-red limonite (hematite) flooding	red limonite has replaced all mafic minerals, everything else is partially or totally sericitized	
				2235						
			100					2242-43 massive dark red limonite		
				2244						
			100				2249 badly broken w/ weak mixture of red and golden brown limonite	2252 end of red limonite flooding		
				2253						
										2255 porphyritic andesite dike(?) premineral gray, chloritized plagioclase phenocrysts cloudy perhaps weakly sericitized
			90							
				2262						
			95							
				2270			1/16-1/8 seams of wavy golden brown limonite			
			100							
				2279			weak gouge			
			100							
				2289			mixed gold + dark red limonite			
			100							
				2298						2296 Same as before agglomerate

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 12 OF 29

SCALE ____ STARTED ____ STOPPED ____ NOTES BY ____

DEPTH ____ BEARING ____ INCLINATION ____

PROPERTY ____ COUNTY ____ STATE ____ COLLAR COORD. N. ____ E. ____ COLLAR ELEV. ____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
									Same	Same
			100							
				2307						
			95							
				2315						
			100							
				2325						
			100							
				2332						weakly developed clastic structure
			100							
				2342						
			100							
				2351						Kag andesite agglomerate
			70							
				2358					chlorite after mafics, weak epidote; plagioclase slightly cloudy but shiny and generally hard red hematite after dissem. magnetite imparts iron stain to most of rock weak to strong calcite in matrix and on fxs, varies widely	2359 start another section of fine grained weakly porphyritic andesite with very weak or no clastic structure medium gray to purplish
			95							
				2368						
			100							Kan fine-grained weakly porphyritic andesite
				2378						
			70							
				2388						
			70							
				2390						
			100							
				2394						
			60							
				2396						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 13 OF 29

SCALE ____ STARTED ____ STOPPED ____ NOTES BY ____

DEPTH ____ BEARING ____ INCLINATION ____

PROPERTY ____ COUNTY ____ STATE ____ COLLAR COORD. N. ____ E. ____ COLLAR ELEV. ____

ASSAYS % MO	ASSAYS % CU	ASSAYS	% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
			100	2405				nearly all fts coated w/ dark red to purple limonite; commonly wavy with white sericite a few small 1/8 fissure veins w/ massive dark red limonite 10-20° to core axis	same	same
			100	2415						
			100	2425						
			100	2435						
			100	2445						2447 medium grained lithic tuff
			100	2455						
			100	2465						2459 aphanitic tuffs 2465 lithic tuffs
			90	2472						
			100	2479						
			90	2487						2483 fine grained weakly porphyritic andesite flows? medium gray w/ purple tints due to diss Fe
			100	2495						
			100							

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 14 OF 29

SCALE
STARTED
STOPPED
NOTES BY
DEPTH
BEARING
INCLINATION
PROPERTY
COUNTY
STATE
COLLAR COORD. N.
E.
COLLAR ELEV.

ASSAYS % MO	ASSAYS % CU	% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
			2502			2502 badly brecciated 2505	Same	Same	Same
		100							
			2512						
		100							
			2520			2520 totally brecciated zone with fault gouge	strong dark red limonite flooding; some weak relict crystal outlines but mostly destroyed by crushing	strong sericite	
		70							
			2526			brecciation continues to 2538			
		90							
			2534						
		80							
			2539			2538 fairly solid core but broken	strong dark red iron stain		
		100							
			2544			2543 strong breccia zone with red-purple-white mud at 2547	up to 10-12% discrete dark red limonite spots 1-3 mm plus iron staining everything else	mod to strong sericite in these iron zones	
		100							
			2551						
		85							
			2559						
		100							
			2569						
		40							
		100	2577 2578			2578 start strong fissure vein zone identical to that described above	minor amounts of gold limonite at both contacts of bx but otherwise limonite identical to zone 2520-2551		
		85							
			2585			zone 2585-95 is literally gravel and flakes but no mud			
		80							
			2590						
	506 ppm	80							
			2595						
		70							
			2598						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 15 OF 29

SCALE _____ STARTED _____ STOPPED _____ NOTES BY _____

DEPTH _____ BEARING _____ INCLINATION _____

PROPERTY _____ COUNTY _____ COLLAR COORD. N. _____ E. _____ COLLAR ELEV. _____ STATE _____

ASSAYS % MO	ASSAYS % CU	% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
						breccia zone continues		same	same
		100				strong dissem specks of red limonite end at 2608			
			2606						
		100							
			2612			2612 limonite, gouge at 2612 below 2612 strong shattering continues to 2637 but limonite is purple waxy mixture of sericite on fts			
		95							
			2616						
		95							
			2626						
		70							
			2630						
		0							
			2633						
		90							
			2636			end of strong brecciation – core below is broken but fairly solid			
		90						possibly chlorite alteration zone	fine-grained andesite w/ small plagioclase phenocrysts
			2645				3-4% finely dissem magnetite with orange red hematite forming as oxidation product	good chlorite, weak to moderate epidote, weak calcite; weak sericite-plagioclase cloudy but vary from dull to shiny and soft to hard.	
		100							locally very weak clastic structure
		50	2650						
		50	2651						
			2654						medium gray w/ purple and red tints due to Fe stain
		100					weak dark red to purple limonite w/ clay on many fractures		
			2660						
		100							
			2663						
		100							
			2671						
		100				moderately broken local short intervals badly broken			
			2677						
		100							
			2687						
		90							
			2692						
		100							
			2697						

DIAMOND DRILL LOG

HOLE No. ES-[redacted]9 SHEET 16 OF 29

SCALE: STARTED STOPPED NOTES BY DEPTH BEARING INCLINATION PROPERTY COUNTY COLLAR COORD. N. E. STATE COLLAR ELEV.

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
			90							Kan
				2723						same
			100							
				2712						
			100						chloritic alteration	
T-SECTION 2722				2721				2722 weak pyrite in qtz-calcite veinlet w/ traces hematite, no alteration halo of vein	at 2722 groundmass is gray due to finely dissem black material possibly weak biotite	
			100							
				2731						
			80							
				2740						
			100						weak calcite veinlets w/ rare pyrite	
				2749						
			100						biotite alteration increases with depth	
				2758						
			100							
				2768						
			95							
				2772						
			100							
				2780					strong biotite	
			100						specimen collected for thin section had thin calcite-chlorite veinlet cutting strong biotite	
T-SECTION 2786				2785						
			100							
				2792					biotite replaces mafics totally as well as groundmass plagioclase a little cloudy but hard and shiny	
			100							
				2798						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 17 OF 29

SCALE: STARTED: STOPPED: NOTES BY: DEPTH: BEARING: INCLINATION: PROPERTY: COUNTY: STATE: COLLAR COORD. N.: E.: COLLAR ELEV.:

ASSAYS % MO	ASSAYS % CU	% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
								same	same
		95							
			2807						
		100					modest increase in frequency of pyrite	biotite decreasing	
			2813						
		100					moderate limonite on fxs and staining varies from orange-red to dark red or purplish		
			2820			1/4" pyrite veins, limonite varies in shades of red but that directly associated w/ pyrite is dark rusty red			2822 marked change in rock texture from weak, very small phenocrysts to andesite porphyry w/ 40-50% plagioclase phenocrysts up to 25 mm
		100					selvages on fxs contain pyrite with chlorite		
			2828				the 1/4 vein at 2822 has no chlorite but a 1/4 inch qtz-sericite alteration halo on either side		
		100						very weak chlorite is the only alteration in groundmass w/ possible weak sericite	probably dike
			2838				most pyrite is w/ chlorite on fxs		
		100							
			2843				3-4% disem magnetite	chlorite sericite on fxs	
		100				2846 cpy-bornite sericite-chlorite selvage on fx		minor calcite veinlets	
			2848				total sulfide content - trace	strong calcite from plagioclase	
		100							
			2853						
		100							
			2860						
		100							
			2866						
		100							
			2873						
		90							
			2878						
		95							
			2882						
		100							
			2891						
		100							2894-97 bleached qtz-ser zone
			2900						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 18 OF 29

SCALE ____ STARTED ____ STOPPED ____ NOTES BY ____

DEPTH ____ BEARING ____ INCLINATION ____

PROPERTY ____ COUNTY ____ STATE ____ COLLAR COORD. N. ____ E. ____ COLLAR ELEV. ____

ASSAYS % MO	ASSAYS % CU	% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
							2899-2901 1/4" pyrite calcite vein w/ 10% dissem pyrite halo 1 inch wide on either side limonite after pyrite is goethite color	2899-2901 bleaching silicification intermittent bleached white zones down to 2911 otherwise alteration is weak as described above	Kan (?) dacite dike
		100							
			2910						
		95							
			2917			badly broken 2913-2917			bottom at 2917 still good porphyry
		100						chloritic alteration	
			2922						
		65							
			2925						
		90					fine dissem magnetite	veinlets chlorite + calcite ± pyrite with bleached halo also some calcite after plagioclase phenocrysts	local short intervals 2950, 2965, show weak porphyritic texture and some clastic structure
			2935						
		100							
			2941						
		100							
			2944						
		100							
			2950						
		100					scattered thin pyrite veinlets total sulfide ≈ 1%	chlorite	
			2958						
		100							
			2964					chlorite giving way to strong biotite	
		100							
			2967						
		100							
			2979						
		100							
			2983						
		100							
			2990						
		100							
			2999						

DIAMOND DRILL LOG

SCALE _____ STARTED _____ STOPPED _____ NOTES BY _____

DEPTH _____ BEARING _____ INCLINATION _____

HOLE No. ES-9 SHEET 19 OF 29

PROPERTY _____ COUNTY _____ STATE _____ COLLAR COORD. N. _____ E. _____ COLLAR ELEV. _____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
								Same	Same	Same
			100							
				3007					chlorite alteration predominant but biotite may be weak to locally strong, the two seem to be somewhat mutually exclusive	
			95							
				3011			½" pyrite vein			
	.30		100							
				3019				dissem magnetite varies from 2% to locally 8%, may be some direct relationship between magnetite + biotite	plagioclase pretty fresh	
	.05		100							
				3026			½"-¾" vein of pyrite-chalcopyrite-chalcocite and "live limonite" remnant of cpy is completely enclosed by chalcopyrite		calcite ± on seams and veins	
	1.62									
			100					no dissem sulfides except fringing the sparse veins of pyrite; veins have bleached halo of qtz-sericite alteration		
	.02									
				3036						
	.02		100							
				3042				thin coatings of pyrite on fts are typically associated with chlorite		
			100							
				3052				chlorite also fairly typical in center of pyrite-qtz-sericite type vein		
			100							
				3060			½" vein pyrite-chalcopyrite-chalcocite cpy enclosed by ccc	calcite also present on some seams and veins		
			100							
				3064						
			90							
				3073						
			100							
				3079						
	.03		100							
				3084						
	.09		85				⅛" vein chalcopyrite			
				3091						
	.62									
			100							
	.03									
				3099						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 20 OF 29

SCALE: STARTED STOPPED NOTES BY

DEPTH BEARING INCLINATION

PROPERTY COUNTY DOLLAR COORD. N. DOLLAR ELEV. STATE E.

ASSAYS % MO	ASSAYS % CU	% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
		100					same	same	same
			3103						plagioclase phenocrysts 1-3 mm total 60% of rock, groundmass aphanitic
		100							
			3113						from here down slightly darker gray color reflecting stronger biotite alteration and good dissem. magnetite
		100							
			3118						
		100					< 1% total sulfides		
			3125						
		100							
			3134						
		90							
			3141						
		100							
			3147						
		100							
			3156						
		100							
			3162						
		100							
			3168						
		100							
			3175						
		100							
			3183						
		100							
			3193						
		100							
	.04		3197						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 21 OF 29

SCALE: STARTED STOPPED NOTES BY DEPTH BEARING INCLINATION PROPERTY COUNTY DOLLAR COORD. N. E. DOLLAR ELEV. STATE

ASSAYS % MO	% CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
			90	3206				same	same strong biotite	same
			90	3215				quartz-sericite-chlorite	quartz-sericite-chlorite associated w/ pyrite veinlets	
			100	3225					persistent clots of chlorite after mafics; traces calcite plagioclase cloudy but hard; entire rock appears very hard, weakly silicified	
			100	3227			trace covellite tarnish on pyrite			
			100	3233				-3232 - down increased frequency of pyrite veinlets	rarely a vein will have thin biotite halo but may be cut by later vein w/ chlorite	
			90	3234						
			100	3236				1-2% pyrite no dissem. sulfides		
			85	3242						
			100	3248						
			100	3253						
			100	3261						
			85	3268						
			100	3273						
			85	3283			3284 - 3285 1/2" qtz-sericite-pyrite-chalcopyrite oxidized to rusty goethite and chalcocite w/ covellite tarnish			
			100	3289						
			100	3295						
			100	3297						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 22 OF 29

SCALE ____ STARTED ____ STOPPED ____ NOTES BY ____

DEPTH ____ BEARING ____ INCLINATION ____

PROPERTY ____ COUNTY ____ STATE ____ COLLAR COORD. N. ____ E. ____ COLLAR ELEV. ____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
	.06			3301				Same	Same	Same
			90				partial to complete oxidation of veins	veins very thin	strong biotite w/ minor chlorite usually after some of the mafic phenocrysts; other mafic phenocrysts alter to biotite	Kan andesite porphyry gray
				3311				traces bornite and chalcopyrite scattered around		locally phenocrysts are minor and rock is slightly clastic or tuffaceous
			100							
			100	3316					pyrite-chlorite-sericite veins	
				3317						
			90							
				3320						
			50							
				3322						
			50							
				3324						
			90							
				3326						
			70							
				3328						
			85							
				3334						
			100							
				3339						
			60	3340						
			100							
				3346						
			95							
				3352						
			100							
				3358						
			100							
				3362						
			100							
				3364						
			100					total sulfides probably 1% average		
				3368						
			100							
				3378						
			100							
				3384						
			90							
				3393						
			100							
				3400						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 23 OF 29

SCALE: STARTED STOPPED NOTES BY DEPTH BEARING INCLINATION PROPERTY COUNTY DOLLAR COORD. N. DOLLAR ELEV. STATE E.

ASSAYS % MO	ASSAYS % CU	% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
							Same	Same	Same
		100							
	.03		3406				pyrite in veins rarely over 1/8 inch weak diss pyrite usually strongest adjacent to veins;	generally chlorite alteration, locally biotite weak to moderate	Kan very weakly porphyritic, tuffaceous in character,
		100						sericite-chlorite halos on veins	gray color
			3416				partial to complete oxidation to bright red or dark brownish red limonite, clay also present		
		100							
			3419					calcite veinlets common, sometimes to 1/2 inch	
		100					traces chalcopyrite in veins		
			3423						
		85							
			3429				original total sulfides 2-3%		
		85							
			3432					abundant finely dissem magnetite	
		100							
			3436						
		100							
			3440						
		90							
			3445						
		80							
			3450						
		100							
			3452						
		100							
			3453						
		100							clastic intervals are common w/ fragments up to 2 inches
							below 2460 marked decrease in limonite and sulfides	decrease in calcite veins also	
			3462						
		95					veins uncommon total sulfides <.5%	weak biotite	
			3472					veinlets qtz-chlor ± pyrite	qtz fragments common in some aphanitic portions
		100							
			3482						
		100							
			3486						
		70							
			3489						
	.01		3498						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 24 OF 29

SCALE ____ STARTED ____ STOPPED ____ NOTES BY ____

DEPTH ____ BEARING ____ INCLINATION ____

PROPERTY ____ COUNTY ____ STATE ____ COLLAR COORD. N. ____ E. ____ COLLAR ELEV. ____

ASSAYS % MO	ASSAYS % CU	% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
		80				reddish brown limonite w/ strong calcite in broken zone	same	same	same
			3503						
		85							
			3511						
		60							
			3521						
		80							
			3526						
		100							
			3531					scattered quartz in open fx or cavities	
		70							rock turns lighter gray color weakly fragmental
			3539			end broken zone			
		95					zone of stronger sulfides good veins 3547-49 10-12% pyrite	generally chlorite alteration, occasional fragments of good andesite porphyry show strong biotite	
			3547						
		85					generally weak to moderate dissem pyrite 2-5%		
			3556					common calcite veins	
		70							
			3563						
		95					pyrite drops off abruptly at ≈ 3566 below no dissem pyrite, only traces in veins due to oxidation		
			3567						
		100							
			3570						
		90							
			3579						
		80						scattered areas strong biotite	
			3585						
		100							
			3591						
		95							
			3596				2% pyrite in veins, partial oxidation	3596 good biotite alteration calcite - quartz	

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 25 OF 29

SCALE ____ STARTED ____ STOPPED ____ NOTES BY ____

DEPTH ____ BEARING ____ INCLINATION ____

PROPERTY ____ COUNTY ____ STATE ____ DOLLAR COORD. N. ____ E. ____ DOLLAR ELEV. ____

ASSAYS % MO	ASSAYS % CU	% RECOV.	DEPTH	Graph	COL. (estimated % Cu)	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
		90					Same	good biotite chlorite varies from weak to equal to biotite	same Kan
		100	3606						
			3607						
		15							fragmental, angular to subangular of all sizes, & few are porphyry but mostly aphanitic
			3612						
		75							
			3614						
		70							medium to dark gray
			3617						
		100							
			3622				beginning at about 3622 chalcopyrite is present in nearly all veins, a few are totally pyrite, none dissem.		
	.23	100			.1				
			3630				vein minerals are chlorite, quartz, weak calcite; little or no alteration halo		
	.15	95			.1				
			3639			3639 - 3644 good chalcopyrite .6-.8 %	total sulfides overall 2-3 %		
	.20	100			.5				
			3649						
	.31	100			.1				
			3659				— — ≈ 3660 marked decrease in sulfides + chalcopyrite		
	.07	100			.1				
			3665						
	.09	100			<.1				
			3675						
	.05	95			<.1				
			3683						
	.10				<.1				
			3690						
	.12	100			.1				
			3699						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 26 OF 29

SCALE ____ STARTED ____ STOPPED ____ NOTES BY ____ DEPTH ____ BEARING ____ INCLINATION ____ PROPERTY ____ COUNTY ____ STATE ____ COLLAR COORD. N. ____ E. ____ COLLAR ELEV. ____

ASSAYS % MO	ASSAYS % CU	% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
		90			<.1		small amounts of sulfides, < 1%, chalcopyrite > pyrite scattered in thin veinlets ± calcite + quartz	Same	Same
	.04		3725					strong biotite	Kar
		100			<.1			weak chlorite or nil	aphanitic tuffaceous(?) sediment; fragmental structure locally well developed
			3709						
	.03	85			<.1	mildly bx zone w/ strong calcite veins, cementing fragments and filling open cavities		calcite veinlets very thin	phenocryst development limited to a few clasts
			3716			moderate to heavy dark red limonite			
	.07	85			<.1				
			3728						
	.02	100			<.1				
			3737						
	.07	100			.1				
			3747						
	.10	100			.3				
			3755						
		100			.1				
			3758						
	.12				.1				
		100				3768			
	.23				.1				
			3777						
		100			.2				
			3780						
	.53	95			.2				
			3788						
		75			.1				
			3791			strong clay in broken zone			
	1.17	100			.2				
						this vein continues up through broken zone			
			3798		.1				

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 27 OF 29

SCALE ____ STARTED ____ STOPPED ____ NOTES BY ____ DEPTH ____ BEARING ____ INCLINATION ____ PROPERTY ____ COUNTY ____ STATE ____ COLLAR COORD. N. ____ E. ____ COLLAR ELEV. ____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
	.24	.24	100			.15		chalcopyrite in veins, rare pyrite + hematite in veins none to local trace dissem cpy	biotite w/ nil or very minor chlorite in groundmass as clumps perhaps after mafics or as thin selvages on quartz-sulfide veins	same Kan
				3807						
	.27		100			.1				
				3811						
			100			.1				
				3815					veinlets are quartz ± sulfides w/ thin bleached halo, ± thin selvage chlorite (relatively rare)	
			100	3817		.2				
	.23		90			.1	orientation of veins parallel or subparallel core axis and at 45°		occasional traces hypogene hematite in veins	
				3822						
			100			.5				
				3827						
			100			.25				
	.64			3831					a very few veins or fxs have calcite clay	
			100			.9				
				3833						
	.48		100			.5			traces K-spar	
				3843						
			100			.4				
	.19			3849						
			75			.4				
				3853						
	.26		100			.3	THIN SECTION			
				3858						
	.13		100			.25				
				3863						
	.11		100			.2				
				3870						
	.12		100			.1				
				3880						
			100	3881						
	.26		70			.05				
				3884			Bx			
	.23		50			.1		partial to complete oxidation down to ≈3900, the dark purple limonite is strong in thin fractured intervals w/ strong calcite veins		
				3890						
							dark red limonite w/ calcite stringers			
	.13		80			.1				
				3899						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 28 OF 29

SCALE _____ STARTED _____ STOPPED _____ NOTES BY _____

DEPTH _____ BEARING _____ INCLINATION _____

PROPERTY _____ COUNTY _____ STATE _____ COLLAR COORD. N. _____ E. _____ COLLAR ELEV. _____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
								Same	same	Same Kan
	.13		100			.1			thin calcite stringers common but may be up to 1/4 inch	predominantly fine grained flows, commonly w/ very weak fragmental structure; locally strong porphyry texture
				3909						
	.37		100			.25	trace qtz-mzt stringer		strong K-feldspar at 3912, normally only traces or small amounts in veins - also qtz eyes - a few inches of qtz monzonite	
				3919						
	.38		100			.2				
				3929						
	.39		100			.6			calcite	
				3939						
	.31		100			.5				
				3947						
	.19		100			.1				
				3957						
	.19		100			.25				
				3967						
	.28		100			.45				
				3977			MoS_2		calcite veins increasingly common many are barren; also calcite in qtz-sulfide veins a few veins contain magnetite; age relationships not clearcut, probably all contemporaneous since all types of x-cutting may be seen	
	.23		100			.2				
				3987						
	.16		100			.15				
				3997						

DIAMOND DRILL LOG

HOLE No. ES-9 SHEET 29 OF 29

SCALE _____ STARTED _____ STOPPED _____ NOTES BY _____

DEPTH _____ BEARING _____ INCLINATION _____

PROPERTY _____ COUNTY _____ STATE _____ COLLAR COORD. N. _____ E. _____ COLLAR ELEV. _____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
	.12		100			.3		Same	Same	Same Kan
				4007						
	.24		100			.1				
				4017						
	.22		100			.35				
				4027						
	.21		100			.15				
				4037						
							10' OF CORE LOST IN CORE BARREL IN THE HOLE			

DRILL HOLE SAMPLES — D & L claim — PAGE 1 OF 2

PROPERTY	DISTRICT	COUNTY	STATE	COUNTRY
SAFFORD		GRAHAM	ARIZ.	

HOLE NO.	CONTRACTOR	COLLAR COORD.	COLLAR ELEV.
ES-9	BOYLES BROS	N E	3940

BEARING	INCLINATION	DEPTH	STARTED	STOPPED
	VERTICAL	ROTARY 1220 CORE	11-27-72 12-8-72	12-5-72 ~~[illegible]~~

SAMPLE NUMBER	BIT SIZE	RECOVERY FEET	RECOVERY %	DRILL RUN FROM	DRILL RUN TO	INT.	ASSAYS	REMARKS
				0	10			
				10	20		No SAMPLES	
				20	30			
				30	40			
				40	50		80% brn + gray basalt, 20% green agglomerate	
				50	60		50% basalt 50% agglom.	
				60	70		60% Tb 40% Kag	
				70	80		" "	
				80	90		" "	
				90	100		" "	
				100	110		" "	
				110	120		" "	
				120	130		" "	
				130	140	Alluvium	70% 30%	
				140	150		80% 20%	big chips
				150	160		70% 30%	coarse
				160	170		" "	
				170	180		95% med gray basalt	
				180	190	Tb	" " " "	
				190	200		100% gray + reddish tan due to Fe, basalt	
				200	210		" " "	
				210	220		90% Tb 10% agglom	contaminated
				220	230		100% Tb tan + gray	
				230	240		" " tan	
				240	250		" " "	
				250	260		" "	
				260	270		" "	
				270	280		" "	
				280	290		" "	
				290	300		" mostly gray	
				300	310		" gray	
				310	320		"	
				320	330		"	
				330	340		" 30% gray, 70% tan	
				340	350		" "	
				350	360		" "	
				360	370		" "	
				370	380		" "	
				380	390		" dull pink red	
				390	400		" "	
				400	410		" "	
				410	420		" "	
				420	430		" "	
				430	440		" "	
				440	450		" "	
				450	460		" "	
				460	470		" "	
				470	480		" "	
				480	490		" "	
				490	500		" "	
				500	510		" "	
		3940 170 3770		510	520		" "	
				520	530		" "	
				530	540		" "	
				540	550		" "	
				550	560		" "	
				560	570		" 50% red, 50% gray	
				570	580		" "	
				580	590		" "	
				590	600		" "	
				600	610		" "	
				610	620		Kag 40% basalt 50% agglomerate (propylitic) 10% yellow limonite	
				620	630		50% basalt (big chips) 50% agglom.	
				630	640		" "	

Uncertain amount of gray 30% basalt

DRILL HOLE SAMPLES

PROPERTY	DISTRICT	COUNTY	STATE	COUNTRY

HOLE NO.	CONTRACTOR	COLLAR COORD. N E	COLLAR ELEV.
ES-9			

BEARING	INCLINATION	DEPTH	STARTED	STOPPED

SAMPLE NUMBER	BIT SIZE	RECOVERY FEET	RECOVERY %	DRILL RUN FROM	DRILL RUN TO	INT.	ASSAYS							REMARKS
				640	650		green agglomerate, propylitic alt., weak sericite;							10% show yellow limonite
				650	660		"	"		"				basalt contamination - gray
				660	670		"	"		"		"		strong
				670	680									"
				680	690		"	"		"	≥ 50%	"	"	"
				690	700		"	"		"	≥ 50%			
				700	710		"	"		"	"	"		"
				710	720		50%	agglom		50%	large	dull red	basalt	chips
				720	730		70%	"		30%	"	"	"	
				730	740		"			"				
				740	750		"			"				a few yellow limonite chips
				750	760		50%	agglom,	10%	basalt,	40%	qtz-ser-gold	lim.	chips, weak hematite
				760	770		"		"		"			"
				770	780		60%	"	"		30%	"	"	
				780	790		"				"			
				790	800		"				"			
				800	810		98%	agglom.	2%	qtz-ser-gold	lim.		trace basalt	
				810	820		95%	"	5%		"	"		"
				820	830		"		"		"			"
				830	840		60%	agglom,	20%	"	"	"	20%	white-totally bleached
				840	850		"		"		"		"	w/ disseminated lim-hem
				850	860		50%	"	40%	"	"		10%	" "
				860	870		"		"		"		"	"
				870	880		"		"		"		"	"
				880	890		30%	"	50%		"	"	20%	"
				890	900		60%	"	25%	"	"	"	15%	"
				900	910		50%	"	50%	"	"		≤5%	bleached; small amounts hematite throughout
				910	920		"		"				"	
				920	930		70%	"	30%	"	"	"	"	" "
				930	940		"		"		"			"
				940	950		80%	"	20%	"	"	"		"
				950	960		50%	"	50%	"	"		weak	hematite
				960	970		"		"		"		"	
				970	980		"		"		"		"	
				980	990		90%		10%		"		"	
				990	1000		"	"	"		"		"	
				1000	1010		75%	"	25%		"		"	
				1010	1020		"	"	"		"		"	
				1020	1030		80%	"	20%		"		"	
				1030	1040		60%	"	40%	"			"	
				1040	1050		"	"	"		"		"	
				1050	1060		40%	"	60%	"	"		"	moderate hematite
				1060	1070		60%	"	40%	"			"	"
				1070	1080		50%	"	50%	"	"		50-50	lim-hematite
				1080	1090		"		"				"	10% basalt contamination
				1090	1100		30%	"	70%	"	"		40-60	lim-hem
				1100	1110		80%	"	20%	"	"		60/40	lim/hem
				1110	1120		70%	"	30%	"	"		"	"
				1120	1130		"	"	"	"	"		"	
				1130	1140		90%	"	10%	"	"		"	≈ 0.4% weak diss magnetite
				1140	1150		"	"	"	"	"		"	"
				1150	1160		80%	"	20%	"	"		"	"
				1160	1170		70%	"	30%	"	"		"	traces qtz" monzonite
				1170	1180		80%	"	20%	"	"		"	" "
				1180	1190		90%	"	10%	"	"		"	" "
				1190	1200		"	"	"		"			" "
				1200	1210		"	"	"		"			≈ 5% qtz mzt
				1210	1220		"		"					5 ≤ 10% qtz mzt

DRILL HOLE SAMPLES

PAGE | OF

PROPERTY | DISTRICT | COUNTY | STATE | COUNTRY

HOLE NO. ES 9 | CONTRACTOR | COLLAR COORD. N E | COLLAR ELEV.

BEARING | INCLINATION | DEPTH | STARTED | STOPPED

SAMPLE NUMBER	BIT SIZE	RECOVERY FEET	RECOVERY %	DRILL RUN FROM	DRILL RUN TO	INT.	ASSAYS							REMARKS
								PPM Cu						
5174				780	790	10		30						
5175				850	860	10		53						
5173				920	930	10		62						
5178				970	980	10		38						
5179				1030	1040	10		37						
5177				1050	1060	10		89						
5176				1070	1080	10		52						
5190				1180	1190	10		84						
6486				1228	1230	2		18						
6487				1260	1265	5		513						
6488				1393	1396	3		71						
6279				2590	2595	5		506						
5236				2900	2902			.02						

DRILL HOLE SAMPLES

PAGE 1 OF 1

PROPERTY	DISTRICT	COUNTY	STATE	COUNTRY

HOLE NO.	CONTRACTOR	COLLAR COORD.	COLLAR ELEV.
ES-9		N E	

BEARING	INCLINATION	DEPTH	STARTED	STOPPED

SAMPLE NUMBER	BIT SIZE	RECOVERY FEET	RECOVERY %	DRILL RUN FROM	DRILL RUN TO	INT.	ASSAYS % Cu							REMARKS
5301	NX	3	100	3091	3094	3	.62			COMPOSITE				
5302		5	"	3026	3031	5	1.62		3194-3199					
5303		8	"	3011	3019	8	.30		3300-3305			% Cu	0.04	
5304		7	"	3019	3026	7	.05		3403-3408			% S	0.15	
5305		5	"	3031	3036	5	.02		3498-3503					
5306		6	"	3036	3042	6	.02							
5307		5	"	3079	3084	5	.03		3622-3659			%Cu	0.25	
5308		7	"	3084	3091	7	.09					% S	0.59	
5309		9	"	3094	3103	9	.03							
5310		5	"	3194	3199	5	.04		3728-3768			.09 Cu	.19 S	
5311		5	"	3300	3305	5	.06		3768-3815			.49 Cu	.44 S	
5312		5	"	3403	3408	5	.03		3997-4037			.20 Cu	.27 S	
5313		4	80	3498	3503	4	.01							
5314		8	100	3622	3630	8	.23							
5315		9	"	3630	3639	9	.15		37' @ .22			(0.59	%S)	
5316		10	"	3639	3649	10	.20							
5317		10	"	3649	3659	10	.31							
5504		6	"	3659	3665	6	.07							
5505		10	"	3665	3675	10	.09							
5506		8	95	3675	3683	8	.05							
5507		7	100	3683	3690	7	.10							
5508		7	"	3690	3697	7	.12							
5509		12	95	3697	3709	12	.04		109' @ .07					
5510		7	85	3709	3716	7	.03							
5511		12	85	3716	3728	12	.07							
5512		9	100	3728	3737	9	.02							
5513		12	"	3737	3749	12	.07							
5318		9	"	3749	3758	9	.10							
5319		10	"	3758	3768	10	.12							
5320		9	"	3768	3777	9	.23							
5321		11	"	3777	3788	11	.53							
5322		9	90	3788	3798	9	1.17							
5323		9	100	3798	3807	9	.24							3768-4037
5324		11	82	3807	3817	11	.27		90' @ .41					
5325		10	100	3817	3827	10	.23							269' @ .28
5326		6	"	3827	3833	6	.64							
5327		10	"	3833	3843	10	.48							
5328		10	"	3843	3853	10	.19							
5329		5	"	3853	3858	5	.26							
5330		5	"	3858	3863	5	.13							
5331		7	"	3863	3870	7	.11							
5332		10	"	3870	3880	10	.12							
5333	BX	4	"	3880	3884	4	.26		51' @ .15					
5334	BX	4	66	3884	3890	4	.23							
5335		8	90	3890	3899	8	.24							
5336		10	100	3899	3909	10	.13							
5337		10	"	3909	3919	10	.37							
5338		10	"	3919	3929	10	.38		38' @ .36					
5339		10	"	3929	3939	10	.39							
5340		8	"	3939	3947	8	.31							
5341		10	"	3947	3957	10	.19							
5342		10	"	3957	3967	10	.19							
5343		10	"	3967	3977	10	.28							
5344		10	"	3977	3987	10	.23							
5345		10	"	3987	3997	10	.16		90' @ .20					
5346		10	"	3999	4007	10	.12							
5347		10	"	4007	4017	10	.24							
5348		10	"	4017	4027	10	.22							
5349		10	"	4027	4037	10	.21							

DRILL HOLE SAMPLES WORK SHEET

PAGE OF

PROPERTY | DISTRICT | COUNTY | STATE | COUNTRY

HOLE NO. ES-9 | CONTRACTOR | COLLAR COORD. N E | COLLAR ELEV.

BEARING | INCLINATION | DEPTH | STARTED | STOPPED

SAMPLE NUMBER	BIT SIZE	RECOVERY FEET	RECOVERY %	DRILL RUN FROM	DRILL RUN TO	INT.	ASSAYS							REMARKS
5301	NX	3	100	3091	3094	3								
5302	"	5	100	3026	3031	5								
5303	"	8	100	3011	3019	8								
5304	"	7	100	3019	3026	7								
5305	"	5	100	3031	3036	5								
5306	"	6	100	3036	3042	6								
5307		5	100	3079	3084	5								
5308		7	100	3084	3091	7								
5309		9	100	3094	3103	9								
5310		5	100	3194	3199	5								
5311		5	100	3300	3305	5								
5312		5	100	3403	3408	5								
5313		4	80	3498	3503	5								
5314		8	100	3622	3630	8								
5315		9	100	3630	3639	9								
5316		10	100	3639	3649	10								
5317		10	100	3649	3659	10								
5318		9	100	3749	3758	9								
5319		10	100	3758	3768	10								
5320		9	100	3768	3777	9								
5321		11	100	3777	3788	11								
5322		9	90	3788	3798	10								
5323		9	100	3798	3807	9								
5324		11	82	3807	3817	13								
5325		10	100	3817	3827	10								
5326		6	100	3827	3833	6								
5327		10	100	3833	3843	10								
5328		10	100	3843	3853	10								
5329		5	100	3853	3858	5								
5330		5	100	3858	3863	5								
5331	NX	7	100	3863	3870	7								
5332	NX	10	100	3870	3880	10								
5333	NX	4	100	3880	3884	4								
5334	BX	4	66	3884	3890	6								
5335	BX	8	90	3890	3899	9								
5336	BX	10	100	3899	3909	10								
5337	BX	10	100	3909	3919	10								
5338	BX	10	100	3919	3929	10								
5339	BX	10	100	3929	3939	10								
5340	BX	8	100	3939	3947	8								
5341	BX	10	100	3947	3957	10								
5342	BX	10	100	3957	3967	10								
5343	BX	10	100	3967	3977	10								
5344	BX	10	100	3977	3987	10								
5345	BX	10	100	3987	3997	10								
5346	BX	10	100	3997	4007	10								
5347	BX	10	100	4007	4017	10								
5348		10	100	4017	4027	10								
5349		10	100	4027	4037	10								
5504		7	100	3659	3665	7								
5505		10	100	3665	3675	10								
5506		8	100	3675	3683	8								
5507		7	100	3683	3690	7								
5508		7	100	3690	3697	7								
5509		12	100	3697	3709	12								
5510		5	71	3709	3716	7								
5511		10	83	3716	3728	12								
5512		9	100	3728	3737	9								
5513		12	100	3737	3749	12								