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Notes on a conversation with Jack Langton, Chief Geologist,
Morenci Division, Phelps Dodge Corp. in Chicago, Ill.
Feb. 28, 1973

1. Drill hole on Section 32 is pilot hole for new production shaft. Mill will also be located here.

2. Tract 37 is crucial to block caving operation, but Essex ground will not be needed for many years.

3. PD has some information on displaced segment of Dos Pobres orebody and looks as if much less than half of orebody is faulted down. This downfaulted portion appears to be lower grade than main part of orebody.

4. Dos Pobres orebody is much larger than announced with some high grade portions. Test cave block will average more than 1% copper.

5. Downfaulted segment of Dos Pobres orebody will be drilled out from underground workings.

6. If decision were made to proceed today would be 8 years before production could start.

7. Jack Langton is writing a paper on the Safford orebody but will be years before it can be published.

8. Thinks the San Juan looks like roots of the PD orebody, but a good prospect.

9. Five to eight weeks after test block cave started the cave will break through to the surface. At that time operation will be shut down and data analyzed. At this point it looks like an ideal set up, although don't know exactly what will happen when caving reaches Foothill fault. A possibility exists that water problems will be encountered at fault. JKJ suggested the shaft and main haulage will encounter problems penetrating fault and that shaft should be located in vicinity of San Juan Mine. Langton said that had been considered and rejected but did not specify why.

10. Langton heard some of Lanier-Lentz interchange after trial. Does not think there is any way PD would consider a joint venture at this time. Understands that Brown is interested in possible joint ventures but Western Mining Division quite upset with Essex now. Langton again reiterated how bad it looks for Essex to be drilling on the property line.

11. All data has been computerized including assays, rock descriptions, analyses, etc. This required a lot of re-logging by Langton, but is most valuable now and has been used to develop targets elsewhere in area. PD has or is about to get a fancy new computer at Morenci.

12. There is a problem differentiating hydrothermal alteration from regional metamorphic minerals in some instances.

13. At Morenci Langton insists that ore adjacent to BYU ground will be mined underground. This ground will be needed by the year 2030 or 50 to 60 years from now, so PD would not consider paying a very high price at present.

14. At time we have San Juan tied up maybe PD would be interested in joint exploration.

J.K. Jones

March 1, 1973

JKJ:td

BOH #17 - 7'

" #11 - 6'

" #5 - 7'

NAIL KEG #7 - 600'SE -

#8. 300'SE -

#10 - 30SE -

COCHINO #1 - 300'NW -

" #2 - 500'NW -

TECOTE #1
" #2 } NW

NAIL KEG #2
" " #3 } NW

DANIEL & ADAMS
702 4th street
Safford, Arizona Phone- 428-1379- 4283418

Mr. Grover Heinrichs
Essex International Inc
Tucson, Arizona

Subject. Safford Properties. Location Holes & Cleaning Sumps By Gradall .

Location #	Location Name	Time
#-3	Bohemia	3.00
#-9	"	3.00
#-22	"	3.30
#-1	"	2.30
#-4	"	3.00
#-19	Nail Keg	3.30
#-4	Lagger	3.00
#-5	"	3.30
#-8	Bohemia	3.30
#-7	"	3.30
#-6	"	3.00
#-7	Lagger	2.30
#-8	"	2.30
#-14	Nail Keg	2.00
#-15	"	2.30
#-9	"	2.30
#-16	"	2.30
#-6	"	2.30
#-17	"	2.00
#-2	Tecote	2.30
#-1	"	2.00
#-2	Nail Keg	2.30
#-3	"	3.00
#-20	"	3.00
#-21	"	3.30
#-1	Cochino	3.00
#-2	"	2.30
#-1	Nail Keg	2.30
#-4	"	3.00
#-10	"	3.30
#-8	"	3.00
#-7	"	3.00
	Location holes	90. hrs
9-16-72	Gradall cleaning Drill Sump	2.30
9-19	" " " "	1.30
9-30	" " " "	2.00
	Cleaning Sumps	6.00 hrs
	Total Gradall Time	96.00 hrs
	at $20. Pr hr	$1920.00

Bob Helming

DANIEL & ADAMS
702 4th Street
Safford, Arizona

Mr Grover Heinrichs
Essex International Inc.
Tucson, Arizona

Subject. Safford Properties, New drill site,new roads, repairing old roads with H.D. 16 cat.

Date	Time Hrs
8-14-72	4.00
8-21	2.30
8-24	5.30
8-25	4.30
8-26	2.00
8-28	4.30
8-29	4-00
8-30	4.00
8-31	4.00
9-5	3.30
9-18	4.30
9-19	8.00
9-20	6.00
9-21	5.00
9-22	2.00
9-25	3.00
9-29	3.00
9-30	3.00
Cat hrs total	73.00
@22.50 per hr	$1642.50
C omb Total	$3562.50

Bob Helming


32
Core Drill
33
Core Drill
Core Drill
Core Drill
Core Drills
Cottonwood
FOOTHILL 33
FOOTHILL 35
FOOTHILL 34
FOOTHILL 37
FOOTHILL 44
FOOTHILL 45
FOOTHILL 43
FOOTHILL 60
SANDWASH 2
SANDWASH 1
BOHEMIA 10
BOHEMIA 20
BOHEMIA 11
BOHEMIA 18
BOHEMIA 12
BOHEMIA 19-A
BOHEMIA 19
BOHEMIA 21
BOHEMIA 17
BOHEMIA 14
BOHEMIA 15
BOHEMIA 16
BOHEMIA 22
BOHEMIA 2
BOHEMIA 5
BOHEMIA 4
BOHEMIA 3
BOHEMIA 6
BOHEMIA 7-A
BOHEMIA 7
BOHEMIA 8-A
PICKUP 1
PASOPORD 8
PASOPORD 7
PASOPORD 6
NAIL KEG 20
NAIL KEG 3
NAIL KEG 21
NAIL KEG 2
COCHINO 10
COCHINO 1
COCHINO 2
COCHINO 11
COCHINO 12
COCHINO 13
TECOTE 1
TECOTE 2
NAIL KEG 1
NAIL KEG 18
NAIL KEG 5
NAIL KEG 4
NAIL KEG 17
NAIL KEG 6
NAIL KEG 7
NAIL KEG 16
NAIL KEG 9
NAIL KEG 8
NAIL KEG 15-A
NAIL KEG 22
NAIL KEG 10
NAIL KEG 15
NAIL KEG 99
NAIL KEG 14
NAIL KEG 23
NAIL KEG 12
LAGGER 5
LAGGER 8
LAGGER 7
FLAT TOP 35
FLAT TOP 37
FLAT TOP 2
RL-X
RL-1
RL-2
RL-4
RL-7
RL-8
RL-10
RL-11
RL-13
S-19
S-2
S-3
JEEP
3715T
3600
4000

Summary of
Drill Hole Condition

4-27-73

Hole ES-5 Total depth 4675

STARTED 9-1-72 Completed _____

General condition good to 1930'

Cased NX to 1930

caved at 2200

depth measured 4-20-73 to 2200' lost end of depth probe at 2200'

Hole ES-9 Total depth 4047

STARTED _____ Completed _____

General condition good to 1220 Cased NX to 1220 BX casing from 3440-3884 likely caved beyond 3884

610' of rods & core barrel stuck in hole @ 3440

Hole ES-20 Total depth 4960

STARTED Dec. 15, 1972 Shut down Dec. 15, 1972

STARTED again Jan. __ 1973

Cased NX to 2470

Condition of hole considered good

I.P. electrode 2" copper tube 10' long resting on bottom of hole with wire attached to surface. Mud to 700'-800' of surface.

20

9

5

E. Grover Heinrichs

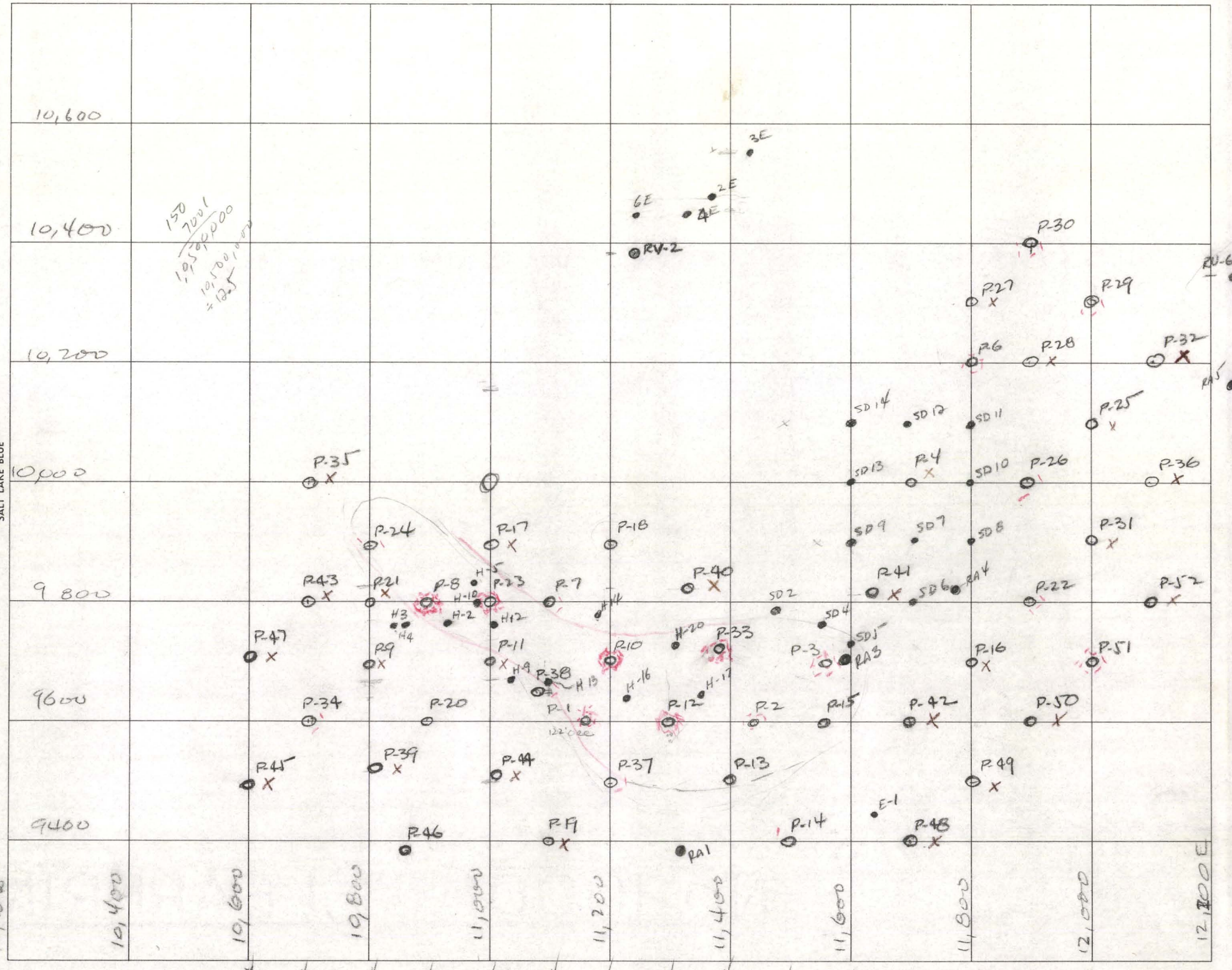
COORDINATES

	HOLE #	NORTH	EAST	ELEVATION
0 X ✓	P-1	9,593	11,156	4108.4
0 X ✓	P-2	9,637	11,457	4111.85
0 X ✓	P-3	9,736	11,554	4132.7
0 X	P-4	9,995	11,698	4162.9
✓	P-5	OUT OF PIT AREA		
0 X	P-6	10,200	11,800	4173.3
0 X	P-7	9,800	11,100	4084.0
0 X ✓	P-8	9,800	10,900	4064.8
0 X ✓	P-9	9,700	10,800	4084.9
0 X ✓	P-10	9,700	11,200	4081.7
0 X ✓	P-11	9,700	11,000	4060.0
0 X	P-12	9,600	11,300	4081.8
0 X	P-13	9,500	11,400	4105.0
0 X ✓	P-14	9,400	11,500	4109.9
0 X	P-15	9,605	11,565	4102.8
0 X ✓	P-16	9,700	11,800	4137.1
0 X ✓	P-17	9,900	11,000	4118.43
0 X	P-18	9,900	11,200	4119.91
0 X ✓	P-19	9,400	11,100	4090.7
0 X	P-20	9,600	10,900	4095.5
0 X	P-21	9,800	10,800	4065.0
0 X	P-22	9,800	11,900	4147.1

	HOLE #	NORTH	EAST	ELEVATION
o x	✓ P-23	9,800	11,000	4062.1
o x	✓ P-24	9,900	10,800	4093.4
o x	✓ P-25	10,100	12,000	4175.8
o x	✓ P-26	10,000	11,900	4162.9
o x	✓ P-27	10,300	11,800	4172.8
o x	✓ P-28	10,200	11,900	4179.8
o x	✓ P-29	10,300	12,000	4185.9
o x	P-30	10,400	11,900	4187.3
o x	P-31	9,900	12,000	4163.2
o x	P-32	10,200	12,100	4183.5
o x	P-33	9,715	11,374	4060.6
o x	P-34	9,600	10,700	4128.6
o x	P-35	10,000	10,700	4069.9
o x	P-36	10,000	12,100	4165.1
o x	P-37	9,500	11,200	4062.1
o x	P-38	9,652	11,082	4063.1
o x	P-39	9,519	10,804	4110.5
o x	P-40	9,832	11,336	4084.2
o x	P-41	9,810	11,650	4097
o x	P-42	9,600	11,705	4099
o x	P-43	9,800	10,700	4083
o x	P-44	9,510	11,010	4085
o x	P-45	9,409.59	10,593.02	4127.59
o x	P-46	9,387.94	10,870.47	4094.34

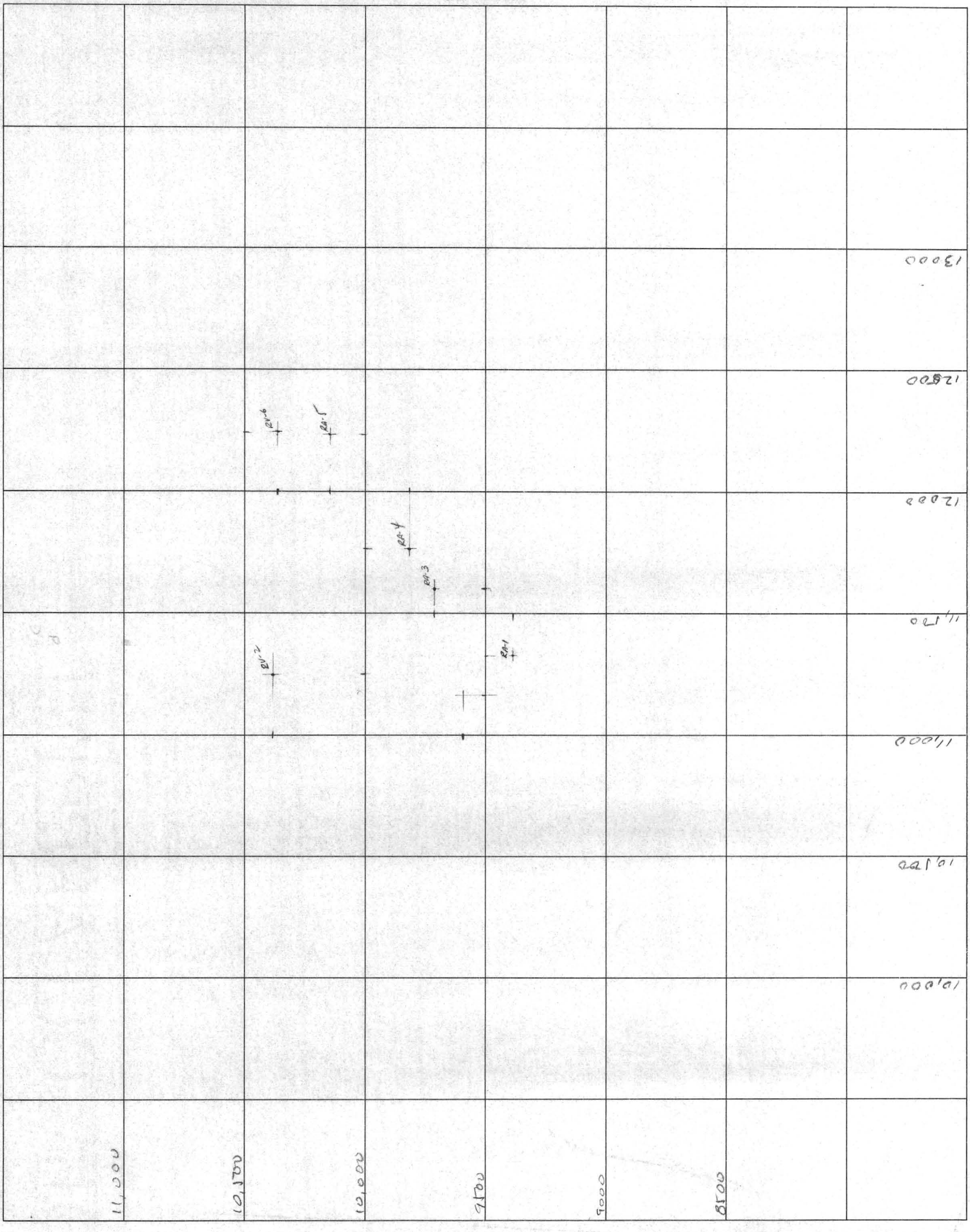
	HOLE #	DEPTH	EAST	ELEVATION
o x	P-47	9,707.42	10,601.93	4082.64
o X	P-48	9,403.73	11,702.12	4129.17
o X	P-49	9,501.12	11,799.31	4130.91
o X	P-50	9,602.50	11,900.88	4139.42
o X	P-51	9,701.17	12,001.10	4140.44
o X	P-52	9,802.46	12,102.78	4144.90

FORM 1006


SALT LAKE BLUE
10,600
10,400
10,200
10,000
9 800
96oo
9400
10,400
10,600
10,800
11,000
11,200
11,400
11,600
11,800
12,000
12,200
3E
2E
6E
4E
RV-2
P-30
P-27
P-29
P-6
P-28
P-32
P-35
P-24
P-17
P-18
P-40
P-25
P-31
P-36
P-26
P-22
P-52
R43
R21
P-8
H-5
P-23
P-7
H-14
H-10
H-2
H12
H3
H4
P-47
R9
P-11
H9
P-38
H13
R10
H-20
P-33
H-16
H-17
P-12
P-1
122' dee
P-34
P-20
P-2
P-15
P-42
P-50
P-16
P-51
P-3
R43
P-45
P-39
P-44
P-37
P-13
P-49
E-1
P-14
P-48
P-46
P-41
RA1
SD 14
SD 12
SD 11
SD 13
R4
SD 10
SD 9
SD 7
SD 8
SD 6
RA4
SD 2
SD 4
SD 3
RA3
RA5
RV-6

SALT LAKE BLUE

FORM 1006



HOLE #	NORTH	EAST	ELEVATION
SD-2	9,788	11,487	4132.5
SD-4	9,765	11,556	4131.2
SD-5	9,741	11,596	4130.3
SD-6	9,800	11,700	4138.5
SD-7	9,900	11,700	4147.4
SD-8	9,900	11,800	4150.7
SD-9	9,900	11,600	4145.5
SD-10	10,000	11,800	4160.8
SD-11	10,100	11,800	4166.7
SD-12	10,100	11,700	4155.4
SD-13	10,000	11,600	4143.7
SD-14	10,100	11,600	4137.4

HOLE #	NORTH	EAST	ELEVATION
✓ E-1	9,453	11,637	4105.97
✓ 2-E	10,476	11,385	4159.73
✓ 3-E	10,553	11,435	4169.83
✓ 4-E	10,463	11,338	4156.69
✓ 6-E	10,463	11,250	4145.83

	HOLE #	NORTH	EAST	ELEVATION
o X	✓ E-1	9,453	11,637	4105.97
o X	✓ 2-E	10,476	11,385	4159.73
o X	✓ 3-E	10,553	11,435	4169.83
o X	✓ 4-E	10,463	11,338	4156.69
o X	✓ 6-E	10,463	11,250	4145.83

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SD-9	9,900	11,600	4145.5
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SD-12	10,100	11,700	4155.4
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COORDINATES

	HOLE #	NORTH	EAST	ELEVATION
o x ✓	P-1	9,593	11,156	4108.4
o x ✓	P-2	9,637	11,457	4111.85
o x ✓	P-3	9,736	11,554	4132.7
o x	P-4	9,995	11,698	4162.9
✓	P-5	OUT OF PIT AREA		
o x	P-6	10,200	11,800	4173.3
o x	P-7	9,800	11,100	4084.0
o x ✓	P-8	9,800	10,900	4064.8
o x ✓	P-9	9,700	10,800	4084.9
o x ✓	P-10	9,700	11,200	4081.7
o x ✓	P-11	9,700	11,000	4060.0
o x	P-12	9,600	11,300	4081.8
o x	P-13	9,500	11,400	4105.0
o x ✓	P-14	9,400	11,500	4109.9
o x	P-15	9,605	11,565	4102.8
o x ✓	P-16	9,700	11,800	4137.1
o x ✓	P-17	9,900	11,000	4118.43
o x	P-18	9,900	11,200	4119.91
o x ✓	P-19	9,400	11,100	4090.7
o x	P-20	9,600	10,900	4095.5
o x	P-21	9,800	10,800	4065.0
o x	P-22	9,800	11,900	4147.1

	HOLE #	NORTH	EAST	ELEVATION
o ✗	✓ P-23	9,800	11,000	4062.1
o ✗	✓ P-24	9,900	10,800	4093.4
o ✗	✓ P-25	10,100	12,000	4175.8
o ✗	✓ P-26	10,000	11,900	4162.9
o ✗	✓ P-27	10,300	11,800	4172.8
o ✗	✓ P-28	10,200	11,900	4179.8
o ✗	✓ P-29	10,300	12,000	4185.9
o ✗	P-30	10,400	11,900	4187.3
o ✗	P-31	9,900	12,000	4163.2
o ✗	P-32	10,200	12,100	4183.5
o ✗	P-33	9,715	11,374	4060.6
o ✗	P-34	9,600	10,700	4128.6
o ✗	P-35	10,000	10,700	4069.9
o ✗	P-36	10,000	12,100	4165.1
o ✗	P-37	9,500	11,200	4062.1
o ✗	P-38	9,652	11,082	4063.1
o ✗	P-39	9,519	10,804	4110.5
o ✗	P-40	9,832	11,336	4084.2
o ✗	P-41	9,810	11,650	4097
o ✗	P-42	9,600	11,705	4099
o ✗	P-43	9,800	10,700	4083
o ✗	P-44	9,510	11,010	4085
o ✗	P-45	9,409.59	10,593.02	4127.59
o ✗	P-46	9,387.94	10,870.47	4094.34

	HOLE #	DEPTH	CASE	ELEVATION
o x	P-47	9,707.42	10,601.93	4082.64
o X	P-48	9,403.73	11,702.12	4129.17
o X	P-49	9,501.12	11,799.31	4130.91
o X	P-50	9,602.50	11,900.88	4139.42
o X	P-51	9,701.17	12,001.10	4140.44
o X	P-52	9,802.46	12,102.78	4144.90

	HOLE #	NORTH	EAST	ELEVATION
O X	✓ H-2	9,777	10,912	4080
O X	✓ H-3	9,770	10,883	4084
O X	✓ H-4	9,771	10,870	4083
O X	✓ H-5	9,836	10,983	4079
O X	✓ H-9	9,673	11,062	4080.41
O X	✓ H-10	9,798	10,981	4078
O X	✓ H-12	9,742	11,007	4077.46
O X	✓ H-13	9,655	11,097	4088.60
O X	✓ H-14	9,789	11,175	4097.70
O Y	✓ H-16	9,651	11,261	4103
O X	✓ H-17	9,648	11,370	4105
O X	✓ H-20	9,716	11,311	4098

HOLE #	NORTH	EAST	ELEVATION
✓ H-2	9,777	10,912	4080
✓ H-3	9,770	10,883	4084
✓ H-4	9,771	10,870	4083
✓ H-5	9,836	10,983	4079
✓ H-9	9,673	11,062	4080.41
✓ H-10	9,798	10,981	4078
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✓ H-13	9,655	11,097	4088.60
✓ H-14	9,789	11,175	4097.70
✓ H-16	9,651	11,261	4103
✓ H-17	9,648	11,370	4105
✓ H-20	9,716	11,311	4098

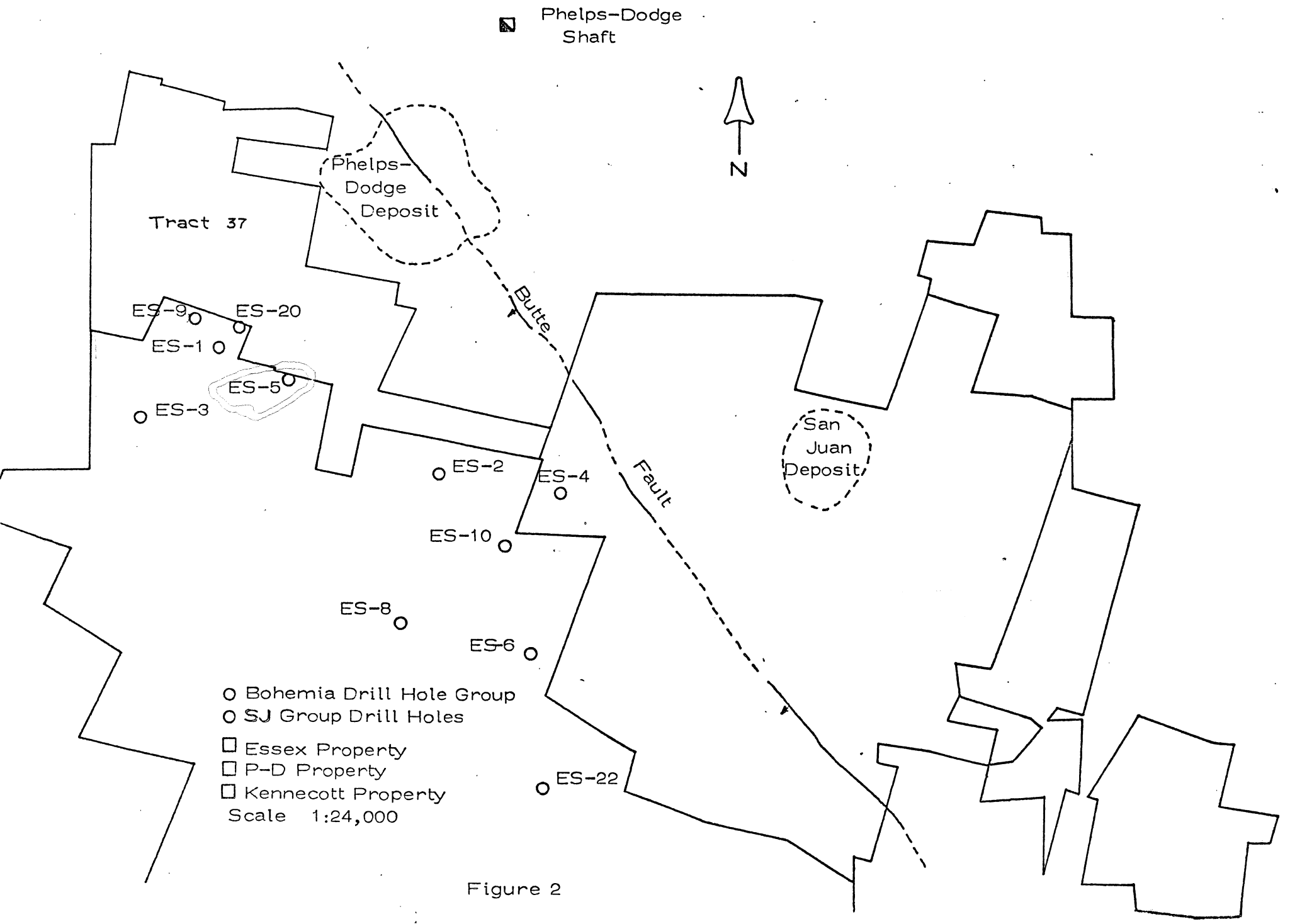
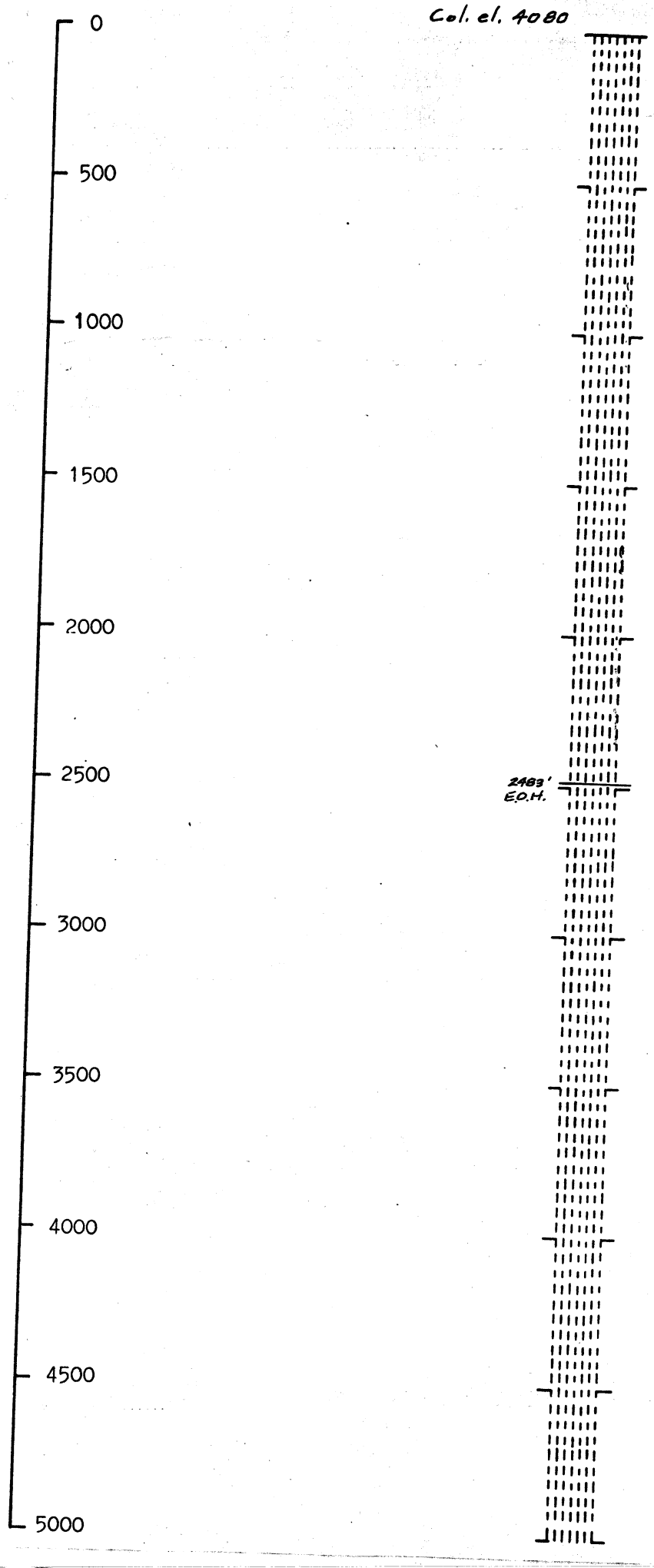

Phelps-Dodge Shaft
N
Phelps-Dodge Deposit
Tract 37
Butte
ES-9
ES-20
ES-1
ES-5
ES-3
ES-2
ES-4
Fault
San Juan Deposit
ES-10
ES-8
ES-6
ES-22
Bohemia Drill Hole Group
SJ Group Drill Holes
Essex Property
P-D Property
Kennecott Property
Scale 1:24,000

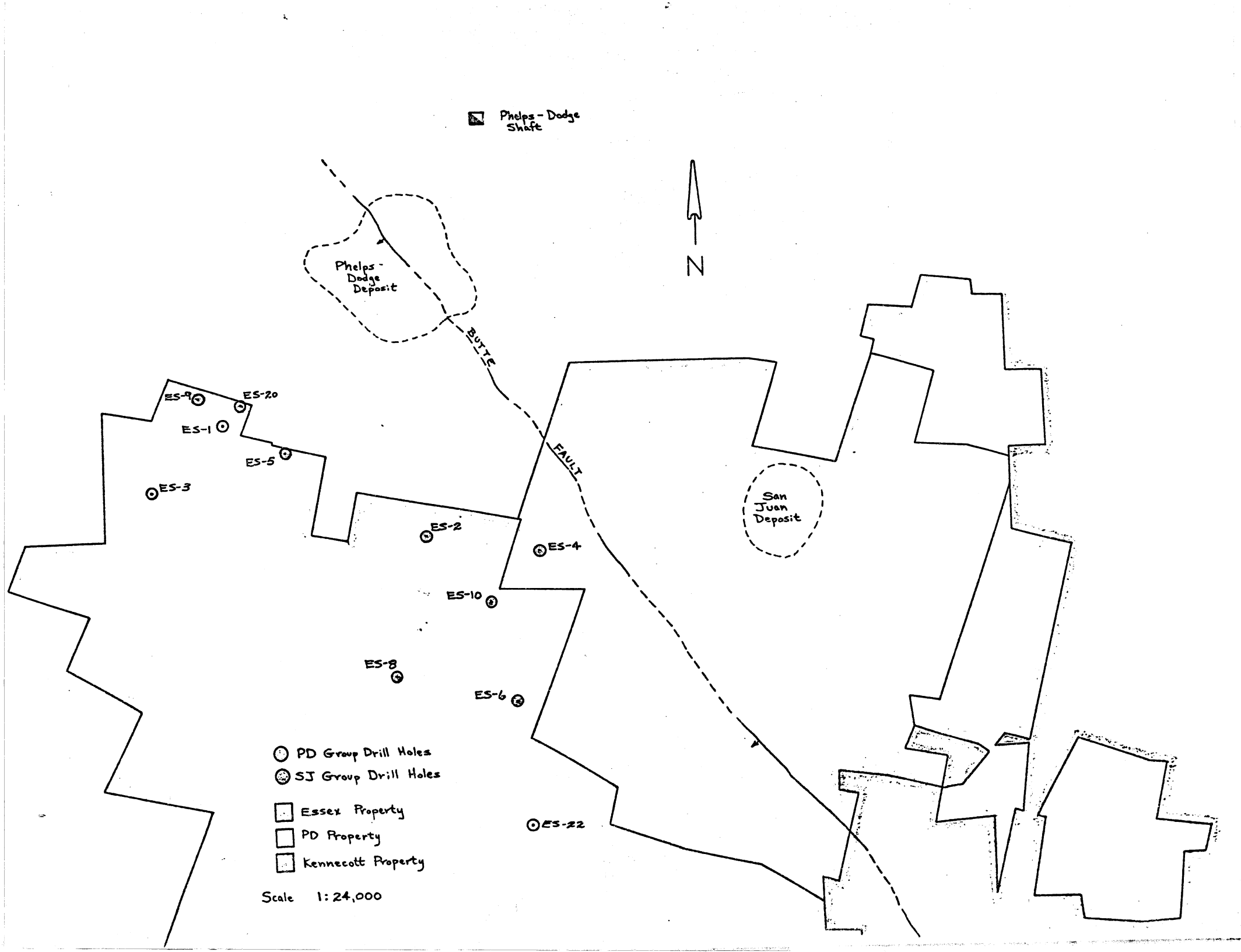
Figure 2

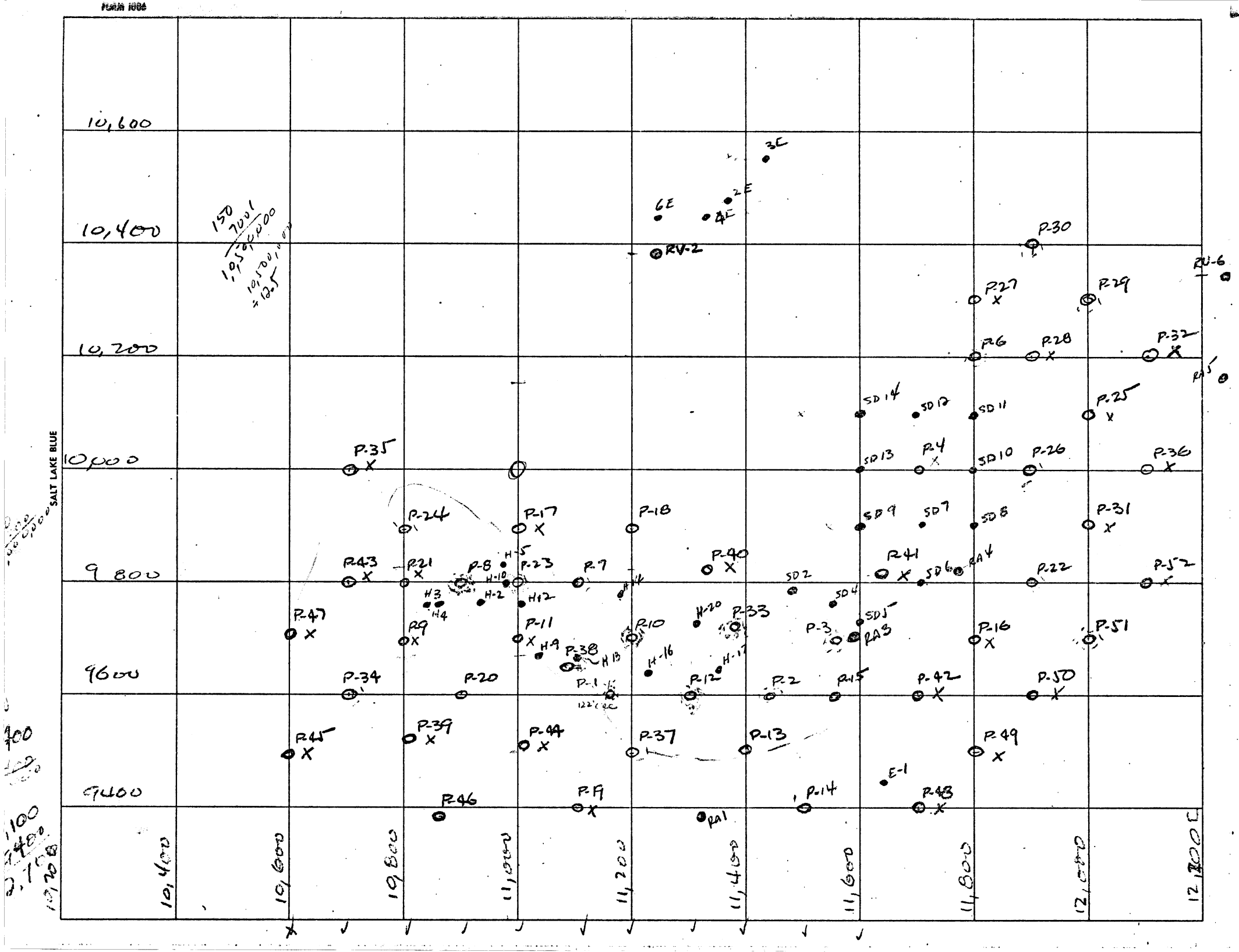
ES-1 3281

ES-2 3265

HOLE NO.	CONTRACTOR	ROTARY DEPTH TYPE OF DRILL	NX CORE TYRE OF DRILL	TOTAL DEPTH	TOTAL COST	COST PER FOOT
ES-3	BOYLES	FAHLING 1500 2147	2147 - 4000	4000	47,400.01	11.85
ES-4	"	FAHLING 1500 0 - 1080		1080	8,187.80	7.58
ES-5	"	FAHLING 1500 0 - 1930	FAHLING 1500 1930 - 4675	4675	63,128.52	13.50
ES-6	"	FAHLING 1500 0 - 1085	LONGYEAR 44 1085 - 2958	2958	35,920.74	12.14
ES-7	"	FAHLING 1500 0 - 1440		1440	13,628.94	9.46
ES-8	"	FAHLING 1500 0 - 1066	LONGYEAR 44 1066 - 2447	2447	33,123.57	13.54
ES-9	"	FAHLING 1500 0 - 1220	LONGYEAR 44 1220 - 4037	4037	66,080.60	16.37
ES-10	"	FAHLING 1500 0 - 1985	FAHLING 1500 1985 - 3855	3855	51,031.42	13.24
ES-11	"	FAHLING 1500 0 - 760		760	4,341.56	5.71
ES-12	METLER	PORTA DRILL 0-460		460	2,531.51	5.50
ES-13	METLER	PORTADRILL 0-335		335	1,956.51	5.84
ES-14	BOYLES	FAHLING 1500 0 - 650		650	4,657.18	7.16
ES-15	METLER	PORTADRILL 0-420		420	2,401.51	5.72
ES-16	BOYLES	PORTA DRILL 0 - 604		604	6,265.57	10.37
ES-17	"	FAHLING 1500 0 - 440	FAHLING 1500 440 - 739	739	7,229.11	9.78
ES-18	"	FAHLING 1500 0 - 400		400	2,102.74	5.26
ES-20	"	FAHLING 1500 0 - 2470	FAHLING 1500 2470 - 4960	4960	72,906.83	14.70
ES-21	"	PORTADRILL 0 - 325		325	1,604.75	4.94
ES-22	"	FAHLING 1500 0 - 1985	FAHLING 1500 1985 - 2500	2500		
ES-23	"	PORTADRILL 0 - 350		350	2,230.64	6.37


Col. el. 4080
SCALE: 1" = 500'
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
2483'
E.O.H.
High assay, 1.27% Cu
Oxide
High assay, 1.68 % Cu
Sulf.


Phelps - Dodge Shaft
N
Phelps - Dodge Deposit
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
PD Group Drill Holes
SJ Group Drill Holes
Essex Property
PD Property
Kennecott Property
Scale 1:24,000


10,600
10,400
10,200
10,000
9800
9600
9400
SALT LAKE BLUE
10,400
10,600
10,800
11,000
11,200
11,400
11,600
11,800
12,000
3E
2E
4E
6E
RV-2
RV-6
P-30
P-27
P-29
P-6
P-28
P-32
P-35
P-24
P-17
P-18
P-4
P-25
P-26
P-36
P-31
P-43
P-21
P-8
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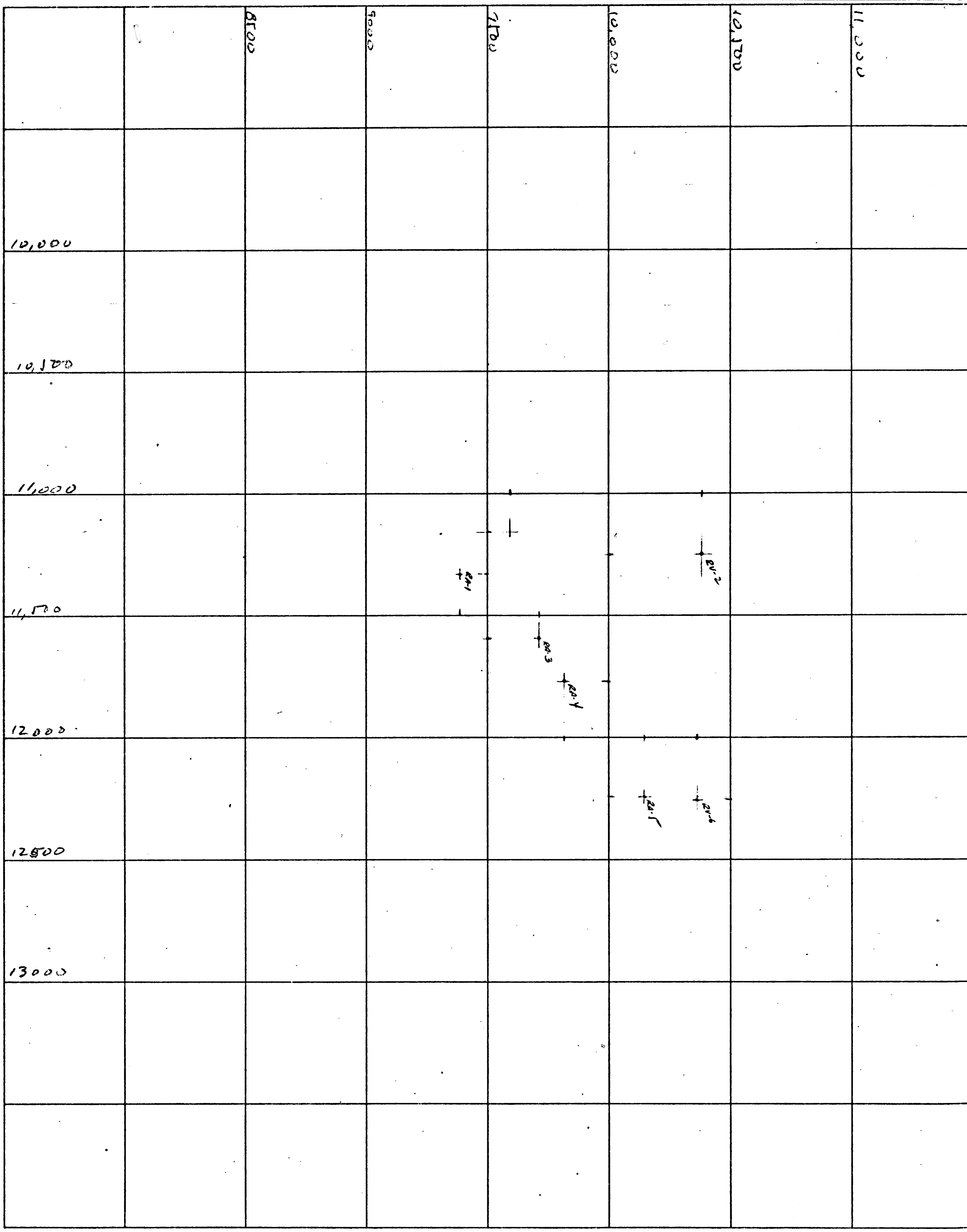
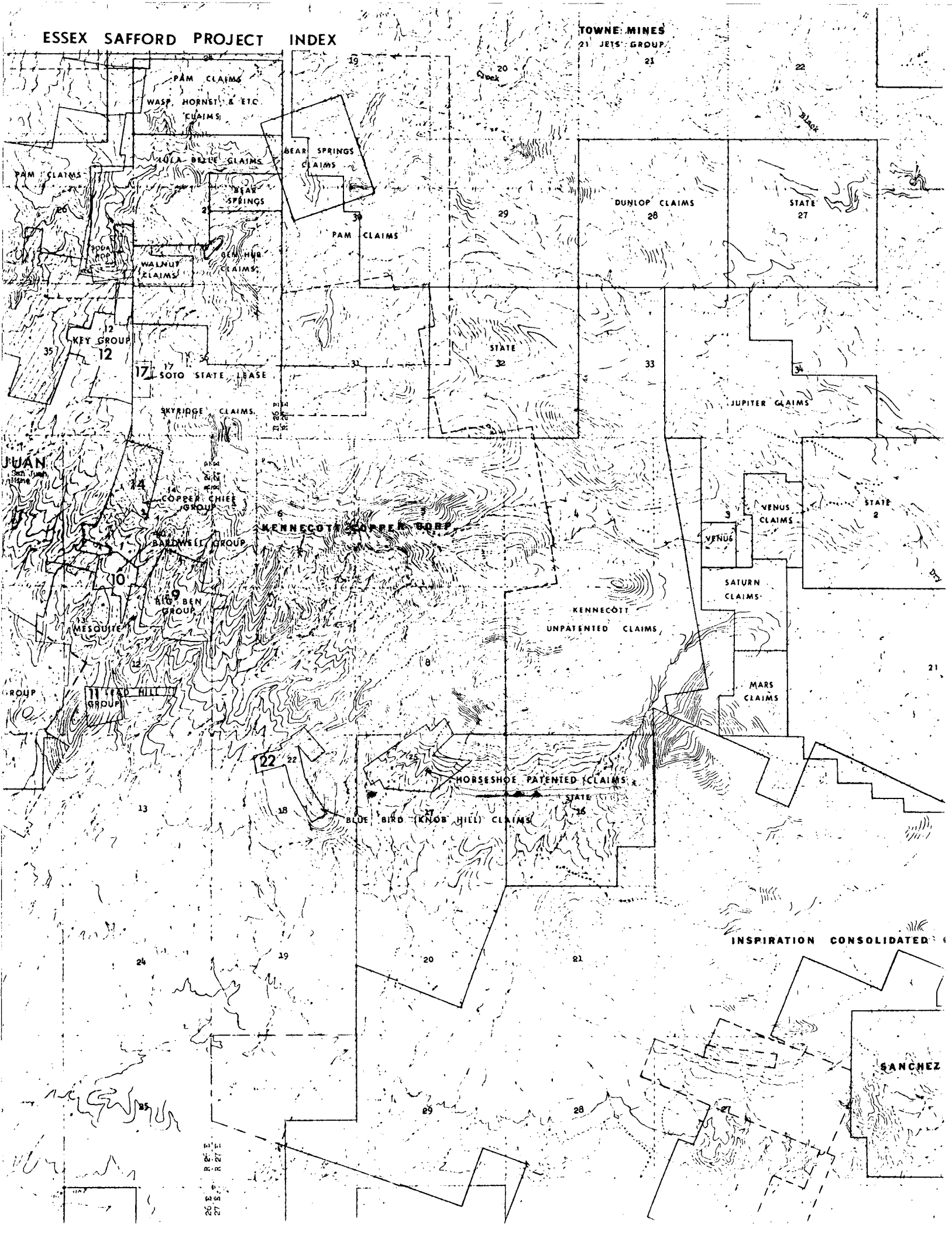
P-7
P-40
P-41
P-22
P-52
P-47
P-9
P-11
P-10
P-33
P-3
P-16
P-51
P-34
P-20
P-38
P-1
P-12
P-2
P-15
P-42
P-50
P-45
P-39
P-44
P-37
P-13
P-49
P-46
P-19
RA1
P-14
E-1
P-48
SD14
SD12
SD11
SD13
SD10
SD9
SD7
SD8
SD2
SD6
SD4
SD5
SD3
RA2
RA3
RA4
RA5
H-5
H-10
H-2
H-12
H-3
H-4
H-9
H-13
H-16
H-20
H-17
H-14
122°C



FORM 1006

SALT LAKE BLUE


ESSEX SAFFORD PROJECT INDEX
TOWNE MINES
21 JETS GROUP
PAM CLAIMS
WASP, HORNET & ETC. CLAIMS
LULA BELLE CLAIMS
BEAR SPRINGS CLAIMS
BEAR SPRINGS
PAM CLAIMS
PAM CLAIMS
WALNUT CLAIMS
BEN HUR CLAIMS
DUNLOP CLAIMS
28
STATE
27
29
30
KEY GROUP
12
17
SOTO STATE LEASE
SKYRIDGE CLAIMS
STATE
32
33
34
JUPITER CLAIMS
JUAN
San Juan Mine
14
COPPER CHIEF GROUP
KENNECOTT COPPER CORP.
BARDWELL GROUP
10
9
BIG BEN GROUP
MESQUITE
11
LEAD HILL GROUP
VENUS CLAIMS
VENUS
STATE
2
SATURN CLAIMS
KENNECOTT UNPATENTED CLAIMS
MARS CLAIMS
22
HORSESHOE PATENTED CLAIMS
STATE
BLUE BIRD (KNOB HILL) CLAIMS
INSPIRATION CONSOLIDATED
SANCHEZ

PROPERTY AND DRILLING

PHELPS DODGE-SAFFORD AREA

GRAHAM CO., ARIZONA

SCALE: 1" = 2000'

From Map by M. J. Rapier dtd Aug. 21, 1959

BUTTE FAULT

A
A'
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C
C'
D
D'
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BUTTE FAULT
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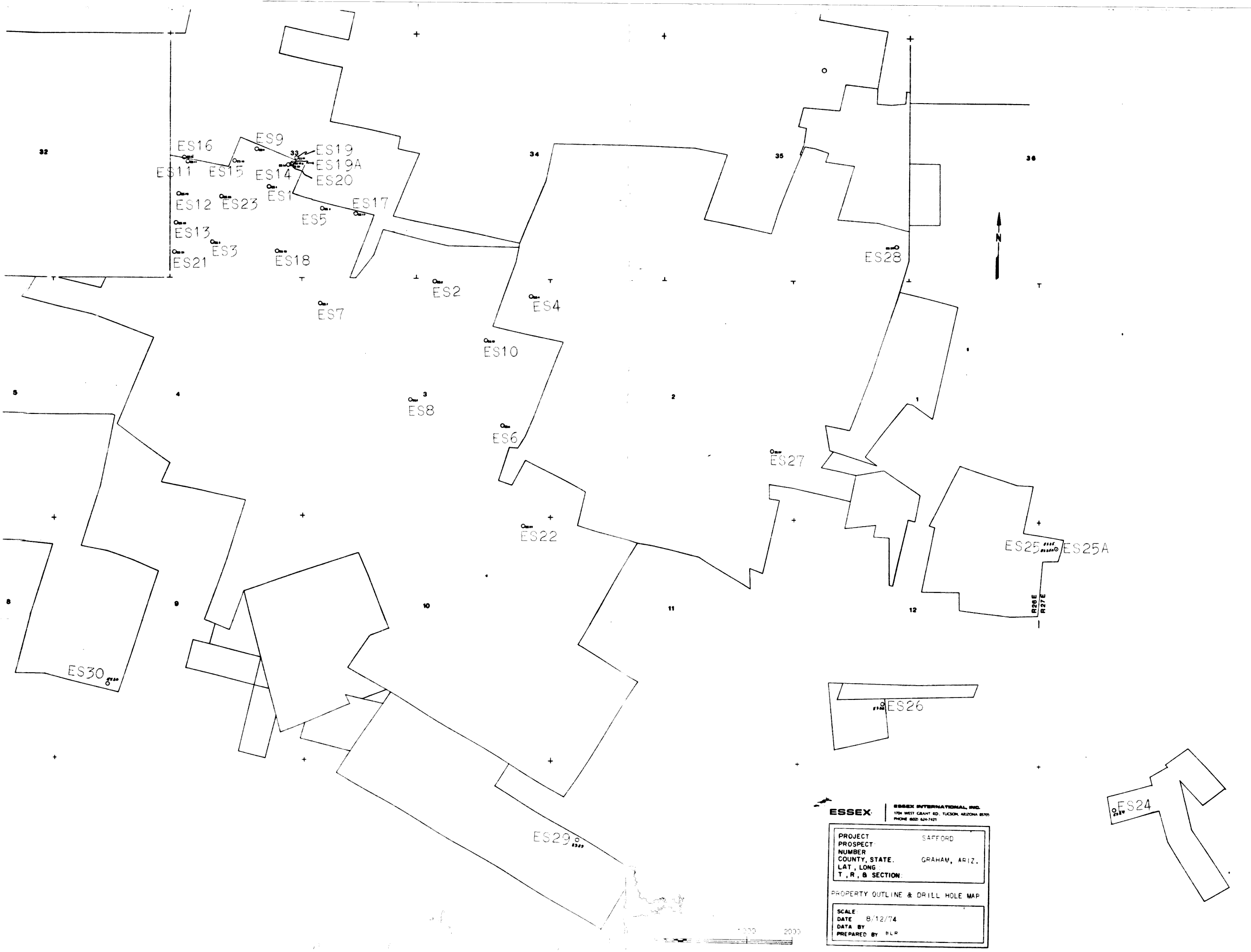
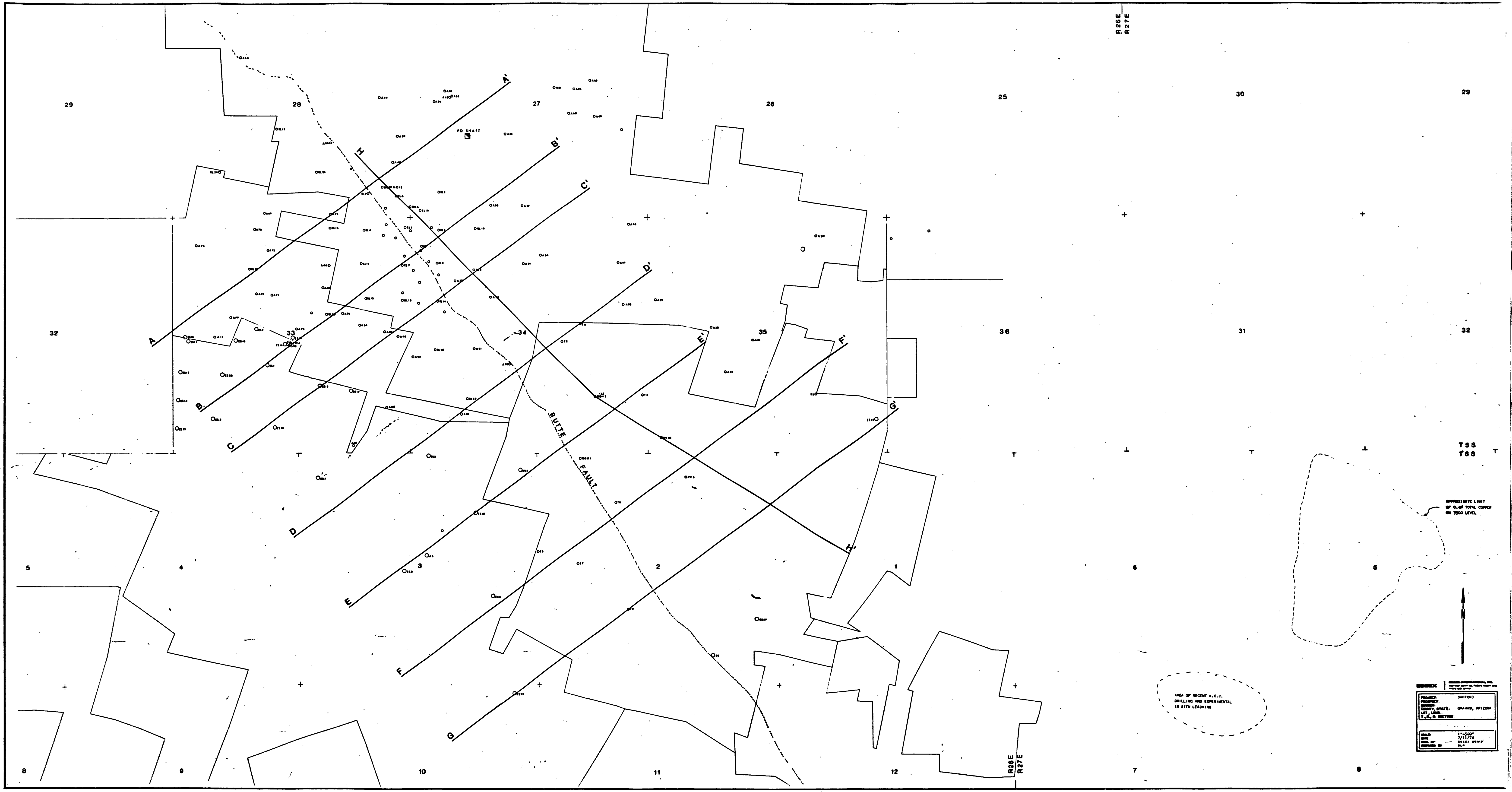


ESSEX | ESSEX INTERNATIONAL, INC.
1704 WEST GRANT RD. TUCSON, ARIZONA 85705
PHONE (602) 624-7421

PROJECT	SAFFORD
PROSPECT	
NUMBER	
COUNTY, STATE.	GRAHAM, ARIZ.
LAT, LONG	
T, R, & SECTION	

PROPERTY OUTLINE & DRILL HOLE MAP

SCALE	
DATE	8/12/74
DATA BY	
PREPARED BY	BLR


R26E
R27E
T5S
T6S
BUTTE FAULT
PD SHAFT
APPROXIMATE LIMIT OF 0.4% TOTAL COPPER ON 3500 LEVEL
AREA OF RECENT K.C.C. DRILLING AND EXPERIMENTAL IN SITU LEACHING
ESSEX
PROJECT: SAFFORD
PROSPECT:
NUMBER:
COUNTY, STATE: GRAHAM, ARIZONA
LAT., LONG.:
T., R., & SECTION:
SCALE: 1"=500'
DATE: 7/11/74
DATA BY: ESSEX STAFF
PREPARED BY: DLP

SAFFORD PROJECT

Monthly Report - September 1972

DRILLING

Drill Hole ES-5 was collared and drilled to 1930 feet. The hole is presently in propylitically altered andesite agglomerate of the older volcanic series.

Drill Hole ES-6 was collared and advanced to 1085 feet before it was cased when biotite alteration and sulfide mineralization were encountered in andesite agglomerate of the older volcanic series.

Drill Hole ES-4 was completed and cased to a depth of 1080 feet when the necessary money for assessment work was expended.

Drill Hole ES-7 was collared and advanced to 630 feet in andesite agglomerate of the older volcanic series

Geophysics

Drilling program ... to 1500' year

SAN JUAN

Acid pumps were re-activated to disperse acid on main leach pile starting September 8. Two more men were hired for day shift bringing the total to six employees besides Jim Mitchell. Acid is

~~continues~~ Raw acid continues ~~to~~ be dumped on the low grade, run-of-the-mine material above the fine dumps. Two loads of scrap iron were received and one load of cement copper was shipped between September 20 and 24. One load of scrap iron is still in the launder.

Monthly Report - Safford Project
January 1973

A total of 4253 feet were drilled in January.

Drill hole ES-9 advanced 522 feet from 2577 to 3099 feet. Approximately seven days were lost when the drill string became stuck ~~at~~ while attempting to cement a badly caving area at about 2500 feet. The hole was subsequently repaired. The rock at 3099 is fine-grained andesite with predominantly chloritic alteration ~~but~~ and patchy biotite alteration. Total sulfide content is perhaps 2-3% principally ~~as~~ in veinlets and fractures. Traces of bornite and chalcopyrite are present.

Drill hole ES-10 advanced 1189 feet from 2109 to 3298 feet in fine-grained andesite. Alteration is chlorite-sericite. Sulfide mineralization has decreased appreciably to 1-3% pyrite with traces bornite.

Drill hole ES-20 advanced to 2542 feet after collaring on January 2. Alteration is strong chlorite. Mineralization consists of weak pyrite on veins and fractures probably less than 1%.

Drill hole ES-23 ~~was~~ advanced 85 feet from 265 to 350 feet and terminated. The last cuttings

were from the sandstone marker bed at the base of the post-ore basalt series.

Phelps-Dodge drill rigs moved onto Sections 29, and 32 on January 2.

On January 15 Phelps-Dodge returned their drill rig to Tract 37 north of ES-20.

Relocation to the new Safford office was completed on January 12.

DRILL HOLE SUMMARY RECORD

SAFford Project
8-13-74

Hole No.	Location	1 Date Start	2 Date Completed	3 Depth	4 Method	5 Cost	6 Contractor	7 Collar Elev.	8 Coordinates N	9 Coordinates E	10 Remarks
ES 1 ✓	Bohemia 9 (NE¼)	8-25-71	11-26-71	3281	Rotary/core	33267.39	Jay				
" 2 ✓	Nail Keg 21 (East End)	12-8-71	3-4-72	3265	R /core	27924.68	Jay				
" 3 ✓	Bohemia 12 (NW¼)	6-6-72 7-13-73	8-16-72 7-26-73	4000 1361	R / C	47400.01	E				
" 4 ✓	Blue Bird 22 (W½)	8-22-72	9-2-72	1080	R/C	12330.50	E				
" 5 ✓	Bohemia 3 (NE¼) Leo 3 (SE¼)	9-1-72	11-25-72	4675	R/C	63128.52	Boyles Bros.				
" 6 ✓	SE¼ Nail Keg 8	9-8-72	11-4-72	2958	R/C	35970.74	B				
" 7 ✓	Nail Keg 19 (SE¼)	9-25-72	10-14-72	1460	Rotary	13628.94	Boyles Bros.				
" 8 ✓	S.W.¼ Nail Keg 6	10-19-72	12-11-72	2447	R/C	33123.57	Boyles Bros.				
" 9 ✓	Pick up 1 (D&L) (W½)	11-27-72	4-6-73	4037	R/C	66080.60	B				
" 10 ✓	Tecote 2 (E. End)	11-6-72	11-25-72	3855	R/core	51031.40	Boyles Bros				
" 11 ✓	No. Edge SAND wash 2	11-29-72	12-06-72	760	R/only	4341.56	" "				
" 12 ✓	SAND wash 1 - East of Sec. 32	12-01-72	12-03-72	450	R/only	2531.51	Metler				
" 13 ✓	Bohemia 20 - East of Sec. 32	12-04-72	12-08-72	335	R/ "	1956.51	"				
" 14 ✓	Pick up 1 (D&L) (East End)	12-06-72	12-13-72	650	R/ "	4657.18	Boyles				
" 15 ✓	Bohemia 9 (NW cor.)	12-9-72	12-12-72	424	R/ "	2401.51	Metler				
" 16 ✓	Tract 37 (No. of SAND wash 2)	12-8-72	12-16-72	604	R/ "	6265.57	Boyles				
" 17 ✓	Bohemia 2 (NE¼) Leo 2 (SE¼)	12-8-72	12-19-72	729	R/ "	7289.11	"				
" 18 ✓	Bohemia 3 (SW cor)	12-13-72	12-14-72	400	R/ "	2102.74	Boyles				
" 19 ✓	TRACT 37	12-15-72	12-15-72	15	R "	?	Boyles				
" 19A ✓	TRACT 37 (KIM 1 So. End)	12-15-72	12-15-72	25							
" 20 ✓	KIM 1 (So. End)	12-15-72 1-2-73	12-15-72 3-30-73	4960	R /core	72906.63	Boyles Bros. Drilling				
" 21 ✓	Bohemia 18 (East end, East of Sec. 32)	12-16-72	12-27-72	325	R/only	1604.75	"				
" 22 ✓	NW cor. Flat Top 6	12-20-72	4-07-73	2500	R/C	34703.43	"				
" 23 ✓	NE Bohemia 10	12-28-72	1-03-73	350	R/only	2230.64	"				
" 24 ✓	Blue Bell 1	7-11-73	—	65	R/ "	432.50	Hugh HARRIS				
" 25 ✓	East End Big Ben 21	7-12-73	7-16-73	1-120	R/ "	1796.85	" "				
" 25A ✓	" " " " "			1-130	R/ "		" "				
" 26 ✓	Lead Hill 2	7-17-73	—	80	R/ "	512.50	" "				
" 27 ✓	Blue Bird 101 (Ctr)	7-18-73	7-21-73	260	R/ "	1622.50	" "				
" 28 ✓	Blue Bird 1 (N½)	7-23-73	7-25-73	600	R/ "	3656.25	" "				
" 29	Copper Flat 13 Nicol	8-15-73	8-16-73	500	R/ "	2491.50	" "				
" 30	Big Bird - 18 Sand ?	8-17-73	8-21-73	500	R/ "	2416.50	" "				
32											

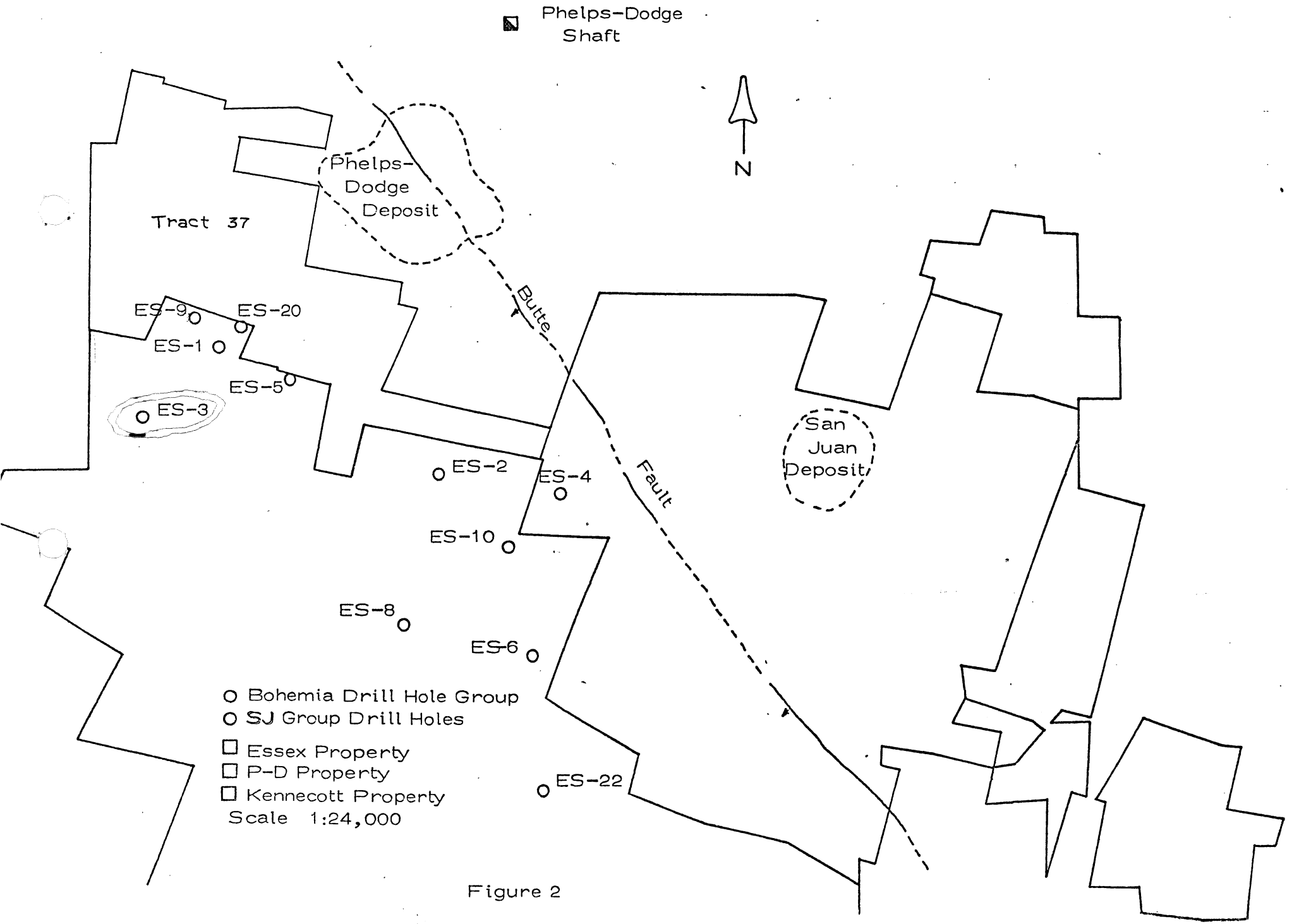

Phelps-Dodge Shaft
N
Phelps-Dodge Deposit
Tract 37
Butte
ES-9
ES-20
ES-1
ES-5
ES-3
ES-2
ES-4
Fault
San Juan Deposit
ES-10
ES-8
ES-6
ES-22
Bohemia Drill Hole Group
SJ Group Drill Holes
Essex Property
P-D Property
Kennecott Property
Scale 1:24,000

Figure 2

J. R. Jones

SAFFORD PROJECT

ES-3
CORE LOG SUMMARY

2148 - 2371 Kag - andesite agglomerate; strongly porphyritic; elastic texture poorly defined perhaps more tuffaceous; light green-gray color; propylitic alteration; disseminated magnetite from nil to 0.5%; traces disseminated hematite possibly after pyrite; no sulfides.

2371 - 4000 Kan - finer-grained andesite unit; obviously fragmental rock but much better indurated and with fewer plagioclase phenocrysts than Kag; color varies from greenish gray to light or medium gray depending upon intensity and type of alteration with the gray color varying directly with the biotite alteration; disseminated magnetite shows a marked increase up to about 2% and frequently as high as 5%.

2371-2750 propylitic alteration with very local intervals of a few feet showing weak secondary biotite; traces pyrite 2707; disseminated hematite (?) and on fractures may result from oxidation of pyrite and/or magnetite; sparsely distributed veinlets of chlorite-epidote-calcite;

2750-2867 rock generally gray due to weak to moderate biotite alteration; still good epidote; moderate silicification from approximately 2840-2867; weak disseminated goethite after pyrite;

2867-4000 Kan - fine grained andesite; gray or greenish gray depending upon alteration; fragmental texture varies from extreme to poorly defined; fragments vary from dust size and angular to a couple inches and well rounded; with no recognizable systematic distribution of types; alteration is combination biotite-chlorite in varying proportions until approximately 3690, below 3690 secondary biotite is a minor alteration mineral occurring only in intervals of less than 5 feet or in individual fragments; epidote is sparse and occurs as clots up to several inches long but becomes more abundant toward the bottom of the hole; plagioclase is clear or slightly cloudy but always hard and shiny; strong disseminated magnetite 2-5%; chlorite-calcite are most common veinlets and fracture coatings with relatively minor quart and epidote;

at about 2867 pyrite becomes more frequent in veinlets and on fractures and shows a modest increase to bottom of hole but can never be considered abundant; disseminated pyrite is directly related to veinlets, total sulfide content averaged over any ten foot interval is certainly less than 0.5% although very locally it may be 1%; from approximately 3265 to 3552 traces of chalcopyrite and much less bornite were seen; from 3552 to the bottom of the hole very diligent searching would reveal chalcopyrite nearly every place there was pyrite but always in very small amounts only; bornite was extremely rare.

cc: J.K. Jones
B. Helming

Est. Drill holes
Near Safford

ES-3 COLLARED: 6/6/72 COMPLETED: 8/16/72 TD: 4000'

ROTARY: 2150'

DIAMOND: 2150'-4000'

ROTARY: 2150'

NUMBER OF SHIFTS: 58

COST PER SHIFT: ~~$227.59~~ $292.46

AVG. FOOTAGE PER SHIFT: 37'

COST PER FOOT: ~~$7.88~~ $7.88

TOTAL COST: ~~$13,200.44~~ $16,962.74 *

DIAMOND: 1850' NX

NUMBER OF SHIFTS: 109

COST PER SHIFT: $313.52

AVG FOOTAGE PER SHIFT: 16'

COST PER FOOT: $18.47

TOTAL COST: $34,179.30

COMPLETE HOLE: 4000'

NUMBER OF SHIFTS: 167

COST PER SHIFT: ~~$285.65~~ $306.21

AVG. FOOTAGE PER SHIFT: 23'

COST PER FOOT: ~~$11.84~~ $12.78

TOTAL COST: ~~$47,374.19~~ $51,137.24 *

* INCLUDES 2150 FEET OF CASING @ $1.75/FT NOT CHARGED ON BILL

Sample No. ES-3 2232

Thin section texture: Porphyritic; groundmass contains abundant feldspar microlites with poorly defined flow orientation.

Mineralogy	Estimated %	
plagioclase	50-60	
epidote	8-10	
quartz	variable	
orthoclase	variable;	fairly abundant in some areas-almost absent in others.
chlorite	tr.	
sericite	tr.	
apatite	tr.	
glass	variable	

plagioclase occurs as subhedral to euhedral phenocrysts up to 1.3 mm in length. Some alteration to epidote. The groundmass in about two-thirds of the rock contains tiny feldspar microlites with a poorly defined flow orientation. These microlites are set in a glass matrix. The other one-third of the thinsection has a slightly coarser-grained groundmass without the microlites and with little or no glass. Larger plagioclase phenocrysts are less abundant in this part of the thin section. Epidote occurs as an alteration product of plagioclase and as granular masses throughout the section. Some quartz is present in the part of the section with the coarser groundmass. A very small amount of chlorite is present.

Rock Name: A volcanic rock of some kind. Appears to contain too much orthoclase in some areas to be called andesite. Look at the small stained piece of core.

Sample No. ES-3 2943

Thinsection texture: Porphyritic, fine-grained, heterogeneous. Lithic fragments.

Mineralogy

plagioclase
epidote
quartz
biotite
magnetite
pyrite
sphene
glass
hornblende
chlorite

The matrix of this rock is composed largely of glass (partially devitrified). Set in the glass are plagioclase phenocrysts and fairly abundant epidote. A few quartz phenocrysts are present. Numerous lithic fragments are included in this matrix. The most abundant type consists of small plagioclase laths in a groundmass composed mostly of fine-grained biotite. Some sphene is present in these areas. The plagioclase is mostly fresh but some grains contain small "islands" of quartz. One large fragment is composed largely of closely packed small plagioclase laths showing flow orientation. Hornblende crystals of various size are present in this fragment with minor amounts of chlorite.

Rock Name: Probably andesite in overall composition, maybe some kind of agglomerate.

See the X-ray tracing which is mostly from one of the fragments.

Sample No. ES-3 3119

Thinsection texture: Porphyritic, fine-grained groundmass.

Mineralogy	Estimated %
plagioclase	40-50
chlorite	5-8
epidote	5 or less
quartz	tr.
orthoclase	30-35
sericite	abundant
pyrite	10
calcite	tr.
apatite	tr.

Subhedral phenocrysts of plagioclase up to 3 mm in length are almost completely replaced by sericite. Minor amounts of epidote and chlorite also occur in the plagioclase sites. Chlorite occurs in fairly large patches where it is probably replacing some mafic mineral, and in small veinlets with quartz. It is commonly associated with pyrite. Penninite. Epidote is in clusters with quartz and calcite commonly associated with pyrite. The groundmass consists of very fine-grained minerals with low birefringence. Some quartz and plagioclase are present but staining the hand sample indicates that orthoclase is very abundant. A very small amount of glass may be present but most of the groundmass is crystalline. Pyrite is abundant as large irregular masses.

Rock Name: Plagioclase appears to be slightly more abundant than orthoclase. Sericitization is so intense That I can not be completely sure that all the sericitized phenocrysts are plagioclase.

Sample No. ES-3 3466

Texture: Porphyritic, fine-grained groundmass

Mineralogy

Hornblende(phen)	(35)
Plagioclase (phen)	(50)
Epidote	≤5
Biotite	≤10
Quartz	tr
Orthoclase veinlet	
Magnetite	1-2
Glass	tr

Plagioclase-fairly fresh-some sericite and epidote alt. Occurs as laths up to 1.4 mm in length. They are closely packed in most areas and have a sub-parallel orientation. Hornblende phenocrysts are subhedral and have a maximum length of ~1mm. Some finer-grained hornblende occurs in the groundmass. Biotite occurs as patches and is fine grained.

A few fairly coarse patches of epidote are present and a very small amount of epidote occurs as an alteration product of plagioclase. A minor amount of quartz is present. Two small orthoclase veinlets cut the slide. Magnetite is fairly abundant and a very small amount of glass is present.

Rock name: Andesite.

Sample No. ES-3 3754

Texture: fine grained, microporphyritic

Mineralogy

Plagioclase
Epidote
Chlorite
Hornblende
Calcite-quartz veinlet
Orthoclase veinlet
Apatite
Biotite
Magnetite
Quartz

Plagioclase occurs as laths mostly less than 1mm in length. It is cloudy and shows some sericitic alteration. Fairly large patches of intergrown chlorite and epidote are present. Irregular crystals of hornblende are scattered throughout the rock. Very small veinlets of calcite cut the slide and one orthoclase veinlet is present. Minor amounts of biotite are present in the groundmass.

Rock name: Andesite, similar to 3-3466. Contains less hornblende and biotite and more chlorite and epidote.

Sample No. ES-3 3991

Texture: Fine-grained porphyritic.

Mineralogy

Plagioclase
Hornblende
Epidote
Chlorite
Sphene
Apatite
Quartz
Calcite
Orthoclase (veinlet)
Glass
Magnetite
Pyrite
Biotite (?)

Plagioclase microphenocrysts make up a large part of the rock. Most of the plagioclase is cloudy and some are being replaced by epidote. Hornblende phenocrysts are fairly abundant and are partially replaced by chlorite. The groundmass is partially replaced by chlorite. The groundmass is partially glass and contains abundant fine grained magnetite. Some fine needles of hornblende are also present in the groundmass. Calcite and orthoclase veinlets cut the rock and contain some pyrite. Minor amounts of biotite are present in some areas in the groundmass.

Rock name: Andesite. Similar to 3-3466 and 3754.

HAWLEY & HAWLEY
ASSAYERS AND CHEMISTS, INC.
1700 W. GRANT RD. • BOX 50106 • 622-4836
TUCSON, ARIZONA 85703

BRANCHES: DOUGLAS, ARIZONA; HAYDEN, ARIZONA; EL PASO, TEXAS; ST. LOUIS, MO.

IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER %	ZINC %	MO. %	IRON %		
				ppm					
E 874				194					

CC: Essex International, Inc.
ADD: Attn: Mr. Ken Jones
CITY: 1704 West Grant Road
DD: Tucson, Arizona 85705
CITY:

REMARKS: Trace analysis

ANALYSIS CERT. BY H E Hawley

PREPARATION $ .90
ANALYSIS $ 1.50

HH3A ACC: ESSEX INTERNATIONAL, INC.

DATE SPL. RECEIVED 7/24/72 | DATE COMPL 7/26/72 | TUC 346322 | $ 2.40

HAWLEY & HAWLEY
ASSAYERS AND CHEMISTS, INC.
1700 W. GRANT RD. • BOX 50106 • 622-4836
TUCSON, ARIZONA 85703

BRANCHES: DOUGLAS, ARIZONA; HAYDEN, ARIZONA; EL PASO, TEXAS; ST. LOUIS, MO.

IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER %	ZINC %	MO. %	IRON %		
				ppm					
E 875				45					
2 inch long specimen of split core from 3102 feet hole ES-3									

CC: Essex International, Inc.
ADD: 1704 West Grant Road
CITY: Tucson, Arizona 85705
DD:
CITY:

REMARKS: Trace analysis

ANALYSIS CERT. BY

PREPARATION $ .90
ANALYSIS $ 1.50

HH3A ACC: ESSEX INTERNATIONAL, INC.

DATE SPL. RECEIVED 7/27/72 | DATE COMPL 7/29/72 | TUC 346367 | $ 2.40

SXM

HAWLEY & HAWLEY
ASSAYERS AND CHEMISTS, INC.
1700 W. GRANT RD. • BOX 50106 • 622-4836
TUCSON, ARIZONA 85703

BRANCHES: DOUGLAS, ARIZONA; HAYDEN, ARIZONA; EL PASO, TEXAS; ST. LOUIS, MO.

JUL 27 1972

RECEIVED

IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER ppm	ZINC %	MO. %	IRON %		
E 874				194					

REGISTERED ASSAYER CERTIFICATE NO. 6784 H.E. RICHARD Not Signed Arizona U.S.A.

CC: Essex International, Inc.
ADD: Attn: Mr. Ken Jones
CITY: 1704 West Grant Road
DD: Tucson, Arizona 85705
CITY:

REMARKS: Trace analysis

ANALYSIS CERT. BY: H.E. Richard

PREPARATION $ .90
ANALYSIS $ 1.50

HH3A ACC: ESSEX INTERNATIONAL, INC.

DATE SPL. RECEIVED 7/24/72 | DATE COMPL 7/26/72 | TUC 346322 | $ 2.40

ES-3
SAFFORD

SUMMARY OF LOG OF ROTARY DRILL SAMPLES

0 - 52 mixture of rock types from unconsolidated and semi-consolidated gravels

52 - 408 Cretaceous volcanics; andesite agglomerate; light to medium greenish gray; propylitic alteration, matics totally gone to chlorite, good epidote, moderate to locally strong sericite from feldspar phenocrysts and also in groundmass; moderate to strong secondary calcite from plagioclase, occasional microscopic clumps of calcite crystals; traces magnetite and/or hematite after magnetite

408 - 428 predominantly leached, Fe stained material (up to 80%) mixed with material as above; quartz-sericite alteration, limonite is strongly goethite with traces of hematite

428 - 768 rock same as initial interval except that leached, Fe stained fragments were found in all intervals and locally comprised 15% of the sample

768 - 798 agglomerate fragments very light colored, leached Fe stained chips with quartz-sericite alteration make up at least 20% of the samples,

relict pyrite cubes very obvious in agglomerate but only in very small amounts; 768-778 about 30% of the sample is weakly sericitized plagioclase fragments, this drops rapidly to 15% in next interval and negligible amounts thereafter

798-848 rock is essentially same as initial interval but dark greenish gray in color due to stronger chlorite alteration and possible tuffaceous material; from here on down the leached, Fe stained chips are ubiquitous in amounts varying from 1% to 10%; traces of relict pyrite also occur in the agglomerate

848-858 no sample

858-898 similar rock as previously described, 858-868 still contains considerable dark colored rock.

898-908 dark greenish gray chips same as interval 798-848

908-1028 the usual light greenish gray agglomerate; cuttings are quite small - sand size. traces relict pyrite

1028-1058 same as above except that 20-50% of the cuttings are pink in color and may be latite or quartz latite (no quartz was seen)

ES-3

~~908 - 2148~~

1058 - 2148 light greenish gray propylitically altered agglomerate; qtz-sericite-limonite chips ubiquitous but only in small amounts ≤ 2%; v.f.g. aphanitic chips present in varying but small amounts; only traces of limonite after pyrite; magnetite as weak disseminations; sericite varies slightly variations are slight changes to darker colors and differences in size of chips; which reflect changes in hardness

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IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER %	ZINC %	MO. %	IRON %		
E 875				ppm 45					

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Signed
ARIZONA

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PREPARATION $ .90
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$ 2.40

HH3A ACC: ESSEX INTERNATIONAL, INC.

DATE SPL. RECEIVED 7/27/72
DATE COMPL 7/29/72
TUC 346367

SAFFORD PROJECT

ES-3
CORE LOG SUMMARY

2148 – 2371 Kag – andesite agglomerate; strongly porphyritic; elastic texture poorly defined perhaps more tuffaceous; light green-gray color; propylitic alteration; disseminated magnetite from nil to 0.5%; traces disseminated hematite possibly after pyrite; no sulfides.

2371 – 4000 Kan – finer-grained andesite unit; obviously fragmental rock but much better indurated and with fewer plagioclase phenocrysts than Kag; color varies from greenish gray to light or medium gray depending upon intensity and type of alteration with the gray color varying directly with the biotite alteration; disseminated magnetite shows a marked increase up to about 2% and frequently as high as 5%.

2371–2750 propylitic alteration with very local intervals of a few feet showing weak secondary biotite; traces pyrite 2707; disseminated hematite (?) and on fractures may result from oxidation of pyrite and/or magnetite; sparsely distributed veinlets of chlorite-epidote-calcite;

2750–2867 rock generally gray due to weak to moderate biotite alteration; still good epidote; moderate silicification from approximately 2840–2867; weak disseminated goethite after pyrite;

2867–4000 Kan – fine grained andesite; gray or greenish gray depending upon alteration; fragmental texture varies from extreme to poorly defined; fragments vary from dust size and angular to a couple inches and well rounded; with no recognizable systematic distribution of types; alteration is combination biotite–chlorite in varying proportions until approximately 3690, below 3690 secondary biotite is a minor alteration mineral occurring only in intervals of less than 5 feet or in individual fragments; epidote is sparse and occurs as clots up to several inches long but becomes more abundant toward the bottom of the hole; plagioclase is clear or slightly cloudy but always hard and shiny; strong disseminated magnetite 2–5%; chlorite-calcite are most common veinlets and fracture coatings with relatively minor quart and epidote;

at about 2867 pyrite becomes more frequent in veinlets and on fractures and shows a modest increase to bottom of hole but can never be considered abundant; disseminated pyrite is directly related to veinlets, total sulfide content averaged over any ten foot interval is certainly less than 0.5% although very locally it may be 1%; from approximately 3265 to 3552 traces of chalcopyrite and much less bornite were seen; from 3552 to the bottom of the hole very diligent searching would reveal chalcopyrite nearly every place there was pyrite but always in very small amounts only; bornite was extremely rare.

cc: J.K. Jones
B. Helming

B. Helmuy

SAFFORD PROJECT

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B. Helming

Type ✓
send copies
to Ken Jones
& Bob Helming

Safford Project.

ES-3

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SAFFORD PROJECT

ES-3
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biotite – chlorite

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– – – 3690
propylitic

at about 2867 pyrite becomes more frequent in veinlets and on fractures and shows a modest increase to bottom of hole but can never be considered abundant; disseminated pyrite is directly related to veinlets, total sulfide content averaged over any ten foot interval is certainly less than 0.5% although very locally it may be 1%; from approximately 3265 to 3552 traces of chalcopyrite and much less bornite were seen; from 3552 to the bottom of the hole very diligent searching would reveal chalcopyrite nearly every place there was pyrite but always in very small amounts only; bornite was extremely rare.

Pyrite
Cu

cc: J.K. Jones
B. Helming

Bohemia 12 Claim

DIAMOND DRILL LOG June 6, 1972

HOLE No. ES-3 SHEET 1 OF 19

SCALE _____ STARTED June 6, 1972 STOPPED _____ NOTES BY BHH

DEPTH _____ BEARING VERTICAL INCLINATION _____

PROPERTY SAFFORD COUNTY GRAHAM STATE ARIZ.

COLLAR COORD. N. _____ E. _____ COLLAR ELEV. 3760 FEET

ASSAYS % MO	ASSAYS % CU	ASSAYS	% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
			100	2147					propylitic weak to mod chlorite, epidote common as product of plagioclase also occasionally as large clumps up to 2" calcite on fractures	Kag - would be mapped as agglomerate light green-gray, abundant small plagioclase phenocrysts no clastic structures possibly tuffaceous good solid core
			100	2155						
			100	2164						
			85	2170						
			90	2180						
			90	2190			2196-2203 badly broken			
			100	2200						
			100	2207						
			100	2217						
			100	2227						
			100	2235						

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 2 OF 19

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
			100	2245				magnetite dissem from nil to ≈ 0.5%		very homogeneous strongly porphyritic no clastic texture
			100	2255					hematite-clay ± calcite on fractures traces dissem hematite stain	
			100	2265						
			100	2275						
			100	2285						
			100	2295			slightly broken			
			60	2300			slightly broken			2330 interspersed finer grained, darker grey more tuffaceous intervals
			90	2309						
			100	2310						
			100	2320						
			100	2330						
			95	2340						

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 3 OF 19

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
			100							
				2360						
			100							
				2360						
			100							Kag
				2369						gradational contact over ≈5'
			70	2371			badly broken			
									less epidote due to less plagioclase	finer grained Kan much less porph. more gray color
			90					finely disseminated magnetite ≈ 2% which oxidizes to hematite	perhaps slightly stronger chlorite	
				2380				also hematite clumps after mafics		
			90							
				2390					hematite - clay coatings on many fractures	
			100				2395 six inch badly broken zone			
				2400						
			100				slightly fractured at 30° to core axis			
				2405						
			100							
				2414						
			100							
				2424						
			100							
				2433						
			100							

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 4 OF 19

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
				2443						fine grained porphyritic andesite
			100						@ 2446 rock turns slightly more gray in color due to little stronger chlorite and possibly v.f. biotite in groundmass	
				2450						
			100							
				2458					feldspars still quite fresh	
			100							
				2468						
			100							
				2475					epidote still abundant as dissemations and large streaks and clots	
			100						no veining	
				2485						
			100							
				2494						
			80							
				2499						
			100							
				2505						2505 purple colored due to hematite from matics v.f. disseminated
			100							very dense, very weakly porphyritic 2510
				2510					two short intervals are darker gray strongly porphyritic and show moderate biotite 2520-2524 and 2532-2535	
			100							
				2519					weakly porphyritic denser looking rock shows no biotite	
			100							
				2529						
			100							
				2539						

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 5 OF 19

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	2548					basically the typical propylitic alteration with light gray intervals 1 to 3 inches wide and suggestive of biotite alteration scattered throughout	no identifiable contact but rock is not totally homogeneous fine-grained andesite porphyry very weak clastic structure appears sporadically and very locally
			100	2555						
			80	2565				1-3% disseminated magnetite		
			100	2575			2575		traces disseminated hematite from magnetite	
			80	2580			increased fracturing w/ brick red iron stain on most fractures			
			88	2588						
			100	2595						
			100	2602			2602			
			100	2609						
			100	2617						
			100	2625					2622 starting to pick up veinlets of chlor-epid-calcite	
			100	2634						
			95	2640					2633 – 2655 bleached whitish zone, green chlorite	

DIAMOND DRILL LOG

SCALE _____ STARTED _____ STOPPED _____ NOTES BY _____

DEPTH _____ BEARING _____ INCLINATION _____

HOLE No. ES-3 SHEET 6 OF 19

PROPERTY _____ COUNTY _____ STATE _____

COLLAR COORD. N. _____ E. _____ COLLAR ELEV. _____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
									dissem and alter hornblende abundant small amounts epidote and dissem magnetite but feldspars and groundmass are white colored no apparent change in rock	21
			100	2649				2647-2651 strong 1/2" vein chl-ep-epid-calc.		
			100	2655						
								2660 marked increase in amount of hematite as discrete specks, on fractures, and locally flooding the rock	small clasts of rock fairly common	
			100	2665			2663-2665 by zone well fractured zone		below 2655 green colored groundmass and epidote from plagioclase	
			100	2668						
			90	2671				dissem. hematite closely related to magnetite therefore most or all the hematite due to oxidation of 2-5% magnetite along fracture zone		
			100	2681						
			100	2685						
			100	2691						
			100	2700					2697-2700 weak to mod plg-sericite alteration, strong dissem. bright orange red hematite?	
			100	2708				2700-2724 zone of 1-2% disseminated hematite as bright orange red rims around small particles of specular hematite?		
	0.01		100					traces dissem pyrite noted at 2707 w/ some hematite rim but some of the pyrite appeared to have a thin rind of more goethitic looking limonite		
				2715						
			90	2722						
			100	2724					very locally rock is more gray suggesting biotite	
			100	2729						
			100	2739						

DIAMOND DRILL LOG

HOLE No. E5-3 SHEET 7 OF 19

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
			100	2745				~2742 oxidized pyrite?, the oxidation product is maroon red when scratched		fine grained andesite porphyry
			100	2755					below approx 2756 rock color generally gray; still good gridote; biotite alteration weak to moderate very fine hematite throughout rock down to 2816	
			95	2759						
			100	2765						
			100	2775						
			100	2785						
			95	2795			2789 much less bx and breaking below this point down to 2816			
			95	2805						
			100	2815						
			100	2825			2816 badly broken locally fine bx at 2829	2816 purple due to abundant fine hematite calcite veinlets abundant; probable weak biotite alteration; abundant calcite veinlets massive calcite containing small pieces of rock 2835-2837		
			100	2835						
			100	2837						
			100	2840						

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 8 OF 19

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
									moderate silicification in lower end of bx zone below approx 2840	
			100					goethite after pyrite as weak disseminations and in veinlets		
				2850			2852 trace pyrite			
			100					abundant hematite after ?		
				2860						
			100							2867
				2870			good solid core	sparse calcite veinlets a few contain pyrite;	biotite - chlorite alteration w/ very sparse epidote	dense gray or greenish gray volcanic debris, unsorted
							very little oxidation	disseminated pyrite as traces and irregularly distributed		rounded to subangular fragments varying in size from dust to 1 inch or more in fine grained matrix which is also porphyritic
			100						plagioclase clear or slightly cloudy but always hard bright and shiny	andesite
				2880						
			100						relative amounts of biotite & chlorite may vary widely between different fragments and between fragments and groundmass	very probably water laid debris & tuffs
				2890						
			100							
				2900						
			100							
				2910						
			100							
				2920						
			100							
				2930						
			100							
				2935						
			100							
				2940						

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 9 OF 19

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
		100	2945						
		100	2950						
		100				locally aphanitic bands ¼ to ½" thick suggest sedimentary layers; if so the dip is very slight ≤10°			
		100	2960						
		100							
		100	2970						
		95							
		100	2980						
		100							
		100	2990						
		100							
		100	3000						
		100						more chlorite than biotite, weak biotite	
	194 ppm		3010				sparse pyrite-chlorite-calcite veinlets ± quartz ± epidote		
		100							
		100	3020						
		100							
		100	3030						
		100				3038-3040 very aphanitic zone contains pyrite veinlets and 1-2% disseminated pyrite			
			3040						

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 10 OF 19

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
			100	3050					biotite comes back at approximately 3040 to predominate over chlorite	
			100	3060						
			100	3070					uncommon epidote locally as clumps or masses up to 3 inches but otherwise rare	fragmental structure pretty weakly defined
			100	3079						
			100	3089 3090				pyrite in scattered veinlets & calcite; also trace amounts of disseminated pyrite		
			100	3100						
	45 ppm		100	3110						
	0.10 %		100	3120			3118-3120 leucocratic dike? or replacement vein, quartz monzonite?; femics altered to chlorite; 5-7% disseminated pyrite & trace chalcopyrite; thin veinlet at 10° angle to core axis contains good bornite, scattered chalcopyrite, and bright red hematite (or cyprite?)			
			100	3130						
			100	3140						

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 11 OF 19

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
									biotite and chlorite; perhaps chlorite is stronger	no change in rock
			100	3150						
			100	3160						
			100	3170						
			100	3180						
			100	3190				calcite stringers and seams becoming more common; many pyrite		
			100	3200				traces chalcopyrite on some veinlets		
			100	3210						
			100	3219						
			100	3225						
			100	3235				pyrite in clumps and disseminated		

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 12 OF 19

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
			100	3245				to approximately 3246	generally chlorite stronger than biotite but locally biotite is very strong	dark greenish gray or gray; fine grained porphyry weakly defined fragmental structure of clasts generally rounded and large from 1" on up to 2" or even 3"
			100	3255				lower calcite stringers; pyrite mostly in veinlets, only traces disseminated	epidote tends to concentrate in patches 2-3 inches in size	locally aphanitic bands 1/4 to 1/2" thick suggest bedding with about 10° dip
			100	3265				small amounts of chalcopyrite + pyrite in quartz-calcite vein 3270-3272		
			100	3275				trace bornite in vein 3276		
			100	3285				6" interval at 3283 contains traces disseminated ccp in rock characterized by clumps of chlorite ± biotite in off white groundmass, abundant yellowish white feldspars also present; strong magnetite		
			100	3295					magnetite strong	
			100	3302						
			100	3312						
			100	3316						
			100	3325						
			100	3335						

DIAMOND DRILL LOG

SCALE _____ STARTED _____ STOPPED _____ NOTES BY _____

DEPTH _____ BEARING _____ INCLINATION _____

HOLE No. ES-3 SHEET 13 OF 19

PROPERTY _____ COUNTY _____ STATE _____

COLLAR COORD. N. _____ E. _____

COLLAR ELEV. _____

ASSAYS % MO	ASSAYS % CU		% RECOV.	DEPTH	Graph	COL.	DETAIL	MINERALIZATION	ALTERATION	ROCK TYPE
			100	3345				traces bornite and/or chalcopyrite in calcite veinlets ± pyrite, rarely disseminated ccp; many calcite veins carry no sulfides	combined chlorite - biotite and varies as to which is stronger	Same
			100	3355				veinlets fairly common		
			100	3359						
			100	3369				many veinlets ± goethite after pyrite; occassionally quartz also		
			100	3375						
			100	3385						
			100	3395						
			100	3405						
			100	3415						
			90				3419-3441 zone of more abundant calcite veinlets and hematite coated fractures		3420 ↓ biotite	
			50	3425 3426						
			100	3435					↑ 3441	

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 14 OF 19

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
			100	3445					mixed biotite -chlorite, probably more chlorite	fine-grained andesite porphyry weak fragmental structure
			100	3455						
			100	3465				pyrite in thin, scattered veinlets ± calcite ± chlorite rarely disseminated		
			100	3475						
			100	3485					≈ 3480 weak biotite, generally lesser chlorite, some femics appear black and unaltered others are completely chloritized	
			100	3497					feldspars cloudy but hard + shiny	
			100	3504				ccp? in chlorite-calcite-pyrite 3504	strong disseminated magnetite 3-5 %	
			100	3510						
			100	3516						
			100	3525						
			100	3535						

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 15 OF 19

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
			100	3545					same biotite-chlorite in varying proportions biotite generally weak	medium to dark greenish gray fine-grained andesite
			100	3557				pyrite with chlorite or calcite in veinlets	traces qtz-chl veinlets;	
			100	3562				scattered traces chalcopyrite	local areas up to several inches enriched in epidote but these are not very common	
			100	3570				only traces dissem sulfides		
			100	3579						
			100	3589						
			100	3599						
			100	3609						
			100	3610						
			100	3615						
			100	3625						
			100	3635						

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 16 OF 19

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
			100						from 3589 to 3665 there is definite increase in biotite at the expense of chlorite	
				3645						
			100							
				3655						
			100							
				3665						
			100							
				3675						
			100							
				3685						
			100					3683 trace diss ccp	below ≈ 3690 more chlorite than biotite	
				3695						
			100						below ≈ 3700 very weak alteration traces chlor.	medium pinkish gray
				3704						very aphanitic to 3714
			100							
				3714						
			100							
				3718						
			100							
				3728				3728 zone of str. diss pyrite up to 10% related to strong pyr.-calc-chl fracture filling first few feet show good barnite-ccp in vein, only traces disseminated	chloritic alteration only traces biotite	
			100							
				3735						

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 17 OF 19

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 TYRE
			100						chlorite alteration	
				3745						
			100							
				3754					epidote occurs as large blotches sparsely scattered throughout	
			100							
				3764						
			100							
				3773						
			100							
	121	ppm								
				3780						
			100							
				3790						
			100							
				3800						
			100							
				3810						
			100							
	0.01	%								
	0.02	%		3820						
	0.04	%	100							
	0.02	%		3824						
			100							
				3834						

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 18 OF 19

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
			100	3844				pyrite in chlorite ± calcite veinlets, low frequency of occurrence of dissem pyrite very weak and directly related to veins only traces ccp in veins and as disseminations	increasing disseminated epidote alteration tending more to propylitic w/ increasing epidote and biotite very rare	
			100	3854						
			100	3863						
			100	3870						
			100	3880						
			100	3890						
			100	3900						
			100	3910						
			100	3920						
			100	3930						
				3940						

DIAMOND DRILL LOG

HOLE No. ES-3 SHEET 19 OF 19

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
			100	3950						
			100	3960						
			100	3970						
			100	3977						
			90	3987						
			100	3996						
			100	4000			END OF HOLE			

ES-3

SAFFORD

SUMMARY OF LOG OF ROTARY DRILL SAMPLES

0 - ~~52~~ mixture of rock types from unconsolidated and semi-consolidated gravels

52 - ~~378~~ 408 Cretaceous volcanics; andesite agglomerate; light to medium greenish gray; propylitic alteration, matics totally gone to chlorite, good epidote, moderate to locally strong sericite from feldspar phenocrysts and also in groundmass; moderate to strong secondary calcite from plagioclase, occasional microscopic clumps of calcite crystals; traces magnetite and/or hematite after magnetite

408 - 423 predominantly leached, Fe stained material (up to 80%) mixed with material as above; quartz-sericite alteration, limonite is strongly goethite with traces of hematite

428 - 768 rock same as initial interval except that leached, Fe stained fragments were found in all intervals and locally comprised 15% of the sample

768 - 793 agglomerate fragments very light colored, leached Fe stained chips with quartz-sericite alteration make up at least 20% of the samples,

relict pyrite cubes very obvious in agglomerate but only in very small amounts; 768-773 about 30% of the sample is weakly sericitized plagioclase fragments, this drops rapidly to 15% in next interval and negligible amounts thereafter

798-848 rock is essentially same as initial interval but dark greenish gray in color due to stronger chlorite alteration and possible tuffaceous material; from here on down the leached, Fe stained chips are ubiquitous in amounts varying from 1% to 10%; traces of relict pyrite also occur in the agglomerate

848-858 no sample

858-898 similar rock as previously described, 858-868 still contains considerable dark colored rock.

898-908 dark greenish gray chips same as interval 798-848

908-1028 the usual light greenish gray agglomerate; cuttings are quite small - sand size. traces relict pyrite

1028-1058 same as above except that 20-50% of the cuttings are pink in color and may be latite or quartz latite (no quartz was seen)

~~908 - 2148~~

1058 - 2148 Light greenish gray propylitically altered agglomerate; qtz-sericite-limonite chips ubiquitous but only in small amounts ≤ 2%; v.f.g. aphanitic chips present in varying but small amounts; only traces of limonite after pyrite; magnetite as weak disseminations; sericite varies slightly variations are slight changes to darker colors and differences in size of chips; which reflect changes in hardness

Type & send copies to Ken Jones & Bob Helming

Safford Project.

ES-3

CORE LOG SUMMARY

2148 – 2371 Kag – andesite agglomerate; strongly porphyritic; clastic texture poorly defined perhaps more tuffaceous; light green-gray color; propylitic alteration; disseminated magnetite from nil to 0.5%; traces disseminated hematite possibly after pyrite; no sulfides

2371 – 4000 Kan – finer-grained andesite unit; obviously fragmental rock but much better indurated and with fewer plagioclase phenocrysts than Kag; color varies from greenish gray to light or medium gray depending upon intensity and type of alteration with the gray color varying directly with the biotite alteration; disseminated magnetite shows a marked increase up to about 2% and frequently as high as 5%

2371 – 2750 propylitic alteration with very local intervals of a few feet showing weak secondary biotite; traces pyrite 2707; disseminated hematite (?) and on fractures may result from oxidation of pyrite and/or magnetite; sparsely distributed veinlets of chlorite – epidote – calcite;

2750 – 2867 rock generally gray due to weak to moderate biotite alteration; still good epidote;

moderate silicification from approximately 2840 - 2867; weak disseminated gethite after pyrite;

2867 - 4000 Kan - fine grained andesite; gray or greenish gray depending upon alteration; fragmental texture varies from extreme to poorly defined; fragments vary from dust size and angular to a couple inches and well rounded; with no recognizable systematic distribution of types; alteration is combination biotite - chlorite in varying proportions until approximately 3690; below 3690 secondary biotite is a minor alteration mineral occuring only in intervals of less than 5 feet or in individual fragments; epidote is ~~sparse~~ ~~until~~ and occurs as clots ~~up to~~ several inches long but becomes more abundant toward the bottom of the hole; plagioclase is clear or slightly cloudy but always hard ~~bright~~ and shiny; strong disseminated magnetite 2-5%; chlorite - calcite are most common veinlets and fracture coatings with relatively minor quart and epidote;
at about 2867 pyrite becomes more frequent in veinlets and on fractures and shows a modest increase to bottom of hole but can never be considered abundant; disseminated pyrite is directly related to veinlets; total sulfide content averaged over any ten foot interval is ~~probably~~ certainly less than

0.5% although very locally it may be 1%; from approximately 3265 to 3552 traces of chalcopyrite and much less bornite were seen; ~~below~~ from 3552 to the bottom of the hole very diligent searching would reveal chalcopyrite nearly everyplace there was pyrite but always in very small amounts only; bornite was extremely rare

B. Holmes

SAFFORD PROJECT

ES-3
CORE LOG SUMMARY

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2750-2867 rock generally gray due to weak to moderate biotite alteration; still good epidote; moderate silicification from approximately 2840-2867; weak disseminated goethite after pyrite;

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at about 2867 pyrite becomes more frequent in veinlets and on fractures and shows a modest increase to bottom of hole but can never be considered abundant; disseminated pyrite is directly related to veinlets, total sulfide content averaged over any ten foot interval is certainly less than 0.5% although very locally it may be 1%; from approximately 3265 to 3552 traces of chalcopyrite and much less bornite were seen; from 3552 to the bottom of the hole very diligent searching would reveal chalcopyrite nearly every place there was pyrite but always in very small amounts only; bornite was extremely rare.

cc: J.K. Jones
B. Helming

ES-3

FOOTAGE ⇒

47' gravel

47-52 gravel

53' mast bigger chips propylitized agglomerate, good epidote, serisite, calcite

61 " mod magnetite, hbld → chl, plag → epidote, serisite contamination, secondary calcite, wk-mod, some

63-68 green agglomerate propylitized as above

68-73 "

73-78 " some reddish brown coloration due to Fe oxides

78-83 "

83-88 "

88-93 little darker green color

93-98 "

98-103 "

103-108 "

108-113 a few pale purplish fragments show intense serisite

113-118 med. green agglomerate, propylitized, wk-mod serisite, good secondary calcite

118-123 "

123-128 "

128-133 "

133-138 "

138-143 "

143-148 " strong serisite

148-153 "

153-158 " very sparse magnetite

158-163 "

163-168 "

168-178

nearly all fragments have small soft dark areas in groundmass, could this be incipient biotite?

178-188 "

188-198 "

198-208 "

208-218 agglomerate, propylitic alteration, good calcite, erratic but usually good epidote, weak-mod chlorite, mod-strong pervasive sericite, weak disc. magnetite

218-228 "

228-238 "

238-248 greenish gray strong sericite + calcite, weak epidote-chlorite

248-258 "

258-268 little lighter colored

268-278 similar, pinkish color to much of aphanitic material, Fe oxide?

278-288 "

288-298 "

298-308 several purple fragments

308-318 only trace purple

318-328 "

328-338 "

348 "

358 "

368 "

378 "

388 "

398

408 finer cuttings; a lot of leached Fe stained material, predominantly fine size

418 " 80% qtz-ser-lim leached material

428 slightly coarser cuttings 60% leached Fe stained material

ES-3

428-438 back to the same old rock + a few contaminating Fe stain chips

448 "

458 "

468 "

478 "

488 "

498 "

508 "

518 "

528 "

538 " scattered bleached, Fe stained pieces

548 " pinkish and

558 " reddish tones

568 " more pronounced

578 " some more Fe stained fragments ≤5%

588 "

598 " " " " " " mod sericite slight decrease in sericite

608 "

618 " "

628 " small amounts Fe stained material

638 " "

648 " more oxidized material ≥ 10%

658 "

668 " ≈15% Fe stained

678 " ≈5% "

688 " 20% "

698 " traces "

E>-3

698-708 " small amounts Fe stained material
718 " 5% " "
728 " 5% " "
738 " " traces otid. pyr. in agglom. ?
748 " ≤5% " "
758 traces "
768 "
778 agglomerate very light colored " 25% bleached + Fe stained qtz-ser., 30% small white ~~fe~~ feldspar fragments
788 " 25% " " " " 15%

relict pyrite cubes very obvious in agglom. but not abundant

798 60% show oxidation, essentially no feldspar as above
808 10% bleached Fe stain material
818 cuttings darker colored due to more chlorite; traces oxidized material
and some aphanitic chips
828 rocks pretty near same as above 768, traces Fe stained fragments
838 darker colored
848 ~~dk~~ dark green-gray & purple chips; much is aphanitic, later chlorite alteration
no 845-858
868 10% Fe stained
878 ~~dk~~ light green gray, small cuttings
888 8% Fe stained
898 10% " "
908 dark gray green & purple
918 light colored again; abundant flakes of rust from rods or
some other source
928 ", sericite alteration has decreased slightly & depth to weak
938 " consistently ±5% Fe stained chips
948 "
958 "
968 " some pink fragments of rhyolite or qtz latite

978 " more pink rock, traces hematite Fe stain

988 " much less pink

998 " abv trace pink rock, contamination?

1008 " 5% show limonite or hematite stain, lim > hem.

1018 ≤5% " " "

1028 lim-hem fragments still present, ≈ 40-50% fragments more pale pink in color but texturally looks like the white agglomerate; traces oxidized pyrite cubes

1038 " " "

1048 " " "

1058 " " "

1068 light green agglomerate ¼ dk. pyr., wk epidote, wk mag, wk ser, traces relict pyrite, quite a bit of white and very light colored chips (rhyolite?) no apparent quartz

1078 " ¼ fewer white chips, traces hem stain

1088 mostly green agglomerate

1098 "

1108 "

1118 "

1128 "

1138 "

1148 "

1158 "

1168 "

1178 "

1188 "

1198 "

1208 "

ES-5

1218 "

1228 little darker green more chl, less epidote

1238 still "

1248 still dark with 10-15% considerable vfg material ranging in color from tan, light green, brown, and reddish

1258 " " good epidote, little less vfg chips

1268 " " only small amounts vfg chips

1278 back to lighter green rock essentially no vfg chips

1288 " "

1298 "

1308 "

1318 "

1328 "

1338 "

1348 " ~10% limonite stained chips

1358 " ≈6-8%

1368 "

1378 " 1-2% limonite-hem chips

1388 " " small amounts of vfg chips, green, brown, red

1398 " " "

1408 " " "

1418 " " "

1428 only trace v.f.g. chips

1438 " < 10% lim. chips "

1448 " " "

1458 " " "

1468 " " "

1478 " " "

ES-3

1478-1488	"	"	"
1498	"	"	"
1508	"	"	"
1518	"	"	"
1528	"	"	"
1538	"	"	"
1548	"	"	"
1558	no sample	"	"
1568	"	essentially no v.f.g. chips	
1578	"	"	
1588	"	"	
1598	"	"	"
1608	"	"	
1618	"	"	in "
1628		increasing v.f.g. chips	
1638	"	"	
1648	"	"	trace v.f.g. chips, oxidized chips
1658	"	"	
1668	"	"	
1678	"	"	slightly more oxidized material
1688	"	"	finer sample
1698	"	"	" "
1708	"	"	
1718	"	"	≈1-2% v.f.g chips
1728	"	"	"
1738	"	"	
1748	"	"	
1758	"	"	

ES-3

1758-1768	"	"	
1778	"	"	
1788	"	"	
1798	"	"	
1808	"	"	
1818	"	"	
1828	"	"	
1838	"	"	~15% brick red fg chips w/ trace pyrite relicts to 20% latite?
1848	"	"	~5% red chips
1858	"	"	
1868	"	"	
1878	"	"	Some more red chips
1888	"	"	
1898	"	"	
1908	"	"	
1918	"	"	
1928	"	"	
1938			
1948			
1958			
1968			
1978			
1988			
1998			
2008			
2018			
2028			
2038			

ES-3

20+8
58
68
78
88
98
2108
18
28
38
48

ES 3 Core Assays

Hole No.	Ft. Interval	% Cu.	PPM Cu
3170 - 3173	4	0.01	
3008 - 3009	1		194
3101 - 3102	1		45
3118 - 3119	1	0.10	
3177 - 3179	2		121
3815 - 3818	3	0.5.	
3818 - 3820	2	0.02	
3820 - 3824	4	0.04	
3824 - 3830	[illegible]	0.[illegible]	

HAWLEY & HAWLEY
ASSAYERS AND CHEMISTS, INC.
1700 W. GRANT RD. • BOX 50106 • 622-4836
TUCSON, ARIZONA 85703

BRANCHES
DOUGLAS, ARIZONA
HAYDEN, ARIZONA
EL PASO, TEXAS
ST. LOUIS, MO.

IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER ~~%~~ ppm	ZINC %	MO. %	IRON %		
E 875				45					

REGISTERED ASSAYER
CERTIFICATE NO
6784
H. E.
RICHARD
Date Signed
Arizona

CC: Essex International, Inc.
ADD: 1704 West Grant Road
CITY: Tucson, Arizona 85705
DD:
CITY:

REMARKS: Trace analysis

ANALYSIS CERT. BY

PREPARATION $ .90
ANALYSIS $ 1.50

HH3A ACC: ESSEX INTERNATIONAL, INC.

DATE SPL. RECEIVED 7/27/72 | DATE COMPL 7/29/72 | TUC 346367 | $ 2.40

SXM

HAWLEY & HAWLEY
ASSAYERS AND CHEMISTS, INC.
1700 W. GRANT RD. • BOX 50106 • 622-4836
TUCSON, ARIZONA 85703

BRANCHES: DOUGLAS, ARIZONA; HAYDEN, ARIZONA; EL PASO, TEXAS; ST. LOUIS, MO.

JUL 27 1972

RECEIVED

IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER %	ZINC %	MO. %	IRON %		
				ppm					
E 874				194					

REGISTERED ASSAYER
CERTIFICATE NO. 6784
H.E. RICHARD
Date Signed
Arizona U.S.A.

CC: Essex International, Inc.
ADD: Attn: Mr. Ken Jones
CITY: 1704 West Grant Road
DD: Tucson, Arizona 85705
CITY:

REMARKS: Trace analysis

ANALYSIS CERT. BY: H.E. Richard

PREPARATION $ .90
ANALYSIS $ 1.50
$ 2.40

HH3A

ACC: ESSEX INTERNATIONAL, INC.

DATE SPL. RECEIVED 7/24/72

DATE COMPL. 7/26/72

TUC 346322

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.
1700 W. GRANT RD. • BOX 50106 • 622-4836
TUCSON, ARIZONA 85703

BRANCHES
DOUGLAS, ARIZONA
HAYDEN, ARIZONA
EL PASO, TEXAS
ST. LOUIS, MO.

IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER %	ZINC %	MO. %	IRON %		
				ppm					
E 875				45					
2 inch long specimen of split core from 3102 feet hole ES-3									

CC: Essex International, Inc.
ADD: 1704 West Grant Road
CITY: Tucson, Arizona 85705
DD:
CITY:

REMARKS: Trace analysis

ANALYSIS CERT. BY

PREPARATION $ .90
ANALYSIS $ 1.50

HH3A

ACC: ESSEX INTERNATIONAL, INC.

DATE SPL. RECEIVED 7/27/72

DATE COMPL 7/29/72

TUC 346367

$ 2.40

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

1700 W. GRANT RD. • BOX 50106 • 622-4836

TUCSON, ARIZONA 85703

BRANCHES
DOUGLAS, ARIZONA
HAYDEN, ARIZONA
EL PASO, TEXAS
ST. LOUIS, MO.

IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER %	ZINC %	MO. %	IRON %		
				ppm					
E 874				194					

CC: Essex International, Inc.
ADD: Attn: Mr. Ken Jones
CITY: 1704 West Grant Road
DD: Tucson, Arizona 85705
CITY:

REMARKS: Trace analysis

ANALYSIS CERT. BY H E Hawley

PREPARATION $ .90
ANALYSIS $ 1.50

ACC: ESSEX INTERNATIONAL, INC.

DATE SPL. RECEIVED 7/24/72

DATE COMPL 7/26/72

TUC 346322

$ 2.40

HH3A