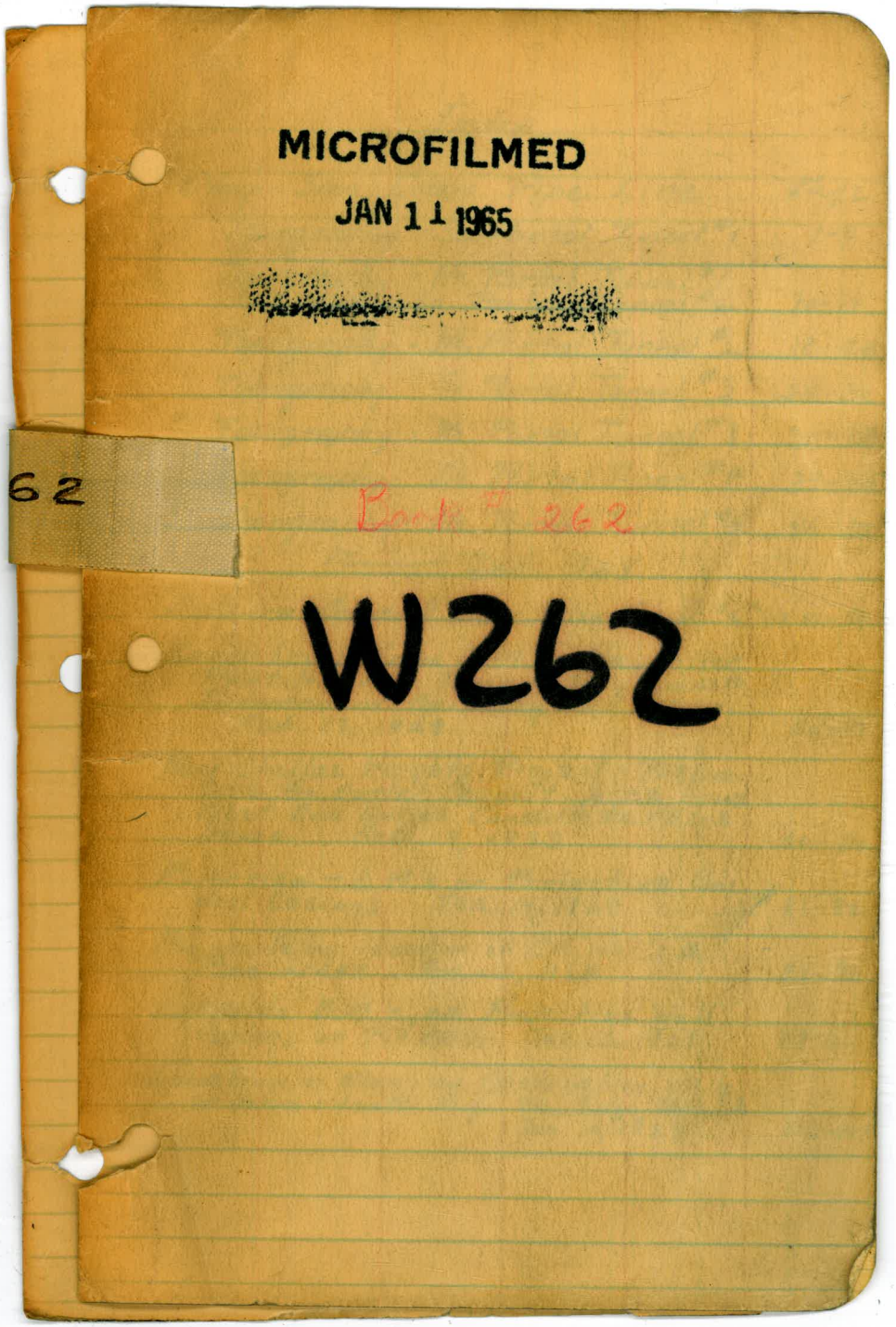
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Book # 262
W262

SDSW

Index

Topography of South Portal
Tunnel #1.

South Portal Tunnel #1.

404.0

Sta. A.	Hor. L.	Vert L	Rod	Dif. El.	Elev
1.	152-40	-5-08	1.63 1.64	- 14.6	389.36
2	159-50	-2-23	4.35	- 18 - -23	381.
3	157-40	-4-02	2.93	- 20.5	383.5
4	155-50	-4-48	2.21	- 18.4	385.6
5	141-0	-11-49	.83 0.87	- 17.4	386.6
6	92-20	-30-48	.30 0.40	- 17.6	386.4
7	1-0	-20-24	.47 0.53	- 17.2	386.8
8	348-05	-15-20	.62 0.67	- 17.	387.0
9	339-35	-9-15	.82 0.84	- 13.3	391.
10	337-05	-2-46	0.85	- 4	400
11	333-10	+1-37	1.16	+ 3	407
12	329-10	+5-37	1.54 1.55	+ 15	419
13	324-25	+3-44	1.67	+ 11	415
14	329-40	+3-14	1.92	+ 11	415
15	10-0	+4-30	2.23	+ 17	421
16	30-30	+5-03	1.84 1.85	+ 16	420
17	24-15	+4-19	1.40	+ 11	415
18	11-15	+3-24	1.51	+ 9 = + 7	411
19	10-15	+4-31	1.36	+ 11	415
20	355-15	+1-07	1.03	+ 2	406
21	346-30	+3-14	1.31	+ 7	411
22	317-10	+7-44	1.76 1.80	+ 24	428
23	305-0	+11-20	1.93 2.00	+ 40	444

H.I = 4.9

B.M. # 85. On Air Valve Sta. 712+00. Ground -2.0

Rod 9.9 Pipe

Pipe, Ground +2.5

" " +1.0

" " +2.0

" " +2.0

" " +1.5

" End Box. 6.5 wide.

℄ Cap of Portal. Pipe 4.3 Lower.

Fence

Fence

Rod 6.9 Ditch

Fence

404.

Rod

24	316-0	+8-34	2.67 2.72	+39	443
25	321-45	+7-18	2.66 2.71	+34	438
26	331-0	+4-46	2.51	+21	425
27	341-45	+4-04	2.41	+17 = 12	416
28	355-15	+3-47	2.53	+17 = 13	417
29	325-0	+4-55	2.83	+24	428
30	315-45	+8-06	1.28 1.31	+18	422
31	315-15	+5-33	1.15 1.16	+11	415
32	318-30	+6-38	1.05 1.06	+12	416
33	302-30	+11-24	.88 0.92	+18	422
34	295-15	+11-04	.92 0.96	+18	
35	286-0	+14-06	1.12 1.19	+28	432
36	275-0	+15-18	1.37 1.47	+37	441
37	294-0	+13-23	1.67 1.76	+39	443
38	304-0	+11-30	1.49 1.55	+30	434
39	245-0	+14-32	1.29 1.37	+33	437
40	244-0	+14-0	1.00 1.06	+25	429
41	248-0	+11-43	.58 0.60	+12	416
42	261-45	+16-21	.23 0.25	+7	411
43	318-0	+7-40	.45 0.46	+6	410
44	343-15	-11-49	.43 0.45	-9	395
45	301-30	-20-50	.12 0.14	-5	399
46	194-45	+1-54	0.46	+2	406
47	182-0	+3-08	0.44	+2	406
48	140-0	-9-37	.22 0.23	-4	400
49	171-15	-2-12	0.57	-2	402

Fence

Rod 9.9
Rod 8.9

Fence
"

Fence

Draw
"
"

			Rod		
50	188-15	+5-13	0.84 .83	+8	412
51	175-30	-0-20	0.92	-1	403
52	204-15	+5-16	0.88 .87	+8	412
53	221-45	+10-37	1.17 1.13	+21	425
54	228-45	+12-14	1.45 1.39	+30 →	434
55	206-45	+7-50	1.84 1.80	+25	429
56	200-15	+6-06	1.65 1.63	+17	421
57	194-45	+3-44	1.42	+9	413
58	188-30	+3-47	2.11	+14=+10	414
59	196-0	+4-57	2.35	+20 →	424
60	181-30	+2-15	2.06	+8	412
61	183-30	+3-34	1.60	+10	414
62	185-0	+4-02	1.18	+8	412
63	178-45	+0-52	2.14	+3	407
64	171-15	+0-09	2.16	+1	405
65	173-30	+0-22	2.61	+2	406
66	170-0	-0-24	1.47	-1	403
67	177-0	-0-08	1.42	-0	404
68	169-15	-4-05	0.89	-6	398
69	155-45	-5-12	0.75 .74	-7	397
70	140-0	-17-05	0.45 .41	-13 →	391
71	159-15	-4-32	1.37	-11	393
72	160-0	-3-33	2.08	-13	391
73	164-30	-3-19	2.09	-12	392
74	162-15	-2-05	2.76	-10	394
75	165-30	-1-40	2.80	-8	396

Fence
"

Rod & 9
Fence

Point

404

			Rod		
76	168-15	-1-19	2.80	-6 = 10	394
B.	167-0	-1-30	3.89	-10.2	393.8
77	157-0	-2-56	3.73	-19	385
78	150-30	-0-55	3.81	-6	398
79	146-0	+0-15	3.90	+2	406
80	143-0	+0-56	3.98	+7	411
81	137-30	+2-03	4.11	+15	419
82	134-15	+2-29	3.25	+14	418
83	140-30	+0-56	3.08	+5	409
84	146-0	-0-33	2.99	-3	401
85	151-45	-2-03	2.91	-10	394
86	156-0	-3-34	3.06	-19	385
87	155-45	-3-01	2.97	-15	389
88	153-0	-3-29	2.12	-13	391
89	147-30	-1-57	2.13	-7	397
90	146-15	-2-39	2.13	-10	394
91	144-45	-1-19	2.21	-5	399
92	135-15	+1-12	2.26	+5	409
93	122-30	+4-38	2.51	+20	424
94	105-45	+6-27	1.88 1.90	+21	425
95	111-30	+4-02	1.57	+11	415
96	118-30	+2-08	1.41	+5	409
97	123-30	+0-36	1.31	+1	405
98	127-0	-1-38	1.29	-4	400
99	130-0	-0-44	1.25	-2	402
100	138-15	-3-43	1.16	-8	396

404
4.9
408.9

1.94

Rod 8.9

408.9
14.8
12.9
1.94
14.8 494.1

Fence

Fence Cor.

End Ditch.
Point

Ditch

Fence

Fence

Ditch

			404 Rod.		
101	115-30	-4-15	0.67	-5	399
102	102-30	+1-57	0.89	+3	407
103	99-30	+0-04	0.92	+1	405
104	94-45	+3-39	1.07	+7	411
105	87-45	+6-27	1.40 1.41	+16	420
106	81-45	+8-57	1.86 1.91	+29	433
107	56-45	+8-26	1.80 1.84	+27	431
108	52-15	+6-27	1.38 1.40	+16	420
109	47-45	+5-10	1.10 1.11	+10	414
110	44-45	+2-46	0.95	+5	409
111	43-45	+3-36	0.86	+5	409
112	36-45	-1-55	0.56	-2	402
113	358-0	+4-02	1.51	+11	415
114	355.45	+3-05	2.02	+11	415
115	6-0	+2-52	1.64	+8=+7	411
	349-15	+3-01	2.92	+13	417
B		(394)			
A	347-0				
1	139-15	-5-35	1.44 1.45	-14.0	380
2	142-0	-4-01	1.97	-13.8	380.2
3	142.0	-3-14	2.50	-14.0	380.0
4	141-45	-2-53	2.94	-14.8	379.2
5	141-30 ~~141-30~~	2-43 ~~-2-39~~	3.81 ~~3.84~~	-18.2 ~~-17.2~~	375.8
6	140-15	-2-04	3.82	-14	380
7	136-0	-1-17	3.80	-9	385
8	126-15	+0-34	3.90	+4=-3	391

Fence

Fc. 3' W
Ditch

Loth
Low place
Rod 5.9 Start of Ditch.
Rod 6.9
H.I = 4.7

Pipe
"
"
"
"

Rod 11.7

394

9	124-0	+1-08	3.47	+7 = +4	398
10	130-15	+0-02	3.25	+0	394
11	136-30	-0-57	3.12	-5	389
12	139-45	-1-55	3.09	-10	384
13	139-0	-2-08	2.38	-9	385
14	131-30	-0-20	2.44	-1	393
15	119-0	+2-04	2.67	+10	404
16	110-15	+3-15	2.13	+12	406
17	100-45	+4-21	2.44	+18 →	412
18	120-30	+0-55	1.78	+3	397
19	130-30	-1-49	1.59	-5	389
20	121-15	-5-24	0.95 (.94)	-9	385
21	109-30	-1-26	1.03	-3	391
22	94-0	+3-36	1.46	+9	403
23	88-0	+5-34	1.92 (1.90)	+19	413
24	21-30	-8-58	0.70 (.68)	-11 →	383
25	45-30	-12-25	0.45 (.43)	-9	385
26	44-45	-12-15	0.39 (.37)	-8 = -14	380
27	105-0	-12-15	0.52 (.50)	-11	383
28	121-15	-19-55	0.44 (.39)	-14 = -18	376
29	140-0	-12-03	0.75 (.72)	-15	379
30	144-30	-15-39	0.67 (.62)	-17 = -24	370
31	159-45	-11-37	1.30 (1.27)	-26 = -29	365
32	155-45	-9-21	1.30 (1.26)	-21	373
33	149-0	-6-44	1.35 (1.34)	-16	378
34	148-15	-4-16	2.10	-16	378

Rod 7.9

Fence

Start of Wash

Rod 10.7 Wash

Rod 8.7 Wash.

Rod 11.7 Wash

Rod 7.7 Wash

			Rod.		
35	157-15	-6-47	2.10 2.13	-25	369
36	159-45	-8-36	2.10 2.15	-32 →	362
37	158-45	-7-10	2.70 2.76	-34	360
38	156-45	-5-49	2.67 2.70	-27	367
39	151-15	-4-48	2.70 2.71	-23	371
40	146-15	-3-04	2.73	-15	379
41	144-30	-2-27	3.40	-15	379
42	150-0	-4-10	3.46	-25	369
43	155-0	-4-50	3.60	-31=-35	359
44	156-15	-5-24	3.57 3.60	-34=40	354
45	155-15	-5-05	4.05 4.09	-36=-41	353
46	154-15	-5-0	4.08 4.11	-36=-37	357
47	149-0	-3-40	4.03	-26	368
48	144-15	-2-31	3.93	-17	377
B.					
A	347-0				
49	344-0	+2-25	0.49	+2	396
50	318-30	+1-13	0.71	+2	396
51	314-15	+5-23	1.24	+12	406
52	299-15	+5-49	0.85 0.86	+9	403
53	286-0	+8-44	1.19 1.21	+18 →	412
54	256-15	+7-17	1.00 1.02	+13	407
55	257-0	+1-25	0.59	+1	395
56	249-0	-2-30	0.42	-2 →	392
57	302-15	+0-51	0.29	+1	395
58	8-45	+0-52	0.46	+1	395

Wash.
"

Rod 8.7
Rod 10.7 Wash
Rod 9.7 "
Rod 5.7

H.I = 4.5̄

Fence
"

Draw

(394)

			Rod		
59	161-30	-5-03	0.18	-2	392
60	128-45	-16-12	.21 0.23	-6	388
61	162-45	-8-07	.39 0.40	-6	388
62	149-45	-9-08	.60 0.62	-10 = -18	376
63	169-30	-9-39	.56 0.58	-10 = -15	379
64	195-0	-17-14	.32 0.35	-10 →	384
65	208-30	-2-42	0.77	-4	390
66	224-30	+4-0	1.15	+8 →	402
67	198-30	-0-27	1.73	-1	393
68	181-45	-4-39	1.60	-13	381
69	163-45	-7-54	1.65 1.68	-23	371
70	163-30	-9-57	1.16 1.20	-20	374
71	162-0	-6-15	2.36 2.39	-26	368
72	174-45	-3-33	2.35	-15	379
73	187-0	+0-05	2.45	+0 →	394
74	180-0	+0-12	3.37	+1	395
75	169-15	-2-44	3.23	-15	379
76	158-45	-5-42	3.12 3.15	-31	363
77	157-15	-4-57	3.80 3.83	-33	361
78	165-30	-2-56	3.86	-20	374
79	172-45	-1-08	4.00	-8	386
80	177-0	+0-02	4.10	+0 →	394
81					
82					

Rod 12.5

Rod 9.5 Draw

Draw

Fence

Draw from West

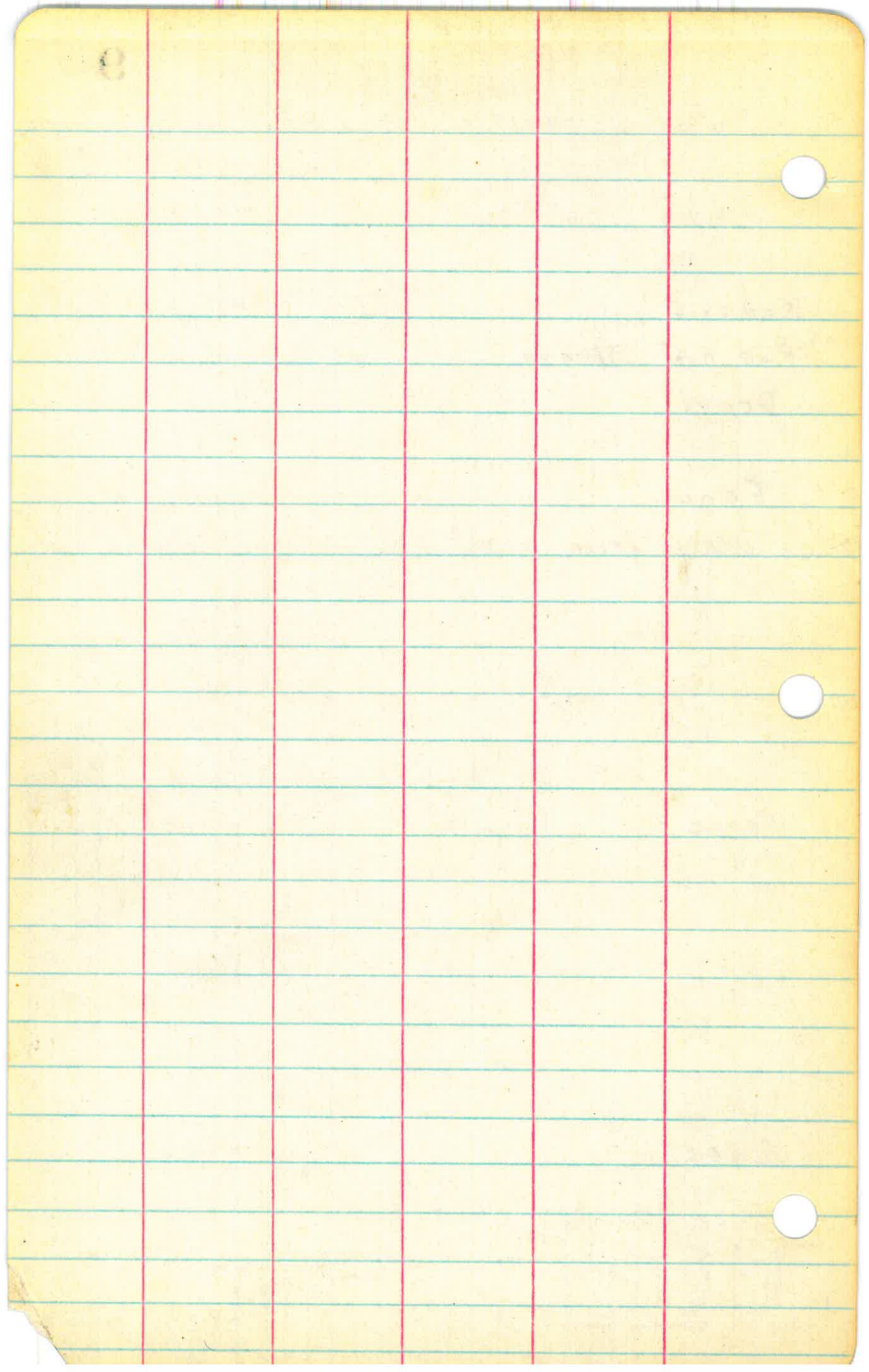
"

"

Fence

"

Fence



Topography of North Portal Tunnel #1 and South Portal Tunnel #2.

South Portal Tunnel #2 and North Portal Tunnel #1.

Sta.	Hor ∠	Vert ∠	Rod	Dif. Elev	Elev.
A.	H.I - 47 395.76				
B.M.	332-25	-1-41	2.04	-6.0	389.76
1	335-10	-3-12.	1.45	-8	387.8
2	341-10	-6-13	0.89 .38	-9.6	386.2
3	359-0	-12-36	0.43 .41	-9.4	386.4
4	109-35	-11-26	0.46 .44	-9.0	386.8
5	122-55	-4-25	1.10	-8.5	387.3
6	122-05	-2-37	1.83	-8.3	387.5
7	120-45	-1-44	2.66	-8.0	387.8
8	120-07	-0-51	3.33	-5.0	390.76
9	329-45	+4-07	2.87	+21	417
10	337-55	+3-30	2.98	+18	414
11	349-20	+4-10	3.20	+23	419
12	2-25	+4-0	3.67	+25	421
13	355-20	+5-0	4.17	+35	431
14	344-20	+5-0	3.86	+34	430
15	333-55	+4-45	3.67	+30	426
16	315-25	+5-31	3.66 3.64	+35	431
17	307-10	+5-37	3.75 3.73	+36	432
18	299-25	+4-40	2.93	+23	419
19	317-45	+4-16	2.52	+19	415
20	326-05	+3-52	2.60	+17	413
21	326-40	+1-52	2.02	+7	403
22	319-40	+3-0	2.02	+11	407
23	297-40	+2-58	2.20	+11	407

389.76
6.
395.76

B.M. # 84 Nail in Cap S. Portal Tunnel #2.

Top Pipe. Gro. 3' Lower, Do. Portal #2. Cap 0.7 Higher than B.M
" " " 3' ", Drain + B.G. Valve. Pipe 2.4 Lower " B.M.
" " " 3' " Gro. 5.4 " " B.M.
" " " 3' "
" " " 3' "
" " " 3' "
" " " 3' "

Top Cap No. Portal Tunnel #1. Pipe 3.8 Lower
Gro. 6.8 "

390.0

395.8

	Hor. ∠	Vert ∠	Rod		
24	288-05	+2-51	2.41	+12	408
25	275-15	-0-26	1.81	-1	395
26	295-10	-1-17	1.38	-3	393
27	328-25	-1-07	1.30	-3	
28	299-15	-1-17	1.13	-3	
29	274-30	-1-12	1.30	-3	
30	262-15	-1-08	1.60	-3	393
31	261-05	-5-15	1.26 (1.25)	-12 = -15	381
32	251-30	-3-47	1-21	-8	388
33	288-20	-6-37	0.86 (.85)	-10 = -14	382
34	283-10	-6-04	0.76 (.75)	-8	388
35	336-10	-6-13	0.75 (.74)	-8	388
36	332-50	-8-51	0.86 (.84)	-13	383
→ 37	3-05	-4-21	1.10	-8 = -11	385
38	15-30	-3-27	1.52	-9	387
39	24-50	-1-44	2.25	-7	389
40	22-35	-0-08	2.38	-1	395
41	18-25	-0-25	2.20	-2	394
42	12-40	+0-55	1.96	+3	399
43	5-45	+0-32	1.55	+1	397
44	348-10	-1-25	1.27	-3	393
45	344-30	-5-11	0.98	-9	387
46	7-25	-3-22	1.24	-7	389
47	19-20	-0-38	1.84	-2 = -4	392
48	24-15	-0-40	2.30	-3	393
49	25-45	-0-33	2.25	-2	394

Rod 7.7 Draw
Fence
Rod 8.7 Draw
Fence Cor.

Draw
Rod 7.7 Draw
Draw
Draw

Rod 6.7

395.8

Rod

50	20-15	-1-37	1.65	-7	389
51	9-0	-3-16	1.17	-7	389
52	348-15	-5-0	0.87	-8	388
53	351-10	-5-37	0.97	-10	386
54	344-0	-3-18	1.36	-8	388
55	339-50	-0-05	1.68	-0	396
56	345-30	+0-18	1.73	+1	397
57	354-45	+2-09	2.00	+7	403
58	1-20	+1-55	2.43	+8	404
59	9-20	+2-10	2.95	+11	407
60	0-40	+3-38	3.35	+21	417
61	349-45	+3-11	2.80	+15	411
62	345-45	+3-24	2.65	+16	412
63	339-30	+2-18	2.46	+10	406
64	335-0	+2-19	2.38	+10	406
65	336-20	+0-42	2.05	+3	399
66	332-0	-0-10	2.17	-1	395
67	331-0	+2-02	2.50	+9	405
68	338-40	-3-43	1.30	-8	388
69	348-0	-5-18	0.40	-4	392
70	3-10	-5-53	0.18	-2	394
71	102-30	-4-0	0.20	-1	395
72	109-20	-13-16	0.32	-7	389
73	122-10	-0-50	0.39	-1	395
74	155-30	-0-48	0.30	-0	396
75	201-55	+5-0	0.21	+2	398

So. Side

Small Draw

Fence Cor.

		395.8			
			Rod.		
- 76	228-0	+3-15	0.35	+2	398
- 77	215-30	+0-55	0.85	+1	397
- 78	206-20	+0-56	1.37	+2	398
- 79	213-30	-0-47	1.39	-2=-6	390
- 80	228-20	-0-49	0.86	-1=-8	388
- 81	238-50	-3-34	1.02	-6	390
- 82	263-20	-4-0	0.50	-3	393
83	162-50	-1-31	0.48	-1	395
84	173-30	+2-44	0.62	+3	399
85	149-30	+2-16	0.97	+4	400
86	145-15	-0-09	1.01	-0	396
87	134-30	-0-12	1.12	-0	
88	128-0	-0-11	1.13	-0	
89	125-30	-3-51	1.21	-8	388
90	126-30	-0-23	1.31	-1	395
91	139-15	+0-33	1.28	+1	397
92	147-45	+0-16	1.34	+1	397
93	156-15	+2-56	1.56	+8	→ 404
94	173-15	+2-17	2.04	+8	→ 404
- 95	183-45	+1-0	1.81	+3	399
- 96	184-0	-0-10	1.40	-0	396
- 97	184-45	+1-14	1.25	+3	399
98	163-45	+1-25	1.19	+3	399
99	167-45	+0-03	1.31	0	396
100	139-45	+0-42	1.50	+2	398
101	136-15	-0-45	1.59	-2	394

Rod 8.7

Rod 11.7

Fence Cor.

Draw

Fc. Cor.

On Fc.

Hd. Draw

			395.8 Rod		
102	126-45	-0-15	2.00	-1 = -4	392
103	125-0	-0-06	1.95	-0	396
104	133-30	+0-16	1.59	+1	397
105	132-45	+0-22	1.92	+1	397
106	125-15	+0-27	2.25	+2	398
107	136-15	+2-10	2.55	+10	406
108	139-45	+0-51	1.86	+3	399
109	147-45	+2-54	2.07	+10	406
110	154-15	+2-41	2.33	+11	407
111	159-30	+3-27	2.66	+16	412
112	149-30	+4-03	3.12	+22	418
113	143-30	+3-02	2.85	+15	411
114	139-45	+3-43	3.69	+24	420
115	134-15	+3-04	3.36	+18	414
116	128-15	+2-36	3.21	+15	411
117	126-45	+1-33	2.86	+8	404
118	125-0	+1-21	2.84	+7	403
119	125-15	+2-05	3.36	+12	408
120	124-45	+1-15	3.45	+8	404
121	128-45	+2-41	3.50	+16	412
122	124-45	+2-10	3.59	+14	410
123	120-0	+2-07	4-08	+15	411
124	120-0	+0-58	3.67	+6	402
125	125-0	+2-35	3.93	+18	414
126	134-45	+3-34	4.17	+26	422
127	139-45	+4-07	4-49	+32	428

Rod 7.9 Drawn
No. Side
" "
So. Side
" "

Drawn
Hd. Drawn

			395.8		
			Rod		
128	136-15	+4-0	5.10	+35	431
129	127-0	+3-01	4.89	+26	422
130	119-15	+2-14	4.84	+19	415
131	111-30	+1-38	4.80	+14	410
132	101-30	+2-50	4.86	+24=21	417
133	95-0	+3-33	5.00	+31=28	424
134	92-15	+3-33	3.93	+24	420
135	106-0	+2-49	3.66	+18=13	409
136	112-15	+2-05	3.57	+13	409
137	117-15	+1-09	3.50	+7	403
138	120-15	+0-05	3.40	+1	397
139	116-30	+0-37	2.67	+3	399
140	110-30	+2-23	2.65	+11	407
141	96-30	+3-06	2.77	+15	411
142	88-45	+3-57	3.16	+22	418
143	78-0	+4-20	2.24	+17	413
144	94-0	+3-18	1.80	+10	406
145	109-15	+3-13	1.65	+9	405
146	116-45	+1-0	1.76	+3	399
147	115-20	+0-10	1.00	+0	396
148	99-45	+4-14	1.09	+8	404
149	77-15	+4-07	1.47	+11	407
150	65-45	+3-54	1.93	+13	409
151	44-45	+1-47	2.09	+7	403
152	50-15	+2-34	1.03	+5	401
153	63-15	+6-18	0.61 0.62	+7	403

Rod 7.7

Rod 7.7

Rod 9.7

			Rod		
154	74-45	-1-46	0.37	-1	395
155	4-0	-3-50	0.55	-4	392
156	21-15	-0-18	0.90	-0	396
157	30-30	0-0	1.36	0	396
158	38-30	+1-04	2.21	+4	400
159	17-15	-2-52	1.01	-5	391
160	42-25	-0-19	0.91	-1	395
161	65-30	+4-25	1.03	+8=+4	400
162	199-30	+0-22	2.00	+1	397
163	208-45	-0-21	2.08	-1	395
164	221-15	-0-19	1.89	-1=-6	390
165	239-30	-3-16	1.80	-10=-7	389
	193-25	+1-43	2.53	+8	404

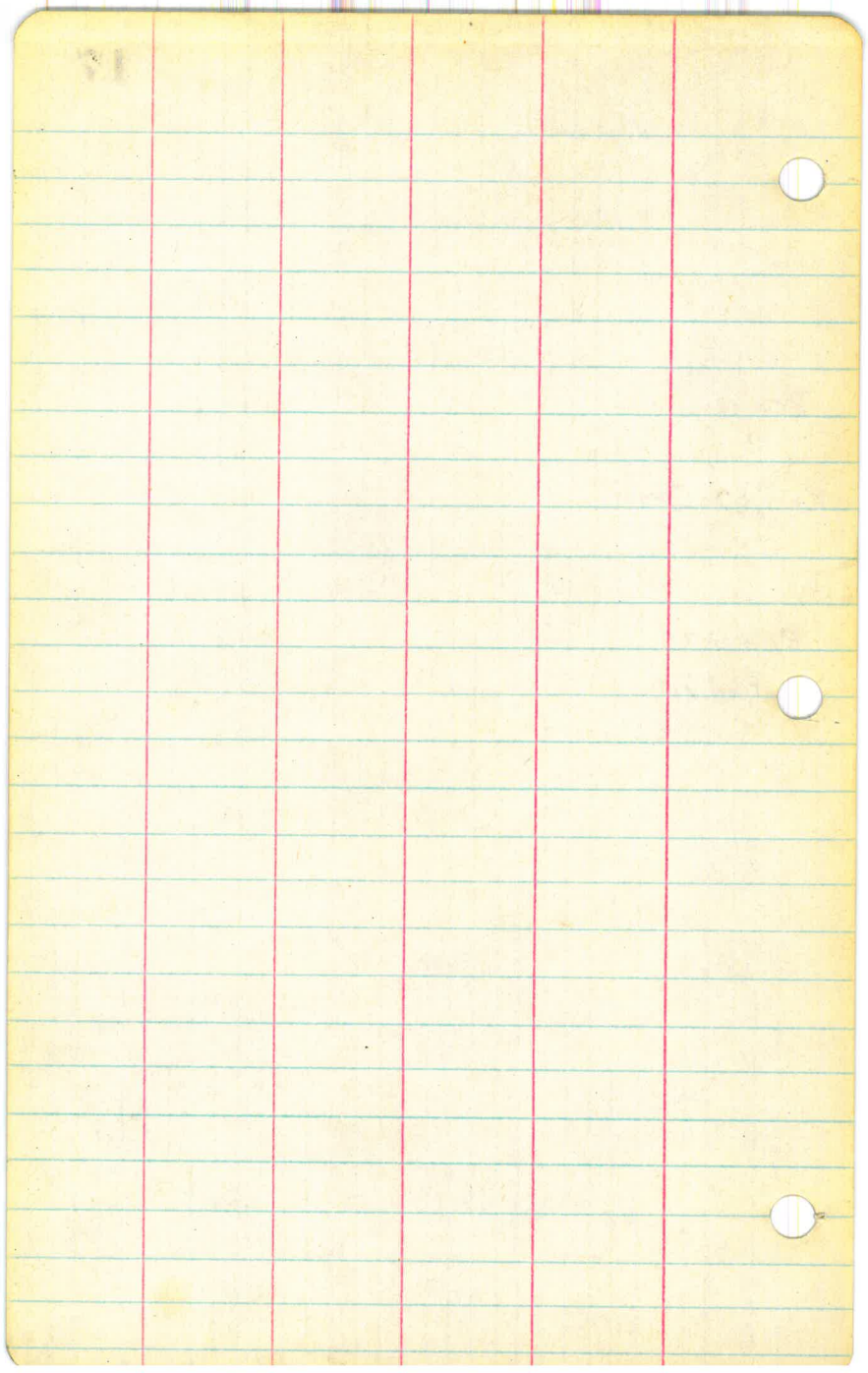
Draw

"

Rod 8.7 Draw

Rod 9.7

Rod 1.7



Topography of North Portal
Tunnel #2.

North Portal Tunnel #2

406.5

Sta.	Hor. L.	Vert L.	Rod	Dif. Elev.	Elev.
4A	(406.5)				
B.M.1	185-20	-9-48	1.03 1.08	18.2	388.34
2	185-20	-	1.03 1.08		388.2
3	170-15	-4-11	1.65	- 12.17	389
4	203-50	-17-18	.78 0.85	- 24	382
5	235-0	-25-06	.66 0.81	- 31	375
6	280-45	-23-09	0.97 1.15	- 41.5	365
7	296-25	-17-02	1.54 1.68	- 47.52	354
8	301-20	-16-07	2.13 2.30	- 61	345
9	162-05	+5-46	2.53 2.56	+ 26	432
10	179-20	+5-55	2.63 2.66	+ 27	433
11	192-40	+5-21	3.02 3.05	+ 28	434
12	206-40	+3-30	2.64	+ 16	422
13	218-20	+1-42	2.48	+ 8	414
14	198-10	+3-45	2.13	+ 14	420
15	182-50	+4-47	2.20	+ 18	424
16	173-20	+4-29	2.13	+ 17	423
17	186-40	+1-37	1.53	+ 4	410
18	200-40	+2-30	1.79	+ 8	414
19	216-15	+0-39	1.51	+2	408
20	219-40	+2-10	1.92	+ 7	413
21	162-20	+5-11	2.38 2.40	+ 22	428
22	146-05	+5-33	2.88 2.90	+ 28	434
23	137-55	+5-41	3.17 3.20	+ 32	438

H.I = 4.9. Top Air Valve 3.1 above Pipe. Gro. 3.1 lower than Pipe
B.M. #83. On Air Valve Near N. End Tunnel #2.

Rod 9.9 ℄ Top Cap No. Portal #2. Pipe 4.3 Lower
Top Pipe on Fc. Line. Gro. 3.4 lower than pipe.
" ". Gro. 3rd Lower.
" " " " "

Rod 9.9

Fc. Line
" "

Small Drain

406.5

Sta.	Hor. L.	Vert L	Rod	Dif. El.	Elev.
24	128-15	+6-48	3.55 3.61	+43	449
25	116-55	+7-0	2.46 2.50	+30	436
26	129-20	+5-53	2.13 2.15	+22	428
27	147-20	+3-03	1.96	+10	416
28	157-0	+3-02	1.94	+10	416
29	163-30	-0-46	1.32	-2	404
30	156-45	-0-40	1.20	-1	405
31	158-45	-1-45	0.74	-2	404
32	145-0	-0-29	0.75	-1	405
33	122-55	+6-02	.95 0.96	+10	416
34	98-30	+7-16	1.62 1.64	+21	427
35	65-55	+5-39	1.38 1.40	+14	420
36	78-40	+6-55	.76 0.77	+9	415
37	59-10	0.0	0.34	00	406.
38	127-0	-1-20	0.37	-1.	405
39	166-35	-5-07	0.40	-4	402
40	197-0	-21-19	.62 0.72	-24	382
41	188-30	-13-39	.87 0.92	-21	385
42	174-40	-5-09	1.18 1.20	-11	395
43	164-30	-1-49	1.67	-5	401
44	167-30	-1-36	1.87	-5	401
45	164-50	+0-57	2.10	+4	410
46	172-30	-1-24	1.83	-4	402
47	186-0	-5-11	1.22 1.23	-11	395
48	206-05	-15-06	.85 0.91	-23	383
49	211-05	-6-04	1.11 1.12	-12	394
50	199-50	-2-33	1.78	-4	400

Small Draw

Fc. Cor.
Fc. Line

Fc. Line
" "

Fc. Line

406.5

Sta.	Hor. ∠.	Vert ∠.	Rod		
51	235-50	-5-47	1.40 1.41	-14.	392.
52	247-20	-10-50	1.32 1.37	-25	381
53	264-0	-9-08	1.71 1.76	-28	378
54	279-40	-11-13	1.59 1.65	-32	374
55	266-40	-8-50	1.46 1.50	-23	383
56	260-20	-13-43	1.09 1.15	-27	379
57	243-05	-12-18	1.03 1.08	-23	383
58	238-25	-3-16	1.89	-11	395
59	236-20	-2-01	2.42	-9	397
60	252-0	-5-37	2.53 2.55	-25	381
61	258-40	-7-31	2.03 2.07	-27	379
62	278-40	-9-52	1.96 1.99	-33	373
63	281-30	-13-02	1.75 1.84	-41	365
64	270-40	-10-15	1.96 2.02	-35 -40	366
65	266-45	-8-40	2.45 2.50	-37	369
66	261-50	-7-49	2.85 2.91	-39	367
67	280-10	-11-13	3.18 3.31	-64 -68	388
68	285-0	-13-12	2.70 2.86	-64	342
69	286-35	-14-27	2.24 2.37	-57	349
70	288-35	-14-47	1.86 1.99	-49	354
71	292-50	-18-21	1.49 1.65	-49	357
72	295-45	-13-07	2.67 2.81	-62	341
73	294-15	-11-57	3.22 3.35	-68	338
74	282-20	-9-56	3.75 3.87	-66	336
75	292-55	-7-14	5.09 5.19	-65	341
76	304-45	-7-51	4.30 4.39	-60	346

On Point

2nd Point
Bet. Points
Rod 10.9

Rod 9.9

Rod 7.9

Rod 8.9

Fence Cor.

406.5

77	308-20	-8-33	4.17 4.27	-63	343
78	326-05	-8-45	3.90 4.00	-60	346
79	335-40	-8-36	3.94 4.03	-60	346
80	339-30	-10-50	3.27 3.38	-63	343
81	315-55	-15-01	2.22 2.37	-59	347
82	304-45	-15-42	2.15 2.31	-60	346
83	311-40	-15-02	1.89 2.03	-51	355
84	324-25	-13-15	1.88 1.98	-44	362
85	342-40	-10-38	2.13 2.20	-40=44	363
86	355-30	-8-17	1.66 1.69	-24	382
87	333-20	-11-17	1.35 1.40	-27	379
88	306-20	-16-53	1.22 1.33	-37	369?
89	283-40	-24-24	.67 0.81	-30	376
90	277-15	-26-08	.75 0.93	-37	369
91	321-55	-11-16	.41 0.42	-8	398
92	349-30	-11-28	.50 0.52	-10	396
93	21-10	-1-31	0.98	-3	403
94	38-20	+0-28	1.93	+2	408
→ 95	326-40	-11-45	3.04 3.17	-63	343
96	312-25	-11-56	3.08 3.22	-65	341
97	304-30	-11-34	3.15 3.28	-65=-70	336
98	306-55	-4-54	5.03 5.03	-43	363
99	309-20	-5-56	4.98 5.02	-52	354
100	311-35	-4-42	4.91	-40	366
101	318-30	-4-01	4.61	-32	374
102	329-0	-3-47	4.65	-31	375

Approx. Pipe Line. 4' from Fence.
Fence

Rod 8.9

On Fence

Rod 9.9

406.5

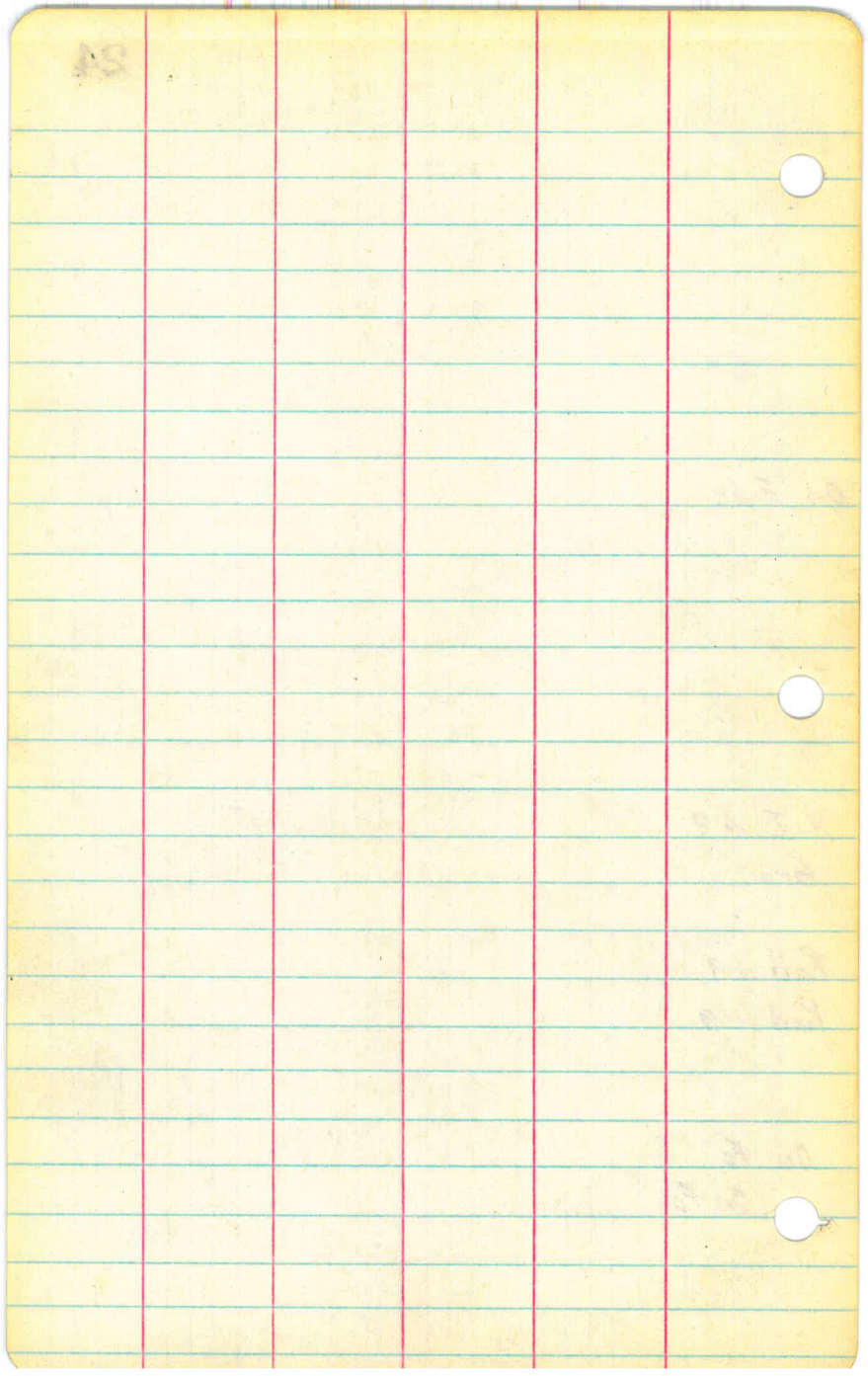
103	328-35	-1-17	5.08	-11	395
104	322-40	-1-19	5.20	-12	394
105	316-55	-2-0	5.40	-19	387
106	312-10	-3-06	5.54	-30	376
107	310-25	-3-51	5.63	-38	368
108	308-40	-3-40	5.67	-36	370
109	310-35	-2-53	6.20	-31	375
110	312-20	-2-46	6.36	-31	375
111	314-35	-1-22	6.31	-15	391
112	320-10	-0-04	6.27	-1	405
113	325-20	+0-41	6.25	+7	413
114	326-25	+1-24	7.75	+19	425
115	321-10	-0-03	7.75	-1	405
116B.	309-46	-3-01	6.01	-31.5	375.0
B.	(375.0)				
A	129-46	+2-28	6.01	+26	
1	120-40	-4-30	3.79	-30	345
2	112-40	-1-49	4.22	-14-21	354 →
3	162-10	-4-58	3.76	-33-39	336
4	173-0	-7-47	2.70 2.75	-37	338
5	219-10	-10-03	1.56 1.60	-28	347
6	252-0	-9-35	1.37 1.40	-23	352
7	231-15	-16-01	.99 1.07	-28	347
8	220-35	-25-53	.37 0.45	-18	357
9	162-05	-12-50	1.07 1.06	-23	352

On Pipe

H.I. 4.9
Gro.

Rod 11.9
Rod 10.9

On Fc.
On Fc



Topography of South Portal Tunnel #3.

So. Portal Tunnel #3.

375.6

B					
10	340-10	+1-42	1.10	+3	379
11	351-10	+7-50	1.17 1.19	+16	392
12	332-0	+1-20	1.13	+3	379
13	332-35	+0-24	1.86	+1	377
14	337-20	+1-05	1.94	+4	380
15	346-20	+5-24	1.98 2.00	+19	395
16	342-25	+3-49	2.96	+20	396
17	336-25	+0-45	2.87	+4	380
18	331-50	+1-08	2.87	+6-00	376
19	335-10	+0-23	3.73	+3	379
20	330-15	+0-38	4.02	+4	380
C	327-56	+1-55	5.97	+20	395.6
21	320-10	+2-33	4.70	+21	397
22	326-55	+0-37	4.47	+5=+2	378
23	332-0	+1-14	4.51	+10=+5	381
24	329-0	+0-32	3.43	+3	379
25	324-50	+0-27	3.44	+3	379
26	318-55	-0-05	2.83	-1	375
27	312-15	-1-48	2.86	-9	367
28	321-20	-0-04	3.55	-00=-6	370
29	315-15	+1-16	3.80	+8	384
30	307-15	+0-41	3.11	+4	380
31	313-45	-3-28	2.55	-15	361
32	324-35	-1-43	3.04	-9	367
33	321-10	-3-57	1.67	-11	365
34	306-45	-5-33	1.88 1.90	-18	358

Pipe

Rod 10.9
Pipe

Rod 7.9
Rod 9.9

Drawn
Rod 10.9 Drawn

Drawn

Drawn

		375.6			
35	294-05	-1-44	2.28	-7	369
36	275-05	-4-37	1.73	-14	362
37	279-35	-11-25	1.20 1.25	-24	352
38	299-40	-12-49	1.61 0.68	-15	361
C		395.6 at "C			
B.	147-56	-1-55	5.95	-20	376
1	146-15	-2-01	5.50	-19	377
2	145-0	-2-10	4.70	-18	378
3	143-0	-2-52	3.51	-18	378
4	128-50	-5-35	1.71 1.73	-17	379
5	118-25	-7-30	1.22 1.24	-16	380
6	103-55	-10-30	.76 0.79	-14	382
B.M.#82	21-40	-18-31	.32 0.35	-10.6	385.0
7	328-40	-6-49	.91 0.92	-11	385
8	325-05	-2-34	1.61	-7	389
9	129-10	-0-48	2.52	-3	393
10	120-40	+3-06	2.92	+16	412
11	114-0	+5-07	3.23 3.25	+29	425
12	95-30	+5-02	2.62 2.63	+23	419
13	100-0	+2-54	2.10	+11	407
14	104-05	-0-04	1.79	-0	396
15	109-40	-5-42	1.38 1.40	-14	382
16	81-45	-1-11	1.77	-4	392
17	63-20	+1-01	2.17	+4=00	396
18	57-50	+1-50	2.67	+9=+4	400
19	76-45	+2-50	2.44	+12	408

9-27-56
1-8-0
1-47-56

Drawn

Pipe
"
"

Top Air Valve. Gro. 1.6 Lower. B.M. Elev. 3854
Not on Pipe
& Cap So. Portal Tunnel #3. Pipe 3.6 Lower.

Drawn
"

Rod 8.9 Drawn
Rod 9.9 "

395.6

20	90-35	+3-02	2.12	+11	407
21	84-25	+4-44	2.70	+22	418
22	67-35	-0-12	1.42	-0	396
23	82-30	-0-56	1.26	-2	394
24	66-40	-4-42	0.70	-6	390
25	53-25	+3-39	1.12	+7	403
26	46-40	+2-50	1.55	+8	404
27	42-30	+5-04	1.95 (1.93)	+17	413
28	22-15	+8-55	1.84 (1.80)	+28	424
29	22-55	+6-10	1.23 (1.22)	+13	409
30	33-30	+7-25	1.23 (1.21)	+16	412
31	12-40	+7-25	0.99 (.97)	+13	409
32	15-35	+3-06	0.73 (.72)	+4	400
33	13-10	-4-46	0.51	-4	392
34	342-35	+0-23	0.92	+1	397
35	340-40	+5-15	1.38 (1.37)	+13	409
36	349-0	+6-13	1.30 (1.29)	+14	410
37	350-35	+6-42	1.16 (1.14)	+13	409
38	357-05	+8-46	1.67 (1.65)	+25	421
39	1-40	+11-10	2.33 (2.25)	+44	440
40	349-50	+10-43	2.67 (2.58)	+49	445
41	340-45	+8-31	2.20 (2.15)	+32	428
42	335-30	+6-55	1.98 (1.97)	+23	419
43	327-05	+4-36	2.07	+17	413
44	324-25	+4-53	2.35	+20	416
45	325-20	+5-32	2.54 (2.52)	+25	421

Fa. Col

395.6

46	331-20	+7-02	2.67 2.72	+33	429
47	342-15	+9-43	3.17 3.26	+54	450
48	346-30	+10-33	3.42 3.53	+64	460
49	326-05	+5-58	3.12 3.15	+33	429
50	316-55	+7-26	3.10 3.14	+40	436
51	298-15	+9-57	3.35 3.45	+59	455
52	281-25	+11-17	2.70 2.80	+54 = 50	446
53	288-20	+9-50	2.15 2.20	+37	433
54	297-40	+8-34	1.76 1.79	+27	423
55	308-50	+8-19	2.33 2.38	+34	430
56	315-20	+5-57	2.13 2.15	+22	418
57	318-50	+5-02	1.98 2.00	+17	413
58	306-55	+6-19	1.52 1.54	+17	413
59	308-50	+5-06	.89 0.90	+8	404
60	287-15	+10-14	.95 0.98	+17	413
61	259-40	+14-41	1.40 1.50	+37	433
62	224-50	+13-24	1.23 1.30	+29	425
63	207-40	+10-0	1.74 1.79	+31	427
64	191-30	+7-24	.90 0.92	+12	408
65	218-50	+14-31	.41 0.44	+11	407
66	339-0	—	0.15	-1.2	394
67	128-35	-6-37	.50 0.51	-6	390
68	144-10	-3-33	1.01	-6	390
69	132-50	-7-44	1.10 1.12	-15	381
70	158-15	-3-43	0.94	-6	390
71	324-0	-0-54	2.00	-3	393

Fc.

Fc.

Rod 8.9

Fc.

Fc.

US

395.6

72	330-40	-2-24	1.55	-7	389
73	325-10	-1-15	1.61	-4	392
74	319-45	-2-02	1.59	-6	390
75	140-30	-4-23	2.52	-19	377
76	178-0	+2-23	3.09	-13=-7	389
			2.92		

Rod 10.9
Rod

Topography of North Portal Tunnel #3.

North Portal Tunnel #3.

389.3

Sta.	Hor. ∠	Vert. ∠	Rod	Dif. El.	Elev.
A.					
1	243-30	-2-04	0.49	- 1.78	387.5 Gro. 385.3
2	142-0	-0-15	2.07	- 1.	388.3
3	140-45	-1-16	1.86	- 4.1	385.2
4	139-15	-1-34	1.50	- 4.1	385.2
5	139-15	-1-55	1.13	- 3.8=4.1	385.2
6	143-0	- 3-11	0.77	- 4.3	385.0
7	150-0	- 5-0	0.57	- 4.9	384.4
8	160-0	-6-11	0.45	- 4.8=5.2	384.1
9	261-15	-2-33	1.03	- 4.6	384.7
10	268-0	-1-27	2.00	-5.1	384.2
11	271-15	- 1-06	3.65	- 7.0	382.3
12	272-15	-1-01	4.90	- 8.7	380.6
13	271-45	- 0-58	4.45	- 7.5	381.8
14	270-30	-1-20	2.90	-6.8	382.5
15	142-30	+1-11	2.19	+ 5	394
16	143-0	+ 3-14	2.36	+ 13	402
17	143-15	+ 4-38	2.65	+ 21	410
18	142-45	+4-14	2.77	+ 20	409
19	146-0	+ 4-48	3.43	+ 28	417
20	155-45	+ 6-54	3.35 3.40	+ 40	427
21	169-0	+ 8-38	3.20 3.26	+ 48	437
22	172-30	+ 8-06	2.49 2.54	+ 34	423
23	155-45	+6-20	2.60 2.63	+ 29	418
24	146-15	+ 4-28	2.25	+ 18	407

H.I = 5.0

B.M. #80 On Air Valve Sta. 628+25.7 Gro. 2.7 Lower

& Portal Top Cap. Box-6.5x16.0x7.5 Pipe 3.3 Lower

Wing Wall 13.0 Long, 2' above Cap. Gro. 6.0 Lower.

Connection

Pipe 0.3 Lower

Air Valve.

Stop Valve 0.4 Lower

Gro. 0.5 higher

Gro. 0.5 higher

Gro. 0.5 "

			389 Rod		
25	152-0	+5-56	2.23 2.26	+23	412
26	176-30	+7-30	2.10 2.14	+27	416
27	171-30	+7-58	2.50 2.55	+35	424
28	163-0	+6-10	1.85 1.88	+20	409
29	157-30	+6-15	1.73 1.75	+19	408
30	149-0	+3-46	1.69	+11	400
31	143-30	+5-16	3.63 3.65	+33	422
32	134-0	+6-09	3.75 3.80	+41	430
33	125-15	+6-56	4.00 4.05	+49	438
34	120-30	+5-50	3.43 3.45	+35	424
35	129-0	+5-20	3.07 3.10	+29	418
36	134-15	+3-50	2.55	+17	406
37	136-45	+4-24	2.48	+19	408
38	139-15	+3-04	2.20	+12	401
39	134-15	+2-03	1.81	+7	396
40	131-15	+3-57	1.80	+12=+6	395
→ 41	135-30	+2-44	2.06	+10=+9	398
42	127-15	+4-01	2.15	+15	404
43	125-45	+3-40	2.36	+15	404
44	121-30	+4-52	2.83	+24	413
45	116-45	+5-30	3.19 3.22	+31	420
46	110-45	+4-04	2.77	+20	409
47	115-0	+3-56	2.46	+17	406
48	117-0	+3-0	2.07	+11	400
49	119-30	+3-31	1.95	+12	401
50	122-15	+2-21	1.64	+7	396

Windmill Rod 11.0	12×12 Base
Windmill Rod 6.0	8×8 Base.
Pumphouse	6.5×16.0

			Rod.		
51	131-15	+0-49	1.23	+2	391
52	119-30	+0-49	1.17	+2	"
53	109-30	+1-16	1.11	+2	"
54	113-30	+3-09	1.50	+8	397
55	103-30	+0-26	1.55	+1	390
56	105-0	+1-18	1.83	+4	393
57	102-0	+2-04	2.40	+9	398
58	91-30	+0-05	2.10	+0	389
59	93-30	+0-15	1.47	+1=-1	388
60	100-30	-1-09	1.00	-2	387
61	115-15	-2-21	0.69	-3	386
62	141-15	-2-36	0.59	-3	386
63	146-45	-3-25	0.39	-2	387
64	79-15	+0-35	1.63	+2	391
65	63-45	+2-56	1.70	+9	398
66	48-0	+6-41	1,81 1,83	+21	410
67	54-0	+5-27	2.57 2.60	+25	414
68	67-15	+2-30	2.38	+10	399
69	78-45	+0-45	2.33	+3	392
70	78-0	+0-09	0.83	+0	389
71	47-15	+5-17	.92 0.93	+9	398
72	31-30	+9-12	1,16 1.19	+19	408
73	357-15	+11-09	1.82 0.85	+16	405
74	1-45	+8-53	.39 0.40	+6	395
75	207-30	-4-49	0.11	-1	388
76	266-15	-0-13	0.59	-0	389

Knoll

4.5 deep 9 wide
Rod 7.0 5 deep 8 wide
2.5 " 10 "
2.0 " 12 "
2.0 "

Road 2.5 Lower

Rd. 2.5 Lower
" 2.0 "

Rd 2.0 Lower

389

Rod

77	306-0	+6-37	0.82 (.81)	+9	398
78	318-45	+10-31	1.20 (1.16)	+22	411
79	302-45	+9-01	1.91 (1.86)	+30	419
80	302-15	+8-14	2.23 (2.18)	+32 =+28	417
81	288-0	+3-29	1.97	+12	401
82	289-45	+4-10	1.59	+12	401
83	271-30	0-0	1.19	0	389
84	271-30	+0-05	1.85	+0	389
85	273-15	-0-16	2.70	-1	388
86	283-15	+2-28	2.89	+12	401
87	289-15	+4-17	2.28	+17	406
88	299-30	+8-02	2.50 (2.45)	+35	424
89	295-45	+6-57	3.14 (3.10)	+38	427
90	294-15	+6-20	3.70 (3.65)	+41 =+39	428
91	287-45	+3-27	3.51	+21	410
92	279-15	+1-0	3.40	+6	395
93	273-30	-0-10	3.38	-1	388
94	273-30	-0-12	4.22	-1	388
95	279-15	+1-38	4.25	+12	401
96	285-30	+3-40	4.32	+28	417
97	289-15	+4-43	4.42	+36	425
98	289-30	+4-37	5.00	+40=+38	427
99	284-45	+3-13	4.97	+28=+27	416
100	279-0	+1-10	5.09	+10	399
101	274-15	-0-20	5.08	-3	386

Rod 9.0 Draw

"

Rod 7.0

Rod 7.0

Rod 6.0

			389		
			Rod		
102	270-15	-1-10	5.15	-11	378
103	269-15	-1-31	5.18	-14	375
104	269-30	-0-53	4.58	-7	382
105	267-45	-1-30	4.56	-12	377
106	268-45	-0-46	3.67	-5	384
107	266-30	-1-26	3.66	-9	380
108	266-45	-1-21	2.84	-7	382
109	264-45	-1-45	2.85	-9	380
110	264-30	-0-37	2.15	-2	387
111	261-45	-1-12	2.18	-5	384
112	259-0	-0-33	1.46	-1	388
113	255-45	-1-24	1.46	-4	385
114	244-45	-1-41	0.80	-2	387
115	193-0	-4-50	0.47	-4	385
116	187-15	-9-01	0.58 (.57)	-9=-10	379
117	162-45	-6-25	0.51 (.51)	-6	383
118	236-30	-2-45	1.07	-5	384
119	233-30	-5-0	1.15	-10=-12	377
120	252-0	-2-11	1.85	-7	382
121	249-0	-2-0	1.90	-7=-13	376
122	256-45	-2-09	2.80	-11	378
123	254-45	-1-44	2.75	-8=-14	375
124	258-45	-2-03	3.38	-12	377
125	257-30	-2-11	3.40	-13=-19	370
126	260-30	-1-56	4.05	-14=-20	369

Rd 3.0 Lower.

Rd 3.5 "

Rd 4.0 Lower.

Rd 2.5 Lower

Rd 4.0 Lower

Rd 3.0 Lower
Rd 2.5 Lower

Rod 6.0 Draw

Rod 7.0 Draw

Rod 11.0 Draw

Rod 11.0 Draw Drop of 3.5 in Bottom

Rod 11.0 Draw
Rod 11.0 "

389

Rod

127	261-45	-2-0	4.03	-14	375
128	261-0	-2-02	4.55	-16	373
129	260-0	-1-46	4.86	-14=-20	369
130	263-30	-1-47	5.00	-16=-18	371
131	263-15	-1-39	5.10	-15=-21	368
132	266-15	-1-56	5.43	-18	371
133	266-0	-1-40	5.51	-16=-21	368
A					
134	147-30	+2-45	1.35	+6	395
135	162-15	+4-0	1.21	+8	397
136	159-15	+0-51	1.00	+2	391
137	148-30	+0-05	0.93	+0	389
138	157-45	-1-03	0.66	-1	388
139	196-30	-3-31	0.70	-4	385
140	192-30	+2-44	0.93	+4	393
141	190-15	+3-0	1.27	+7	396
142	185-45	+6-07	1.73 1.75	+19	408
143	204-45	+5-23	1.97 1.98	+18	407
144	211-0	+2-28	1.58	+7	396
145	217-0	+2-22	1.33	+5	394
146	224-15	-1-10	1.16	-2	387
147	235-0	-0-12	1.50	-1	388
148	227-0	+1-46	1.72	+5	394
149	232-0	0—0	1.92	0	389
150	223-45	+1-34	1.95	+5	394
151	218-15	+3-33	2.27	+14	403

Rod 11.0 Draw
Rod 7.0
Rod 11.0 Draw

Rod 10.0 Draw

389

152	229-45	+1-18	2.60	+6	395
153	240-15	-0-39	2.43	-3	386
154	249-0	-2-10	2.25	-9	380
155	254-45	-0-57	3.13	-5 = -10	379
156	242-30	-1-07	3.10	-6	383
157	233-15	0-0	3.25	0	389
158	244-15	+0-40	3.90	+5	394
159	251-45	-0-35	3.69	-4 = -9	380
160	257-30	-1-55	3.72	-13	376
161	259-30	-2-02	4.05	-14	375
162	259-15	-1-52	4.68	-15	374
163	253-45	-0-39	4.68	-5	384
164	249-0	+0-37	4.75	+5	394
165	255-45	0-0	5.80	0	389
166	261-15	-1-32	5.60	-15	374
167	265-15	-1-51	5.47	-18 = -19	370
168	185-30	+7-55	2.30 (2.25)	+31	420
169	202-45	+6-45	2.50 (2.46)	+29	418
170	215-15	+4-25	3.08	+24	413
171	218-15	+3-22	3.90	+23 = +16	405
172	230-0	+2-34	3.95	+22	411
173	239-15	+2-06	4.06	+15	404
174	245-15	+1-51	4.92	+16	405
175	249-15	+1-50	5.60	+18	407
176	253-0	+1-33	6.15	+17	406

Rod 10.0

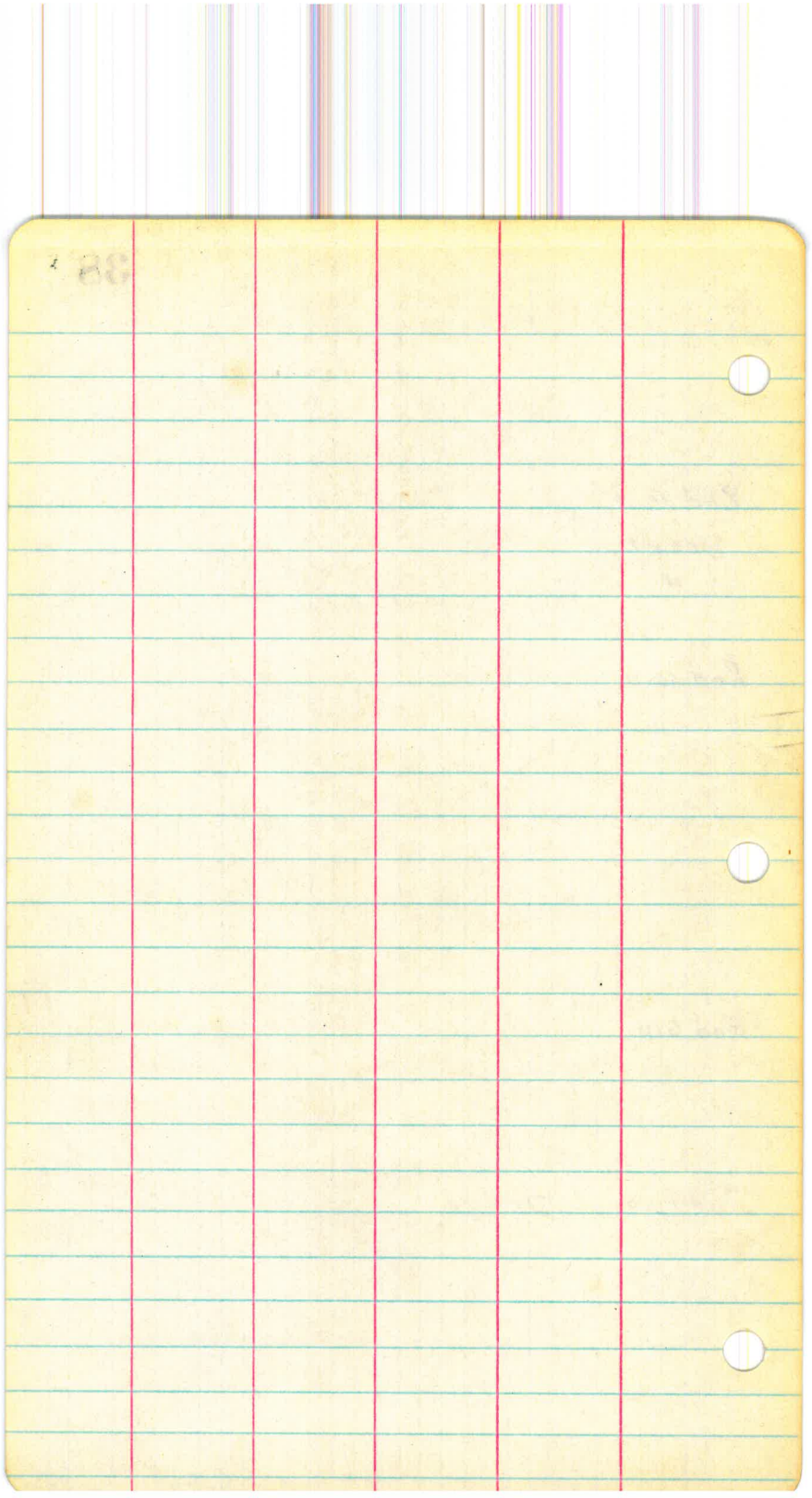
Draw

"

Rod 10.0

Rod 6.0

Rod 12.0 Draw



Topography of South Portal
Tunnel #4.

South Portal - Tunnel #4.

B.M. #71 — 388.04

Sta.	Hor. ∠	Vert. ∠	Rod	Dif. El.	Elev.
△ A.	(401.8)				
B.M.	295-30	-7-0	1.14 (1.18)	-13.8	388.04
1.	297-22		1.13 (1.10)		388.0
2	297-20	-9-48	1.13 (1.10)	-19.0	383.0
3	236-40	-25-38	0.47 (.38)	-18.4	383.4
4	154-50	-7-35	1.44 (1.41)	-18.8	383.0
5	310-50	+3-35	2.36	+15	417
6	316-50	+5-07	2.40	+21	423
7	331-40	+7-07	2.64	+32	434
8	346-15	+9-06	3.10 (3.03)	+48	450
9	303-30	+5-17	2.54	+23	425
10	289-25	+6-42	2.85 (2.80)	+33	435
11	277-20	+8-40	3.60 (3.52)	+54	456
12	267-30	+9-05	3.24 (3.17)	+51	453
13	275-55	+8-08	2.62 (2.57)	+37	439
14	291-40	+5-22	2.07 (2.05)	+19	421
15	307-0	+4-17	1.93	+14	416
16	307-20	+3-12	2.03	+11	413
17	332-0	+7-32	1.98 (1.94)	+26	428
18	353-30	+10-10	2.45 (2.38)	+42	444
19	18-20	+10-50	2.17 (2.08)	+40	442
20	357-10	+10-29	1.48 (1.43)	+26	428
21	348-11	+9-45	1.24 (1.21)	+20	422

S.E. Cor. Cap of So. Portal Tunnel #4.

H.I = 4.9

Note - All Hor. Angles turned to right from Mag. North.

B.M. #71.

℄ Portal.

Top Pipe

" " 1.0 Cover.

" ", 1.0 Cover

Draw

Top Fill above Portal

Draw

567+43.3 Williams 2nd. Otay Pipe Line

401.8

Sta.	Hor. ∠.	Vert. ∠	Rod.	Dif. El.	Elev.
22	317-45	+4-58	1.10	+10	412
23	304-50	+1-19	1.60	+4	406
24	285-0	+3-45	1.33	+9	411
25	266-40	+6-38	1.68 (1.66)	+19	421
26	251-50	+8-03	2.30 (2.25)	+32	434
27	245-20	+7-52	2.98 (2.95)	+40	442
28	229-50	+5-40	2.66 (2.64)	+26	428
29	230-40	+5-44	2.03 (2.02)	+20	422
30	235-30	+3-55	1.28	+9	411
31	241-30	-0-35	0.77	-10	401
32	244-20	-6-30	0.62	-8.	394
33	249-0	-20-47	0.54 (.47)	-18	384
34	281-20	-12-44	0.79 (.75)	-17	385
35	295-10	-4-42	1.34	-11	391
36	305-0	-2-0	1.30	-5=-10	392
37	292-50	-12-41	0.76 (.73)	-16	386
38	257-0	-25-11	0.44 (.36)	-17	38.5
39	297-20	-4-15	0.42	-3	399
40	319-40	+5-40	0.58 (.57)	+6	408
41	10-20	+11-07	0.71 (.63)	+13	415
42	22-30	+10-10	1.38 (1.34)	+24	426
43	53-40	+6-26	1.51 (1.50)	+17	419
44	61-20	+4-09	1.44	+10	412
45	58-20	+4-49	0.88	+7	409
46	67-40	+3-04	1.00	+5=-21	400
47	102-0	-10-02	0.66 (.64)	-11 =9	393

Top Cut above Pipe
Above Portal

Rod 10.0

Draw

Rod 12.0 Draw
Rod 6.9 "

401.8

Sta.	Hor. ∠	Vert. ∠	Rod	Diff	
48	152-10	-14-40	0.68 .63	-17.	385
49	133-20	-11-25	0.30 .27	-6	396
50	73-10	+1-36	0.49	+1.	403
51	182-40	-22-01	0.49 .42	-17	385
52	192-20	-11-0	0.83 .80	-16	386
53	201-20	-3-23	1.03	-6	396
54	207-20	+1-10	1.67	+3	405
55	212-50	+2-21	2.05	+8	410
56	201-40	-0-30	2.29	-2	400
57	193-0	-2-13	1.66	-6	396
58	174-40	-5-09	2-14 2.13	-19	383
59	171-40	-5-54	1.82 1.80	-19	383
60	178-20	-4-14	1.63	-12	390
61	185-0	-4-37	1.70	-14	388
62	173-20	-7-51	1.33 1.31	-18	384
63	162-40	-9-51	1.11 1.08	-19	383
64	157-30	-9-40	1.08 1.05	-18	384
65	138-10	-6-19	0.85 .84	-9	393
66	107-0	-0-12	0.87	-.3	402
67	69-20	+6-05	1.27 1.26	+13=+11	413
68	94-0	+7-28	1.83 1.73	+24	426
69	116-10	+3-55	1.50	+10	412
70	139-30	-1-26	1.49	-4	398
71	149-50	-4-39	1.53	-12	390
72	160-0	-6-15	1.66 1.64	-18	384
73	160-30	-5-28	2.23 2.21	-21	381

Draw

Draw

Rod 6.9

401.8

Sta.	Hor. L.	Vert. L.	Rod	Dif. El.	Elev.
74	167-40	-6-32	2.34 2.37	-27 = -32	370
75	167-50	-7-42	1.60 1.62	-22	380
76	154-20	-7-33	1.12 1.14	-15	387
77	151-30	-4-24	2.41	-19	383
78	143-50	-0-46	2.38	-3 =	394
79	131-25	+1-27	2.45	+6	408
80	118-40	+4-35	2.57	+20	422
81	121-20	+3-40	2.35	+21	423
82	131-05	+1-32	3.18	+9	411
83	142-50	-1-0	3.08	-5 =	393
AB.	173-16	-2-37	3.27	-15.0	386.8
B.	386.8				
A	353-16				
1	328-50	-5-47	.94 0.95	-10	377
2	306-0	-0-04	1.34	-1.0	386.
3	297-50	+4-32	1,05	+8.	395
4	318-15	-0-25	0.68	-0.5	387
5	351-25	-7-09	.64 0.65	-8	379
6	63-20	-14-15	.33 0.35	-8	379
7	128-10	-8-05	.78 0.80	-11	376
8	65-30	-18-18	.78 0.85	-25	362
9	97-50	-15-0	1.07 1.16	-29	358
10	86-40	-8-06	1.32 1.35	-19	368
11	79-40	-2-32	1.50	-7	380
12	156-50	-1-58	1.31	-4	383
13	37-40	-6-27	.92 0.93	-10	377

Rod 10.0 Draw

569+75 Williams 2nd. Otay Pipe Line

Rod 9.9

Rod 8.9

Draw

"

Draw

Draw

386.8

Sta.	Hor. ∠.	Vert ∠	Rod.	Dif. El.	Elev.
14	72-46	-1-02	1.60	-2.9	283.9
15	88-40	-2-27	1.88	-8	379
16	84-15	-2-0	2.03	-7	380
17	77-45	+2-48	2.38	+12	399
18	72-25	+5-38	3.03 3.05	+30	417
19	82-20	+4-56	3.82 3.84	+33	420
20	91-30	+3-16	3.33	+19	406
21	103-0	+0-02	2.86	00	387
22	105-10	-1-04	2.78	-5	382
23	108-30	-1-36	2.69	-8	379
24	116-0	-5-17	2.55	-23	364
25	124-50	-8-27	2.39 2.43	-35	352
26	132-30	-7-27	2.38 2.36	-30=35	352
27	139-50	-6-24	2.27 2.30	-25	362
28	109-20	-11-17	1.47 1.52	-29	358
29	96-50	-6-32	1.74 1.76	-20	367
30	139-25	-5-44	3.50 3.54	-35	352
31	134-45	-7-0	3.50 3.55 3.50	-43	344
32	128-50	-6-28	3.53	-40	347
33	121-40	-3-56	3.50	-24	363
34	114-30	-0-44	3.58	-5	382
35	111-20	-0-19	3.62	-2	385
36	110-15	-0-42	3.64	-4	383
37	108-30	+0-20	3.65	+2	389
38	101-05	+1-50	4.20	+13	400
39	93-0	+3-15	4.70	+27	414

Elev. 284.2
Top Air Valve B.M.#72. Pipe 1.7 Lower.

On pipe

Draw
Rod 10.0
Draw

Draw

On Pipe

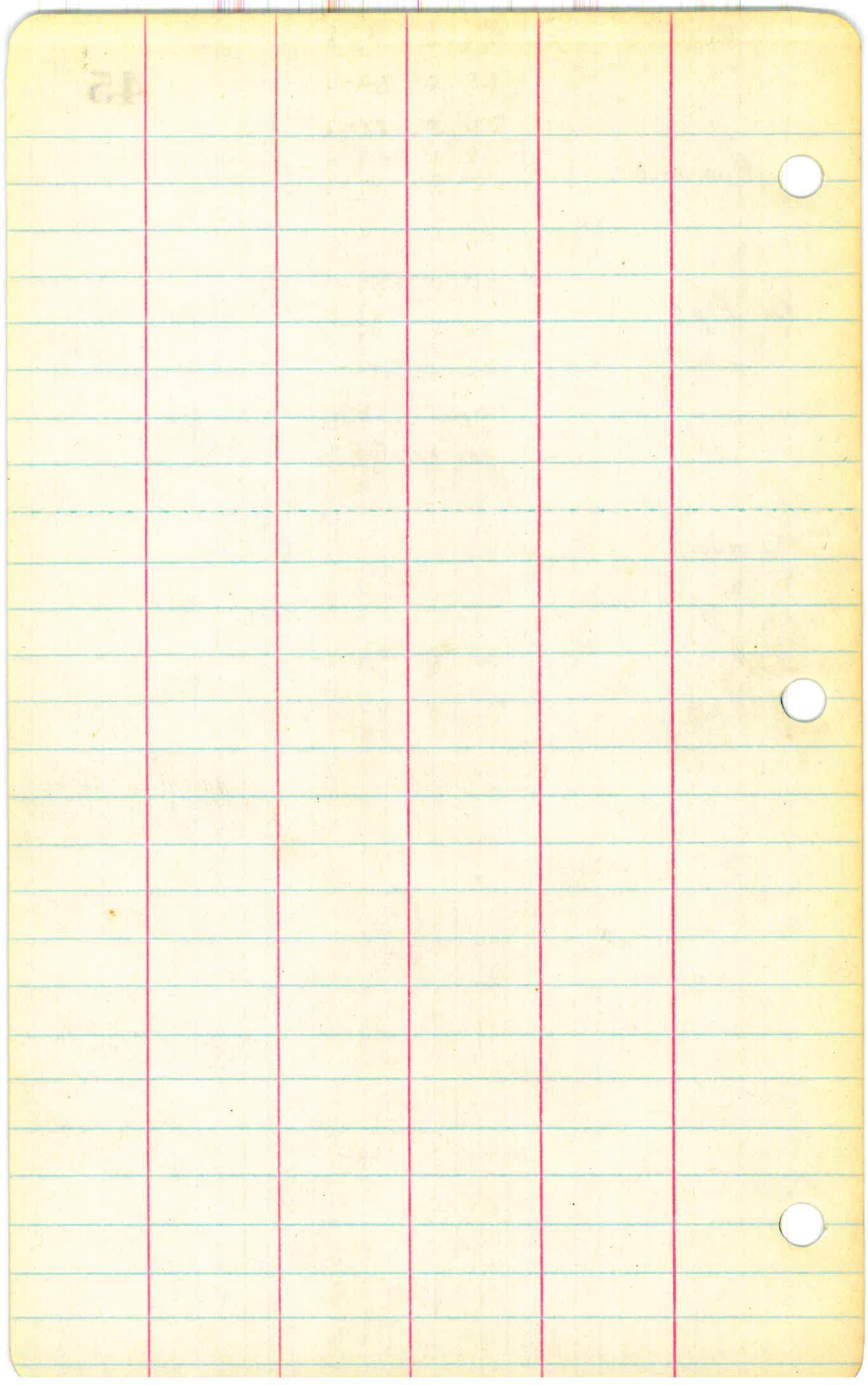
386.8

Sta.	Hor. ∠	Vert ∠	Rod		
40	96-45	+2-55	5.09	+26=+21	408
41	103-45	+1-36	5.00	+14	401
42	109-45	+0-11	4.89	+2	389
43	111-10	-0-32	4.90	-5	382
44	112-05	-0-13	4.86	-2	385
45	113-30	-0-24	4.80	-3	384
46	121-0	-2-35	4.62	-21	366
47	125-25	-4-11	4.67	-34	353
48	130-40	-5-47	4.60 4.65	-47	340
49	136-40	-5-49	4.60 4.64	-47	340
50	139-45	-4-51	4.60	-40	347

Rod 10.0

On Pipe

Drawn
"



Topography of North Portal
Tunnel #4.

North Portal Tunnel #4.

B.M. 387.27

12.84 400.11 H.I.

Sta.	Δ	Hor. L.	Vert. L.	Rod.	Diff. El.	Elev.
1		134-45	—	2.67	12.84	387.27
2		134-45	-2-50	2.67 (1.2)	-18.	382.
3		136-19	-4-02	1.96 (1.0)	-19.0	381.
4		136-55	-5-38	1.34 (1.3)	-18.0	382.
5		130-03	-9-02	0.84 (2.0)	-18.0	382.
6		71-55	-22-39	0.36 (5.0)	-18.0	382.
7		346-38	-7-37	1.00 (2.0)	-18.0	382.
8		331-49	-3.02	2.46	-18.0	382
9		328-21	-2-04	3.57	-18.0	382
10		326-22	-1-16	4.90	-17.1	383.
11		325-48	-1-09	5.41	-16.1	385
12		133-25	+3-04	3.26	+72.0	412
13		119-50	+3-04	3.30	+18.0	413
14		109-14	+2-49	3.98	+75.0	415.0
15		143-47	+3-03	3-61	+14.0	414.
16		153-46	+2-57	4-40	+78	418.0
17		164-05	+0-33	3.75	-1.0	399.0
18		150-39	+0-42	3.14	+1.0	399.0
19		139-36	+0-17	2.70	-4.0	396.0
20		129-31	+0-41	2.65	+2.0	398.0
21		114-50	+0-32	2.79	-2.0	398.0

B.M. #70 S.E. Cor. Cap N. Portal #4.

H.I. = 5.0

Pipe set on 6"x6" Blocks spaced 4.0 for 105 feet from Portal.

℄ Tunnel Top Cap 7.4 x 1.0 Concrete.

Top Pipe Gro. Elev. 3.3 Lower

Top Pipe Gro. Elev. 3.0 "

Top Pipe " " 3.1 "

" " " " 2.9 "

Top " " " 3.0 "

" " " " 3.2 "

" " " " 3.3 "

" " " " 3.0 " Fence Line.

Rod 7.0

Top Air Valve. B.M. #69.

Bottom Drain

No. #4

400.1

Sta.	Hor. L.	Vert L	Rod	Dif. El.	Elev.
22	105-14	+0-24	3.39	+2.0	398.
23	94-29	-4-09	2.75	-25.0	375.
24	98-18	-6-16	176.0 1.78	-24.0	376.
25	129-41	-5-11	161.0 1.62	-26.0	380.
26	133-56	-5-09	162.0 1.63	-26.0	380.
27	140-56	-5-19	185.0 1.87	-22.0	378.0
28	156-50	-1-57	2.70	-14.0	386.0
29	115-13	—	2.18	-10.1	390.0
30	146-45	-2-18	2.31	-14.0	386.0
31	169-46	+1-54	2.49	+3.0	403
32	173-22	+3-10	1.56	+4.0	404.0
33	158-12	—	1.35	-6.4	394
34	141-47	-4-16	1.31	-15.	385
35	131-43	-5-26	1.17	-16.	384
36	126-15	-7-39	1.20	-21.	379
37	117-29	-7-46	-2.0 1.24	-22.	378
38	100-39	-9-05	4.0 1.32	-26.	369
39	76-35	-12-26	150. 1.58	-38	362
40	72-26	-8-30	-3. 1.91	-33.	367.
41	87-04	-6-38	2.36	-32.	368
42	92-57	-7-07	1.79	-27.	373
43	54-13	-11-52	162 1.70	-39	361
44	53-07	-15-57	133. 1.42	-43	357
45	68-06	-10-34	97.0 1.00	-23	377
46	81-37	-9-40	125 1.28	-26	374

In Road

Conc. Bldg.

Rod 10.0
In Draw

In Draw Intersection

In Road

Draw

400.1 N. #4

Sta.	Hor. L.	Vert. L	Rod	Dif. El.	Elev.
	113-55	-2-9	2.79	2.9	384.5
47	71-31	-15-09	0.86 (.80)	-27.0	373
48	85-34	-12-45	0.83 (.79)	-23.0	377
49	111-40	-9-09	0.63 (.61)	-15.	385
50	132-26	——	0.50	-11.5	388
51	176-06	+5-0	0.53	0.0	400
52	207-12	+11-26	0.83 (.80)	+11.	411
53	219-23	+12-43	1.13 (1.10)	+20	420
54	281-40	+10-46	1.07 (1.03)	+15	415
55	275-36	+10-57	1.35 (1.30)	+20	420
56	300-39	+8-11	0.74 (.72)	+5.	405
57	337-30	——	0.55	-6.6	393
58	354-34	-9-43	0.62 (.60)	-15.	385
59	4-25	-8-21	0.73 (.70)	-16	384
60	16-15	-12-50	0.96 (.92)	-26	376
61	24-21	-14-11	1.33 (1.23)	-37	363
62	26-53	-15-0	1.74 (1.62)	-47	353
63	26-16	-12-36	1.95 (1.86)	-47	353
64	28-33	-8-49	2.20 (2.15)	-38.	362
65	12-41	-7-48	2.80 (2.75)	-43	357
66	7-45	-10-16	2.65 (2.57)	-51	349
67	1-45	-10-34	2.57 (2.50)	-52	343
68	354-56	-8-37	2.34 (2.28)	-40	355
69	347-0	-6-09	2.16	-28	367
70	336-57	-3-47	1.98	-18	382
71	332-30	-3-07	1.91	-15	385
72	340-57	-4-4	1.98	-20	380

Sta. 557+42.8 Williams 2nd. Otay Pipe Line

Fc. Cor.

Fc. Line

Dran Rd. 12' East

Rd.

Rd.

Rod 10.0

Rod 10.0

Rod 10.0

553+22.5 Williams 2nd. Otay Pipe Line

N. #4.

Sta.	Hor. ∠	Vert ∠	Rod	Dif. Elev.	Elev.
73	325-20	-0-11	1.91	-6.	394
74	315-10	+2-35	1.93	+4	404
75	300-20	+6-35	2.35	+17	417
76	315-0	+2-09	3.54	+3	403
77	322-40	—	3.66	-5.0	395
78	326-50	—	3.70	-13.8	386
79	329-15	-1-30	3.80	-15	385
80	331-50	-2-10	3.81	-19	381
81	340-0	-4-50	4.00	-39	361
82	346-50	-6-52	4.10	-54	346
83	358-10	-8-23	4.30 4.39	-68	332
84	356-20	-7-28	4.40 4.50	-63	337
85	353-50	-6-50	5.25 5.35	-67	333
86	351-0	-7-22	5.20 5.30	-72	328
87	345-40	-6-09	5-05 5.11	-60	340
88	338-20	-3-55	4.94	-39	361
89	330-20	-1-34	4.90	-18	382
90	327-30	-1-09	4.85	-15	385
91	325-20	—	4.86	-12.2	388
92	322-0	+0-13	4.72	-3-8	392
93	324-50	-0-40	5.36	-11-16	384
94	326-50	-1-22	5.46	-18.	382
95	334-10	-2-44	5.55	-31.	369
96	340-10	-4-17	5.65	-47	353
97	345-40	-6-08	5.75 5.82	-67	333

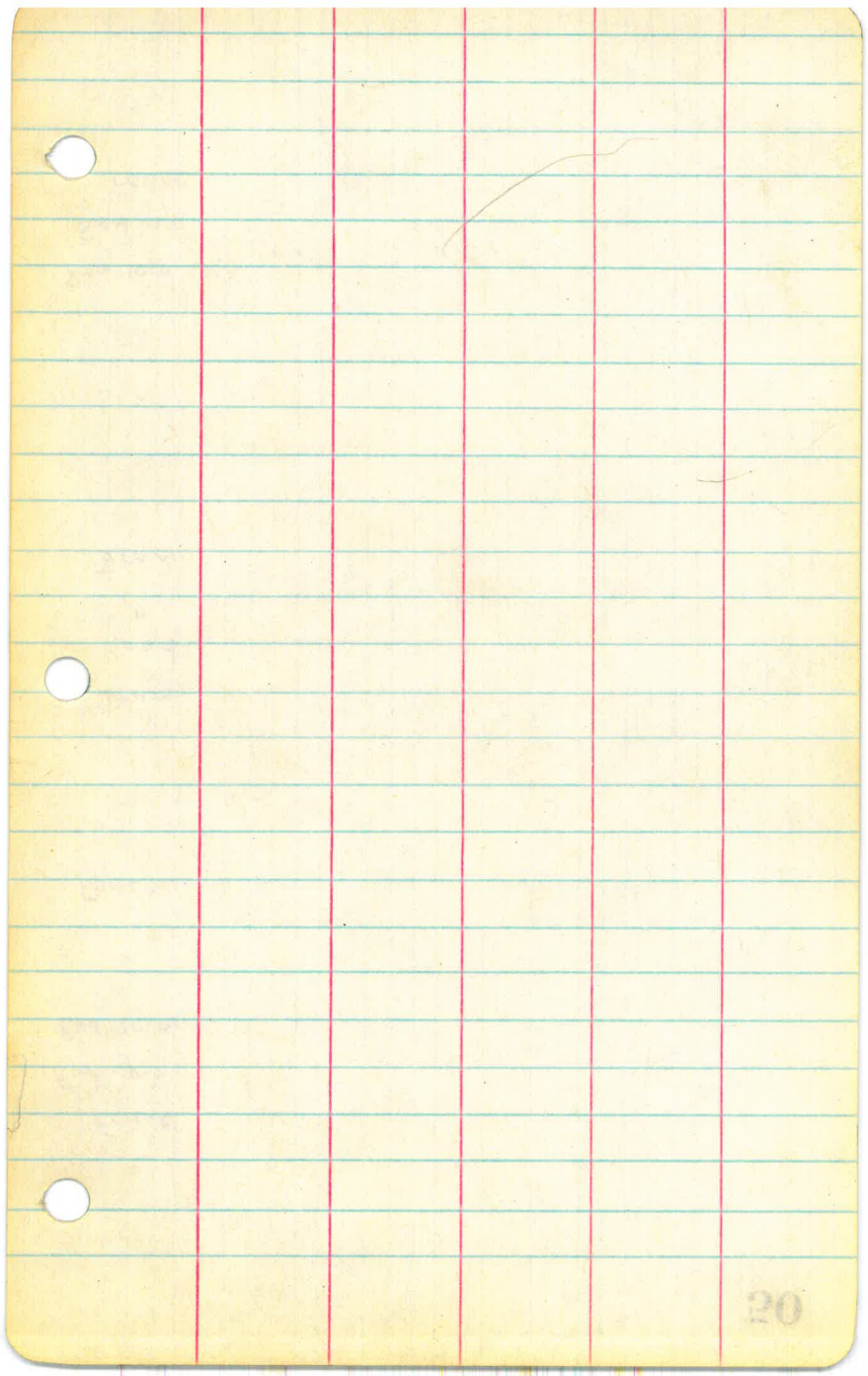
2.68
2
536

Fence.
Rod 10.0
Rod 10.0

Fence.

Draw
Road
"
Draw

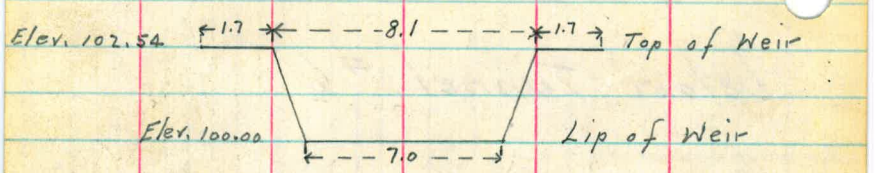
Rod 10.0
Rod 10.0
Fence.


20

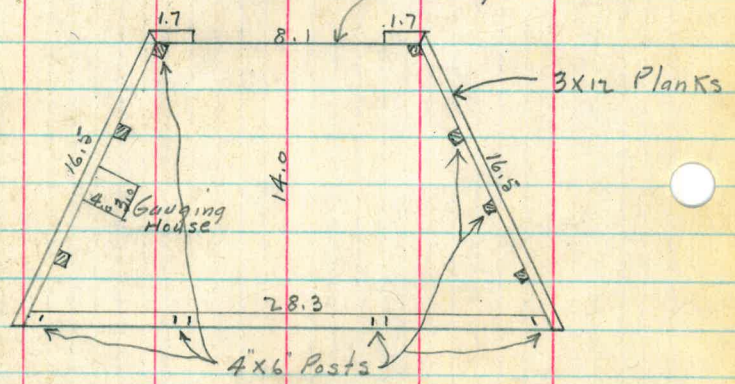
Dulzura Creek. Weir
below Tunnel #6

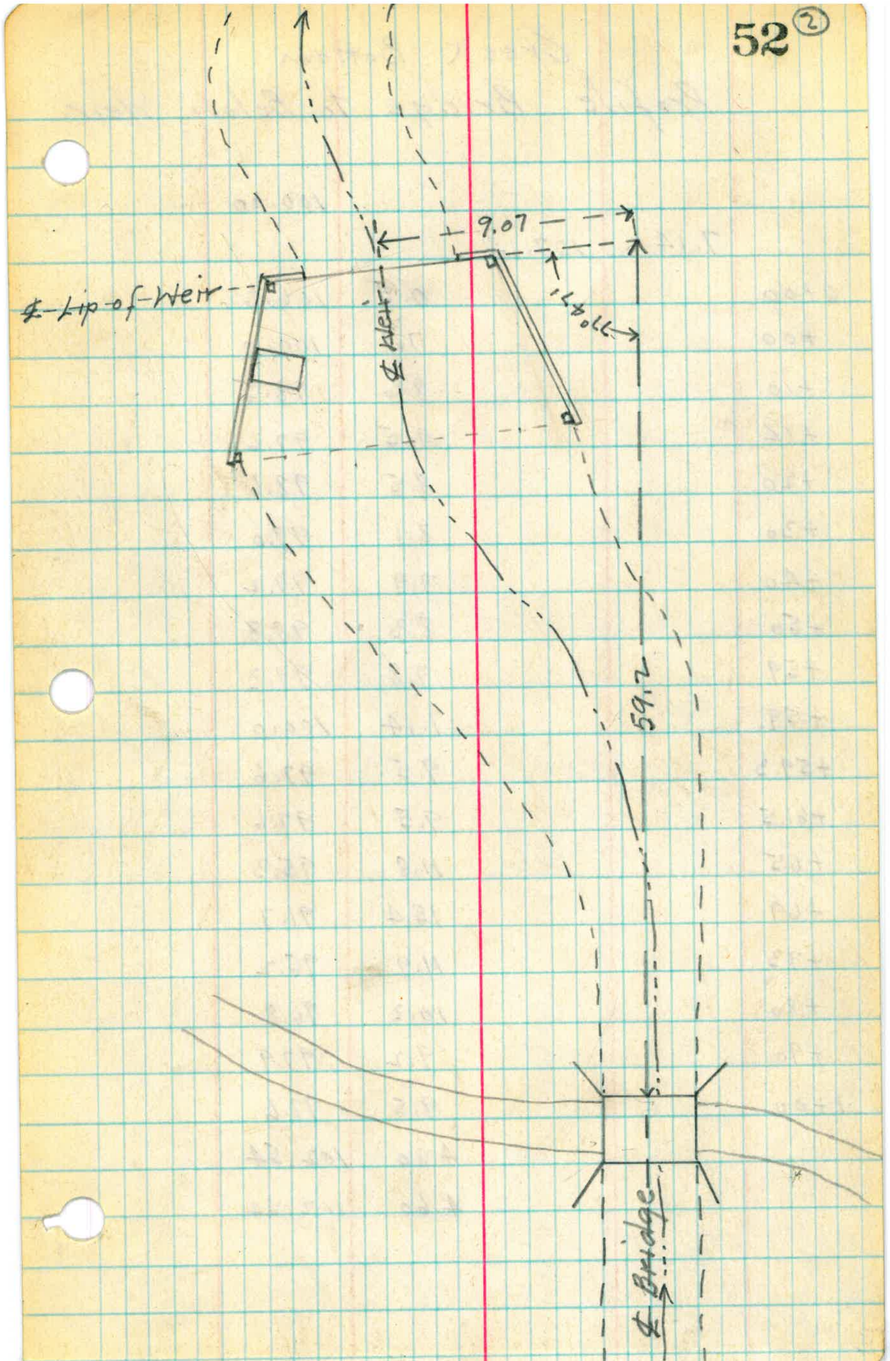
Converse.
Nov 1. 1928.

Downstream Elevation



Plan.




℄ Lip of Weir
9.07
℄ Weir
59.2
℄ Bridge

Creek Bottom
Profile. Bridge to Below Weir

				100.00
	7.14	107.14		
0+00			0.5	106.6
+00			7.1	100.0
+10			8.6	98.5
+14			9.5	97.6
+20			8.5	98.6
+30			8.1	99.0
+40			7.9	99.2
+50			8.3	98.8
+59			7.8	99.3
+59			7.14	100.0
+59.3			9.5	97.6
+61.5			9.5	97.6
+65			11.8	95.3
+69			15.4	91.7
+73			11.9	95.2
+80			10.3	96.8
+90			9.2	97.9
1+00			9.5	97.6
			4.60	102.54
			4.60	102.54

Assumed Elev. Lip of Weir

Top of Bridge. Downstream Edge.
Bottom Creek of downstream edge of Bridge

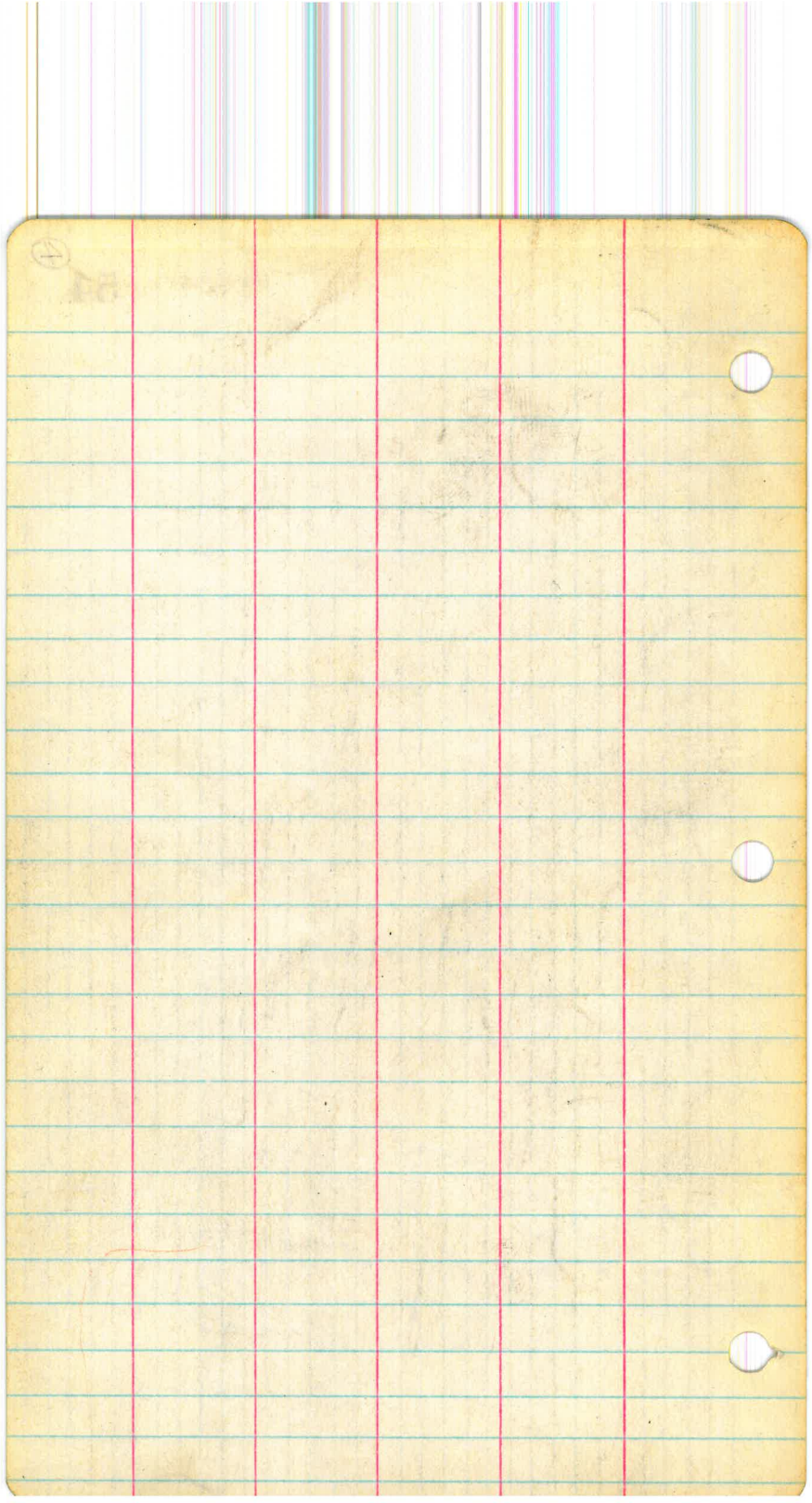
Ground elev. above Lip
Elev. Lip
Top Apron
" "

Bottom Water Hole.

Top W. Side Wall.
Top S. " " .

Cross Section across Weir
1.5 above Lip.

Sta.	Elev.	
0+00	102.54	Top N. Side Wall
+00.2	99.1	
+01	99.5	
+02	99.9	
+03	99.9	
+04	99.8	
+05	99.5	
+06	99.4	
+07	99.5	
+08	99.5	
+09	99.4	
+10	99.2	
+11	99.1	
+12	99.1	
+12.8	99.0	
+13	102.54	Top S. Side Wall.



Check Levels from B.M. at Otay Filter Plant to Outlet Tower to Otay Dam to Independent Spillway and return to Filter Plant.

Elevations on City Datum as run by Chillson - Second Otay Pipe Line.

Feb. 13. 1929.
Converse
Elliott
Simpson
Pages 1-5

Note - These Elevations are 1.0 foot Low. Mistake of 1.0 ft. between Lantana Drive and Cholla Heights as determined by Check Levels of March 7. 1929. G.W. Converse

B.M	0.04	393.48		393.44	
			5.39	388.09	
			1.26	392.22	
			3.47	390.01	
B.M.				393.44	
	12.64	406.08			
T.P.			0.12	405.96	
	9.55	415.51			
			4.65	410.86	
T.P.			0.37	415,14	
	12.57	427.71			
T.P.			0.15	427.56	
	12.51	440.07			
T.P			0.70	439.37	
	12.77	452.14			
T.P.			1.13	451.01	
	12.69	463.70			
T.P			0.32	463.38	
	12.50	475.88			
T.P.			0.63	475.25	
	11.51	486.76			
T.P.			0.37	486.39	
	12.76	499.15			
T.P.			0.42	498.73	

#105 Spike in Power Pole By Otay Filter

Bottom of 4' pipe outlet of tunnel

Top " " " " "

Center of Ashcroft Pressure Gauge on side of W.S. Pipe 10.3' S. of Cast Iron Connection. Press. 22.1# 10:30 A.M.

Center of Calif. Jewel Co. Pressure Gage in Filter Plant

Influent 21½ Lbs - 50' Head. Affluent 14.7 Lbs 34' Head
Time 10:30 A.M.

T.P.				498.73
	3.38	502.11		
T.P.			12.33	489.78
	0.09	489.87		
			2.82	487.05
T.P.			4.06	485.81
T.P.				485.81
	4.06	489.87		
T.P.			7.08	482.79
	2.93	485.72		
			0.0	485.72
T.P.				485.81
	2.54	488.35		
T.P.			1.68	486.67
	4.97	491.64		
			2.60	489.04
			6.71	484.93
			8.05	483.59
T.P.			6.50	485.14
	1.33	486.47		
			12.61	473.86
			8.83	477.64
			6.39	480.08

El. Floor of Outlet Tower

On gage at gage El. 493.02. Difference 7.30
Water El. 477.3 on gage on outlet Tower

Top of parapet wall W. end of dam
Floor of driveway " " " "
Approx. El. of top of flood gate

On Reservoir gage on Dam. 473.86 = 134 on gage, Water Surf 130.1 on gage
Approx. El. of Spillway on Main Dam. = 137.7 on gage
El. of independent Spillway

		486.47			
			2.50	483.97	
			1.56	484.91	
T.P.			1.49	484.98	
	10.64	495.62			
B.M			0.25	495.37	
B.M.				495.37	
	0.39	495.76			
			6.76	489.00	
			10.80	484.96	
T.P.			10.74	485.02	
	5.00	490.02			
T.P			0.94	489.08	
	4.23	493.31			
T.P.			2.57	490.74	
	8.71	499.45			
T.P			1.97	497.48	
	5.09	502.57			
T.P.			12.42	490.15	
	0.52	490.67			
T.P.			12.38	478.29	
	1.37	479.66			
T.P.			12.55	467.11	
	1.37	468.48			
T.P.			12.96	455.52	
	0.83	456.35			

Top of Drum Gates on Independent Spillway

Top of Walkway " " "

Spike in S. Cor. Post of Guard Rail, E. end of Bridge over Spillway. Set by Ward on Road Survey

Elev. 502.97
5.37
7.60

Top of parapet wall E. end of Dam

Floor of driveway " " " "

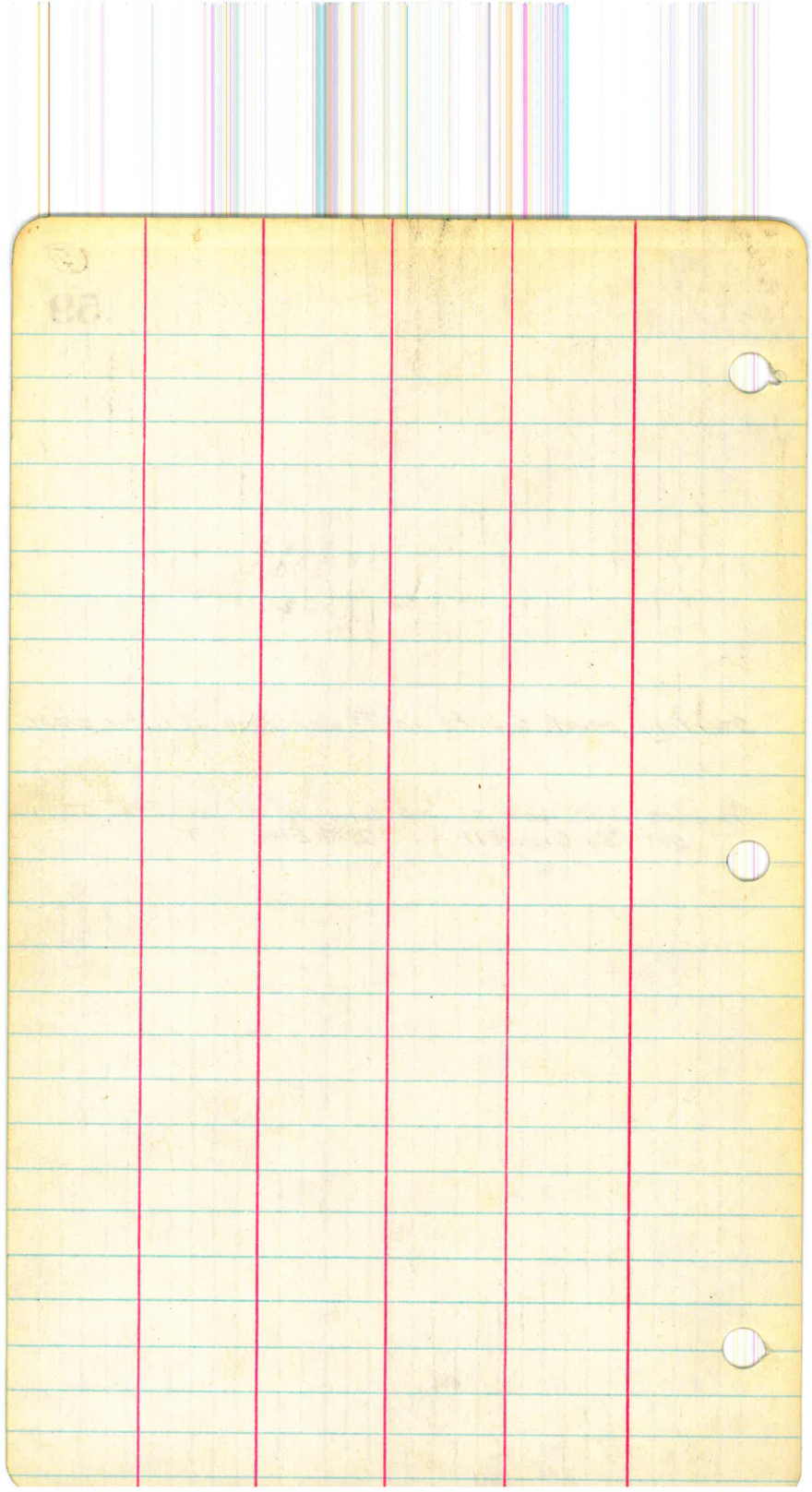
Jal.
485.81
9.56
495.37

		456.35			
T.P.			12.84	443.51	
	0.75	444.26			
T.P			13.11	431.15	
	0.12	431.27			
T.P.			12.44½	418.83	
	0.16	418.99			
T.P.			12.92	406.07	
	0.28	406.35			
Check B.M.			12.89	393.46	= 393.44
	12.89	406.33			
			11.53	394.80	

695.37
393.26
103.11

Starting point. Spike in Power Pole at filter plant.

Point on Conc. Walk at S.E. Cor. of Filter Plant
Set By Crowell B.M. Elev. ? 7.90



New Challas Heights Project.
Preliminary Line for Outlet Conduit.
Line from West End Outlet Conduit
to Valve House, to Sta. 56+01.8 Williams
Second Pipe Line Survey.

Pages 1-5.
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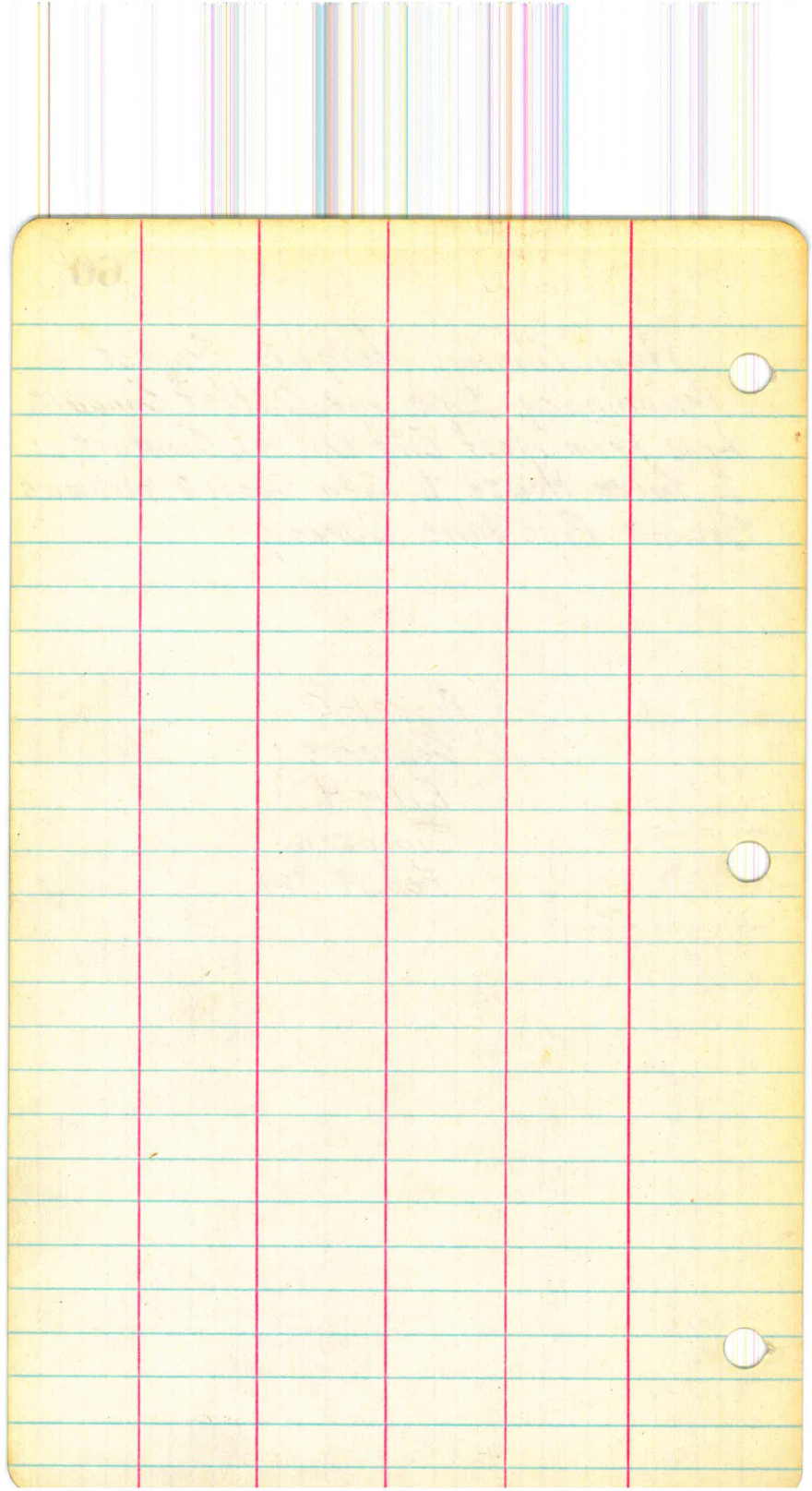
Elliott
Simpson
Feb. 19. 1929.

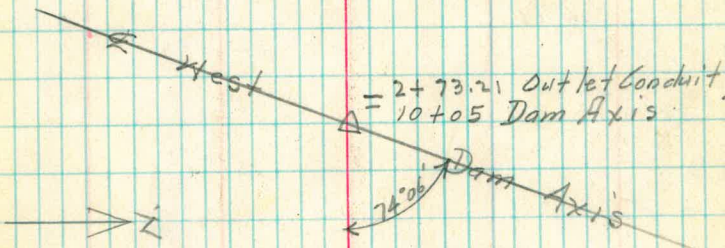


Δ 4+98.27 Outlet Conduit Downstream Toe of Slope.

℄ 36" W.S. Pipe 4+86.08

℄ 24" W.S. Pipe 4+53.0

Δ 3+89.83 P.O.T.



Δ = 2+73.21 Outlet Conduit = 10+05 Dam Axis

Δ 0+00 Outlet Conduit = Upstream Toe of Slope.

22.2
5.9
16.3

25.0

0+27.

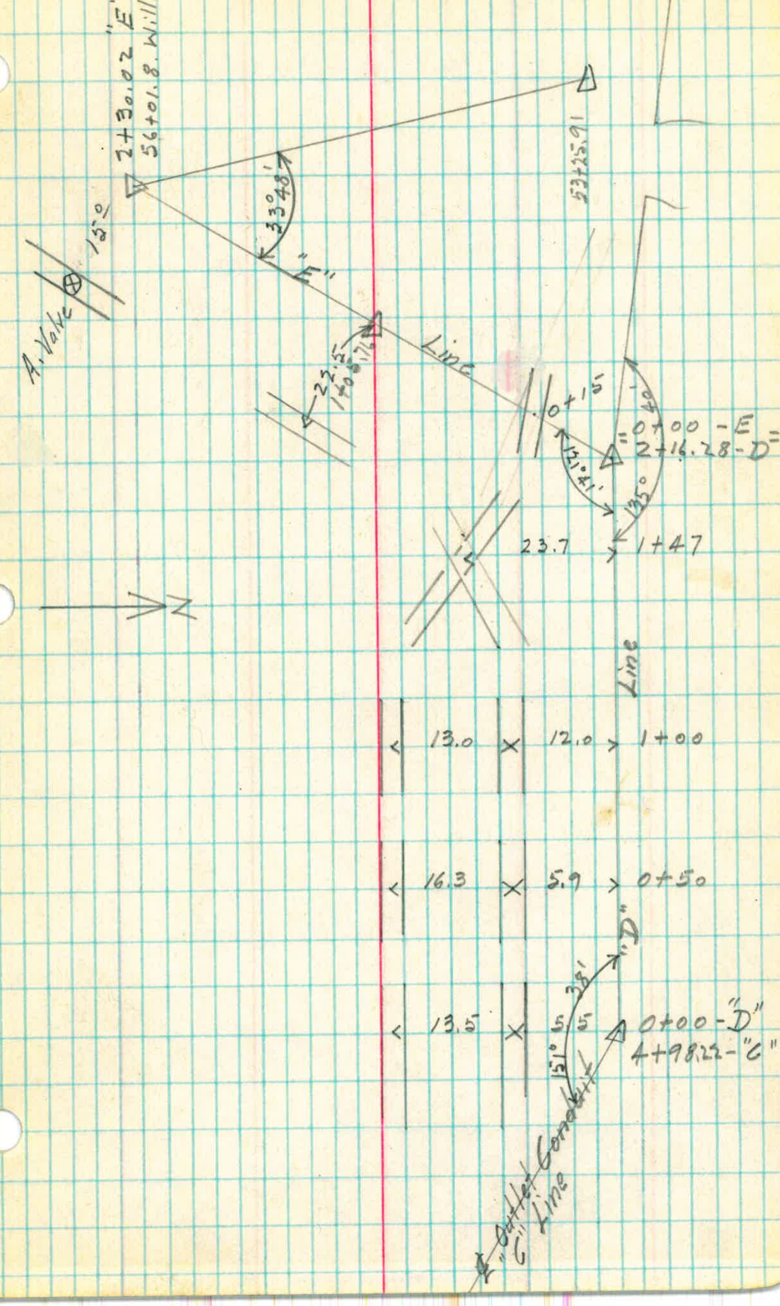
1+05.76 P.O.T. 22.5 to Pipe

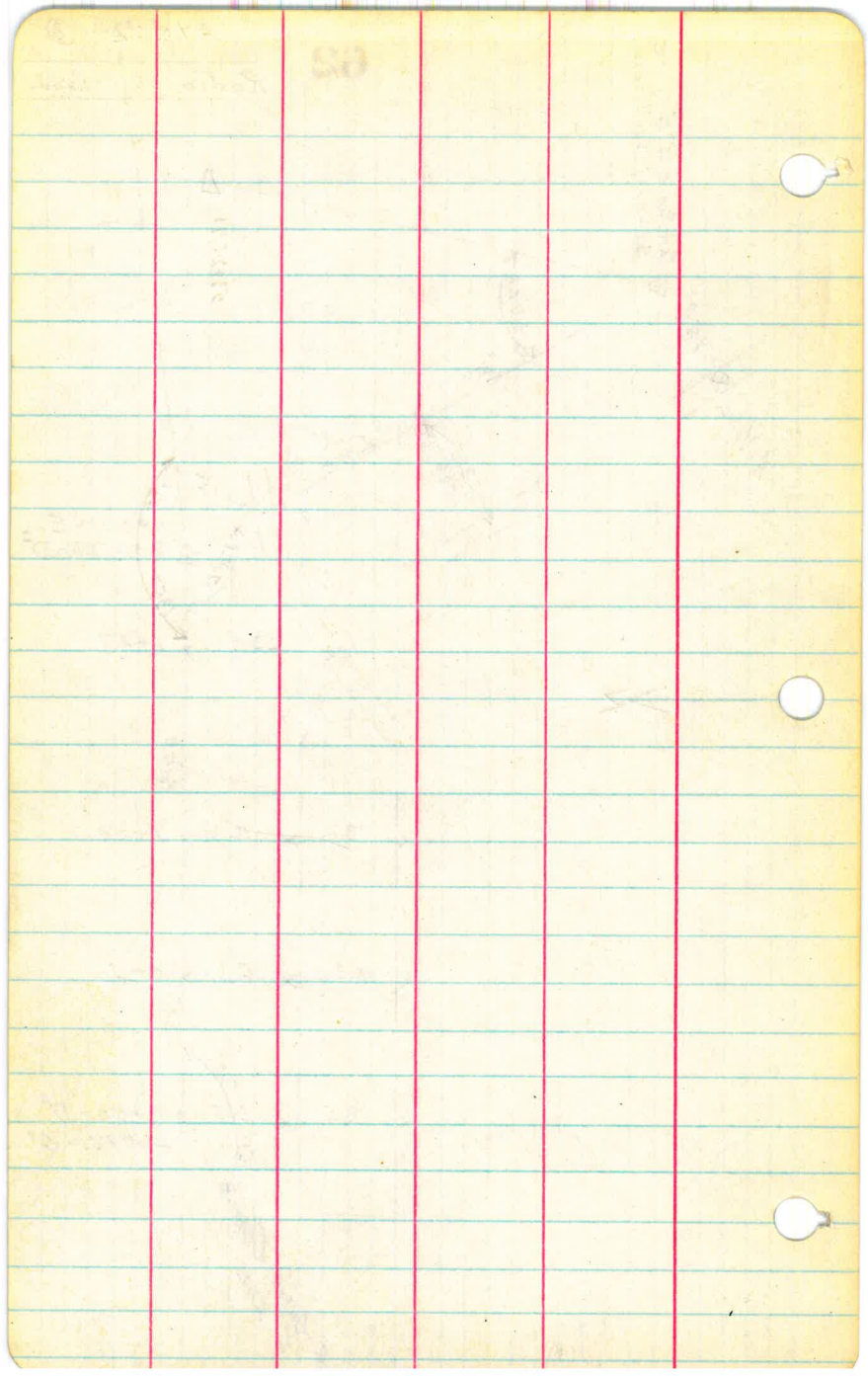
33°48' 2+30.02 E = 56+01.80 = 0+00 Pipe Line

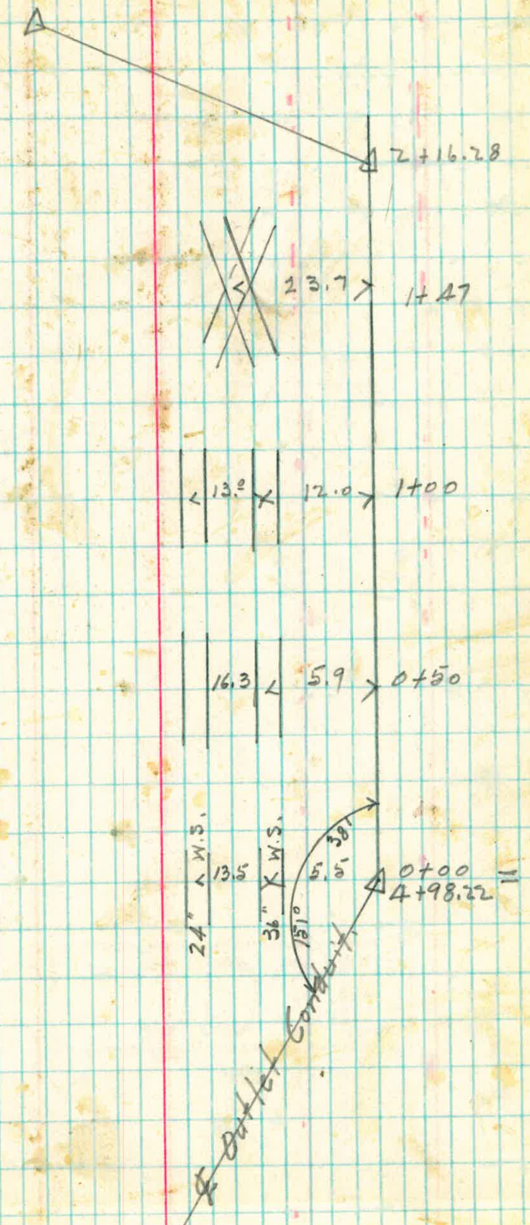
121°41'

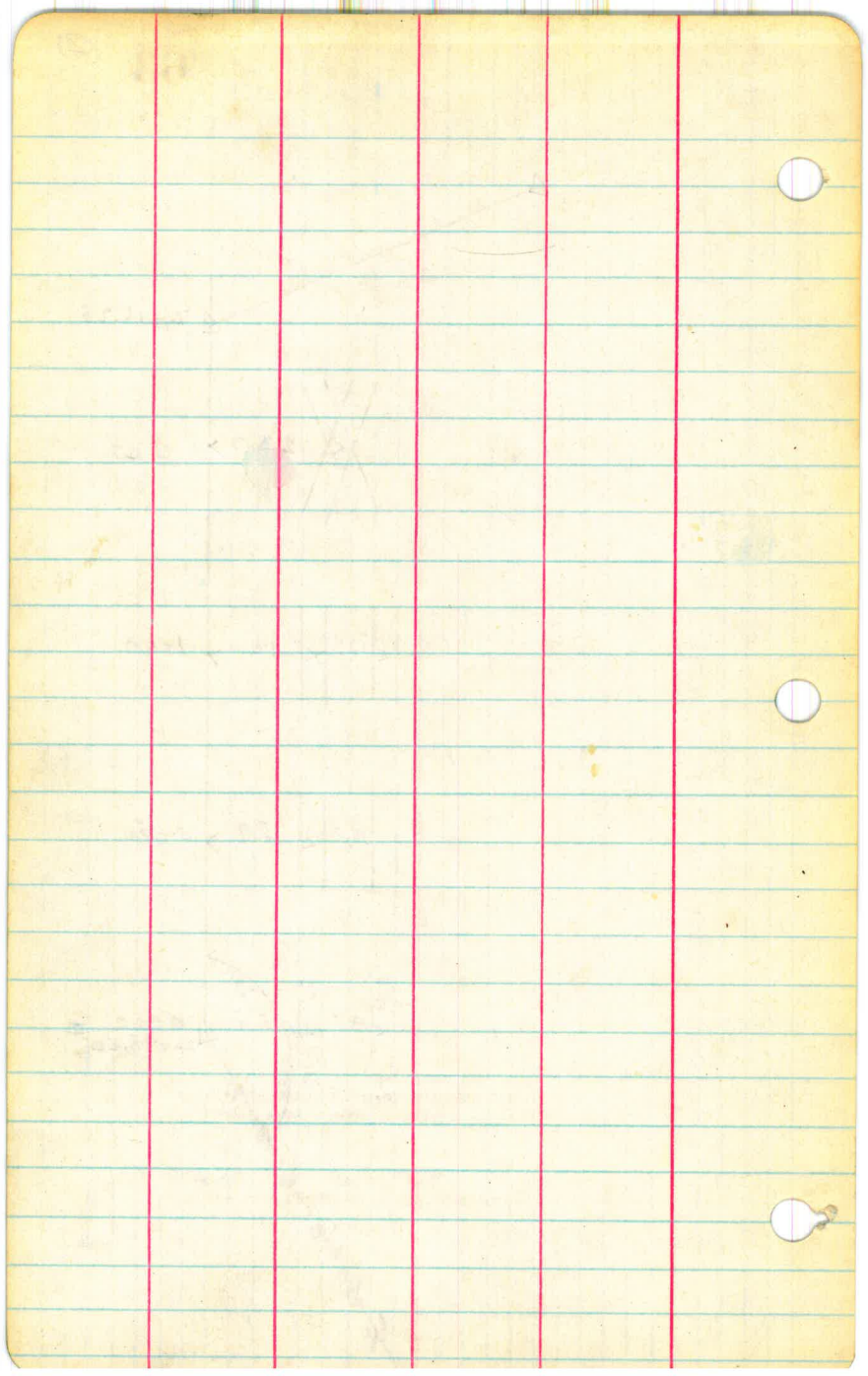
A.V. 3+15° (3)

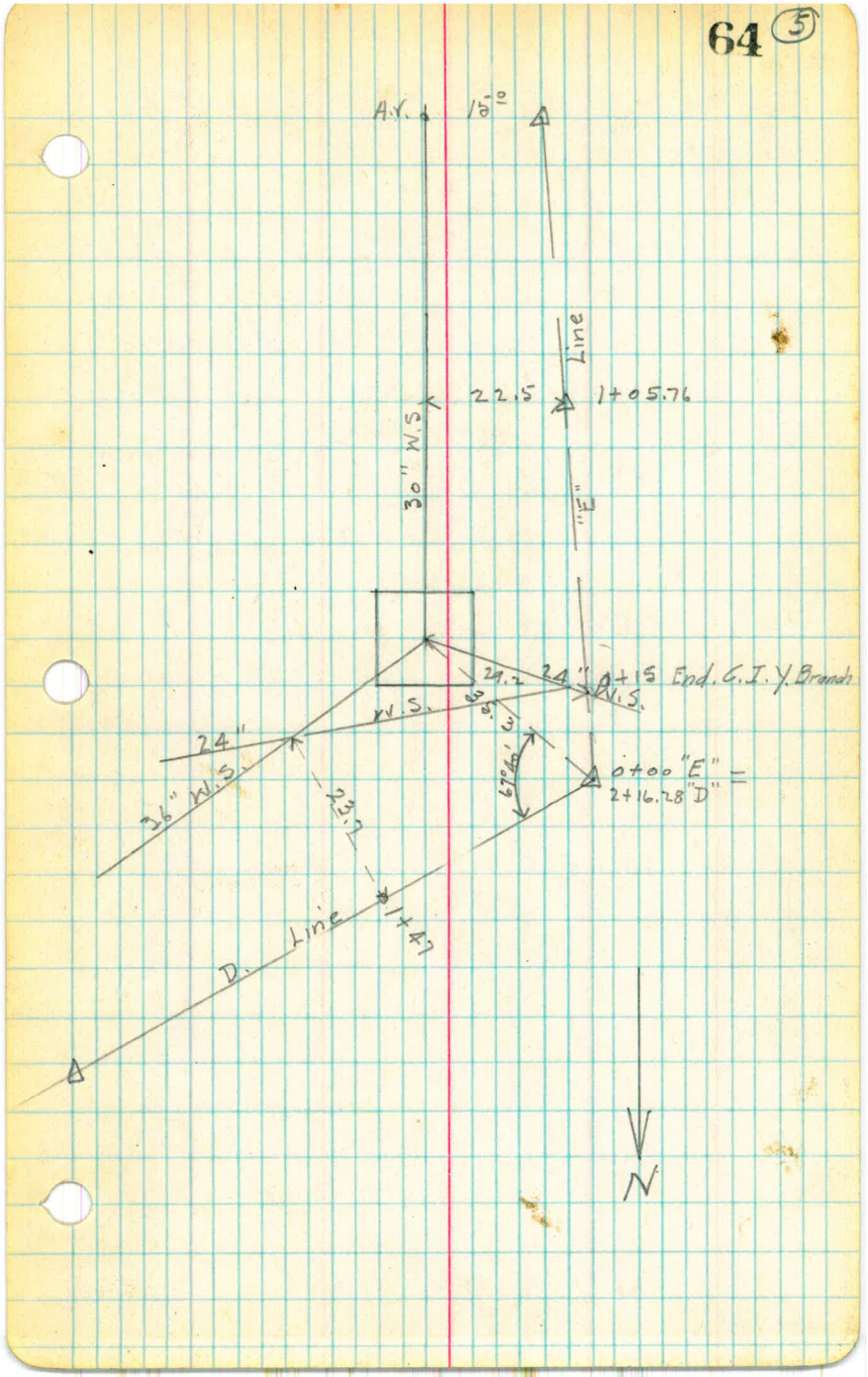
Radio Road.

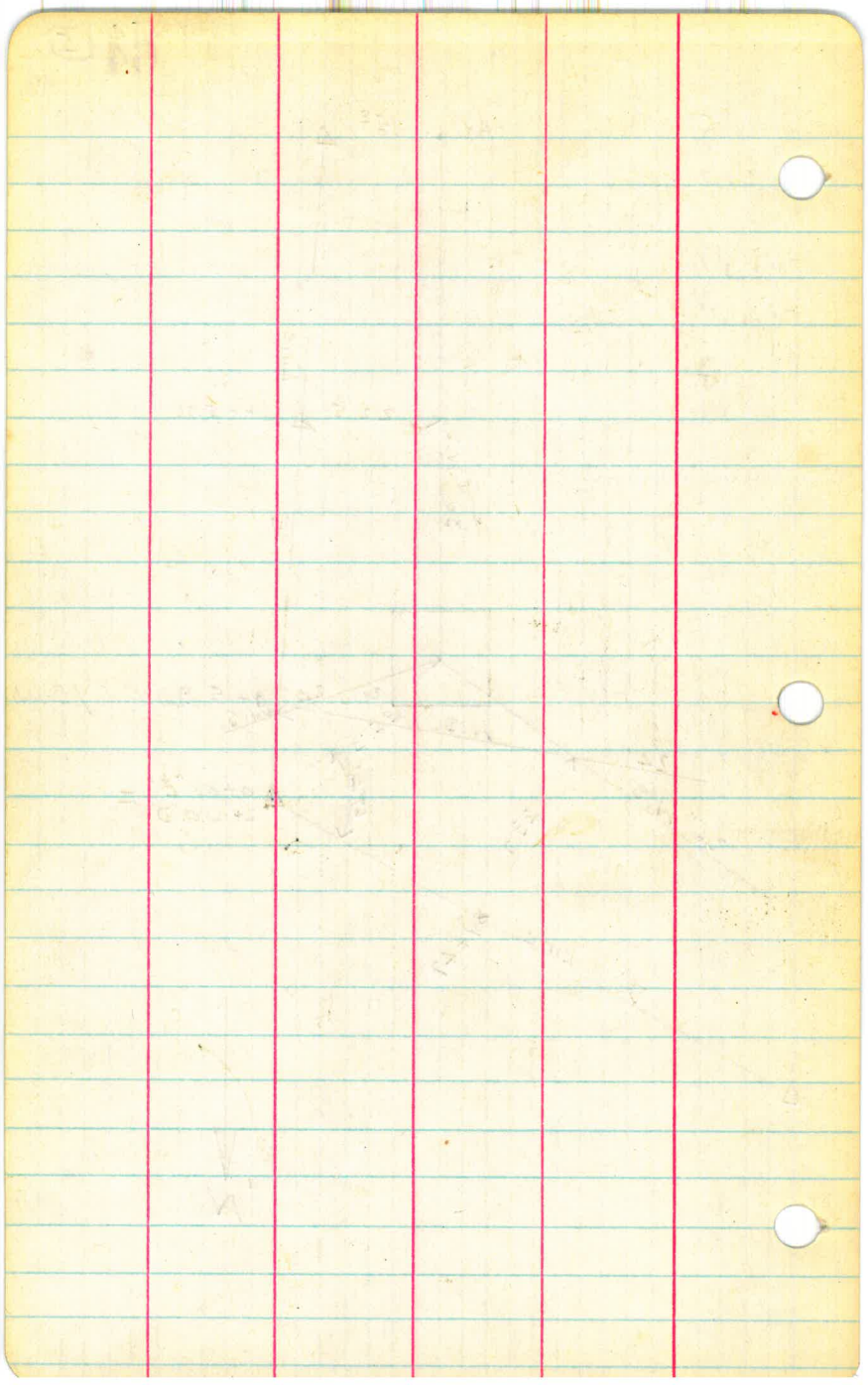





2+16.28
23.7
1+47
13.0
12.0
1+00
16.3
5.9
0+50
24" W.S.
13.5
36" W.S.
5.5
38°
151°
0+00
4+98.22
℄ Outlet Conduit




A.Y.
15°
Line
22.5
1+05.76
30" W.S.
"E"
24"
24.7
24"
0+15 End G.I.Y. Branch
W.S.
W.S.
60°
24"
36" W.S.
23.7
67°48'
0+00 "E" =
2+16.28 "D"
D. Line
0+43
N



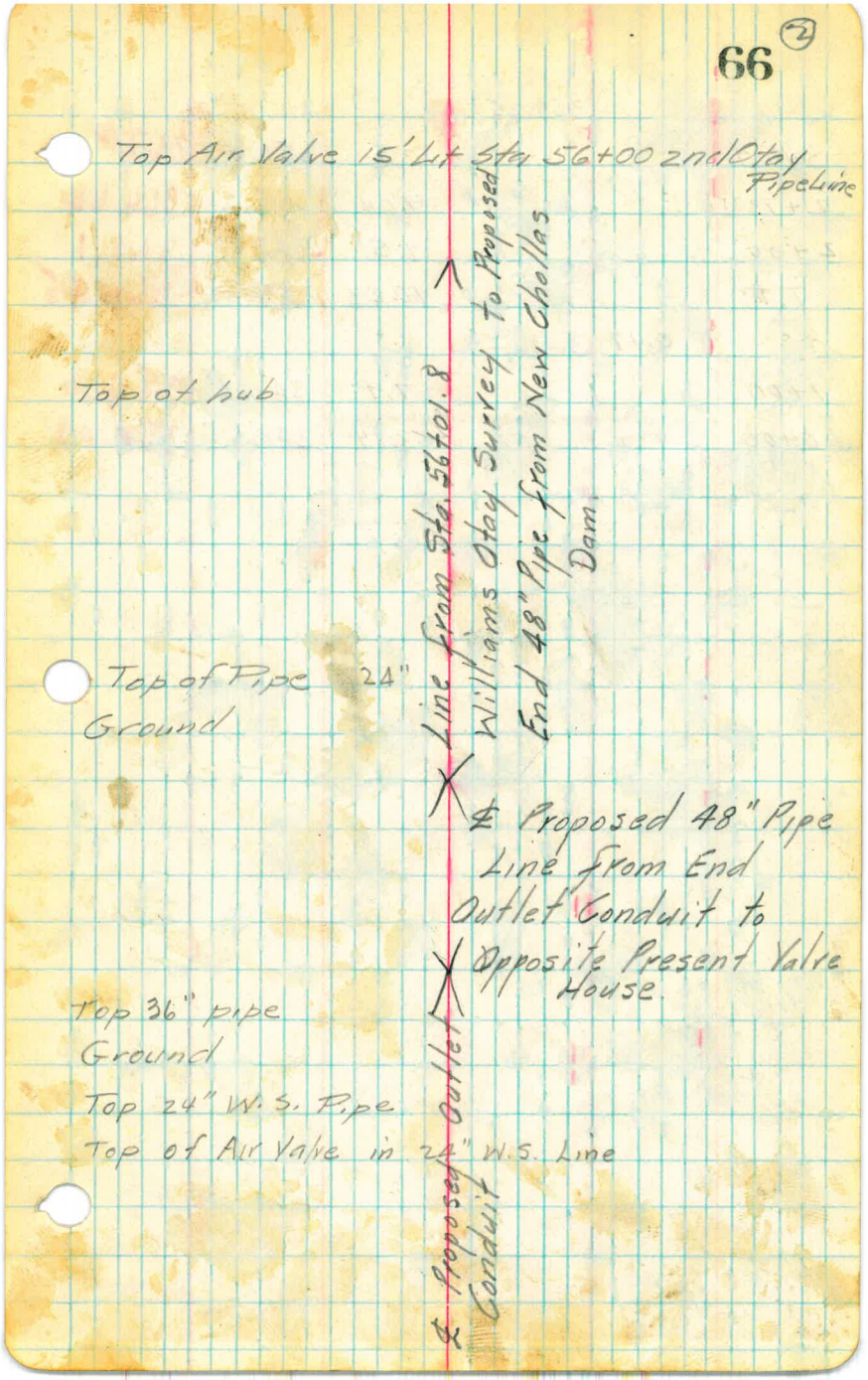
Profile Levels. Sta. 56+01.8 Second Otay Pipe Line Survey to Valve House, to West End Outlet Conduit, also Outlet Conduit.

All elevations in pencil = City Datum.

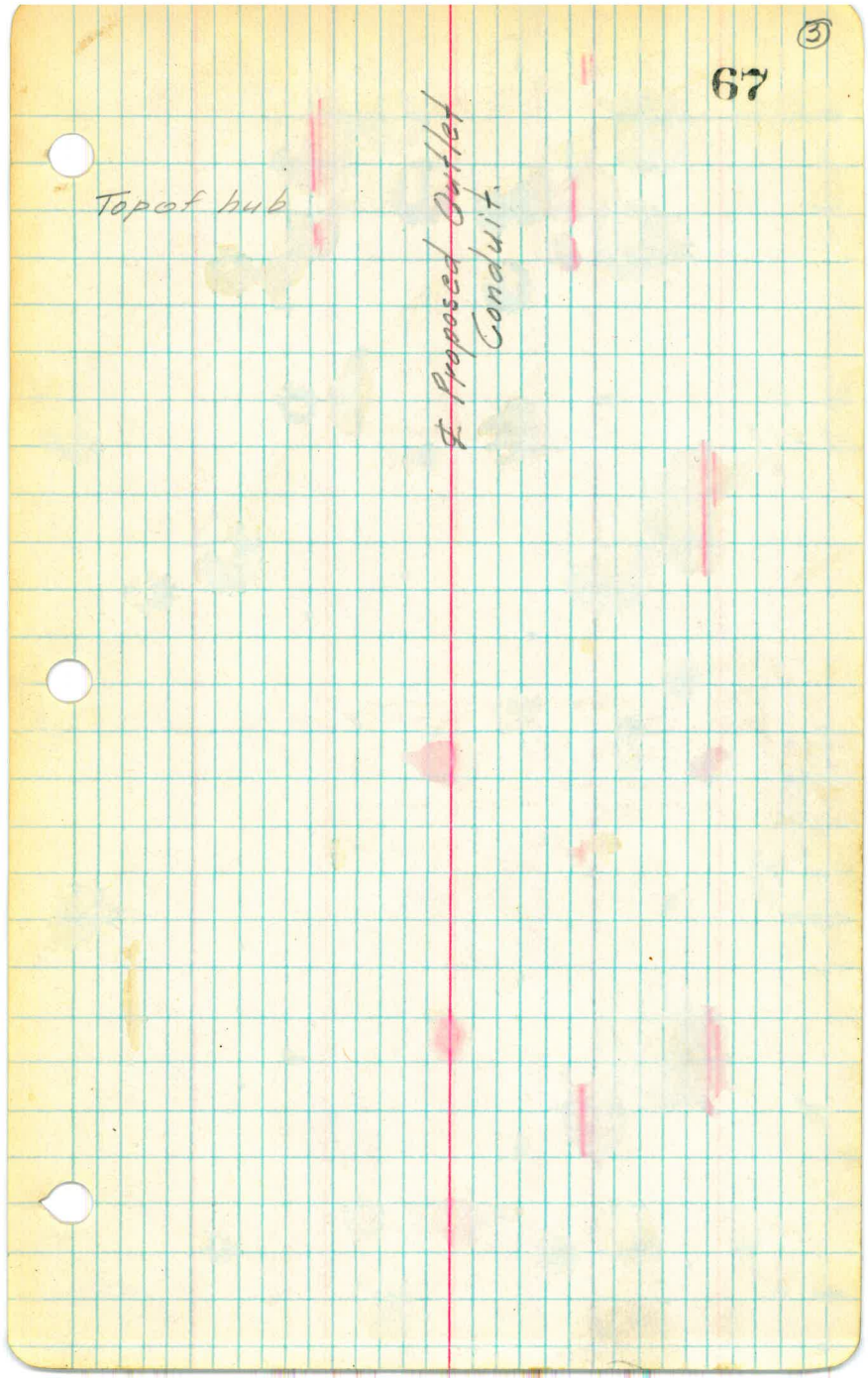
Feb. 19. 1929.
Converse
Elliott
Simpson
Pages 1-3

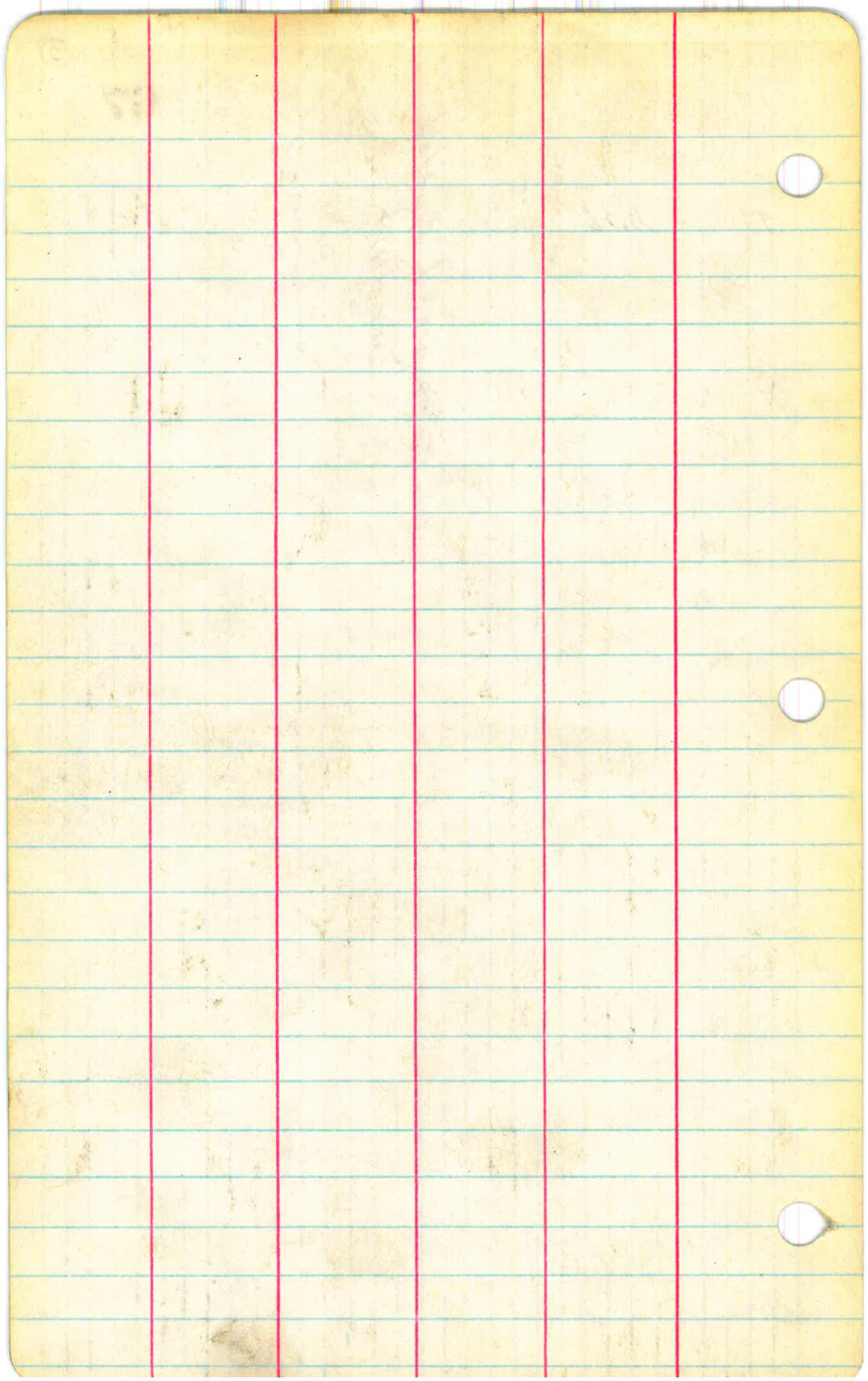
Note - Elevations in Pencil = City Datum
Elevations in Red = Chollas Heights (Pipe Line) Datum
City 0.00 = Chollas 11.43

B.M. #9				367.56	
	2.16	369.72			
2+30.03			4.0	365.7	377.1
2+00			3.7	366.0	377.4
1+50			7.8	361.9	373.3
T.P. 1+05.76			12.05	357.67	
	0.30	359.97			
1+00			0.7	359.3	370.7
0+45			8.6	351.4	362.8
T.P			13.00	344.97	
	6.25	351.22			
0+15			8.70	342.5	353.9
0+13			11.1	340.1	351.5
EO 0+00 = 2+16.28			11.08	340.14	351.57
2+00			10.7	340.5	351.9
1+60			6.8	344.4	355.8
1+00			5.5	345.7	357.1
4+98.22 = 0+00			4.70	346.52	357.95
4+86.08			1.5	350.7	362.1
4+86.08			4.9	346.3	357.7
4+53			4.5	346.7	358.1
T.P. B.M.			1.90	349.32	
	9.93	359.25			
4+00			5.8	353.4	364.8
3+89.83			4.40	354.85	366.28


Top Air Valve 15' Lt Sta 56+00 2nd Stay Pipeline
Top of hub
Top of Pipe 24"
Ground
Top 36" pipe
Ground
Top 24" W.S. Pipe
Top of Air Valve in 24" W.S. Line
℄ Proposed Outlet Conduit
Line from Sta. 56+01.8 Williams Stay Survey To Proposed End 48" Pipe from New Chollas Dam
℄ Proposed 48" Pipe Line from End Outlet Conduit to Opposite Present Valve House.

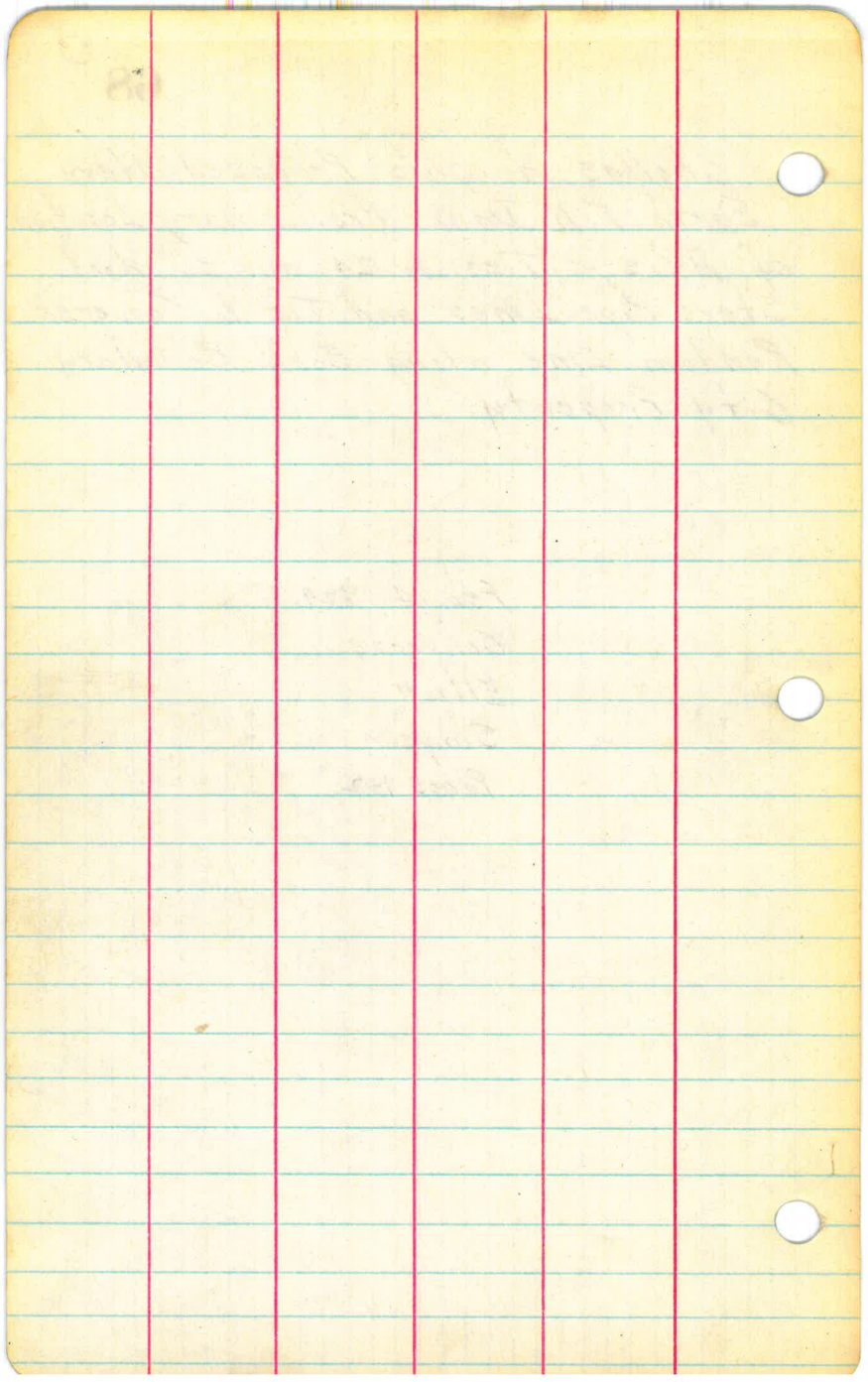
		359.25			
3+00			3.2	356.0	367.4
2+7321			4.04	355.21	366.64
2+00			9.5	349.7	361.1
T.P.			10.23	349.02	360.45
	0.47	349.49			
1+00			7.9	341.6	354.0
0+00			8.84	340.65	357.08

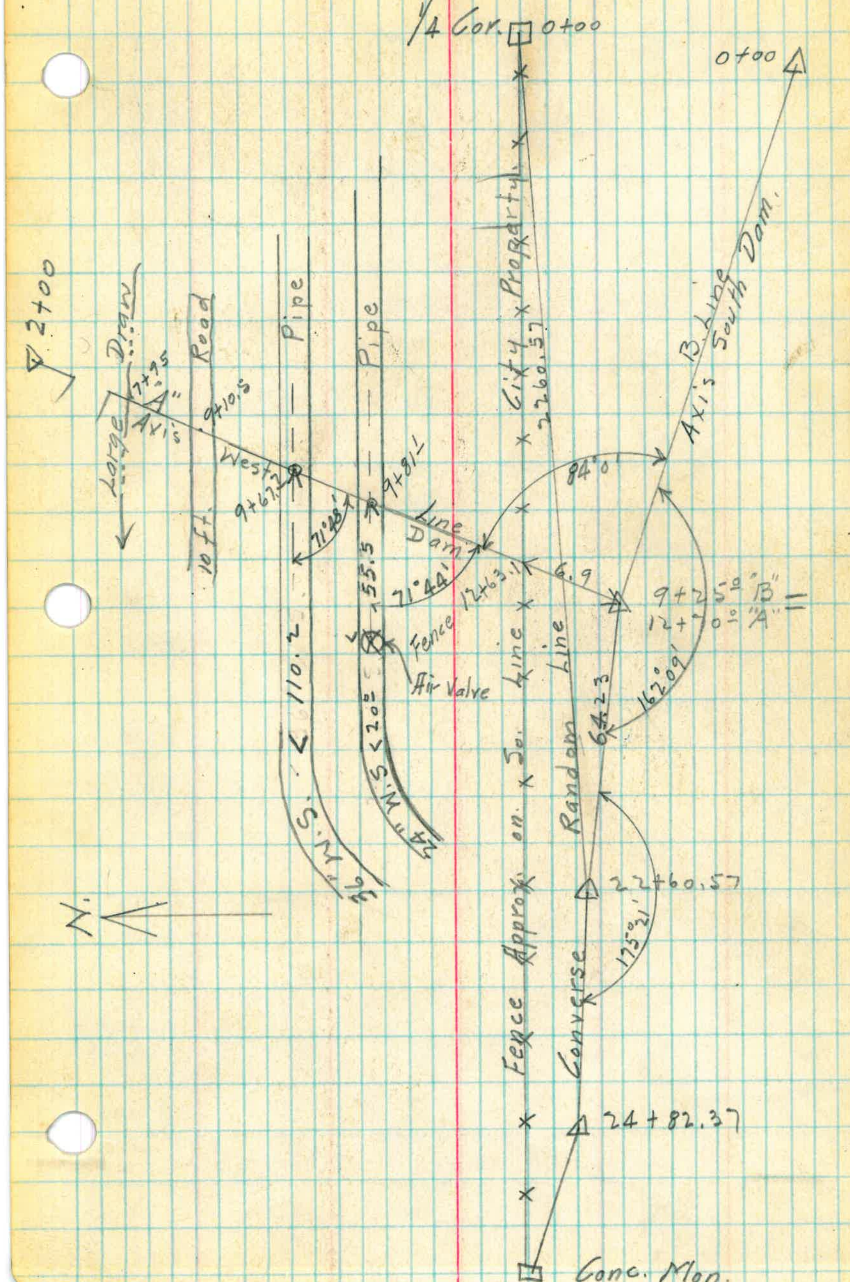

Top of hub
Proposed Outlet Conduit.

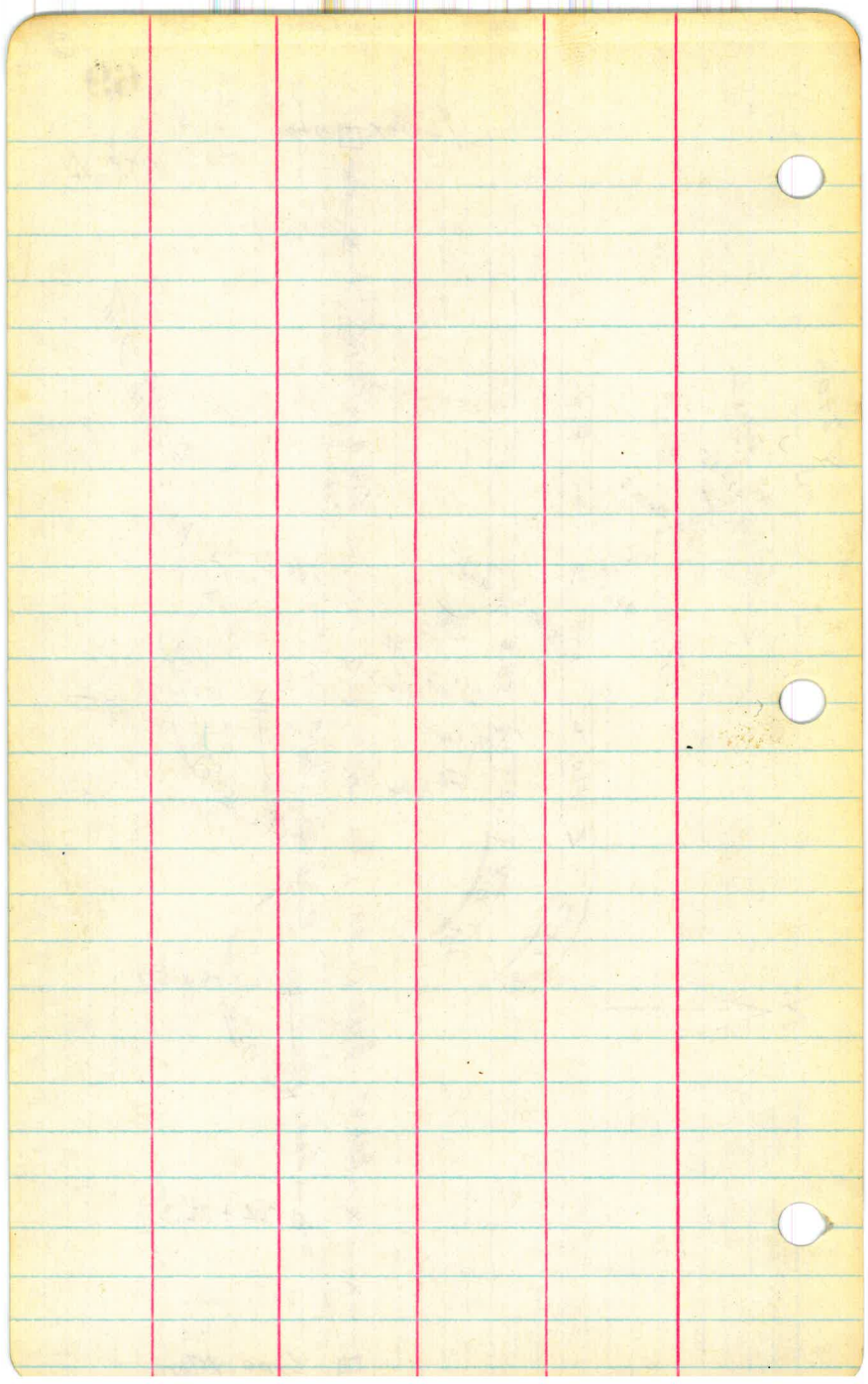


Chollas Heights Proposed New Earth Fill Dam. Preliminary Location of Axis, - Ties to 24" and 36" Wood Stave Pipe Lines and Tie to Converse Random Line along South Boundary City Property.

Feb. 14. 1929.
Converse
Elliott
Simpson
Pages 1-2




1/4 Cor. 0+00
0+00
2+00
Large Draw
Road
10 ft.
Pipe
Pipe
Axis "A"
West Dam Line
9+67.2
9+81
71°48'
71°44'
84°0'
City Property
2260.57
B Line Axis South Dam.
12+63.1
6.9
9+25.0 "B"
12+70.0 "A"
162°09'
64.23
Fence
Air Valve
110.2
53.5
36" W.S.
24" W.S. < 20
Fence Approx. on. So. Line
Random Line
Converse
22+60.57
175°21'
24+82.37
Conc. Mon.
N.



Profile Levels on Axis Chollas Heights Reservoir Axis - New Dam. Also check levels to Old Chollas Hts. Outlet Tower.

Feb. 15, 1929.
Converse
Elliott
Simpson
Pages 1-6

Note - Elevations in Red = Cholla Heights (Pipe Line) Datum.
Elevations in pencil = City Datum. See Page 6 #95

B.M.#9				367.56	
	6.80	374.36			
T.P.			11.89	362.47	
	5.16	367.63			
			11.17	356.46	
	1.58	358.04			
Set B.M.			8.71	349.33	
	1.24	350.57			
9+81.1			4.99	345.58	357.01
9+67.7			1.6	349.0	360.43
9+67.7			5.2	345.4	
9+60			4.9	345.7	
T.P.			11.90	338.67	
	0.49	339.16			
9+00			7.52	331.64	343.07
T.P.			12.80	326.36	
	3.23	329.59			
8+50			9.6	320.0	
8+00			11.28	318.31	329.74
7+95			12.0	317.6	
7+88			10.6	319.0	
7+80			11.3	318.3	
7+70			5.2	324.4	
T.P.			0.30	329.29	
	11.78	341.07			
7+00			9.66	331.41	342.84

Top Air Valve 15' Lt. Sta. 56+00. 2nd. Otay Pipe Line.

Top Air Valve

Top of 24" W.S. pipe Sta 9+81.1
Top of 36" " " " 9+67.7
Ground at Sta 9+67.7

Top Hub

Top Hub
Bottom Large Draw

Top Hub

These elevations on Axis West Dam

		341.07			
T.P.			0.45	340.62	
	12.21	352.83			
6+00			11.17	341.66	353.09
T.P			2.16	350.67	
	12.18	362.85			
5+00			4.53	358.32	369.75
T.P.			1.20	361.65	
	12.20	373.85			
T.P.			0.35	373.50	
	12.65	386.15			
4+00			3.76	382.39	393.82
T.P.			1.29	384.86	
	12.90	397.76			
T.P.			0.52	397.24	
	12.85	410.09			
3+00			11.32	398.77	410.20
2+80			9.2	400.9	
T.P.			1.82	408.27	
	12.76	421.03			
2+30			7.0	414.0	
2+00			3.54	417.49	428.9
1+70			0.0	421.0	

Top Hub

Top Hub

Top Hub

Top Hub

Top Hub

These elevations on Axis of West Dam.

B.M.				349.33	
	12.63	361.96			
10+00			8.10	353.86	365.29
T.P.			1.20	360.76	
	13.02	373.78			
T.P.			0.48	373.30	
	13.25	386.55			
11+00			0.25	386.30	397.73
T.P.			0.25	386.30	
	12.70	399.00			
T.P			0.88	398.12	
	11.58	409.70			
12+00			2.90	406.80	418.23
T.P.			0.63	409.07	
	3.01	412.08			
12+20			1.9	410.2	
A 12+70 = B 9+25			3.86	408.22	419.65
B9+00			5.99	406.09	417.52
B8+60			6.5	405.6	
B8+30			8.6	403.5	
T.P.			12.56	399.52	
	1.41	400.93			
B8+00			2.52	398.41	~~409.84~~
B7+80			3.2	397.7	
B 7+00 T.P.			12.74	388.19	399.62
	1.24	389.43			

Bm. Lee Page 71

Top Hub

Top Hub

Top Hub

Top Hub.
Top Hub

Top Hub

Top Hub

These elevations on Axis South Dam.

These elevations on Axis West Dam.

		389.43			
T.P.			12.82	376.61	
	9.15	385.76			
B 6+20			10.0	375.8	
B 6+00			10.58	375.18	386.61
B 5+80			11.2	374.6	
B 5+00			3.64	382.12	393.55
T.P			0.48	385.28	
	12.23	397.51			
B 4+00			3.47	394.04	405.47
T.P.			0.45	397.06	
	12.36	409.42			
B. 3+00			6.00	403.42	414.85
T.P.			0.39	409.03	
	12.79	421.82			
B 2+30			5.9	415.9	
B 2+00			4.36	417.46	428.89
T.P.			0.73	421.09	
	12.12	433.21			
B 1+50			11.9	421.3	
B 1+25			12.9	420.3	
B 1+00			9.49	423.72	435.15
B 0+57			10.4	422.8	434.2
B 0+30			6.8	426.4	
B 0+00			8.36	424.85	436.28
14+57.93			5.81	427.40	

These elevations on Axis South Dam.

Top Hub

Top Hub

Top Hub

Top Hub

Top Hub

Top Hub

Top Hub

Top Hub

Hub Prelim. Pipe Survey

436.8
13.4
423.4

		433.21			
T.P.			7.87	425.34	
	6.13	431.47			
T.P.			3.54	427.93	
	13.18	441.11			
T.P			12.08	429.03	
	1.46	430.49			
T.P.			10.87	419.62	
	3.50	423.12			
			6.04	417.08	429.00
			4.79	418.33	
			5.55	417.57	429.00
			4.71	418.41	
			2.3	420.8	432.2

Westend of Walkway Cholla Outlet Tower

E, " " " " " " "

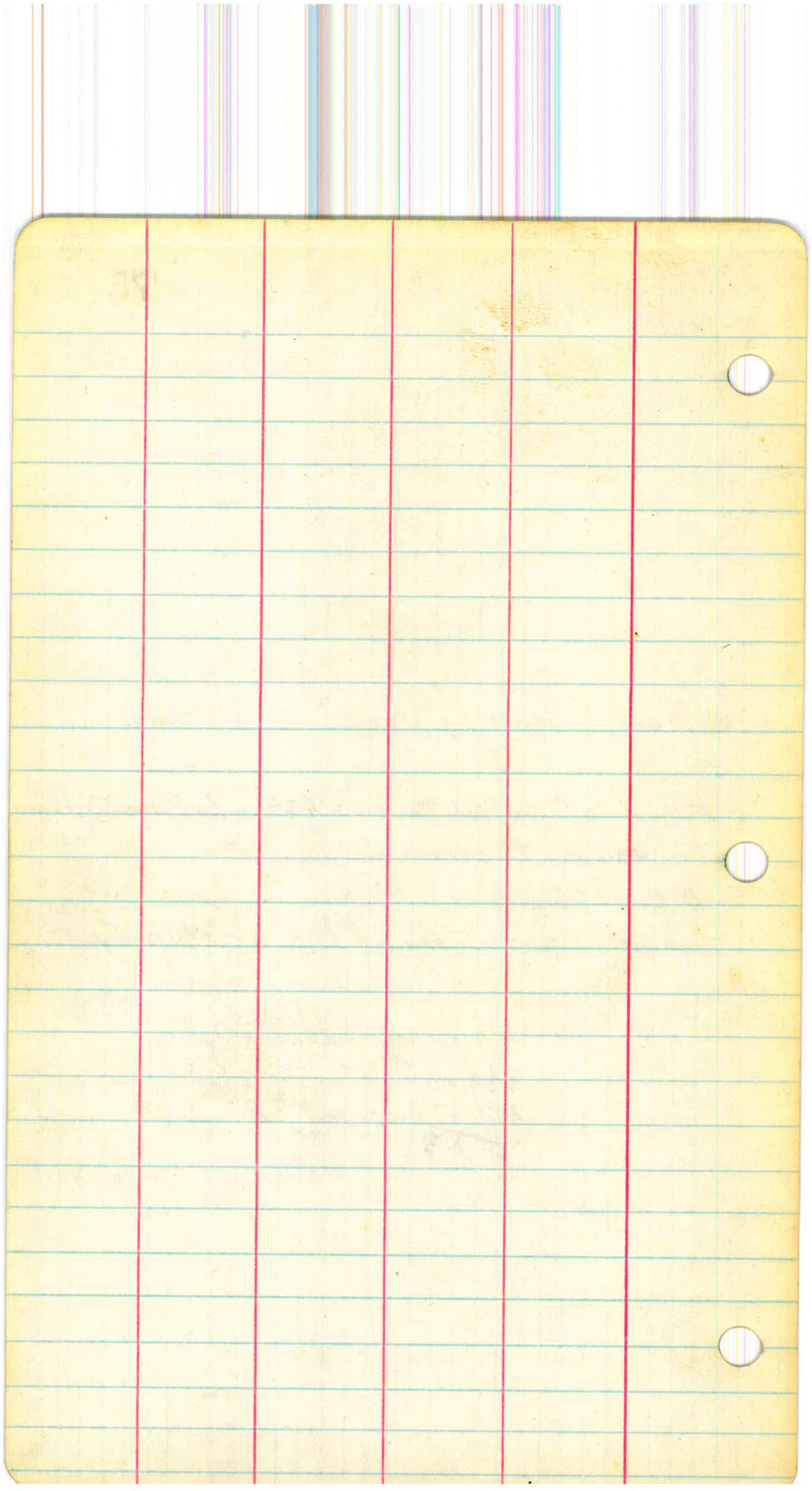
Floor of Outlet Tower = 429.00 La Playa Datum

On 40.0 on Reservoir Gage

W.S. 31.75 on " "

Top of Earth Dam at End of Walkway

429.00
417.57
11.43



Proposed New Chollas Heights Dams - Cross sections on West and South Axis.

Preliminary.

Elevations shown = Chollas Hts. Datum. = 11.43 (Pipe Line) above City Datum

Feb. 15-16.

Converse

Elliott

Simpson

Pages 1-5

"A" Line = West Dam.

Sta.	+ S.	H.I	- S.	Elev.	
12+70	3.20	422.85		419.65	
12+00	1.81	420.04		418.23	
11+00	2.84	400.57		397.73	
Downstream	0.41	388.41	12.57		388.00 (Down stream)
	1.06	377.09	12.38		376.03 (Down stream)
Upstream	1.60	399.33		397.73	
	0.57	387.12	12.78		386.55
10+00	0.21	365.50		365.29	
Downstream	0.72	353.93	12.29		353.21
	0.39	341.10	13.22		340.71
10+00					
9+00	1.51	344.58		343.07	
Downstream	2.23	334.49	12.32		332.26
Upstream	11.65	354.72		343.07	
9+00					
8+00	10.85	340.59		329.74	

Grade 435.0 (2)

77

Axis

L. or Upstream ℄ R. or Downstream

419.6 / 0.0 — 420.0 / 30.0 — 420.8 / 39.5

(8.8) 411.2 / 63.0 — 418.2 / 0.0 — 417.2 / 44.0 — 415.4 / 53.0

(13.0) 374.1 / 196.7 — (8.6) 378.5 / 155.5 — (9.6) 389.7 / 100.0 — (4.0) 395.3 / 60.0 — 397.7 / 0.0 — (4.1) 396.5 / 67.0 — 376.0 / 160.0 — (8.6) 368.5 / 190.25

Approx. intersection of Slopes on both dams.

This will overlap Fill of So. Dam

Top 36" W.S. Pipe — Grd. Elev.

(7.0) 358.5 / 243.5 — (7.1) 358.4 / 200.0 — (2.1) 363.4 / 100.0 — 366.1 / 50.0 — 365.5 / 0.0 — (7.2) 358.3 / 57.0 — (3.9) 361.6 / 100.0 — (7.3) 358.2 / 100.0 — (7.7) 357.8 / 116.0

Top 24" W.S. Pipe

(10.6) 343.4 / 200.0 — (5.5) 335.6 / 282.5

Top 36" W.S. Pipe

(2.0) 352.7 / 207.0 — (5.5) 349.2 / 200.0 — (9.4) 345.3 / 100.0 — 343.1 / 0.0 — (3.2) 341.4 / 58.0 — (8.4) 336.2 / 100.0 — (3.0) 331.5 / 136.0 — (6.4) 328.1 / 165.0

Top 24" W.S. Pipe (5.0) 349.7 / 269.9 — (8.8) 346.4 / 246.5

(13.1) 321.4 / 222.5 — (11.3) 323.2 / 240.0 — (12.0) 322.5 / 315.25

(2.5) 338.1 / 204.7 — 8.1 332.5 / 200.0 — 9.5 331.1 / 100.0 — 329.7 / 0.0 — 11.8 328.8 / 14.0 — 10.5 330.1 / 33.0 — 12.0 328.6 / 100.0 — 15.6 325.0 / 161.0

10.5 330.1 / 200.0 — 334.0 / 250.0 — 7.6 333.0 / 289.0

"A" Line = West Dam.

7+00	5.67	348.51		342.84
6+00	6.34	359.43		353.09
5+00	6.06	375.81		369.75
4+00	3.37	397.19		393.82
3+00	4.38	414.58		410.20
2+00	5.30	434.22		428.92

Axis ℄

L. or Upstream

R. or Downstream

(5.1)	(4.8)	(4.5)		(7.2)	8.3	8.5
343.4 / 288.8	343.7 / 200.0	344.0 / 100.0	342.8 / 0.0	341.3 / 100.0	340.2 / 200.0	340.0 / 271.5
5.4	5.1	5.3		7.1	7.0	8.4
354.0 / 257.0	354.3 / 200.0	354.1 / 100.0	353.1 / 0.0	352.3 / 100.0	352.4 / 200.0	351.0 / 234.0
7.8	7.1	5.7		5.4	7.5	
368.0 / 215.0	368.7 / 200.0	370.1 / 100.0	369.8 / 0.0	370.4 / 100.0	368.3 / 190.75	
	7.2	4.9		5.3	2.8	
	190.0 / 149.0	397.3 / 100.0	393.8 / 0.0	391.9 / 100.0	390.4 / 125.5	
		2.3		7.0		66.5
		408.3 / 84.1	410.2 / 0.0	407.6 / 92.5		
		5.6		4.8		
		428.6 / 23.2	428.9 / 0.0	429.4 / 18.0		

"B" Line = South Dam.

9+25	3.20	422.85		419.65	
9+00	3.67	421.19		417.52	
8+00	2.66	412.50		409.84	
7+00	1.92	401.54		399.62	
Upstream	1.20	389.50	13.24		388.20
	0.74	378.57	11.67		377.83
	0.36	366.22	12.71		365.86
7+00 Downstream	2.37	401.99		399.62	
	0.92	390.70	12.21		389.78
6+00 Downstream	1.39	388.00		386.61	
	1.26	376.15	13.11		374.89
Upstream	0.80	387.41		386.61	
	0.19	374.60	13.00		374.41
5+00 Downstream	3.54	397.09		393.55	
	1.17	386.16	12.10		384.99
Upstream	2.92	396.47		393.55	
	0.73	387.48	10.72		386.75

R. or Upstream. | Axis ℄ | L. or Downstream.

419.6 / 0.0 — 408.4 / 70.5

Approx. Intersection of slopes on both Dams

1:2

420.0 / 22.4 — 417.5 / 0.0 — 11.8 409.4 / 68.0

13.5 399.0 / 112.0 — 11.6 401.0 / 100.0 — 6.1 406.4 / 53.0 — 409.8 / 0.0 — 3.1 409.4 / 37.0 — 14.0 398.5 / 105.125

14.2 364.4 / 200.0 — 9.8 379.7 / 100.0 — 7.2 394.3 / 42.0 — 399.6 / 0.0 — 4.1 397.9 / 38.0 — 12.2 389.8 / 92.0 — 11.3 379.4 / 150.0

7.5 358.7 / 242.9 — 13.2 377.5 / 157.75

Fence

7.5 378.1 / 140.5 — 9.4 368.0 / 100.0 — 5.5 381.9 / 74.0 — 386.61 / 0.0 — 2.6 385.4 / 45.0 — 7.0 381.0 / 100.0 — 13.4 374.6 / 151.0

10.3 364.3 / 226.1 — 8.6 366.0 / 200.0 — 371 / 168.0 — 7.2 369.9 / 186.0 — 366.3 / 195.75

← 7+09 Pipe Line Survey. 26' from bottom drain

10.7 380.3 / 178.1 — 5.3 391.2 / 100.0 — 1.2 395.3 / 31.0 — 393.6 / 0.0 — 10.7 386.4 / 100.0 — 381.0 / 149.0

= 8+11 Pipe Line Survey

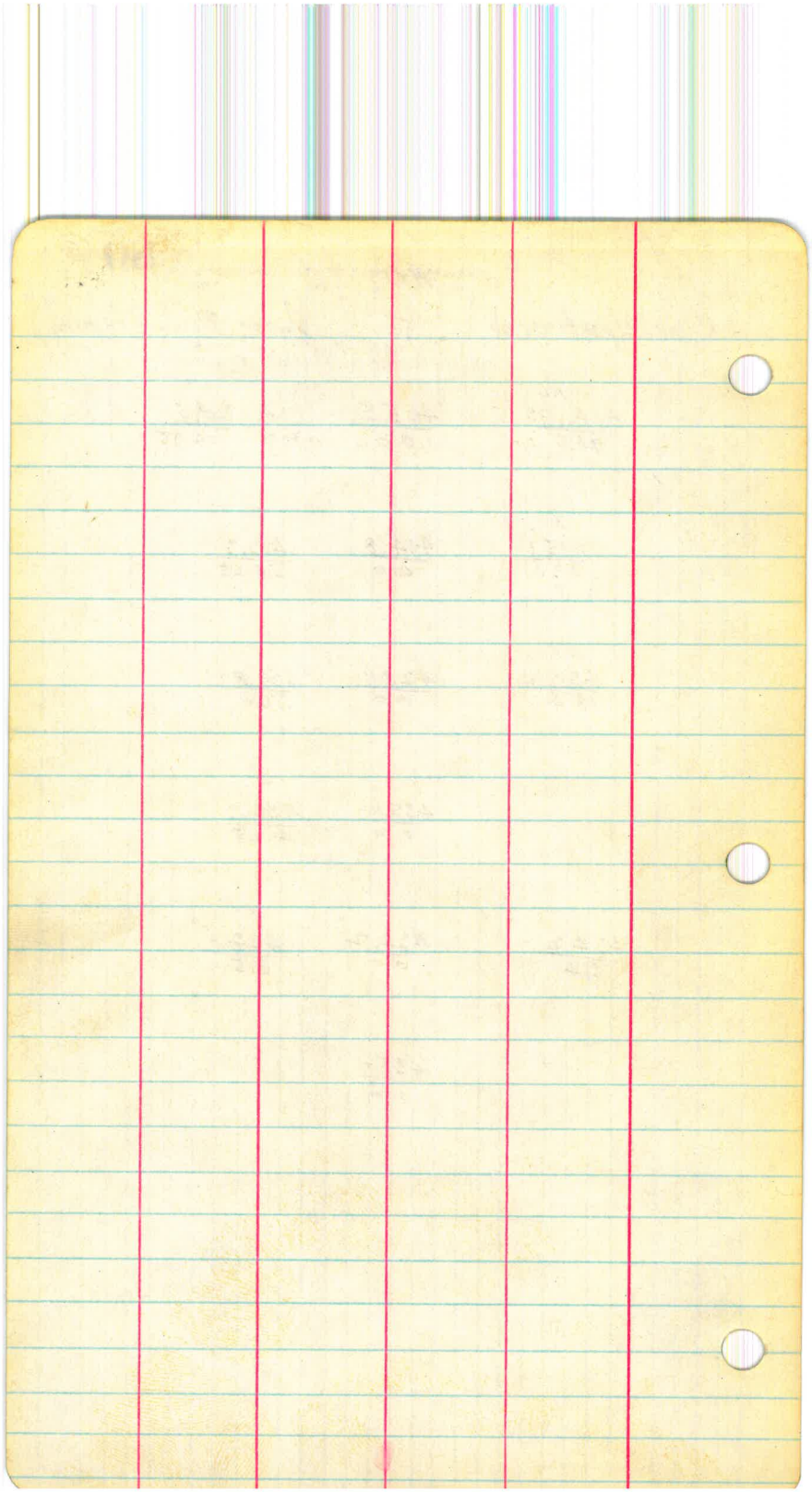
Fence → 182.5

"B" Line = South Dam.

4+00	0.97	406.44		405.47
3+00	3.43	418.28		414.85
2+00	5.73	434.62		428.89
1+00	2.80	437.95		435.15
0+57				
0+49				

Axis

R. or Upstream	℄	L. or Downstream
1.6 404.8 94.6	405.5 0.0	3.0 403.4 72.0
		6.9 399.5 102.75
3.0 415.3 63.1	414.8 0.0	5.0 413.3 58.25
4.4 430.7 18.4	428.9 0.0	6.8 427.8 22.0
	435.2 0.0	3.1 434.9 4.25
3.8 434.2 6.4	434.2 0.0	4.0 434.0 6.5
	435.0 0.0	



Riverview
Bench Marks on Protective
Concrete Well Casings or Pit
Walls. Riverview Pumping
Project
Jan. 14. 1929.
Converse
Elliott
Simpson
Pages 1-3

				U.S.G.S. Elev. →	
B.M.				378.06	
	2.57	380.63			
T.P.			12.04	368.59	
	5.28	373.87			
Set B.M. #11			2.09	371.78	370.2
Set B.M. #15			3.42	370.45	370.5
Set B.M. #2			1.42	372.45	372.2
B.M #15	6.13	376.58		370.45	
T.P.			3.46	373.12	
	9.69	382.81			
Set B.M. #1			6.35	376.46	377.5
B.M. #2	7.61	380.06		372.45	
Set B.M. #6			3.98	376.08	376.0
	5.04	381.12			
Set B.M. #5			8.43	372.69	372.5
	5.57	378.26			
T.P.			3.64	374.62	
	7.65	382.27			
Set B.M. #McNeil.			7.68	374.59	373.0 River
T.P.	2.80	377.42		374.62	
Set B.M. #16 Neil.			10.24	367.18	370.4

(2)

(Riverview)
Bolt in N.E. Cor. of Conc. Valve Box in Front of Lake View Pump. Plant

Point Chiseled in W. Cor of Conc. Curb of Well #11 ✓

50' South = Elev. 370.1 S. W. " " " " " #15 ✓

" " " S. W. " " " " " " #2 ✓

" " " " " " " " " " #15 ✓

Point Chiseled in W. Edge of top of Pit Well #1 ✓
Elev. 373.1 - 100' North

Point Chiseled in S.W. Cor of Conc Curb of Well #2 ✓

Point Chiseled in N.W. Cor of Conc. Curb of Well #6 ✓

" " " W. " " " " " " #5 ✓

Hub at Pipe Intersection

N. Side Steel Casing of New Well on E. Line City Property
Elev. 376.6 50' S.E. ground

Hub at Pipe Intersection.

S. Side 12" Steel Casing New Well.
Elev. 367.0 70' W.

			U.S.G.S. Elev. →		
B.M. #5				372.69 ✓	
	4.16	376.85 ✓			
Set B.M. #7			4.56	372.29 ✓	X 371.5
T.P.			5.67	371.18 ✓	
	2.75	373.93 ✓			
T.P.			5.47	368.46 ✓	
	8.99	377.45 ✓			
Set B.M. #14			5.89	371.56 ✓	370.5
	4.28	375.84 ✓			
Set B.M. #3			5.57	370.27 ✓	
Set B.M. #10			3.80	372.04 ✓	369.8
T.P.			4.70	371.14 ✓	
	1.78	372.92 ✓			
Set B.M. #9			3.68	369.24 ✓	367.1
B.M. #3.				370.27 ✓	368.7
	1.44	371.71 ✓			
Set B.M. #13			5.40	366.31 ✓	365.8
T.P			7.56	364.15 ✓	
	6.92	371.07 ✓			
Set B.M.			4.61	366.46 ✓	
T.P			4.60	366.47 ✓	
	6.39	372.86 ✓			
Set B.M. #12			3.47	369.39 ✓	368.0

Point Chiseled in W. Cor. of Conc. Curb of Well #5 ✓

Spike in Power Pole in Conc. Curb S.W. Cor. Well #7 ✓

Point Chiseled in N. W. Cor. Conc. Curb of Well # 14 ✓

Point Chiseled in N. Cor Conc Curb of Well #3 ✓
Top of Bolt S.E. Side Conc. Curb of Well #10 ✓

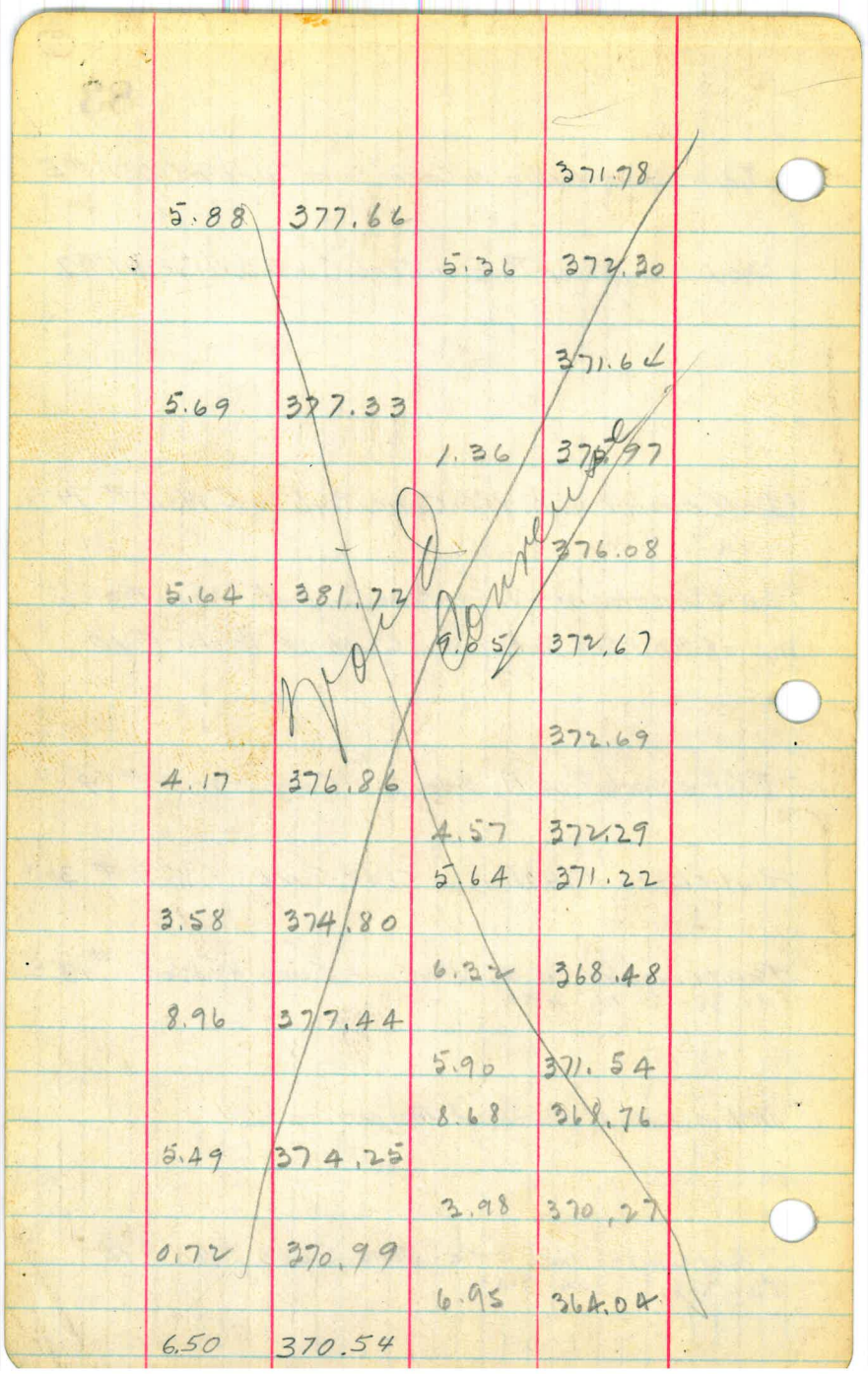
Point chiseled in N. Side Conc. Curb of Well # 9 ✓

Point chiseled in N. Cor Conc Curb of Well # 3 ✓

Point chiseled in S. W. Cor Conc. Curb. of Well #13 ✓
Elev. 362.5 - 100' South

Nail in hub 5' South of Recording Well

Point Chiseled in W. Side Conc. Curb Well # 12
Elev. 366.8 - 325' South


371.78
5.88 377.66
5.36 372.30
371.62
5.69 377.33
1.36 370.97
376.08
5.64 381.72
9.05 372.67
372.69
4.17 376.86
4.57 372.29
5.64 371.22
3.58 374.80
6.32 368.48
8.96 377.44
5.90 371.54
8.68 368.76
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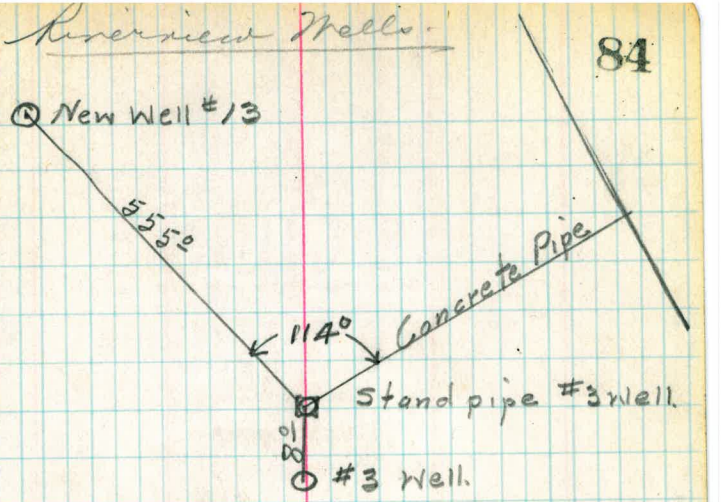
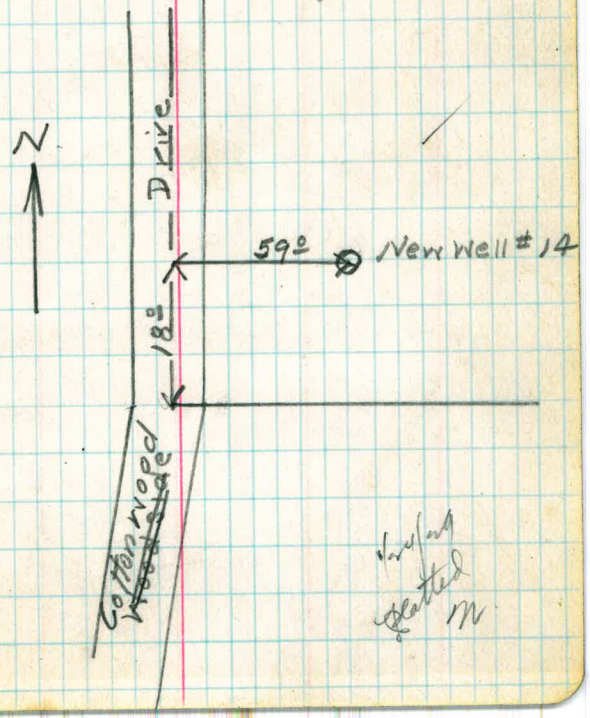
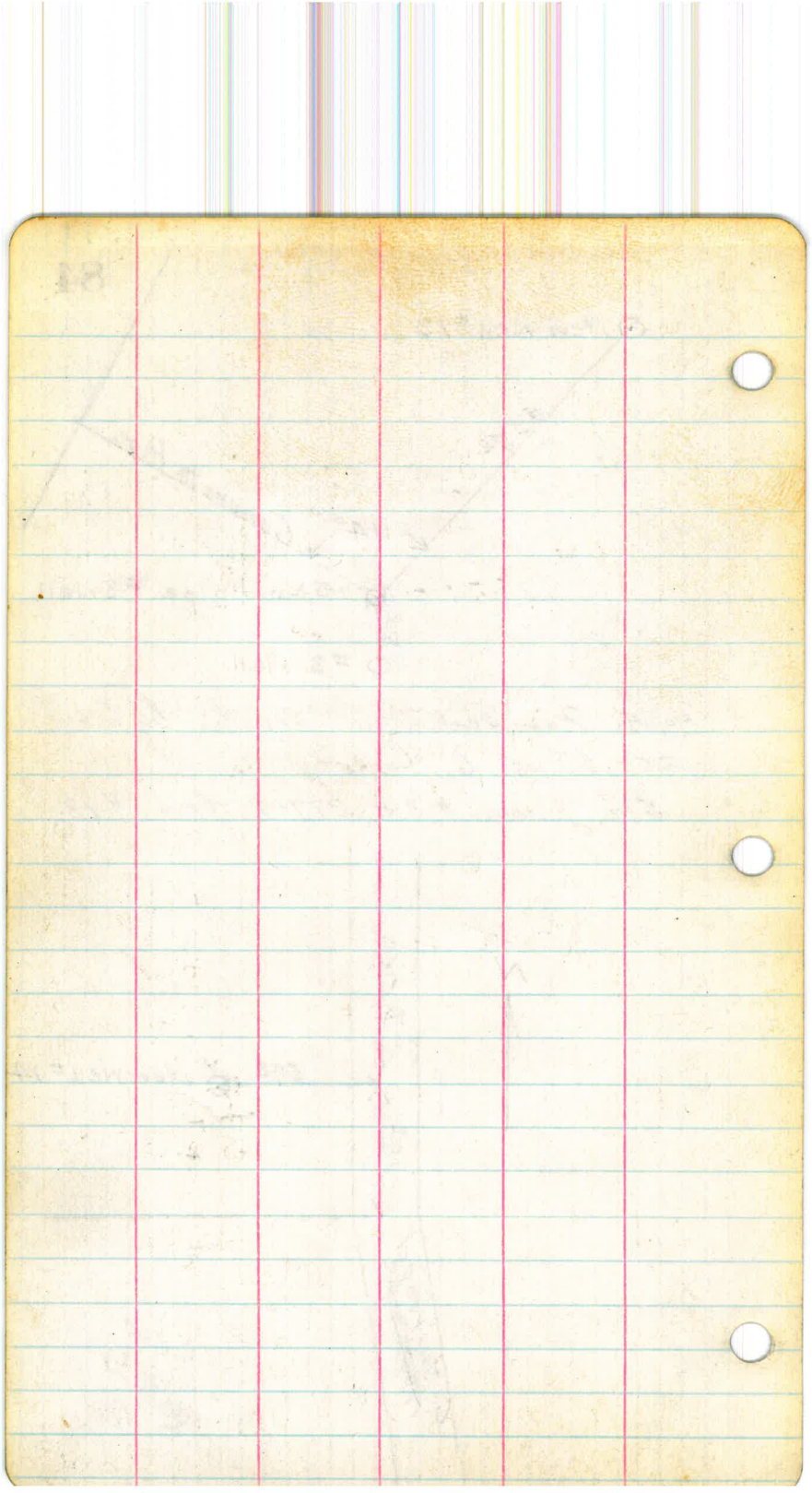
3.98 370.27
0.72 370.99
6.95 364.04
6.50 370.54

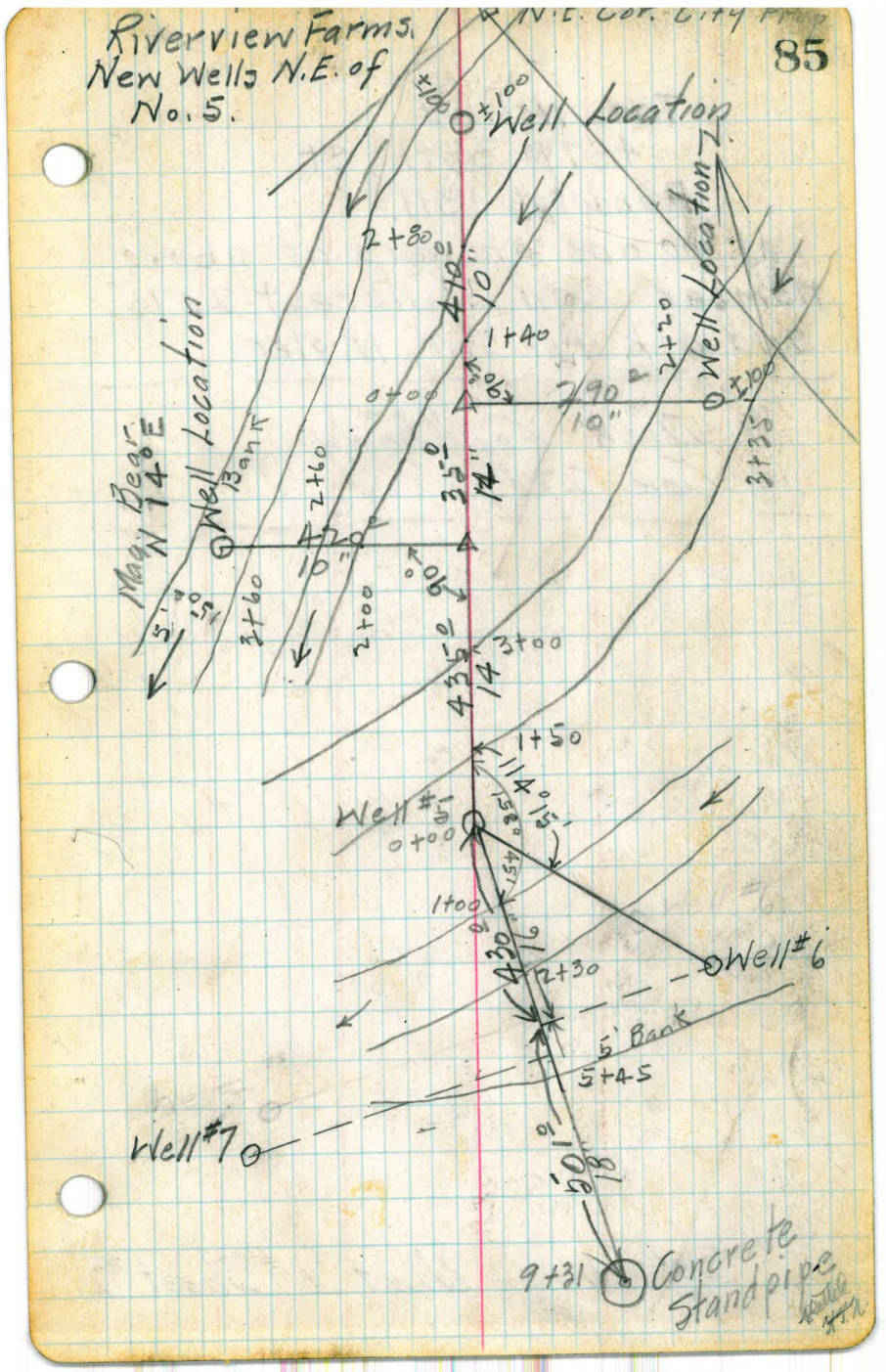


3/4/29- New Test Well Located by Clark.
25'-5" of 6" Casing.
510' from #3 & 377'-8" from #13.





Riverview Farms.
New Wells N.E. of
No. 5.

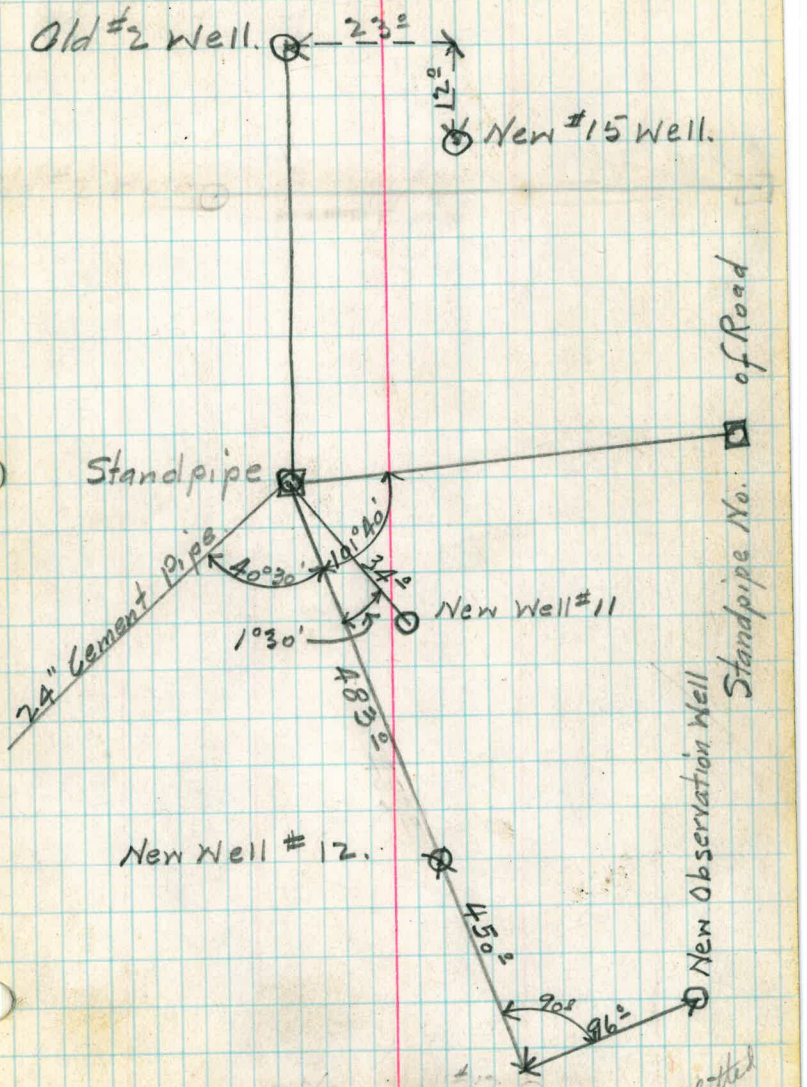


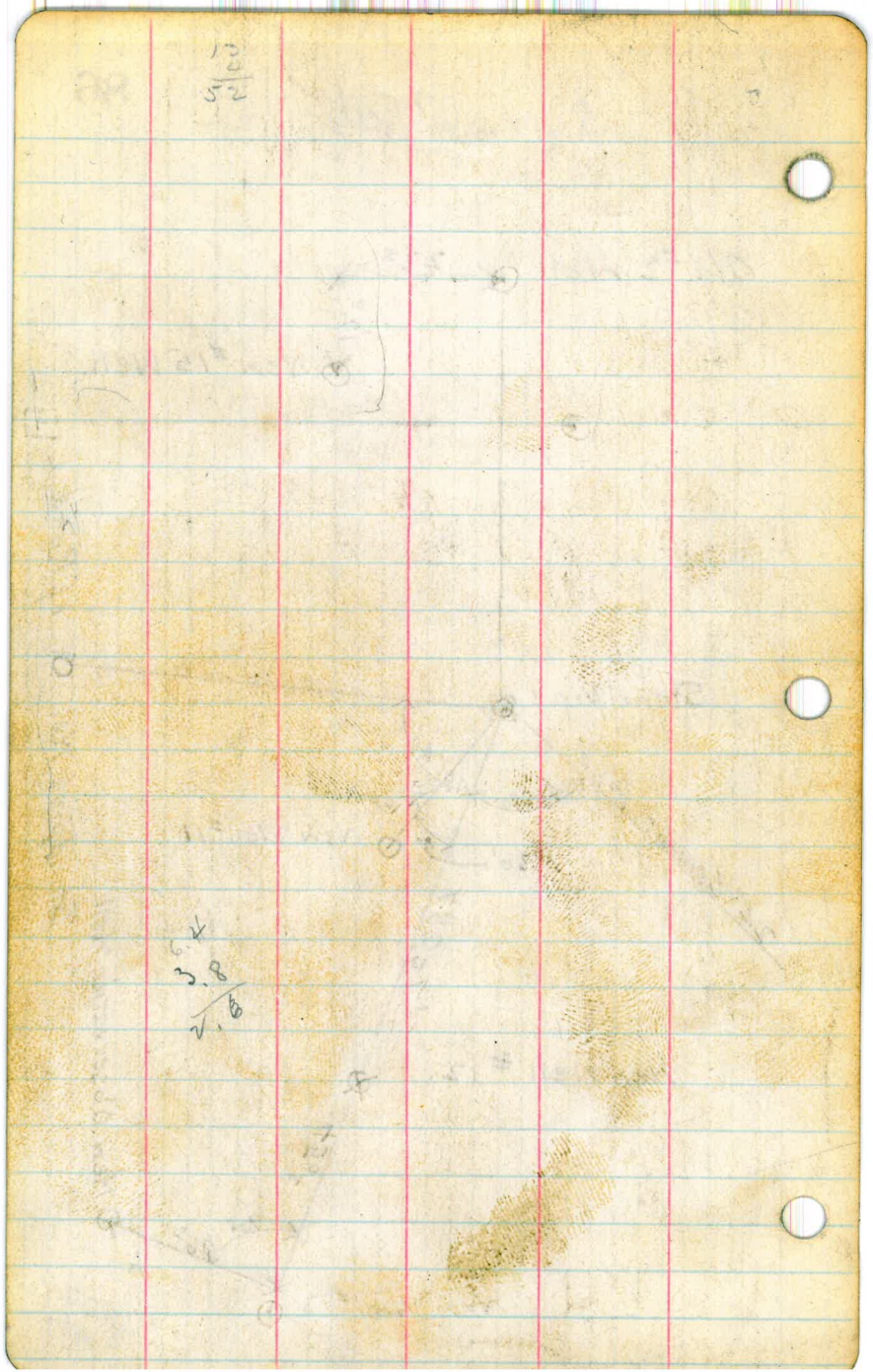
Tom Noland
4377 39th St.
Randolph 1311.
If no one answers at above number call Hillcrest 2076 and ask for Mr. Meier.

Dick Goodbody.
Cor. 278.

Del Dios Unit #1. Sheet #2.

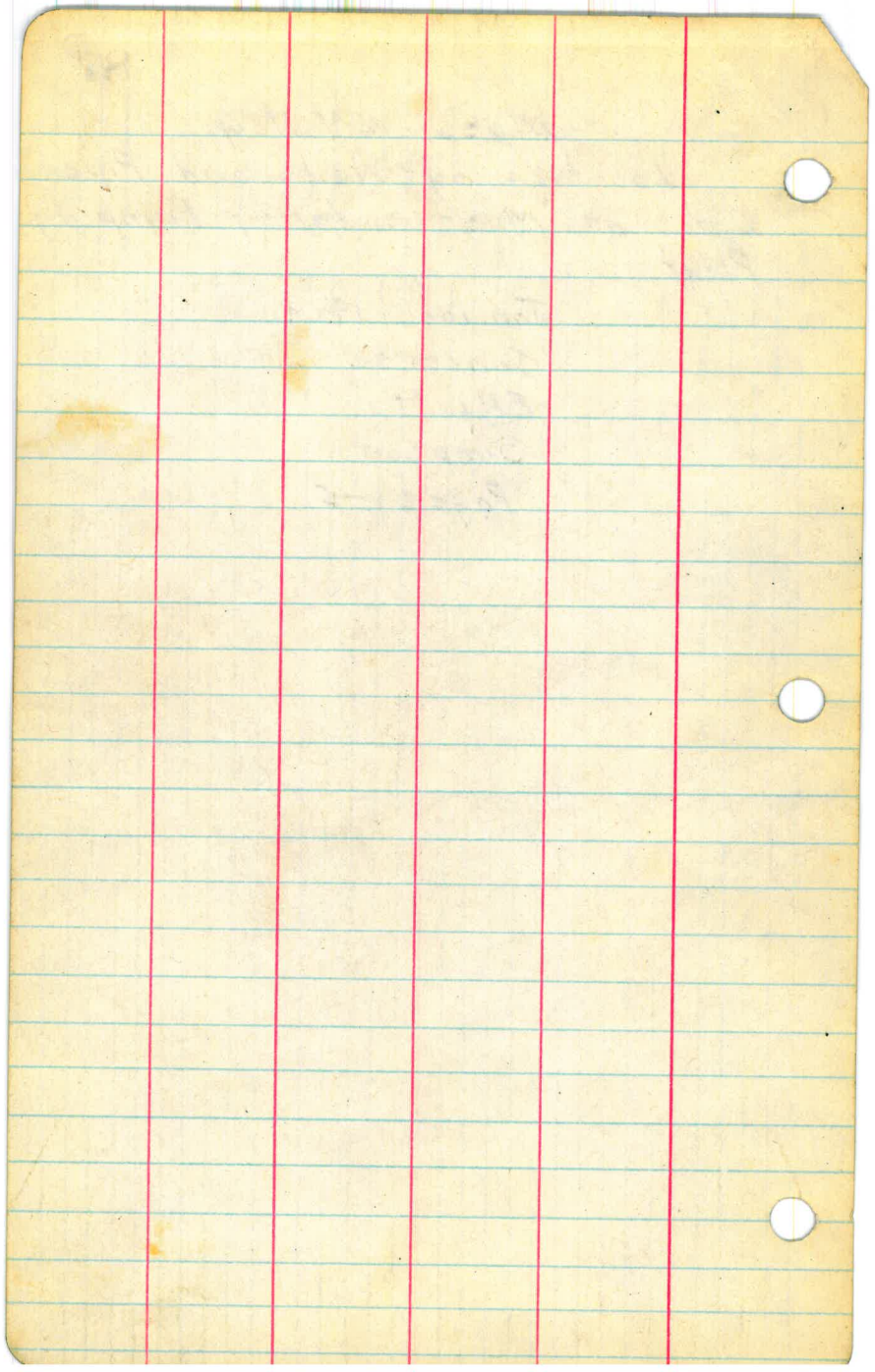
Riverview Wells

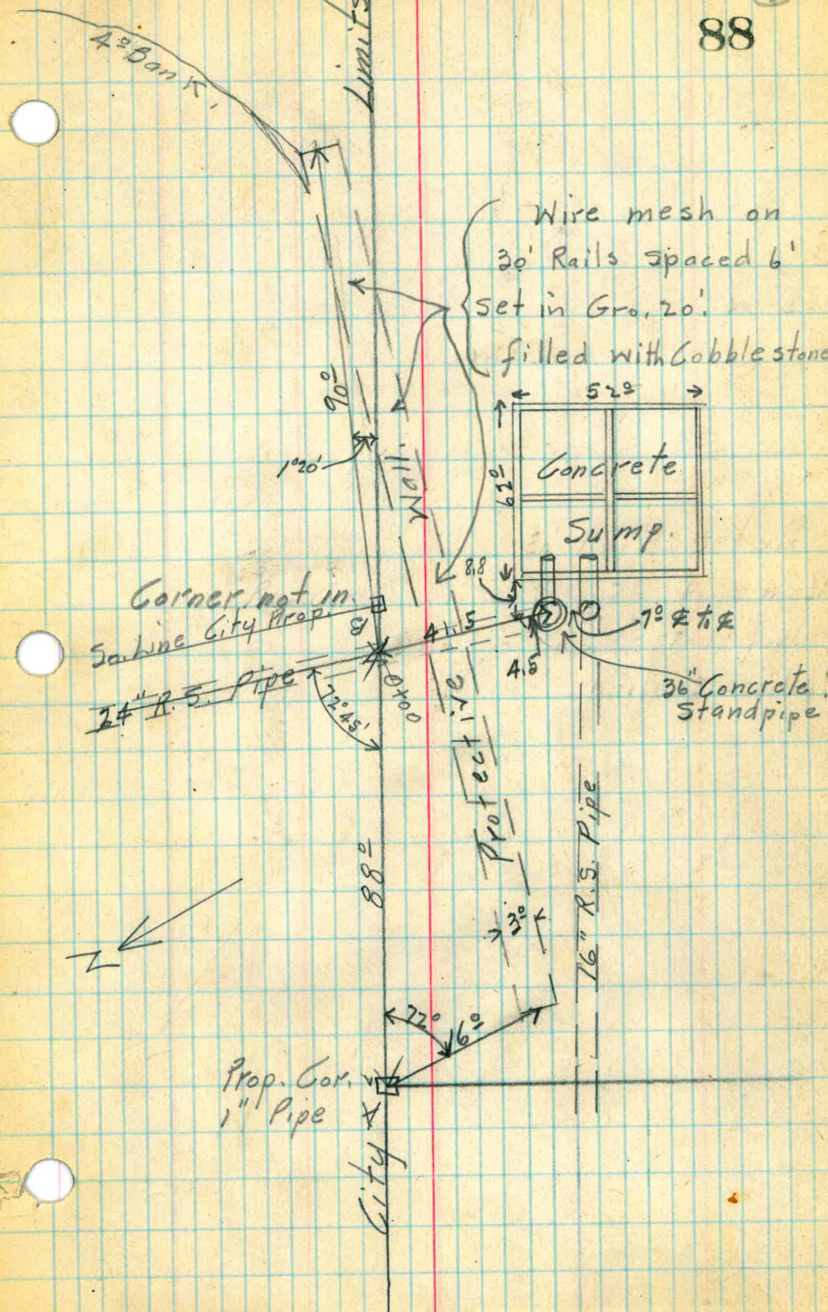


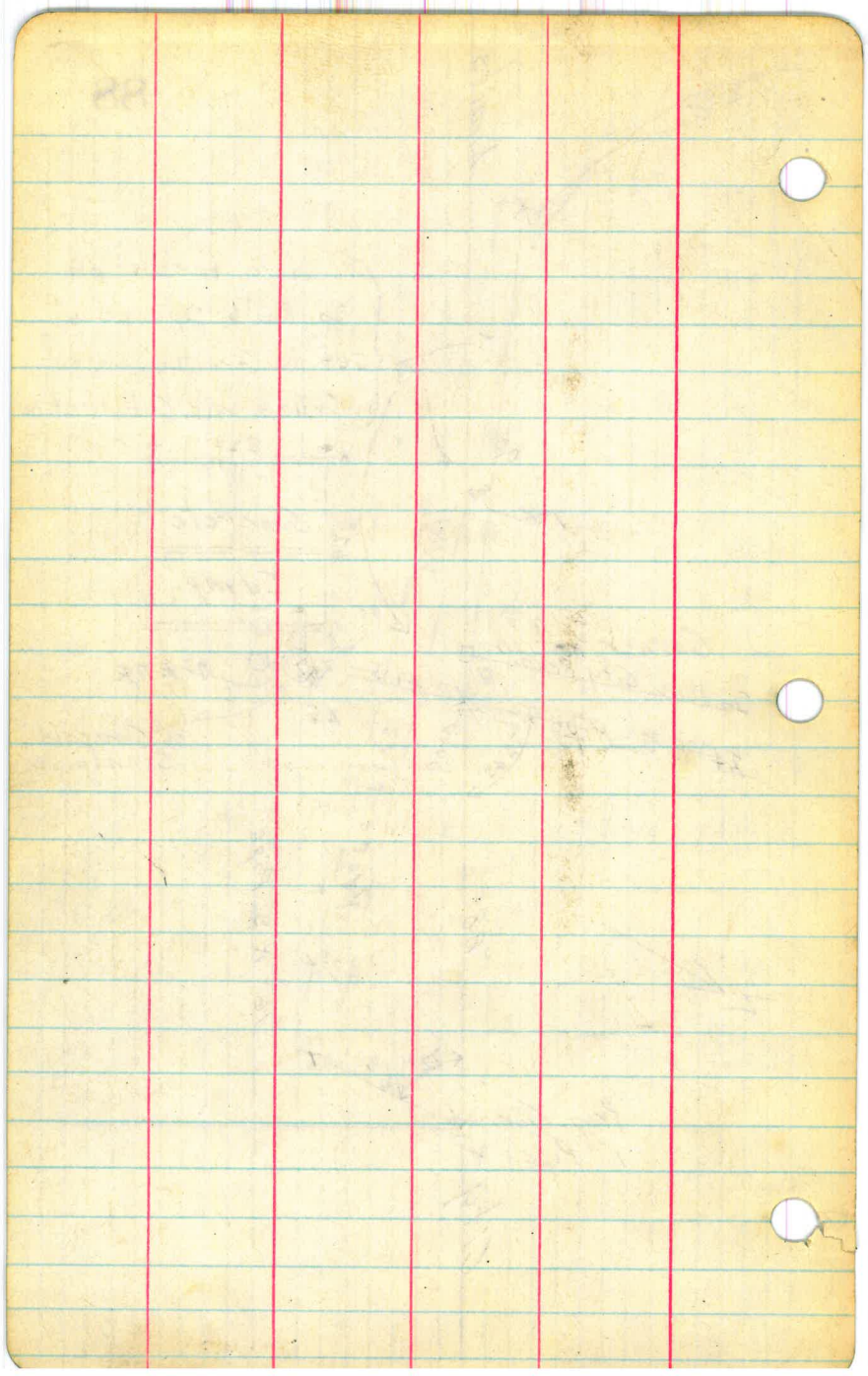


Mission Valley.
Location of Wells and Pipe Lines of Mission Valley Pumping Plant.

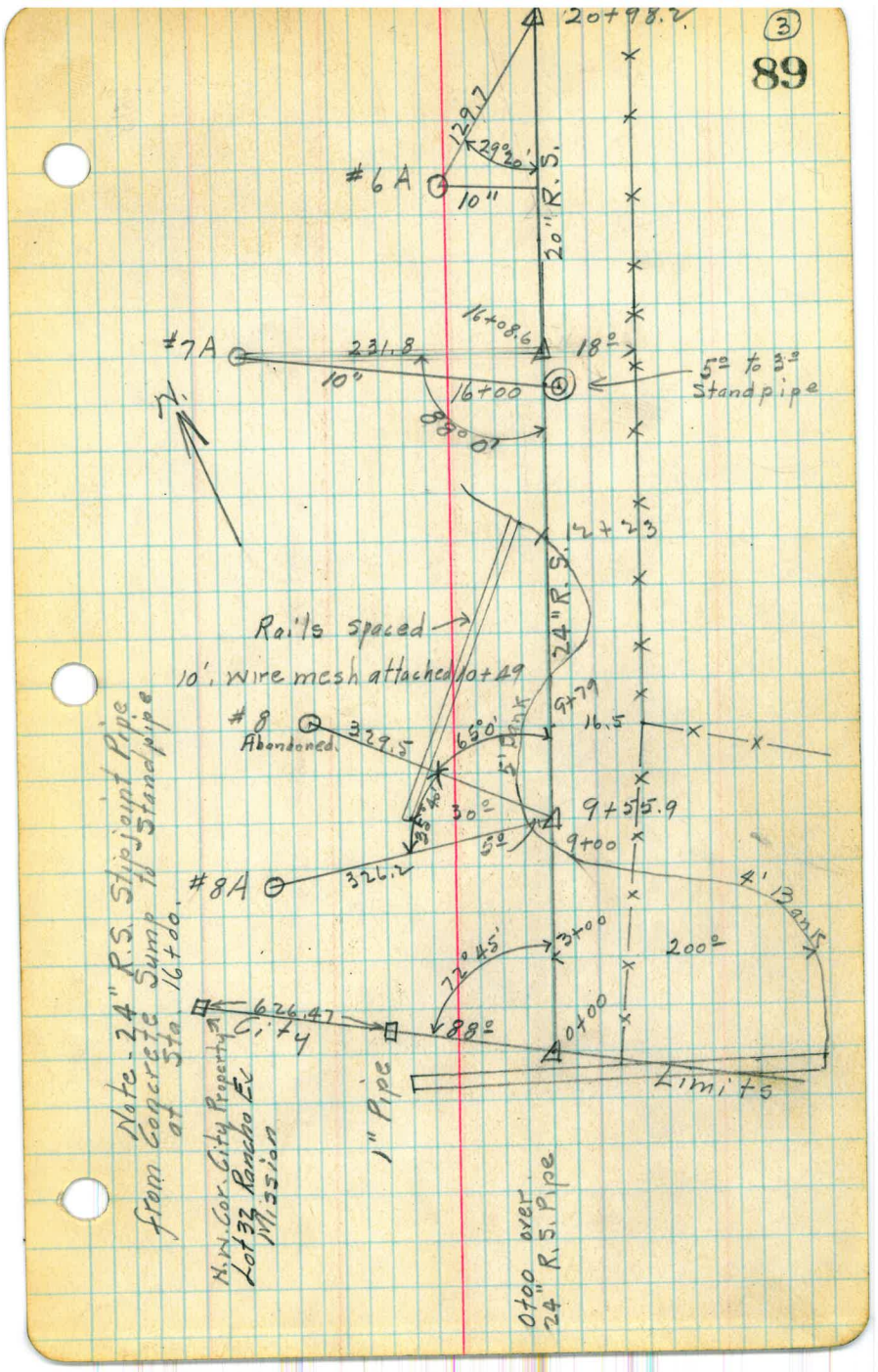
Jan. 10-11. 1929.
Converse
Elliott
Simpson
Pages 1-5.

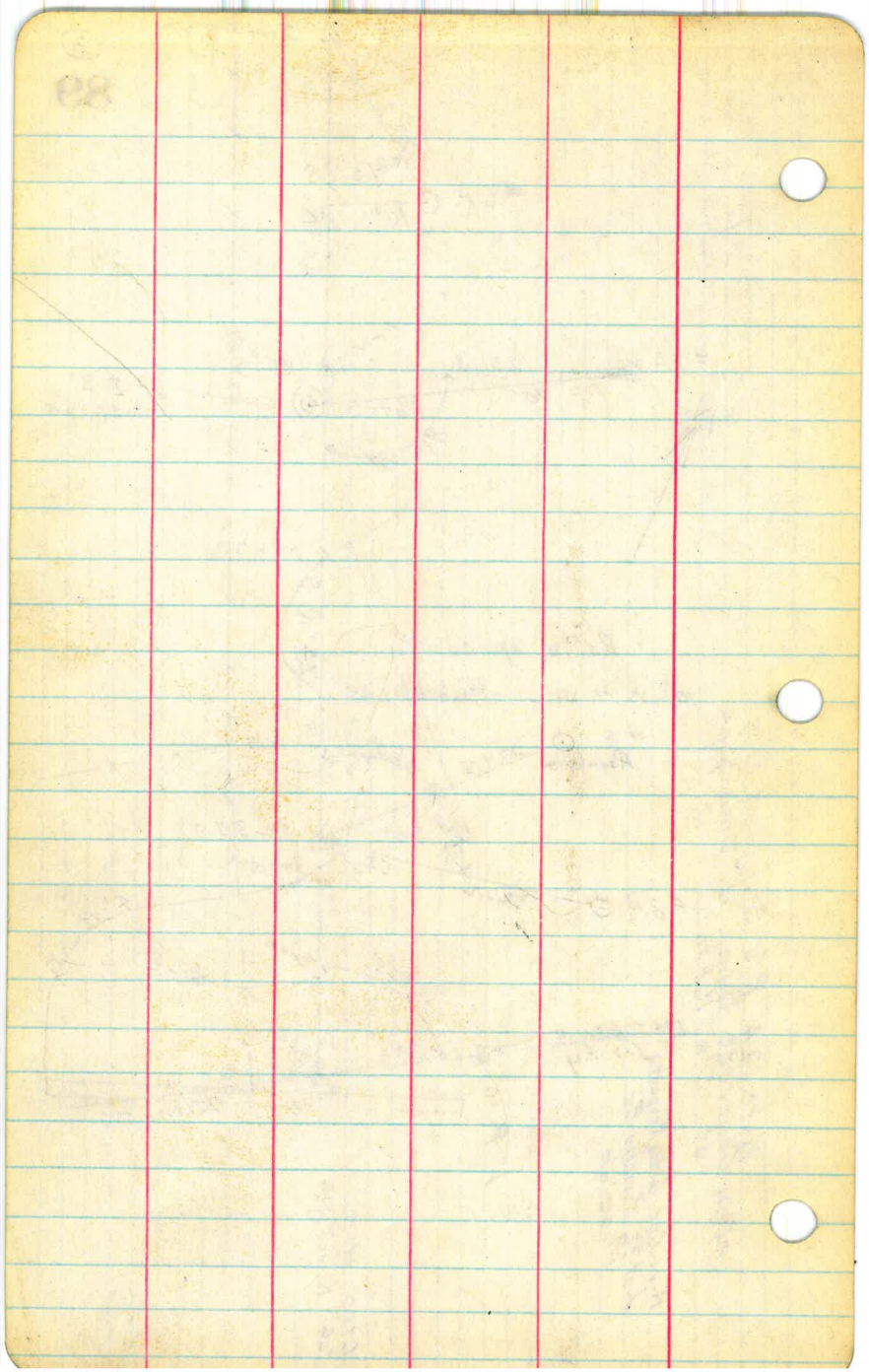


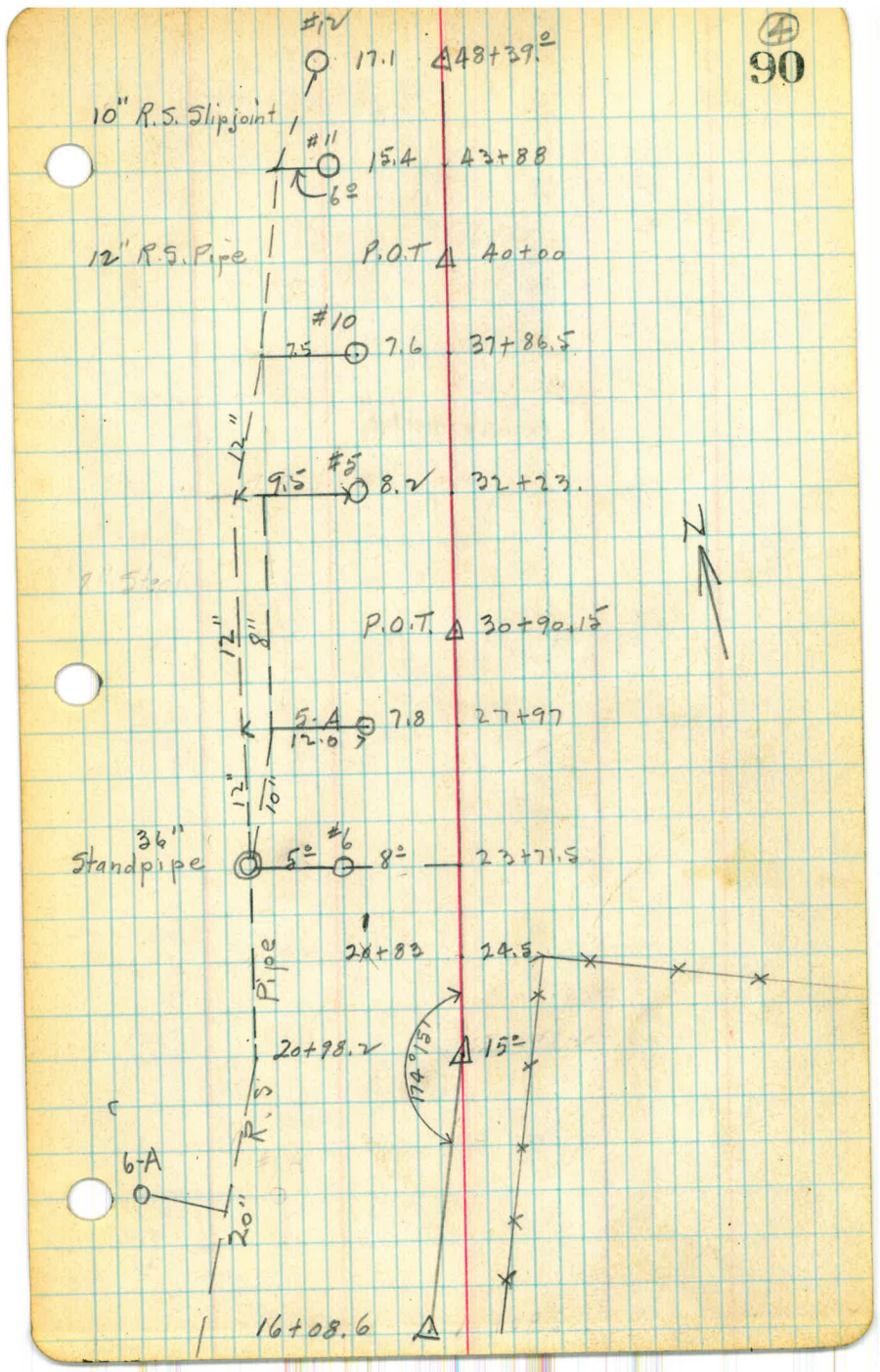

4' Bank
Limits
Wire mesh on
30' Rails spaced 6'
set in Gro. 20'
filled with Cobblestone
52'
Concrete
Sump.
62'
90'
1°20'
Wall
8.8
Corner not in
So. Line City Prop.
8
4.5
4.5
7' ¢ to ¢
36" Concrete
Standpipe
24" R.S. Pipe
72°45'
0+00
Protective
88'
3'
16" R.S. Pipe
N
72°
6'
Prop. Cor.
1" Pipe
City



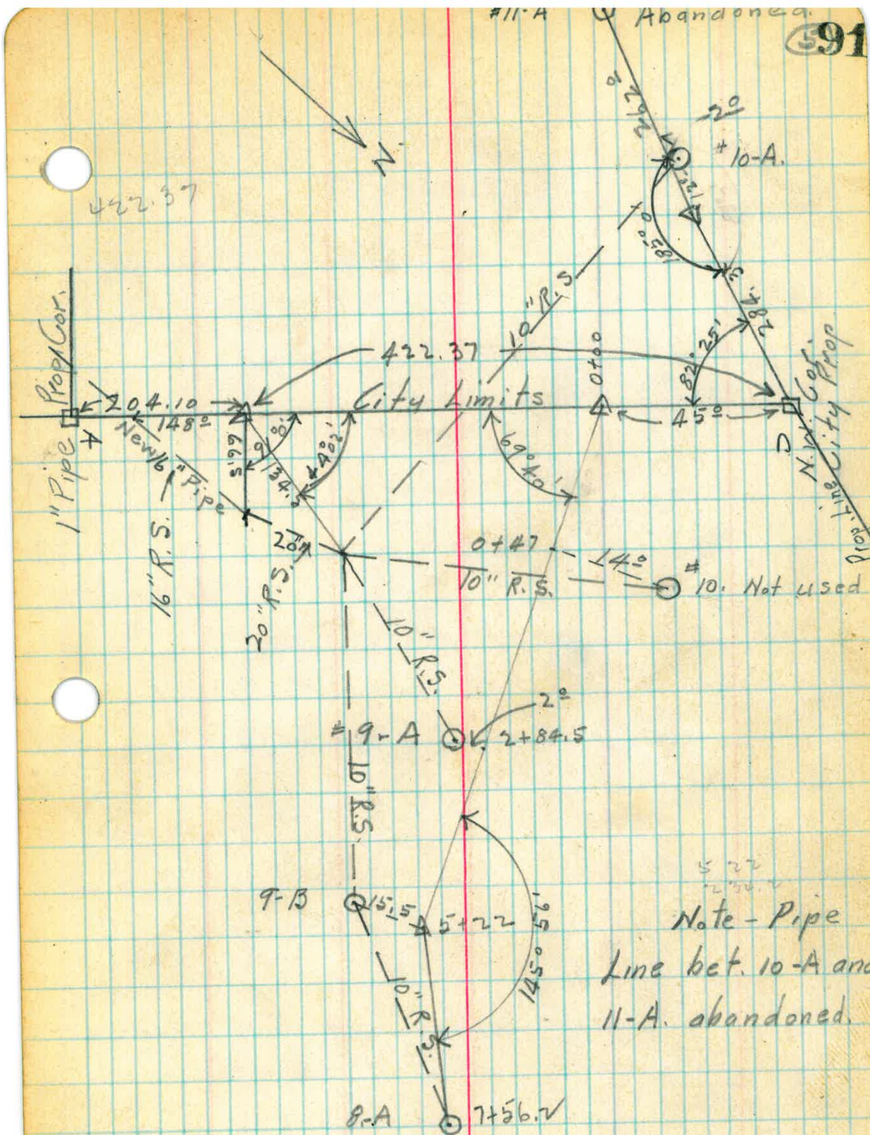
89


20+98.2
#6A
129.7
29° 30'
R.S.
10"
20"
16+08.6
#7A
231.8
18°
10°
16+00
5" to 3" Standpipe
88° 07'
N.
12+23
Rails spaced
10', wire mesh attached
10+49
24" R.S.
9+79
#8 Abandoned
329.5
65° 0'
16.5
2' Bank
30°
9+55.9
9+00
#8A
326.2
4' Bank
3+00
200'
72° 45'
676.47
88°
0+00
Limits
1" Pipe
0+00 over 24" R.S. Pipe
Note-24" R.S. Slip joint Pipe from Concrete Sump to Standpipe at Sta. 16+00.
N.W. Cor. City Property Lot 33 Rancho La Ballona

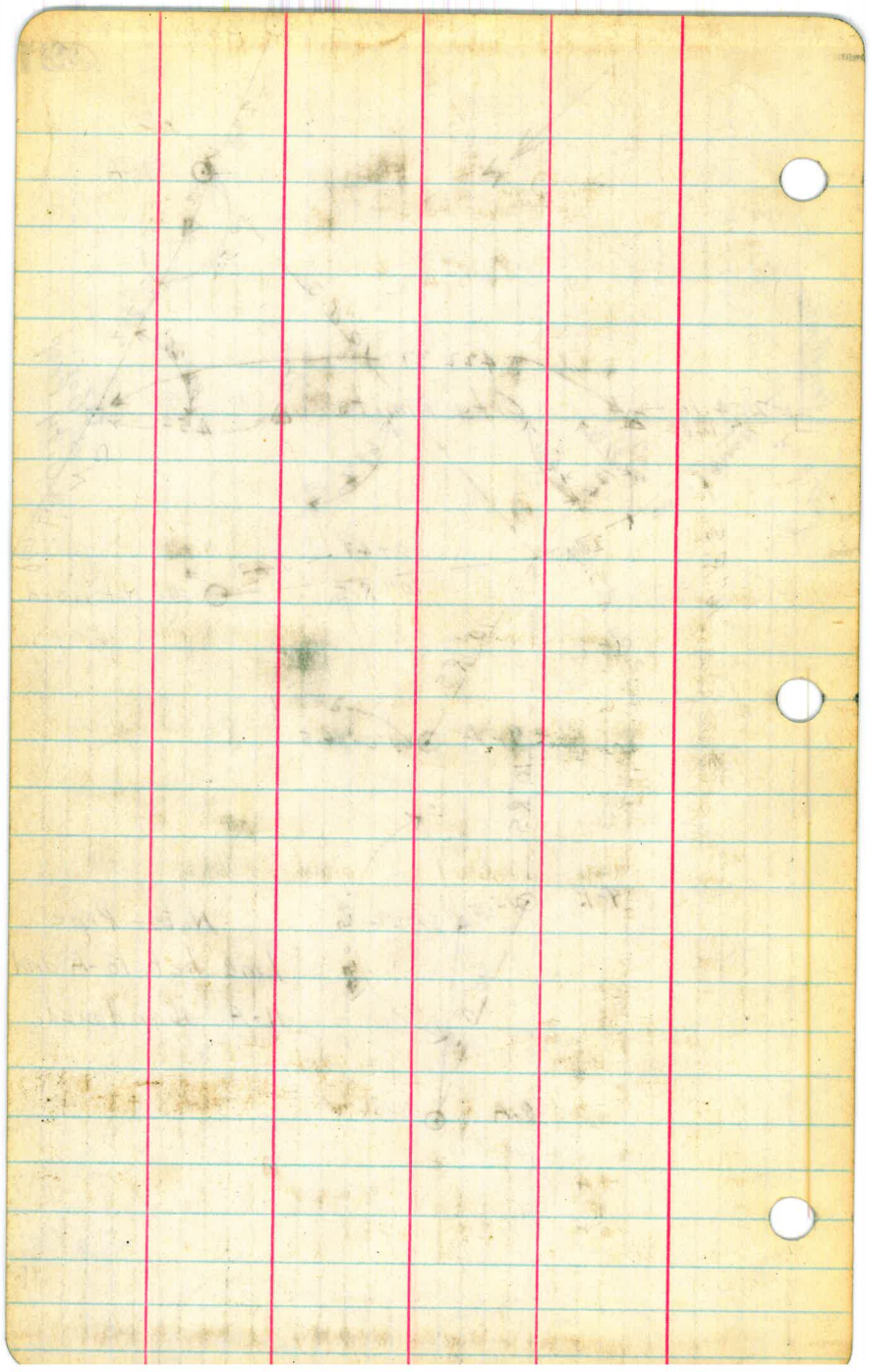



#12
17.1
48+39.2
10" R.S. Slipjoint
#11
15.4
43+88
6°
12" R.S. Pipe
P.O.T. 40+00
#10
7.5
7.6
37+86.5
12"
9.5
#9
8.2
32+23.
N
12"
8"
P.O.T. 30+90.15
5-A
12.0
7.8
27+97
12"
10"
36"
Standpipe
5°
#6
8°
23+71.5
24+83
24.5
P.I. 0°
20+98.2
15°
174°05'
6-A
20°
16+08.6

626.47
557.05
69.47



Note - Pipe Line bet. 10-A and 11-A abandoned.



Mission Valley.
Bench Marks on Protective Concrete Well Casings or Pit Walls. Mission Valley Pumping Plant.

Jan. 11. 1929.
Converse
Elliott
Simpson
Pages 1-3

Note: Corrected in Ref to U.S.G.S. Elev. by applying +6.12 to City Elev.

B.M.				59.57 ~~53.45~~	U.S.G.S. ?
	0.42	53.87 ✓			
T.P.			11.41	42.46 ✓	
	1.81	44.27 ✓			
T.P.			5.22	39.05 ✓	
	7.25	46.30 ✓			
Set B.M. 10A			6.13	46.29 ✓ ~~40.17~~	45.7
	6.13	46.30 ✓			
Set B.M. 9A.			4.50	47.92 ✓ ~~41.80~~	48.2
	2.78	44.58 ✓			
Set B.M. 9B.			3.70	47.00 ✓ ~~40.88~~	45.4
Set B.M. 8A.			7.11	43.59 ✓ ~~37.47~~	43.6
	5.10	42.57 ✓			
T.P.			5.08	37.49 ✓	
	11.66	49.15 ✓			
Set B.M. 7A.			7.42	47.85 ✓ ~~41.73~~	48.1
Set B.M 6A			4.68	50.59 ✓ ~~44.47~~	50.9
	6.47	50.94 ✓			
Set B.M *6			6.14	50.92 ✓ ~~44.80~~	52.5
T.P.			4.40	46.54 ✓	
	6.21	52.75 ✓			
Set B.M. 5A			7.37	51.50 ✓ ~~45.38~~	53.1
T.P.			4.17	48.58 ✓	
	5.02	53.60 ✓			
Set B.M. #5			6.28	53.44 ✓ ~~47.32~~	54.6

Brass Plug in Ret. Wall at Mission Valley
53.45 = City Datum. Pumping Plant.

Elev. 40.7 in Center River Channel on City Line

Point chiseled in S.E. Cor of Conc. Casing-Well #10-A

Point chiseled in N.W. Cor of Conc. Casing-Well #9-A

Point ⊕ chiseled in W. Side Conc. Casing - Well #9-B.

Point chiseled in N. Cor. Conc. Block Well #8-A.
Elev. 42.1 - 100' So. in Main Channel

Elev. 43.3 - 50' North in River Bottom
Point chiseled in E. Side Con. Casing. Well #7-A.
Point chiseled in W. Side Conc. Casing. Well #6-A

Point chiseled in S.E. Side Conc. Casing Well #6

Point chiseled in So. Side Conc. Casing. Well #5-A

Point chiseled in So. Side Conc. Casing Well # 5

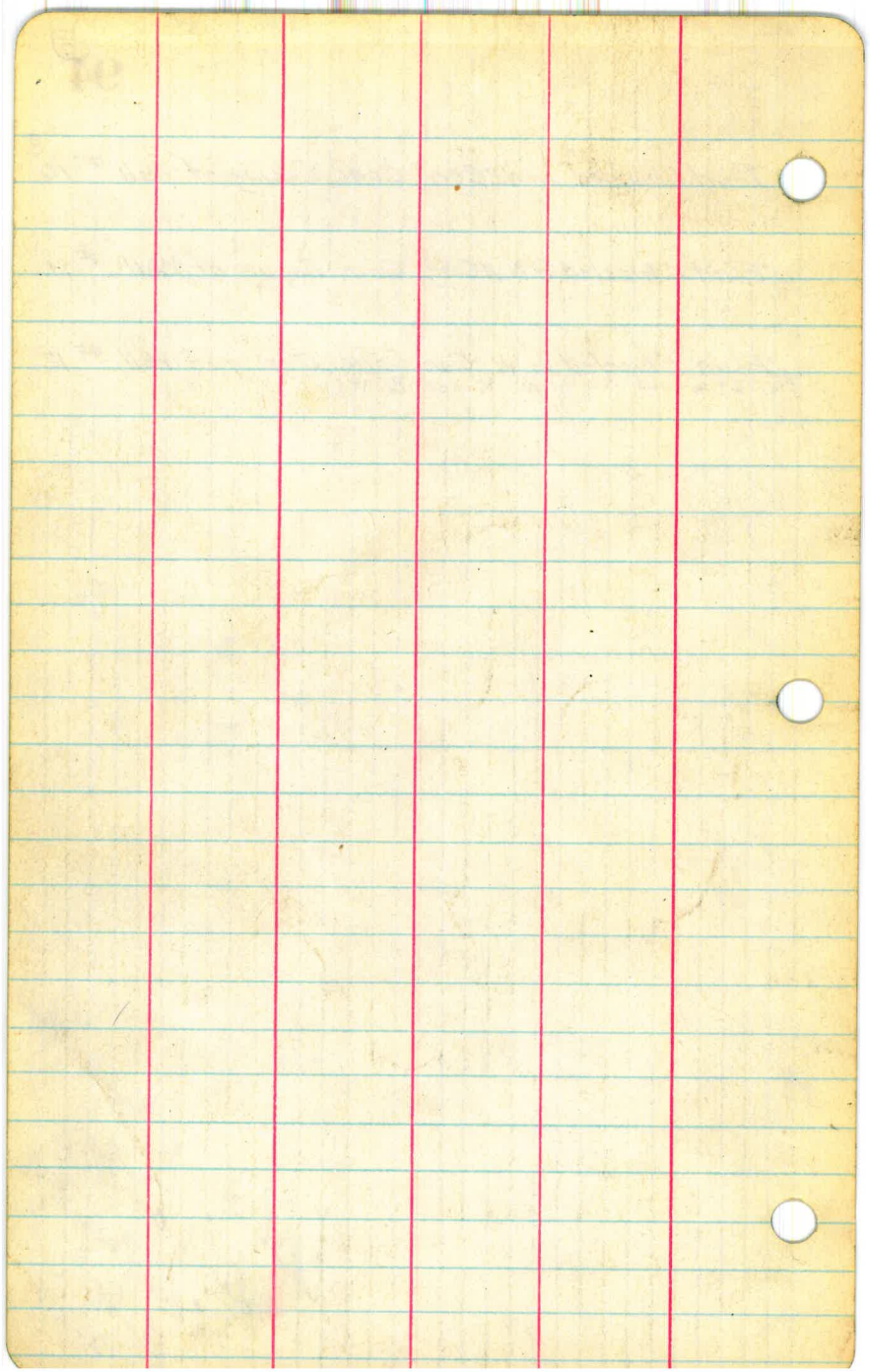
		53.60 ✓			
Set B.M.	*10 B' Changed to 10 B by [illegible]		6.54	53.18 ~~47.06~~	✓ 54.7
	8.86	55.92			
Set B.M.	*11		6.01	56.03 ~~49.91~~	✓ 56.3
	3.86	53.77 ✓			
Set B.M.	*12.		4.52	55.37 ~~49.25~~	✓ 55.4

Point Chiseled in N.E. Cor. Conc. Casing of Well # 10 B.

Point Chiseled in N.W. Cor. Conc. Casing of Well # 11

Point Chiseled in W. Cor. Conc. Casing of Well # 12
Elev. 49.4 - 165' North in River Bottom

Reduction of levels checked
Plotted on map
of San Diego Wells
1/22/29
[illegible]



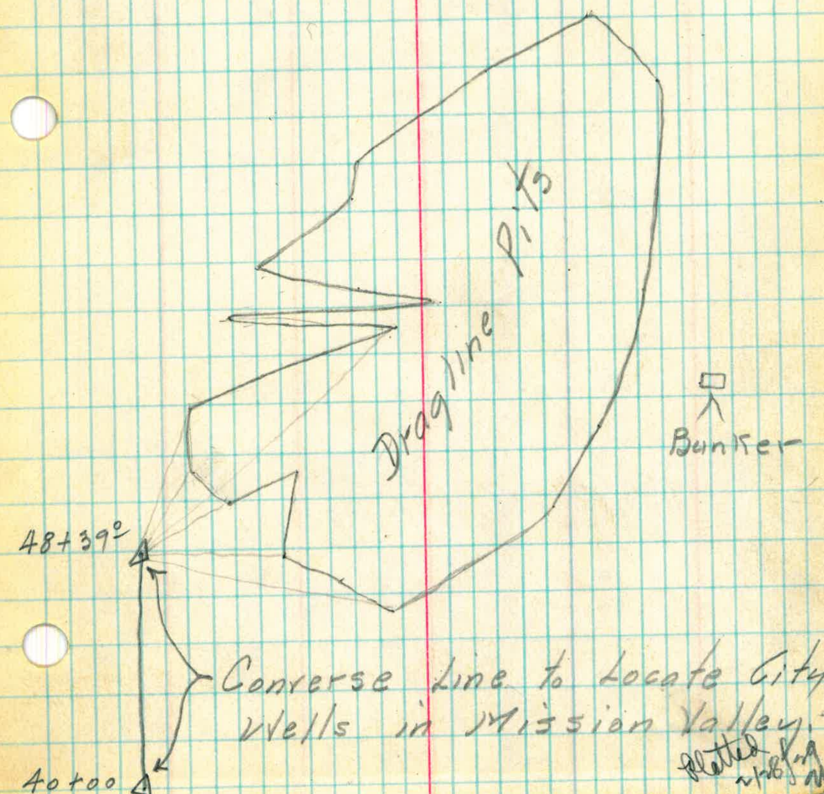
Location of Outside Edge of Dragline Pits at Fentons Sand Bunkers on Land Leased from City in Mission Valley.

Feb. 27. 19-19.
Converse
Elliott
Simpson
Pages 1-2

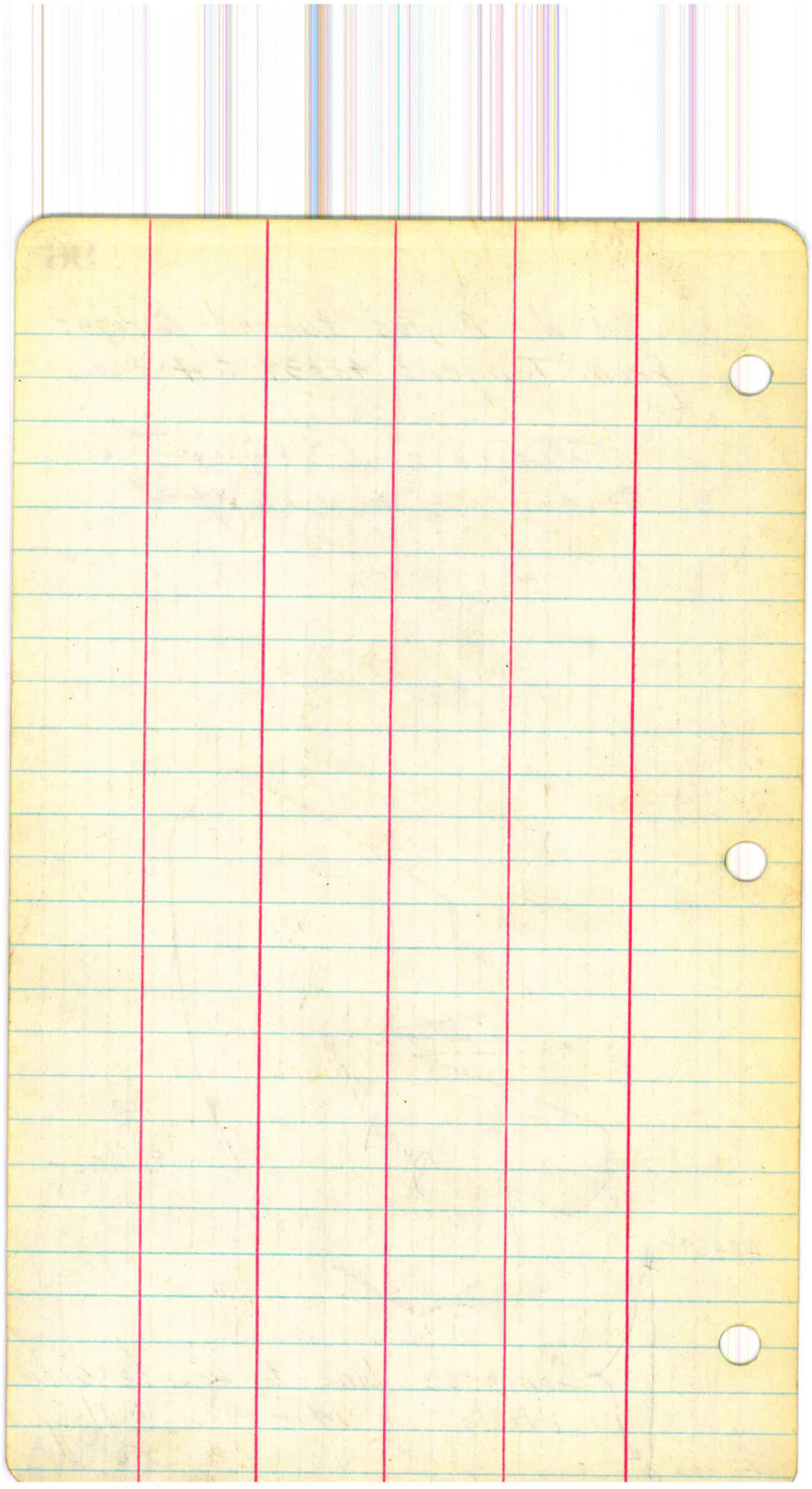
Sta.	Hor. L.	Dist.		
48+39²	⊙ ⊼	FS to 40+00		
40+00				
1	249-10	1.62		
2	243-10	2.32		
3	207-00	1.57		
4	197-30	2.67		
5	228-20	4.27		
6	201-40	3.90		
7	231-10	5.28		
8	204-0	4.52		
9	212-40	5.81		
10	209-40	6.88		
11	215-50	8.75		
12	220-20	10.37		
13	228-0	9.38		
14	241-40	7.80		
15	255-10	8.10		Bunker
16	252-20	6.68		
17	263-20	5.85		
18	285-0	3.86		
19	274-40	3.00		
20	269-50	2.30		

All Hor. Angles turned to right from Tangent 48+39 to 40+00.

~~Stations~~ in Consecutive Order around Pit



Plotted



Lakeside
Bench Marks on Protective
Well Casings or Pit Walls.
Lakeside Pumping Project.

Jan. 17. 1929.
Converse
Elliott
Simpson
Pages 1-3.

Location of New Well on
S. 1/2 Lot #59.

B.M.				395.06	
	2.69	397.75			Nat. Gro.
Set B.M. #1			9.34	388.41	388.4
	3.81	392.22			
Set B.M. #7			5.70	386.52	386.5
	5.70	392.22			River B.M.
Set B.M. #3			7.04	385.18	386.4
	7.04	392.22			
T.P. B.M.			5.70	386.52	
	3.36	389.88			
Set B.M. #4			5.17	384.71	384.4
B.M. #1 Well				388.41	
	6.38	394.79			
Set B.M. #2 Well			3.47	391.32	392.4
B.M.				395.06	
	3.09	398.15			
Set B.M. #5			3.79	394.36	394.4
Set B.M. #6 Well			2.15	396.00	396.0

98

Spike in Power Pole S.E. Cor. Benedict & Maple Sts.

#1 Iron
Point chiseled in N. Cor. Conc. Casing of Well in S.E. Cor. of S. ½ of Lot 59

#7
Point chiseled in W. Cor. Conc. Casing of Well in Center of S ½ of Lot 59

Point ~~chiseled in~~ on S. Side ~~S. Cor Conc.~~ Casing of Well in Center of N ½ of Lot 59

#4
Point chiseled in S Cor. Conc Casing of Well S.W. Cor of the S ½ of Lot 59

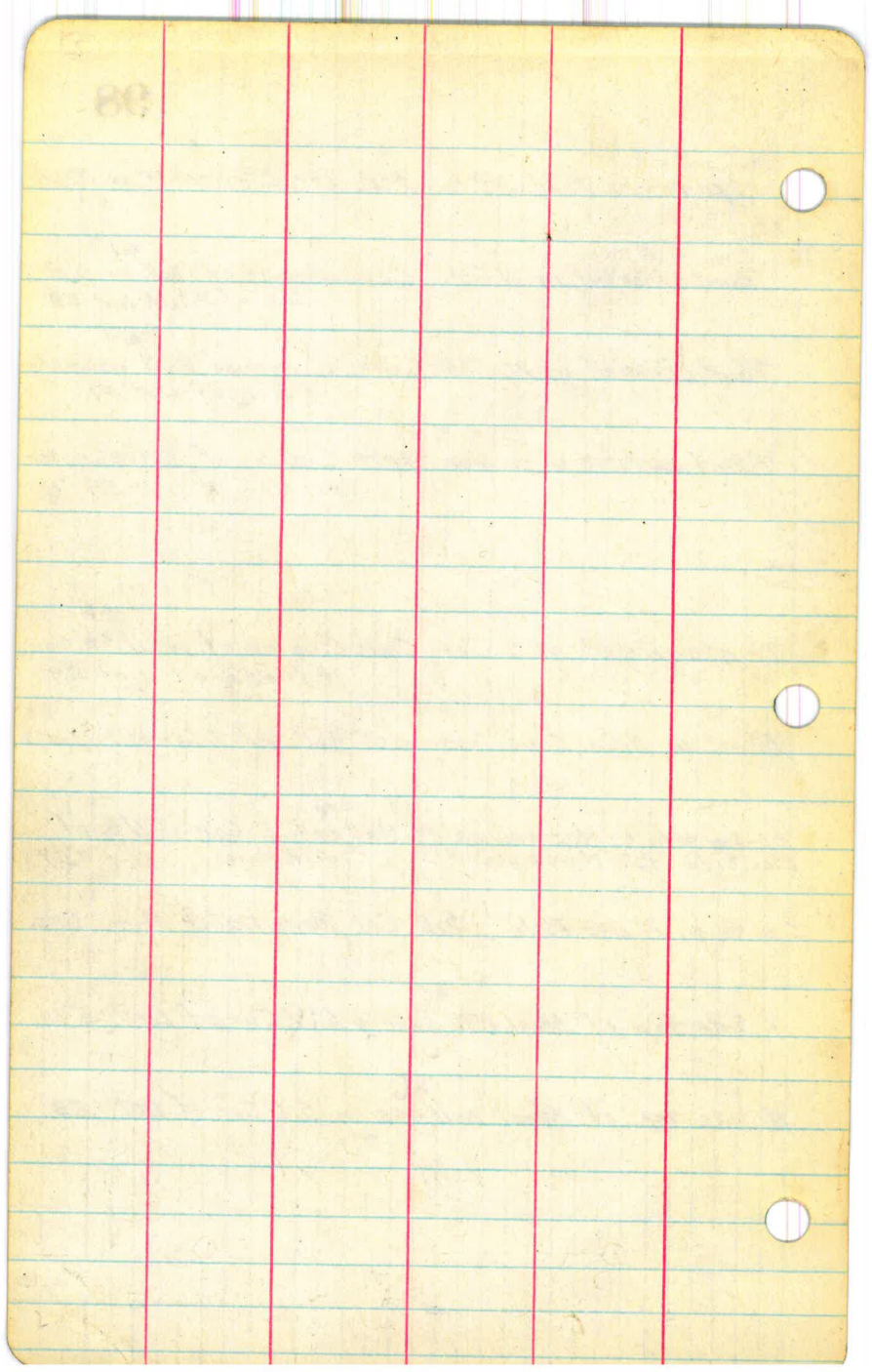
#1
Point in N. Cor. Conc. Casing of Well in S.E. Cor of S. ½ Lot 59

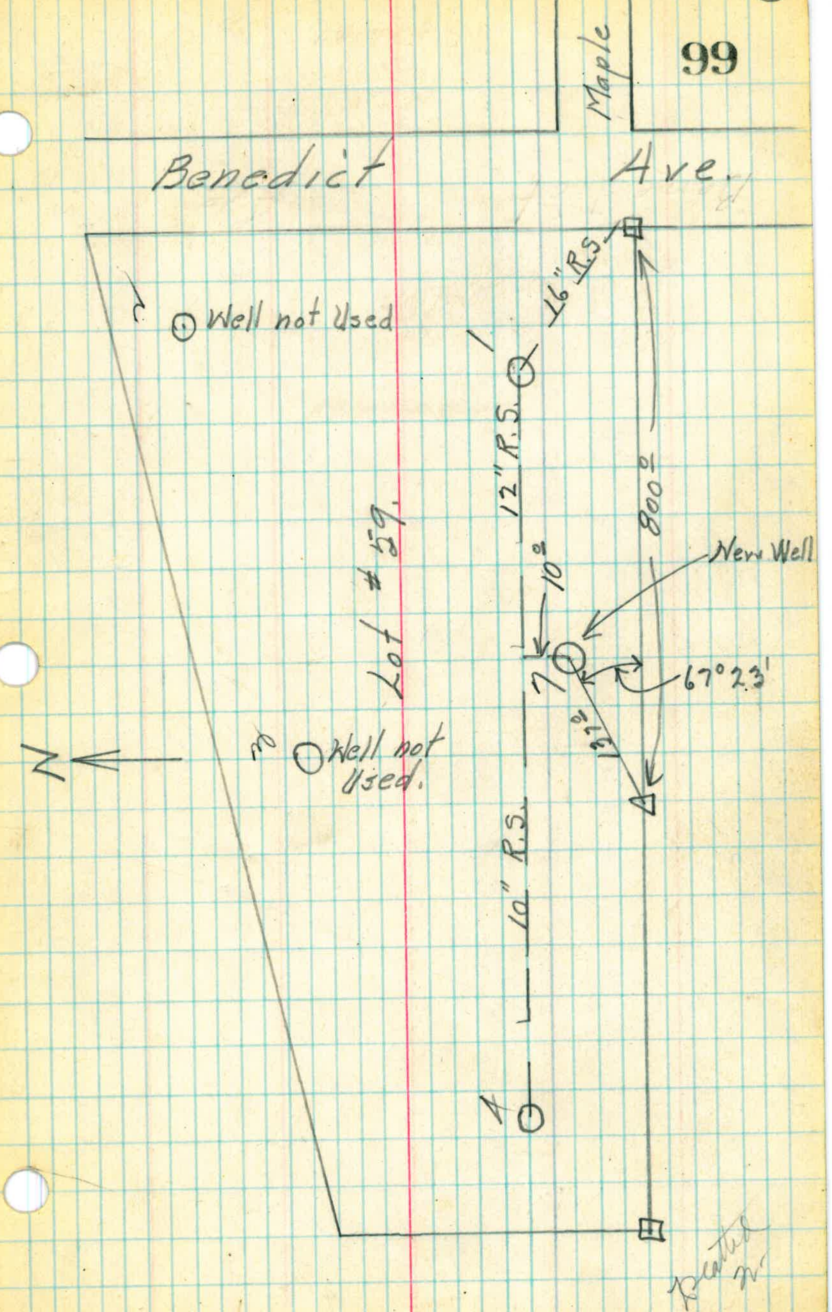
#2
South side of top casing of Well in N.E. Cor of N ½ of Elev. 388.6 125' North Well #2 in River Bottom Lot #59

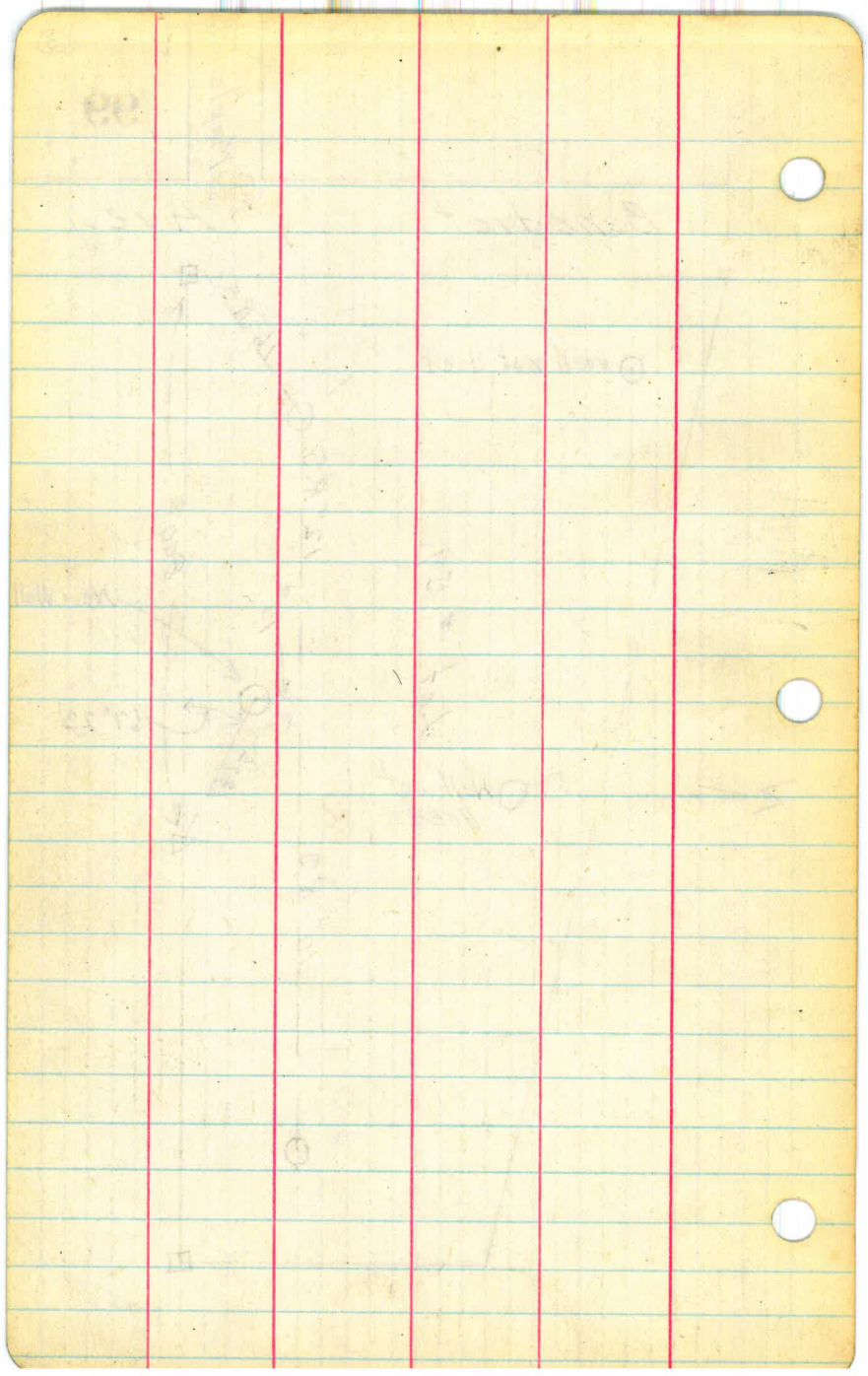
Spike in Power Pole S.E. Cor. Benedict & Maple Sts.

#5
N. Side, top of Steel Well casing S.W. Cor of Lot 53

#6
N. Side top of Steel Well casing S.E. Cor. of Lot 53




99
Maple
Benedict Ave.
Well not Used
16" R.S.
12" R.S.
Lot #59.
800±
10±
New Well
67°23'
13±
Well not Used.
10" R.S.
N



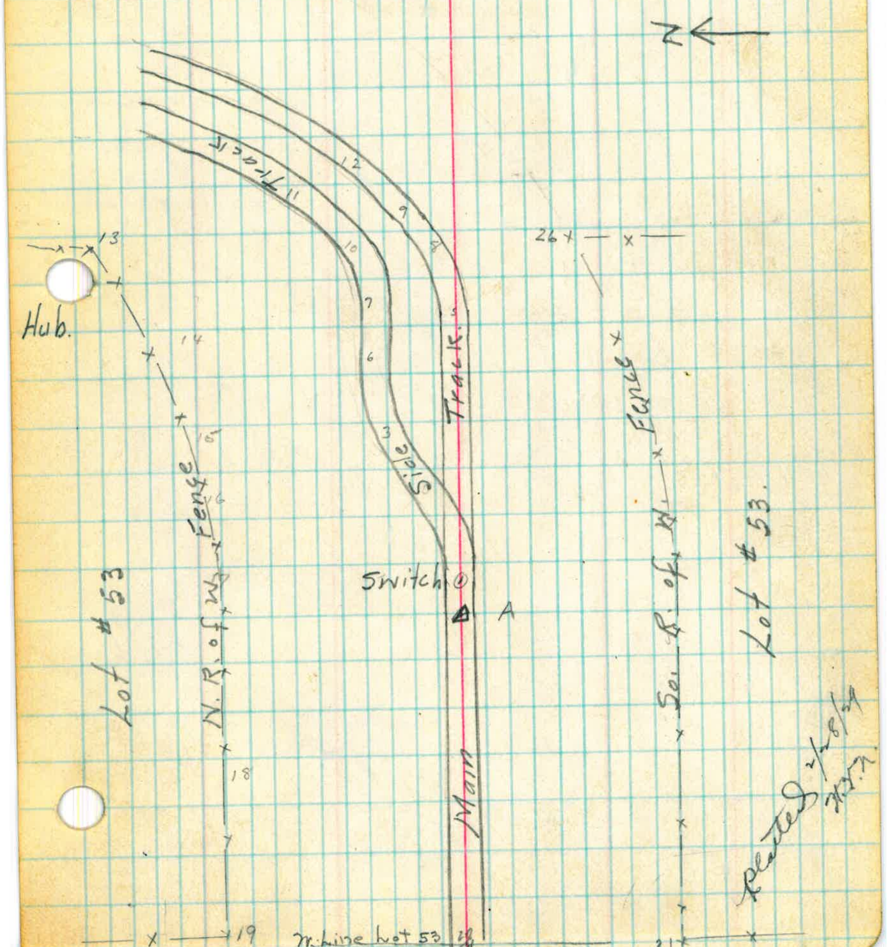
Location of Main Line Railroad, Sidetrack, and Right-of-Way Fences, thru Lot #53. Lakeside

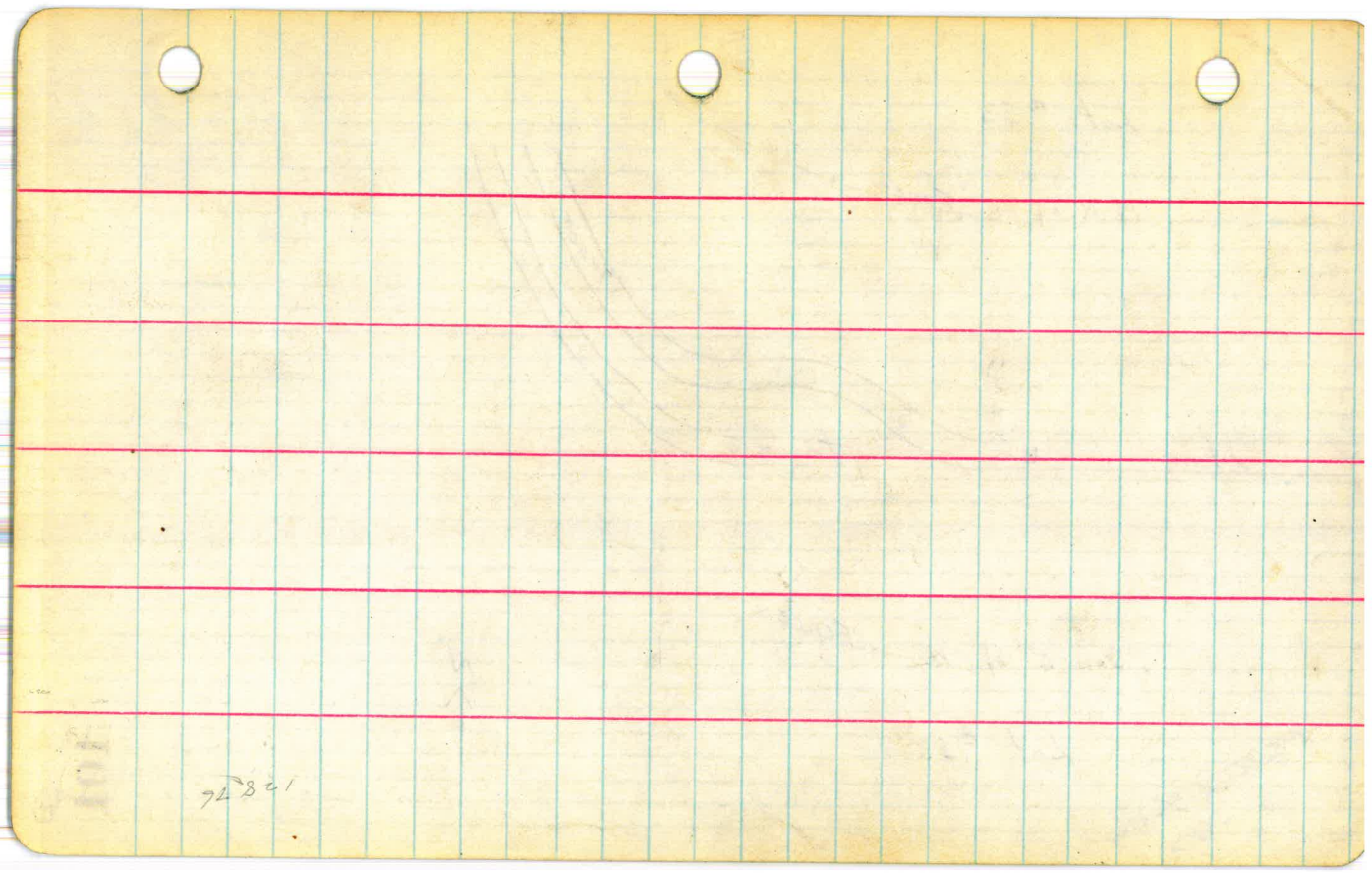
Feb. 27. 1929.
Converse
Elliott
Simpson
Pages 1-2

Note: All angles to right from backsight on ℄ Main Track at shot #20

Sta A. △ at East along Ry ℄ 376' from W. Line Lot 53.

#1	180°	.27	Switch at ℄ Track
2	180°	1.05	Track
3	177-20	1.05	Side Track
4	176-10	1.52	"
5	180	2.14	BC. Main Tr.
6	176-22	2.15	Side Tr
7	176-43	2.72	" "
8	179-19	2.75	Main Tr.
9	178-45	3.14	" "
10	176-0	3.13	Side Tr
11	175-20	3.49	Side Tr.
12	177-46	3.50	Main Tr
13	167-34	3.64	Fence Cor. on E Line Lot 53
14	167-28	3.00	Fence N. Side R.W
15	165-40	2.27	" "
16	159-26	1.43	" "
17	139-03	0.73	" "
18	13-30	2.10	" "
19	7-42	3.66	Fnce Cor.
20	0-0	3.76	℄ R.R. & W. Line Lot 53
21	352-55	3.86	Fnce Cor. So. R.W.
22	339-20	1.36	Fence So. R.W.
23	201-30	1.27	" So. R.W
24	192-30	2.03	" "
25	188-0	2.68	" "
26	184-50	3.36	Fnc. Cor. So. R.W. & E. Cor of Lot 53


N
Hub.
Lot # 53
N. R. of W. Fence
Side Track
Main Track
Switch
A
So. R. of W. Fence
Lot # 53.
N. Line Lot 53

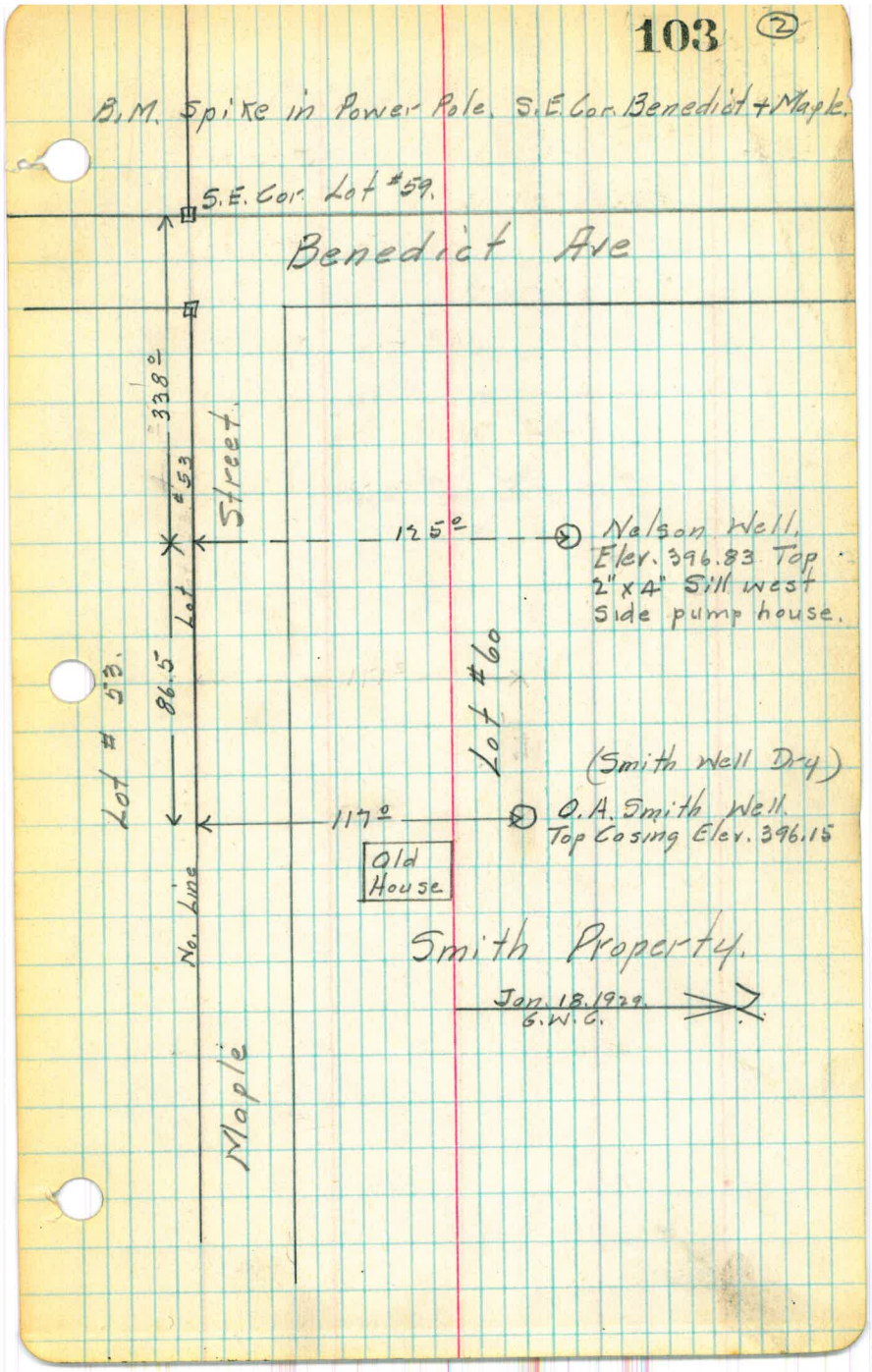


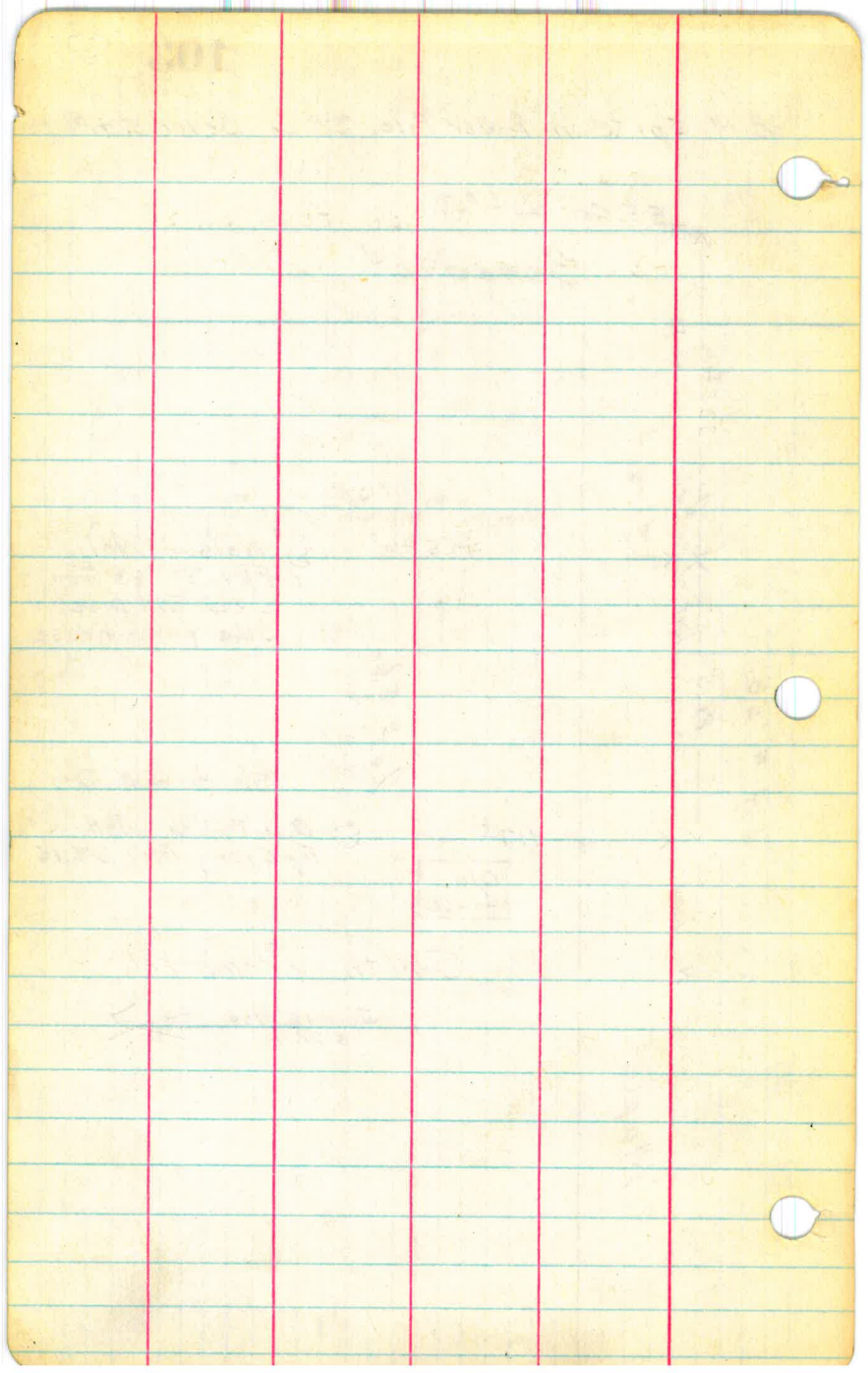
Locations of and Elevations on Observation Wells on the Nelson and Smith Properties West of the South End of San Diego River Bridge at Lakeside.

Pages 1-2.
Converse
Elliott
Simpson
Jan. 18. 1929.

B.M.				395.06	
	3.85	398.91			
T.P.			1.92	396.99	
	5.27	402.26			
O.A. Smith Well			6.11	396.15	Top Casing
T.P.			5.50	396.76	
	5.76	402.52			
Nelson Well			5.69	396.83	on 2"x4" footing of well shed

396.83
15.08
381.75 Elev. Water in Nelson Well 1/18/29


B.M. Spike in Power Pole. S.E. Cor. Benedict + Maple.
S.E. Cor. Lot #59.
Benedict Ave
338'
Lot #53
86.5'
Lot # 513.
Street.
125'
Nelson Well.
Elev. 396.83 Top
2" x 4" Sill west
side pump house.
Lot #60
(Smith Well Dry)
117'
O.A. Smith Well.
Top Casing Elev. 396.15
Old House
No. Line
Smith Property.
Jan. 18. 1929.
G.W.C.
Maple



Location of and Elevation on Observation Well Sunk by Clark on Property west of City Property, Riverview Farms and East of Cottonwood Road.

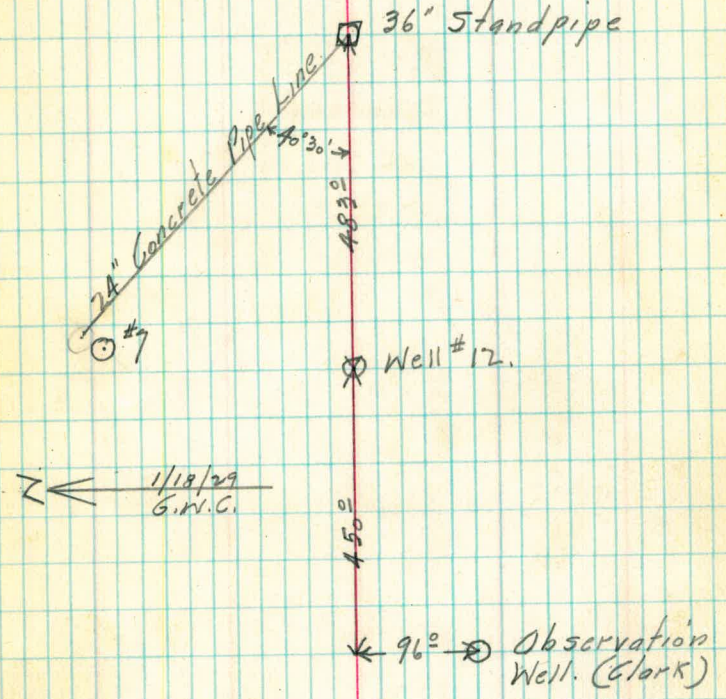
Pages 1-2
Converse
Elliott
Simpson
Jan. 18. 1949.

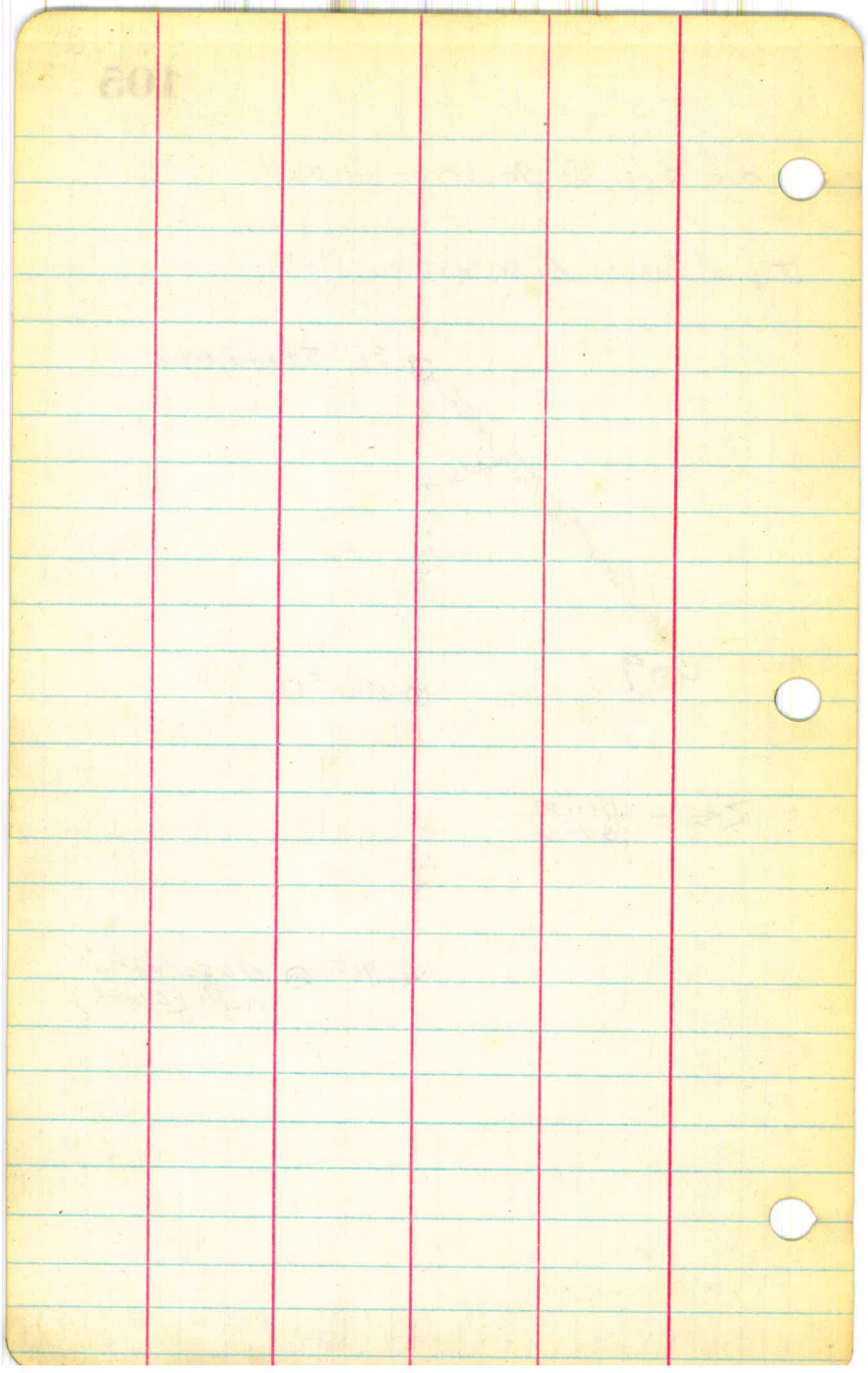
B. M.				366.48	
	4.55	371.03			
			+1.57	372.60	

372.60
16.65
355.95 Elev. of Water in Well, 1/18/29.

Hub 5 ft. So. Observation Well.

Top 6" Casing Observation Well.





Location of and Elevation on
Observation Well on the
Drinkwater Property, near Riverview

Pages 1-2
Converse
Elliott
Simpson
Jan. 18, 1929.

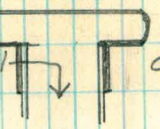
B.M.				372.04
	2.42	374.46		
			5.79	368.67
	1.27	369.94		
			3.25	366.69
	4.92	371.61		
Set B.M.			4.33	367.28
Set B.M.			9.29	362.32

362.32
11.78
350.54 Elev. of Water in Well 1/18/29

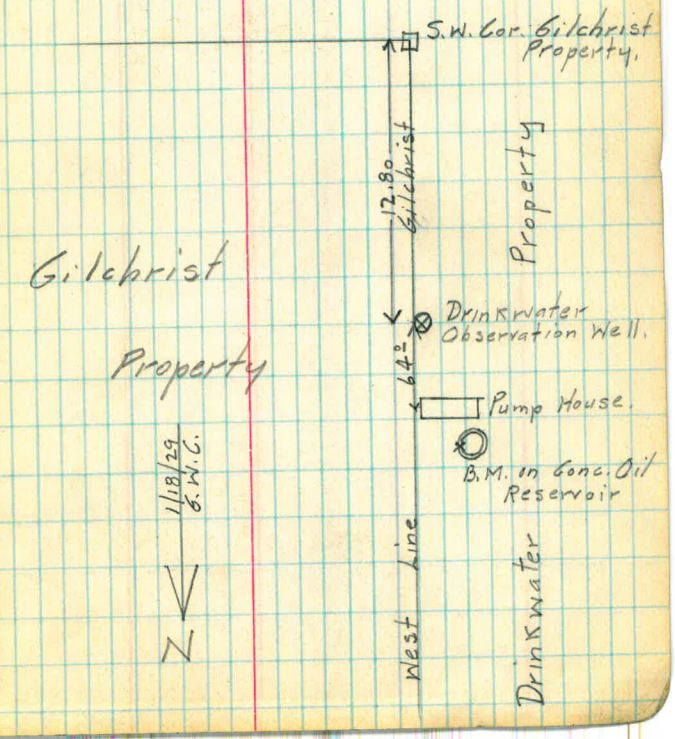
B.M. on Well #10. Riverview.

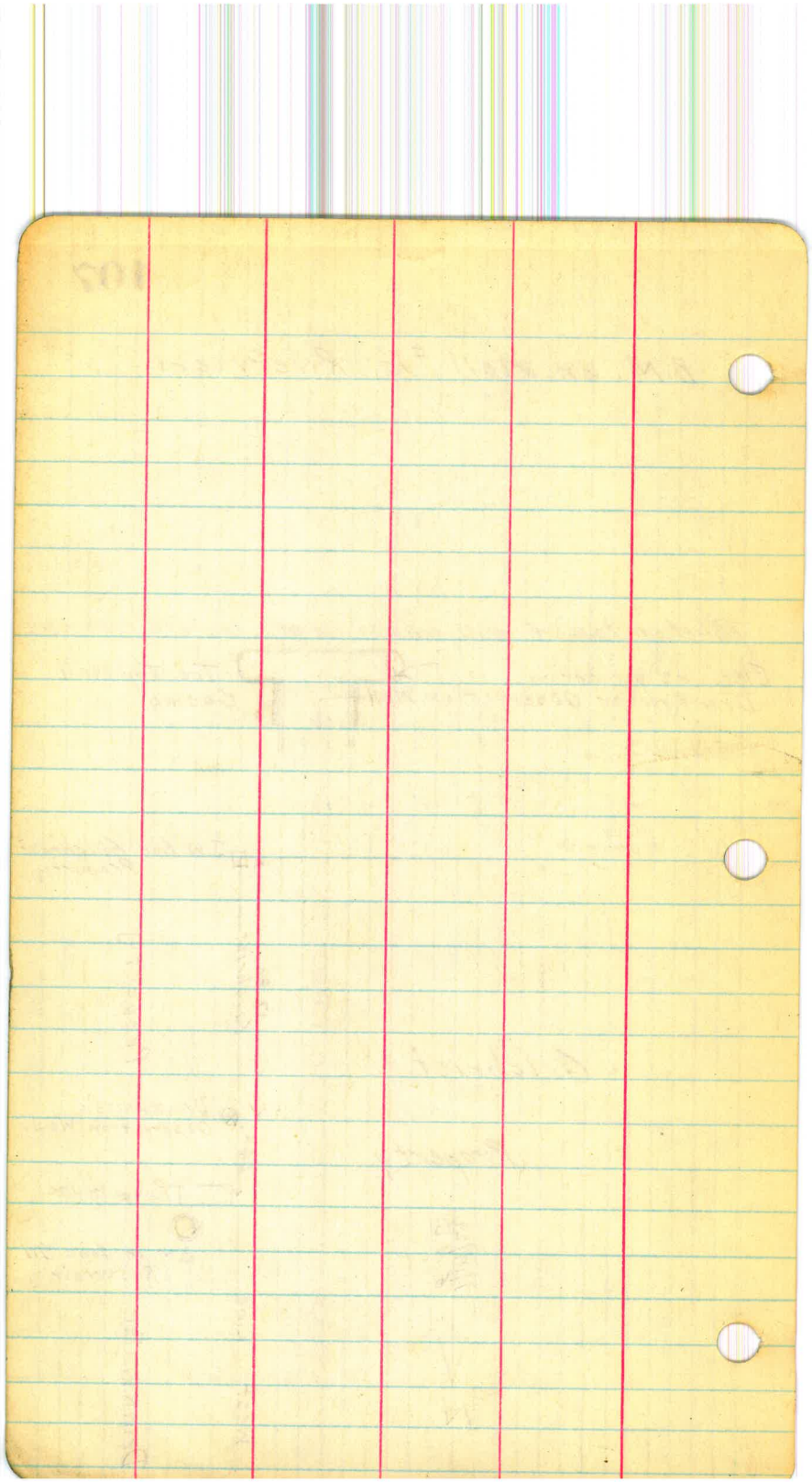
Point on top of wall west side of Conc. oil reservoir

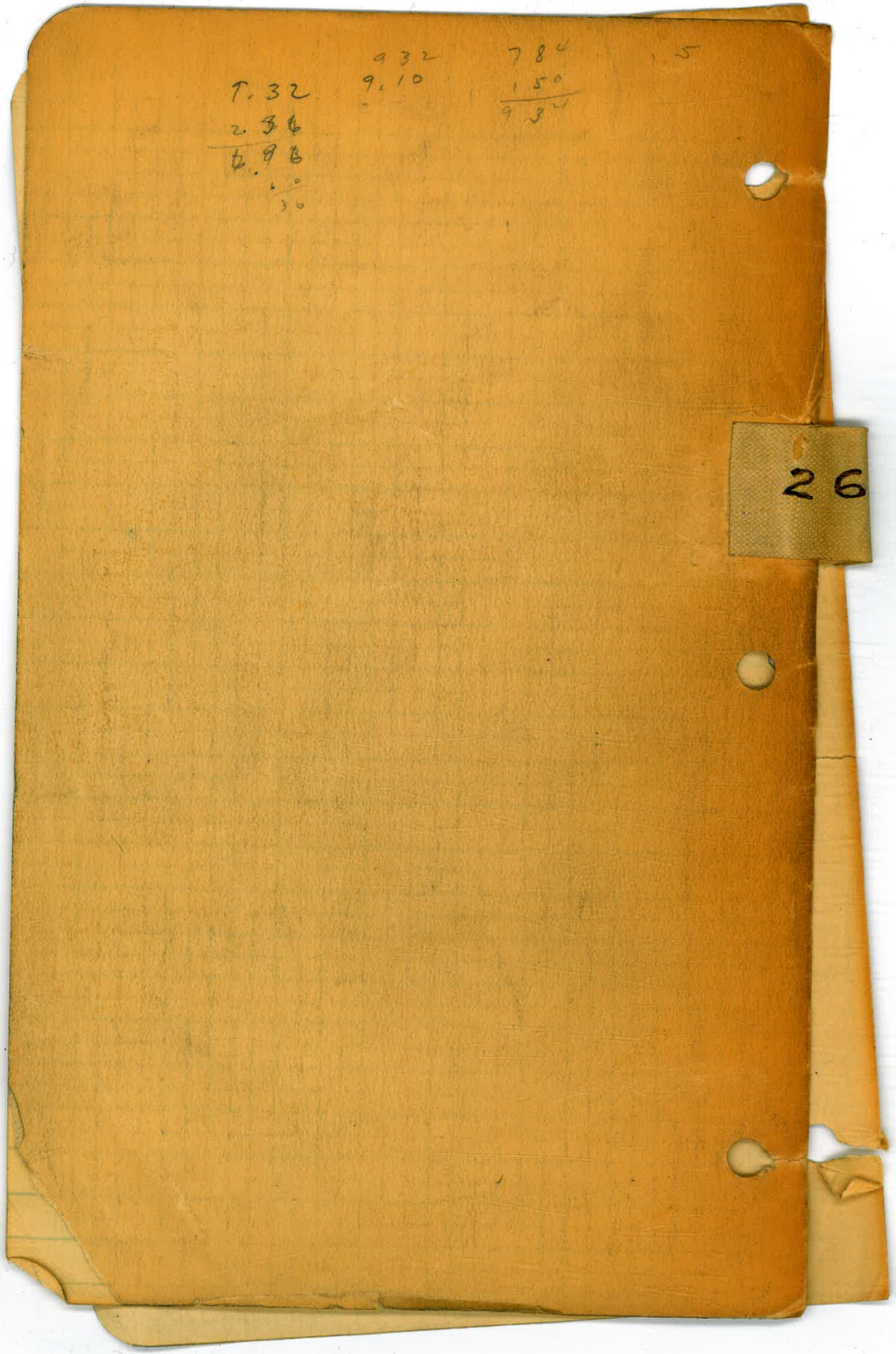
Elev. as per arrow.
Drinkwater Observation Well



Tee Top Well Casing.






T. 32
2. 34
4. 98
1.0
36
432
9.10
784
150
934
1.5
26