

El Cajon Valley  
Pipe Line

N<sup>o</sup> 1

Document No. 9040

Filed March 6<sup>th</sup> 1905.

H. W. Vincent, city clerk.

By Percy L. Day, Deputy

Transit Book No. 1.

El Cajon Valley Pipe Line.

Presented to Council and

Ordered filed Mar 6<sup>th</sup> 1905

W32

Table showing the difference of latitude and departure in running 80 chains at any course from 1 to 60 minutes.

MINUTES	LKS.	MINUTES	LKS.	MINUTES	LKS.
1	2 1/3	21	49	41	95 2/3
2	4 2/3	22	51 1/3	42	98
3	7	23	53 2/3	43	100 1/3
4	9 1/3	24	56	44	102 2/3
5	11 2/3	25	58 1/3	45	105
6	14	26	60 2/3	46	107 1/3
7	16 1/3	27	63	47	109 2/3
8	18 2/3	28	65 1/3	48	112
9	21	29	67 2/3	49	114 1/3
10	23 1/3	30	70	50	116 2/3
11	25 2/3	31	72 1/3	51	119
12	28	32	74 2/3	52	121 1/3
13	30 1/3	33	77	53	123 2/3
14	32 2/3	34	79 1/3	54	126
15	35	35	81 2/3	55	128 1/3
16	37 1/3	36	84	56	130 2/3
17	39 2/3	37	86 1/3	57	133
18	42	38	88 2/3	58	135 1/3
19	44 1/3	39	91	59	137 2/3
20	46 2/3	40	93 1/3	60	140

TABLE FOR RUNNING ON SLOPES.

In the following table the first column shows the angle, the second the number of links to be added to a chain on the slopes, to make one chain, horizontal measurement.

Angle	COR. IN LINKS	Angle	COR. IN LINKS	Angle	COR. IN LINKS
0		0		0	
4	0.24	18	1.88	25	10.54
5	0.38	19	2.24	26	11.26
6	0.55	20	2.63	27	12.24
7	0.76	21	3.06	28	13.37
8	0.98	22	3.53	29	14.34
9	1.24	23	4.02	30	15.47
10	1.55	24	4.56	35	22.07

El Cajon Valley  
Water Investigation  
Pipe Line

Dec 1904

B S Sherron's  
Field Notes

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30" Steel Pipe Line from  
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New M. Dam to Head Works

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at Head Works

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Stadia Meas at New M. Reservoir

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Survey Pipe Line from the  
Head Works to Santee Str

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Location of Gates, Air valves &  
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Copy of Benj McLaren's Notes  
of Middle San Diego River

Pages 55 + 56

No 7 - 30" dia. Steel Pipe  
Location & Lengths of same

Page 57

10 Acre Tract at Head Works

Page 58

12/3/04

El Cajon Valley  
Pipe Line

Sta. Dist. ang Bearing Needle.

15+73

15+70

15

14

13

A 12

11

10

9

8

7

6

5

4

3

2

1

0

N 89° 53' E

at a point 65' north of the  
N.E. cor Bk 122 Duffly Hights  
thence East along Urey Blvd

Alexson  
Lomly  
& Sully

15+73

15+70

on old 15" main  
water gate at 2nd  
on Ohio.  
30th St Pipe Line

90° 07'

65'



Sta	Dist	Ang.	Bearing	Needle
33				
32				
31				
30				
29				
28				
27+24 <sup>s</sup>		9°33' L	S 89°26' E	East
27				
26+07.5		E. Line of Neallo of San Diego		
26				
25+40.7		10°14' R	S 79°53' E	S 80°30' E
25				
24			N 89°45' E	
23				
22				
21				
20				
19				
18				
17				
16				

33

32

31

30

29

28

27+24<sup>s</sup> 9°33' L S 89°26' E East

27

26+07.5 E. Line of Neallo of San Diego

26

25+40.7 10°14' R S 79°53' E S 80°30' E

25

24 N 89°45' E

23

22

21

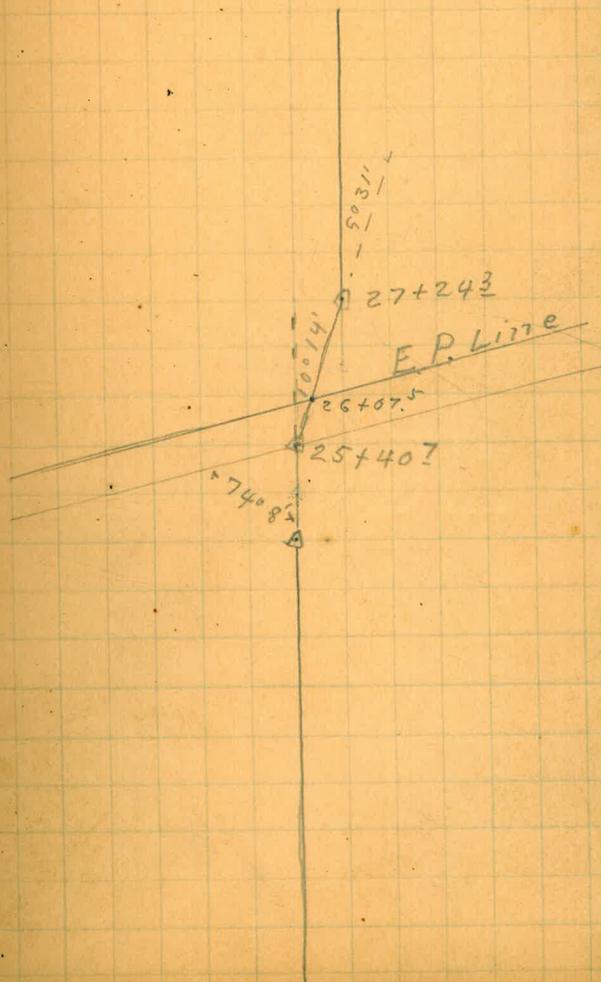
20

19

18

17

16

$$\begin{array}{r} 27+24.3 \\ 25+40.7 \\ \hline 7+83.6 \end{array}$$


Sta	Dist	Angle	Bearing	needle
-----	------	-------	---------	--------

53

52

A 51

50

49

48

47

46

45

44

A 43

42

41

40

39

38

37

36

35

34

gate  
 2  
 1

A

A

Sta	Dise	Angle	Bearing	needle
73				
72				
71				
70				
69				
68				
67				
66				
65				
64				
A 63				
62				
61				
60				
59				
58				
57				
56				
55				
54				

Hse  
□

△

□ A.C.H. 1820

Sta	Dist	Angle	Bearing	Needle
92				
91				
90				
89				
A 88				
87				
86				
85				
84				
83				
82				
81				
80				
79				
78				
77				
A 76				
75				
74				

N 88° 30' E  
12/5/09

Barr  
Hse  
W H Taggart

A

Sta	Dist	Angle	Bearing	Needle
-----	------	-------	---------	--------

109

108

107

A  
106+36

9°35' L N80°59' E N80°15' E

106

105

104

103

102+21

A  
102

N85°45' E

101

100

99

98

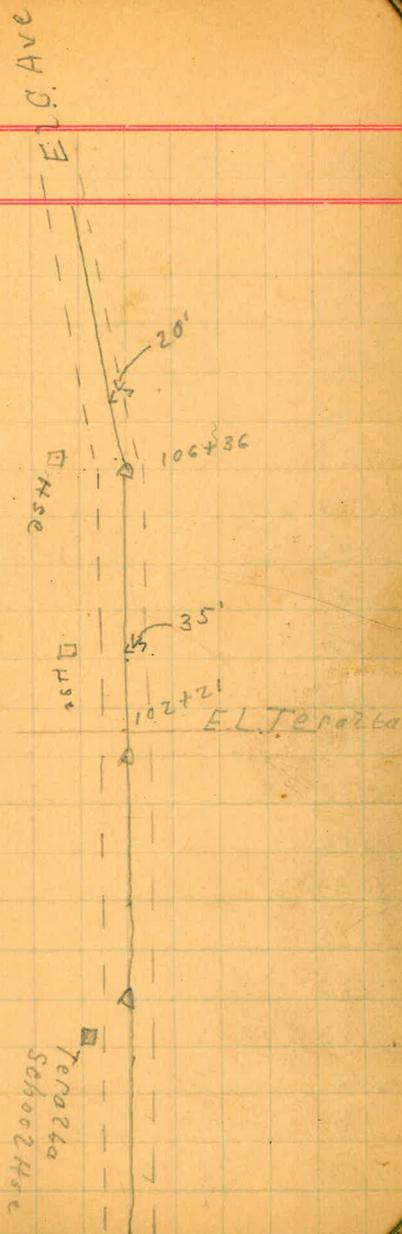
B  
97

96

95

94

93



Sta	Dist	Angle	Bearing	Needle
127				
126				
125				
124				
A 123				
122				
121				
120				
119				
118				
117				
116				
A 115+40				
115				
114				
113				
112				
111				
110				

Geoborpes Hse  
Barna Vanbara

Reservoir

W. Seeibeng

B. Trankeimas Hse

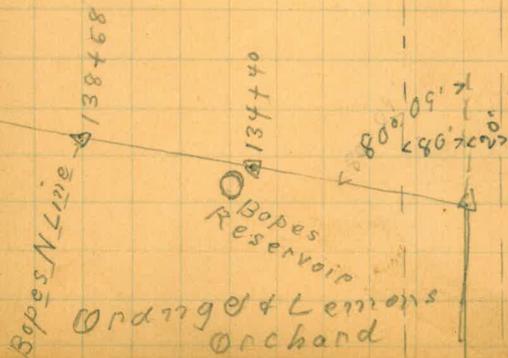
Sta	Dist	Angle	Bearing	Needle
140				
139				
138+68				
138				
137				
136				
135				
134+40				
134				
133				
132				
131				
130				
129+03				
125				
128				

12/6/02

80° 09' L N 0° 50' E

North

N 80° E



El Cajon Ave

Bopes N Line

Bopes Reservoir

Ording &amp; Lemons Orchard

Sta	Dist	Angle	Bearing	Needle
-----	------	-------	---------	--------

158+50

158 In Deep Ravine not set

157

156

A 155+55

155

154

153

152

151

150

149

148

N 14° 30' E

A 147+55

14° 30' R N 15° 20' E

147

146

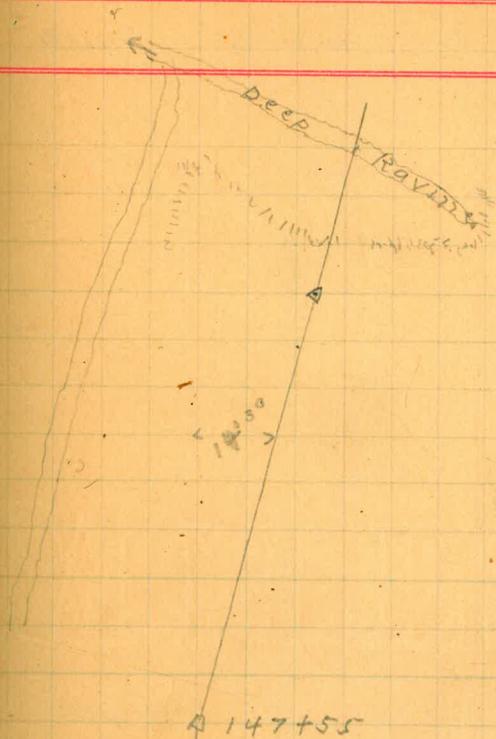
145

144

143

142

141



Sta	Dist	Angle	Bearing	Needle
175				
174				
173				
172				
171				
170				
A 169+50				
169				
168				
167				
A 166			N 14° 30' E	
165				
164				
163				
162				
161				
160				
159				

175  
174  
173  
172  
171  
170  
A 169+50  
169  
168  
167  
A 166  
165  
164  
163  
162  
161  
160  
159

N 14° 30' E

Sta	Dist	Angle	Bearing	Needle
A191+35				
191				
190				
185				
188				
187				
186				
			12/7/04	
X 185+65				
185				
184				
183				
182				
181				
180				
179				
178+70				
178+20				
178				
177				
176				

~~S 211 77 12 E~~

185+65  
 W. 185+65  
 185+65

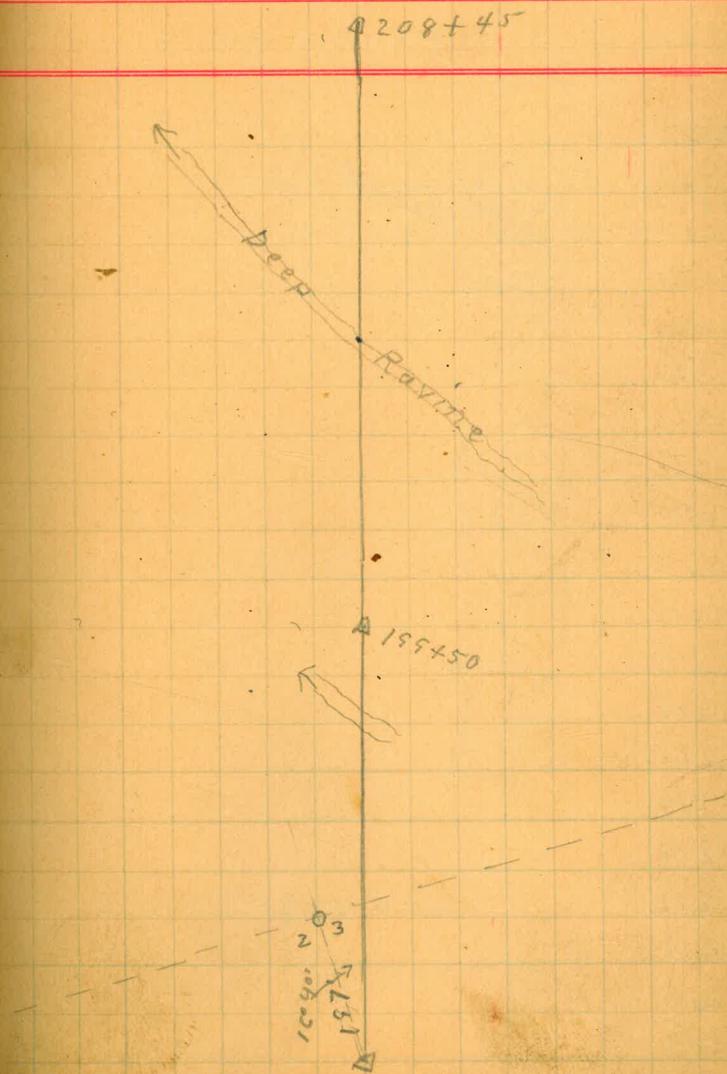
Deed Ravine  
 V. E. A. D. 178+70 Old Wagon Road  
 ----- 178+20

(note) from 175 to 178 stakes to far east set with plumb line wrong sight

Sta	Dist	Angle	Bearing	Needle
A 208+45				
208				
207				
206				
205				
204+50	Deep Ravine			
204				
203				
202				
201				
200				
A 199+50				
199				
198				
197				
196				
195			N 14° 30' E	
194				
193				
192				

191+35 bar 2+3 of Ex Minion Lot 22 & 23

At angle 16° 40' L 197' dist needle N 2° 15' W



Sta	Dist	Angle	Bearing	Needle
-----	------	-------	---------	--------

227

226+50 center of wash Alvarado Canyon  
 226+15 ~~lowest point~~  
 225+45 Wagon Road N 45° W

225

224

223

222

221

220

219

218

217

216

215

214

213

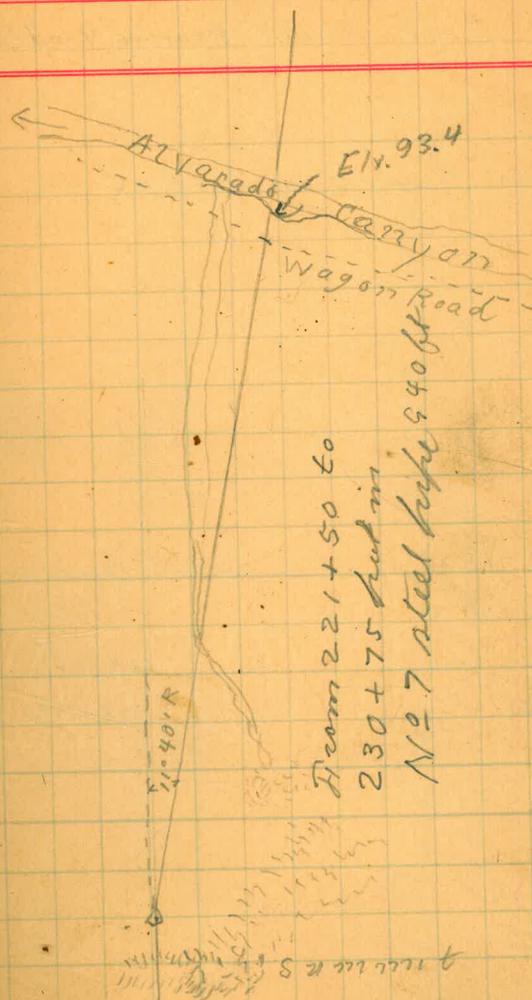
A 212

11°40' R N 27° E N 25° 45' E

211

210

209



Sta	Dist	Angle	Bearing	Needle
-----	------	-------	---------	--------

245

244+50 *beam work in Ravine*

244

243

242

241

240

239

238

237 *Foot of steep descent thence angling*

236

235

12/8/09

N25°30'E.

A 234+60

234

233

232

231

230

229

228



From Sta 240 to Sta 250. Put in  
No 7 steel pipe 1000 ft

Sta	Dist	Angle	Bearing	Needle
265				
264				
263				
262				
261				
260				
259				
258				
257				
256				
255	Hub is 1 tenth to far east			
254				
253				
252				
251				
250				
249				
248				
247				
246				

265

264

263

262

261

260

259

258

257

256

255 Hub is 1 tenth to far east

254

253

252

251

250

249

248

247

246

T16S.R.2W  
Q con secs 9-10-15-16

1412



Sta	Dist	Angle	Bearing	Needle
-----	------	-------	---------	--------

286				
285				
284				
283				
282				
281				
* 280				
279				
278				
277				
276				
Δ 275				
274				
273				
272				
271				
270				
269				
268				
267				
266				

(Note) the pit is from Sta 257 to Sta 313  
 can be delimited from old wagon road from the  
 Grantville School Hse up by the old reservoir & thence  
 easterly over the mesa a good road

Elev. 346'

Sta	Dist	Angle	Bearing	Height
-----	------	-------	---------	--------

305+60				
--------	--	--	--	--

305				
-----	--	--	--	--

304				
-----	--	--	--	--

303				
-----	--	--	--	--

302				
-----	--	--	--	--

301				
-----	--	--	--	--

300				
-----	--	--	--	--

299				
-----	--	--	--	--

298				
-----	--	--	--	--

297				
-----	--	--	--	--

296				
-----	--	--	--	--

295				
-----	--	--	--	--

294				
-----	--	--	--	--

293				
-----	--	--	--	--

292				
-----	--	--	--	--

291				
-----	--	--	--	--

290				
-----	--	--	--	--

289				
-----	--	--	--	--

288				
-----	--	--	--	--

287+90	Cross Old Wagon Road			
--------	----------------------	--	--	--

287				
-----	--	--	--	--

305+60				
--------	--	--	--	--

← Old Wagon Road to Grantville

Sta	Dist	Angle	Bearing	Needle
322				
321+25	Old Wagon Road			
321				
320				
319				
318				
317				
316				
315+50	Im Work near junction 3 Ravines			
315				
314				
313				
A 312				
311				
A 310				
309+865				
309				
308				
307				
306				

12/9/04

N 25° 50' E

L 06 70

15' 45"  
N. L 1170 0 P

Original Post 4" x 4" - 3'

Pipe can be directed from  
Low Ravine

Old Wagon Road

From 314+25 to 319+15 feet in  
No. 7 Well pipe 500 ftA 309+865  
E 7

Mission Lot 67

Sta	Dist	Angle	Bearing	needle
-----	------	-------	---------	--------

341

340

339

338

337

336

335

334

333+40 County Wagon Road

333

332

331

330

329

328

327

326

325

324

323

N26°10'E



Sta	Dist	Angle	Bearing	needle
-----	------	-------	---------	--------

A	359+80			
---	--------	--	--	--

359

358

357

356

355

354

N 37° E

A	353+50	11° 00' R	N 38° E	
---	--------	-----------	---------	--

\* 353

352

351

350

349

348

347

346

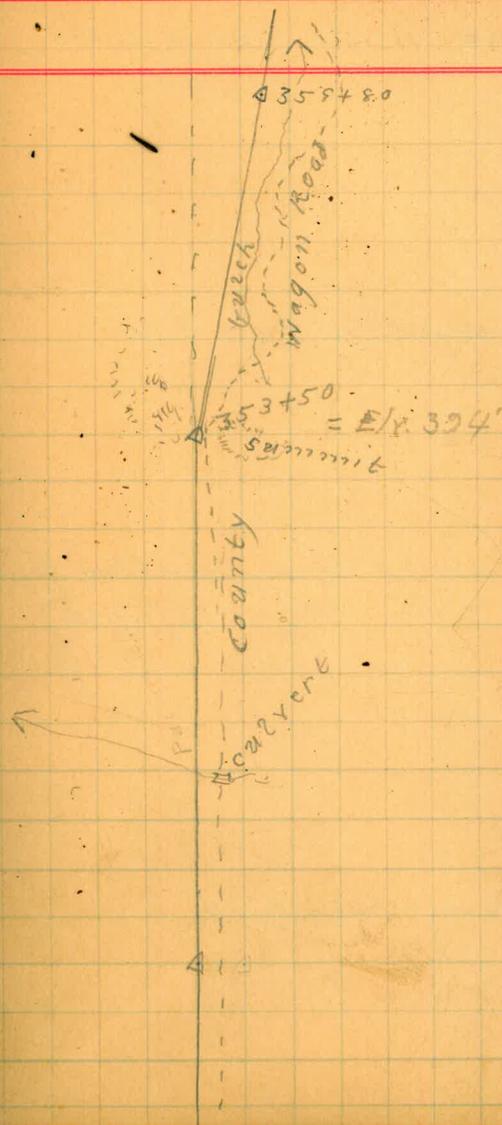
345

344

A	343+80			
---	--------	--	--	--

343

342



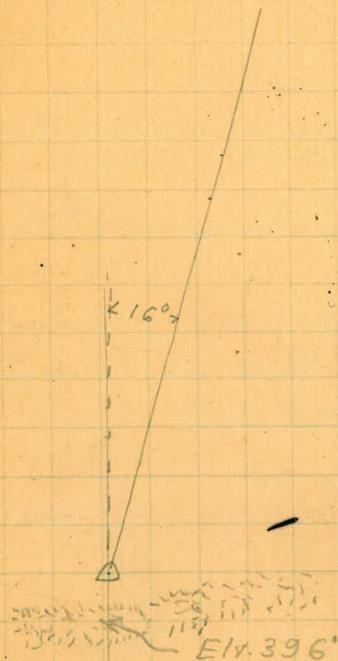
Sta	Dist	Angle	Bearing	needle
377+60				
377				
376				
375				
374				
A 373	Summit low bare hill			
372				
371				
370				
369				
+30	Cross wash in shallow gulch			
A 368				12/10/04
367				
366				
365				
364				
363				
362+80	Cross shallow gulch			
362				
361				
360				



Sta	Dist	Angle	Bearing	Needle
-----	------	-------	---------	--------

395				
384				
383				
382				
381				
380				
389+55				
388				
388				
387				
A 386				
* 385				
384				
383				
382				
381				
380				
379				
378				

16° 00' R N54° E N52° 30' E



Sta	Dist	Angle	Bearing	Needle
410				
409+50				
409	In gulch about 40 ft wide Put in Needle			
408+50				
408		$38^{\circ}45' L$	$N15^{\circ}15' E$	$N14^{\circ}15' E$
407				
406+40	at 406+25 to 406+73 pit			
406	in trestle first 3 posts 8 ft high			
405	forth 3 ft			
404				
403				$N53^{\circ} E$
402				
401				
400				
399				
398+60	County Wagon Road			
398				
397+70	Cross Gulch			
397				
396				


  
 pit in a 10 ft bent  
 about 4 ft above surface  
 & a blow off

1-28  
35  
5-67  
210  
75-7

Diff 45  
125  
170  
20  
150  
400  
210 ft west

4 20' south

1080  
1605  
0801

Oct 80

1100 X 400

Sta Dist Angle Bearing Needle

410

409+50

409 In gulch about 40 ft wide  
Put in Trestle

408+50

A 408  $38^{\circ}45' L N 15^{\circ}15' E N 14^{\circ}15' E$ 

407

406+40 at 406+25 to 406+73 pit

406 in trestle first 3 posts 8 ft high  
forth 3 ft

405

404

B 403  $N 53^{\circ} E$ 

402

401

400

399

398+60 County Wagon Road

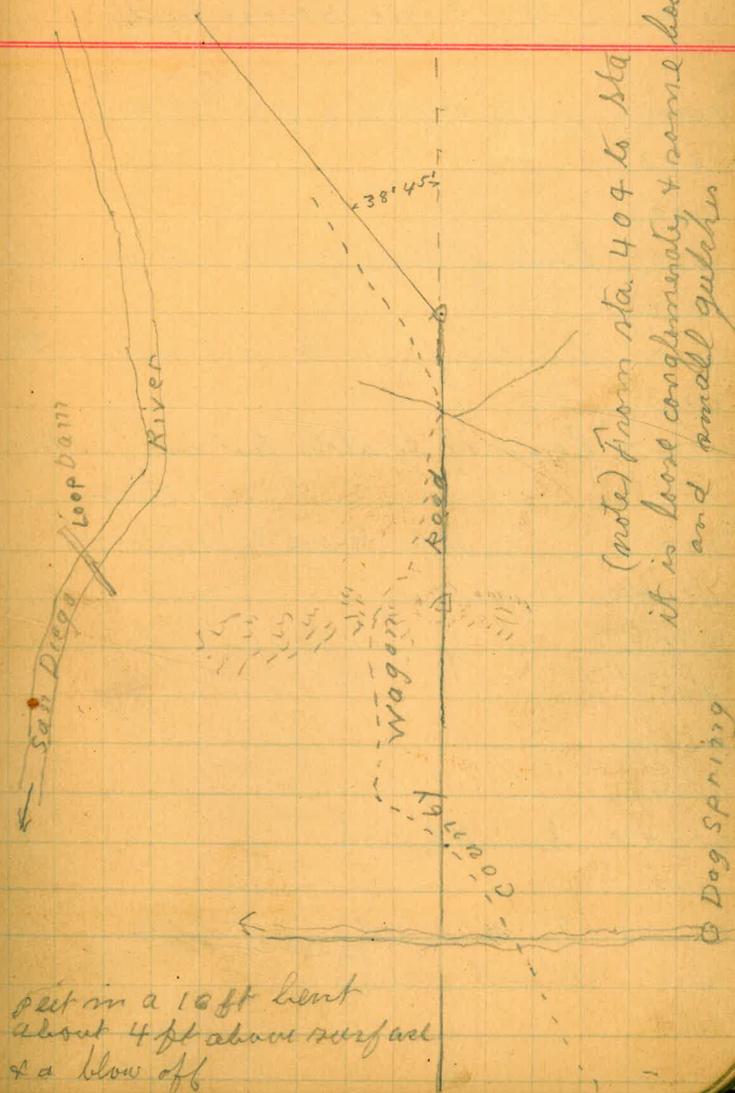
398

397+70 Cross gulch

397

396

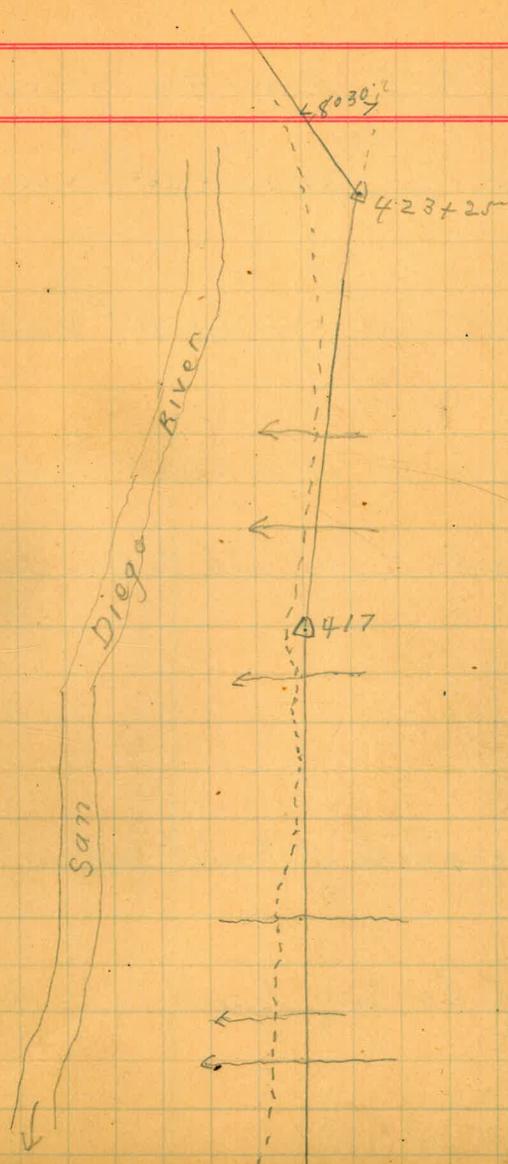
pit in a 16 ft bent  
about 4 ft above surface  
& a blow off



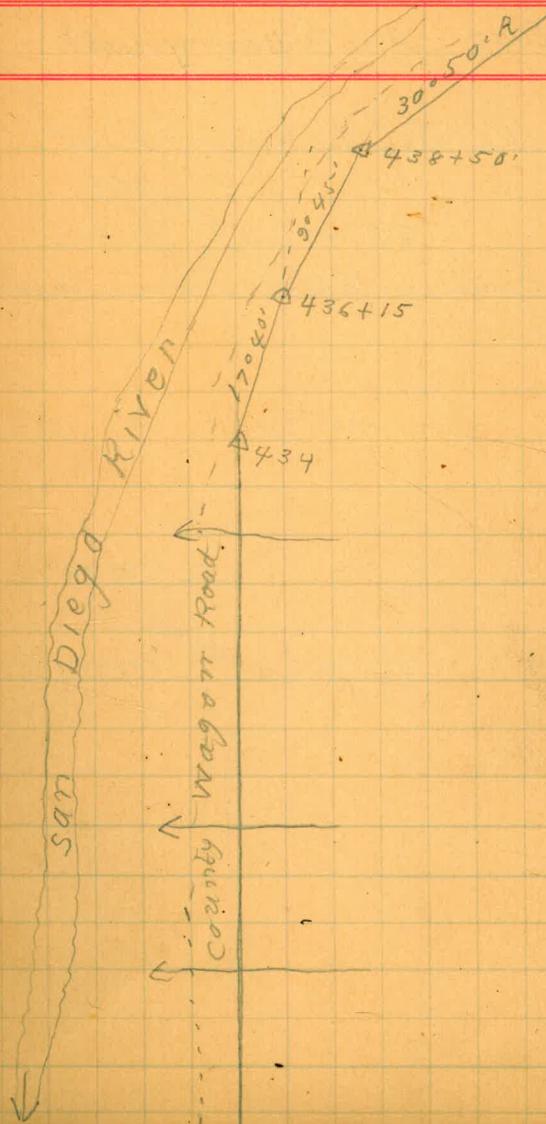
(note) From sta. 409 to Sta.  
it is loose conglomerate & some boulders  
and small gulches

Dog Spring

Sta	Dist	Angle	Bearing	Needle
A x423+25		8° 30' L	N 8° 25' E	N 7° 40' E
423				
422				
421	center of large gulch put in trust			
420				
419	center of gulch put in trust			
418				
417+70	center of gulch put in trust			
		12/12/04		
A 417		1° 40' R	N 16° 55' E	N 15° 55' E
416+70				
416				
415				
414+80				
414				
413+90	small gulch			
413				
412+50	small gulch) put in trust			
412	small gulch)			
411				



Sta	Dist	Angle	Bearing	Tie
438+50		30° 50' R	N 66° 40' E	N 66° E
438				
Δ 437				
436+15		9° 45' R	N 35° 50' E	N 35° E
436				
Δ 435				
434		17° 40' R	N 26° 05' E	N 25° 15' E
433				
432+20	center of Gulch Put in Trestle			
432				
431				
430				
429				
428				
427+80	center of Gulch Put in Trestle			
427				
426				
425+40	center of Gulch Put in Trestle			
425				
424				



Sta	Dist	Angle	Bearing	Needle
-----	------	-------	---------	--------

457	San County Wagon Road			
-----	-----------------------	--	--	--

456

455		22° 40' L	N 24° 10' E	
-----	--	-----------	-------------	--

454

454	Center of Gulch Put in level		N 23° E	
-----	------------------------------	--	---------	--

453

452

451

450

449

448

12/13/04

447

447		19° 50' L	N 46° 50' E	
-----	--	-----------	-------------	--

446

445

444

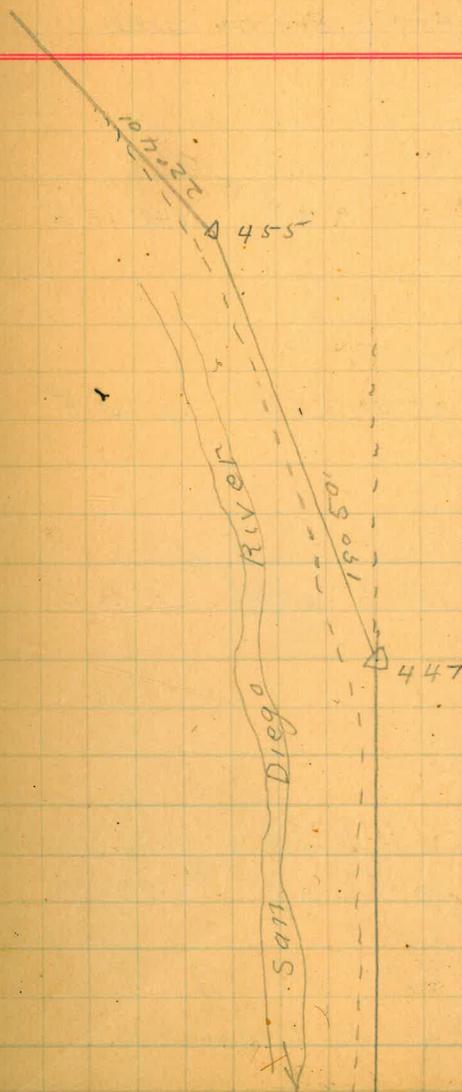
443

442

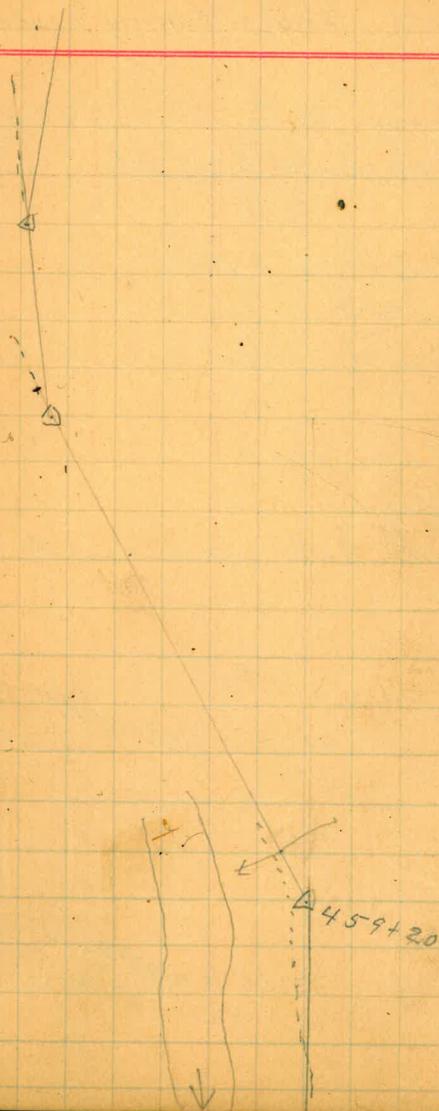
441

440

439



Sta	Dist	Angle	Bearing	Needle
A 471 470+50		16° 10' R	N 49° 35' E	N 49° 45' E
470				
469				
A 468 467+45		25° 30' R	N 33° 25' E	N 31° 45' E
467				
466				
A 465 464+70		10° R	N 7° 55' E	N 5° 30' E
464				
463				
462				
461				
A 460+70	bent to small gulch Dot on bed			
A 459+20		26° 15' L	N 2° 05' W	N 2° 20' W
459				
458				
457+50 Clear County Wagon Road				



El Cajon Valley  
Pipe Line

Sta	Dist	Angle	Bearing	Trundle
-----	------	-------	---------	---------

Note from 0 to Sta 482+40  
= 9 miles & 720 ft

483+65				Reference point
482+65				End of Inlet pipe
482+40				End of Outlet pipe in Reservoir

see

482

481

480

479+70 Center Rocky Ravine Put in Trundle

479

478

477

476+60

44°30'R S52°25'E 353°10'E

476

475

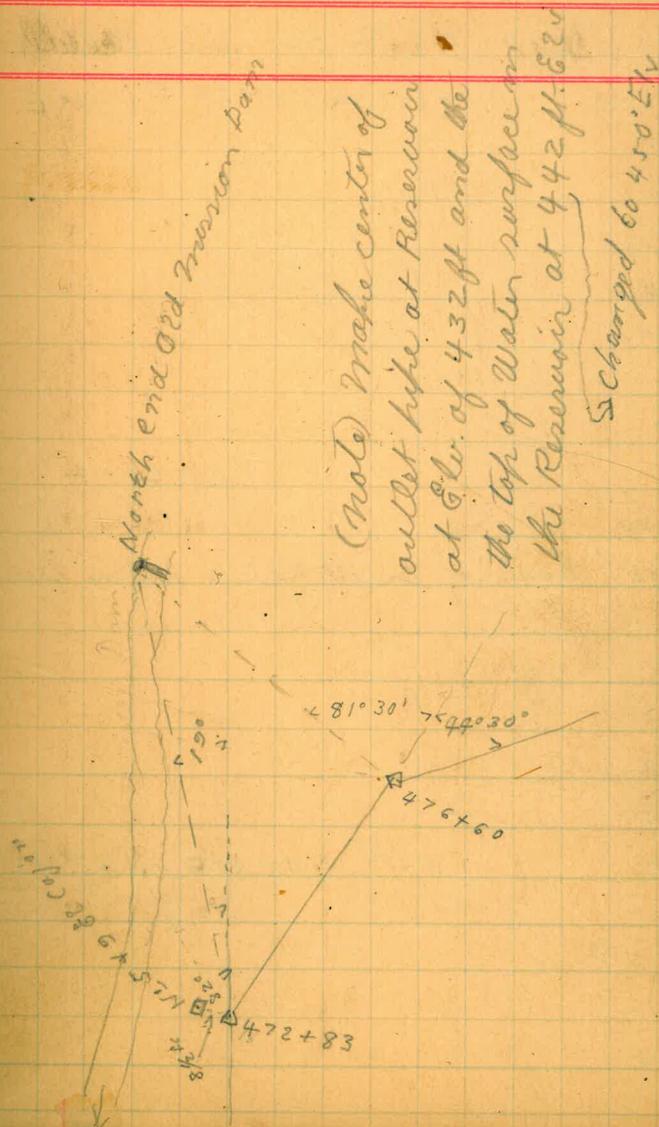
474

473

472+83

33°30'R N83°05'E N83°E

472



## Force Main Pipe Line

Sta	Dist	Angle	Bearing	Needle
A 12+50		58°30' R	S 77°55' E	S 78° E

12

11

10+20

10

9

8

7

6+50'

6+05 center of small Ravine put in center

6

5

3

2

1

0

84° L N 43° 35' E N 42° 45' E

48

12/14/09

58°30'

12+50

Handwritten notes and sketches on the right page, including a small diagram of a pipe layout with labels like 'S 77° 55' E' and 'S 78° E'.

84°

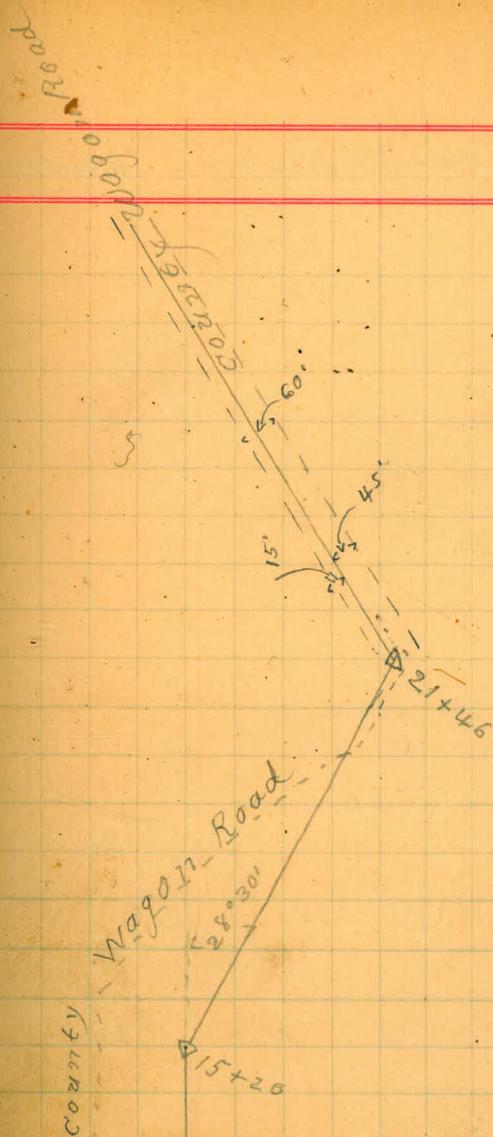
482+65=0 Force in

Handwritten notes and sketches on the right page, including a diagram of a pipe layout with labels like '84°' and '482+65=0 Force in'.

Note this should be moved back 25 ft see page 40

## Force Main Pipe Line

Sta	Dist	Angle	Bearing	Needle
29				
28				
27				
26				
25				
24				
23				
22				
B 21+46		30° 45' L	S 80° 10' E	B 80° 30' E
21				
20+75	Brown County Wagon Road			
20				
19				
18				
17				
16				
A 15+20		28° 30' R	S 49° 25' E	
15				
14				
13				



31

## Force main Pipe Line

Sta	Dist	Angle	Bearing	Needle
-----	------	-------	---------	--------

49

48

47

46

45

44

43

42

41

40

39

A 38

37

36

35

34

33

A 32

31

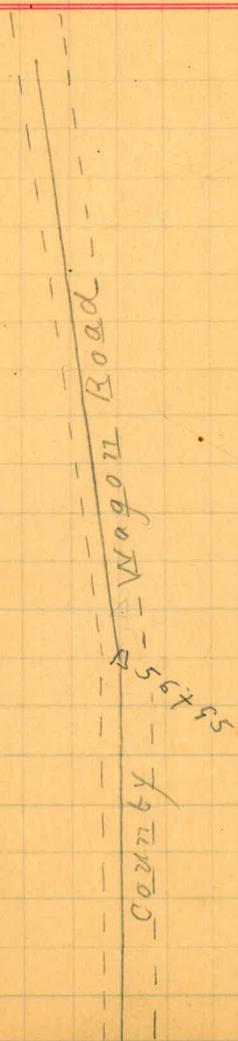
30

Wagon Road

Courtby

## Force Main Pipe Line

Sta	Dist	Angle	Bearing	Needle
68				
67				
66				
65				
64				
63				
62				
61				
60				
59				
58				
57				
56+95		5° 50' L	S 86° E	S 86° 15' E
56				
55				
54				
53				
52				
51				
50				



33

## Force Main Pipe Line

Sta	Dist	Angle	Bearing	needle
88				
87				
86				
Δ 85				
84				
83				
82				
81				
80				
79				
78				
77				
76				
75				
74				
Δ 73				
72				
71				
70				
69				



34

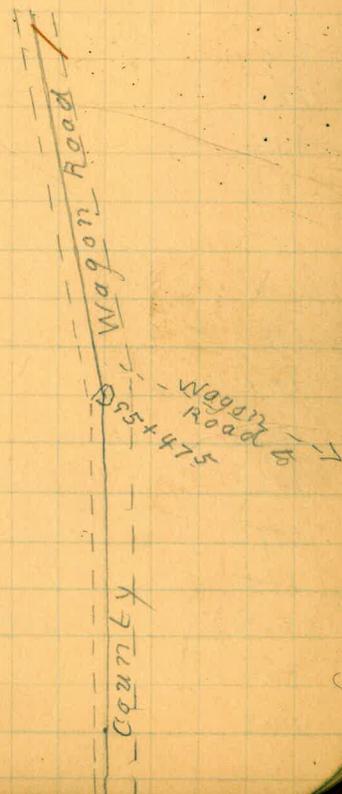
Force Main Pipe Line

Sta	Dist	Angle	Bearing	Needle
-----	------	-------	---------	--------

107				
106				
105				
104				
103				
A 102				
101				
100				
99				
98				
97				
96				
95+475				
95				
94				
93				
92				
91				
90				
89				

12/15/09

10° 05' L N 83° 55' E N 83° 30' E



35 Force main Pipe Line

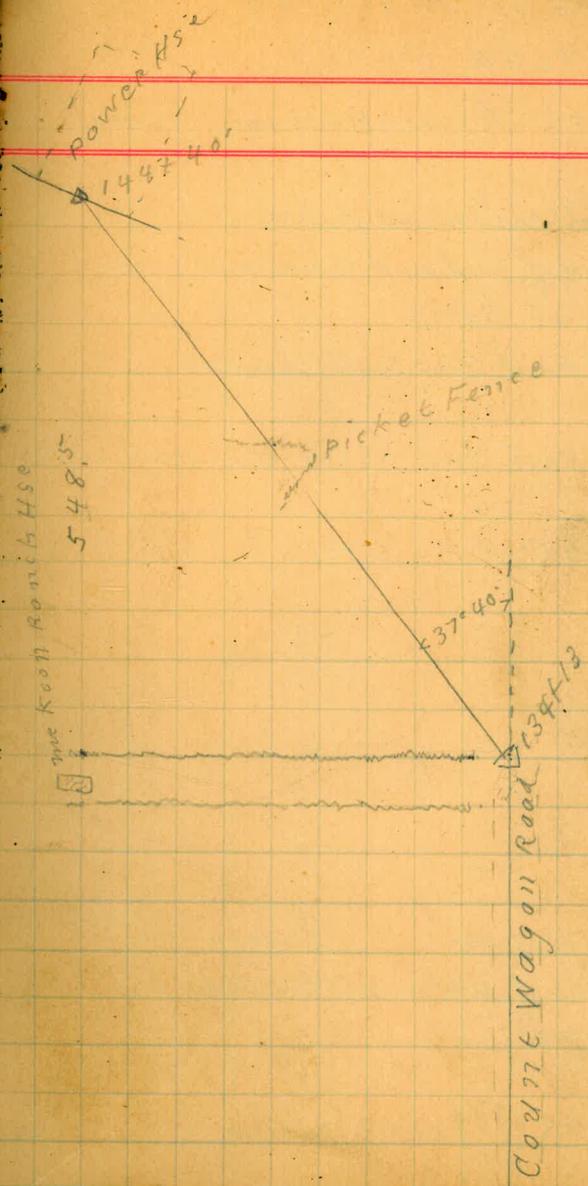
Sta	Dist	Angle	Bearing	Needle
126				
125				
124				
123				
Δ 122				
121				
120				
119				
118				
117				
116				
115				
114				
113				
112				
111				
110				
Δ 109 + 915			14° 25' L. N 69° 30' N 69° 15' E	
109				
108				

Poway Wagon Road

36 Force main Pipe Line.

14413' = 2 mi 3853 ft

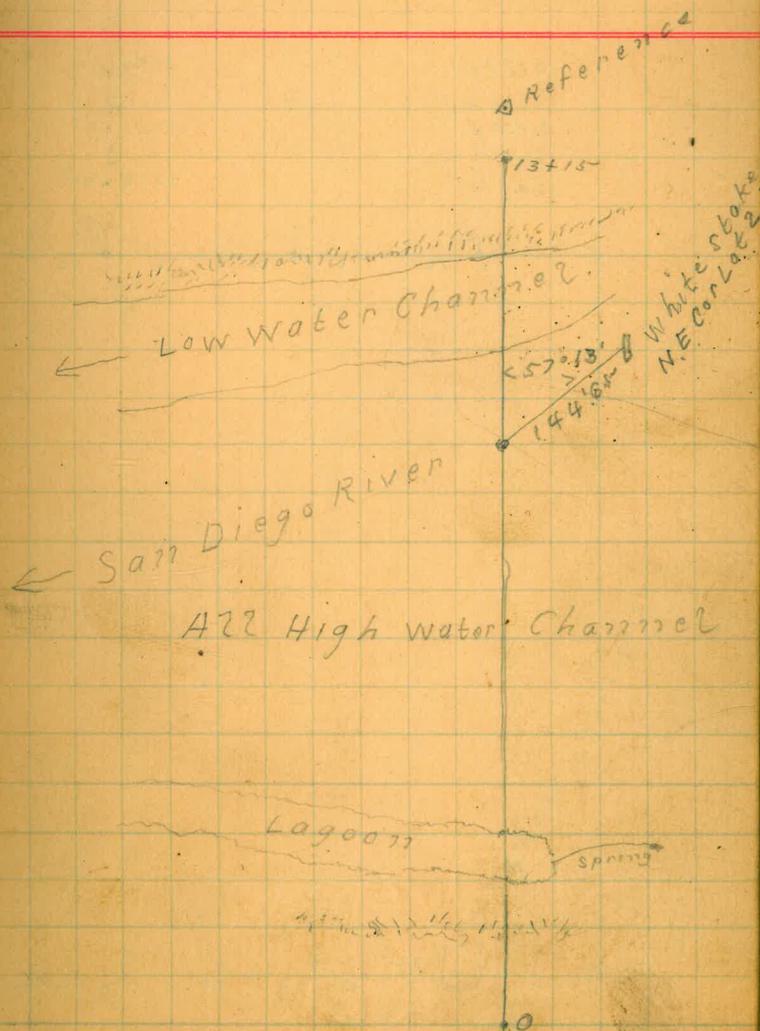
Sta	Dist	Angle	Bearing	Grade
A 144+40		29°40' L	N 20°10' E	N 1°30' E
144				
143				
142				
141				
140				
+95	Fence			
139				
+20	Fence			
138				
137+65	center of wash			
137				
136				
135				
A 134+13		37°40' L	N 31°50' E	N 30°45' E
134				
133				
132				N 68°45' E
131				
130				
129				
128				
127				



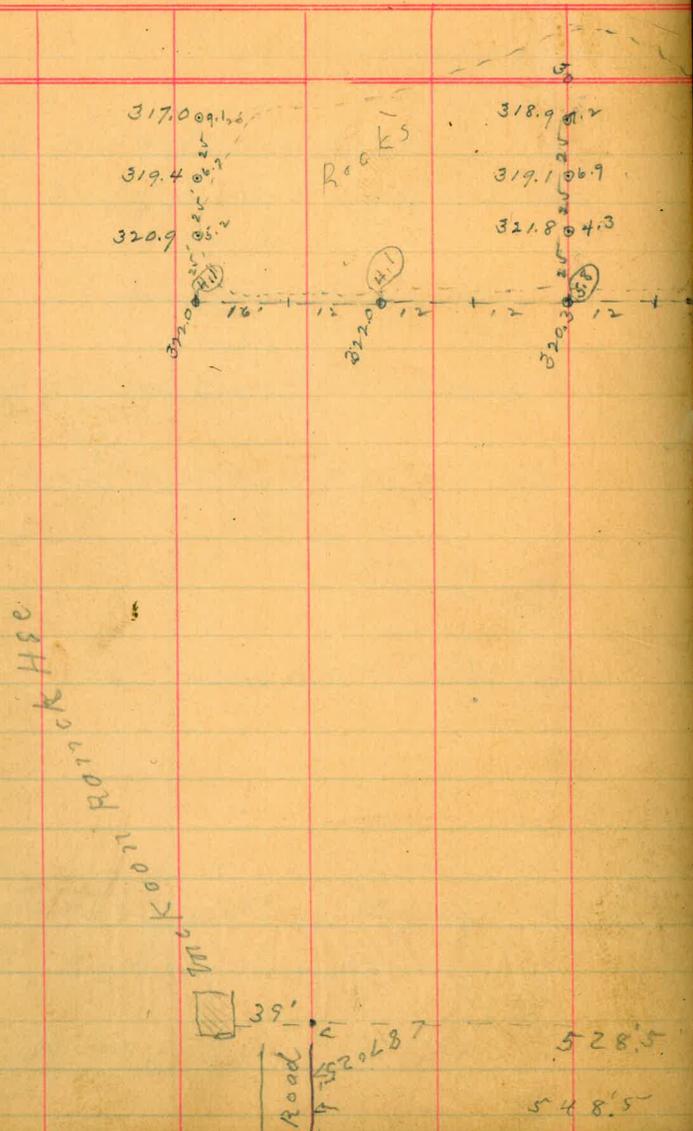
(note) at 134+13 leave county Wagon Road  
 & across field to the proposed pumping Sta

Suction Main at  
Head Works

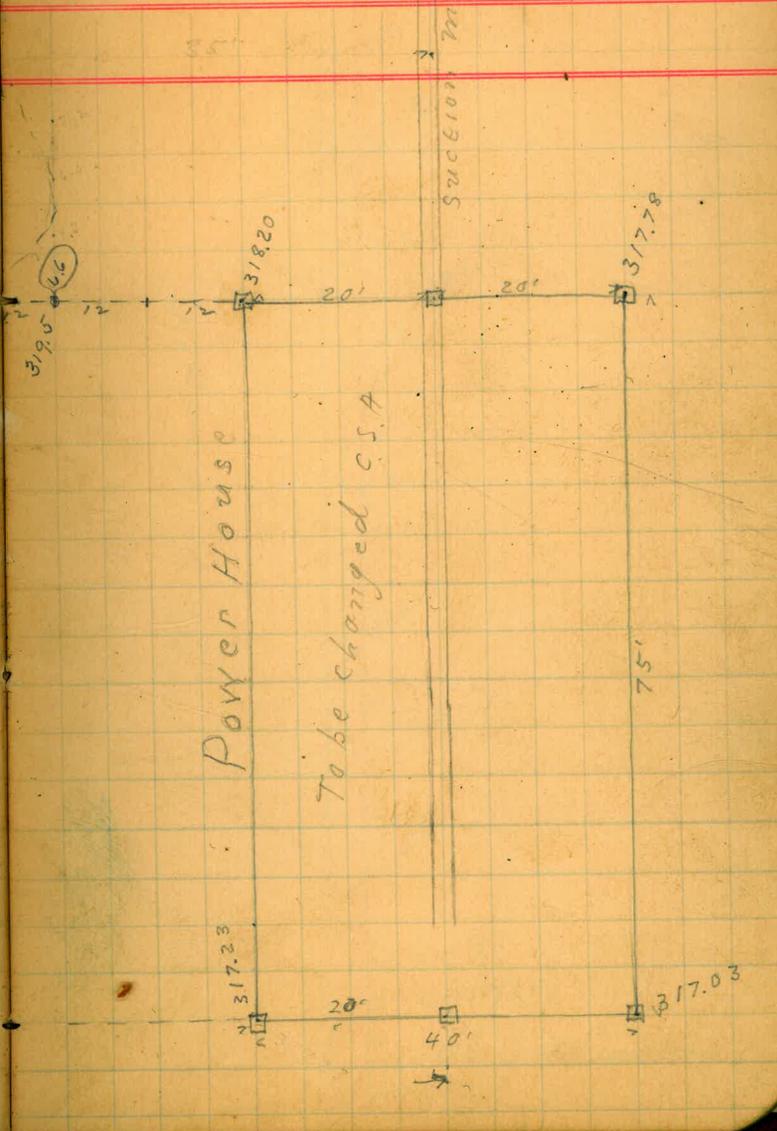
Sta	Dist	Angle	Bearing	Needle
A				
	13+80		For reference point	
	13+15		End of proposed suction main	
	13+10		Top of Bank	
	13		RT Bank Low Water channel	
	12			
	11+90		Lt Bank Low Water channel S.D. Riv	
	11			
A	10		White Post Bm $57^{\circ}13'R$ $144^{\circ}65'$ dist	
	9			
	8			
A	7			
	6			
	5			
	4			
	3			
	2+10		Edge of Lagoon	
	1+30		Edge of water in Lagoon	
	1+27		Bank	
	1			
	0		= 144+40 of Force main	



38

Suction Main  
+  
Power HouseD. M. 41) 320.40  
5.74  
326.14

12/15/04



Suction Main  
at  
Head Works

*Faint handwritten notes on the left page, possibly describing the layout or measurements of the suction main.*

*P. to be changed*

13 310.8

12 310

11 313.8

10 313.7

+45 = 309

9 312.1

8 312.8

+50 = 312.1

7 312.7

6 313

5 312.9

4 312.8

3 312.7

+58 = 313.5

+10 = 306.2 82V

2

+30 = 306 water surface

1 317.5

40

# New Mission Reservoir

5+23 Reference point a Hub

A 4+73 West end of Dam 450' Elv.

4+50

A D 4

3+50

D 3

2+50

D 2

1+50

1+48

D 1

0+50

D 0 = 450 ft Elv.

-+50

Alverson  
Comly  
Tosselyn

12/16/54

5+23 Ref. point

5+03

Wasteway

4+10

4+73 End of Dam

△

Rocky Ravine

Ledge Rocks

Pipe Line

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

4+30

S 84° 15' W

43° 50' L

4+48 = 482+40 P. Line

4+82+65

Force main

D. O. of Dam

Reference point

41 New Mission Reservoir  
Stadia Measurement

Transit at D-4, F.S. on D-0

Alverson Transit  
Rumsey Level + Record  
Cornly Rod  
Josslyn Stake

Dist.	Ver. ang.	Hor. ang.	Hor. Dist.	
(450' Contour)				
88'	14°45'	137°15'R	82.3	1
124'	9°45'	109°45'R	120.4	2
150'	8°35'	106°50'R	146.7	3
218'	5°45'	92°00'R	215.8	4
273'	5°00'	89°30'R	270.9	5
305'	4°20'	87°25'R	303.3	6
410'	4°30'	85°25'R	407.5	7
468'	3°25'	80°00'R	466.4	8
532'	3°00'	74°10'R	530.6	9
573'	3°00'	73°00'R	571.5	10
498'	3°10'	70°25'R	496.5	11
425'	3°30'	66°35'R	423.4	12
375'	4°00'	58°35'R	373.2	13
322'	4°10'	49°20'R	320.3	14
307'	4°20'	32°55'R	305.2	15
305'	4°15'	21°05'R	303.4	16
330'	4°25'	10°40'R	328.0	17
373'	4°00'	3°40'R	371.2	18

## New Mission Reservoir

Dist.	Ver. Ang.	Hor. Ang.	Hor. Dist.	
(445' Contour)				
332'	3°00'	3°45'R	331.1	1
285'	3°30'	16°55'R	283.9	2
277'	3°30'	32°55'R	276.0	3
308'	3°20'	51°50'R	307.0	4
357'	3°30'	61°15'R	355.7	5
385'	2°55'	65°15'R	384.0	6
435'	2°45'	70°30'R	434.0	7
465'	2°45'	72°35'R	463.9	8
500'	2°30'	73°25'R	499.0	9
453'	2°40'	76°35'R	452.0	10
415'	2°50'	80°35'R	414.0	11
365'	3°10'	81°50'R	364.1	12
300'	4°00'	83°45'R	298.5	13
260'	4°30'	86°20'R	258.4	14
196'	4°45'	90°30'R	194.7	15
165'	6°35'	96°20'R	162.8	16
140'	7°50'	99°20'R	137.4	17
94'	13°30'	116°20'R	88.9	18
62'	16°20'	141°05'R	57.1	19

Dist.	Ver. Ang.	Hor. Ang.	Hor. Dist.	
(440' Contour)				
46'	12°40'	135°13'R	43.8	1
82'	9°55'	105°50'R	79.6	2
135'	5°30'	95°15'R	133.8	3
187'	4°00'	87°50'R	186.1	4
233'	3°10'	83°55'R	232.3	5
295'	3°00'	81°20'R	294.2	6
345'	2°50'	80°45'R	344.2	7
400'	2°15'	78°35'R	399.4	8
430'	2°10'	74°45'R	429.4	9
390'	2°00'	71°30'R	389.5	10
368'	2°10'	68°15'R	367.5	11
320'	2°25'	61°20'R	319.7	12
274'	2°40'	50°30'R	273.4	13
245'	2°45'	36°55'R	244.4	14
248'	2°45'	21°50'R	247.4	15
270'	2°45'	8°40'R	269.4	16

Dist.	Ver. ang.	Hor. ang.	Hor. Dist.	
		(435' Contour)		
217	2°30'	7°50'R	216.6	1
206	2°30'	18°30'R	205.6	2
227	2°30'	38°45'R	226.6	3
254	2°15'	52°20'R	253.6	4
300	2°00'	64°15'R	300.0	5
345	1°45'	72°50'R	345.0	6
385	1°30'	76°55'R	385.0	7
325	1°40'	77°45'R	325.0	8
257	1°45'	80°10'R	257.0	9
193	2°00'	81°15'R	193.0	10
147	2°45'	86°55'R	146.5	11
98	3°00'	87°35'R	97.7	12
50	9°45'	108°15'R	48.6	13
335	1°30'	4°20'L	335.0	14
396	1°30'	8°00'L	396.0	15
50	9°30'	147°15'L	48.6	16

Dist.	Ver. ang.	Hor. ang.	Hor. Dist.	
(430' Contour)				
50'	4°00'	87°45'R	49.8	1
105'	3°45'	81°15'R	104.6	2
188'	1°00'	77°45'R	188.0	3
258'	1°00'	73°00'R	258.0	4
320'	1°00'	73°45'R	320.0	5
275'	1°00'	65°35'R	275.0	6
226'	1°00'	54°10'R	226.0	7
200'	1°00'	41°30'R	200.0	8
187'	1°00'	25°25'R	187.0	9
188'	1°00'	13°05'R	188.0	10
215'	1°00'	5°20'L	215.0	11
60'	4°30'	127°20'L	59.6	12
425' Contour				
58'	2°00'	101°35'L	58.0	1
21'	2°30'	198°05'L	21.0	2
34'	2°30'	67°05'R	34.0	3
87'	2°30'	66°05'R	87.0	4
133'	2°00'	73°20'R	133.0	5
172'	1°30'	73°30'R	172.0	6
205'	1°00'	69°25'R	205.0	7
253'	1°00'	68°05'R	253.0	8

Dist.	Ver. ang.	Hor. ang.	Hor. dist.	
(425' Contour, Contd)				
214'	1°00'	64°10'R	214.0	9
186'	1°30'	53°25'R	186.0	10
174'	1°30'	35°45'R	174.0	11
165'	1°30'	15°30'R	165.0	12
193'	1°30'	9°00'L	193.0	13
225'	1°00'	12°15'L	225.0	14

## (420' Contour)

215'	2°00'	16°35'L	215.0	1
168'	2°15'	9°30'L	168.0	2
140'	2°45'	16°05'R	140.0	3
148'	2°30'	30°40'R	148.0	4
146'	2°30'	42°40'R	146.0	5
150'	2°30'	58°10'R	150.0	6
180'	2°30'	65°45'R	180.0	7
102'	4°00'	69°45'R	107.5	8
74'	4°30'	54°05'R	73.6	9
47'	7°15'	39°15'R	46.2	10
45'	10°50'	68°25'L	43.4	11
73'	1°00'	93°05'L	73.0	12

Must be in error

## New Mission Reservoir

113

$$\begin{array}{r} 411.13 \\ 111 \\ \hline 400.0 \end{array}$$

Dist.	Ver. ang.	Hor. ang.	Hor. dist.	
(415' Contour)				
80'	5°30'	82°00'L	79.2	1
56'	7°00'	59°25'L	55.1	2
88'	6°30'	27°25'R	86.9	3
124'	4°00'	49°45'R	123.3	4
115'	3°45'	22°50'R	114.5	5
156'	2°45'	15°55'L	156.0	6
173'	2°45'	21°15'L	173.0	7

## (410' Contour)

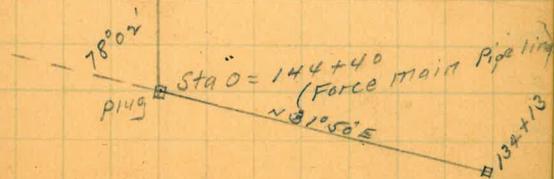
187'	5°00'	29°15'L	185.6	1	} O.K.
143'	6°45'	23°00'L	141.0	2	
118'	7°45'	9°35'L	115.9	3	} ?
100'	9°00'	11°25'R	97.6	4	
83'	11°15'	15°35'L	79.8	5	
73'	13°00'	39°45'L	69.3	6	} O.K.
100'	9°30'	68°55'L	97.3	7	

at 65' Right of Sta. 23 the elevation of ground (lowest point in draw) is 401.3

48 Stadia Survey of Pipe Line (for Oil or Distillate)  
 from "Head Works" to Santee Station

Ramsey Instrument  
 Alverson Rod

Sta.	Dist.	Ang.	Bearing	Needle
17				
16				
15				
14				
13				
12				
11				
10				
9				
8				
7				
6				
5				
4				
3				
2				
1	2593'	78°02' R	S70°08' E	S70°25' E
0				



Sta.	Dist.	ang.	Bearing	Needle
------	-------	------	---------	--------

38

37

36

35

34

33

32

31

30

29

28

27

26

25

24

23

22

21

20

19

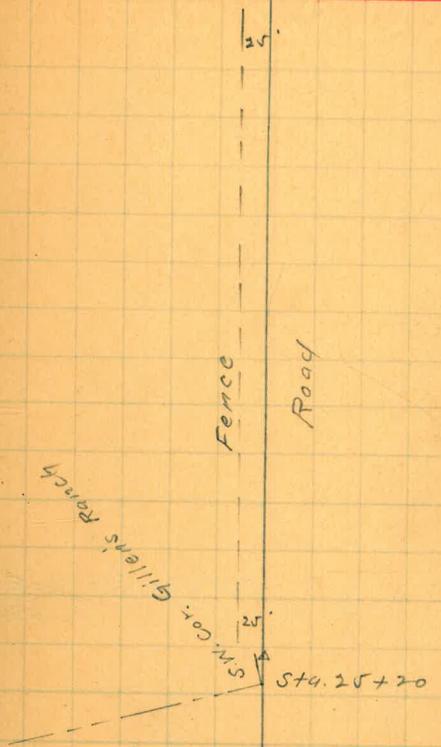
18

2189'

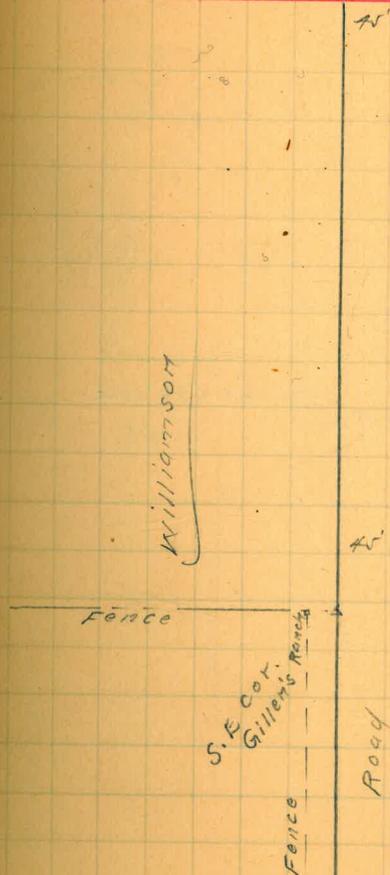
2

20° 21' L

N 89° 31' E N 89° 30' E



Sta	Dist.	Ang.	Bearing	Needle
59				
58				
57				
56				
55				
54				
53				
52				
51				
50				
49				
48	2487'		S88°58'E	S88°40'E
47	+82' 1031'R			
46				
45				
44				
43				
42				
41				
40				
39				





Sta.	Dist.	ang.	Bearing	Needle
94				
93				
92				
91				
90				
89				
88				
87				
86				
85				
84				
83				
82				
81				

+87

93

92

91

90

89

88

87

86

85

84

83

82

81

S.D.C. & E. R.R. 771.61°27'

Platform

Santeo Station

76.43'

94+87

1' inside Rail

## Gravity Main

Location Gates Air valves &amp; Blowoffs

Sta		
130	30"	gate valve
135	3"	air valve
154	3"	air valve
158	6"	blowoff
170	3"	air valve
179	6"	blowoff
191	3"	air valve
204+75	6"	blow off
211	3"	air valve
226+50	6"	blow off
234+25	3"	air valve
234+50	30"	gate valve
243+75	6"	blowoff
275	3"	air valve
301	3"	air valve
315+50	6"	blowoff
329+75	3"	air valve
330	30"	gate valve
344	3"	air valve
353+50	3"	air valve

Sta		
373	3"	air valve
377+50	6"	blowoff
386	3"	air valve
397+75	6"	blow off
403	3"	air valve
408	3"	" "
423	3"	" "
434	3"	" "
447	3"	" "

8 Blowoffs  
18 Air Valves

## On Fore Main.

Sta		
6	6"	blowoff
9	3"	air valve
32+50	3"	air valve
55+50	3"	air valve
77+25	6"	blowoff
137+50	6"	blowoff

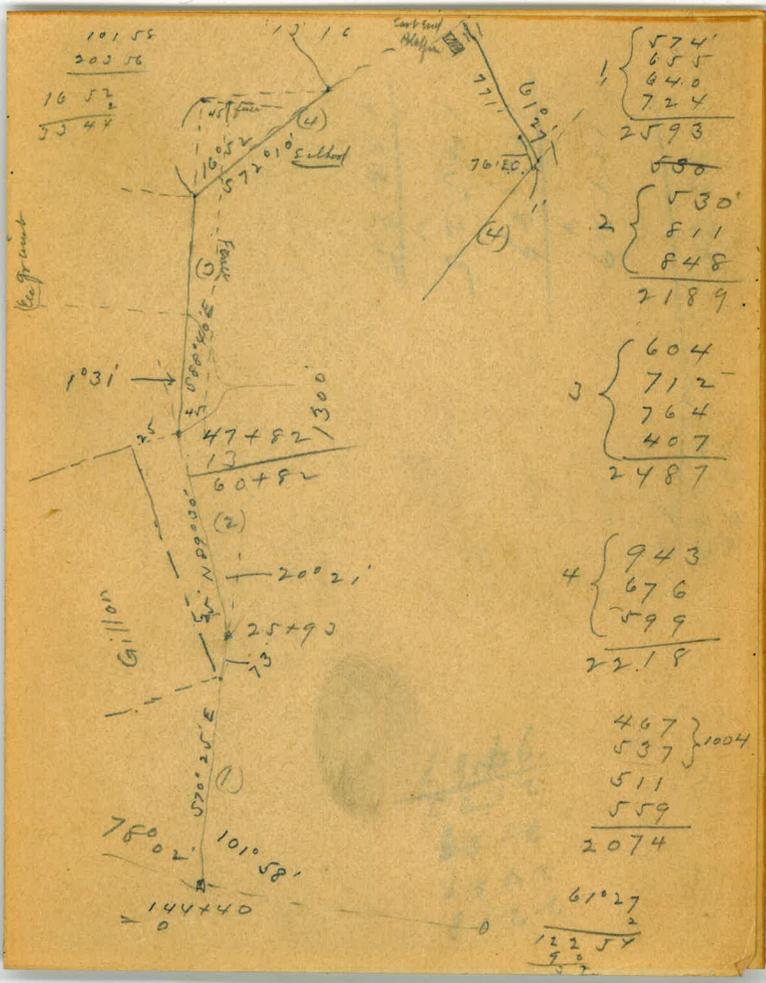
3 Air Valve  
3 Blowoffs

$$\begin{array}{r} 25+93 \\ 21+89 \\ \hline 47+82 \\ 24+87 \\ \hline 72+69 \\ 22+18 \\ \hline 94+87 \end{array}$$

$$\begin{array}{r} 179.60 \\ 101.58 \\ \hline 78.02 \end{array}$$

$$\begin{array}{r} N20.10'E \\ 78.02'P \\ \hline N80.92'E \\ 20.21'L \\ \hline N59.51'E \end{array}$$

$$\begin{array}{r} N310.50'E \\ 78.02'N \\ \hline 109.52 \\ 179.60 \\ \hline S70.08'E \\ 20.21 \\ \hline 90.29 \\ 179.60 \\ \hline N89.31'E \\ 1.31'P \\ \hline 91.02 \\ 179.60 \\ \hline S88.58'E \\ 16.52 \\ \hline S72.06'E \end{array}$$



1  
 { 574  
 655  
 840  
 724  
 ---  
 2593  
 590

2  
 { 530  
 811  
 848  
 ---  
 2189

3  
 { 604  
 712  
 764  
 407  
 ---  
 2487

4  
 { 943  
 676  
 599  
 ---  
 2218

467  
 537 } 1004  
 511  
 559  
 ---  
 2074

61.27  
 2  
 ---  
 122.54  
 2  
 ---  
 61.27

Copy of the  
Notes of Benj McLeran of the  
Middle of the San Diego River  
from NE Cor of Lot 2 Tract. Fanito  
Ranch Surveyed Oct 1899.

Course	Chains	feet
S 83 1/2° W	5.80	= 382.8
S 56 1/4° W	7.16	472.5
S 54° W	4.30	283.8
S 33 3/4° W	3.65	240.9
S 63 1/4° W	2.00	132.0
To West Line of Lot 2 + SSE of N of S. Brk Riv		
S 68 1/4° W	10.20	673.2
S 56° W	* 4.80	316.8
To East side Powry Wagon Road		
S 64 1/4° W	9.68	638.9
S 80° W	12.83	846.8
S 79 1/4° W	19.00	1244.0
S 44° W	16.00	1056.0
S 75 1/4° W	11.40	752.4
Total Southing		
N 69 1/2° W	7.80	514.8
N 66 3/4° W	12.27	809.8
N 50 1/4° W	2.65	174.9
N 50 1/4° W	3.35	221.1

see Diagram

Note the distances in feet &  
the Latitude & Departure are  
calculated by G. S. Morrison

Lat	feet.	Dep
43.4		380.4
262.2		392.5
166.9		229.7
200.3		133.8
59.4		117.9
732.2		1254.3
249.3		625.1
177.3		262.7
1158.8		2142.1
277.6		575.5
147.0		834.0
232.2		1222.2
759.3		739.9
191.3		727.3
2766.2		6241.0
N 180.3		482.3
" 319.7		744.2
" 111.8		134.5
2154.4		7602.0

To Maj Chase's E line

Opposite Page



57

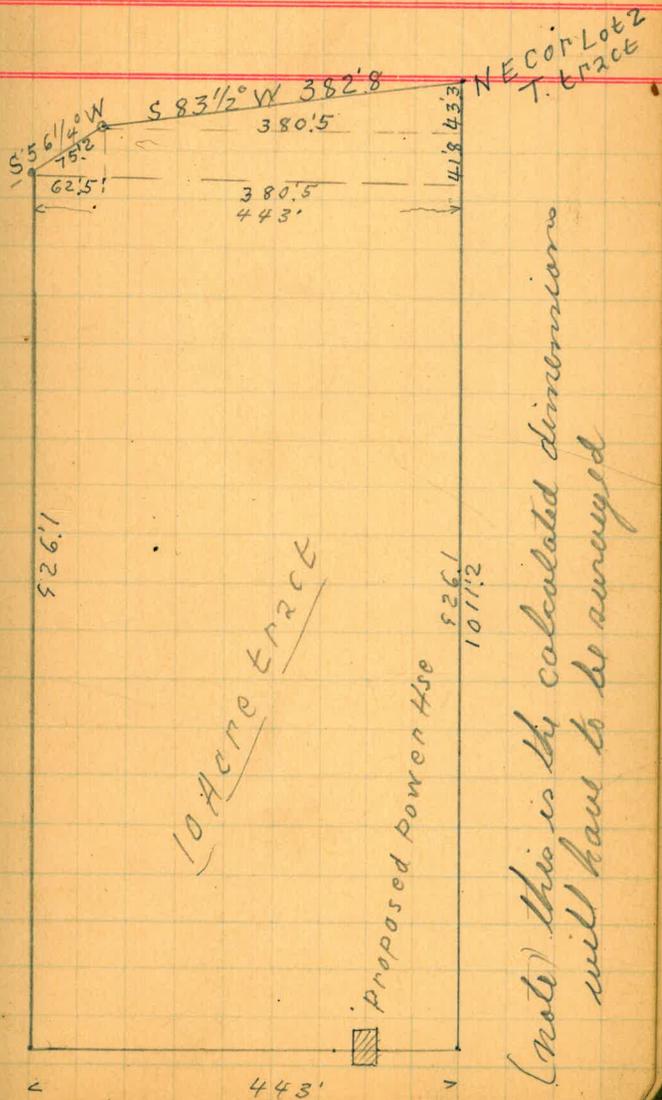
No 7 - 30" dia Steel Pipe

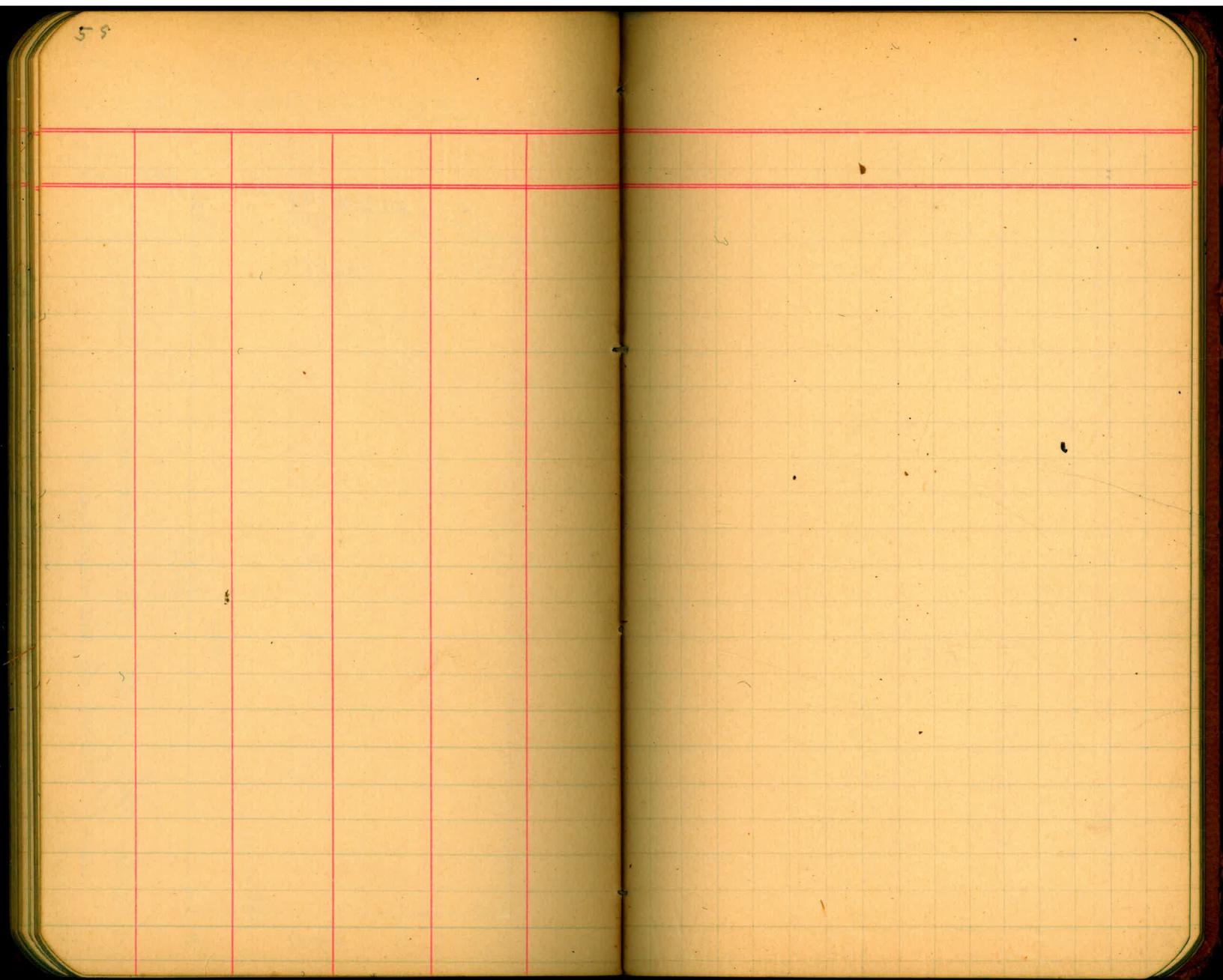
Location &amp; Length of same

on the Gravity Main

Sta	221+50	to	230+75	=	925' + 15 =	940
"	240+00	"	250+00	=		1000
"	314+25	"	319+15	=	490 + 10 =	<u>500</u>
			Total			2440

10 Acre tract at Head Wks  
 as per Option of Jan. 1905





Lanthesheim to Maybach  
North line of Block G. F. Anita.

Joe H.  
Joe Lloyd

Wm Steilberg

1430  
1140  
2610

44

12800  
10550  
2290

5288      8953  
1890      1014      13888  
3990      7939      10180  
            831      33

14750      138468  
445      5280  
52      19148

Lat      Dep  
1849      470  
1700  
2176

But sta 370 & 371 should be here  
& 1350 ft East of line to 2-3-34-35

TRAVERSE TABLE FOR TRANSIT BOOK.

From 1° to 90° for a distance of 100.

Degrees.	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		Degrees.
	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	
0			100.00	0.44	100.00	0.87	99.99	1.31	89
1	99.98	1.75	99.98	2.18	99.97	2.62	99.95	3.05	88
2	99.94	3.49	99.92	3.93	99.91	4.36	99.88	4.80	87
3	99.86	5.23	99.84	5.67	99.81	6.10	99.79	6.54	86
4	99.76	6.98	99.73	7.41	99.69	7.85	99.66	8.28	85
5	99.62	8.72	99.58	9.15	99.54	9.58	99.50	10.02	84
6	99.45	10.45	99.41	10.89	99.36	11.32	99.31	11.75	83
7	99.25	12.19	99.20	12.62	99.14	13.05	99.09	13.49	82
8	99.03	13.92	98.97	14.35	98.90	14.78	98.84	15.21	81
9	98.77	15.64	98.70	16.07	98.63	16.50	98.56	16.93	80
10	98.48	17.36	98.40	17.79	98.33	18.22	98.25	18.65	79
11	98.16	19.08	98.08	19.51	97.99	19.94	97.90	20.36	78
12	97.81	20.79	97.72	21.22	97.63	21.64	97.53	22.07	77
13	97.44	22.50	97.34	22.92	97.24	23.34	97.13	23.77	76
14	97.03	24.19	96.92	24.62	96.81	25.04	96.70	25.46	75
15	96.59	25.88	96.48	26.30	96.36	26.72	96.25	27.14	74
16	96.13	27.56	96.00	27.98	95.88	28.40	95.76	28.82	73
17	95.63	29.24	95.50	29.65	95.37	30.07	95.24	30.49	72
18	95.11	30.90	94.97	31.32	94.83	31.73	94.69	32.14	71
19	94.55	32.56	94.41	32.97	94.26	33.38	94.12	33.79	70
20	93.97	34.20	93.82	34.61	93.67	35.02	93.51	35.43	69
21	93.36	35.84	93.20	36.24	93.04	36.65	92.88	37.06	68
22	92.72	37.46	92.55	37.86	92.39	38.27	92.22	38.67	67
23	92.05	39.07	91.88	39.47	91.71	39.87	91.53	40.27	66
24	91.35	40.67	91.18	41.07	91.00	41.47	90.81	41.87	65
25	90.63	42.26	90.45	42.66	90.26	43.05	90.07	43.44	64
26	89.88	43.84	89.69	44.23	89.49	44.62	89.30	45.01	63
27	89.10	45.40	88.90	45.79	88.70	46.17	88.50	46.56	62
28	88.29	46.95	88.09	47.33	87.88	47.72	87.67	48.10	61
29	87.46	48.48	87.25	48.86	87.04	49.24	86.82	49.62	60
30	86.60	50.00	86.38	50.38	86.16	50.75	85.94	51.13	59
31	85.72	51.50	85.49	51.88	85.26	52.25	85.04	52.62	58
32	84.80	52.99	84.57	53.36	84.34	53.73	84.10	54.10	57
33	83.87	54.46	83.63	54.83	83.39	55.19	83.15	55.56	56
34	82.90	55.92	82.66	56.28	82.41	56.64	82.16	57.00	55
35	81.92	57.36	81.66	57.71	81.41	58.07	81.16	58.42	54
36	80.90	58.78	80.64	59.13	80.39	59.48	80.13	59.83	53
37	79.86	60.18	79.60	60.53	79.34	60.88	79.07	61.22	52
38	78.80	61.57	78.53	61.91	78.26	62.25	77.99	62.59	51
39	77.71	62.93	77.44	63.27	77.16	63.61	76.88	63.94	50
40	76.60	64.28	76.32	64.61	76.04	64.94	75.76	65.28	49
41	75.47	65.61	75.18	65.93	74.90	66.26	74.61	66.59	48
42	74.31	66.91	74.02	67.24	73.73	67.56	73.43	67.88	47
43	73.14	68.20	72.84	68.52	72.54	68.84	72.24	69.15	46
44	71.93	69.47	71.63	69.78	71.33	70.09	71.03	70.40	45
45	70.71	70.71							
Degrees.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Degrees.
	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		