

FIELD JOURNAL.

ORDER OF SEQUENCE  
FOR AN  
ASTRONOMICAL REPORT  
AT  
MAIN FIELD STATIONS.

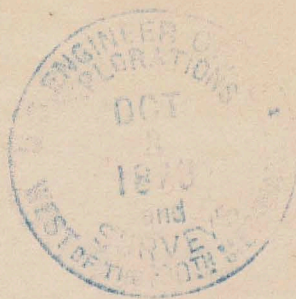
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*Longitude by Telegraph.*

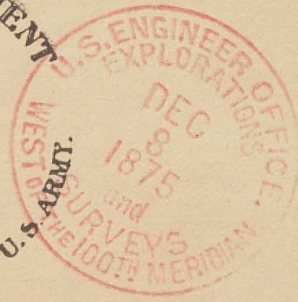
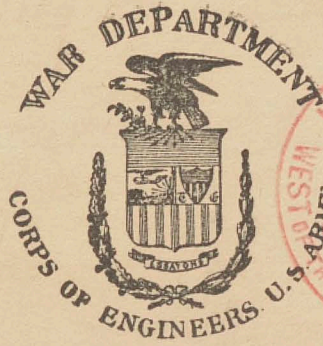
*Latitude by Zenith Telescope, (Talcott's method.)*

1. Geographical position of station.
2. Physical geography details; especially giving the physical peculiarities of the location.
3. Meteorological conditions, general and special, while observations were conducted.
4. Description of observatory; including personnel of party, name of telegraph operator, and name of telegraph company whose wire has been employed.
5. Description of instruments used.
6. Points with which connections were made; nights of observation, and observers; also name of computer or computers.
7. Tabulation of stars used, and number of observations.
8. Instrumental values; circumstances of telegraphic communication, *i. e.* length of circuit batteries, number of relays, repeaters, &c.
9. Uniform tables of time-reductions at receiving station.
10. Uniform tables of time-reductions at sending station.
11. Grouping of series of exchange signals, including means of single and serial results.
12. Personal equation.
13. Probable error by least squares.
14. Resulting longitude.
15. Reduction of the latitude observations properly grouped, with discussion of results.
16. Resulting astronomical co-ordinates.

No. 177



1  
C 61



~~ASTRONOMICAL~~ RECORDS,

Book No. *177*, 1875.

U. S. ENGINEER OFFICE.

GEOGRAPHICAL AND GEOLOGICAL

EXPLORATIONS AND SURVEYS

WEST OF THE 100th MERIDIAN.

*L. W. L. Marshall*

Corps of Engineers,  
IN CHARGE.

Party No. 1 Colorado Div

From November 10

To 11 17-1875

*J. Calvin Spiller*

REMARKS.

*Top<sup>d</sup>-Assistant*

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Nov 10<sup>m</sup> - 1875 -

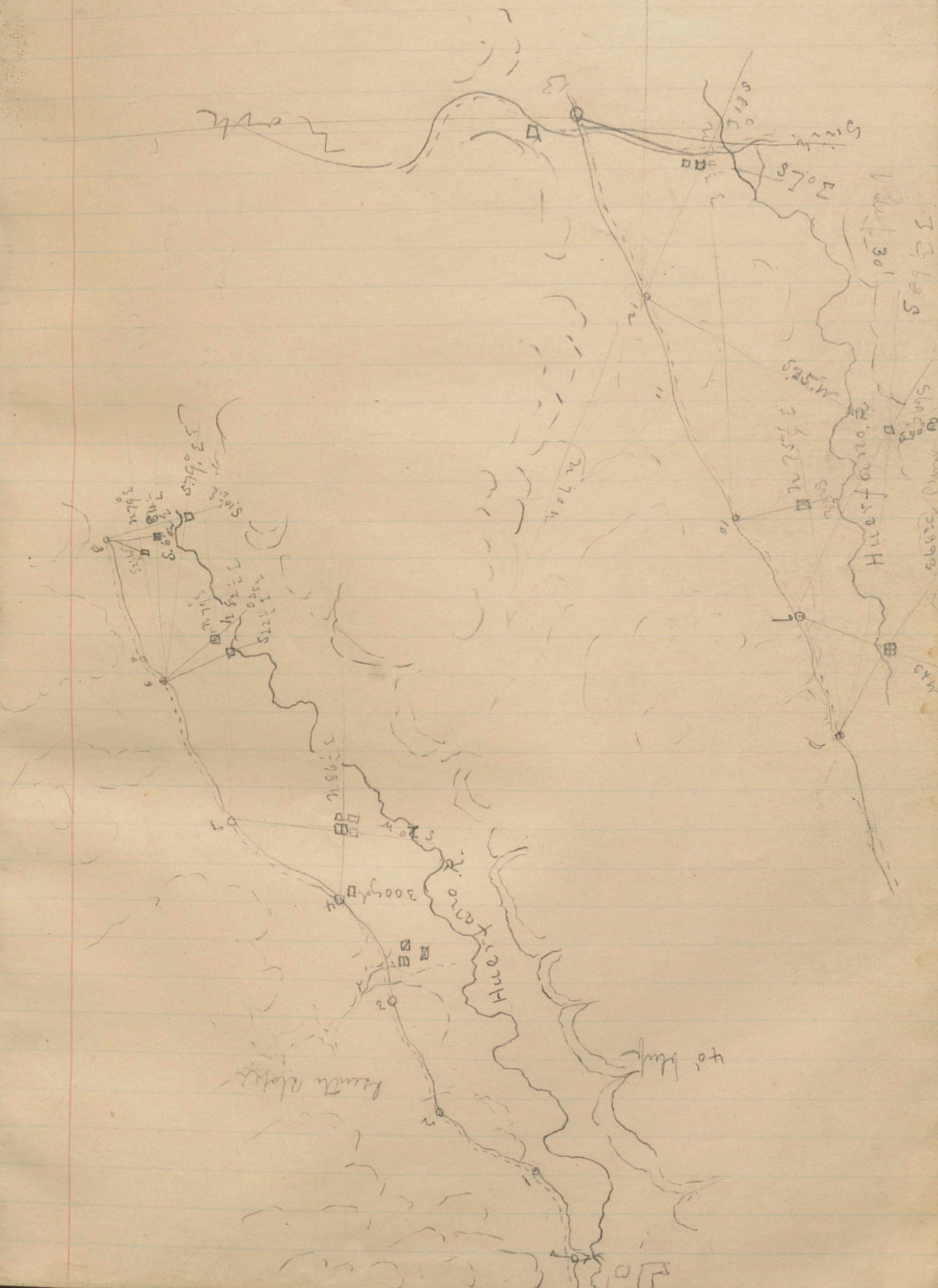
Camp 67 - 68 - Colorado Party - I

- 1. 6922 - N 69° E (1) Nth Greenhorn = N 21° 40' W
- 2. 7220 -10 N 44° E
- 3. 7466 -30 N 69° E
- 4. 7670 -20 N 65° E
- 5. 7902 - N 40° E
- 6. 8230 -10 N 53° E (1) E Span = S 19° 50' E W Span S 10° 10' E  
Abeysa S 28° 40' W Sth Sheep S 58° W
- 7. 8286 N 37° E
- 8. 8607 -15 N 68° E
- 9. 8855 N 64 1/4° E
- 10. 9001 N 57 2/3° E 256° E 72 72 1/2
- 11. 9192 N 52° E 1 1
- 12. 9444 N 62 1/2° E (11)
- 13. 9785 N 65 1/4° E Viable Road -

- (13) E Span S 12° E W Span S 34 1/4° E  
 Greenhorn S 10° 10' W Abeysa S 34° 40' W  
 Sth Sheep S 58° 00' W Sth Greenhorn N 89 1/2° W  
 Greenhorn N 48° 20' W

Two dollar signs drawn vertically on the right margin.

26573



2 Sta 1

n 21°40' w

n 4°40' w

+7°37'

+6°38'

(6) n 63 1/4 w

n 30°50' w

(13) n 64°50' w

G9 n 81 1/4 w

Sta 6

E Spa

W Spa

S 3°2' W  
S 1°2' W  
S 1°2' W

+20°04'

S 21°20' W

+20°30'

S 34 1/2 w

36

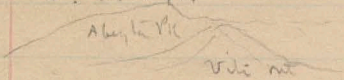
(20°)

14	342		N. 87° E
15	745	- 20	N. 72½° E
16	928	- 20	N. 70° E
17	1356	- 55	N. 54½° E
18	1575	- 10	N. 52° E
19	1662		N. 46° E

89 m

700 m  
10,000 ft

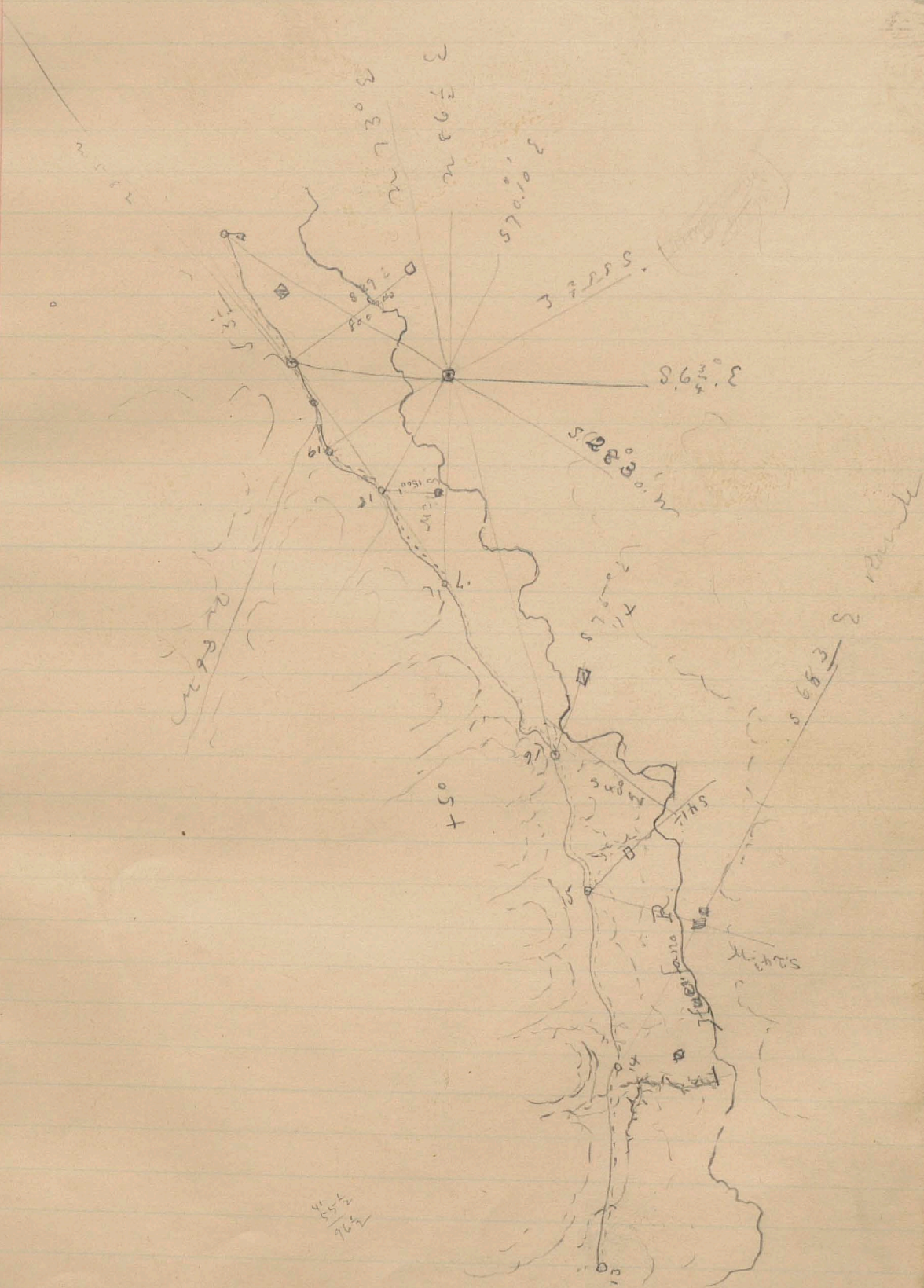
E Spanish = S. 20° 50' E - W Spanish = S 4° 50' W  
S. 41° W



Site Greenhorn S 83° W. Greenhorn = 2,600 ft

20	1794	-	N 59.10 E
21	1918		N 58½ E
22	2254		N 62¼ E

Camp 68  
on Hurfano



$\frac{1}{2} \times 96$   
 $= 48$   
 $\frac{1}{2} \times 96$   
 $= 48$



6

Camp 68-69 - Nov<sup>r</sup> 11-1875

523 69

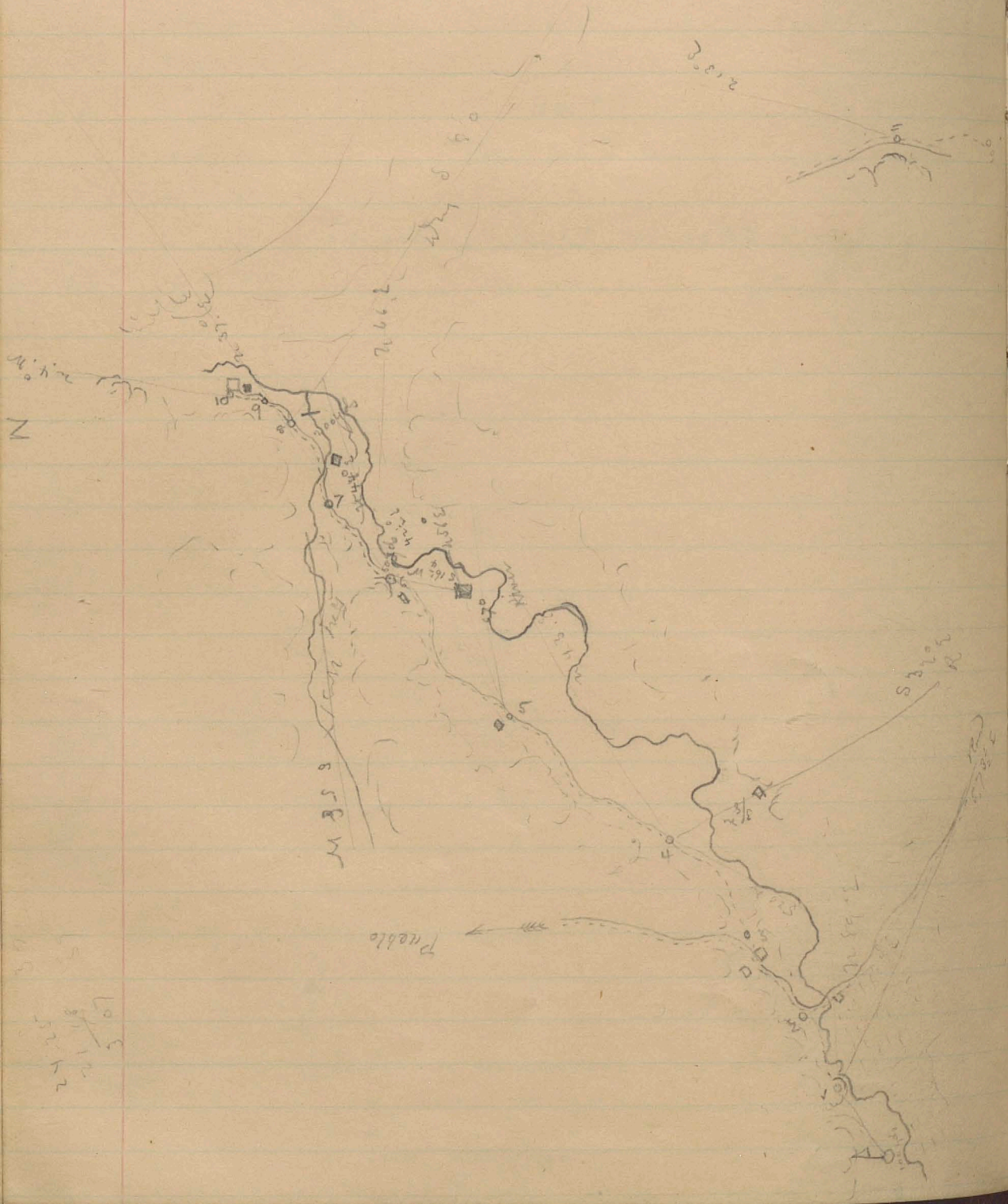
2254

1.	2444		n 42 $\frac{1}{2}$ E		
2	2496		n 49° E	(11)	
3	2591		n 34° E		
4	2788		n 37 $\frac{1}{4}$ E		
5	3236	-20	n 36 $\frac{1}{2}$ E		
6	3744	-30	n 39° 10' E		
7	3978		n 40° 10' E		
8	4176		n 56 $\frac{1}{2}$ ° E		
9	4236		n 28° E		
10	4300		n 6° E		
11	4549		n 2° W		} End of Graded Road } H + R E, Possibly
12	4724		n 18° W		

7277  
12-10-80

E Span Pk = South W Span Pic =  $S. 74^{\circ} W$   
 Trinchera " =  $S. 17.20' W$  Abuyta =  $S. 41.80' W$   
 South Sheeps =  $S. 60.40' W$  Sth of Greenhorn =  $S. 79^{\circ}. 10' W$   
 Greenhorn - N 69.20 Snow Butte near Camp 68 =  $S. 31.50' W$   
 (4) Butte  $S. 34.10' W$

(ii) E Span =  $S. 42^{\circ} W$  Span =  $S. 10^{\circ}. 20' W$



7-05-54  
12,30-30

Site 6 Nov 11

2.020  
1.010

3.62

Groundwater - n 80.25 w  
Site " = S 71.1 w

(1) m 41.1 w  
(2) m 41.1 w

Site Sharp S. 57.50 w  
Abundant 417

(1) m 6.0 w  
(4) m 3.3 w  
(6) m 2.3 w

(21) S. 67.7 w

3.41

Span S. 95.0 w  
326 w

(10) m 6.2 w  
(11) m 5.5 w  
(14) m 3.3 w

(16) S 41.2  
+ 3.067  
1.005

(21) S. 19.2 w

1.36

Pointe  
Bikes n 25.2 w

100  
100  
100

# 10 Nov 11 - Cont'd

2000

44

13 4822 N. 23° W Creek

14 4991 " " "

15 5160 N 1° 50' E

~~4~~

From 12.20.80

(15) E Span = S. 3° 50' W W Span = S. 9° 40' W

Abeysa = S. 38° 20' W Trinchem = S. 17° 50' W

Greenham S. 89° 20' W

(15) Odometer changed to 0

16 97 N. 25° E

17 225 N 61° E

18 379 N. 6° E

19 790 -40 N. 32° 10' E

20 1074 -30 N. 27° 10' E House S. 55° E 300 yds

21 1228 N 49 1/4 E

(21) E Span = S. 5° 40' W W. Span = S. 11° W

Trinchem = S. 18° W Abeysa = S. 37° 40' W

From 12.29.80

51° → Sinner Blance? S. 52° 20' W Sth Shup S. 57° W

Greenham S. 81° 40' W Butte near Camp 68 = S. 27° 40' W

A

22 1510 N. 9° W

23 1591 N 2 1/4 E

24 1710 N 17 1/4 E

25 1955 " " "

26 2325 N 35 1/2 E

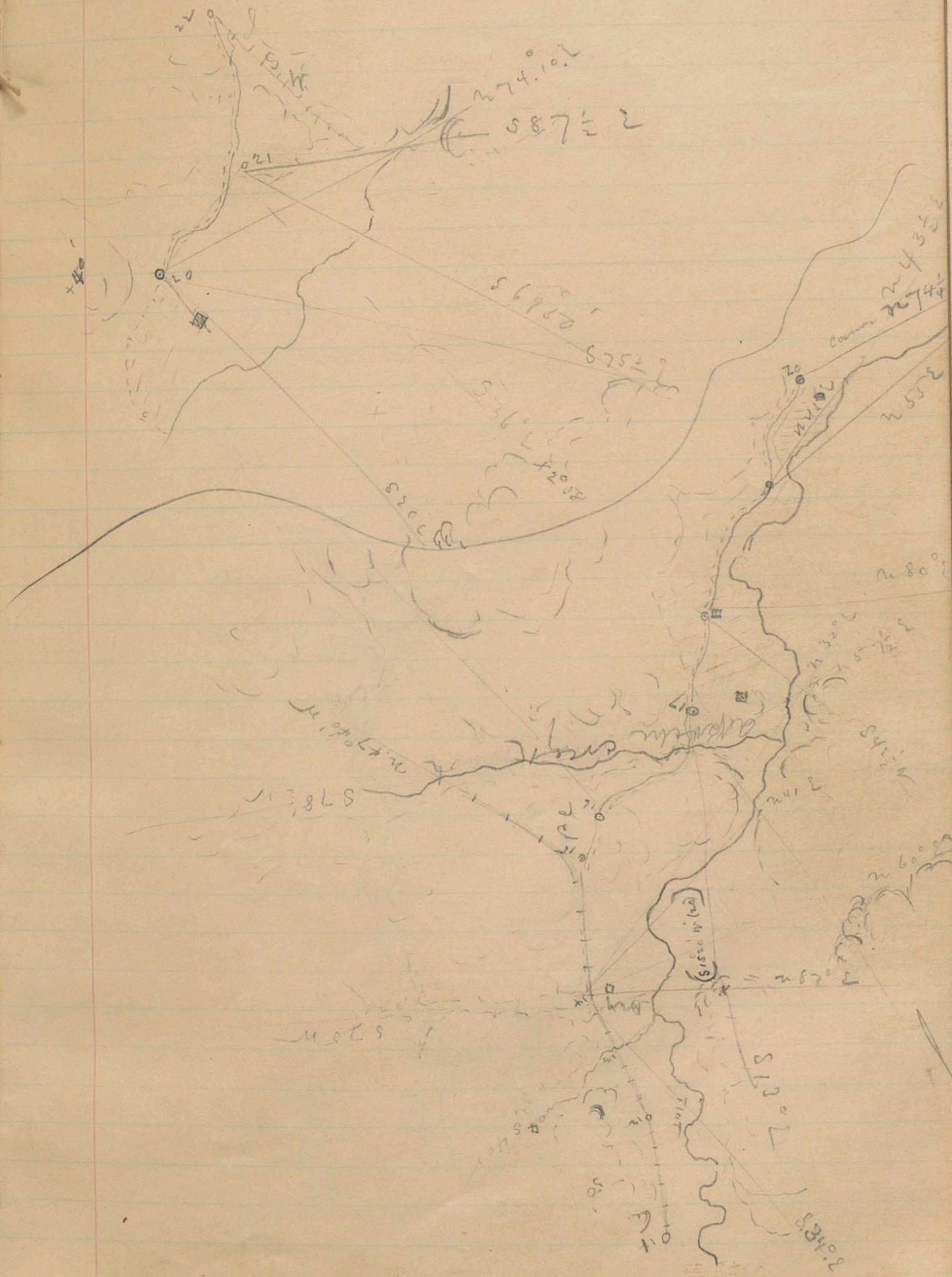
27 2605 N. 31 1/4 E

28 2846 N. 53 3/4 E

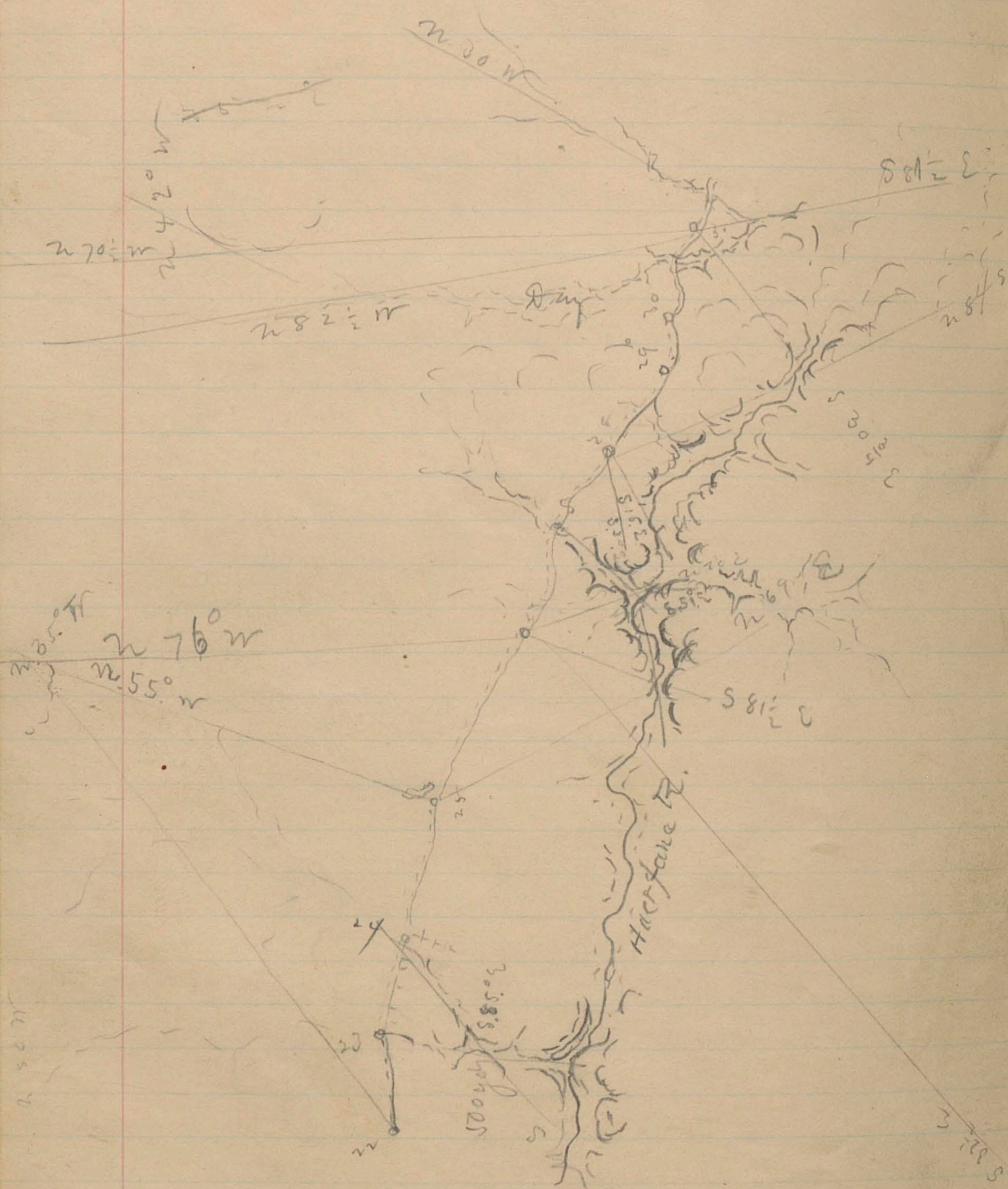
29 3102 N 54 1/2 E

30 3154 N 11° E

31 3314 -40 N 41° E



map 3, 2



Plotted from (2780)

75

Plot 110

255 11° W  
x 5.0

W Span 5 11° W, Pt Site Grantham 5.54 20 E  
 5550 W, Benth. 5.24 45  
 5550 W

Alaska 5.61 0 W  
 French 5.18 2 W  
 541° W  
 5.16 2. E

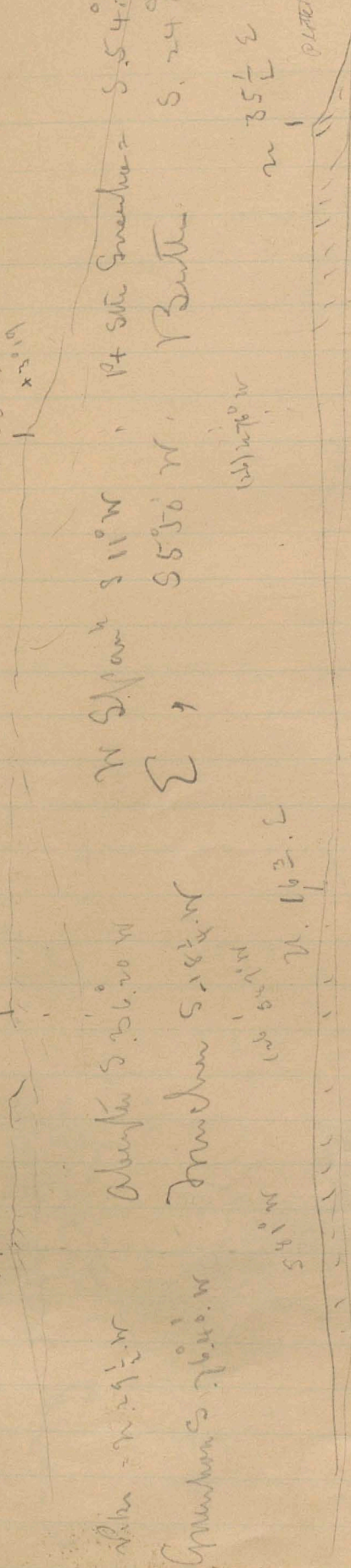
255 1/2 E

Plotted

555 1/4 W 588 1/2 W

(28)

Plotted  
 (27) 5 7 1/2 W  
 (28) 5 7 1/2 W





14 Nov 11 - Contd

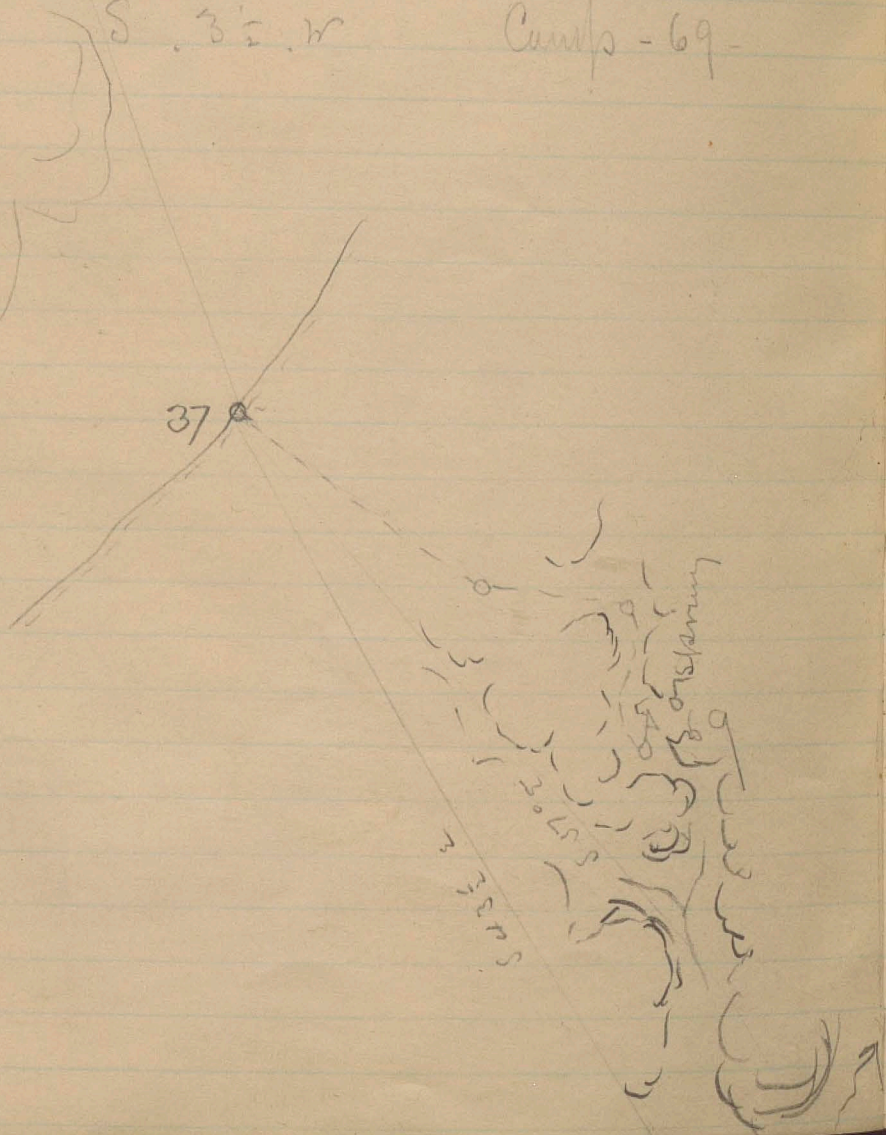
32 3582 N 43 1/4 E  
 33 3990 N 45 1/2 E

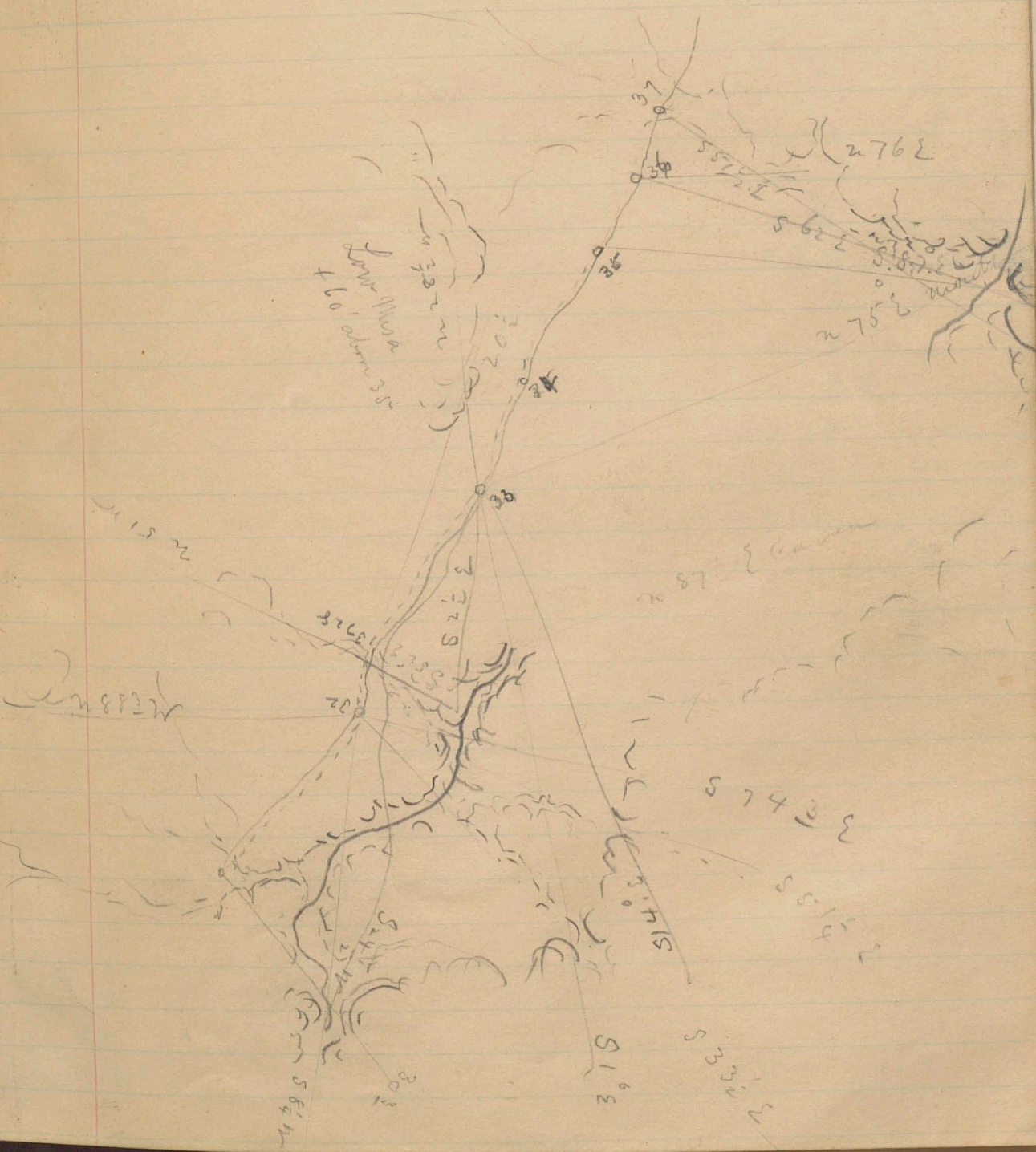
(33)  
 11.29.18  
 7.00 AM

E Span = S. 95.0 W. W Span = S. 14.10' W  
 Abeyta = S. 37.0' W Sth of Granhorn = S 51.50 W  
 Granhorn = S 69.40 W Trinchera S. 20.20 W

34 4174 N 19 1/2 E  
 35 4324 N 37.0 E  
 36 4684 N 33.3 E  
 37 4844 N 22 1/2 E  
 38 5188 S 62 1/2 E  
 39 5300 -20 S 80.0 E  
 40 5389 S 3 1/2 W

Camp - 69 -





Camp 69-70

Nov 12<sup>th</sup> 1878

Colorado No. I

Spiller Tag

Started at Sta 37 - of Nov 11 - Odom = 5933

1 6596 N 22½ E

2 6720 N 49½ E

3 6934 N 30° E

4 7108 N 32½ E

5 7348 N 34° E

6 7584 N 43° E

7 7758 N 17½ E

8 7863 N 32° W

9 7960 N 19½ E

10 8225 N 46° E

11 8295 North

12 8358 N 55° E

13 8560 N 84½ E

14 8666 S 78½ E

15 8990 N 67° E

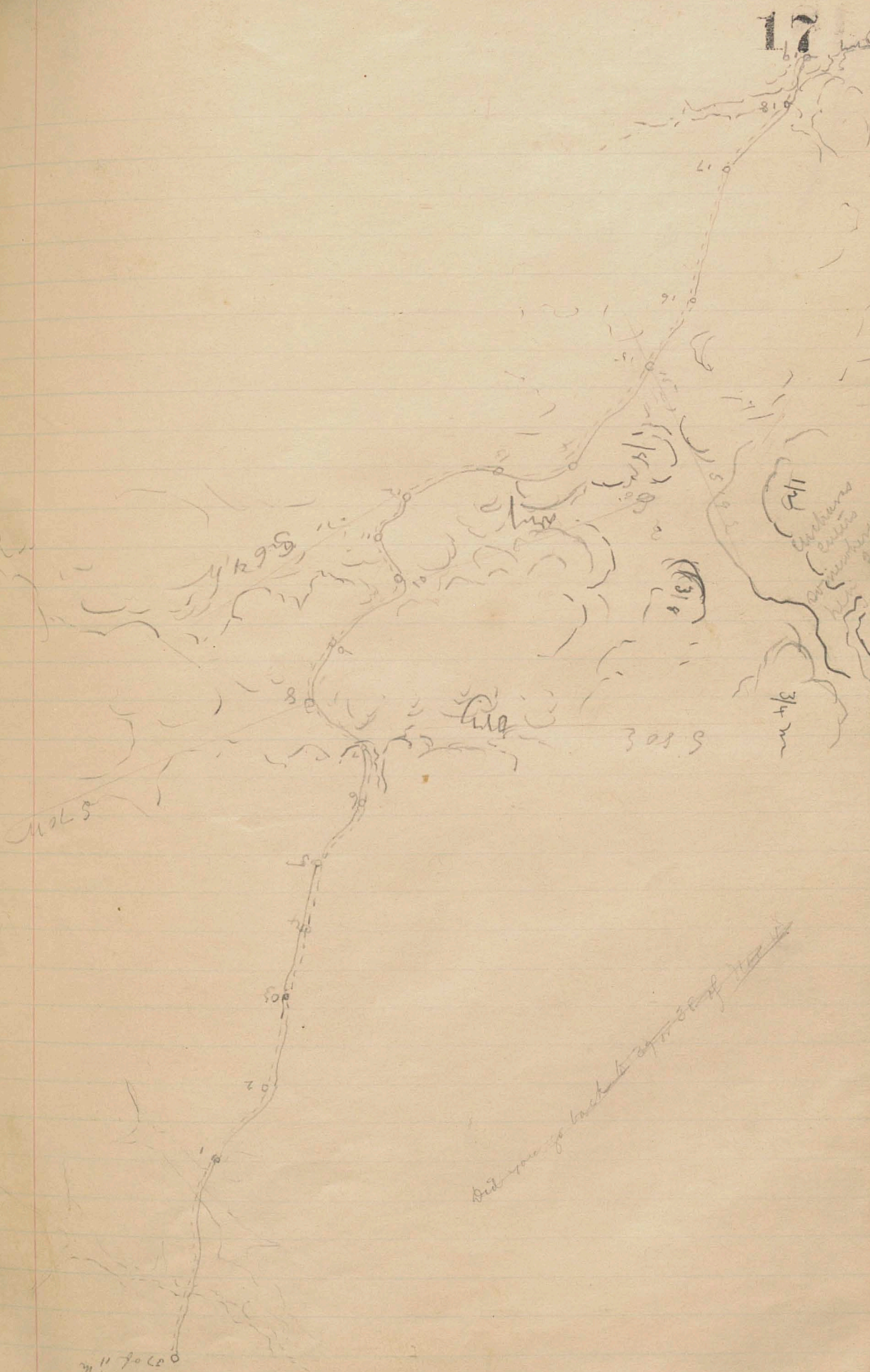
16 9166 " " "

17 9734 N 41¼ E

18 235 N 51½ E

18a 351 N 32° E

78



Did you go back to approx 1000

1000

Sub 10

n 26 1/2 W  
1 (11)

19 1/2  
1 (15)

n 5 40 W  
(3)

n 150 W  
1 (14)

n 50 1/2  
1 (8)

n 6 30 1/2  
6

(14) n 49 W

n 67 W

(14) 36 50

Sub 16

(17) n 86 1/2 W

n 56 1/4 W  
1

34 1/2  
1

36 1/2  
6

(14) n 19 W  
(14) n 11 W

n 15 W

(17) n 76 20 W

(17) 68 1/4

(17) 6440 + 1 1/2 W

(17) n 40 1/2 W + 1 1/2

(17) n 27 1/4 W

(17) n 14.50 W + 5 1/2

(23) 8,860 W

n 6 1/2 W

n 1/2 W

30/10/21

(17) 887.20  
+44

23 5 27 5

57 2 1/4

(17) 8. 59.50

where

57 2 1/4

(17) 8. 69.50

58 6 8

22 1/2

(17) 885.00  
+44

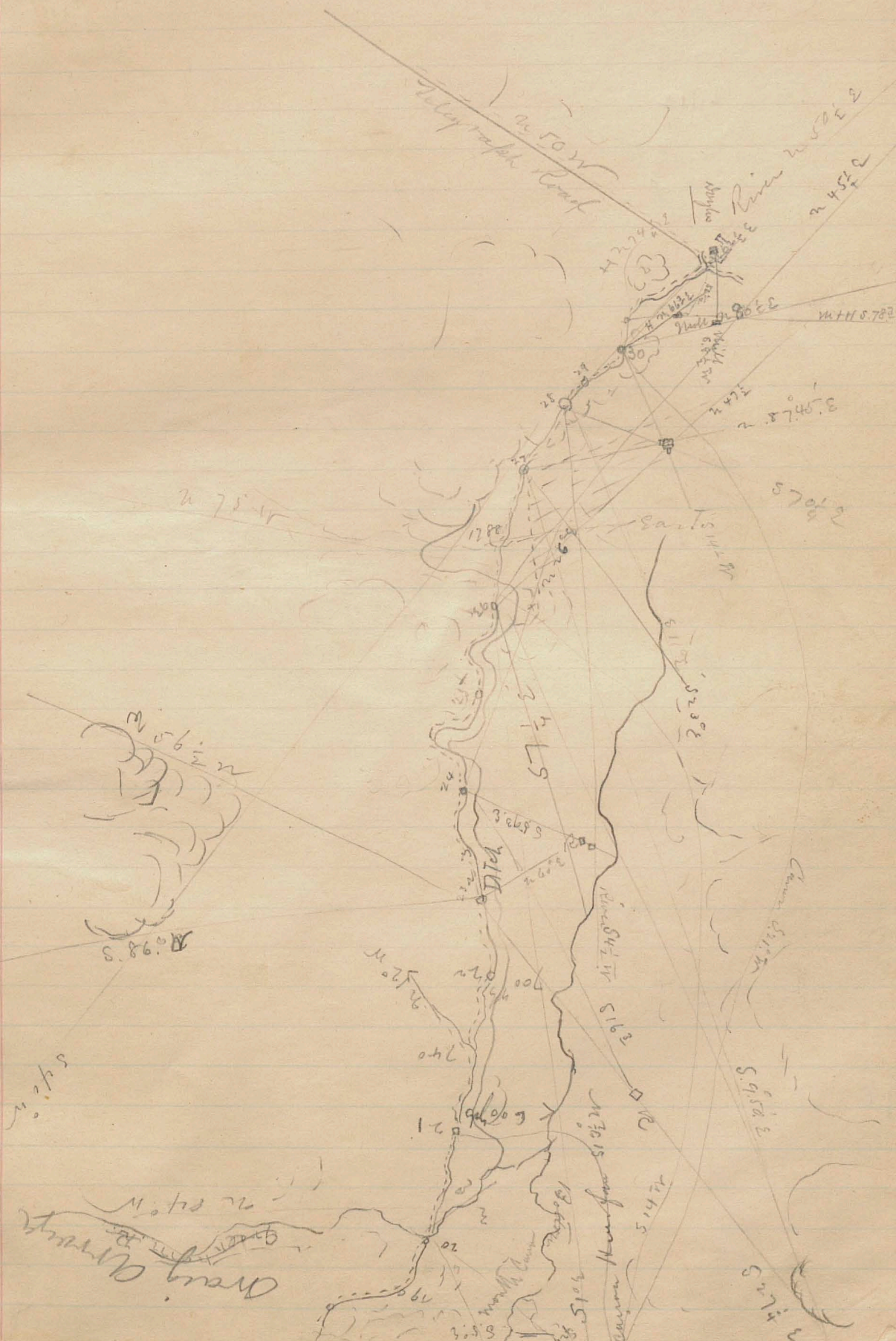
22 1/2

22 1/2

*Camp 70*

19	440	N 78° E
20	496	N 25 E
21	664	N 21 $\frac{1}{4}$ E
22	902	N 27 $\frac{1}{2}$ E
23	1041	N 1° E
24	1242	N 2° E
25	1524 - 80	N 14 $\frac{3}{4}$ E
26	1621 - 40	N 76 $\frac{1}{4}$ E
27	1932	N 12° E
28	2058	N 51 $\frac{1}{2}$ E
29	2103	N 54° E
30	2310	N 69 $\frac{1}{2}$ E
31	2388	N 30° E
32	2600 - 50	N 74 $\frac{1}{4}$ E
33	2724	N 21 $\frac{1}{2}$ E

Camp 70





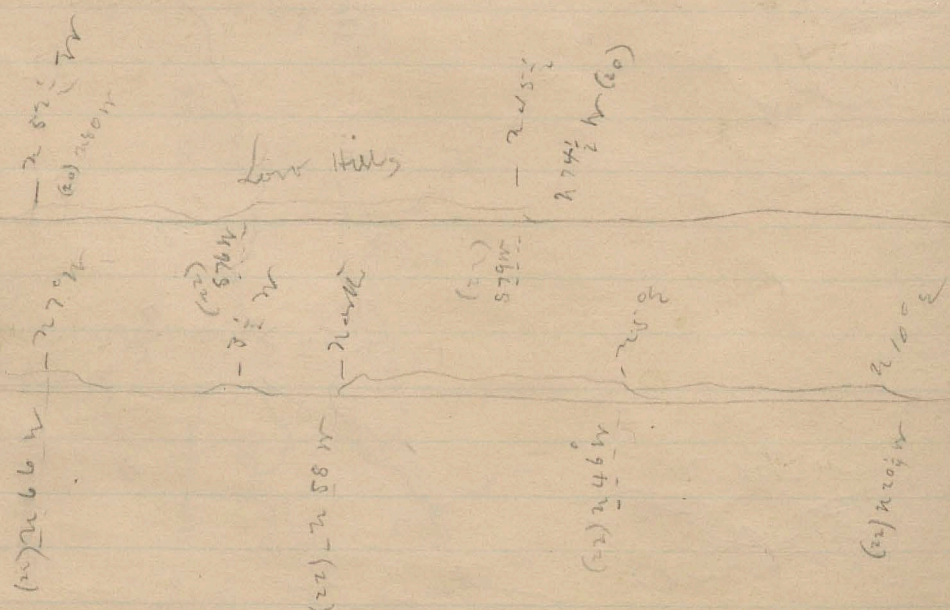
Nov 13 - 1875 - Spiller Top

Camp 70 - 71 - Colorado Party I

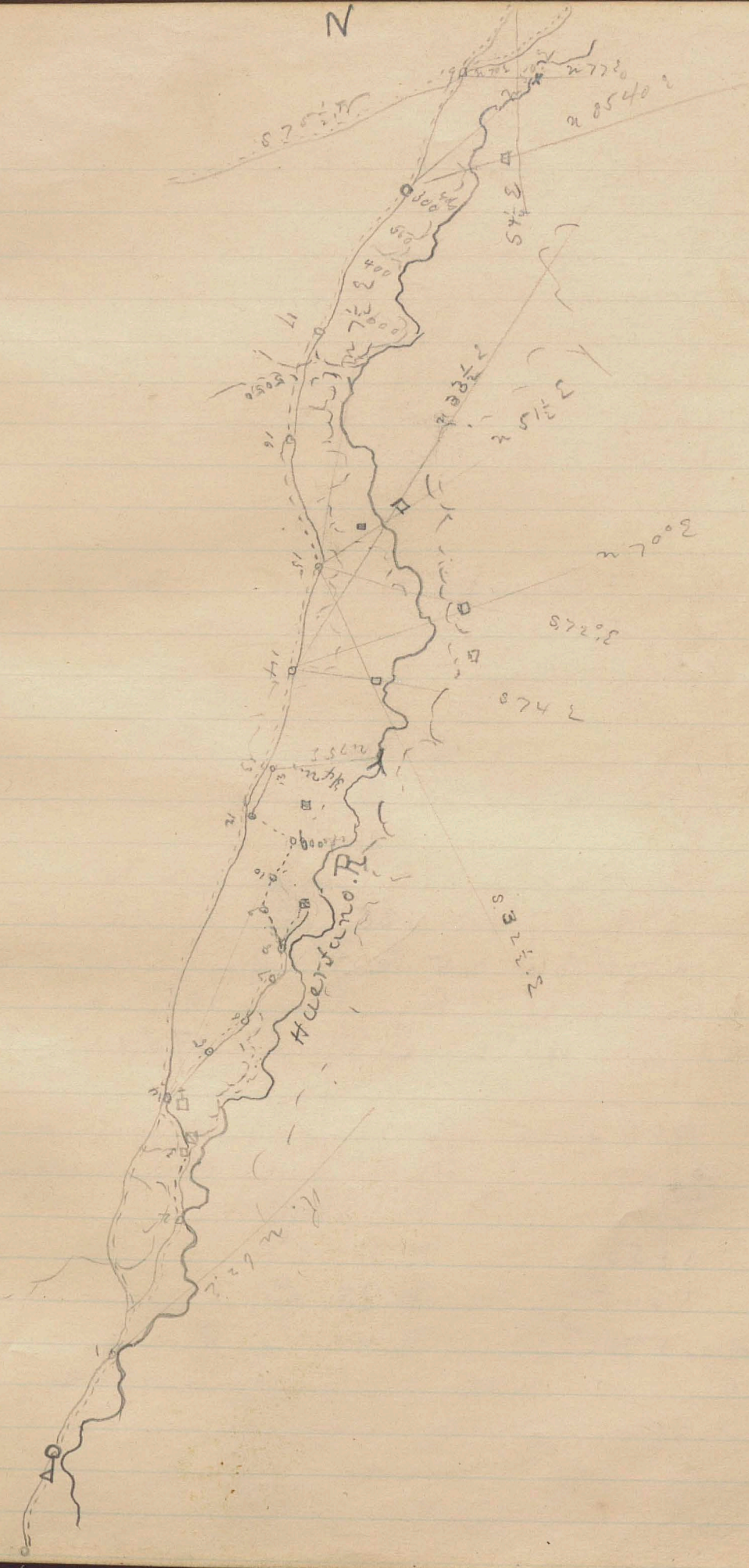
	2724		
1	2912	N. 36 <sup>3</sup> / <sub>4</sub> E	
2	3162	N. 33° E	
3	3250	N. 27 E	
4	3360	N. 24 E	
5	3440	N. 51 <sup>1</sup> / <sub>2</sub> E	
6	3516	N. 57° E	
7	3610	N. 47 <sup>3</sup> / <sub>4</sub> E	
8	3704 - 30	N. 7° E	
9	3814	N. 39° W	
10	3850	N. 10° E	
11	4011	N. 19 <sup>1</sup> / <sub>2</sub> E	
12	4184	N. 53° W	
13	4329	N. 26° E	
14	4542	N. 15° E	
15	4700	N. 4 <sup>1</sup> / <sub>2</sub> E	
16	4922	N. 17 <sup>1</sup> / <sub>2</sub> W	
17	5184	N. 14° E	
18	5349 +150	N. 21 <sup>1</sup> / <sub>2</sub> E	Abnormal out of order
19	5615	N. 30° E	

25  
80

78



N



3745  
 3725  
 3742  
 3700  
 3725  
 3742  
 3700

8700

3725

3742

3560

3600

3725

3725

20 5904 N. 31° - E

ob. 12.13.80  
7.00 PM  
19

E Spanish = S 18 1/4 W or 9.06' W Span = 12.31'  
Abeyta, 27.08' Greenhorn 41:52'  
Pikes = 120.37'

21 6126 N 21 3/4 E

22 6608 N. 21 3/4 E

23 6782 N. 18 1/4 E

(2) ob. 12.13.80  
7.00 PM  
20

E Span = S 18.40 W or 28.01 W Span = 30° - 28'  
Abeyta = 44.37 Greenhorn = 58° 26'  
Pikes = 136° 21'

24 6914 N 1/2 E

25 7360 - 50 N. 30° E

N.W. cor Sec 26 - T. 21. S Range. 62. W  
bears N 87° W 135' from Sta 25 -  
Odorn at Sta 25 = 7669 -

ob. 12.13.80  
7.00 PM  
21

Pikes 276.58 Greenhorn 199° 38'  
Abeyta = 186.26 E Span = 170.17' = S. 18.50 W

26 7995 + 225 N 26° E Odornite out of order

27 8150 N. 35° E Change Odornite

28 4724 N 46° E

29 4936 N. 33 1/2 E

30 5445 N 20 1/2 E

31 Pikes 5735 N 40 1/2 E

31 { Pikes = 65.13 N 57.40 W Greenhorn = 349.49'  
E Span = 322° 10'



332 40

26

Nov 13 cont<sup>d</sup>

32 5890 N 62° E

33 5935 S 83½ E

34 6010 N 59 E x Humphreys

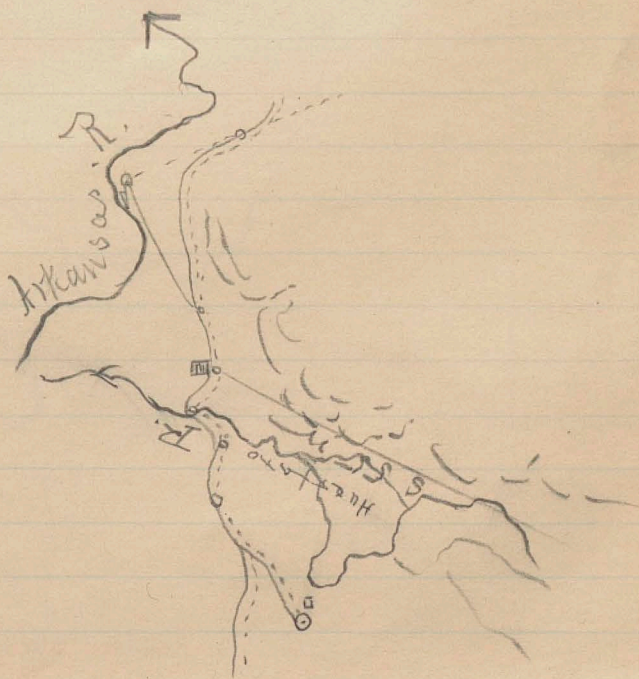
35 6042 S 69 E

36 6184 S 86½ E

37 6354 N 71¼ E

Camp -

Z



28

Camps 71 - 72

Nov 14 - 1875

Colorado Party I

Spiller Top<sup>n</sup>

	0	
1	358	S. 16 $\frac{1}{2}$ ° E
2	420	" " "
3	654	S. 76° E
4	796	S. 45 $\frac{1}{2}$ ° E
5	1160	S. 60 $\frac{1}{2}$ ° E
6	1286	S. 59° E
7	1396	S. 45° E
8	1469	" " "
9	1708	S. 67° E
10	2000	S. 65 $\frac{1}{2}$ ° E
11	2125	S. 56° E
12	2241	East
13	2871	S. 83° E
14		N. 80 $\frac{1}{2}$ ° E

Aug 21 1951

Plotted  
12, 14, 20  
20m.

3-5716  
2.302  
m. m

Camp 71

225 m

279 m

245 m

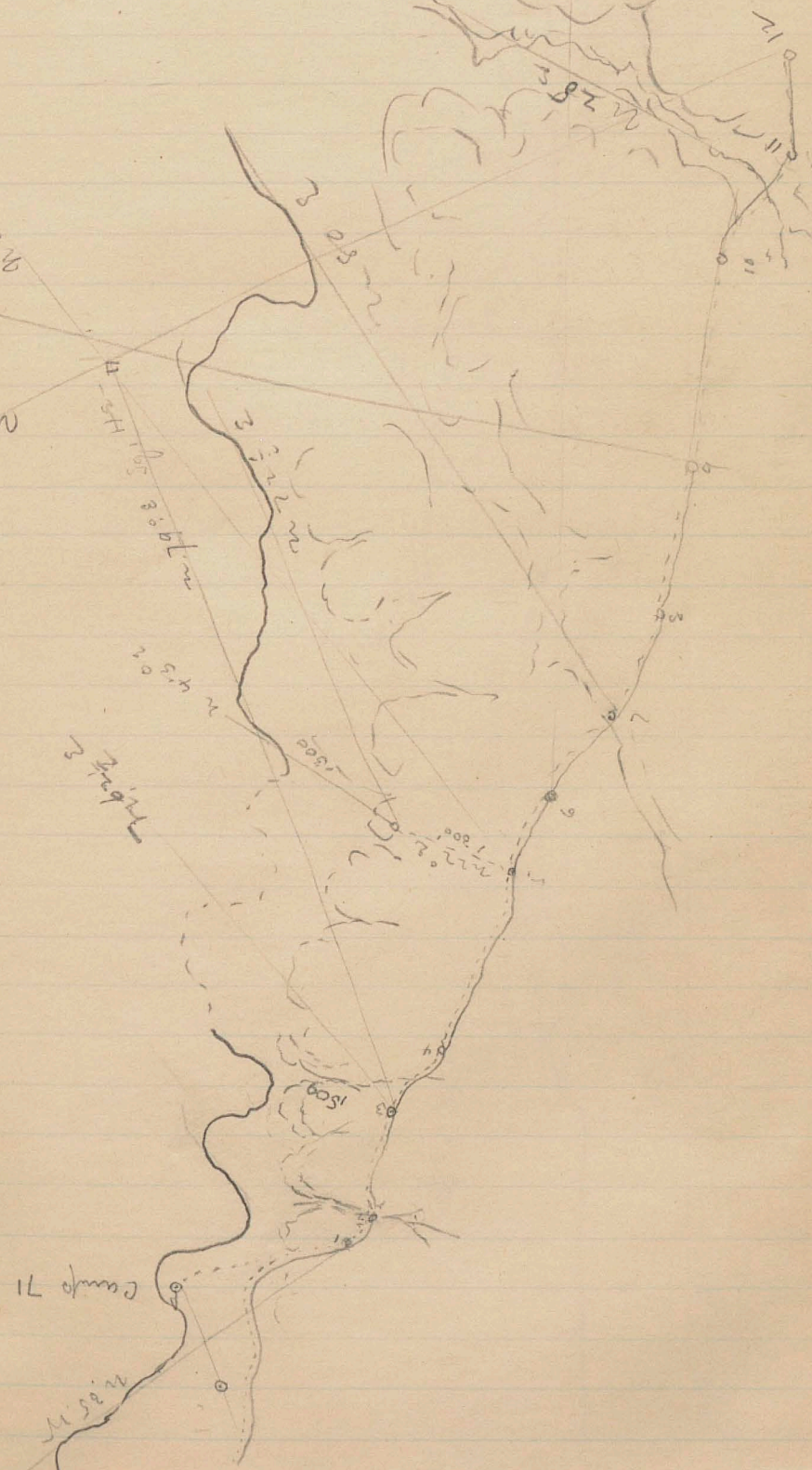
210 m

222 m

200 m

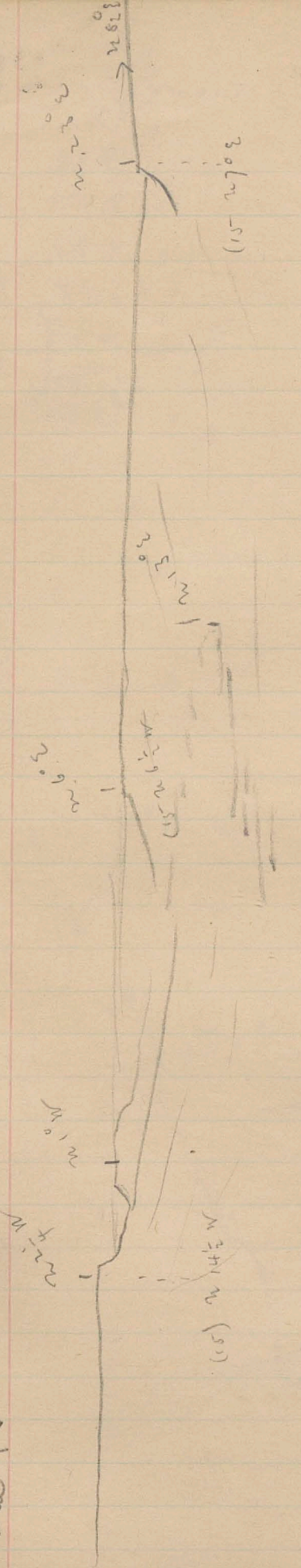
220 m

1500





Site 13



3.19m

3.06m (S1)

3.03m

3.01m (S1)

3.00m

3.00m

3.00m

3.00m (S1)

November 14 - 1875

14	3080	N. 80 $\frac{1}{2}$ E	Current
15	3329	" " "	
16	3426	S. 71 $\frac{1}{4}$ E	
17	3834	S. 70 $\frac{1}{4}$ E	
18	4058	S. 73 E	
19	4259	S. 86 E	
20	4528	N. 87 $\frac{1}{2}$ E	

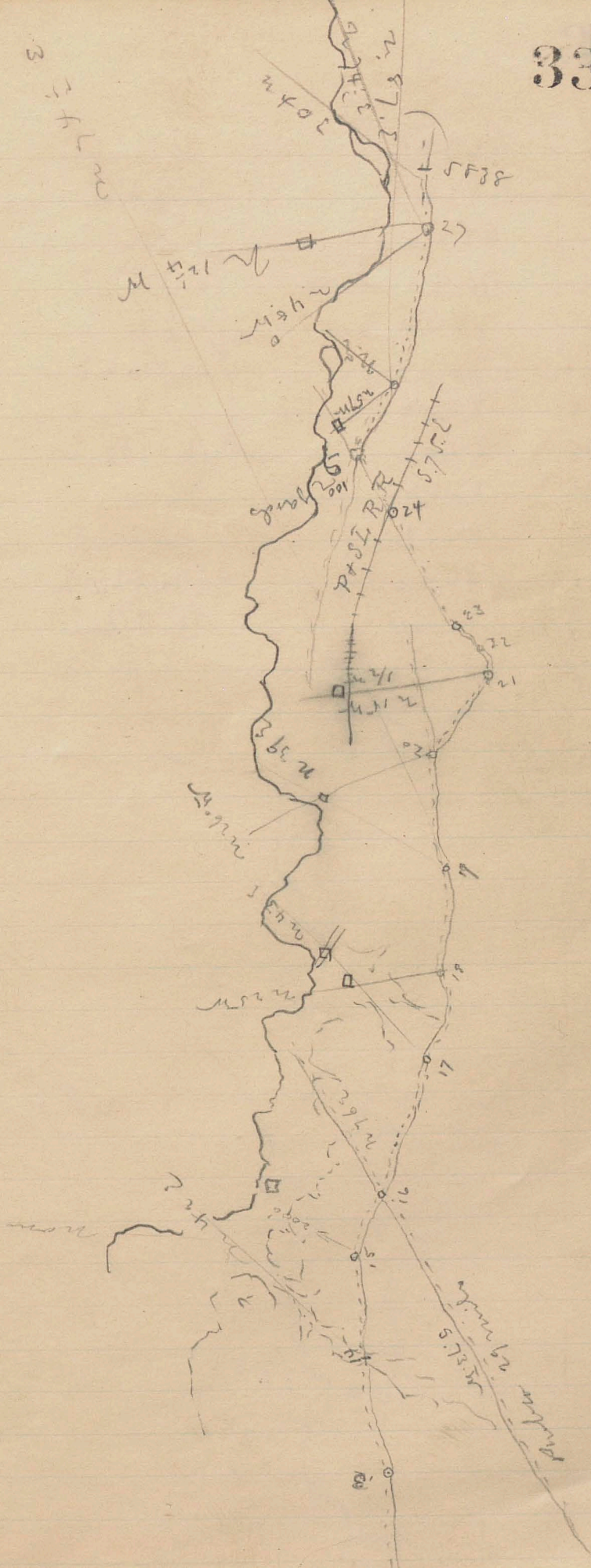
(19) E. Spinn S. 28 $\frac{1}{4}$  W 284.1's Green Horn 3, 3 $^{\circ}$  03

Knots - I 4 $^{\circ}$  52' Pikes 16 $^{\circ}$  36

21	4741	S. 58 $\frac{1}{2}$ S
22	4850	N. 87 E
23	4941	N. 80 $\frac{1}{2}$ E
24	5174	N. 78 $\frac{1}{4}$ E
25	5262	" " "
26	5496	S. 77 $^{\circ}$ E
27	5706	S. 79 E
		<del>S. 81 E</del>

3  
11  
20

Plotted  
12.4.80  
R.M.



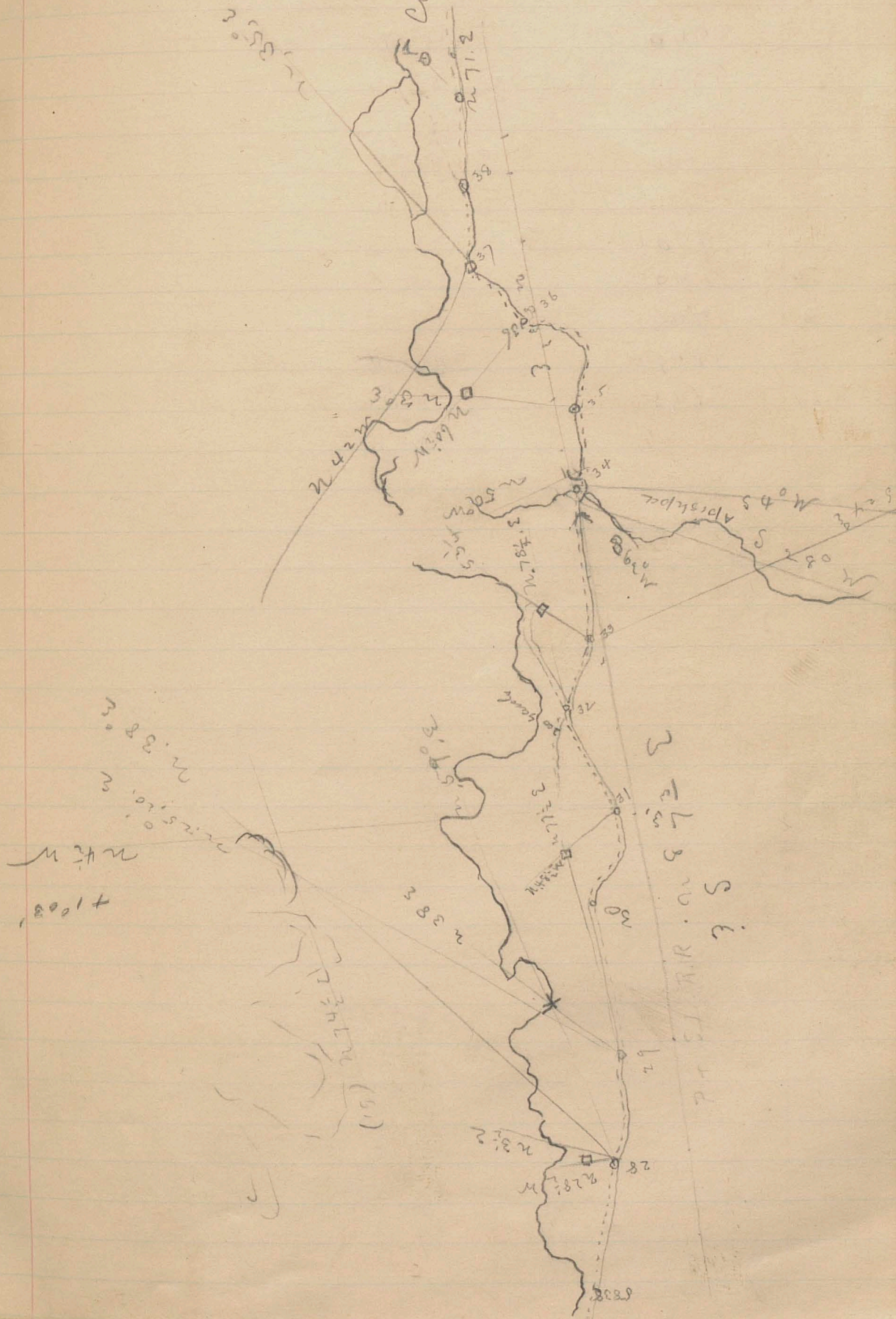
28	6248 -	S 81° E
29	6526	N 88° E
30	6828	N 78° E
31	7040	S 73° E
32	7436	N 71° E
33	7624	S 76° E
34	8108	S 83½° E
35	8202	N 85½° E
36	8366 -30	" " "
37	8472	N 50½° E
38	8640	N 82¼° E
39	8764	N 71¼° E
40	8856	N 14° E

RR. Bridge

Camp 72

Plotted  
in 14.8  
7.0.20

Campo 72



Camp 72-73 -

Nov 15-1875

Colorado I

Spiller, Japs<sup>r</sup>  
Road

1	8948	S. 14° W
2	9535	W 83½ E
3	9860	W 87° E
4	196	S. 89° E
5	620	S. 70½ E
6	980	S. 79° E
7	1140	S. 84½ E
8	1746	S. 87½ E
9	2344	S. 84 E
10	2665	" " "

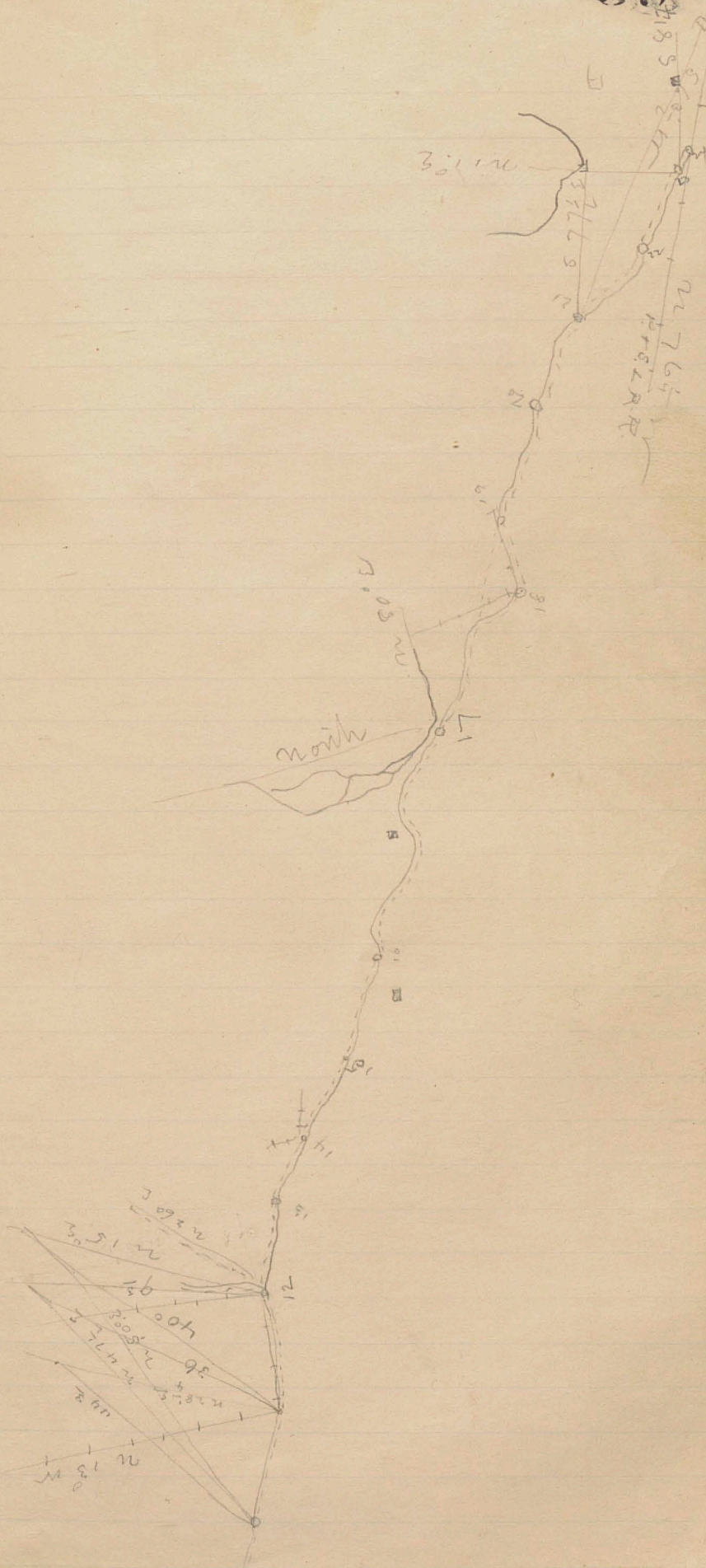
Plotted  
12.14.80  
J.M.



11	2882	S 86° E
12	3316	N 76° E
13	3600	S 87° E
14	3812	S 73° E
15	3938	S 68½° E
16	4365	S 67½° E
17	5115	S 62° E
18	5450	S 56¼° E
19	5557	N 77° E
20	5880	S 61° E
21	6135	S 65½° E
22	6268	S 45° E
23	6406	S 55° E
24	6458	" " "
25	6630	East

Plotted  
12.14.80  
J.M.





40 Camp 73-74

Nov 16-1870

Colorado I

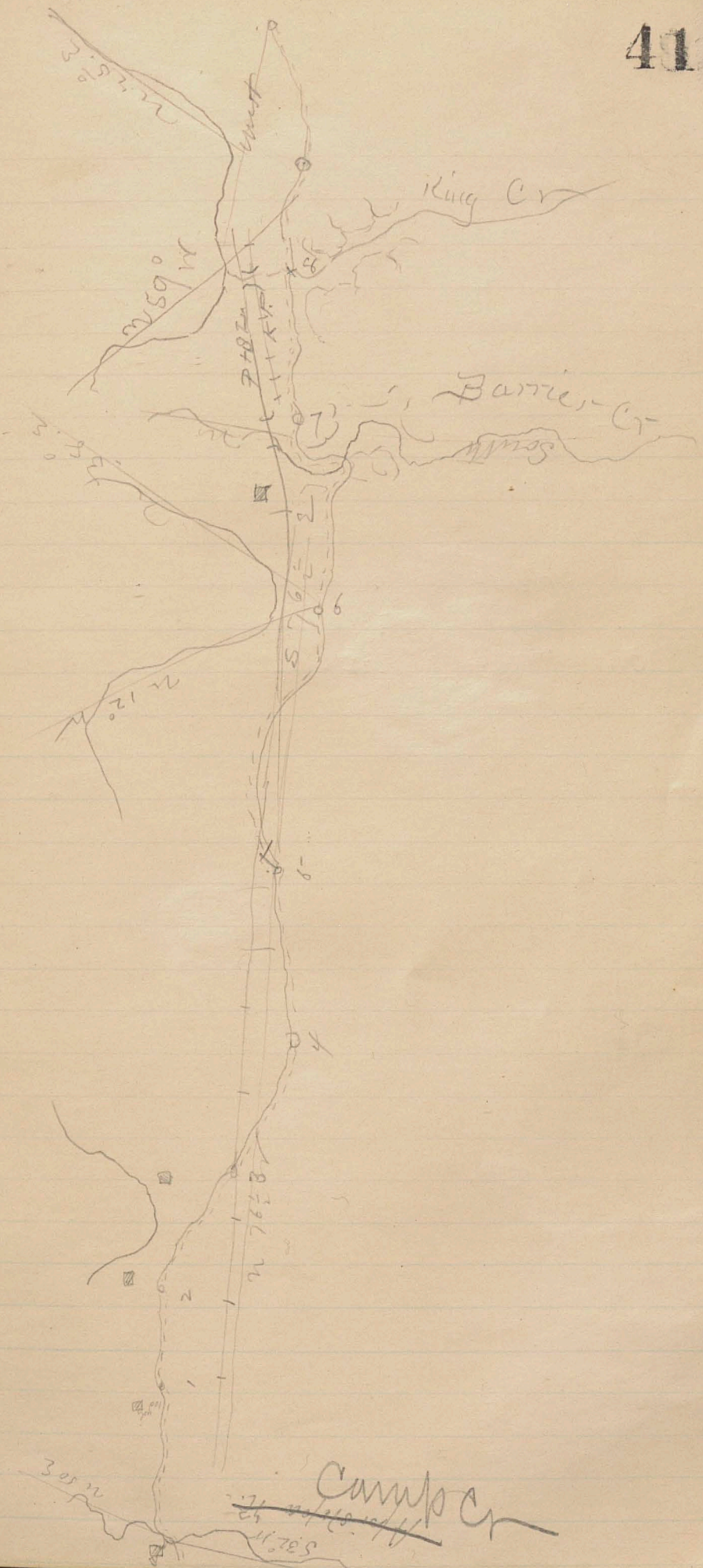
Stiller Jpt

1	7020	-	S 77° E
2	7316	-	" 77 1/2 "
3	7484		S 63 1/4 E
4	7946		<del>S 88 1/2 "</del>
5	8436		S 88 1/4 E
6	8774		S 76 3/4 E
7	9132	-50	N 87° E
8	9624		N 75° E
9	9716		N 76 E
10	106		N 73 E

RR

King Cr

Photos  
12/4/80  
Tom



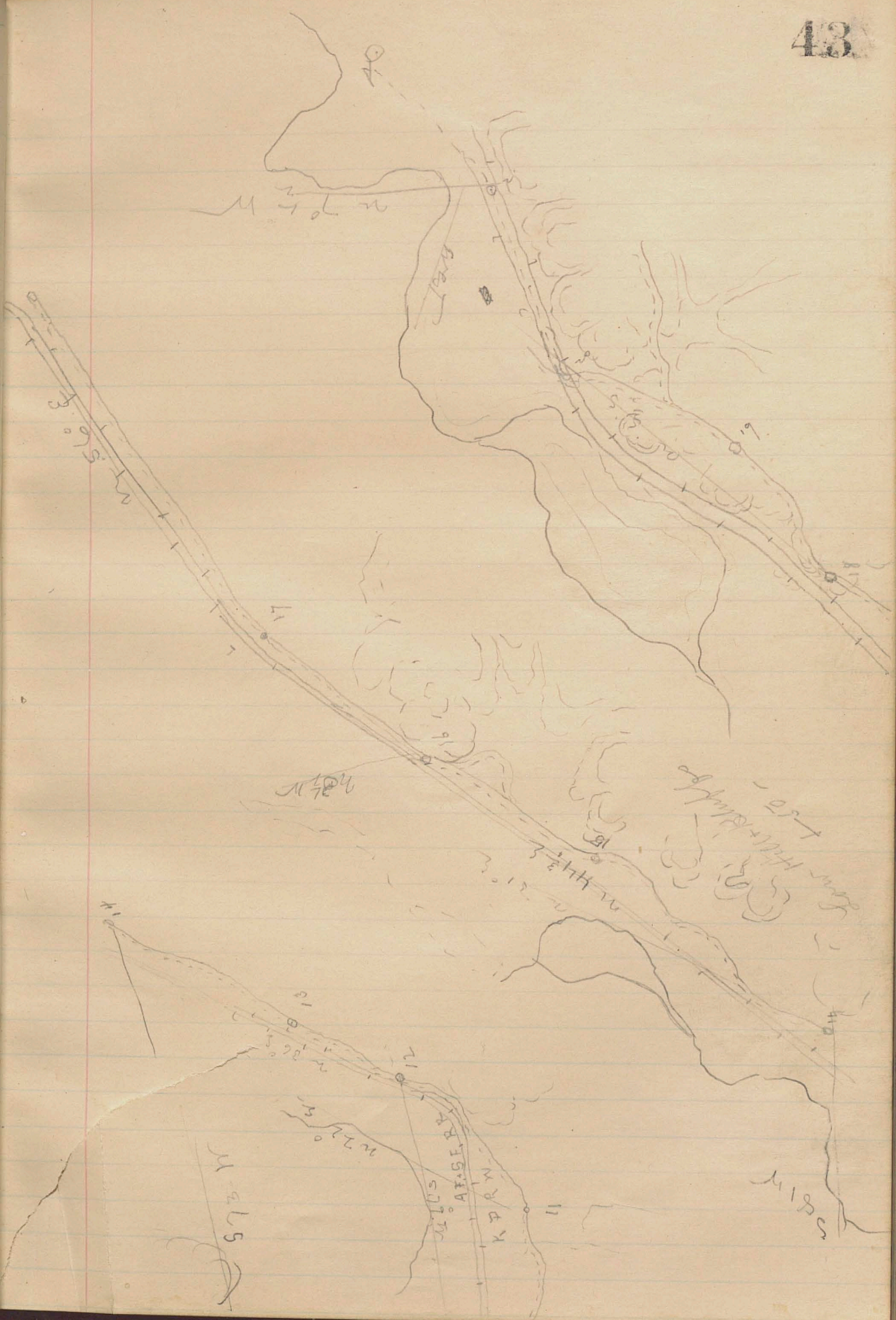
Nov<sup>r</sup> - 16 - 1875

$\frac{43}{2}$

45 47

11	210		N. 85 $\frac{1}{2}$ ° E
12	450		N. 47° E
13	666		N. 35 $\frac{1}{2}$ ° E
14	1222		N. 43 $\frac{1}{2}$ ° E
15	1560		N. 41 $\frac{1}{2}$ ° E
16	2118		N. 44 $\frac{3}{4}$ ° E
17	2564		" "
4000 18	2995		N. 56° E
19	4388	1.40 - 1.45	N. 57° E
20	4425	1.48 - 1.52	N. 35° E
21	4524	1.56 - 2.00	" 34° E
22	4820	2.04 - 2.14	N. 53° E
23	5084	2.22 - 2.26	N. 39 $\frac{1}{2}$ ° E

Plotted  
with  
30  
m.



44

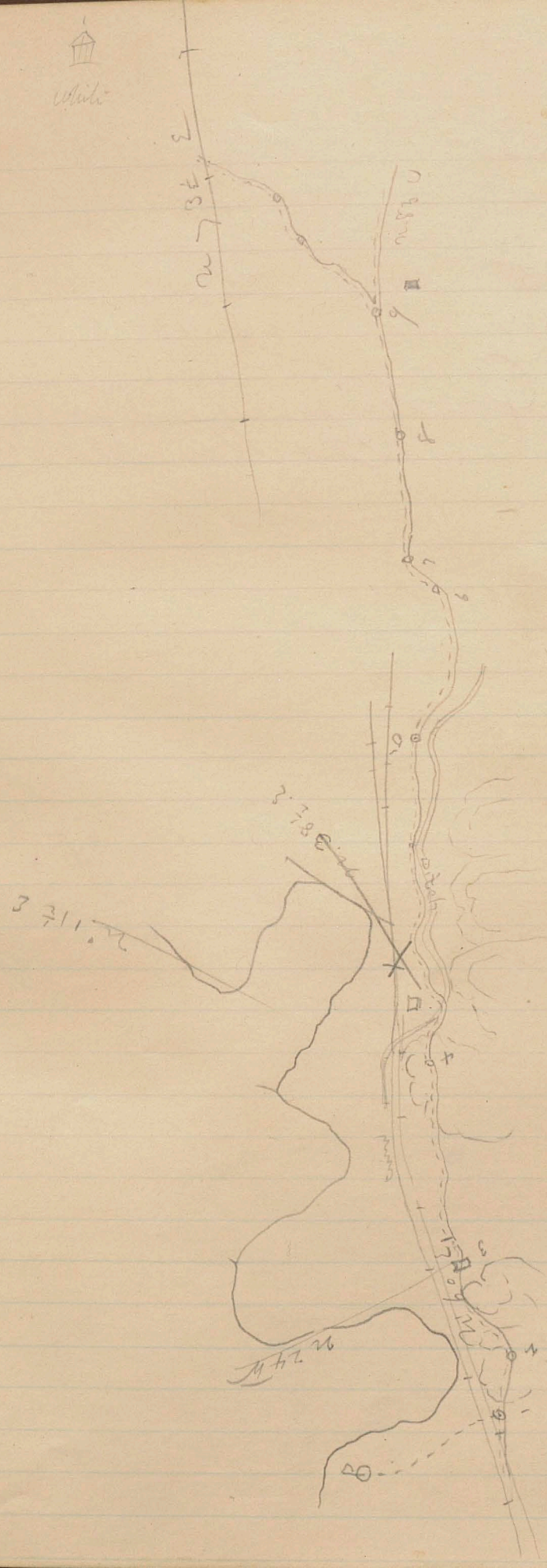
Camp 74 - 75. Nov 17 - 18 1875

Spiller

Camp	6370		
1	6454	S. 30° E	
2	6533	N. 80° E	
3	6650	N. 61° E	
4	7018	N. 74 <sup>3</sup> ° E	
5	7610	N. 76 <sup>3</sup> ° E	
6	7874	N. 88 <sup>1</sup> / <sub>4</sub> ° E	
7	7968	N. 73° E	
8	8218	N. 86 <sup>1</sup> / <sub>4</sub> ° E	
9	8478	N. 83° E	
10	8840	N. 47 <sup>3</sup> ° E	
11	8954	N. 65 <sup>1</sup> / <sub>4</sub> ° E	
12	9095	N. 45.20° E	x A 7. + S. F. RR.

Plotted  
12.4.30  
Horn

  
Ushiki



13 9335-  
 14 19625-  
 15 34  
 16 75+  
 17 100

N. 45° 20'. E

K. S. R. R.

S. 84½ E

N. 61½° E

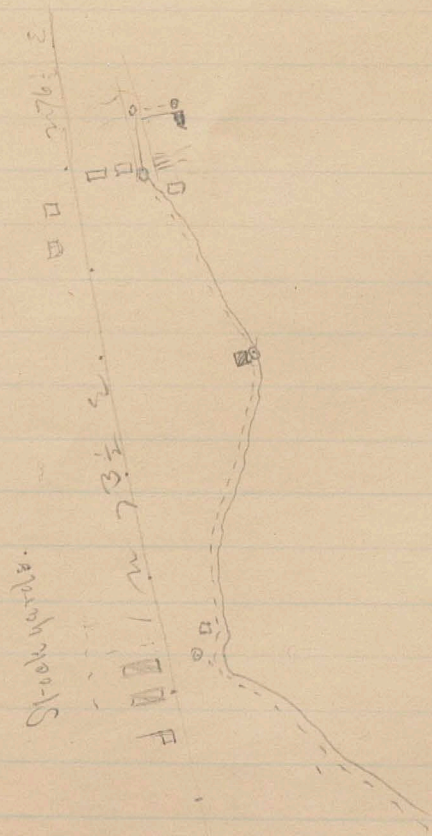
N. 76½ E

S. 13½ E

Quartermaster Office  
 Las Animas C. T.

Plotted 80  
 12.1 x  
 7.5 M.





□

□

□

90'.4"

□

52

125

□

□

25'

□

□

62'

□

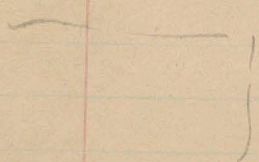
25'

125

□

120

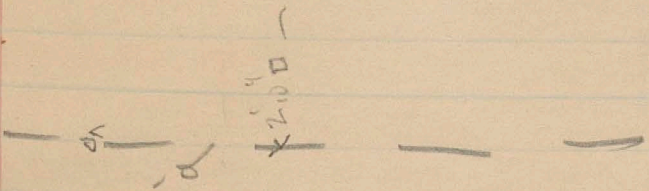
□

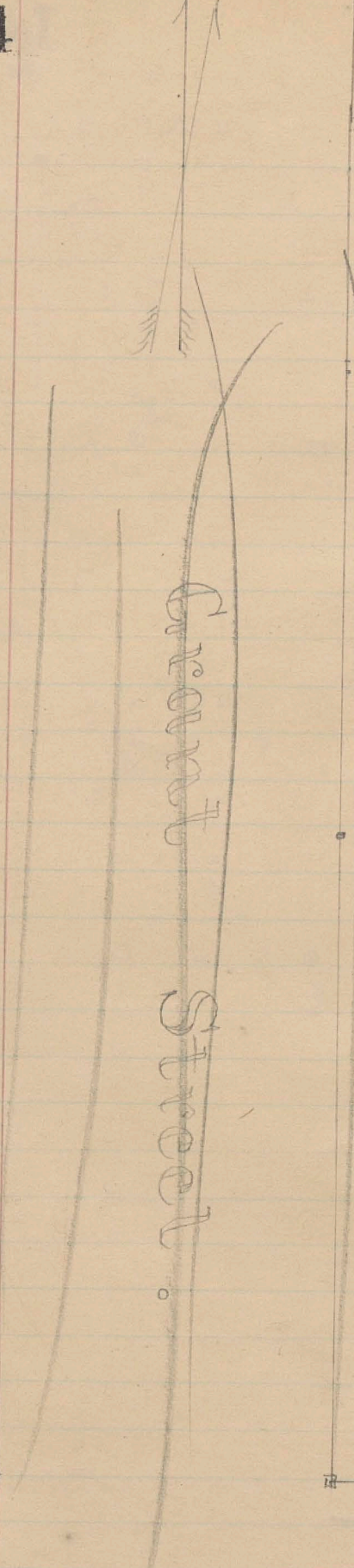


Moose Sta



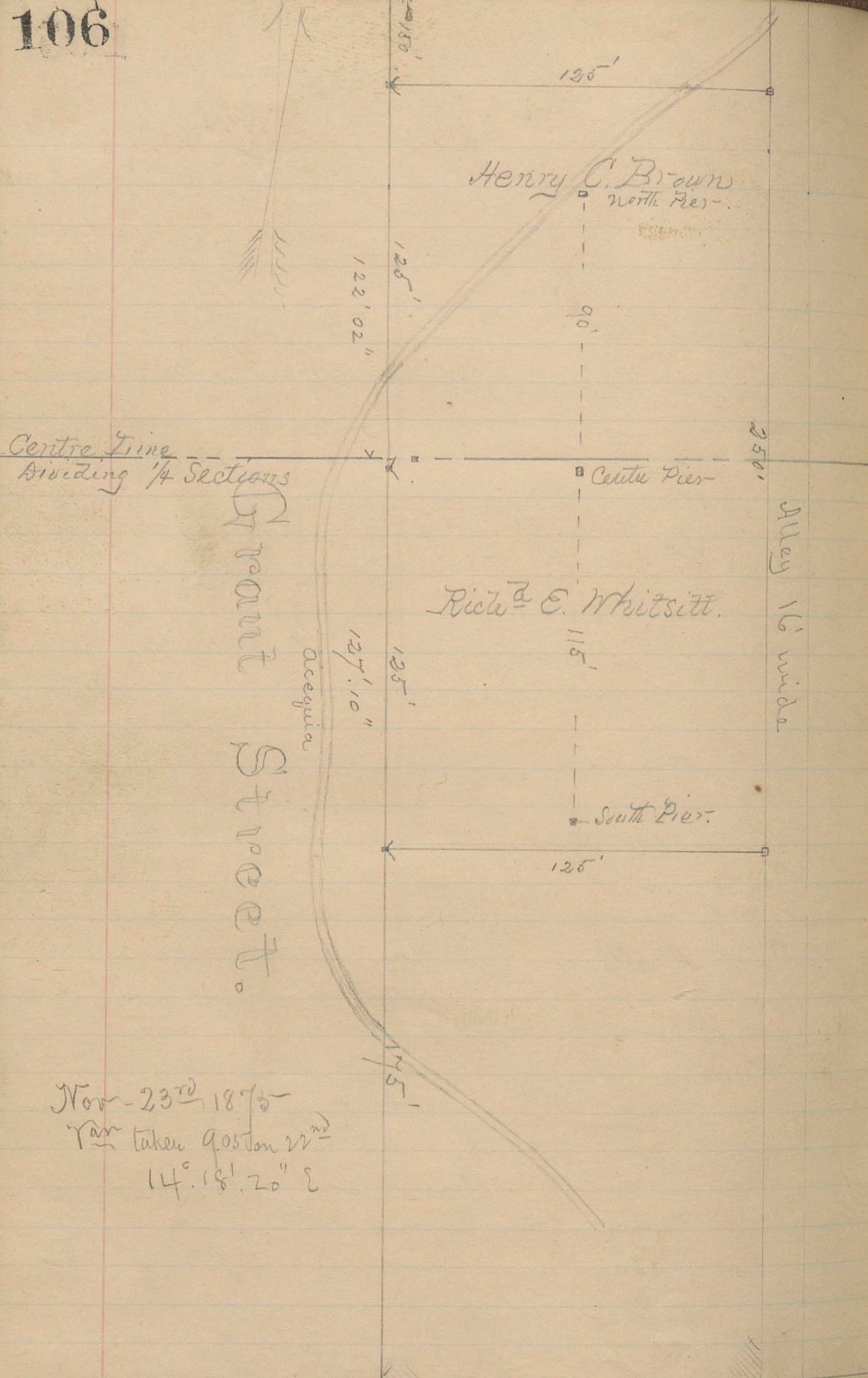
5-20-20





Green Street

Moose Street.



Centre Line  
Dividing 1/4 Sections

Grant Street.

Creeper

Centre Pier

Alley 16' wide

Henry C. Brown  
North Pier

Richd. E. Whitsitt

South Pier

Moose Street.

Nov-23<sup>rd</sup> 1875  
Tan taken 9.05 Jan 22<sup>nd</sup>  
14° 18' 20" E

R. E. Whitsitt -

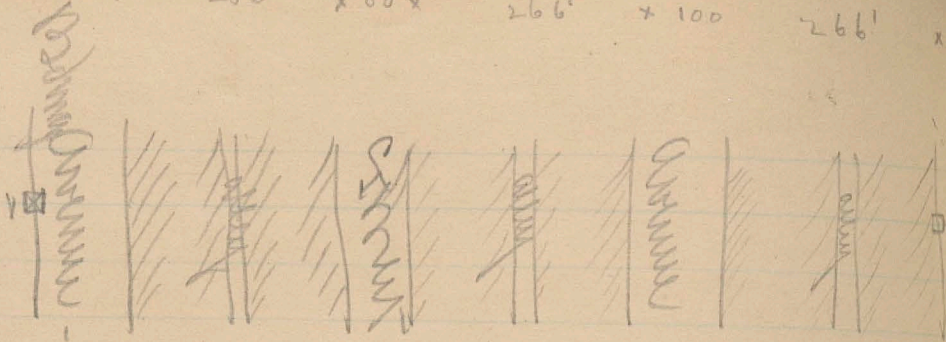
Beginning for the same at a stake on building line East side of Grant Street distant 175 ft northerly from the N. E. corner of the intersection of Grant Street & Moose St - running thence binding on said building line the distance of 127' 10" more or less to the intersection of said building <sup>line</sup> with the center line dividing  $\frac{1}{4}$  sections N. E. & S. E. of Sec 3 - Town 4 S - Range 68 W 6<sup>th</sup> P.M. ~~6<sup>th</sup> P.M.~~ Meridian thence in an easterly direction ~~thence~~ binding on said section division line 125' to an alley 16' wide - thence binding on line of said alley 127' 10" southerly to a stake marked "S. E. corner Observatory Enclosure" thence westerly to a stake ~~at~~ 125' feet to the place of beginning -

Henry C. Brown -

Beginning for the same at a point formed by the intersection of the building line on the East side of Grant Street, and the line dividing  $\frac{1}{4}$  Sec<sup>s</sup> N. E. & S. E. of Sec 3 - T. 4 S. R. 68 W. 6<sup>th</sup> P.M. Mer and running thence binding on said building line 125 feet ~~to~~ a stake marked N. W. corner of Observatory Enclosure

100' x 266 x 80 x 266' x 100 266' x

Center  
Sec 3



100  
 266  
 80  
 266  
 100  
 266  
 -----  
 1078  
 1076.9"  
 -----  
 - 1' 3"

Center Sect 3 -

car track  
roadway -

100 10 I.

266'

X 366

B.L.

446

80' 400

Street

265.9

446  
266  
712

712

750

800

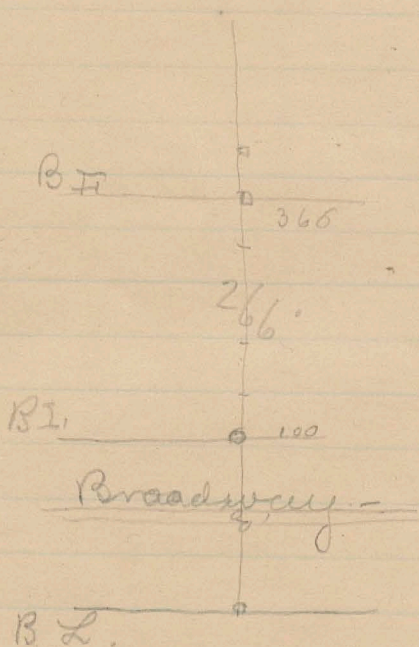
900

1000

1076.9



Starting at Stake Centre of  
Section 3 -



||||| + 26'.9"

~~76~~

21

1050  
269

1076.9"

446

630.9"

32

~~594.9"~~

578.9

530.9"

80

266

100

446

630.9"

100

530.9"

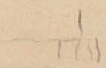
500

30.9"

ally

73½

75°



N. 86° E

Latitude of Denver }  $39^{\circ} - 44' - 32''$

Rich<sup>d</sup> - E. Whitsett -  
 Corner 15<sup>th</sup> and Arrapahoe  
 Railroad Turn  
 Over Grocery -

□ □ Center See 3 -

$$\begin{array}{r}
 5389 \\
 2900 \\
 \hline
 8289 \\
 440 \\
 \hline
 3889 \\
 3920 \\
 \hline
 3600 \\
 3520 \\
 \hline
 800
 \end{array}$$

(18.81)

$$\begin{array}{r}
 51 \\
 22 \\
 \hline
 29
 \end{array}$$

$$\begin{array}{r}
 312 - 52 - 20 \\
 298 - 32 - 10 \\
 \hline
 14 - 20 - 10 \\
 \quad \quad 1 \quad 40 \\
 \hline
 14 \quad 18 - 20
 \end{array}$$

$$\begin{array}{r}
 909 \\
 905 \\
 \hline
 \end{array}$$

04 before passing

$$\begin{array}{r}
 2661 \\
 2639 \\
 \hline
 4 \overline{) 22}
 \end{array}$$

$$\begin{array}{r}
 55 \\
 3 \\
 \hline
 125 \\
 2639
 \end{array}$$

$$15 \overline{) 2655} \begin{array}{l} 13 \\ 115 \\ 120 \end{array}$$

4

$$\begin{array}{r}
 1560 \\
 55 \\
 \hline
 15 \overline{) 615} \begin{array}{l} 1078 \\ 60 \\ \hline 1.408 \end{array} \\
 118 \\
 105 \\
 \hline
 130 \\
 120
 \end{array}$$

298-32-10-9.00-  
 312-52-20-2