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R. 12 W.	R. 11 W.
1	6
12	7
13 ₃	18
24	19
26	30
36	31

T. 55.
R. 12 W. R. 11 W.

SUBDIVISION OF T. 5 S., R. 12 W., San Bernardino Meridian.

Survey commenced Jan. 28, 1914, and executed with a Keuffel and Esser transit No. 20579, fitted with a modification of Smith's Solar Attachment.

All arcs of the instrument are read by verniers to single minutes of arc.

Before beginning this survey I carefully tested the several adjustments of the solar attachment and transit by reversals and corrected all errors.

Owing to failure of my baggage to arrive at the place of beginning this survey, it was impossible for me to establish a true meridian by Polaris Observation, on the night of January 21 and the sky was overcast during the whole of each succeeding night, till Jan. 27, I therefore proceeded with the work, without Polaris test till that date.

To test the accuracy of my instrument by comparing the results of the solar observations with a true meridian, established by Polaris observation, on Jan. 27, 1914 at Bay City (now Seal Beach) Cal. in lat. $33^{\circ}45.5'$ N., Long. $118^{\circ}7'$ W. of Greenwich, I observed Polaris at 5 hr. 36m. by my watch which is set to agree with standard time, and note that the position of the star is $20'$ of arc, to the right of a conspicuous object, about 20.00 chs. N. of my station.

My watch being correct for Long. 120° W. from Greenwich, is therefore 7^m slower than l.m.t., hence, the true l.m.t., of the observation is (5 hr 36m plus 7^m =) 5 hr 43m p.m.

U.C. of Polaris Jan. 27, Greenwich	5 hr. 3.7 m.
For Long. 118° subtract	<u>1.3 "</u>
l.m.t., U.C. Polaris, this date and Long,	5 " 2.4 "
l.m.S. of Observation	<u>5 " 43.5 "</u>
Difference, hour angle	0 " 41.1 "

Which gives, according to Ephemeris, azimuth of Polaris $14.8'$ W. of N. and object noted bears $N. 0^{\circ}25' W.$

Inasmuch as my watch had not been compared with a telegraphic clock, or other acceptable source of correct time, within the last 24 hours, on Jan. 29, 1914, at 10 hr. 40m. to 10hr. 50m. p.m., l.m.t., at the same point I observed Polaris at western elongation and mark the line thus obtained by the eastern edge of a stake set, 6.00 chs. N. of my station.

Jan. 30, I lay off the azimuth of Polaris $1^{\circ}23'$ to the east, and note that the above described, conspicuous object bears $N. 0^{\circ}25' W.$

It being inconvenient, and very expensive, in the matter of time, to make solar observations at this point, on account of late rising of the sun, I carefully run a transit line from the above described permanent and accurate line, to the tracks of the P.E.Ry. and along same thru the entire length of the tract surveyed, and note that the tangents thereof, bear respectively, $S. 42^{\circ}18' E.$ $S. 59^{\circ}35' E.$ and $S. 45^{\circ}25' E.$

Comparisons of the results of solar observations with the true meridian, thus established, are set forth in the following:

Subdivision of T. 5 S., R. 12 W., San Bernardino Mer., Cal.

Solar Observations.

Jan. 22, 1914, at the cor. No. 42 of Los Alamitos Rancho at 2 hr. p.m., l.m.t., I set off $33^{\circ}45'$ on the lat. arc; $19^{\circ}41'$ S. on the decl. arc; and determine a meridian with the solar. This by carefully turned transit angles falls less than $1'$ of arc to the right of the true meridian, as above set forth.

Jan. 22, the sun was obscured at high noon.

Jan. 23, 1914, I set off $33^{\circ}45'$ on the lat. arc, $19^{\circ}29'$ S. on the decl. arc; at 10 hr. a.m., and determine a meridian with the solar at the corner of secs. 7, 12, 13 and 18 on E. bdy. of Tp. This, as afterwards determined by carefully turned transit angles, disagrees with the true meridian by about $1'$ of arc.

Jan. 27, the sun was obscured by clouds at high noon.

Jan. 27, at the NW. end of the tract surveyed at 1 hr. p.m., l.m.t., I set off $33^{\circ}45'$ on the lat. arc; $18^{\circ}29'$ S. on the decl. arc; and determine a meridian with the solar at the intersection with the track of the P.E.Ry. This gives the bearing of the said Ry. tangent as S. $42^{\circ}19'$ E., which is $1'$ of arc in error.

Jan. 28, 1914, at point of Polaris Observation, hereinbefore described at 8 hr. a.m., l.m.t., I set off $33^{\circ}45'$ on the lat. arc; $18^{\circ}15'$ S. on the decl. arc and determine a meridian with the solar. This agrees, within $1'$ of arc with the true meridian.

Jan. 28, 1914, I set off $18^{\circ}14'$ S. on the decl. arc; and observe the sun at noon (12 hr. 13m. l.m.t.,) at the SE. end of the tract surveyed. The resulting lat. is $33^{\circ}44'$ which is about correct.

Jan. 29, 1914, at 9 hr. a.m., l.m.t., I set off $17^{\circ}59\frac{1}{2}'$ S. on the decl. arc; $33^{\circ}45'$ on the lat. arc; and determine a meridian with the solar at the intersection of the line between secs. 13 and 14 and the tracks of the P.E.Ry. This gives the bearing of the tangent as S. $59^{\circ}36'$ E., thus agreeing with the true meridian.

Jan. 29, 1914, I set off $17^{\circ}58'$ S. on the decl. arc; and observe the sun on the meridian at 12 hr. 13m. p.m., l.m.t., at the meander corner on line bet. secs. 13 and 14 on N. side of the Sand-spit. The resulting lat. is $33^{\circ}45'$ which is about correct.

Jan. 30, 1914, at cor. No. 42, Rancho Los Alamitos at 10 hr. a.m., l.m.t., I set off $17^{\circ}43'$ S. on the decl. arc; $33^{\circ}45'$ on the lat. arc; and determine a meridian with the solar, This disagrees with the true meridian, by about $1'$ of arc.

Jan. 30, 1914, at said corner No. 42 of Rancho Los Alamitos, I set off $17^{\circ}42'$ S. on the decl. arc; and at 12 hr. 13m. p.m., l.m.t., observe the sun on the meridian

The resulting lat. is $33^{\circ}45'$ which is about correct.

The bearings of the blank lines bet. secs. 13 and 18 bet. secs. 13 and 24 and the NW boundary of Rancho La Bolsa Chica were carefully compared with this transit line and the bearings agree therewith.

Measurements in this survey were made with a steel tape 5.00 chs. in length, which was carefully compared with the standard tape, in my possession.

Over uneven ground, the slope method was used to obtain the proper correction of the measurements.

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Chains.

No permanent lines were run, Jan. 22, 1914.

I commence at the corner of sections 7, 12, 13 and 18 on the E. bdy. of Tp. which is a redwood post 4x4x20 ins. above ground, firmly set, marked

S 7 on NE.,

S 18 on SE.,

S 13 on SW. and

S 12 on NW. faces, these marks agreeing with the description furnished to me by Surveyor L. Friel, who had previously identified the same.

Thence I run
South on a blank line bet. secs. 13 and 18.
Over tide flat or salt marsh.

- 12.35 Slough 35 lks. wide, course west.
- 19.40 Slough from N.E., course S. 15° W.
- 28.25 Left bank of same.
- 53.40 Right bank of slough, course west.
- 60.00 Left bank of same and proceed along left bank of a branch slough, 2.00 chs. wide.
- 69.00 Leave bank of slough, from SW.
- 80.00 Set temporary corner of secs. 13, 18, 19 and 24, as per instructions. Land, level tide flat, cut by numerous, irregular sloughs. Soil, tide or mud, flats of little or no, present value for agriculture.
Jan. 23, 1914. The sky was overcast and cloudy at noon hence, observation for latitude test was impossible.

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Thence I run
West on a blank line bet. secs. 13 and 24.
Over tide flat.

- 18.50 Slough, course NW. This joins a main slough 5.00 chs. N. of line and runs west.
- 22.50 Leave same.
- 36.86 Leave tide flat and enter sand dunes bearing N. 21° W. and S. 36° E.
Set a granite stone 16x10x9 ins., 12 ins. in the ground, for meander corner, marked M C on E, with 3 grooves on S. faces. It is impracticable to build any accessory or witness to this corner at this point.
Jan. 23, 1914.
- 36.89 A cabin on line. Measure over it.
- 37.05 Set a redwood post, 7 ft. long, 5x4 ins., 5 ft. in the ground for witness corner to meander corner, marked

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WC, MC on E.

T 5 S R 12 W on W.,

S 13 on W. and

S 24 on S. faces, with 3 grooves on S. face.

Pits are impracticable or useless and stones for a mound are not obtainable, without great difficulty and expense.

40.00 Set a granite stone 18x10x10 ins., 12 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked $\frac{1}{4}$ on N. face; on west side of this stone, I set a redwood post, 7 ft. long, 5x5 ins., 5 ft. in the ground, with 3 quarts of broken glass, scattered from 4 ft. below the surface to the surface; post is marked

$\frac{1}{4}$ S 13 on N.,

S 24 on S. faces.

Owing to loose, sandy character of the soil, pits are of no value and stones for a mound of stone, so difficult to obtain as to be impracticable.

40.13 Telephone line bears NW. and SE.

41.23 Center of northern track of P.E. Ry., bears S. 55° E. and N. 55° W. the track being curved at this point.

41.46 Center of line of trolley poles for P.E. Ry., same bearings,

41.68 Center of southern track of P.E. Ry.; same bearings.

45.20 Mean high tide line of Pacific Ocean, bears NW. and SE.

Set a granite stone 20x10x8 ins., 15 ins. in the ground for meander corner, marked MC on W. face; with 3 grooves on S. face; on E. side of this stone set a redwood post 7 ft. long, 4x5 ins., 5 ft. in the ground, marked

MC on W,

T 5 S R 12 W on E.,

S 13 on N. and

S 24 on S faces, with 3 grooves in S. face.

Pits in this soil, are of no value and other ordinary materials for accessories are not available at this point.

Land, level and low sand dunes.

Soil, tide, or mud, flats and sand dunes, of no apparent value for agriculture.

No vegetation, except salt grass on the tide-lands and a species of spineless cactus on the sand dunes.

Jan. 29, 1914.

From the meander corner on shore of Pacific Ocean, on line bet. secs. 13 and 24, hereinbefore described, I run with meanders in sec. 13.

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Course	Dist.	North	South	East	West.
N. $56\frac{1}{2}^{\circ}$ W.	22.00	12.14			18.35
N. $60\frac{1}{2}^{\circ}$ W.	16.00	7.94			13.89
N. 50° W.	3.54	<u>2.15</u>			<u>2.56</u>
Totals		22.23	0.00	0.00	34.80

To a point 22.23 chs. N. and 80.00 chs. W. of the temp. cor. of secs. 13, 18, 19 and 24, at mean high tide of Pacific Ocean where I set a granite stone 24x18x10 ins., 18 ins. in the ground, for meander corner of fractional secs. 13 and 14, marked MC on S. with 1 groove on E. faces; on S. side of this stone, set a redwood post, 7 ft. long, 4x5 ins., 5 ft. in the ground, marked

MC on S.,

T 5 S R 12 W. on N.,

S 13 on E.,

S 14 on W. with 1 groove on E. faces; from the corner a granite stone in seawall 4x3x3 ft., marked with a cross and the letters BO and number 13 bears N. $35\frac{1}{2}^{\circ}$ E 81 lks. distant.

No other materials are available for accessories to this corner.

Thence I run

North between secs. 13 and 14.

~~Over~~ low sand dunes.

- 1.68 Center of southern track of P.E.Ry. bears N. $42^{\circ}18'$ W. and S. $42^{\circ}18'$ E.
- 1.85 Center between tracks and trolley pole line, same bearing.
- 2.00 Center of northern track of P.E.Ry., same bearing.
- 2.48 Section house, of P.E.Ry. extends SE. and NW.

To pass this section house, I run from meander corner N $9\frac{1}{2}^{\circ}$ E. 2.457 chs. thence

North 2.20 chs. to mean high tide line of inlet

Thence N. 61° W. 46 lks. to true sec. line at a point 4.84 chs. north of meander corner.

- 4.84 Intersect mean high tide line of Inlet or Anaheim Bay, Set a granite stone 18x10x8 ins., 12 ins. in the ground, for meander corner of fractional secs. 13 and 14, marked MC on N; 1 groove on E. faces; on N side of this stone, set a redwood post, 7 ft. long, 4x5 ins., 4 $\frac{1}{2}$ ft. in the ground, marked

MC on N.,

T 5 S R 12 W on S.,

S 14 on W.,

S 13 on E. with 1 groove on E. faces;

Thence I run
South

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2.00 To N. side of section house.
Land, rolling sand spit.
Soil, ocean sand.
No vegetation.

Jan. 29, 1914.

From the meander corner on N. side of sand spit bet. secs. 13 and 14, the corner No. 42 of Rancho Los Alamitos bears N. $32^{\circ}53'$ W. Set a flag on N. shore of inlet, bearing N. $1^{\circ}51'$ W. The angle covering this base is therefore $31^{\circ}02'$; from said corner No. 42, said flag bears S. $86^{\circ}36'$ E. 7.525 chs. dist. The angle is, therefore, $53^{\circ}43'$. At the flag, the angle between meander corner and cor. No. 42, is $95^{\circ}15'$. Solution of the triangle.

Log. of 7.525 is	0.876507
A.c. Log. s in $31^{\circ}2'$	0.287740
Sum	1.164247
Log. s in $95^{\circ}15'$	9.998174
Sum	1.162421 is the log.

of 14.54

First sum above	1.164274
Log. sin $53^{\circ}43'$	9.906389
Sum	1.070863 is the log.

of 11.77, therefore, from the meander corner of fractional secs. 13 and 14, on N. side of sand-spit, corner No. 42 of Rancho Los Alamitos bears N. $32^{\circ}53'$ West, 14.54 chs. dist.

From the eastern end of the base above described, I run North, on offset line 38 lks. W. of the true line, By computation I find the said eastern end of base to bear from the temporary corner of secs. 13, 18, 19 and 24 West 80.38 chs. and north 27.07 chs. plus 11.77 chs. = 38.84

1.16 Made search for $\frac{1}{2}$ sec. cor. but did not find it.

41.36 Total northing 80.20 chs. The cor. of secs. 11, 12, 13 and 14 bears east 38 lks. dist. which is an old oak post in small mound of stone.
Jan. 30, 1914.

Meanders.

From the meander corner of fractional sections 13 and 24, on NE. side of sand spit and shore of Anaheim Bay, as hereinbefore described, I run with meanders in Sec. 24 on west shore of Anaheim Bay, ~~By~~ along foot of low sand dunes, and edge of tide flat;

S $35\frac{1}{2}^{\circ}$ E.,	1.80 chs.	
S $55\frac{1}{2}^{\circ}$ E.,	3.90 "	
S $23\frac{1}{2}^{\circ}$ E.,	2.20 "	
S 63° E.,	5.50 "	
S 45° E.,	7.00 "	
S 58° E.,	9.80 "	
S 49° E.,	3.00 "	
S 34° E.,	5.00 "	
S 53° E.,	3.00 "	
S $24\frac{1}{2}^{\circ}$ E.,	5.80 "	
S 49° E.,	3.40 "	To the NW. boundary of Rancho La Bolsa Chica.

See resurvey of this line.

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Land low sand dunes on west and tide flat, or salt marsh on east.

Vegetation, salt grass on the tide flats.

Jan. 27, 1914.

I commence again at the most western corner of the Rancho La Bolsa Chico, as established in this survey, and run with meanders in sec. 24, mean high tide line of Pacific Ocean, over low sand dunes.

N. 42 $\frac{3}{4}$ ° W., 23.30 chs.

N. 48 $\frac{1}{2}$ ° W., 10.00 "

N. 53 $\frac{3}{4}$ ° W., 21.43 " To the meander corner of secs. 13 and 24, hereinbefore described.

Land, low sand dunes, from 4 ft. to 10 ft. above high tide.

No vegetation to mention.

Jan. 28, 1914.

From the meander corner of fractional sections 13 and 24 on the shore of Pacific Ocean, I run with meanders in sec. 13, N. 56 $\frac{1}{2}$ ° W. 22.00 chs.,

N. 60 $\frac{1}{4}$ ° W. 16.00 "

N. 50° W. 3.34 chs., to the meander corner of sections 13 and 14, hereinbefore described.

Jan. 29, 1914.

Land, low sand dunes, 4 ft. to 6 ft. above high tide, and subject to rapid erosion, in cases of storms or uncommonly high tides.

No vegetation.

From the meander corner of fractional sections 13 and 14 on the bank of Anaheim Bay, hereinbefore described, I run with meanders in sec. 13

S 61° E. 20.85 chs. Along low sand dunes 6 ft. to 10 ft. high, to right, Anaheim bay to left.

S. 49 $\frac{3}{4}$ ° E. 15.50 chs.

S. 67 $\frac{1}{2}$ ° E. 5.00 "

S. 79 $\frac{1}{4}$ ° E. 7.10 "

S. 20 $\frac{3}{4}$ ° E. 4.00 " leaving the waters of Anaheim bay bearing east and along tide flat to left of line, to meander corner of fractional sections 23 and 24, hereinbefore described.

Land, low sand dunes, and tide flats.

Vegetation, to right of line, very scanty; on tide flats coarse salt grass.

From the meander corner of fractional sections 13 and 14 on south side of sand spit and along the shore of Pacific Ocean, I run with meanders in sec. 14.

Over rolling sand spit.

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- N.50°W. 3.50 chs.,
- N.13°W. 2.40 chs., Thence, leaving Pacific Ocean and along shore of Anaheim Bay.
- N.50°E. 1.00 chs., At 0.37 chs., center of S. track of P.E.Ry.
At 0.48 chs., center of trolley pole line between tracks.
At 0.62 chs. center of northern track of same Ry., all bearing N.42°18'W. and S.42°18'E.
- S.81½°E. 2.50 chs. to meander corner on north side of sand spit, hereinbefore described.
- Land, low sand spit, from 3 ft. to 6 ft. above high tide of Pacific ocean.
- No vegetation.

Jan. 29, 1914.

L. E. Wilkes,

U.S. Surveyor.

General Description.

Anaheim Bay which forms the north-eastern boundary of this tract consists of low lands, traversed by numerous, irregular sloughs. The low lands, are covered with a coarse salt grass, and are subject to periodical overflows or inundations, most of which are inundated at each tide of average height, while others are covered only at ordinarily high tides. The "Tide flat" immediately adjoining this tract is, generally of the higher class, and the meander line was determined by the presence of flowage or light drift, and the land beyond this is inundated by mean high tides.

L. E. Wilkes,

U.S. Surveyor.

Resurvey of a part of the NW. Boundary of Rancho La Bolsa Chica in Sec.24, T 5 S., R 12 W., S.B.M., Cal.

The original corner of this Rancho, which is described as "A post and charred stake on the sea beach being the S.W. corner of the Rancho" is lost.

By inquiry among local surveyors, including Legrand Friel of Los Angeles, S.H. Finley of Santa Ana, Victor Hayes of Long Beach and others, I find that the several corners of this Rancho, in this vicinity, have long been lost, and that the various owners of the adjacent lands have had private surveyors to locate points as nearly as possible to the locus of the original corners and that these compromise corners now stand, undisputed as the corners of the various ownerships.

That part of Rancho La Bolsa Chica occupying the narrow strip of land along the sea beach, has been laid out into lots and blocks and named Sunset Beach, but it appears that in this survey, no attempt was made to definitely fix the Rancho boundary, a strip of land designated as a street lies on the NW side of the most north-western lots and extends beyond (NW. of) the line as located in this survey.

The lines of the original Rancho leading to and from this corner were meander lines with numerous courses and distances, and the changes of the contours, caused by action of the elements, give no definite clue to the actual position of the line, hence to relocate this point in its original position, or to even approximate its original position, by retracement of the original lines is entirely out of the question.

In the field notes of the Rancho Los Alamitos, I find the following:

"Thence South 49° and $30'$ W.
"At 174 chs. Station "6" of Ro. La Bolsa and Sta.
"2 of Rancho Bolsa Chica.
"Thence along the line of the last named Ro. 361 chs.
"to Station No.29 of Hancock's survey of this Rancho
"on north shore of inlet 56 chs. wide and at a point
"north $49^{\circ}30'$ E. 58 chs. from a post in md. at high
"water mark of the Pacific Ocean, being the S.W. cor.
"of the Rancho La Bolsa Chica."

The post in md. being the said S.W. corner of Rancho La Bolsa Chica.

Therefore I commence at the "Compromise corner" of the Ranchos Los Alamitos and La Bolsa Chica, which is a redwood post $4 \times 4 \times 14$ ins., above ground, firmly set, marked

L A on NW and

L B C on SE. and

Stac 32 on NE. faces, from which a wire fence bears N. $49^{\circ}34'$ E. and about S. $49^{\circ}34'$ W.

Thence I run

S. $49^{\circ}30'$ W. over tide flat crossing several sloughs.

56.00 This point falls in the tide flat.

58.00 This point falls in the tide flat.

58.87 Leave tide flat, enter low sand dunes bearing N. 49° W. and S. 63° E. Set temp. meander post.

60.91 Center of northern track of P.E. Ry., bears N. $43^{\circ}25'$ W. and S. $43^{\circ}25'$ E.

Resurvey of a part of the NW. Boundary of Rancho La
Bolsa Chica. T 5 S., R 12 W., S.B.Mer., Cal.

- 61.07 Center of trolley pole line, same bearing.
61.23 Center of southern track, same bearing.
63.09 To line of mean high tide, of Pacific ocean.
Set a redwood post 7 ft. long, 5x4 ins., 5 ft. in the
ground for SW. cor. of La Bolsa Chica Rancho, marked
M C on SW.,

L B C on SE.,

T 5 S R 12 W on NE. faces, from which
A post at most western corner of lots of Sunset Beach
bears S. $54^{\circ}10'E$. $45\frac{1}{2}$ lks. dist., not marked.

A post, apparently set as limit of street on NW. side of
Sunset beach bears N. $3^{\circ}E$. $11\frac{1}{2}$ lks. dist., not marked.

On this line, the above mentioned fence continues, from
the beginning corner S. $49^{\circ}30'E$. 10.00 chs. to a slough
where the fence ends, but posts indicate it's position
on all the tide flats, (above low tide) to the edge of
the tide flat, as noted above.

Before permanently leaving this work I wrote the surveyor
general for California, as follows:

Copy of letter.

Los Angeles, California
January 31, 1914.

The United States Surveyor General,
San Francisco, Cal.

Dear Sir:

Having completed the survey of the sand spit in
sections 13 and 24, T 5 S., R 12 W., S.B.M. by way of
preliminary report will say that in accordance with my
instructions.

"Your first duty, before making the survey,
will be to determine that the land embraced in the
application existed in it's present state and condition
at and since 1850 --- and if you find, upon investi-
gation that the lands, did exist as stated, you will
make the survey thereof."

No one of whom I could hear, had seen the land
at that time. I have been shown a copy of an affidavit
made by one Pedro Sepulveda, in which he certifies that
such a strip of land existed before 1850; while field notes
dated 1855 mention the tract, and a copy of field notes of
an earlier survey of the Los Alamitos Rancho, dated 1858,
give meanders of the tract. No trees exist on the tract,
and the other vegetation gives no evidence of long life;
but nothing indicates a recent origin, while all local
evidences indicate that the land has existed very many years,
although it is probable that considerable changes have
occurred by alternate erosions and accretions by action of