

MEMORANDUM

CONCERNING PROPOSED WARNER-ESCONDIDO-UNIVERSITY SYSTEM

by W. S. POST

Sept. 19th, 1915

-oOo-

COST OF 80-FOOT DAM AT WARNERS.

Basing on O'Shaughnessy-Lippincott Report, who give for a 90-foot dam, \$499,850, and making 18% reduction in yardage and omitting flood control line, etc.

We have; for 80-foot dam:

90-foot dam estimate, O'Shaughnessy-Lippincott ----- \$ 499,850.

Deduct:

18% of yardage and masonry estimates
which are \$238,500 ----- \$ 43,000.

Flood control conduit, unnecessary, ----- 81,500.

10% of remaining items, of Tower, plant,
etc., ----- 18,000. 142,500.

Cost of Dam of 80 feet, basing on O'Shaughnessy-
Lippincott Report, modified, ----- \$ 357,350.
=====

Note: A Post and Hickok Report, Oct. 10, 1914, make this estimate for 80-foot Dam, \$301,816.

Note: B Of either of the above estimates, \$50,00 is already built, invested in cut-off wall, tunnel and buildings.

LOSSES OF WATER - BETWEEN WARNERS DAM AND ESCONDIDO DITCH INTAKE.

The general fact appears to be that this section is an "increasing" stream. Present data shows that the quantity of water at the Escondido Intake is greater than at the Warners Dam, being:

During rainy season -- 140% of Warners

During summer months,
ordinary years ----- 200% of Warners

During summer months of
extraordinary dry years 0 to 100% of Warners

That is to say, there are practically no losses under present conditions. However, practice elsewhere has shown (as on Boulder Creek of the Cuyamaca System and on South Fork San Jacinto River of Hemet System) that losses must be expected when larger quantities are flowing in the summer.

Such losses will vary from 0 to 30% of the water flowing in the 12 miles of length, and can be safely taken as 10% average throughout the year.

ESCONDIDO DITCH.

Has a length of some 14 miles and in this statement is considered simply as a carrier for the water, on some leasing terms yet to be decided.

ESCONDIDO DAM

This dam will be the outlet of a conduit and pipe line which may be viewed in four different ways.

PIPE LINES - ESCONDIDO DAM TO LINDA VISTA MESA AND CITY OF SAN DIEGO

- A. As a direct 22" pipe line 34 miles long, from Escondido Reservoir to University Reservoir. Capacity 10 million gallons daily.
- B. As a 29" pipe line 21 miles long from the Dam to San Clemente Reservoir, capacity 20 million gallons daily with a 5 million gallon pipe line to the City.
- C. As a 18" pipe line 10 miles long, discharging into the 16th mile of Pamo Conduit. This keys with Pamo Reservoir.
- D. As a 30" line discharging into Santa Maria Reservoir. This keys with Sutherland and Santa Maria Reservoirs.

PLAN "A",

CAPACITY 10 million gallons daily. TOTAL LENGTH 33.3 miles.

Consists of:

5.2 miles conduit at \$21,100, ----- \$ 110,000.
29.5 miles 22" pipe:

of which:

19.7 miles	-	3/16"	thick	at	50 lbs	per	ft.	5,200,800
6.1	"	1/4"	"	"	70	"	"	2,254,600
3.0	"	5/16"	"	"	90	"	"	1,429,200
.7	"	3/8"	"					<u>414,000</u>

9,298,600
lbs at .05 464,930.

\$ 574,930.

Rights of way ----- 5,000.

Interest 8% for 1/2 year on \$580,000 ----- 23,200.

Engineering and Contingencies 15% ----- 87,000.

\$ 690,130.
=====

Plan "B".

Capacity 20 million gallons daily. Total length

Escondido Dam to San Clemente Reservoir, 21-1/4 miles.

Consists of:

3.1 miles of conduit at \$21,100----- \$ 65,400

19.1 miles of 29" Steel pipe; of which:

8.7 miles	3/16" thick	at 66 lbs per ft.	3,032,000 lbs.
6.6 "	1/4 " "	" 92 " "	3,286,000 "
1.8 "	5/16" "	" 117 " "	1,112,000 "
1.0 "	3/8 " "	" 142 " "	750,000 "
.55 "	7/16" "	" 167 " "	485,000 "
.25 "	1/2 " "	" 192 " "	253,000 "
.20 "	9/16"b "	" 217 "b "	229,000 "
			<u>9,067,000 "</u>

a \$0.05 per lb.----- \$ 453,350

Right of way----- 5,000

Interest 8% for 1/2 year----- 20,800

Engineering and contingencies 15%----- 78,000

San-Clemente Dam

Fill 450,000 cu.yds. a \$0.25-----	\$ 112,500
Riprap, upstream, 22,200 sq.yds. a \$1.50-----	33,300
" downstream 19,000 " " .30-----	5,700
Outlet Tower and Conduit-----	15,000
Interest 8% for 1/2 year -----	6,700
Contingencies 15%-----	<u>25,000</u>
	198,200

San Clemente- University Pipe Line.

Capacity 5 million gallons daily.

18" pipe line, 12 miles long, at \$15,000 per mile----- 180,000

Total ----- \$ 935,350

Plans "C" and "D" are not estimated.

-Comment on Plan A.

It seems unlikely that the City of San Diego can use more than 5 Million Gals. daily in addition to its present supply for the next few years; unless it goes extensively into the irrigation of the Pueblo lands.

5 Mil. Gals. daily would ~~not~~ require only an 18" pipe line instead of the 22" here estimated. The saving in construction cost would amount to \$50,000 by substitution of the smaller pipe.

The larger size is required for the irrigation of the Linda Vista Mesa and the Pueblo lands.

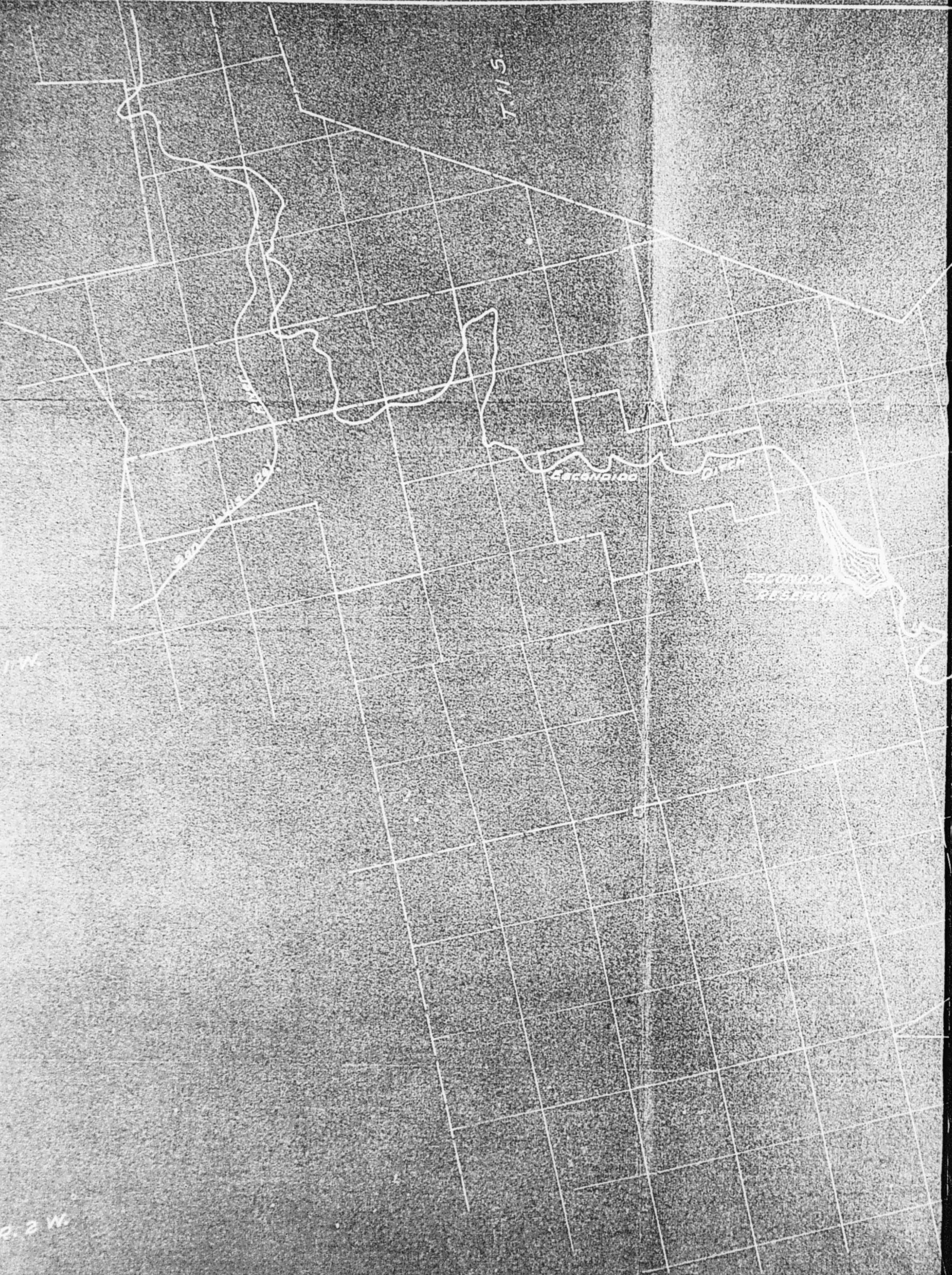
Cost per 1000 Gallons,-- Plan "B".

Maintenance and operation of System	\$ 30,000
Rental or allowance to Escodido M. W. Co. say	10,000
Interest 8% on Plan "B" \$ 1,292,350	103,4000
Depreciation, say 2%	<u>25,800</u>
Total Annual Cost	\$ 169,200

Cost per 1000 Gallons based upon delivery of 20 million gallons daily or 7,300,000 Gals per year is 2.32 cents.

If there is included in the investment the value of lands, water rights, riparian rights for the Warner project and the San Luis rey River at say, \$ 1,500,000, the investment becomes \$ 2,792,350; the annual cost becomes \$ 289,200; and the cost per 1000 gallons delivered on the Linda Vista Mesa ($\frac{1}{2}$ being delivered further to the University Heights Reservoir) becomes 4.1 cents.per

T. 115



ESCONDIDO

ESCONDIDO

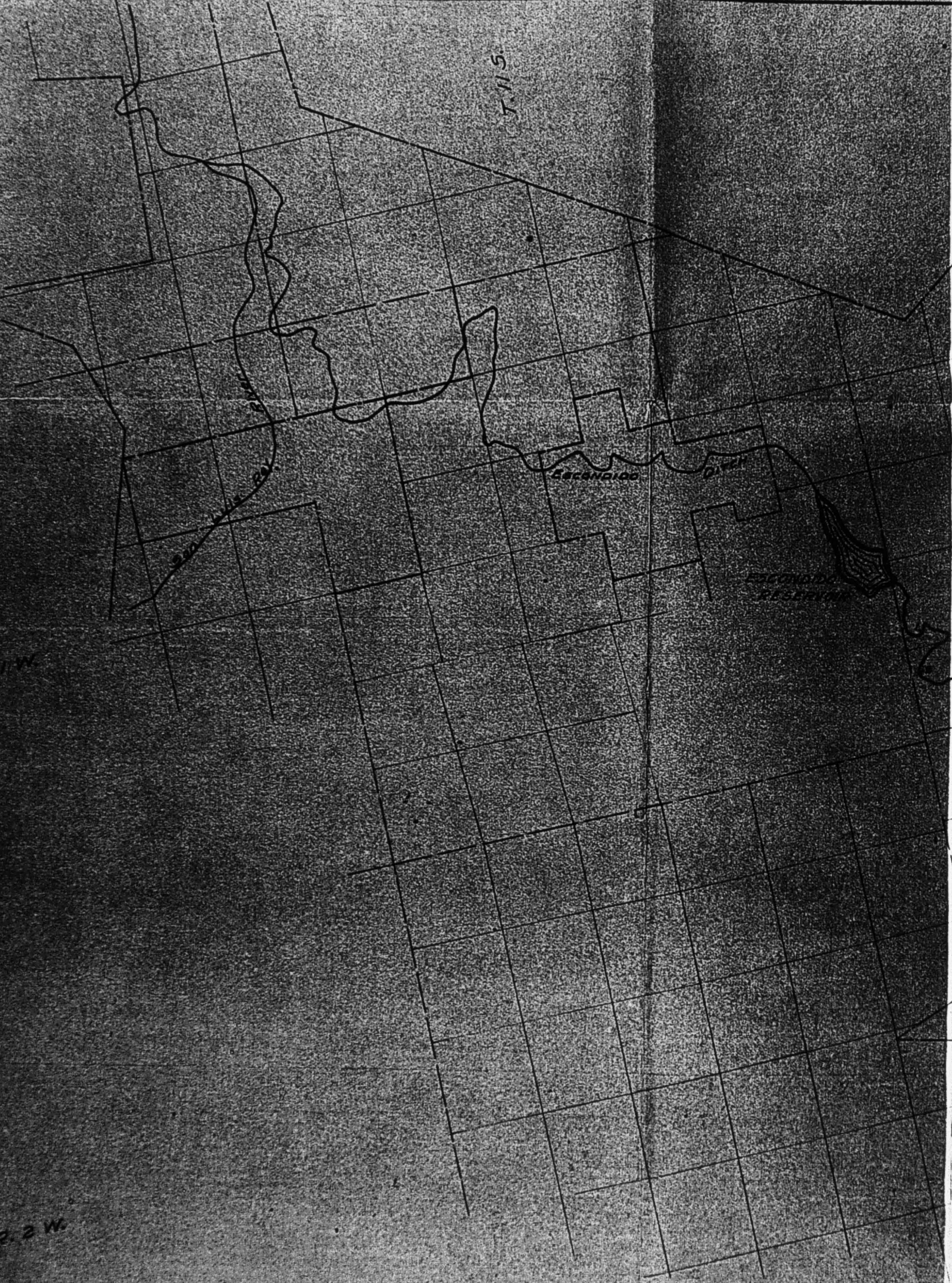
D. 115

ESCONDIDO
ESCONDIDO

1-W

R. 2 W.

T. 115



S. 20
S. 15

SEC. 10

DIV. 1

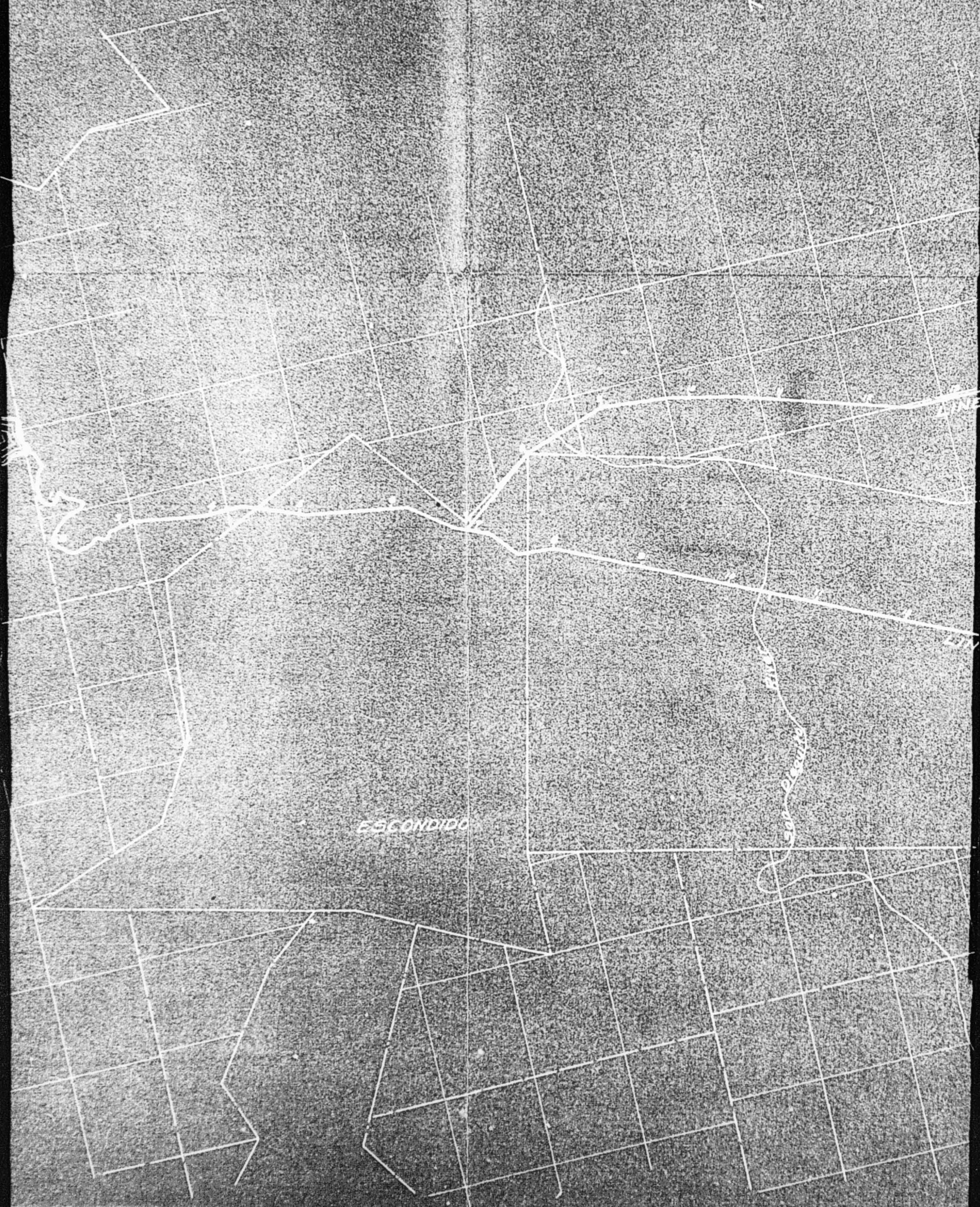
R. 2 W.

T. 125.

T. 135.

ESCONDIDO

SAN JUAN

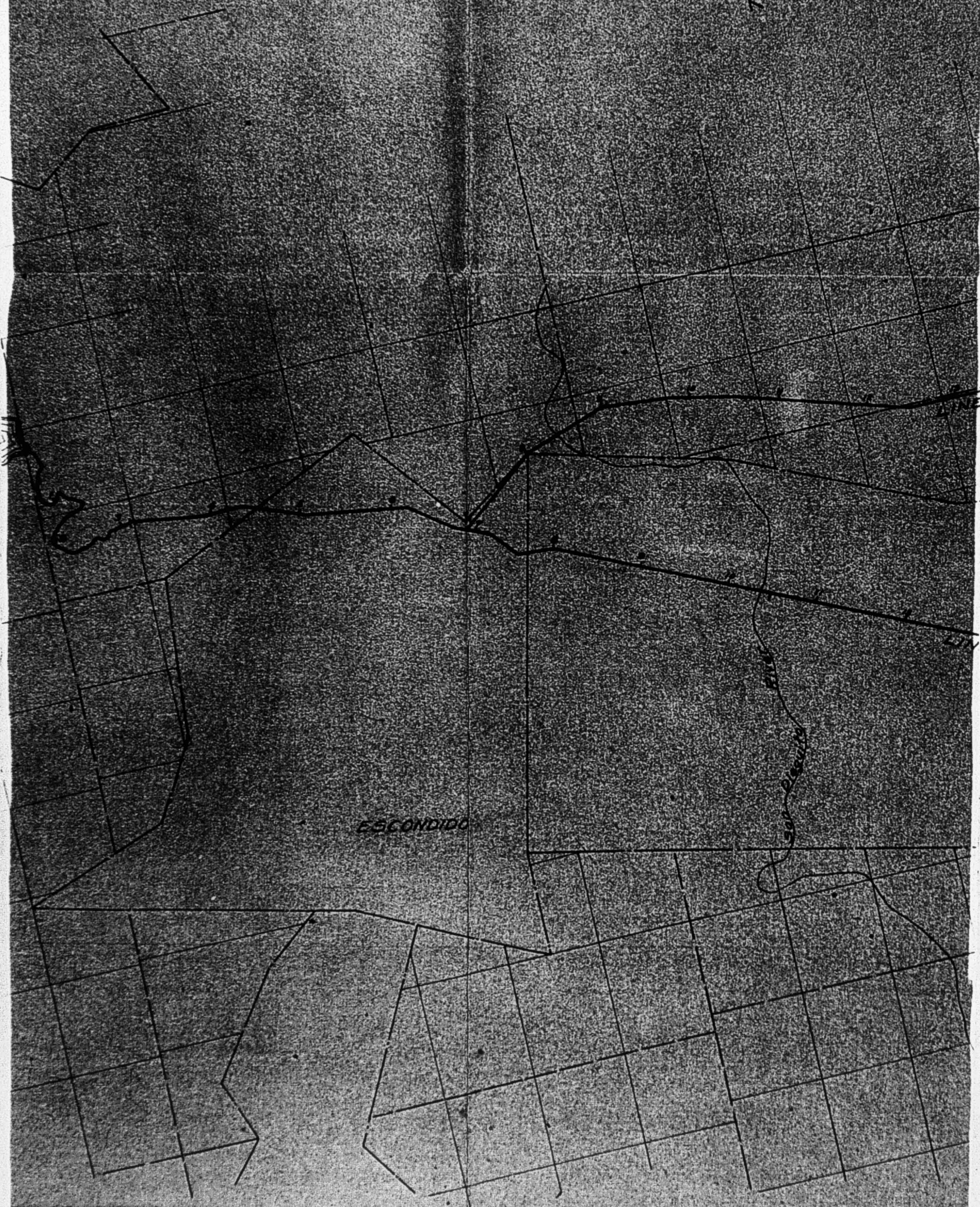


T. 125

T. 135

ESCONDIDO

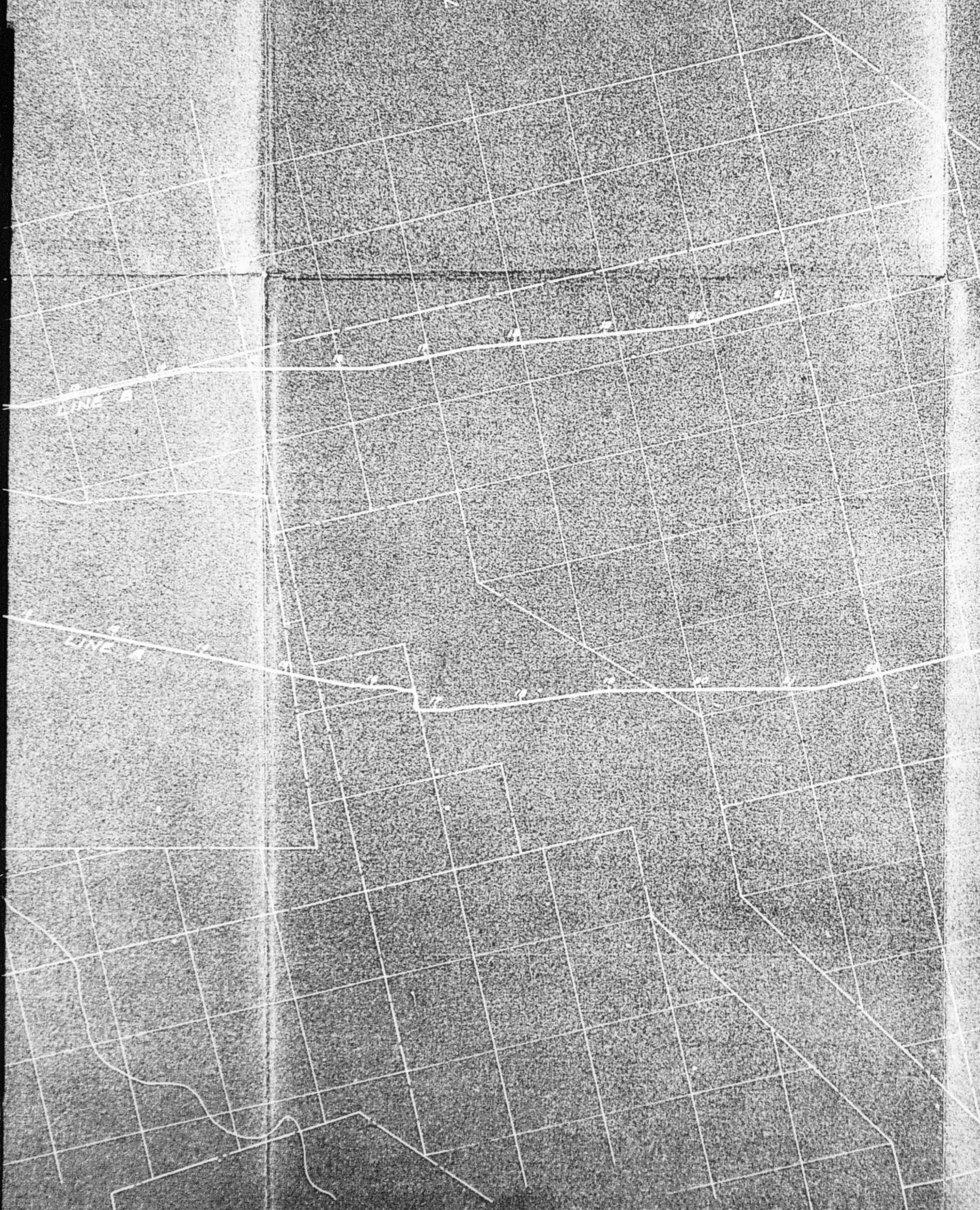
San Diego



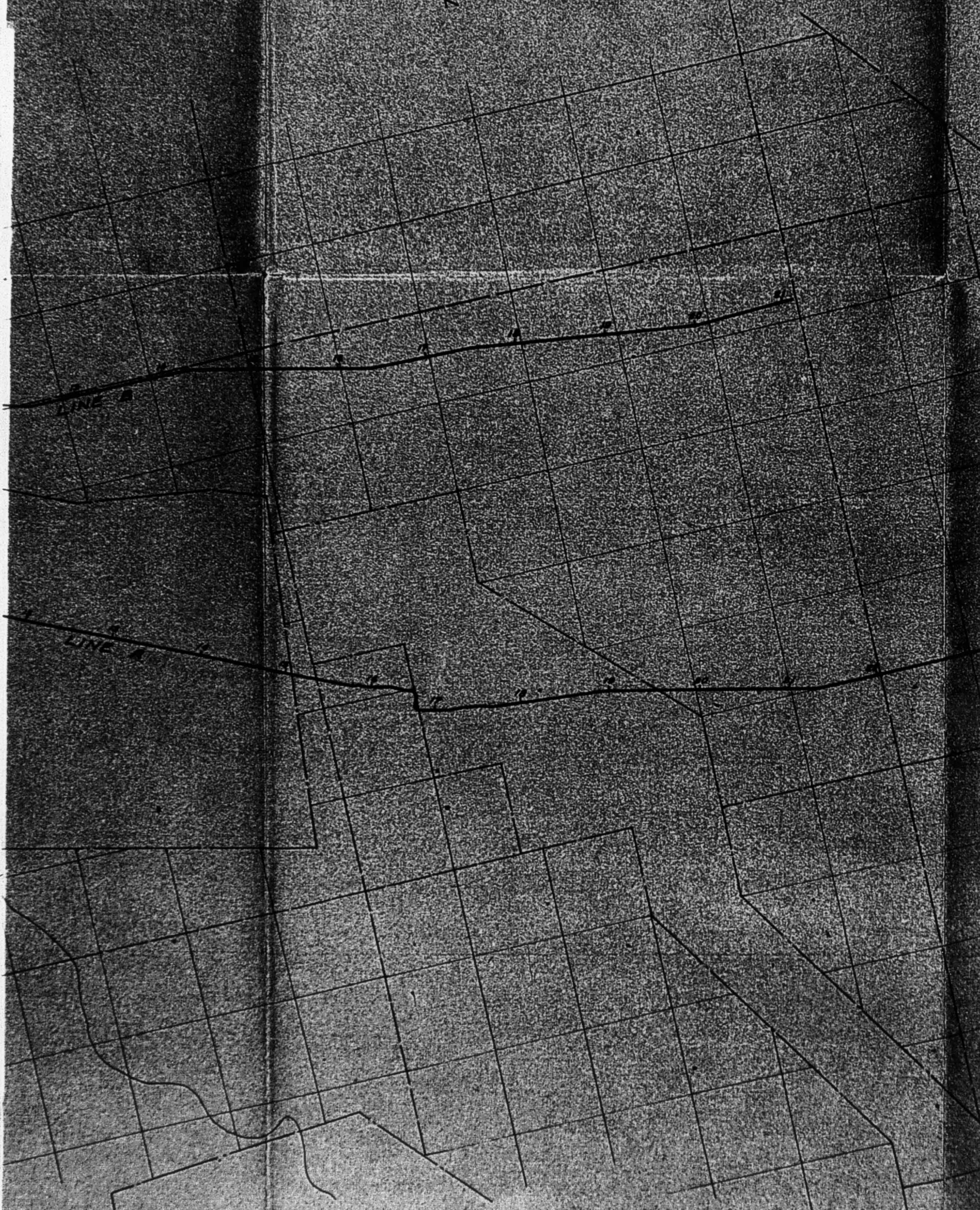
T145

LINE A

LINE B



T. 145



T. 16 S.

YOLCAN LAND & WATER CO.
MAP OF
PROPOSED PIPE LINE

FROM ESCONDIDO RESERVOIR
TO UNIVERSITY HEIGHTS RESERVOIR

PLAN A --- 22" Pipe Line

PLAN B --- 23" Pipe Line

SCALE: 1" = 1 MI.

W.S. POST, ENGR.

SEPT. 16, 1915

Drawing No. 594
File No. B-40

T. 16 S.

YOLCAN LAND & WATER CO.
MAP OF
PROPOSED PIPE LINE

FROM ESCONDIDO RESERVOIR
TO UNIVERSITY HEIGHTS RESERVOIR

PLAN A --- 22" Pipe Line

PLAN B --- 23" Pipe Line

SCALE: 1" = 1 MI

W. S. POST, 1917

SEPT. 16, 1918

Drawing No. 534
File No. B-40

CITY OF
SAN DIEGO

San Diego

1957
5-10



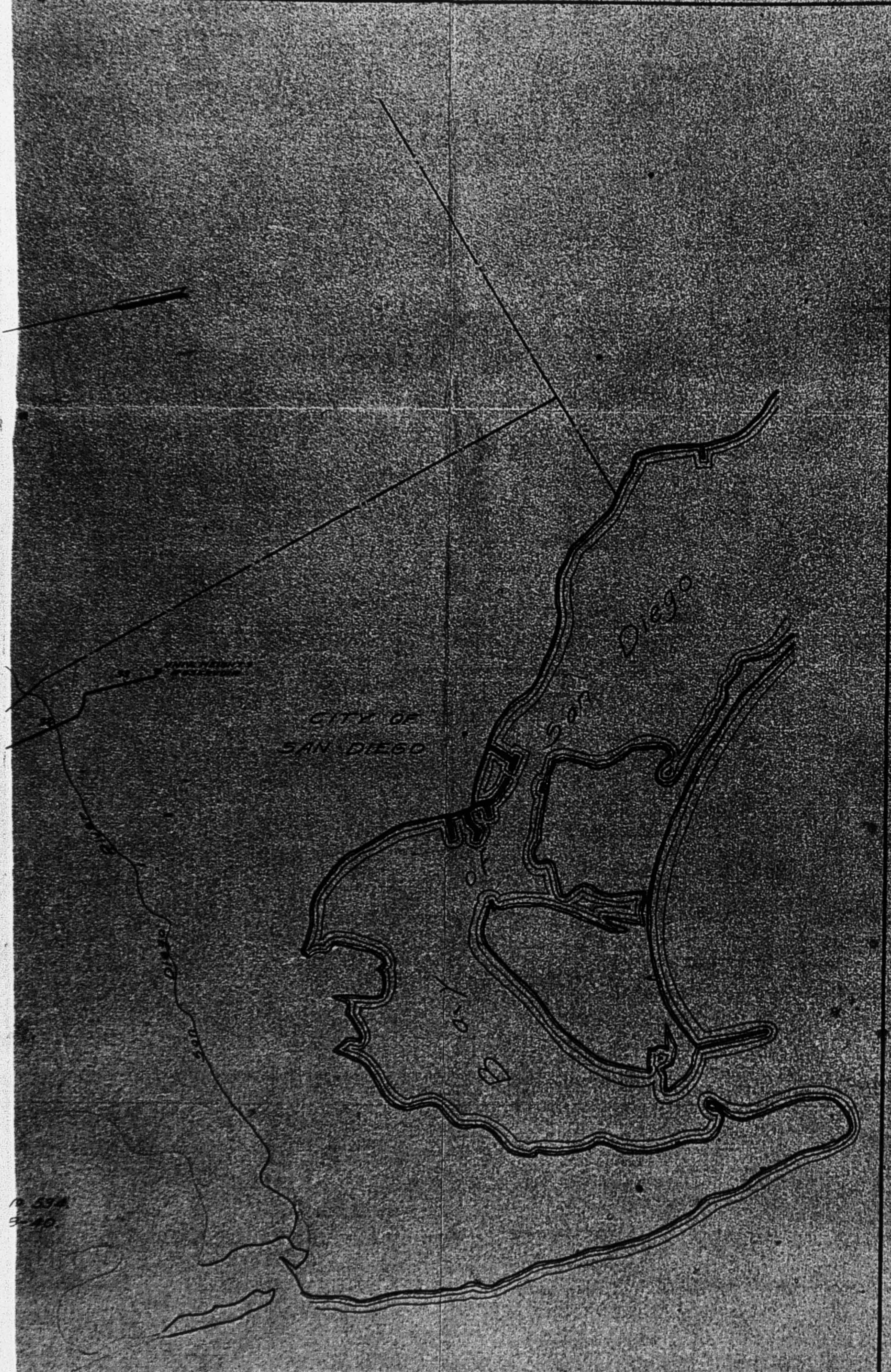
CITY OF
SAN DIEGO

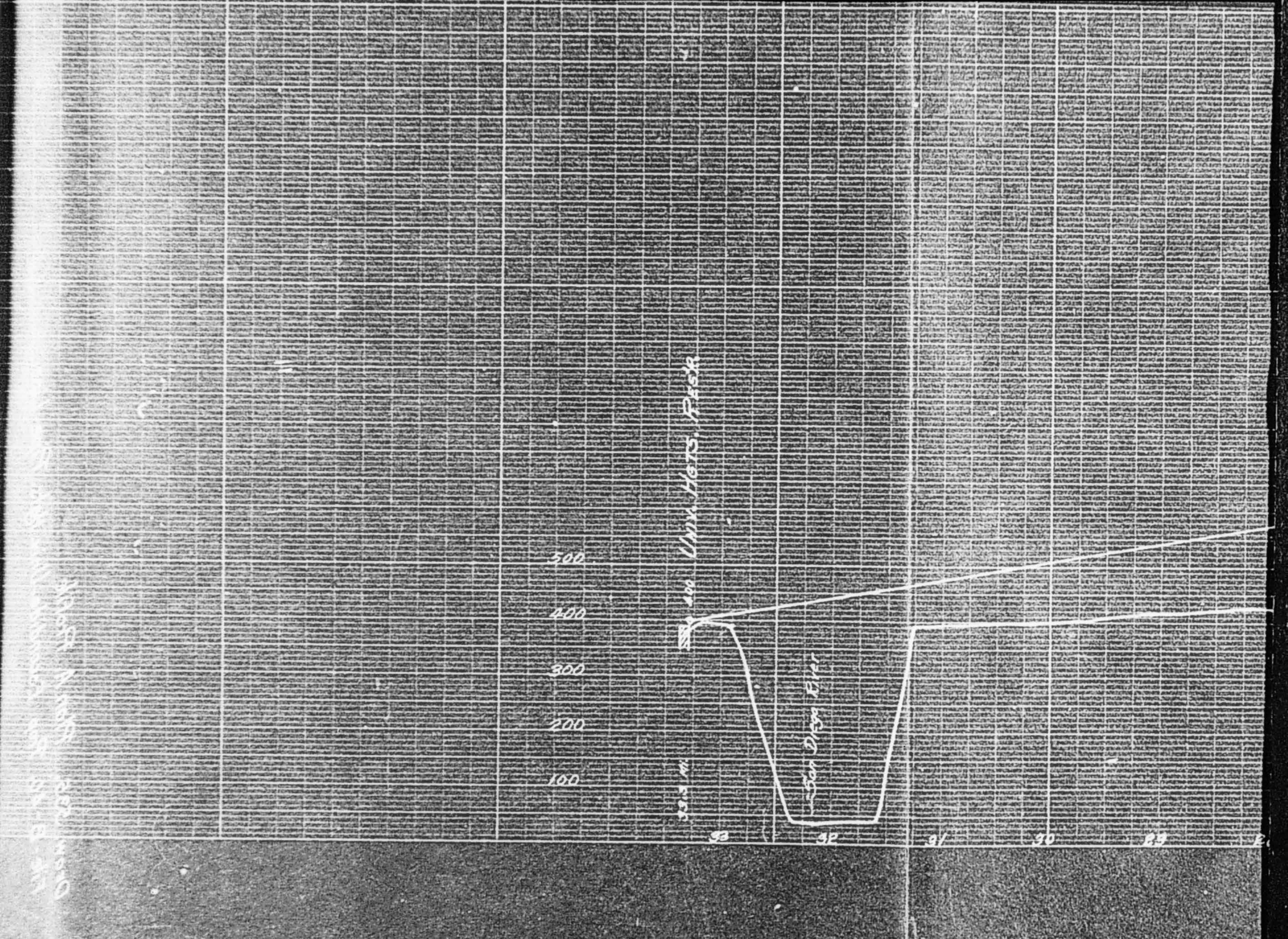
San Diego

San Diego

150

10 534
5-10





500

400

300

200

100

325 m Linx Hets, Peak

San Diego River

93

92

91

90

89

88

Drawn by [unclear]

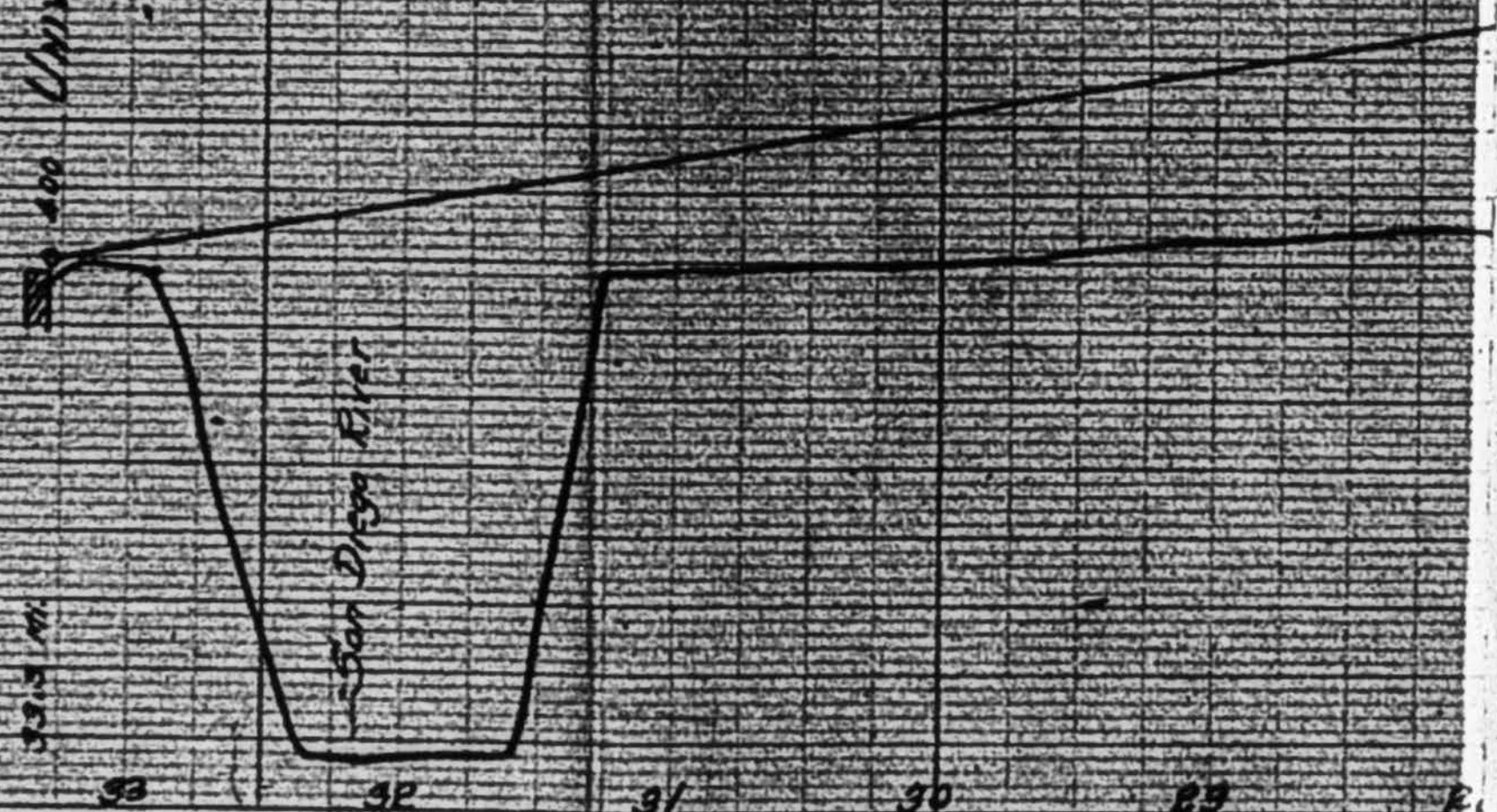
500
400
300
200
100

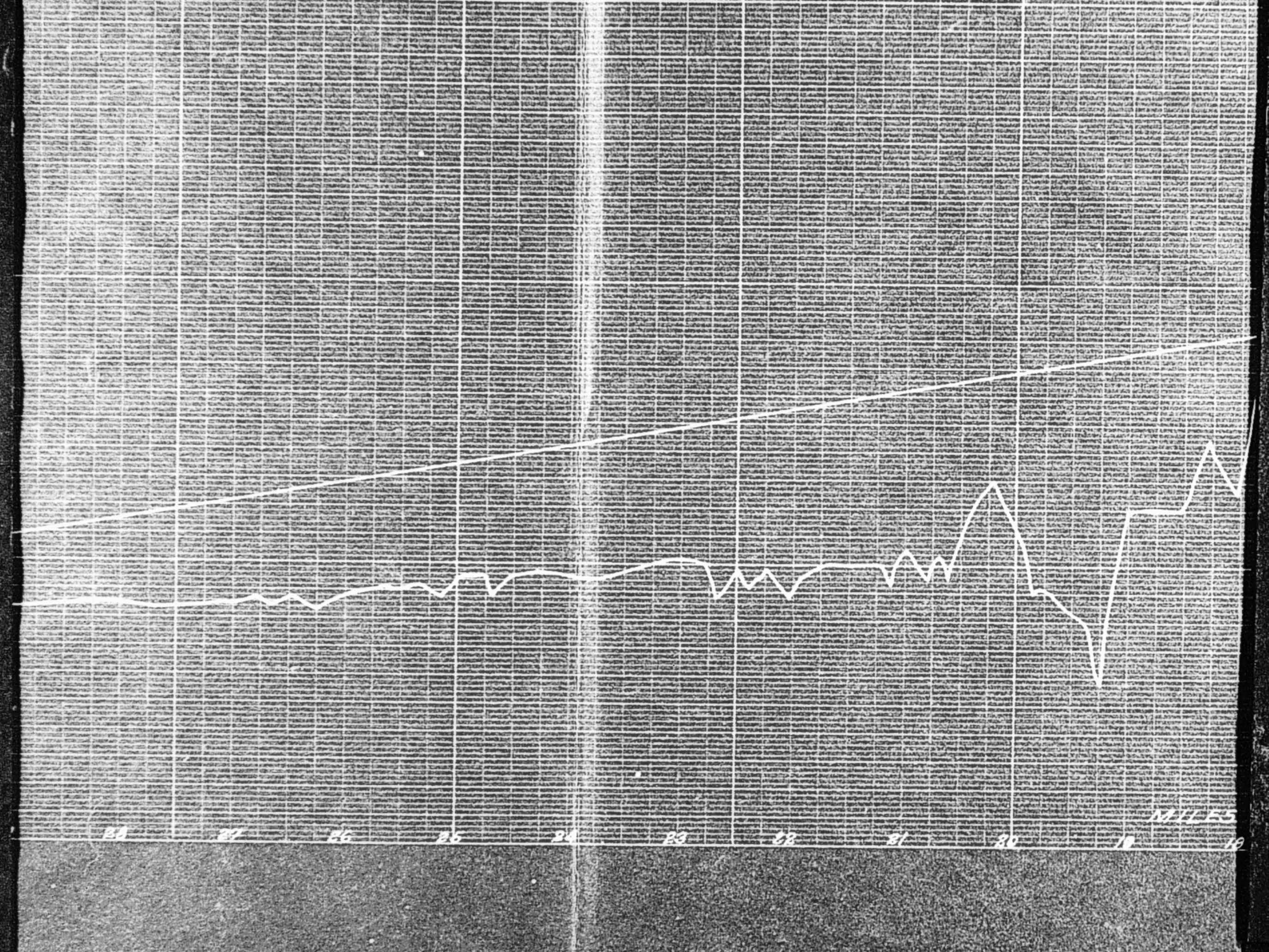
Univ. Hgts. Res'r

33.3 mi.

San Diego River

93 92 91 90 89 88





80

81

82

83

84

85

86

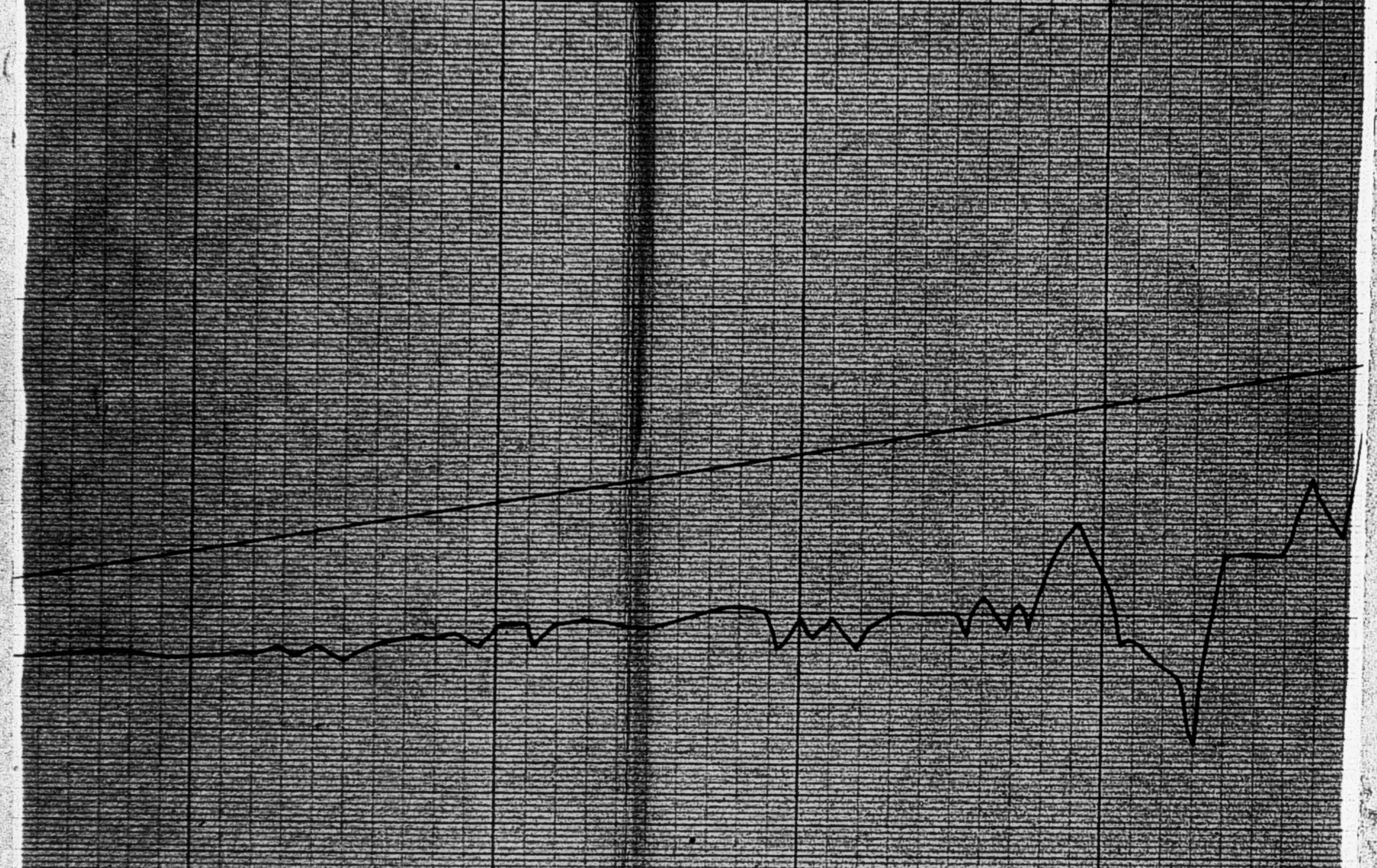
87

88

89

90

MILES



28

27

26

25

24

23

22

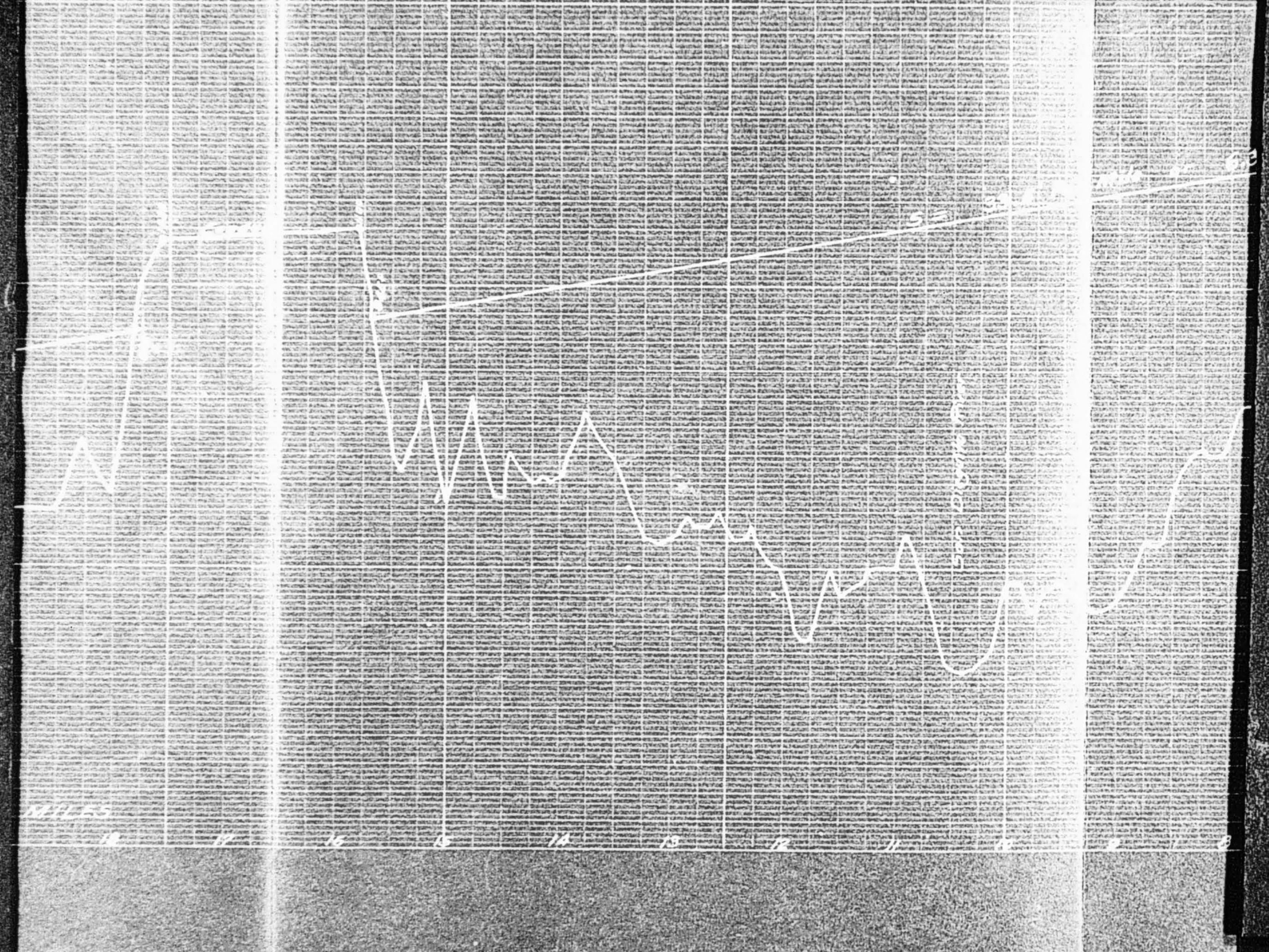
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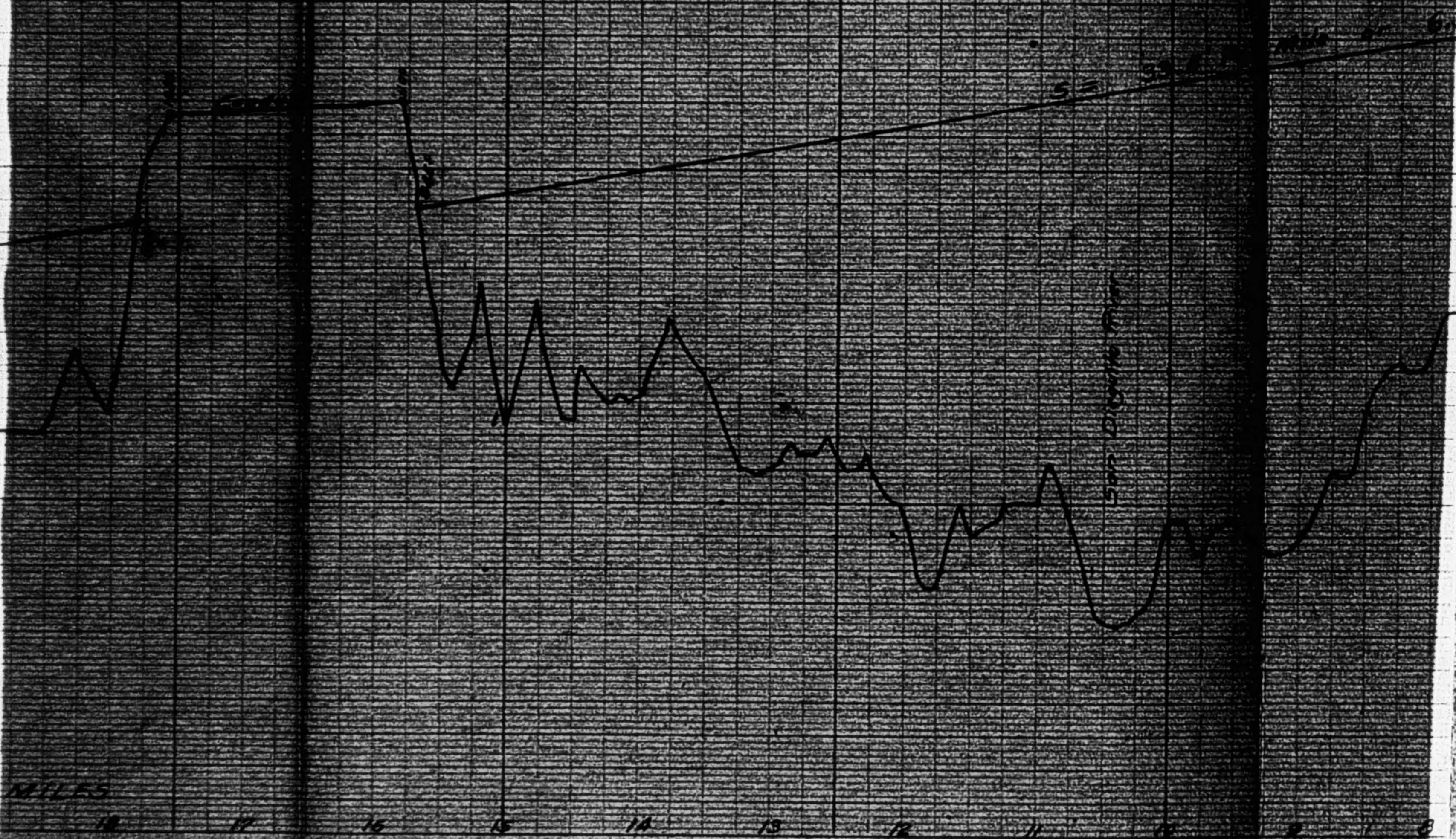
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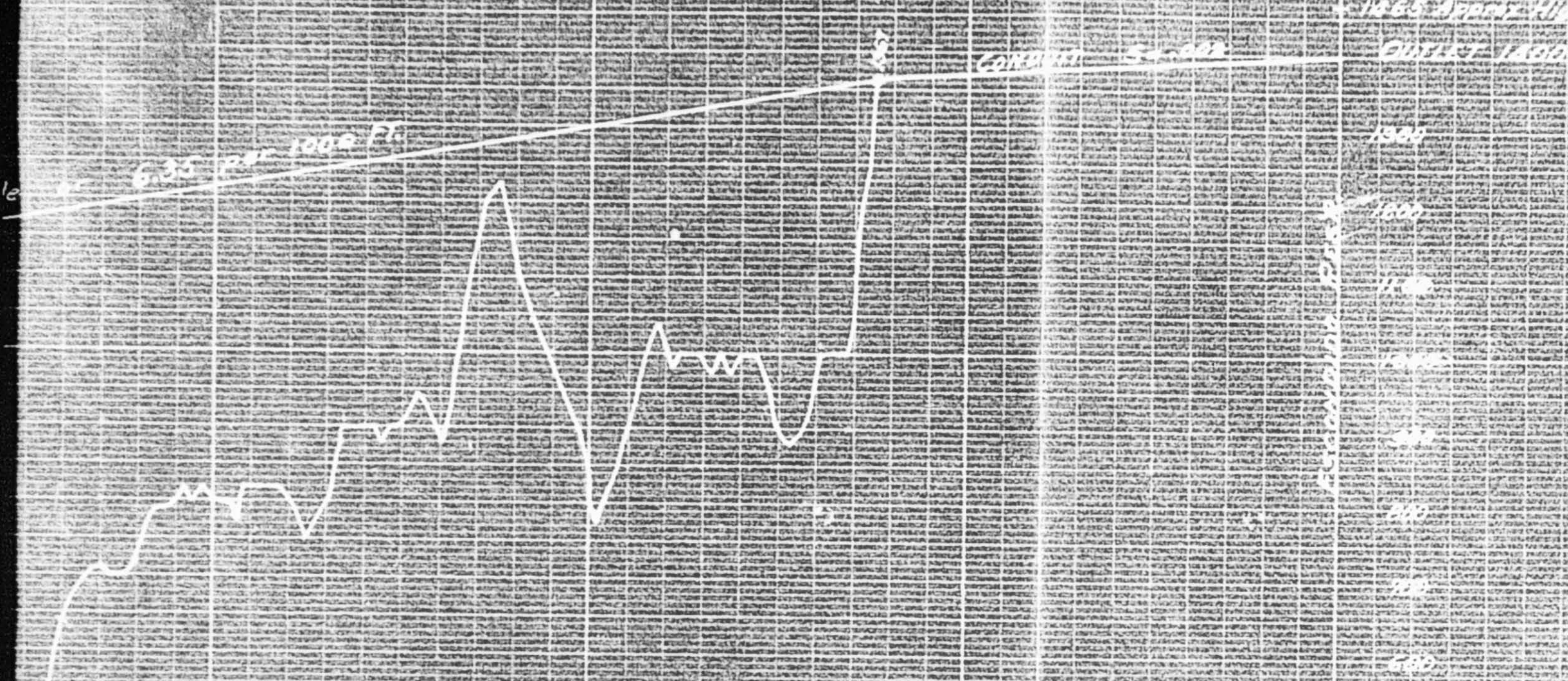
19

MILES

19







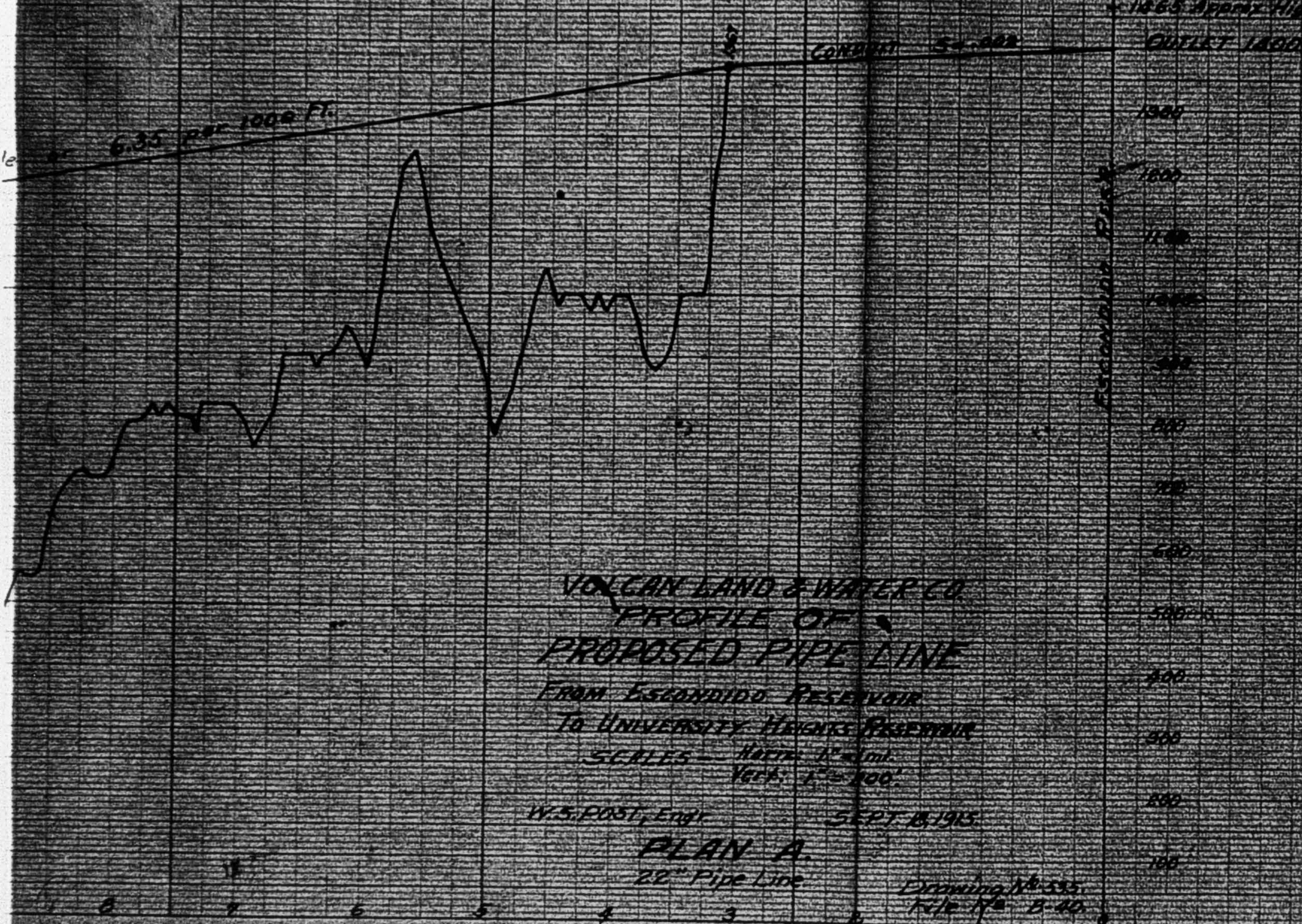
**YOU CAN LAND WATER CO.
FRONTIER OF
PROPOSED PIPE LINE**

**From Escondido Reservoir
To University Avenue Reservoir**

**12 INCHES DIAMETER
100' DEEP**

**FLAN A
22" PIPE LINE**

**Drawing No. 1
11-15-50**



6.35 PER 1000 FT.

CONTRACT 54-202

1865 APPROX. HIGH

OUTLET 1850

ESCONDIDO FEET

VOLCAN LAND & WATER CO.
 PROFILE OF
 PROPOSED PIPE LINE

FROM ESCONDIDO RESERVOIR
 TO UNIVERSITY HEIGHTS RESERVOIR

SCALE - Horiz. 1" = 1 mi.
 Vert. 1" = 100'

W.S. POST, ENGR.

SEPT. 18, 1915

PLAN A.
 22" Pipe Line

Drawing No. 535.
 File No. B-40.

STATIONS
 0 1 2 3 4 5 6 7 8

THE NEW YORK TIMES

FRIDAY, JANUARY 20, 1934

WASHINGTON, Jan. 19.—The House of Representatives today passed a bill authorizing the construction of a new highway bridge across the Chesapeake Bay, connecting the States of Maryland and Virginia. The bill, which is the first step toward the building of the bridge, was passed by a vote of 345 to 107. The bridge, which is to be built by the Chesapeake and Delaware Canal Company, will be the longest and most expensive bridge ever built in the United States. It will be 3,700 feet long and will cost \$125,000,000. The bridge will be built in two sections, each 1,850 feet long. The first section will be built between the States of Maryland and Virginia, and the second section will be built between the States of Maryland and Delaware. The bridge will be built on a 2,000-foot wide right-of-way. The bridge will be built on a 2,000-foot wide right-of-way. The bridge will be built on a 2,000-foot wide right-of-way.

THE NEW YORK TIMES
FRIDAY, JANUARY 20, 1934
15 CENTS

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1865 Approx High Water

CONCRETE 54-002

OUTLET 1450



ESCALANTE RESERVOIR

1300
 1200
 1100
 1000
 900
 800
 700
 600
 500
 400
 300
 200
 100

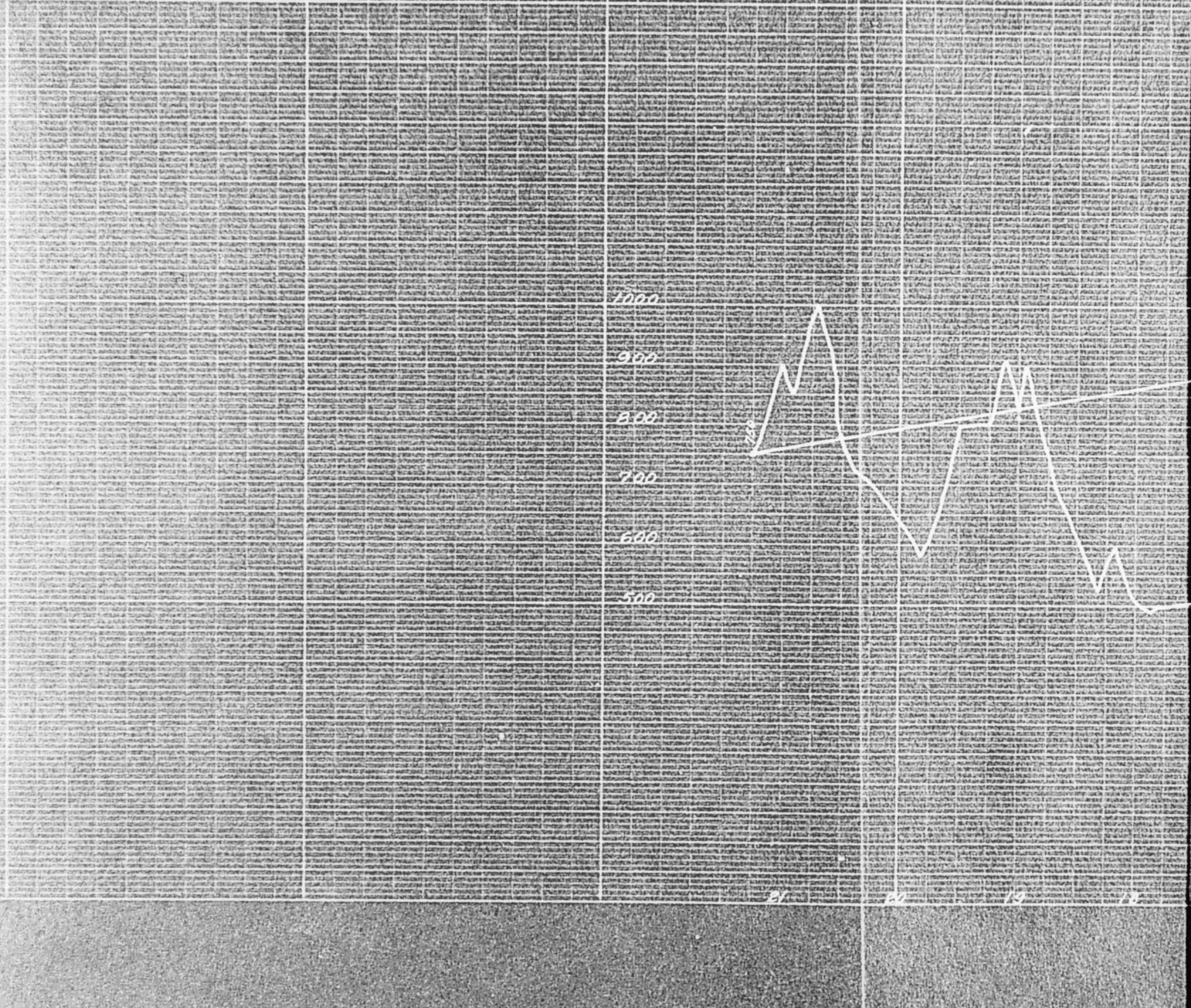
VON OHN LAND & WATER CO.
 PROFILE OF
 PROPOSED PIPE LINE
 From Escalante Reservoir
 To University Heights Reservoir
 SCALES - Horiz. 1" = 100'
 Vert. 1" = 100'

W.S. PORT, ENR. SEPT. 8, 1915

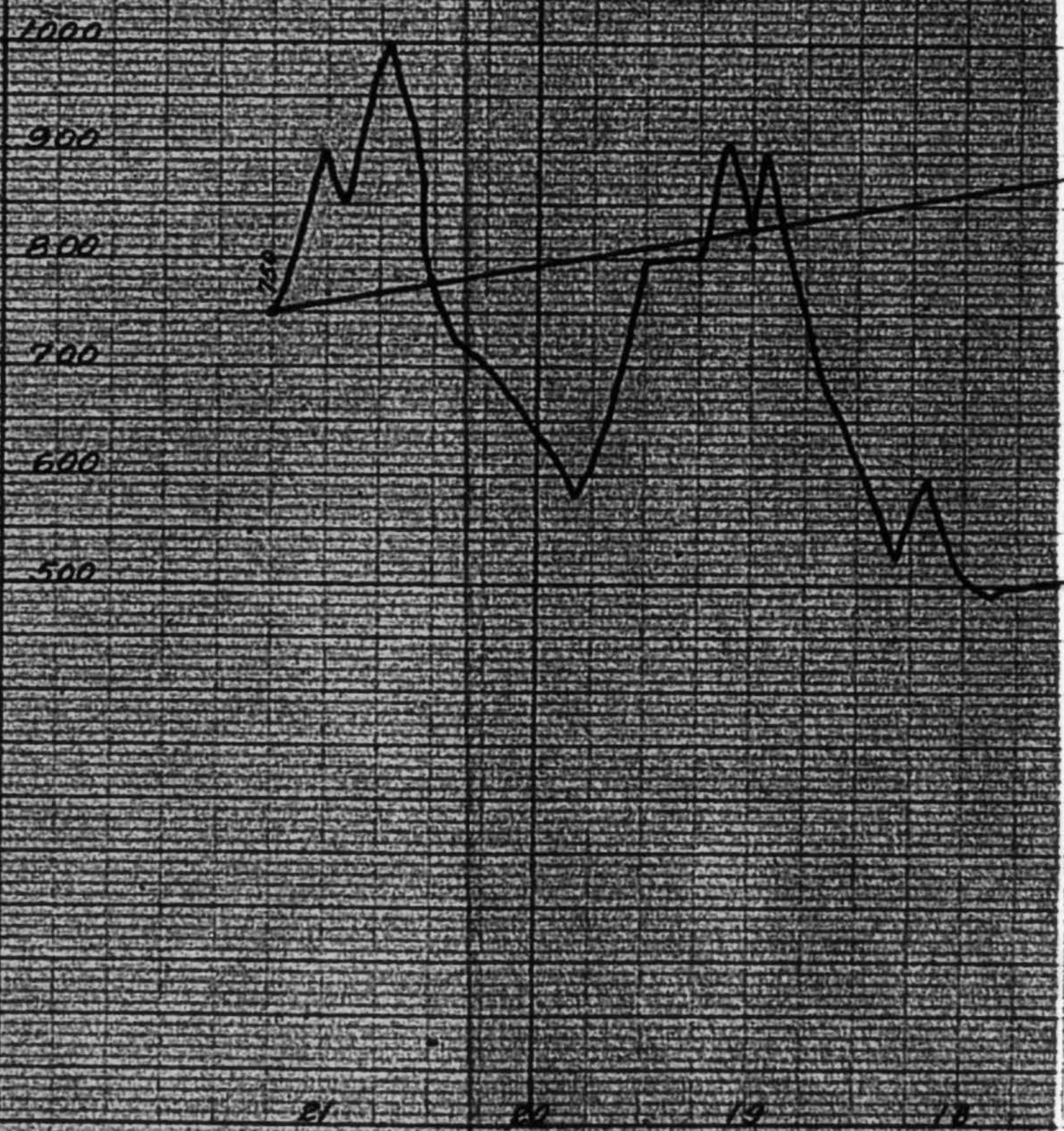
PLAN A
22" Pipe Line

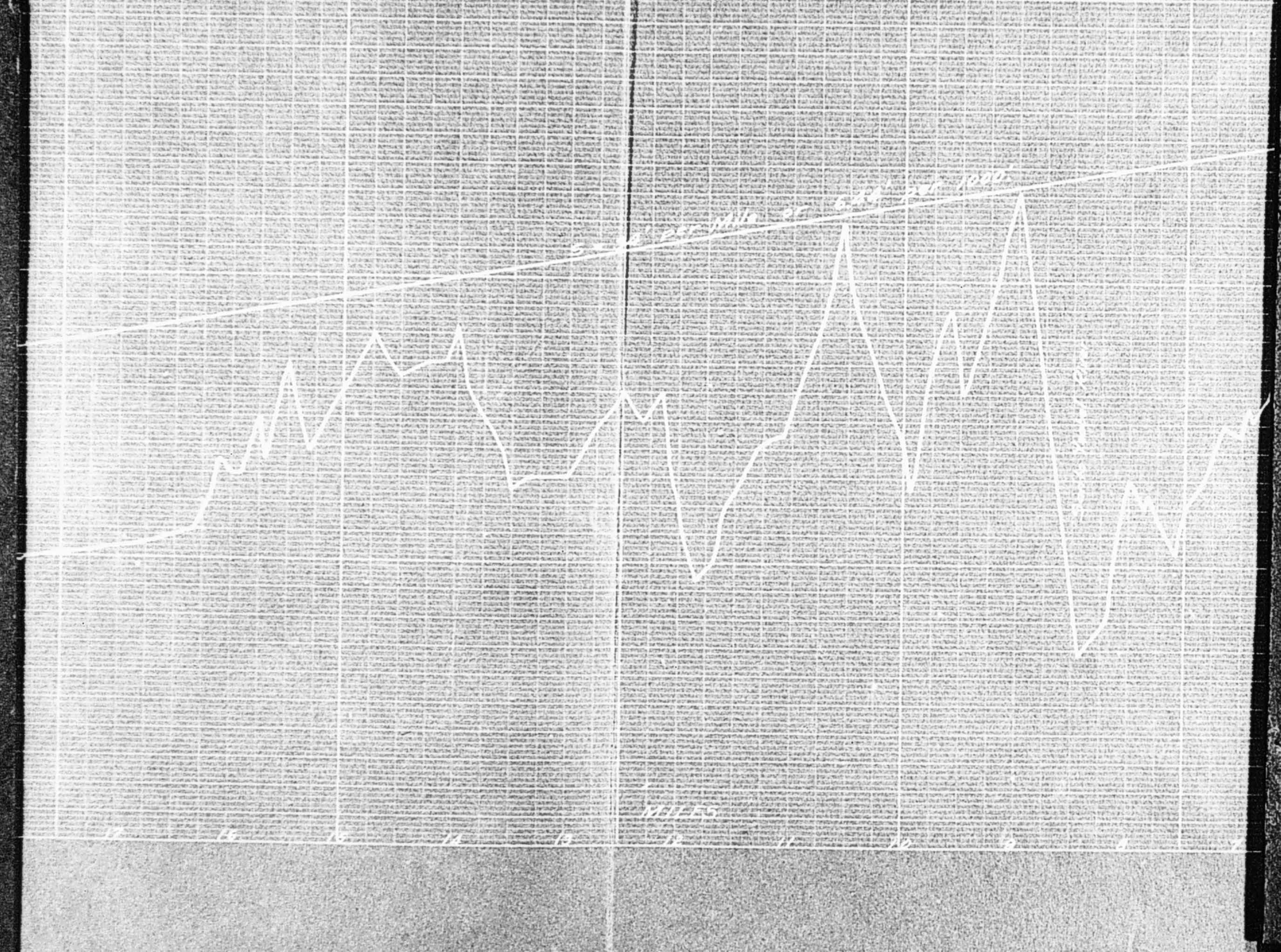
Drawing No. 535
File No. B-40

1000
900
800
700
600
500

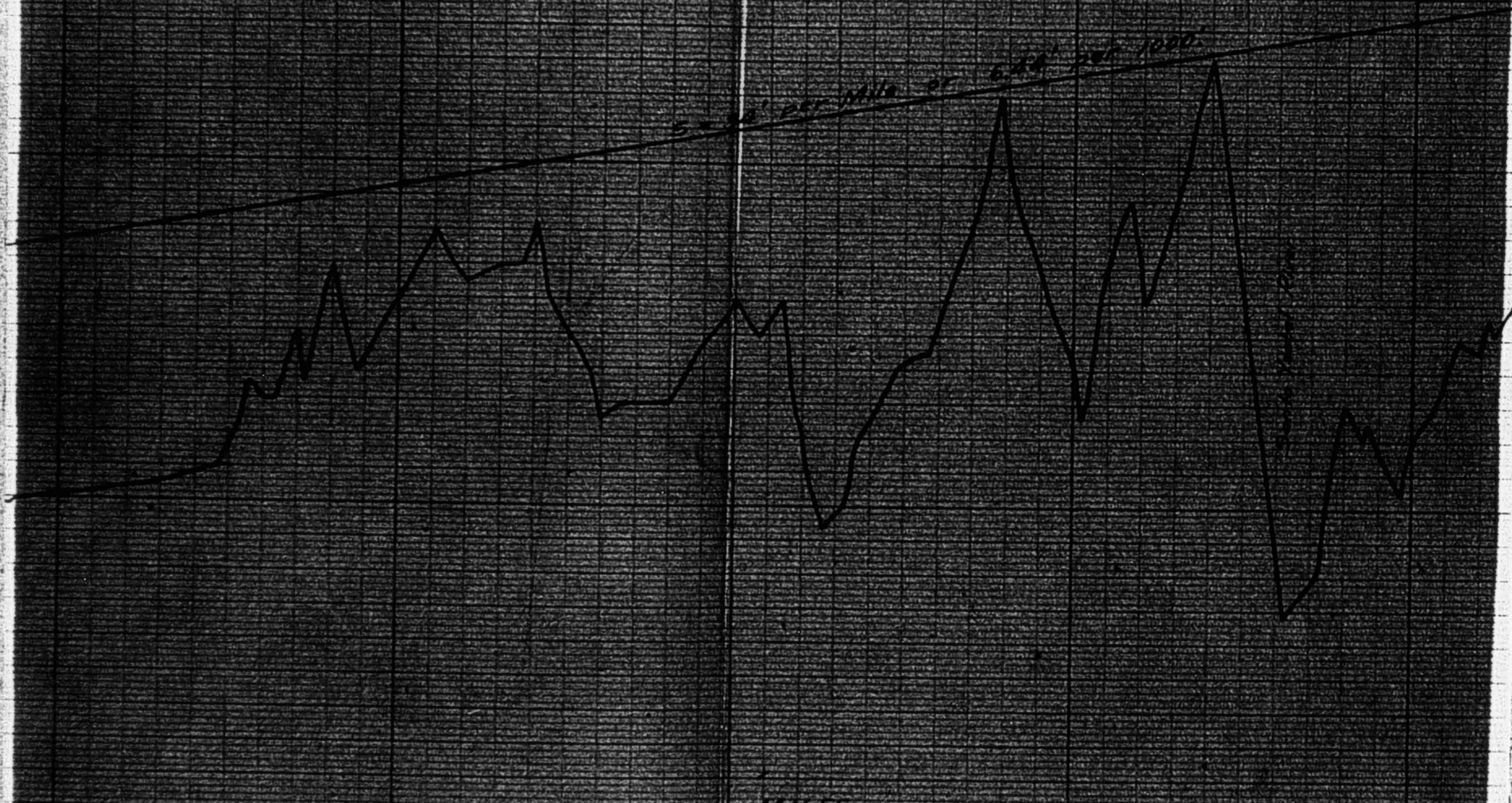


1000
900
800
700
600
500





5.2 PER GALLON OF GAS PER 1000'



MILES

17 16 15 14 13 12 11 10 9 8 7



VOLCAN LAND & WATER-ED PROFILE OF PROPOSED PIPE LINE

FROM FUNDING 12-1-50
TO UNIVERSITY OF MICHIGAN
SCALE 1" = 1000'

NO. 1030
PLAN B
TO PIPE LINE

DATE 7-1-51



1465 Ave. 5, 1915

CONDUIT 5" 000

OUTLET 1420



VOLCAN LAND & WATER CO.
 PROFILE OF
 PROPOSED PIPE LINE
 FROM ESCONDIDO RESERVOIR
 TO UNIVERSITY HEIGHTS RESERVOIR

SCALE: Horizontal 1" = 100'
 Vertical 1" = 200'

N.S. POST, Engr.

SEPT. 16, 1915

PLAN B.
 29 Pipe Line

Drawing No. 536
 File No. D-49

1 2 3 4 5

1 2 3 4 5

100

200

300

400

500

600

700

800

900

1000

1100

1200

1300

1400

1500

1600

1700

Ed Fletcher Papers

1870-1955

MSS.81

Box: 41 Folder: 10

**Business Records - Reports - Post, W.S
- "Memorandum Concerning Proposed
Warner-Escondido-University System"**



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