BASELINE ENGINEERING
260 W. Douglas
EL CAJON, CALIFORNIA 92020
(619) 442-0494

JOB #1533 SWAIN
SHEET NO. 1 OF 10
CALCULATED BY JJL DATE 1-14-04
CHECKED BY DATE
SCALE

PRELIMINARY DRAINAGE STUDY FOR DEAN SUGA, ADLAI ROAD

REFERENCE DRAINAGE CALCS & REPORTS ON FILE WITH COUNTY ENGR FOR TM 5009 AND TM 5186

GENERAL DESCRIPTION OF CONDITIONS

SITE STRADDLES AN EXISTING DRAINAGE SWALE WHICH CARRIES AREA DRAINAGE FROM NORTH TO SOUTH THROUGH PROPERTY. A PUBLIC 48" STORM DRAIN IS PROPOSED AND RIGHT-OF-WAY IS BEING ACQUIRED, TO SATISFY CONDITIONS OF APPROVED TM 5009 AND TM 5186, BY KENNEY DEV. CO.

THE PROPOSED 48" RCP STORM DRAIN WILL TRAVERSE THROUGH THIS SITE AND EXIT PROPERTY IN EXISTING SWALE IN NEW LOT 8 - SEE TENTATIVE MAP.

ON-SITE DRAINAGE IS DIRECTED INTO NEW PRIVATE STREET AND INTO NEW CURB INLETS IN SAG AT THE NEW 48" RCP STORM DRAIN

REGISTERED PROFESSIONAL ENGINEER
James Joel Lewis
No. 51260
Exp. 9-30-05
CIVIL
STATE OF CALIFORNIA

I MAIN DRAINAGE COURSE

AS DESCRIBED ABOVE, Q_{100} TO EXIT @ LOT 8

$Q_{100} = C I_{100} A$

$Q_{100} = 0.45 \times 3.1 \times 80$

$Q_{100} = 112$ cfs

- SOIL GROUP B, SINGLE FAMILY RES, C = 0.45
- T_c: Δ ELEV = 830 - 620 = 210 in 3230, T_c = 21 MIN
- I_{100} = 3.1 IN/HR
- A = 80 AC SEE QUAD SHT HEREIN; SEE REF CALCS FOR TM 5009 & TM 5186 FOR 200' SCALE TOPO PLOT OF ENTIRE BASIN

PRODUCT 204-3 Graphic Inc., Groton, Mass. 01471.

BASELINE ENGINEERING
260 W. Douglas
EL CAJON, CALIFORNIA 92020
(619) 442-0494

DRAINAGE CONVEYED THROUGH SITE IN 48" RCP AS DESCRIBED ON SHEET 1. NO INUNDATION ON THIS SUBDIVISION

II SITE DRAINAGE

a) Q_{100} to N. side curb inlet

$Q_{100} = C I_{100} A$ $\quad C = 0.60$

$T_c = 10$ min

$Q_{100} = 0.60 \times 5.0 \times 3.7$ $\quad I_{100} = 5.0$ in/Hr

$Q_{100} = 11.1$ cfs $\quad A = 3.7$ AC SEE 200' SCALE TOPO HEREIN

CURB INLET $H = 10''$, $h = 6''$, $H/h = \frac{0.83}{0.50} = 1.66$, $Q/L = 2.0$, $L = \frac{11.1}{2} = 5.6'$

USE 6' STD. INLET - SEE CHART HEREIN

b) Q_{100} to S. side curb inlet

$Q_{100} = C I_{100} A$ $\quad C = 0.60$

$T_c = 10$ min

$Q_{100} = 0.60 \times 5.0 \times 3.4$ $\quad I_{100} = 5.0$ in/hr

$Q_{100} = 10.2$ cfs $\quad A = 3.4$ AC SEE 200' SCALE TOPO HEREIN

USE 6' STD INLET - SEE CHART HEREIN

PRODUCT 204-3 [illegible] Inc., Groton, Mass. 01471

TABLE 2

RUNOFF COEFFICIENTS (RATIONAL METHOD)

DEVELOPED AREAS (URBAN)

Land Use	Coefficient, C Soil Group (1) A	B	C	D
Residential:				
Single Family	.40	.45	.50	.55
Multi-Units	.45	.50	.60	.70
Mobile homes	.45	.50	.55	.65
Rural (lots greater than 1/2 acre)	.30	.35	.40	.45
Commercial(2) 80% Impervious	.70	.75	.80	.85
Industrial(2) 90% Impervious	.80	.85	.90	.95

NOTES:

(1) Obtain soil group from Appendices IX-C1 thru IX-C4.

(2) Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in no case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

Actual imperviousness = 50%

Tabulated imperviousness = 80%

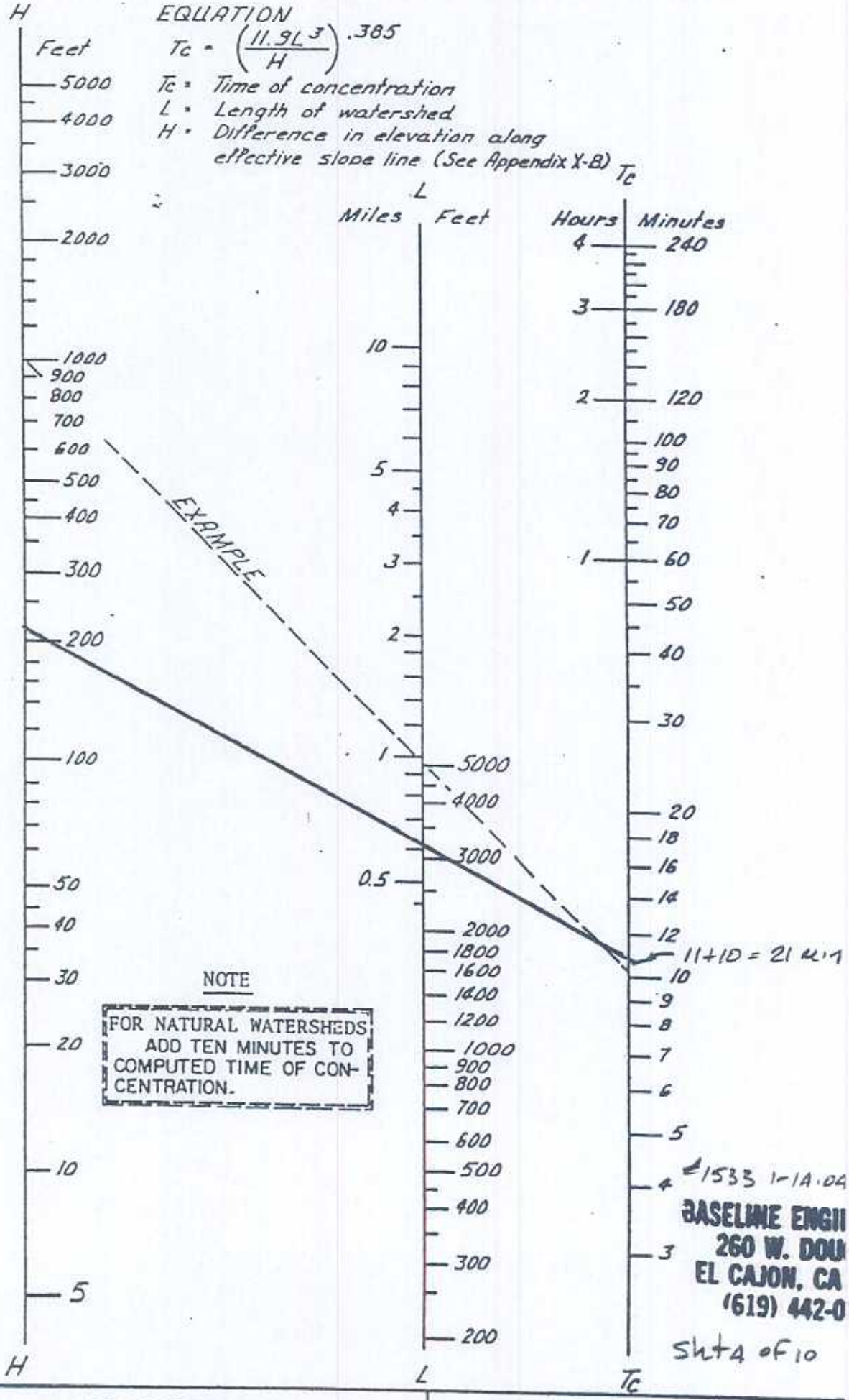
Revised $C = \frac{50}{80} \times 0.85 = 0.53$

#1533 1-14 [illegible]
[illegible] 1-20-[illegible]
BASELINE ENGINEERING
260 W. DOUGLAS
EL CAJON, CA [illegible]
(619) [illegible]
sht 3 of 10

EQUATION

$$T_c = \left(\frac{11.9L^3}{H}\right)^{.385}$$

T_c = Time of concentration
L = Length of watershed
H = Difference in elevation along effective slope line (See Appendix X-B)



#1533 1-14.04

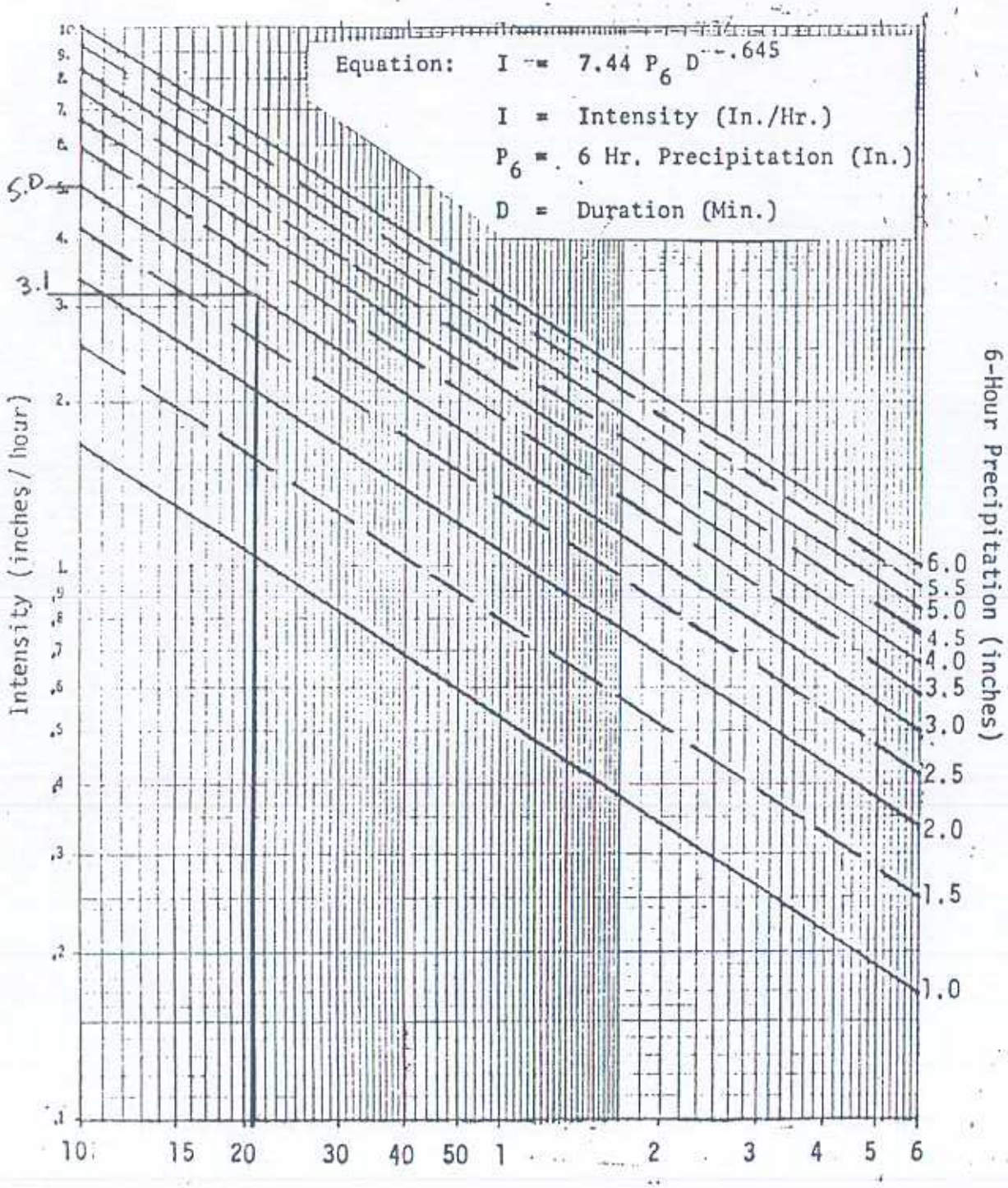
BASELINE ENGI
260 W. DOU
EL CAJON, CA
(619) 442-0

Sht 4 of 10

SAN DIEGO COUNTY DEPARTMENT OF SPECIAL DISTRICT SERVICES DESIGN MANUAL	NOMOGRAPH FOR DETERMINATION OF TIME OF CONCENTRATION (Tc) FOR NATURAL WATERSHEDS
APPROVED [illegible]	DATE 12/1/10

INTENSITY-DURATION DESIGN CHART

1984



Directions for Application:

1) From precipitation maps determine 6 hr. and 24 hr. amounts for the selected frequency. These maps are printed in the County Hydrol Manual (10, 50 and 100 yr. maps included in Design and Procedure Manual).

2) Adjust 6 hr. precipitation (if necessary) s that it is within the range of 45% to 65% o the 24 hr. precipitation. (Not applicable to Desert)

3) Plot 6 hr. precipitation on the right side of the chart.

4) Draw a line through the point parallel to t plotted lines.

5) This line is the intensity-duration curve f the location being analyzed.

Application Form:

0) Selected Frequency 100 yr.

1) P_6 = 3.0 in., P_{24} = 6.5, $^*\frac{P_6}{P_{24}}$ = 46.1 %*

2) Adjusted $^*P_6$ = 3.0 in.

3) t_c = 21 | 10 min.

4) I = 3.1 | 5.0 in/hr.

*Not Applicable to Desert

Sht 5 of 10

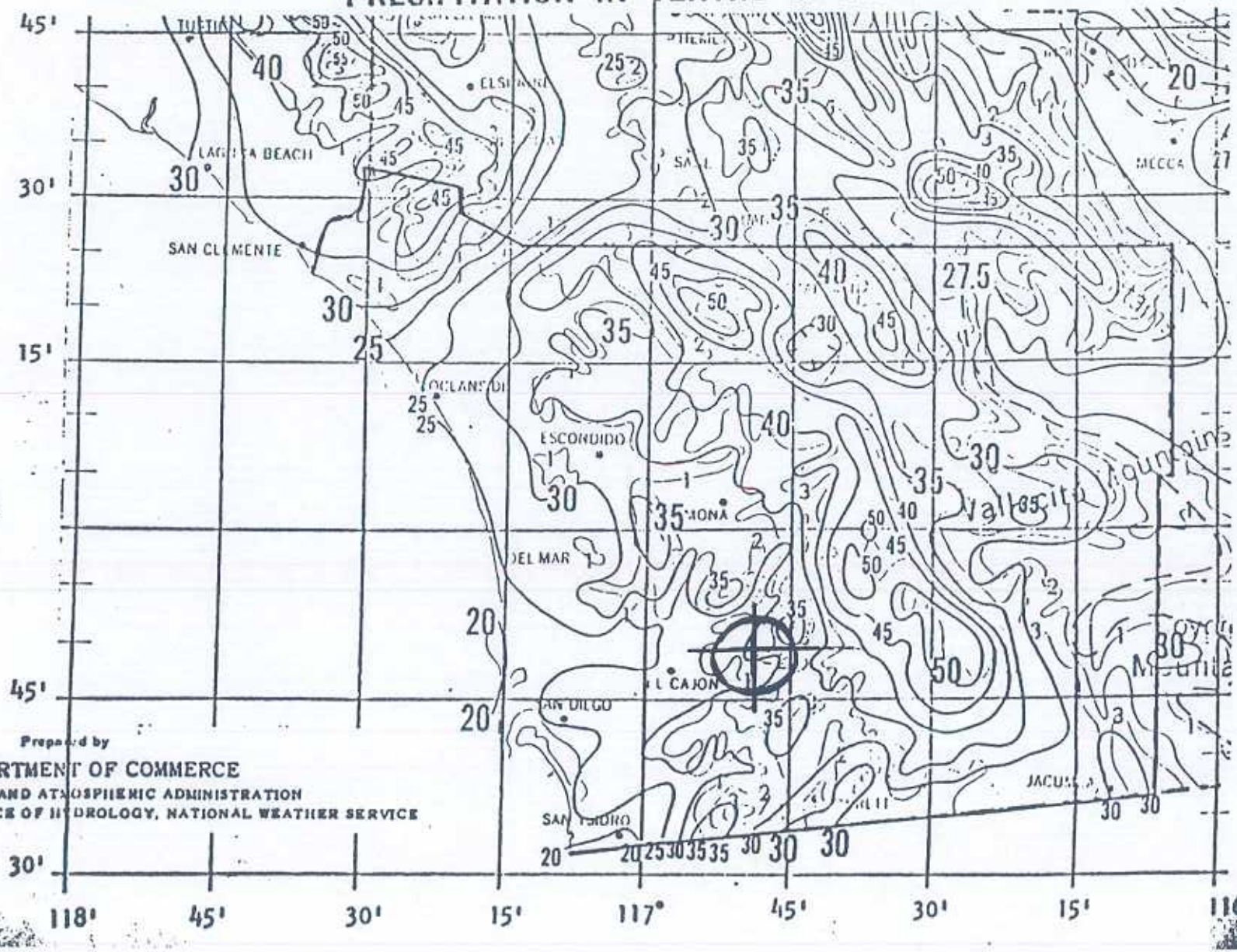
This chart replaces the Intensity-Duration-Frequency curves used since 1965.

#533 1-14-04
BASELINE ENGINEERING
260 W. DOUGLAS
EL CAJON, CA 92020
(619) 442-0894

COUNTY OF SAN DIEGO
DEPARTMENT OF SANITATION &
FLOOD CONTROL

100-YEAR 6-HOUR PRECIPITATION

~20~ ISOPLUVIALS OF 100-YEAR 6-HOUR PRECIPITATION IN TENTHS OF AN INCH



Prepared by
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
SPECIAL STUDIES BRANCH, OFFICE OF HYDROLOGY, NATIONAL WEATHER SERVICE

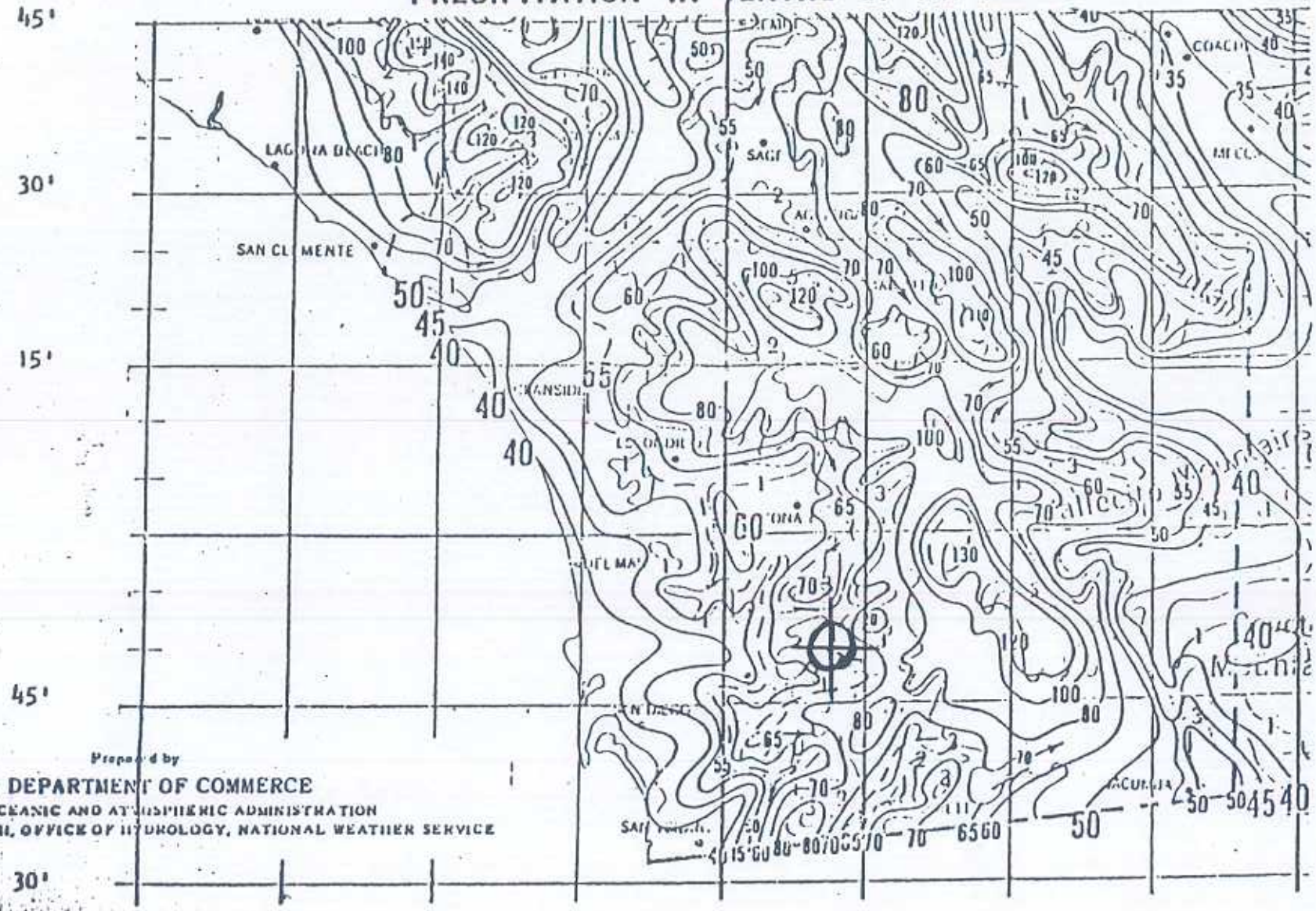
BASELINE ENGINEERING
260 W. DOUGLAS
EL CAJON, CA 92020
(619) 442-0494

#1535 1-14-04
~~1-14-04~~ ~~1-20-00~~
sht 6 of 10

COUNTY OF SAN DIEGO
DEPARTMENT OF SANITATION &
FLOOD CONTROL

100-YEAR 24-HOUR PRECIPITATION

20 ISOPLUVIALS OF 100-YEAR 24-HOUR PRECIPITATION IN TENTHS OF AN INCH



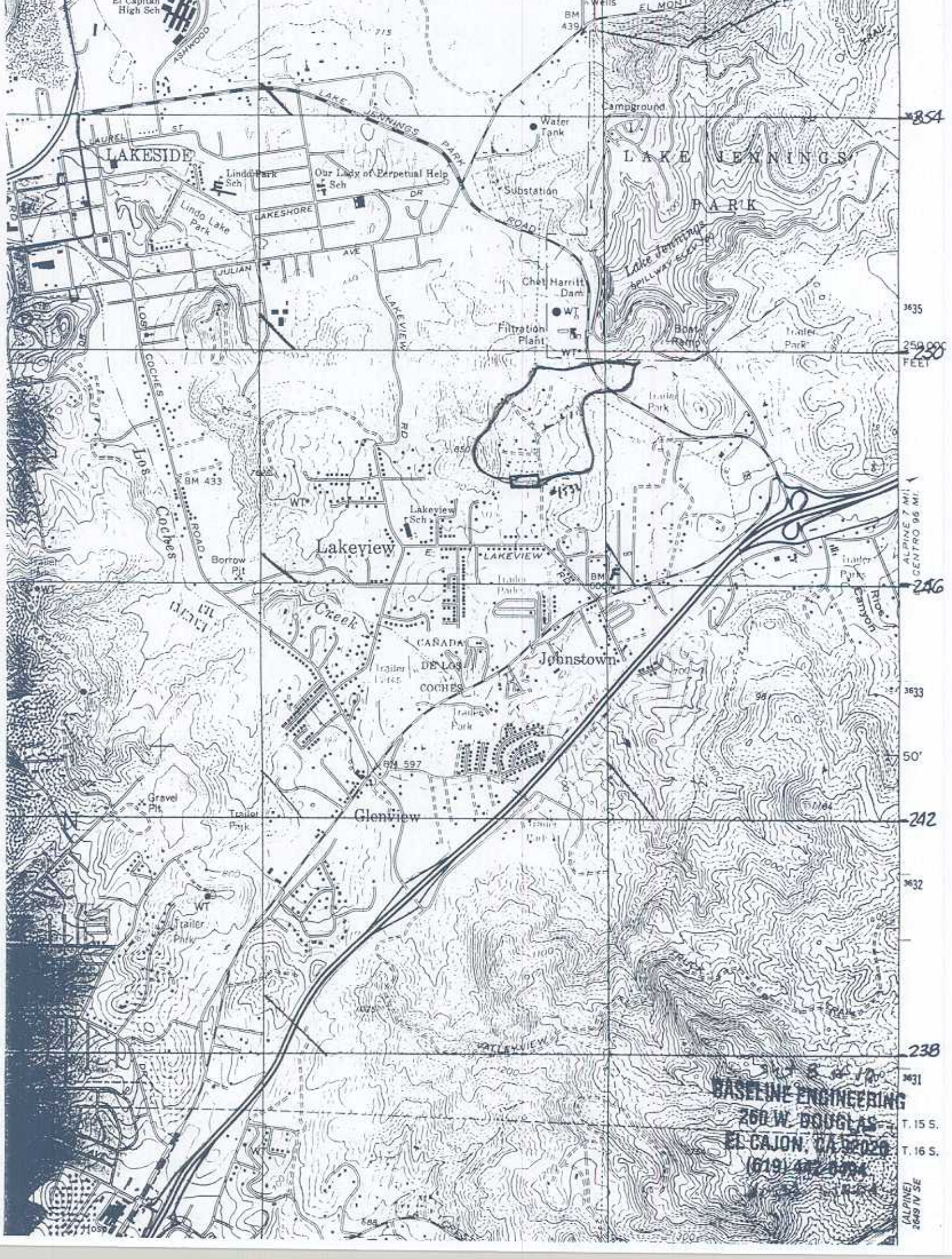
Prepared by
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
SPECIAL STUDIES BRANCH, OFFICE OF HYDROLOGY, NATIONAL WEATHER SERVICE

BASELINE ENGINEERING
260 W. DOUGLAS
EL CAJON, CA 92020
(619) 442-0494

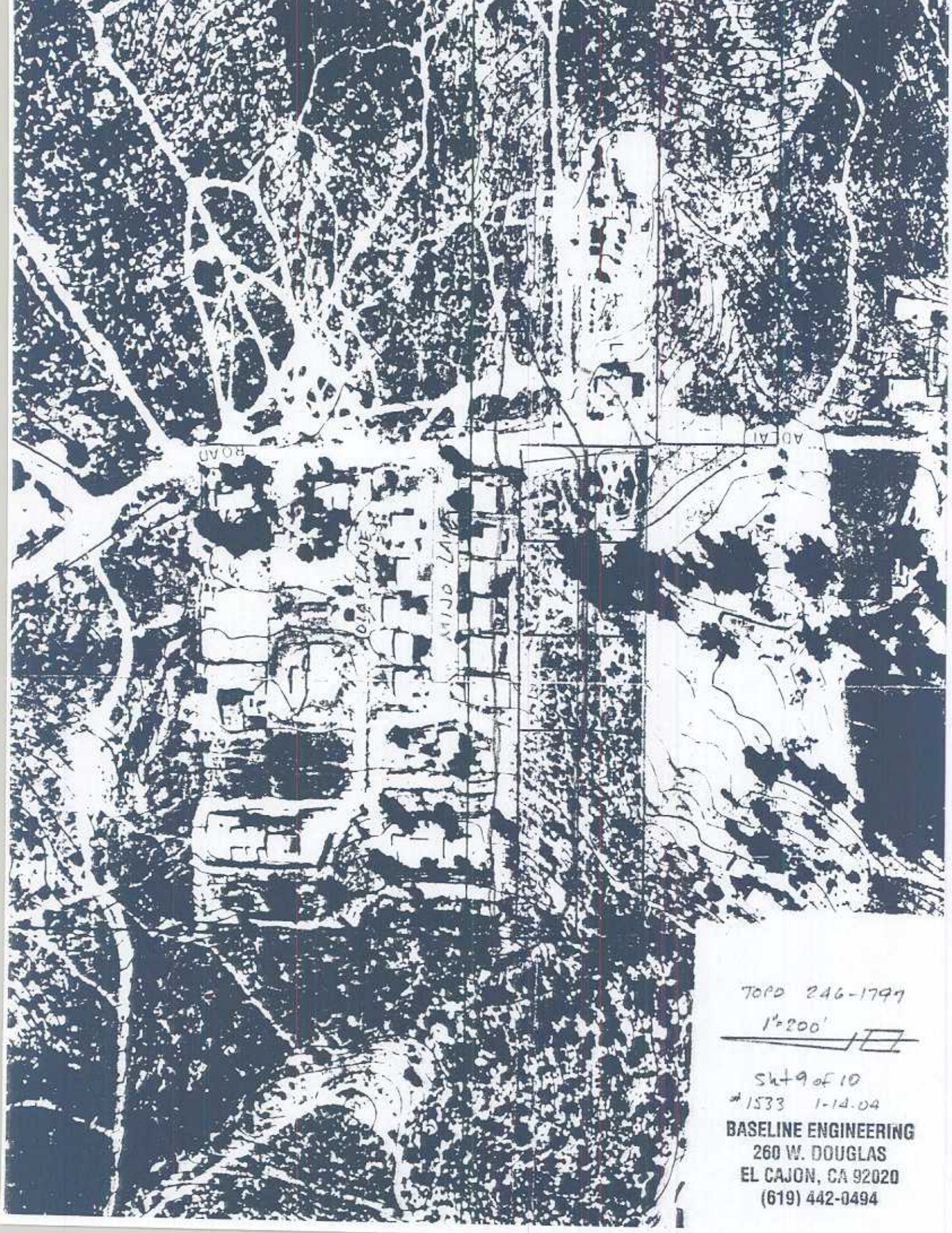
1-14-07
Sheet 7 of 10

Revised 1/85

APPENDIX



BASELINE ENGINEERING
260 W. DOUGLAS
EL CAJON, CA 92020
(619) 442-0984



TOPO 246-1797

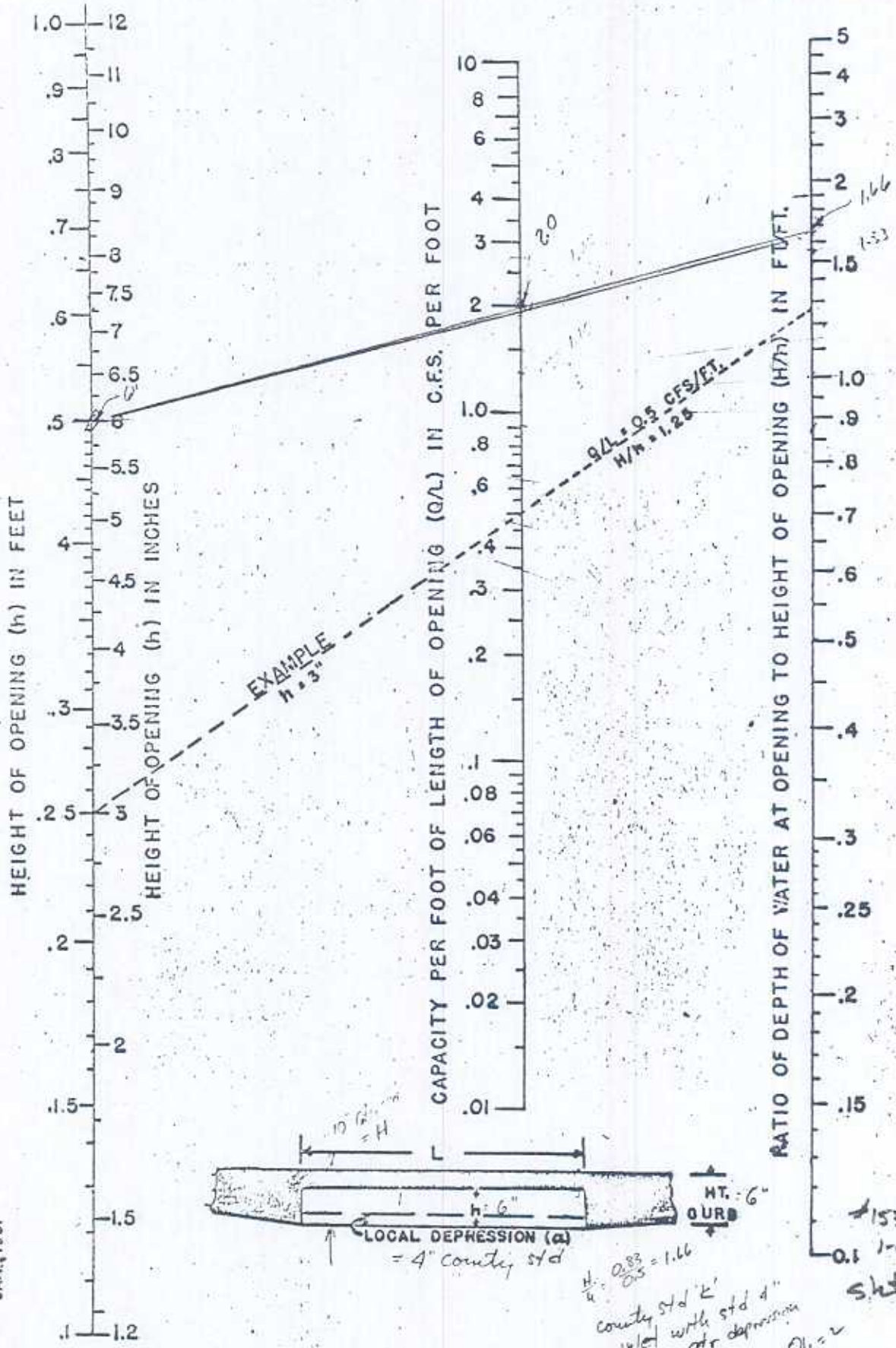
1"=200'

Sht 9 of 10

#1533 1-14-04

BASELINE ENGINEERING
260 W. DOUGLAS
EL CAJON, CA 92020
(619) 442-0494

1073.03



BUREAU OF PUBLIC ROADS
DIVISION TWO WASH., D. C.

NOMOGRAPH FOR CAPACITY OF CURB OPENING INLETS AT LOW POINTS

BASELINE ENGINEERING
260 W. DOUGLAS
EL CAJON, CA 92020
(619) 442-0404