

# Hydrology Report

for

**TR 38921**

Located in the City of Riverside

County of Riverside

APN: 136-220-016

Prepared For:



**Warmington**

R E S I D E N T I A L

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February 26, 2024

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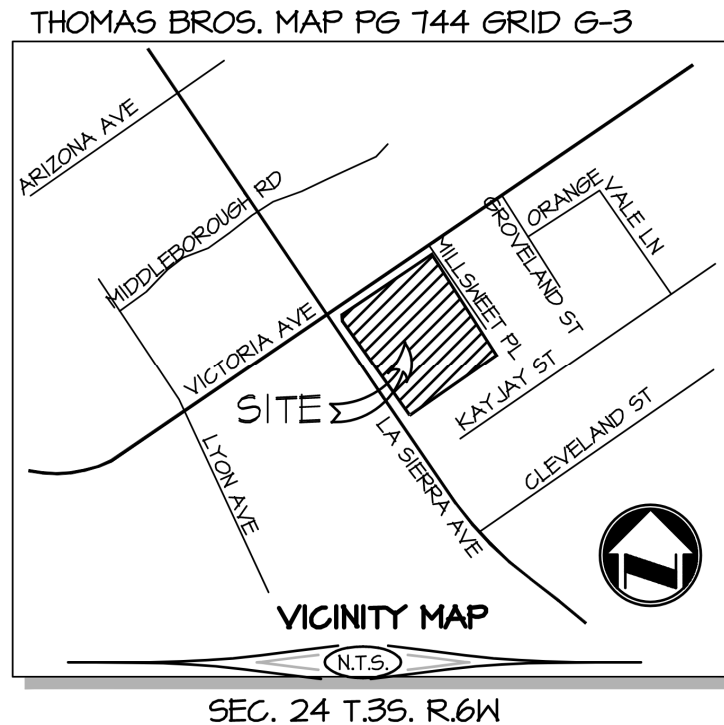
## 1. Purpose

The purpose of this study is to substantiate the hydrology design of Tract 38921 for the purposes of Entitlement Approval. Adkan Engineers has prepared this study to ensure that adequate size and proper operation of drainage facilities are incorporated into the Post-Development project site.

## 2. Project Description

Tract 38921 is located in the City of Riverside at the northeast corner of Victoria Avenue and La Sierra Avenue. The planned development will consist of 49 single family residential lots and 2 open space lots on 7.9+/- acres. The site will treat the 2 year 24 hour storm event through the use of an infiltration basin with an additional gravel layer beneath it. Since site flows are tributary to the Arizona Channel, all other storm events (5, 10 & 100 year) are not required to be analyzed.

### A. Vicinity Map



## 3. Pre-Development Hydrology

The site is currently a functioning orange grove and there are no existing storm drain facilities on site. Onsite runoff sheet flows to the south west corner of Millsweet Place and Victoria Ave to an existing drop inlet structure that feeds site flows to City SD tributary to the Arizona Channel.

## 4. Post-Development Hydrology

Onsite flows are being directed towards the north east corner via a series of gutters throughout the project site. Surface flows in these proposed gutters will be captured via drop inlets and conveyed via an onsite storm drain

system to an infiltration basin located in the north east corner of the site. The infiltration basin will have an additional gravel layer beneath to mitigate the 2 year 24 hour storm flows.

<b>Basin Storage Volume Calculations</b>	
Infiltration Basin Bottom Area (sf)	3674
Basin Top Area (sf)	4899
Depth of Basin (ft)	2.5
Open Basin Volume Provided (cf)	10716
Rock Storage depth (ft)	4.6
Rock Storage Volume (40% void) (cf)	6755
<b>Total Flood Volume Stored</b>	<b>17472</b>
Ex. 2-yr 24-hr Storm Volume (cf)	8233
Prop. 2-yr 24-hr Storm Volume (cf)	26528
Allowable 2-yr 24-hr Storm Volume (mitigated to 110% of existing) (cf)	<b>9056</b>
Prop. 2-yr 24-hr Storm Volume (cf)	26528
<b>Total Flood Volume Stored</b>	<b>17472</b>
<b>Remaining Storm Volume</b>	<b>9056</b>

## 5. Method of Analysis

The site hydrology was based upon Riverside County Flood Control and Water Conservation District Hydrology Manual, from which pertinent soil and rainfall information was obtained.

Storm flows were determined by the “RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM”, Riverside County Flood Control & Water Conservation District 1978 Hydrology Manual, produced by Bondamin Engineering.

The site was also analyzed by the “SYNTHETIC UNIT HYDROLOGY METHOD COMPUTER PROGRAM”, Riverside County Flood Control & Water Conservation District 1978 Hydrology Manual, produced by Bondamin Engineering.

## 6. Conclusion

The hydrologic calculations provided herein substantiate the design of the Post-Development project and indicate the following:

- The Post-Development facilities demonstrate the ability to limit flow discharge from the project site to no greater than 110% of the pre-development 2-year peak flow.

Since site flows are tributary to the Arizona Channel, no other storm events need to be mitigated/analyzed.

Therefore, it is our conclusion this project **does not** negatively impact the local community or watershed goals.

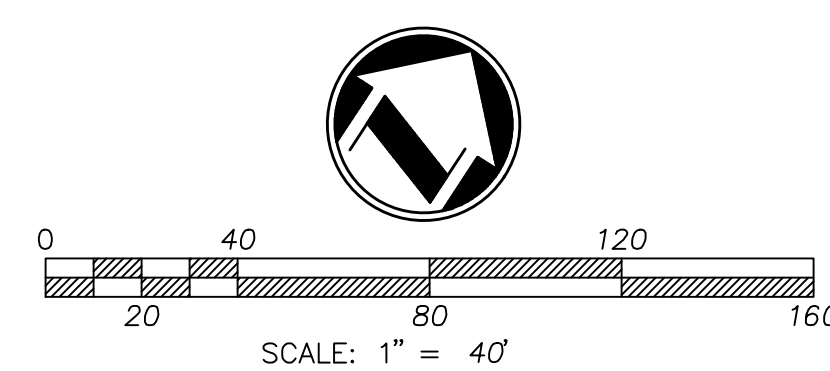
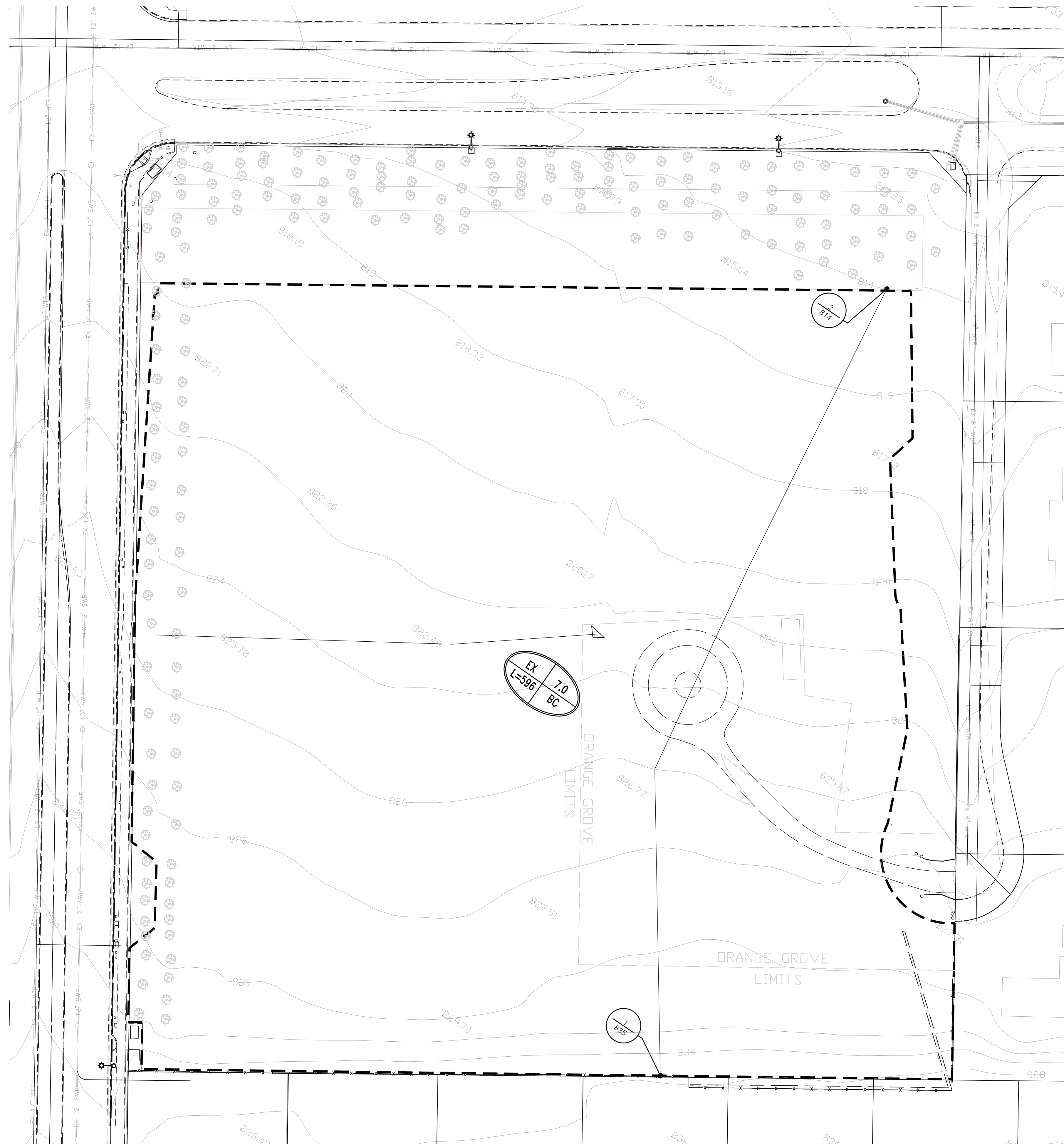
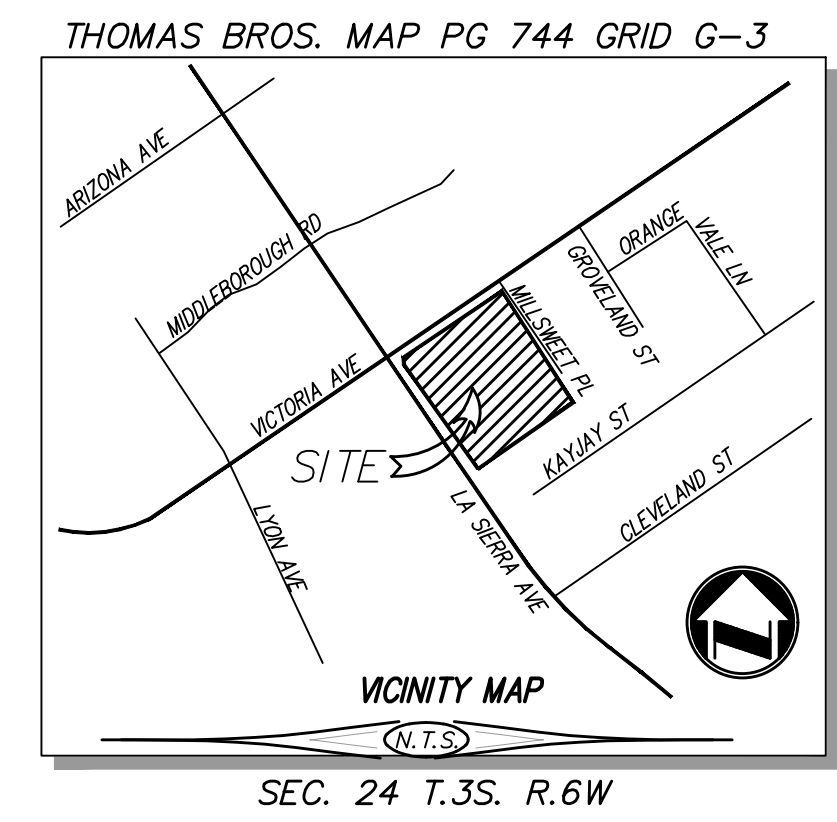


# Section 1

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## Pre-Development Unit Hydrograph

IN THE COMMUNITY OF WINCHESTER, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA  
**PRE DEVELOPMENT UNIT HYDROGRAPH**



Unit Hydrograph Analysis

Copyright (C) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1
Study date 02/22/24 File: EX2YR242.out

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 5006

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 7.00(Ac.) = 0.011 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 7.00(Ac.) = 0.011 Sq. Mi.
Length along longest watercourse = 596.00(Ft.)
Length along longest watercourse measured to centroid = 300.00(Ft.)
Length along longest watercourse = 0.113 Mi.
Length along longest watercourse measured to centroid = 0.057 Mi.
Difference in elevation = 26.00(Ft.)
Slope along watercourse = 230.3356 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.038 Hr.
Lag time = 2.26 Min.
25% of lag time = 0.56 Min.
40% of lag time = 0.90 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] weighting[1\*2]
7.00 1.80 12.60

100 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] weighting[1\*2]
7.00 6.00 42.00

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.800(In)
Area Averaged 100-Year Rainfall = 6.000(In)

Point rain (area averaged) = 1.800(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.800(In)

Sub-Area Data:
Area(Ac.) Runoff Index Impervious %
7.000 72.00 0.100
Total Area Entered = 7.00(Ac.)

RI RI Infil. Rate Impervious Adj. Infil. Rate Area% F
AMC2 AMC-1 (In/Hr) (Dec.%) (In/Hr) (Dec.) (In/Hr)
72.0 53.4 0.537 0.100 0.489 1.000 0.489
Sum (F) = 0.489

Area averaged mean soil loss (F) (In/Hr) = 0.489
Minimum soil loss rate ((In/Hr)) = 0.244
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.820

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period Time % of lag Distribution Unit Hydrograph
(hrs) Graph % (CFS)

1	0.083	221.634	46.905	3.309
2	0.167	443.269	41.886	2.955
3	0.250	664.903	7.981	0.563
4	0.333	886.537	3.228	0.228
			Sum = 100.000	Sum= 7.055

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
				Max	Low	
1	0.08	0.07	0.014	( 0.867)	0.012	0.003
2	0.17	0.07	0.014	( 0.863)	0.012	0.003
3	0.25	0.07	0.014	( 0.860)	0.012	0.003
4	0.33	0.10	0.022	( 0.857)	0.018	0.004
5	0.42	0.10	0.022	( 0.853)	0.018	0.004
6	0.50	0.10	0.022	( 0.850)	0.018	0.004
7	0.58	0.10	0.022	( 0.847)	0.018	0.004
8	0.67	0.10	0.022	( 0.843)	0.018	0.004
9	0.75	0.10	0.022	( 0.840)	0.018	0.004
10	0.83	0.13	0.029	( 0.837)	0.024	0.005
11	0.92	0.13	0.029	( 0.834)	0.024	0.005
12	1.00	0.13	0.029	( 0.830)	0.024	0.005
13	1.08	0.10	0.022	( 0.827)	0.018	0.004
14	1.17	0.10	0.022	( 0.824)	0.018	0.004
15	1.25	0.10	0.022	( 0.820)	0.018	0.004
16	1.33	0.10	0.022	( 0.817)	0.018	0.004
17	1.42	0.10	0.022	( 0.814)	0.018	0.004
18	1.50	0.10	0.022	( 0.811)	0.018	0.004
19	1.58	0.10	0.022	( 0.807)	0.018	0.004
20	1.67	0.10	0.022	( 0.804)	0.018	0.004
21	1.75	0.10	0.022	( 0.801)	0.018	0.004
22	1.83	0.13	0.029	( 0.798)	0.024	0.005
23	1.92	0.13	0.029	( 0.795)	0.024	0.005
24	2.00	0.13	0.029	( 0.791)	0.024	0.005
25	2.08	0.13	0.029	( 0.788)	0.024	0.005
26	2.17	0.13	0.029	( 0.785)	0.024	0.005
27	2.25	0.13	0.029	( 0.782)	0.024	0.005
28	2.33	0.13	0.029	( 0.779)	0.024	0.005
29	2.42	0.13	0.029	( 0.775)	0.024	0.005
30	2.50	0.13	0.029	( 0.772)	0.024	0.005
31	2.58	0.17	0.036	( 0.769)	0.030	0.006
32	2.67	0.17	0.036	( 0.766)	0.030	0.006
33	2.75	0.17	0.036	( 0.763)	0.030	0.006
34	2.83	0.17	0.036	( 0.760)	0.030	0.006
35	2.92	0.17	0.036	( 0.756)	0.030	0.006
36	3.00	0.17	0.036	( 0.753)	0.030	0.006
37	3.08	0.17	0.036	( 0.750)	0.030	0.006
38	3.17	0.17	0.036	( 0.747)	0.030	0.006
39	3.25	0.17	0.036	( 0.744)	0.030	0.006
40	3.33	0.17	0.036	( 0.741)	0.030	0.006
41	3.42	0.17	0.036	( 0.738)	0.030	0.006
42	3.50	0.17	0.036	( 0.735)	0.030	0.006
43	3.58	0.17	0.036	( 0.732)	0.030	0.006
44	3.67	0.17	0.036	( 0.729)	0.030	0.006
45	3.75	0.17	0.036	( 0.726)	0.030	0.006
46	3.83	0.20	0.043	( 0.722)	0.035	0.008
47	3.92	0.20	0.043	( 0.719)	0.035	0.008
48	4.00	0.20	0.043	( 0.716)	0.035	0.008
49	4.08	0.20	0.043	( 0.713)	0.035	0.008
50	4.17	0.20	0.043	( 0.710)	0.035	0.008
51	4.25	0.20	0.043	( 0.707)	0.035	0.008
52	4.33	0.23	0.050	( 0.704)	0.041	0.009
53	4.42	0.23	0.050	( 0.701)	0.041	0.009
54	4.50	0.23	0.050	( 0.698)	0.041	0.009
55	4.58	0.23	0.050	( 0.695)	0.041	0.009
56	4.67	0.23	0.050	( 0.692)	0.041	0.009
57	4.75	0.23	0.050	( 0.689)	0.041	0.009
58	4.83	0.27	0.058	( 0.686)	0.047	0.010
59	4.92	0.27	0.058	( 0.683)	0.047	0.010
60	5.00	0.27	0.058	( 0.680)	0.047	0.010
61	5.08	0.20	0.043	( 0.677)	0.035	0.008
62	5.17	0.20	0.043	( 0.674)	0.035	0.008
63	5.25	0.20	0.043	( 0.672)	0.035	0.008
64	5.33	0.23	0.050	( 0.669)	0.041	0.009
65	5.42	0.23	0.050	( 0.666)	0.041	0.009
66	5.50	0.23	0.050	( 0.663)	0.041	0.009
67	5.58	0.27	0.058	( 0.660)	0.047	0.010
68	5.67	0.27	0.058	( 0.657)	0.047	0.010
69	5.75	0.27	0.058	( 0.654)	0.047	0.010
70	5.83	0.27	0.058	( 0.651)	0.047	0.010
71	5.92	0.27	0.058	( 0.648)	0.047	0.010
72	6.00	0.27	0.058	( 0.645)	0.047	0.010

73	6.08	0.30	0.065	( 0.643)	0.053	0.012
74	6.17	0.30	0.065	( 0.640)	0.053	0.012
75	6.25	0.30	0.065	( 0.637)	0.053	0.012
76	6.33	0.30	0.065	( 0.634)	0.053	0.012
77	6.42	0.30	0.065	( 0.631)	0.053	0.012
78	6.50	0.30	0.065	( 0.628)	0.053	0.012
79	6.58	0.33	0.072	( 0.626)	0.059	0.013
80	6.67	0.33	0.072	( 0.623)	0.059	0.013
81	6.75	0.33	0.072	( 0.620)	0.059	0.013
82	6.83	0.33	0.072	( 0.617)	0.059	0.013
83	6.92	0.33	0.072	( 0.614)	0.059	0.013
84	7.00	0.33	0.072	( 0.612)	0.059	0.013
85	7.08	0.33	0.072	( 0.609)	0.059	0.013
86	7.17	0.33	0.072	( 0.606)	0.059	0.013
87	7.25	0.33	0.072	( 0.603)	0.059	0.013
88	7.33	0.37	0.079	( 0.600)	0.065	0.014
89	7.42	0.37	0.079	( 0.598)	0.065	0.014
90	7.50	0.37	0.079	( 0.595)	0.065	0.014
91	7.58	0.40	0.086	( 0.592)	0.071	0.016
92	7.67	0.40	0.086	( 0.589)	0.071	0.016
93	7.75	0.40	0.086	( 0.587)	0.071	0.016
94	7.83	0.43	0.094	( 0.584)	0.077	0.017
95	7.92	0.43	0.094	( 0.581)	0.077	0.017
96	8.00	0.43	0.094	( 0.579)	0.077	0.017
97	8.08	0.50	0.108	( 0.576)	0.089	0.019
98	8.17	0.50	0.108	( 0.573)	0.089	0.019
99	8.25	0.50	0.108	( 0.571)	0.089	0.019
100	8.33	0.50	0.108	( 0.568)	0.089	0.019
101	8.42	0.50	0.108	( 0.565)	0.089	0.019
102	8.50	0.50	0.108	( 0.563)	0.089	0.019
103	8.58	0.53	0.115	( 0.560)	0.094	0.021
104	8.67	0.53	0.115	( 0.557)	0.094	0.021
105	8.75	0.53	0.115	( 0.555)	0.094	0.021
106	8.83	0.57	0.122	( 0.552)	0.100	0.022
107	8.92	0.57	0.122	( 0.550)	0.100	0.022
108	9.00	0.57	0.122	( 0.547)	0.100	0.022
109	9.08	0.63	0.137	( 0.544)	0.112	0.025
110	9.17	0.63	0.137	( 0.542)	0.112	0.025
111	9.25	0.63	0.137	( 0.539)	0.112	0.025
112	9.33	0.67	0.144	( 0.537)	0.118	0.026
113	9.42	0.67	0.144	( 0.534)	0.118	0.026
114	9.50	0.67	0.144	( 0.531)	0.118	0.026
115	9.58	0.70	0.151	( 0.529)	0.124	0.027
116	9.67	0.70	0.151	( 0.526)	0.124	0.027
117	9.75	0.70	0.151	( 0.524)	0.124	0.027
118	9.83	0.73	0.158	( 0.521)	0.130	0.029
119	9.92	0.73	0.158	( 0.519)	0.130	0.029
120	10.00	0.73	0.158	( 0.516)	0.130	0.029
121	10.08	0.50	0.108	( 0.514)	0.089	0.019
122	10.17	0.50	0.108	( 0.511)	0.089	0.019
123	10.25	0.50	0.108	( 0.509)	0.089	0.019
124	10.33	0.50	0.108	( 0.506)	0.089	0.019
125	10.42	0.50	0.108	( 0.504)	0.089	0.019
126	10.50	0.50	0.108	( 0.501)	0.089	0.019
127	10.58	0.67	0.144	( 0.499)	0.118	0.026
128	10.67	0.67	0.144	( 0.497)	0.118	0.026
129	10.75	0.67	0.144	( 0.494)	0.118	0.026
130	10.83	0.67	0.144	( 0.492)	0.118	0.026
131	10.92	0.67	0.144	( 0.489)	0.118	0.026
132	11.00	0.67	0.144	( 0.487)	0.118	0.026
133	11.08	0.63	0.137	( 0.485)	0.112	0.025
134	11.17	0.63	0.137	( 0.482)	0.112	0.025
135	11.25	0.63	0.137	( 0.480)	0.112	0.025
136	11.33	0.63	0.137	( 0.477)	0.112	0.025
137	11.42	0.63	0.137	( 0.475)	0.112	0.025
138	11.50	0.63	0.137	( 0.473)	0.112	0.025
139	11.58	0.57	0.122	( 0.470)	0.100	0.022
140	11.67	0.57	0.122	( 0.468)	0.100	0.022
141	11.75	0.57	0.122	( 0.466)	0.100	0.022
142	11.83	0.60	0.130	( 0.463)	0.106	0.023
143	11.92	0.60	0.130	( 0.461)	0.106	0.023
144	12.00	0.60	0.130	( 0.459)	0.106	0.023
145	12.08	0.83	0.180	( 0.456)	0.148	0.032
146	12.17	0.83	0.180	( 0.454)	0.148	0.032
147	12.25	0.83	0.180	( 0.452)	0.148	0.032
148	12.33	0.87	0.187	( 0.450)	0.154	0.034
149	12.42	0.87	0.187	( 0.447)	0.154	0.034
150	12.50	0.87	0.187	( 0.445)	0.154	0.034
151	12.58	0.93	0.202	( 0.443)	0.165	0.036
152	12.67	0.93	0.202	( 0.441)	0.165	0.036
153	12.75	0.93	0.202	( 0.438)	0.165	0.036
154	12.83	0.97	0.209	( 0.436)	0.171	0.038
155	12.92	0.97	0.209	( 0.434)	0.171	0.038
156	13.00	0.97	0.209	( 0.432)	0.171	0.038
157	13.08	1.13	0.245	( 0.430)	0.201	0.044
158	13.17	1.13	0.245	( 0.427)	0.201	0.044

159	13.25	1.13	0.245	( 0.425)	0.201	0.044
160	13.33	1.13	0.245	( 0.423)	0.201	0.044
161	13.42	1.13	0.245	( 0.421)	0.201	0.044
162	13.50	1.13	0.245	( 0.419)	0.201	0.044
163	13.58	0.77	0.166	( 0.417)	0.136	0.030
164	13.67	0.77	0.166	( 0.415)	0.136	0.030
165	13.75	0.77	0.166	( 0.412)	0.136	0.030
166	13.83	0.77	0.166	( 0.410)	0.136	0.030
167	13.92	0.77	0.166	( 0.408)	0.136	0.030
168	14.00	0.77	0.166	( 0.406)	0.136	0.030
169	14.08	0.90	0.194	( 0.404)	0.159	0.035
170	14.17	0.90	0.194	( 0.402)	0.159	0.035
171	14.25	0.90	0.194	( 0.400)	0.159	0.035
172	14.33	0.87	0.187	( 0.398)	0.154	0.034
173	14.42	0.87	0.187	( 0.396)	0.154	0.034
174	14.50	0.87	0.187	( 0.394)	0.154	0.034
175	14.58	0.87	0.187	( 0.392)	0.154	0.034
176	14.67	0.87	0.187	( 0.390)	0.154	0.034
177	14.75	0.87	0.187	( 0.388)	0.154	0.034
178	14.83	0.83	0.180	( 0.386)	0.148	0.032
179	14.92	0.83	0.180	( 0.384)	0.148	0.032
180	15.00	0.83	0.180	( 0.382)	0.148	0.032
181	15.08	0.80	0.173	( 0.380)	0.142	0.031
182	15.17	0.80	0.173	( 0.378)	0.142	0.031
183	15.25	0.80	0.173	( 0.376)	0.142	0.031
184	15.33	0.77	0.166	( 0.374)	0.136	0.030
185	15.42	0.77	0.166	( 0.372)	0.136	0.030
186	15.50	0.77	0.166	( 0.370)	0.136	0.030
187	15.58	0.63	0.137	( 0.368)	0.112	0.025
188	15.67	0.63	0.137	( 0.367)	0.112	0.025
189	15.75	0.63	0.137	( 0.365)	0.112	0.025
190	15.83	0.63	0.137	( 0.363)	0.112	0.025
191	15.92	0.63	0.137	( 0.361)	0.112	0.025
192	16.00	0.63	0.137	( 0.359)	0.112	0.025
193	16.08	0.13	0.029	( 0.357)	0.024	0.005
194	16.17	0.13	0.029	( 0.355)	0.024	0.005
195	16.25	0.13	0.029	( 0.354)	0.024	0.005
196	16.33	0.13	0.029	( 0.352)	0.024	0.005
197	16.42	0.13	0.029	( 0.350)	0.024	0.005
198	16.50	0.13	0.029	( 0.348)	0.024	0.005
199	16.58	0.10	0.022	( 0.346)	0.018	0.004
200	16.67	0.10	0.022	( 0.345)	0.018	0.004
201	16.75	0.10	0.022	( 0.343)	0.018	0.004
202	16.83	0.10	0.022	( 0.341)	0.018	0.004
203	16.92	0.10	0.022	( 0.339)	0.018	0.004
204	17.00	0.10	0.022	( 0.338)	0.018	0.004
205	17.08	0.17	0.036	( 0.336)	0.030	0.006
206	17.17	0.17	0.036	( 0.334)	0.030	0.006
207	17.25	0.17	0.036	( 0.333)	0.030	0.006
208	17.33	0.17	0.036	( 0.331)	0.030	0.006
209	17.42	0.17	0.036	( 0.329)	0.030	0.006
210	17.50	0.17	0.036	( 0.328)	0.030	0.006
211	17.58	0.17	0.036	( 0.326)	0.030	0.006
212	17.67	0.17	0.036	( 0.324)	0.030	0.006
213	17.75	0.17	0.036	( 0.323)	0.030	0.006
214	17.83	0.13	0.029	( 0.321)	0.024	0.005
215	17.92	0.13	0.029	( 0.320)	0.024	0.005
216	18.00	0.13	0.029	( 0.318)	0.024	0.005
217	18.08	0.13	0.029	( 0.316)	0.024	0.005
218	18.17	0.13	0.029	( 0.315)	0.024	0.005
219	18.25	0.13	0.029	( 0.313)	0.024	0.005
220	18.33	0.13	0.029	( 0.312)	0.024	0.005
221	18.42	0.13	0.029	( 0.310)	0.024	0.005
222	18.50	0.13	0.029	( 0.309)	0.024	0.005
223	18.58	0.10	0.022	( 0.307)	0.018	0.004
224	18.67	0.10	0.022	( 0.306)	0.018	0.004
225	18.75	0.10	0.022	( 0.304)	0.018	0.004
226	18.83	0.07	0.014	( 0.303)	0.012	0.003
227	18.92	0.07	0.014	( 0.301)	0.012	0.003
228	19.00	0.07	0.014	( 0.300)	0.012	0.003
229	19.08	0.10	0.022	( 0.299)	0.018	0.004
230	19.17	0.10	0.022	( 0.297)	0.018	0.004
231	19.25	0.10	0.022	( 0.296)	0.018	0.004
232	19.33	0.13	0.029	( 0.294)	0.024	0.005
233	19.42	0.13	0.029	( 0.293)	0.024	0.005
234	19.50	0.13	0.029	( 0.292)	0.024	0.005
235	19.58	0.10	0.022	( 0.290)	0.018	0.004
236	19.67	0.10	0.022	( 0.289)	0.018	0.004
237	19.75	0.10	0.022	( 0.288)	0.018	0.004
238	19.83	0.07	0.014	( 0.286)	0.012	0.003
239	19.92	0.07	0.014	( 0.285)	0.012	0.003
240	20.00	0.07	0.014	( 0.284)	0.012	0.003
241	20.08	0.10	0.022	( 0.283)	0.018	0.004
242	20.17	0.10	0.022	( 0.281)	0.018	0.004
243	20.25	0.10	0.022	( 0.280)	0.018	0.004
244	20.33	0.10	0.022	( 0.279)	0.018	0.004



1+50	0.0041	0.03	Q				
1+55	0.0043	0.04	Q				
2+ 0	0.0046	0.04	Q				
2+ 5	0.0048	0.04	QV				
2+10	0.0051	0.04	QV				
2+15	0.0053	0.04	QV				
2+20	0.0056	0.04	QV				
2+25	0.0058	0.04	QV				
2+30	0.0061	0.04	QV				
2+35	0.0063	0.04	QV				
2+40	0.0067	0.04	QV				
2+45	0.0070	0.05	QV				
2+50	0.0073	0.05	QV				
2+55	0.0076	0.05	QV				
3+ 0	0.0079	0.05	QV				
3+ 5	0.0082	0.05	QV				
3+10	0.0085	0.05	QV				
3+15	0.0089	0.05	QV				
3+20	0.0092	0.05	QV				
3+25	0.0095	0.05	Q V				
3+30	0.0098	0.05	Q V				
3+35	0.0101	0.05	Q V				
3+40	0.0104	0.05	Q V				
3+45	0.0107	0.05	Q V				
3+50	0.0111	0.05	Q V				
3+55	0.0115	0.05	Q V				
4+ 0	0.0118	0.05	Q V				
4+ 5	0.0122	0.05	Q V				
4+10	0.0126	0.05	Q V				
4+15	0.0130	0.05	Q V				
4+20	0.0134	0.06	Q V				
4+25	0.0138	0.06	Q V				
4+30	0.0143	0.06	Q V				
4+35	0.0147	0.06	Q V				
4+40	0.0151	0.06	Q V				
4+45	0.0156	0.06	Q V				
4+50	0.0160	0.07	Q V				
4+55	0.0165	0.07	Q V				
5+ 0	0.0170	0.07	Q V				
5+ 5	0.0175	0.06	Q V				
5+10	0.0179	0.06	Q V				
5+15	0.0183	0.06	Q V				
5+20	0.0187	0.06	Q V				
5+25	0.0191	0.06	Q V				
5+30	0.0195	0.06	Q V				
5+35	0.0200	0.07	Q V				
5+40	0.0205	0.07	Q V				
5+45	0.0210	0.07	Q V				
5+50	0.0215	0.07	Q V				
5+55	0.0220	0.07	Q V				
6+ 0	0.0225	0.07	Q V				
6+ 5	0.0231	0.08	Q V				
6+10	0.0236	0.08	Q V				
6+15	0.0242	0.08	Q V				
6+20	0.0248	0.08	Q V				
6+25	0.0253	0.08	Q V				
6+30	0.0259	0.08	Q V				
6+35	0.0265	0.09	Q V				
6+40	0.0271	0.09	Q V				
6+45	0.0277	0.09	Q V				
6+50	0.0284	0.09	Q V				
6+55	0.0290	0.09	Q V				
7+ 0	0.0296	0.09	Q V				
7+ 5	0.0303	0.09	Q V				
7+10	0.0309	0.09	Q V				
7+15	0.0315	0.09	Q V				
7+20	0.0322	0.10	Q V				
7+25	0.0329	0.10	Q V				
7+30	0.0336	0.10	Q V				
7+35	0.0343	0.10	Q V				
7+40	0.0350	0.11	Q V				
7+45	0.0358	0.11	Q V				
7+50	0.0366	0.11	Q V				
7+55	0.0374	0.12	Q V				
8+ 0	0.0382	0.12	Q V				
8+ 5	0.0391	0.13	Q V				
8+10	0.0400	0.14	Q V				
8+15	0.0409	0.14	Q V				
8+20	0.0419	0.14	Q V				
8+25	0.0428	0.14	Q V				
8+30	0.0438	0.14	Q V				
8+35	0.0448	0.14	Q V				
8+40	0.0458	0.15	Q V				
8+45	0.0468	0.15	Q V				
8+50	0.0478	0.15	Q V				
8+55	0.0489	0.15	Q V				



9+ 0	0.0499	0.16	Q	V			
9+ 5	0.0511	0.16	Q	V			
9+10	0.0522	0.17	Q	V			
9+15	0.0534	0.17	Q	V			
9+20	0.0547	0.18	Q	V			
9+25	0.0559	0.18	Q	V			
9+30	0.0572	0.18	Q	V			
9+35	0.0585	0.19	Q	V			
9+40	0.0598	0.19	Q	V			
9+45	0.0611	0.19	Q	V			
9+50	0.0625	0.20	Q	V			
9+55	0.0638	0.20	Q	V			
10+ 0	0.0652	0.20	Q	V			
10+ 5	0.0664	0.17	Q	V			
10+10	0.0674	0.14	Q	V			
10+15	0.0683	0.14	Q	V			
10+20	0.0693	0.14	Q	V			
10+25	0.0702	0.14	Q	V			
10+30	0.0712	0.14	Q	V			
10+35	0.0723	0.16	Q	V			
10+40	0.0735	0.18	Q	V			
10+45	0.0747	0.18	Q	V			
10+50	0.0760	0.18	Q	V			
10+55	0.0773	0.18	Q	V			
11+ 0	0.0785	0.18	Q	V			
11+ 5	0.0798	0.18	Q	V			
11+10	0.0810	0.17	Q	V			
11+15	0.0822	0.17	Q	V			
11+20	0.0834	0.17	Q	V			
11+25	0.0846	0.17	Q	V			
11+30	0.0858	0.17	Q	V			
11+35	0.0869	0.17	Q	V			
11+40	0.0880	0.16	Q	V			
11+45	0.0891	0.16	Q	V			
11+50	0.0902	0.16	Q	V			
11+55	0.0913	0.16	Q	V			
12+ 0	0.0924	0.16	Q	V			
12+ 5	0.0938	0.19	Q	V			
12+10	0.0953	0.22	Q	V			
12+15	0.0968	0.23	Q	V			
12+20	0.0984	0.23	Q	V			
12+25	0.1001	0.24	Q	V			
12+30	0.1017	0.24	Q	V			
12+35	0.1034	0.25	Q	V			
12+40	0.1052	0.25	Q	V			
12+45	0.1069	0.26	Q	V			
12+50	0.1087	0.26	Q	V			
12+55	0.1105	0.26	Q	V			
13+ 0	0.1124	0.26	Q	V			
13+ 5	0.1143	0.29	Q	V			
13+10	0.1164	0.31	Q	V			
13+15	0.1186	0.31	Q	V			
13+20	0.1207	0.31	Q	V			
13+25	0.1229	0.31	Q	V			
13+30	0.1250	0.31	Q	V			
13+35	0.1268	0.26	Q	V			
13+40	0.1283	0.22	Q	V			
13+45	0.1298	0.21	Q	V			
13+50	0.1313	0.21	Q	V			
13+55	0.1327	0.21	Q	V			
14+ 0	0.1342	0.21	Q	V			
14+ 5	0.1357	0.23	Q	V			
14+10	0.1374	0.24	Q	V			
14+15	0.1391	0.25	Q	V			
14+20	0.1408	0.24	Q	V			
14+25	0.1424	0.24	Q	V			
14+30	0.1440	0.24	Q	V			
14+35	0.1457	0.24	Q	V			
14+40	0.1473	0.24	Q	V			
14+45	0.1490	0.24	Q	V			
14+50	0.1506	0.23	Q	V			
14+55	0.1521	0.23	Q	V			
15+ 0	0.1537	0.23	Q	V			
15+ 5	0.1553	0.22	Q	V			
15+10	0.1568	0.22	Q	V			
15+15	0.1583	0.22	Q	V			
15+20	0.1598	0.22	Q	V			
15+25	0.1612	0.21	Q	V			
15+30	0.1627	0.21	Q	V			
15+35	0.1640	0.19	Q	V			
15+40	0.1652	0.18	Q	V			
15+45	0.1665	0.17	Q	V			
15+50	0.1677	0.17	Q	V			
15+55	0.1688	0.17	Q	V			
16+ 0	0.1700	0.17	Q	V			
16+ 5	0.1708	0.11	Q	V			

16+10	0.1712	0.05	Q				V
16+15	0.1714	0.04	Q				V
16+20	0.1717	0.04	Q				V
16+25	0.1719	0.04	Q				V
16+30	0.1722	0.04	Q				V
16+35	0.1724	0.03	Q				V
16+40	0.1726	0.03	Q				V
16+45	0.1728	0.03	Q				V
16+50	0.1730	0.03	Q				V
16+55	0.1732	0.03	Q				V
17+ 0	0.1734	0.03	Q				V
17+ 5	0.1736	0.04	Q				V
17+10	0.1739	0.04	Q				V
17+15	0.1742	0.05	Q				V
17+20	0.1745	0.05	Q				V
17+25	0.1749	0.05	Q				V
17+30	0.1752	0.05	Q				V
17+35	0.1755	0.05	Q				V
17+40	0.1758	0.05	Q				V
17+45	0.1761	0.05	Q				V
17+50	0.1764	0.04	Q				V
17+55	0.1767	0.04	Q				V
18+ 0	0.1769	0.04	Q				V
18+ 5	0.1772	0.04	Q				V
18+10	0.1774	0.04	Q				V
18+15	0.1777	0.04	Q				V
18+20	0.1779	0.04	Q				V
18+25	0.1782	0.04	Q				V
18+30	0.1784	0.04	Q				V
18+35	0.1787	0.03	Q				V
18+40	0.1789	0.03	Q				V
18+45	0.1790	0.03	Q				V
18+50	0.1792	0.02	Q				V
18+55	0.1793	0.02	Q				V
19+ 0	0.1795	0.02	Q				V
19+ 5	0.1796	0.02	Q				V
19+10	0.1798	0.03	Q				V
19+15	0.1800	0.03	Q				V
19+20	0.1802	0.03	Q				V
19+25	0.1805	0.04	Q				V
19+30	0.1807	0.04	Q				V
19+35	0.1809	0.03	Q				V
19+40	0.1811	0.03	Q				V
19+45	0.1813	0.03	Q				V
19+50	0.1815	0.02	Q				V
19+55	0.1816	0.02	Q				V
20+ 0	0.1817	0.02	Q				V
20+ 5	0.1819	0.02	Q				V
20+10	0.1821	0.03	Q				V
20+15	0.1823	0.03	Q				V
20+20	0.1824	0.03	Q				V
20+25	0.1826	0.03	Q				V
20+30	0.1828	0.03	Q				V
20+35	0.1830	0.03	Q				V
20+40	0.1832	0.03	Q				V
20+45	0.1834	0.03	Q				V
20+50	0.1835	0.02	Q				V
20+55	0.1837	0.02	Q				V
21+ 0	0.1838	0.02	Q				V
21+ 5	0.1840	0.02	Q				V
21+10	0.1841	0.03	Q				V
21+15	0.1843	0.03	Q				V
21+20	0.1845	0.02	Q				V
21+25	0.1846	0.02	Q				V
21+30	0.1848	0.02	Q				V
21+35	0.1849	0.02	Q				V
21+40	0.1851	0.03	Q				V
21+45	0.1853	0.03	Q				V
21+50	0.1854	0.02	Q				V
21+55	0.1856	0.02	Q				V
22+ 0	0.1857	0.02	Q				V
22+ 5	0.1859	0.02	Q				V
22+10	0.1860	0.03	Q				V
22+15	0.1862	0.03	Q				V
22+20	0.1864	0.02	Q				V
22+25	0.1865	0.02	Q				V
22+30	0.1866	0.02	Q				V
22+35	0.1868	0.02	Q				V
22+40	0.1869	0.02	Q				V
22+45	0.1870	0.02	Q				V
22+50	0.1871	0.02	Q				V
22+55	0.1873	0.02	Q				V
23+ 0	0.1874	0.02	Q				V
23+ 5	0.1875	0.02	Q				V
23+10	0.1877	0.02	Q				V
23+15	0.1878	0.02	Q				V

23+20	0.1879	0.02	Q				V
23+25	0.1880	0.02	Q				V
23+30	0.1882	0.02	Q				V
23+35	0.1883	0.02	Q				V
23+40	0.1884	0.02	Q				V
23+45	0.1885	0.02	Q				V
23+50	0.1887	0.02	Q				V
23+55	0.1888	0.02	Q				V
24+ 0	0.1889	0.02	Q				V
24+ 5	0.1890	0.01	Q				V
24+10	0.1890	0.00	Q				V
24+15	0.1890	0.00	Q				V

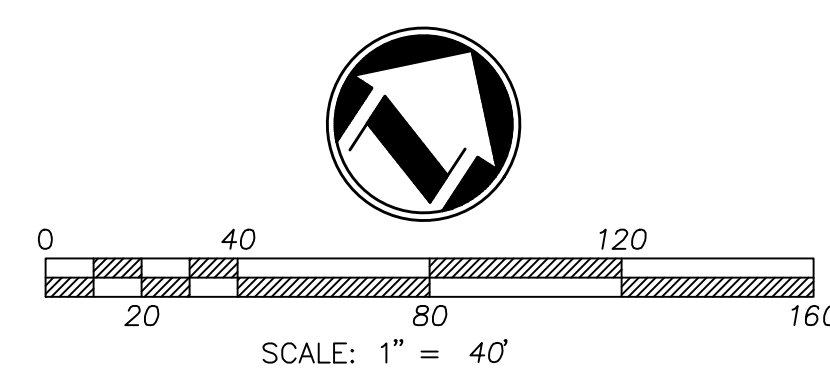
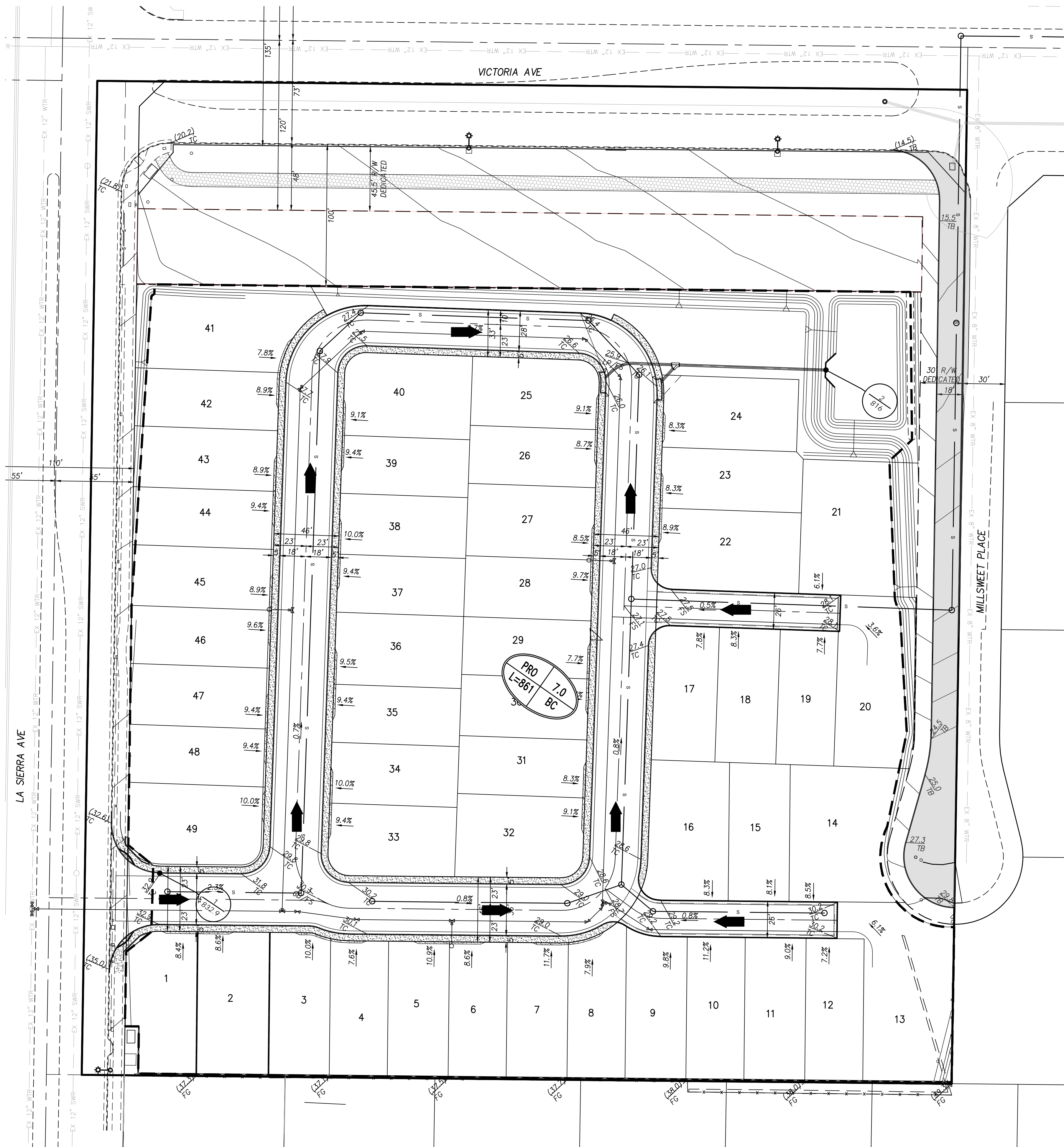
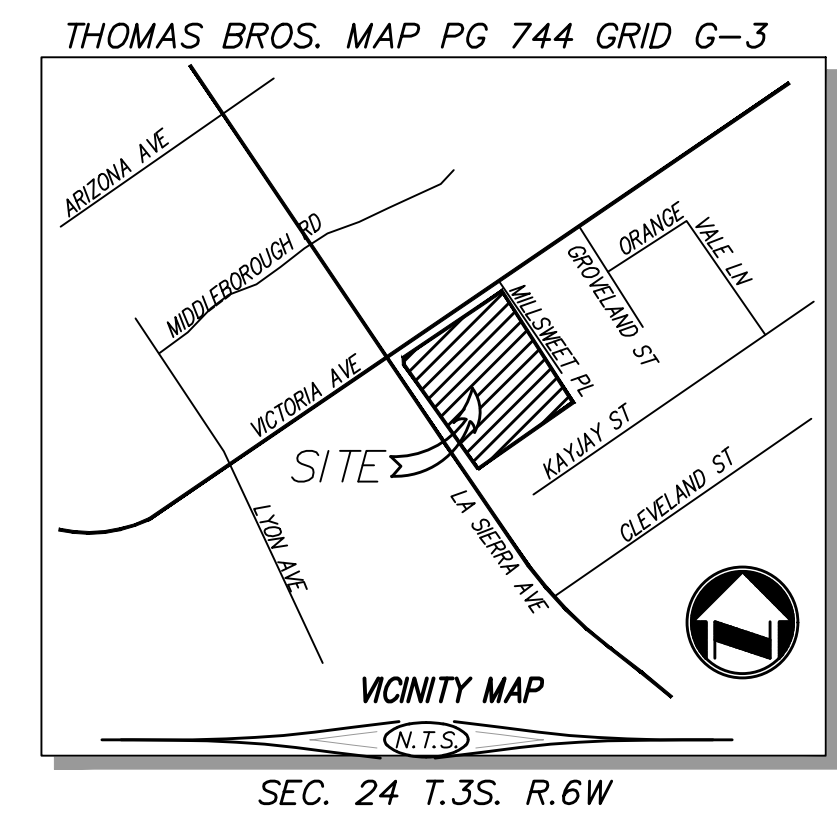
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## **Section 2**

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### **Post-Development Unit Hydrograph**

IN THE COMMUNITY OF WINCHESTER, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA  
**POST DEVELOPMENT UNIT HYDROGRAPH**



Unit Hydrograph Analysis

Copyright (C) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1  
 Study date 02/22/24 File: 2YR242.out

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Riverside County Synthetic Unit Hydrology Method  
 RCFC & WCD Manual date - April 1978

Program License Serial Number 5006

-----  
 English (in-lb) Input Units Used  
 English Rainfall Data (Inches) Input Values Used

English Units used in output format

-----  
 Drainage Area = 7.00(Ac.) = 0.011 Sq. Mi.  
 Drainage Area for Depth-Area Areal Adjustment = 7.00(Ac.) = 0.011 Sq. Mi.  
 Length along longest watercourse = 861.00(Ft.)  
 Length along longest watercourse measured to centroid = 430.00(Ft.)  
 Length along longest watercourse = 0.163 Mi.  
 Length along longest watercourse measured to centroid = 0.081 Mi.  
 Difference in elevation = 16.90(Ft.)  
 Slope along watercourse = 103.6376 Ft./Mi.  
 Average Manning's 'N' = 0.015  
 Lag time = 0.029 Hr.  
 Lag time = 1.73 Min.  
 25% of lag time = 0.43 Min.  
 40% of lag time = 0.69 Min.  
 Unit time = 5.00 Min.  
 Duration of storm = 24 Hour(s)  
 User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	weighting[1*2]
7.00	1.80	12.60

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	weighting[1*2]
7.00	6.00	42.00

STORM EVENT (YEAR) = 2.00  
 Area Averaged 2-Year Rainfall = 1.800(In)  
 Area Averaged 100-Year Rainfall = 6.000(In)

Point rain (area averaged) = 1.800(In)  
 Areal adjustment factor = 100.00 %  
 Adjusted average point rain = 1.800(In)

Sub-Area Data:  
 Area(Ac.)      Runoff Index      Impervious %  
 7.000            69.00            0.600  
 Total Area Entered = 7.00(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
69.0	49.8	0.574	0.600	0.264	1.000	0.264
						Sum (F) = 0.264

Area averaged mean soil loss (F) (In/Hr) = 0.264  
 Minimum soil loss rate ((In/Hr)) = 0.132  
 (for 24 hour storm duration)  
 Soil loss rate (decimal) = 0.420

-----  
 Unit Hydrograph  
 VALLEY S-Curve

-----  
 Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)

1	0.083	288.833	55.504	3.916
2	0.167	577.666	37.752	2.663
3	0.250	866.500	6.744	0.476
		Sum = 100.000	Sum=	7.055

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
				Max	Low	
1	0.08	0.07	0.014	( 0.468)	0.006	0.008
2	0.17	0.07	0.014	( 0.466)	0.006	0.008
3	0.25	0.07	0.014	( 0.464)	0.006	0.008
4	0.33	0.10	0.022	( 0.463)	0.009	0.013
5	0.42	0.10	0.022	( 0.461)	0.009	0.013
6	0.50	0.10	0.022	( 0.459)	0.009	0.013
7	0.58	0.10	0.022	( 0.457)	0.009	0.013
8	0.67	0.10	0.022	( 0.455)	0.009	0.013
9	0.75	0.10	0.022	( 0.454)	0.009	0.013
10	0.83	0.13	0.029	( 0.452)	0.012	0.017
11	0.92	0.13	0.029	( 0.450)	0.012	0.017
12	1.00	0.13	0.029	( 0.448)	0.012	0.017
13	1.08	0.10	0.022	( 0.447)	0.009	0.013
14	1.17	0.10	0.022	( 0.445)	0.009	0.013
15	1.25	0.10	0.022	( 0.443)	0.009	0.013
16	1.33	0.10	0.022	( 0.441)	0.009	0.013
17	1.42	0.10	0.022	( 0.439)	0.009	0.013
18	1.50	0.10	0.022	( 0.438)	0.009	0.013
19	1.58	0.10	0.022	( 0.436)	0.009	0.013
20	1.67	0.10	0.022	( 0.434)	0.009	0.013
21	1.75	0.10	0.022	( 0.433)	0.009	0.013
22	1.83	0.13	0.029	( 0.431)	0.012	0.017
23	1.92	0.13	0.029	( 0.429)	0.012	0.017
24	2.00	0.13	0.029	( 0.427)	0.012	0.017
25	2.08	0.13	0.029	( 0.426)	0.012	0.017
26	2.17	0.13	0.029	( 0.424)	0.012	0.017
27	2.25	0.13	0.029	( 0.422)	0.012	0.017
28	2.33	0.13	0.029	( 0.420)	0.012	0.017
29	2.42	0.13	0.029	( 0.419)	0.012	0.017
30	2.50	0.13	0.029	( 0.417)	0.012	0.017
31	2.58	0.17	0.036	( 0.415)	0.015	0.021
32	2.67	0.17	0.036	( 0.414)	0.015	0.021
33	2.75	0.17	0.036	( 0.412)	0.015	0.021
34	2.83	0.17	0.036	( 0.410)	0.015	0.021
35	2.92	0.17	0.036	( 0.408)	0.015	0.021
36	3.00	0.17	0.036	( 0.407)	0.015	0.021
37	3.08	0.17	0.036	( 0.405)	0.015	0.021
38	3.17	0.17	0.036	( 0.403)	0.015	0.021
39	3.25	0.17	0.036	( 0.402)	0.015	0.021
40	3.33	0.17	0.036	( 0.400)	0.015	0.021
41	3.42	0.17	0.036	( 0.398)	0.015	0.021
42	3.50	0.17	0.036	( 0.397)	0.015	0.021
43	3.58	0.17	0.036	( 0.395)	0.015	0.021
44	3.67	0.17	0.036	( 0.393)	0.015	0.021
45	3.75	0.17	0.036	( 0.392)	0.015	0.021
46	3.83	0.20	0.043	( 0.390)	0.018	0.025
47	3.92	0.20	0.043	( 0.388)	0.018	0.025
48	4.00	0.20	0.043	( 0.387)	0.018	0.025
49	4.08	0.20	0.043	( 0.385)	0.018	0.025
50	4.17	0.20	0.043	( 0.384)	0.018	0.025
51	4.25	0.20	0.043	( 0.382)	0.018	0.025
52	4.33	0.23	0.050	( 0.380)	0.021	0.029
53	4.42	0.23	0.050	( 0.379)	0.021	0.029
54	4.50	0.23	0.050	( 0.377)	0.021	0.029
55	4.58	0.23	0.050	( 0.375)	0.021	0.029
56	4.67	0.23	0.050	( 0.374)	0.021	0.029
57	4.75	0.23	0.050	( 0.372)	0.021	0.029
58	4.83	0.27	0.058	( 0.371)	0.024	0.033
59	4.92	0.27	0.058	( 0.369)	0.024	0.033
60	5.00	0.27	0.058	( 0.367)	0.024	0.033
61	5.08	0.20	0.043	( 0.366)	0.018	0.025
62	5.17	0.20	0.043	( 0.364)	0.018	0.025
63	5.25	0.20	0.043	( 0.363)	0.018	0.025
64	5.33	0.23	0.050	( 0.361)	0.021	0.029
65	5.42	0.23	0.050	( 0.359)	0.021	0.029
66	5.50	0.23	0.050	( 0.358)	0.021	0.029
67	5.58	0.27	0.058	( 0.356)	0.024	0.033
68	5.67	0.27	0.058	( 0.355)	0.024	0.033
69	5.75	0.27	0.058	( 0.353)	0.024	0.033
70	5.83	0.27	0.058	( 0.352)	0.024	0.033
71	5.92	0.27	0.058	( 0.350)	0.024	0.033
72	6.00	0.27	0.058	( 0.349)	0.024	0.033
73	6.08	0.30	0.065	( 0.347)	0.027	0.038

74	6.17	0.30	0.065	( 0.345)	0.027	0.038
75	6.25	0.30	0.065	( 0.344)	0.027	0.038
76	6.33	0.30	0.065	( 0.342)	0.027	0.038
77	6.42	0.30	0.065	( 0.341)	0.027	0.038
78	6.50	0.30	0.065	( 0.339)	0.027	0.038
79	6.58	0.33	0.072	( 0.338)	0.030	0.042
80	6.67	0.33	0.072	( 0.336)	0.030	0.042
81	6.75	0.33	0.072	( 0.335)	0.030	0.042
82	6.83	0.33	0.072	( 0.333)	0.030	0.042
83	6.92	0.33	0.072	( 0.332)	0.030	0.042
84	7.00	0.33	0.072	( 0.330)	0.030	0.042
85	7.08	0.33	0.072	( 0.329)	0.030	0.042
86	7.17	0.33	0.072	( 0.327)	0.030	0.042
87	7.25	0.33	0.072	( 0.326)	0.030	0.042
88	7.33	0.37	0.079	( 0.324)	0.033	0.046
89	7.42	0.37	0.079	( 0.323)	0.033	0.046
90	7.50	0.37	0.079	( 0.321)	0.033	0.046
91	7.58	0.40	0.086	( 0.320)	0.036	0.050
92	7.67	0.40	0.086	( 0.318)	0.036	0.050
93	7.75	0.40	0.086	( 0.317)	0.036	0.050
94	7.83	0.43	0.094	( 0.315)	0.039	0.054
95	7.92	0.43	0.094	( 0.314)	0.039	0.054
96	8.00	0.43	0.094	( 0.312)	0.039	0.054
97	8.08	0.50	0.108	( 0.311)	0.045	0.063
98	8.17	0.50	0.108	( 0.310)	0.045	0.063
99	8.25	0.50	0.108	( 0.308)	0.045	0.063
100	8.33	0.50	0.108	( 0.307)	0.045	0.063
101	8.42	0.50	0.108	( 0.305)	0.045	0.063
102	8.50	0.50	0.108	( 0.304)	0.045	0.063
103	8.58	0.53	0.115	( 0.302)	0.048	0.067
104	8.67	0.53	0.115	( 0.301)	0.048	0.067
105	8.75	0.53	0.115	( 0.300)	0.048	0.067
106	8.83	0.57	0.122	( 0.298)	0.051	0.071
107	8.92	0.57	0.122	( 0.297)	0.051	0.071
108	9.00	0.57	0.122	( 0.295)	0.051	0.071
109	9.08	0.63	0.137	( 0.294)	0.057	0.079
110	9.17	0.63	0.137	( 0.293)	0.057	0.079
111	9.25	0.63	0.137	( 0.291)	0.057	0.079
112	9.33	0.67	0.144	( 0.290)	0.060	0.084
113	9.42	0.67	0.144	( 0.288)	0.060	0.084
114	9.50	0.67	0.144	( 0.287)	0.060	0.084
115	9.58	0.70	0.151	( 0.286)	0.064	0.088
116	9.67	0.70	0.151	( 0.284)	0.064	0.088
117	9.75	0.70	0.151	( 0.283)	0.064	0.088
118	9.83	0.73	0.158	( 0.282)	0.067	0.092
119	9.92	0.73	0.158	( 0.280)	0.067	0.092
120	10.00	0.73	0.158	( 0.279)	0.067	0.092
121	10.08	0.50	0.108	( 0.277)	0.045	0.063
122	10.17	0.50	0.108	( 0.276)	0.045	0.063
123	10.25	0.50	0.108	( 0.275)	0.045	0.063
124	10.33	0.50	0.108	( 0.273)	0.045	0.063
125	10.42	0.50	0.108	( 0.272)	0.045	0.063
126	10.50	0.50	0.108	( 0.271)	0.045	0.063
127	10.58	0.67	0.144	( 0.269)	0.060	0.084
128	10.67	0.67	0.144	( 0.268)	0.060	0.084
129	10.75	0.67	0.144	( 0.267)	0.060	0.084
130	10.83	0.67	0.144	( 0.266)	0.060	0.084
131	10.92	0.67	0.144	( 0.264)	0.060	0.084
132	11.00	0.67	0.144	( 0.263)	0.060	0.084
133	11.08	0.63	0.137	( 0.262)	0.057	0.079
134	11.17	0.63	0.137	( 0.260)	0.057	0.079
135	11.25	0.63	0.137	( 0.259)	0.057	0.079
136	11.33	0.63	0.137	( 0.258)	0.057	0.079
137	11.42	0.63	0.137	( 0.256)	0.057	0.079
138	11.50	0.63	0.137	( 0.255)	0.057	0.079
139	11.58	0.57	0.122	( 0.254)	0.051	0.071
140	11.67	0.57	0.122	( 0.253)	0.051	0.071
141	11.75	0.57	0.122	( 0.251)	0.051	0.071
142	11.83	0.60	0.130	( 0.250)	0.054	0.075
143	11.92	0.60	0.130	( 0.249)	0.054	0.075
144	12.00	0.60	0.130	( 0.248)	0.054	0.075
145	12.08	0.83	0.180	( 0.246)	0.076	0.104
146	12.17	0.83	0.180	( 0.245)	0.076	0.104
147	12.25	0.83	0.180	( 0.244)	0.076	0.104
148	12.33	0.87	0.187	( 0.243)	0.079	0.109
149	12.42	0.87	0.187	( 0.242)	0.079	0.109
150	12.50	0.87	0.187	( 0.240)	0.079	0.109
151	12.58	0.93	0.202	( 0.239)	0.085	0.117
152	12.67	0.93	0.202	( 0.238)	0.085	0.117
153	12.75	0.93	0.202	( 0.237)	0.085	0.117
154	12.83	0.97	0.209	( 0.236)	0.088	0.121
155	12.92	0.97	0.209	( 0.234)	0.088	0.121
156	13.00	0.97	0.209	( 0.233)	0.088	0.121
157	13.08	1.13	0.245	( 0.232)	0.103	0.142
158	13.17	1.13	0.245	( 0.231)	0.103	0.142
159	13.25	1.13	0.245	( 0.230)	0.103	0.142



160	13.33	1.13	0.245	( 0.228)	0.103	0.142
161	13.42	1.13	0.245	( 0.227)	0.103	0.142
162	13.50	1.13	0.245	( 0.226)	0.103	0.142
163	13.58	0.77	0.166	( 0.225)	0.070	0.096
164	13.67	0.77	0.166	( 0.224)	0.070	0.096
165	13.75	0.77	0.166	( 0.223)	0.070	0.096
166	13.83	0.77	0.166	( 0.222)	0.070	0.096
167	13.92	0.77	0.166	( 0.220)	0.070	0.096
168	14.00	0.77	0.166	( 0.219)	0.070	0.096
169	14.08	0.90	0.194	( 0.218)	0.082	0.113
170	14.17	0.90	0.194	( 0.217)	0.082	0.113
171	14.25	0.90	0.194	( 0.216)	0.082	0.113
172	14.33	0.87	0.187	( 0.215)	0.079	0.109
173	14.42	0.87	0.187	( 0.214)	0.079	0.109
174	14.50	0.87	0.187	( 0.213)	0.079	0.109
175	14.58	0.87	0.187	( 0.212)	0.079	0.109
176	14.67	0.87	0.187	( 0.210)	0.079	0.109
177	14.75	0.87	0.187	( 0.209)	0.079	0.109
178	14.83	0.83	0.180	( 0.208)	0.076	0.104
179	14.92	0.83	0.180	( 0.207)	0.076	0.104
180	15.00	0.83	0.180	( 0.206)	0.076	0.104
181	15.08	0.80	0.173	( 0.205)	0.073	0.100
182	15.17	0.80	0.173	( 0.204)	0.073	0.100
183	15.25	0.80	0.173	( 0.203)	0.073	0.100
184	15.33	0.77	0.166	( 0.202)	0.070	0.096
185	15.42	0.77	0.166	( 0.201)	0.070	0.096
186	15.50	0.77	0.166	( 0.200)	0.070	0.096
187	15.58	0.63	0.137	( 0.199)	0.057	0.079
188	15.67	0.63	0.137	( 0.198)	0.057	0.079
189	15.75	0.63	0.137	( 0.197)	0.057	0.079
190	15.83	0.63	0.137	( 0.196)	0.057	0.079
191	15.92	0.63	0.137	( 0.195)	0.057	0.079
192	16.00	0.63	0.137	( 0.194)	0.057	0.079
193	16.08	0.13	0.029	( 0.193)	0.012	0.017
194	16.17	0.13	0.029	( 0.192)	0.012	0.017
195	16.25	0.13	0.029	( 0.191)	0.012	0.017
196	16.33	0.13	0.029	( 0.190)	0.012	0.017
197	16.42	0.13	0.029	( 0.189)	0.012	0.017
198	16.50	0.13	0.029	( 0.188)	0.012	0.017
199	16.58	0.10	0.022	( 0.187)	0.009	0.013
200	16.67	0.10	0.022	( 0.186)	0.009	0.013
201	16.75	0.10	0.022	( 0.185)	0.009	0.013
202	16.83	0.10	0.022	( 0.184)	0.009	0.013
203	16.92	0.10	0.022	( 0.183)	0.009	0.013
204	17.00	0.10	0.022	( 0.182)	0.009	0.013
205	17.08	0.17	0.036	( 0.181)	0.015	0.021
206	17.17	0.17	0.036	( 0.181)	0.015	0.021
207	17.25	0.17	0.036	( 0.180)	0.015	0.021
208	17.33	0.17	0.036	( 0.179)	0.015	0.021
209	17.42	0.17	0.036	( 0.178)	0.015	0.021
210	17.50	0.17	0.036	( 0.177)	0.015	0.021
211	17.58	0.17	0.036	( 0.176)	0.015	0.021
212	17.67	0.17	0.036	( 0.175)	0.015	0.021
213	17.75	0.17	0.036	( 0.174)	0.015	0.021
214	17.83	0.13	0.029	( 0.173)	0.012	0.017
215	17.92	0.13	0.029	( 0.173)	0.012	0.017
216	18.00	0.13	0.029	( 0.172)	0.012	0.017
217	18.08	0.13	0.029	( 0.171)	0.012	0.017
218	18.17	0.13	0.029	( 0.170)	0.012	0.017
219	18.25	0.13	0.029	( 0.169)	0.012	0.017
220	18.33	0.13	0.029	( 0.168)	0.012	0.017
221	18.42	0.13	0.029	( 0.168)	0.012	0.017
222	18.50	0.13	0.029	( 0.167)	0.012	0.017
223	18.58	0.10	0.022	( 0.166)	0.009	0.013
224	18.67	0.10	0.022	( 0.165)	0.009	0.013
225	18.75	0.10	0.022	( 0.164)	0.009	0.013
226	18.83	0.07	0.014	( 0.164)	0.006	0.008
227	18.92	0.07	0.014	( 0.163)	0.006	0.008
228	19.00	0.07	0.014	( 0.162)	0.006	0.008
229	19.08	0.10	0.022	( 0.161)	0.009	0.013
230	19.17	0.10	0.022	( 0.160)	0.009	0.013
231	19.25	0.10	0.022	( 0.160)	0.009	0.013
232	19.33	0.13	0.029	( 0.159)	0.012	0.017
233	19.42	0.13	0.029	( 0.158)	0.012	0.017
234	19.50	0.13	0.029	( 0.158)	0.012	0.017
235	19.58	0.10	0.022	( 0.157)	0.009	0.013
236	19.67	0.10	0.022	( 0.156)	0.009	0.013
237	19.75	0.10	0.022	( 0.155)	0.009	0.013
238	19.83	0.07	0.014	( 0.155)	0.006	0.008
239	19.92	0.07	0.014	( 0.154)	0.006	0.008
240	20.00	0.07	0.014	( 0.153)	0.006	0.008
241	20.08	0.10	0.022	( 0.153)	0.009	0.013
242	20.17	0.10	0.022	( 0.152)	0.009	0.013
243	20.25	0.10	0.022	( 0.151)	0.009	0.013
244	20.33	0.10	0.022	( 0.151)	0.009	0.013
245	20.42	0.10	0.022	( 0.150)	0.009	0.013



1+55	0.0140	0.12	Q			
2+ 0	0.0148	0.12	Q			
2+ 5	0.0156	0.12	QV			
2+10	0.0164	0.12	QV			
2+15	0.0172	0.12	QV			
2+20	0.0181	0.12	QV			
2+25	0.0189	0.12	QV			
2+30	0.0197	0.12	QV			
2+35	0.0206	0.13	QV			
2+40	0.0216	0.15	QV			
2+45	0.0226	0.15	QV			
2+50	0.0236	0.15	QV			
2+55	0.0247	0.15	QV			
3+ 0	0.0257	0.15	QV			
3+ 5	0.0267	0.15	QV			
3+10	0.0277	0.15	QV			
3+15	0.0287	0.15	QV			
3+20	0.0297	0.15	QV			
3+25	0.0307	0.15	Q V			
3+30	0.0318	0.15	Q V			
3+35	0.0328	0.15	Q V			
3+40	0.0338	0.15	Q V			
3+45	0.0348	0.15	Q V			
3+50	0.0359	0.16	Q V			
3+55	0.0371	0.17	Q V			
4+ 0	0.0384	0.18	Q V			
4+ 5	0.0396	0.18	Q V			
4+10	0.0408	0.18	Q V			
4+15	0.0420	0.18	Q V			
4+20	0.0433	0.19	Q V			
4+25	0.0447	0.20	Q V			
4+30	0.0462	0.21	Q V			
4+35	0.0476	0.21	Q V			
4+40	0.0490	0.21	Q V			
4+45	0.0504	0.21	Q V			
4+50	0.0520	0.22	Q V			
4+55	0.0536	0.23	Q V			
5+ 0	0.0552	0.24	Q V			
5+ 5	0.0566	0.20	Q V			
5+10	0.0578	0.18	Q V			
5+15	0.0591	0.18	Q V			
5+20	0.0604	0.19	Q V			
5+25	0.0618	0.20	Q V			
5+30	0.0632	0.21	Q V			
5+35	0.0647	0.22	Q V			
5+40	0.0664	0.23	Q V			
5+45	0.0680	0.24	Q V			
5+50	0.0696	0.24	Q V			
5+55	0.0712	0.24	Q V			
6+ 0	0.0729	0.24	Q V			
6+ 5	0.0746	0.25	Q V			
6+10	0.0764	0.26	Q V			
6+15	0.0782	0.27	Q V			
6+20	0.0801	0.27	Q V			
6+25	0.0819	0.27	Q V			
6+30	0.0837	0.27	Q V			
6+35	0.0857	0.28	Q V			
6+40	0.0877	0.29	Q V			
6+45	0.0897	0.29	Q V			
6+50	0.0917	0.29	Q V			
6+55	0.0938	0.29	Q V			
7+ 0	0.0958	0.29	Q V			
7+ 5	0.0978	0.29	Q V			
7+10	0.0998	0.29	Q V			
7+15	0.1019	0.29	Q V			
7+20	0.1040	0.31	Q V			
7+25	0.1062	0.32	Q V			
7+30	0.1085	0.32	Q V			
7+35	0.1108	0.34	Q V			
7+40	0.1132	0.35	Q V			
7+45	0.1157	0.35	Q V			
7+50	0.1182	0.37	Q V			
7+55	0.1209	0.38	Q V			
8+ 0	0.1235	0.38	Q V			
8+ 5	0.1264	0.42	Q V			
8+10	0.1294	0.44	Q V			
8+15	0.1324	0.44	Q V			
8+20	0.1355	0.44	Q V			
8+25	0.1385	0.44	Q V			
8+30	0.1416	0.44	Q V			
8+35	0.1447	0.46	Q V			
8+40	0.1479	0.47	Q V			
8+45	0.1512	0.47	Q V			
8+50	0.1546	0.49	Q V			
8+55	0.1580	0.50	Q V			
9+ 0	0.1614	0.50	Q V			

9+ 5	0.1651	0.53	Q	V		
9+10	0.1689	0.56	Q	V		
9+15	0.1728	0.56	Q	V		
9+20	0.1768	0.58	Q	V		
9+25	0.1808	0.59	Q	V		
9+30	0.1849	0.59	Q	V		
9+35	0.1891	0.61	Q	V		
9+40	0.1933	0.62	Q	V		
9+45	0.1976	0.62	Q	V		
9+50	0.2019	0.64	Q	V		
9+55	0.2064	0.65	Q	V		
10+ 0	0.2109	0.65	Q	V		
10+ 5	0.2145	0.53	Q	V		
10+10	0.2177	0.46	Q	V		
10+15	0.2207	0.44	Q	V		
10+20	0.2238	0.44	Q	V		
10+25	0.2268	0.44	Q	V		
10+30	0.2299	0.44	Q	V		
10+35	0.2335	0.52	Q	V		
10+40	0.2375	0.58	Q	V		
10+45	0.2415	0.59	Q	V		
10+50	0.2456	0.59	Q	V		
10+55	0.2496	0.59	Q	V		
11+ 0	0.2537	0.59	Q	V		
11+ 5	0.2576	0.57	Q	V		
11+10	0.2615	0.56	Q	V		
11+15	0.2654	0.56	Q	V		
11+20	0.2692	0.56	Q	V		
11+25	0.2731	0.56	Q	V		
11+30	0.2769	0.56	Q	V		
11+35	0.2806	0.53	Q	V		
11+40	0.2841	0.51	Q	V		
11+45	0.2875	0.50	Q	V		
11+50	0.2911	0.52	Q	V		
11+55	0.2947	0.53	Q	V		
12+ 0	0.2984	0.53	Q	V		
12+ 5	0.3028	0.65	Q	V		
12+10	0.3078	0.72	Q	V		
12+15	0.3129	0.74	Q	V		
12+20	0.3180	0.75	Q	V		
12+25	0.3233	0.76	Q	V		
12+30	0.3286	0.77	Q	V		
12+35	0.3341	0.80	Q	V		
12+40	0.3397	0.82	Q	V		
12+45	0.3454	0.83	Q	V		
12+50	0.3512	0.84	Q	V		
12+55	0.3571	0.85	Q	V		
13+ 0	0.3630	0.85	Q	V		
13+ 5	0.3694	0.94	Q	V		
13+10	0.3763	0.99	Q	V		
13+15	0.3832	1.00	Q	V		
13+20	0.3901	1.00	Q	V		
13+25	0.3970	1.00	Q	V		
13+30	0.4039	1.00	Q	V		
13+35	0.4095	0.82	Q	V		
13+40	0.4144	0.70	Q	V		
13+45	0.4190	0.68	Q	V		
13+50	0.4237	0.68	Q	V		
13+55	0.4284	0.68	Q	V		
14+ 0	0.4330	0.68	Q	V		
14+ 5	0.4382	0.74	Q	V		
14+10	0.4436	0.79	Q	V		
14+15	0.4491	0.80	Q	V		
14+20	0.4544	0.78	Q	V		
14+25	0.4597	0.77	Q	V		
14+30	0.4650	0.77	Q	V		
14+35	0.4703	0.77	Q	V		
14+40	0.4756	0.77	Q	V		
14+45	0.4808	0.77	Q	V		
14+50	0.4860	0.75	Q	V		
14+55	0.4911	0.74	Q	V		
15+ 0	0.4962	0.74	Q	V		
15+ 5	0.5011	0.72	Q	V		
15+10	0.5060	0.71	Q	V		
15+15	0.5109	0.71	Q	V		
15+20	0.5156	0.69	Q	V		
15+25	0.5203	0.68	Q	V		
15+30	0.5250	0.68	Q	V		
15+35	0.5292	0.61	Q	V		
15+40	0.5331	0.57	Q	V		
15+45	0.5370	0.56	Q	V		
15+50	0.5408	0.56	Q	V		
15+55	0.5447	0.56	Q	V		
16+ 0	0.5486	0.56	Q	V		
16+ 5	0.5507	0.31	Q	V		
16+10	0.5517	0.15	Q	V		

16+15	0.5525	0.12	Q				V
16+20	0.5534	0.12	Q				V
16+25	0.5542	0.12	Q				V
16+30	0.5550	0.12	Q				V
16+35	0.5557	0.10	Q				V
16+40	0.5563	0.09	Q				V
16+45	0.5569	0.09	Q				V
16+50	0.5575	0.09	Q				V
16+55	0.5581	0.09	Q				V
17+ 0	0.5587	0.09	Q				V
17+ 5	0.5596	0.12	Q				V
17+10	0.5606	0.14	Q				V
17+15	0.5616	0.15	Q				V
17+20	0.5626	0.15	Q				V
17+25	0.5636	0.15	Q				V
17+30	0.5646	0.15	Q				V
17+35	0.5656	0.15	Q				V
17+40	0.5667	0.15	Q				V
17+45	0.5677	0.15	Q				V
17+50	0.5686	0.13	Q				V
17+55	0.5694	0.12	Q				V
18+ 0	0.5702	0.12	Q				V
18+ 5	0.5710	0.12	Q				V
18+10	0.5718	0.12	Q				V
18+15	0.5726	0.12	Q				V
18+20	0.5735	0.12	Q				V
18+25	0.5743	0.12	Q				V
18+30	0.5751	0.12	Q				V
18+35	0.5758	0.10	Q				V
18+40	0.5764	0.09	Q				V
18+45	0.5770	0.09	Q				V
18+50	0.5775	0.07	Q				V
18+55	0.5779	0.06	Q				V
19+ 0	0.5783	0.06	Q				V
19+ 5	0.5789	0.08	Q				V
19+10	0.5794	0.09	Q				V
19+15	0.5801	0.09	Q				V
19+20	0.5808	0.10	Q				V
19+25	0.5816	0.12	Q				V
19+30	0.5824	0.12	Q				V
19+35	0.5831	0.10	Q				V
19+40	0.5837	0.09	Q				V
19+45	0.5843	0.09	Q				V
19+50	0.5848	0.07	Q				V
19+55	0.5852	0.06	Q				V
20+ 0	0.5856	0.06	Q				V
20+ 5	0.5862	0.08	Q				V
20+10	0.5868	0.09	Q				V
20+15	0.5874	0.09	Q				V
20+20	0.5880	0.09	Q				V
20+25	0.5886	0.09	Q				V
20+30	0.5892	0.09	Q				V
20+35	0.5898	0.09	Q				V
20+40	0.5904	0.09	Q				V
20+45	0.5910	0.09	Q				V
20+50	0.5915	0.07	Q				V
20+55	0.5919	0.06	Q				V
21+ 0	0.5923	0.06	Q				V
21+ 5	0.5929	0.08	Q				V
21+10	0.5935	0.09	Q				V
21+15	0.5941	0.09	Q				V
21+20	0.5946	0.07	Q				V
21+25	0.5950	0.06	Q				V
21+30	0.5954	0.06	Q				V
21+35	0.5959	0.08	Q				V
21+40	0.5965	0.09	Q				V
21+45	0.5971	0.09	Q				V
21+50	0.5976	0.07	Q				V
21+55	0.5980	0.06	Q				V
22+ 0	0.5984	0.06	Q				V
22+ 5	0.5989	0.08	Q				V
22+10	0.5995	0.09	Q				V
22+15	0.6002	0.09	Q				V
22+20	0.6007	0.07	Q				V
22+25	0.6011	0.06	Q				V
22+30	0.6015	0.06	Q				V
22+35	0.6019	0.06	Q				V
22+40	0.6023	0.06	Q				V
22+45	0.6027	0.06	Q				V
22+50	0.6031	0.06	Q				V
22+55	0.6035	0.06	Q				V
23+ 0	0.6039	0.06	Q				V
23+ 5	0.6043	0.06	Q				V
23+10	0.6047	0.06	Q				V
23+15	0.6051	0.06	Q				V
23+20	0.6055	0.06	Q				V

23+25	0.6059	0.06	Q				V
23+30	0.6063	0.06	Q				V
23+35	0.6068	0.06	Q				V
23+40	0.6072	0.06	Q				V
23+45	0.6076	0.06	Q				V
23+50	0.6080	0.06	Q				V
23+55	0.6084	0.06	Q				V
24+ 0	0.6088	0.06	Q				V
24+ 5	0.6090	0.03	Q				V
24+10	0.6090	0.00	Q				V

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## **Section 3**

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### **Riverside County Plates**







RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group			
		A	B	C	D
<u>NATURAL COVERS -</u>					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
<u>URBAN COVERS -</u>					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
<u>AGRICULTURAL COVERS -</u>					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

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HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS  
FOR  
PERVIOUS AREA

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group			
		A	B	C	D
<u>AGRICULTURAL COVERS</u> (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)	See Note 4				
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard	See Note 4				

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.
2. Quality of cover definitions:  
 Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.  
 Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.  
 Good-Heavy or dense cover with more than 75 percent of the ground surface protected.
3. See Plate C-2 for a detailed description of cover types.
4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.
5. Reference Bibliography item 17.

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HYDROLOGY MANUAL

**RUNOFF INDEX NUMBERS  
FOR  
PERVIOUS AREA**

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent (2)
Natural or Agriculture	0 - 10	0
Single Family Residential: (3)		
40,000 S. F. (1 Acre) Lots	10 - 25	20
20,000 S. F. (½ Acre) Lots	30 - 45	40
7,200 - 10,000 S. F. Lots	45 - 55	50
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 -100	90

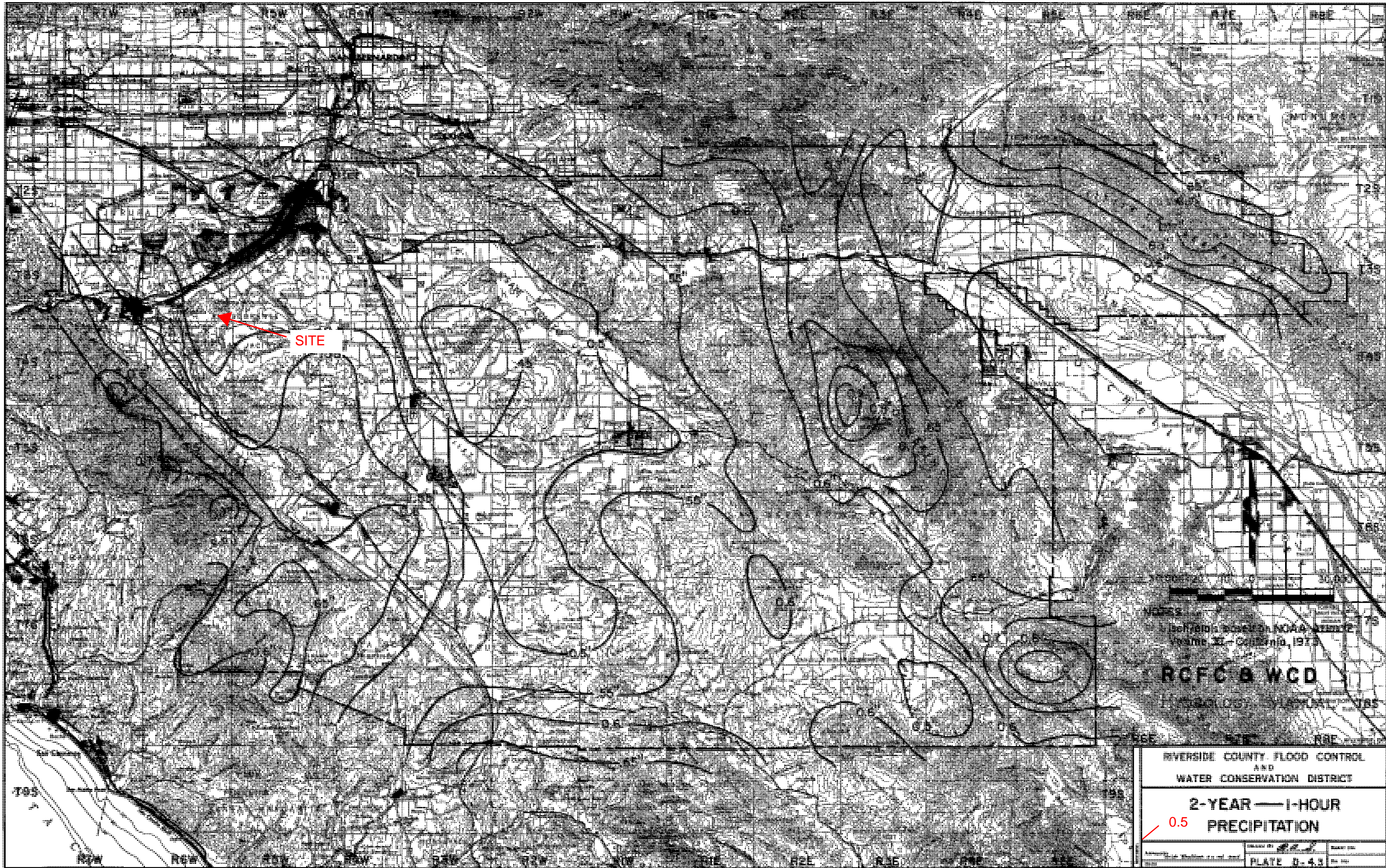
Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.
2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.
3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

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HYDROLOGY MANUAL

**IMPERVIOUS COVER  
FOR  
DEVELOPED AREAS**





SITE

Map based on National Oceanic and Atmospheric Administration (NOAA) NAD 83 datum  
Scale 1:25,000 - Contouring, 1971

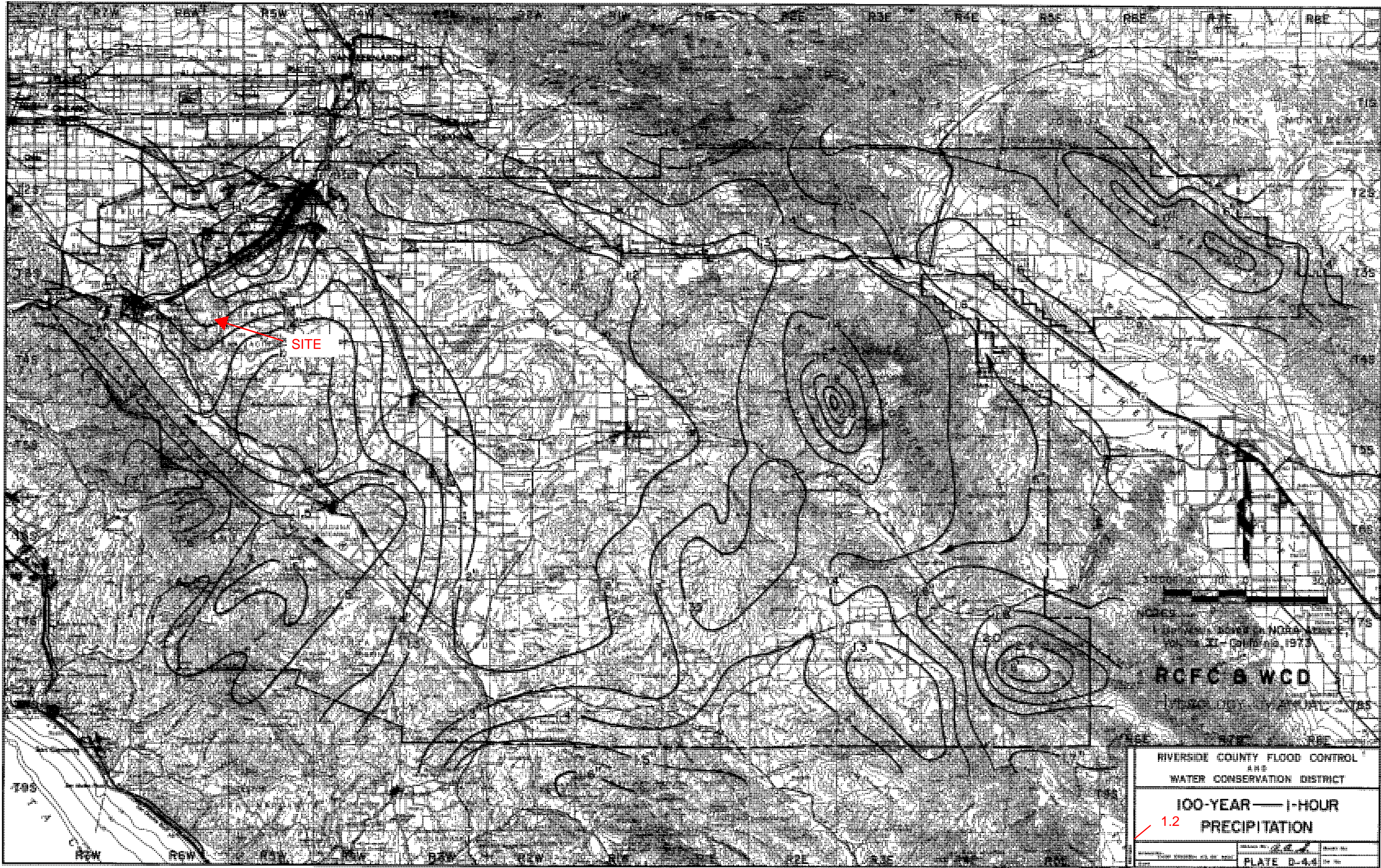
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RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT

2-YEAR — 1-HOUR  
0.5 PRECIPITATION

PLATE D-43





SITE

RCFC & WCD

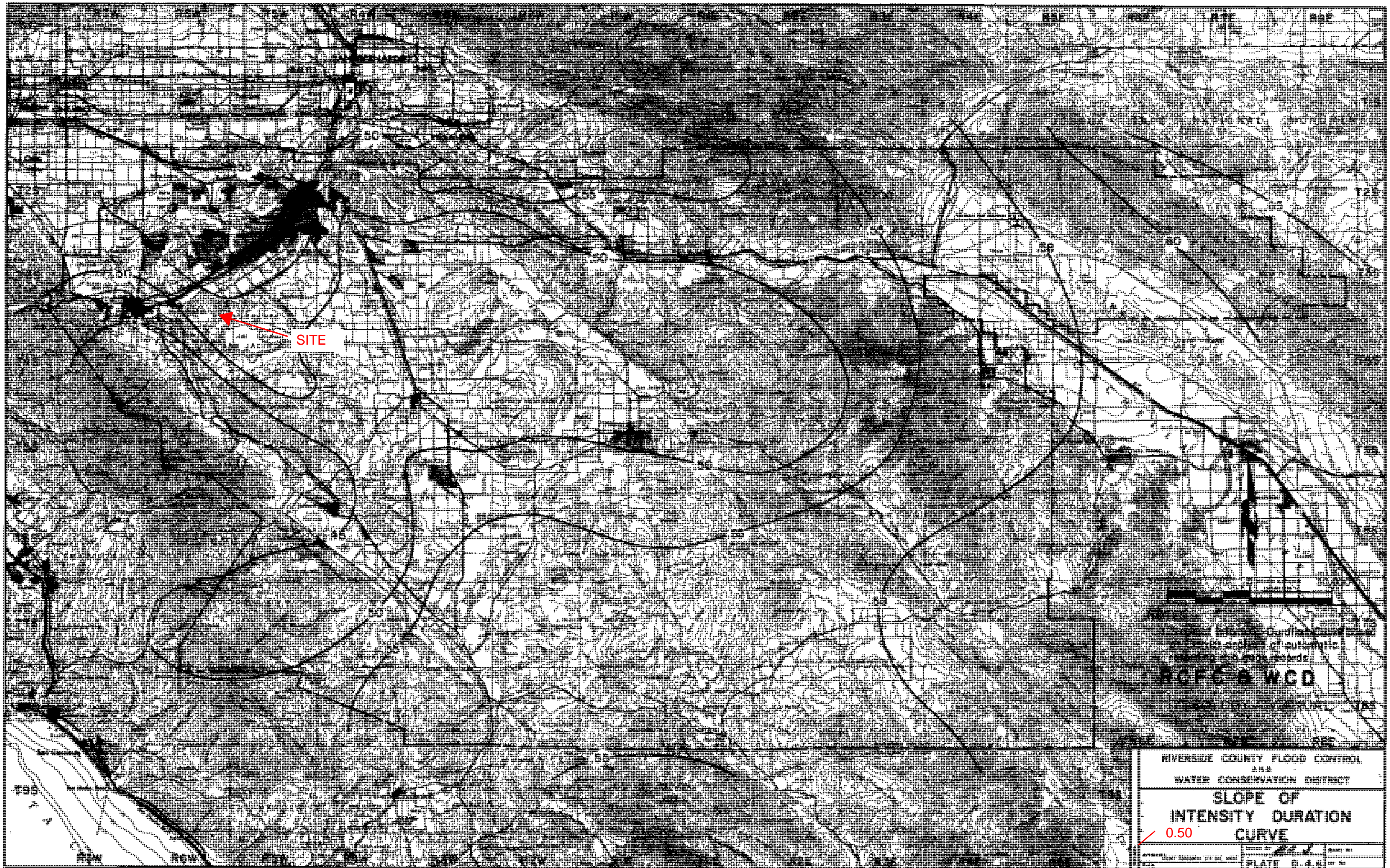
RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT

100-YEAR 1-HOUR  
PRECIPITATION

1.2

PLATE D-4.4





SITE

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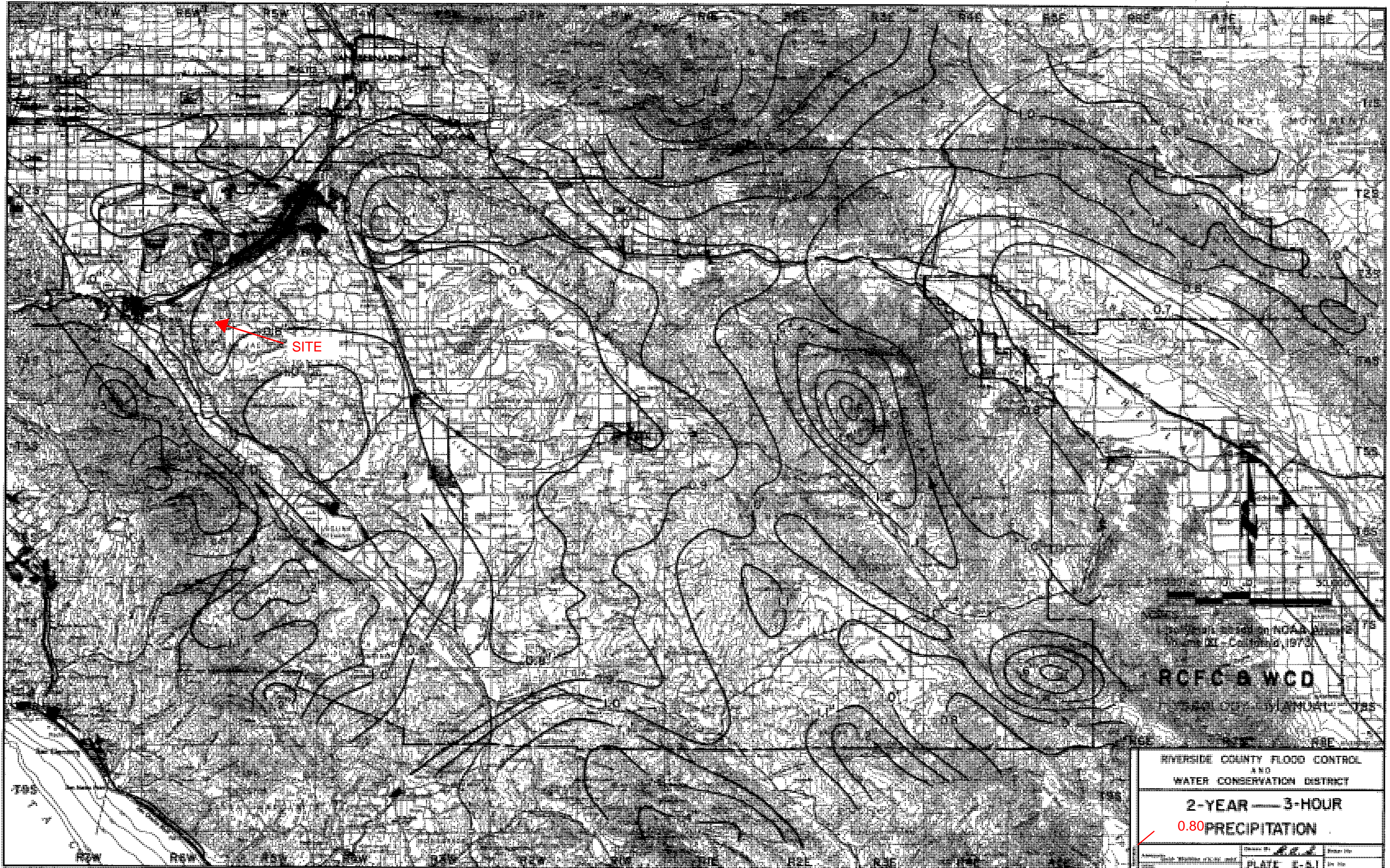
RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT

**SLOPE OF  
INTENSITY DURATION  
CURVE**

0.50

PLATE 0-1-1





SITE

Source: U.S. Geological Survey  
Topographic Map of California, 1970

RCFC & WCD

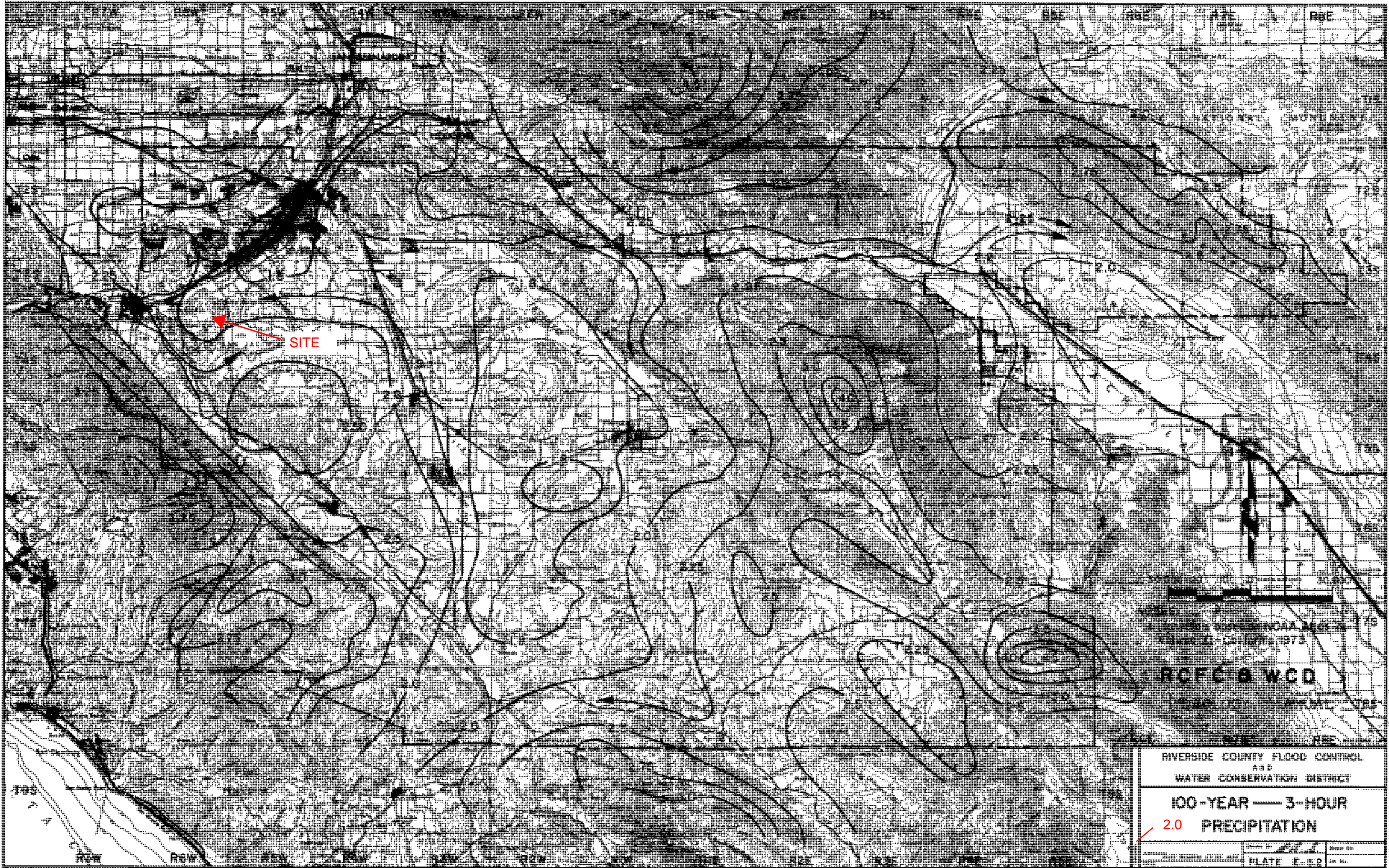
RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT

2-YEAR — 3-HOUR

0.80 PRECIPITATION

PLATE E-51





SITE

U.S. GEOLOGICAL SURVEY  
RIVERSIDE COUNTY, CALIFORNIA 925

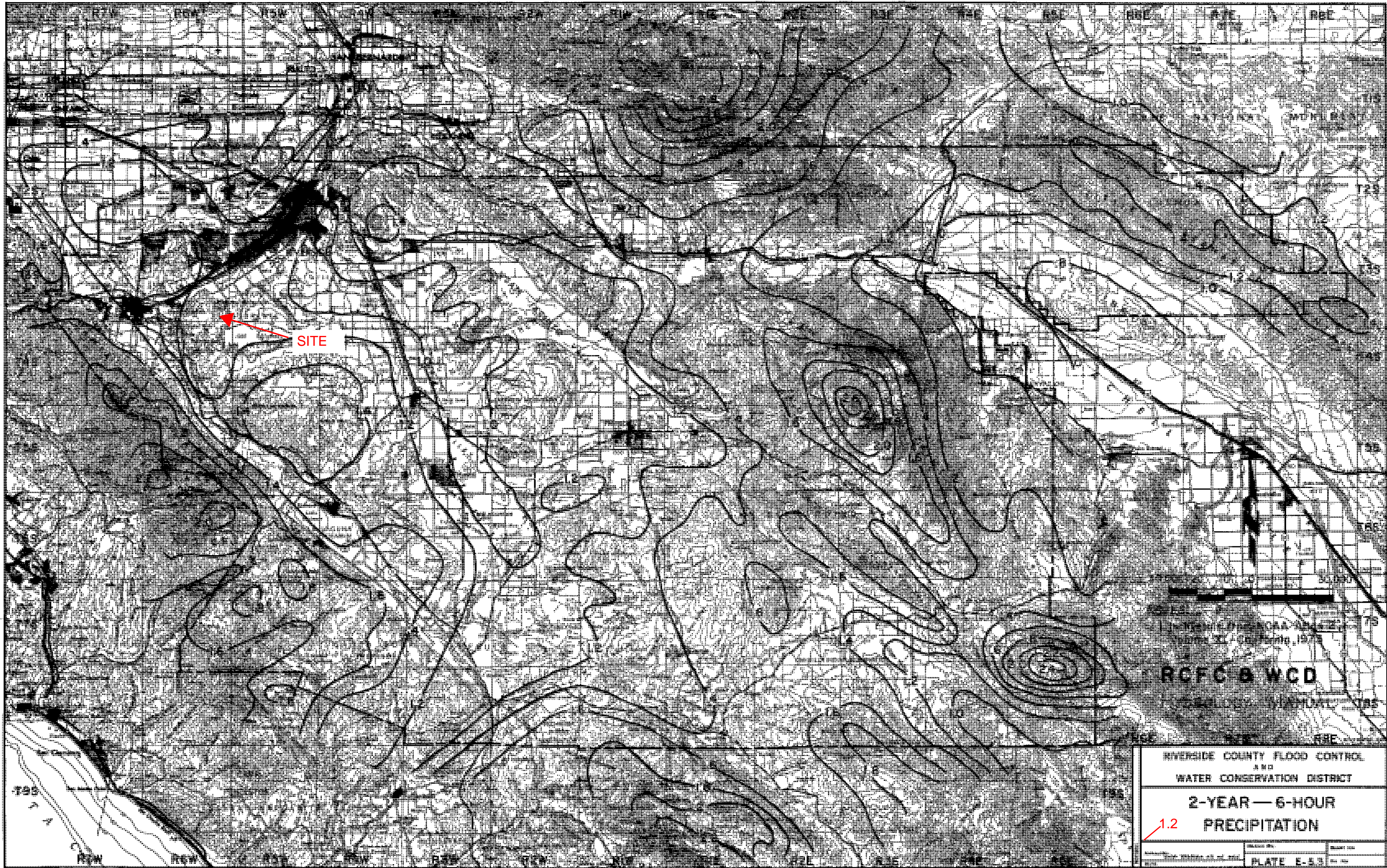
RCFC & WCD

RIVERSIDE COUNTY FLOOD CONTROL  
&  
WATER CONSERVATION DISTRICT

100-YEAR — 3-HOUR  
2.0 PRECIPITATION

PLATE E-22





SITE

RCFC & WCD

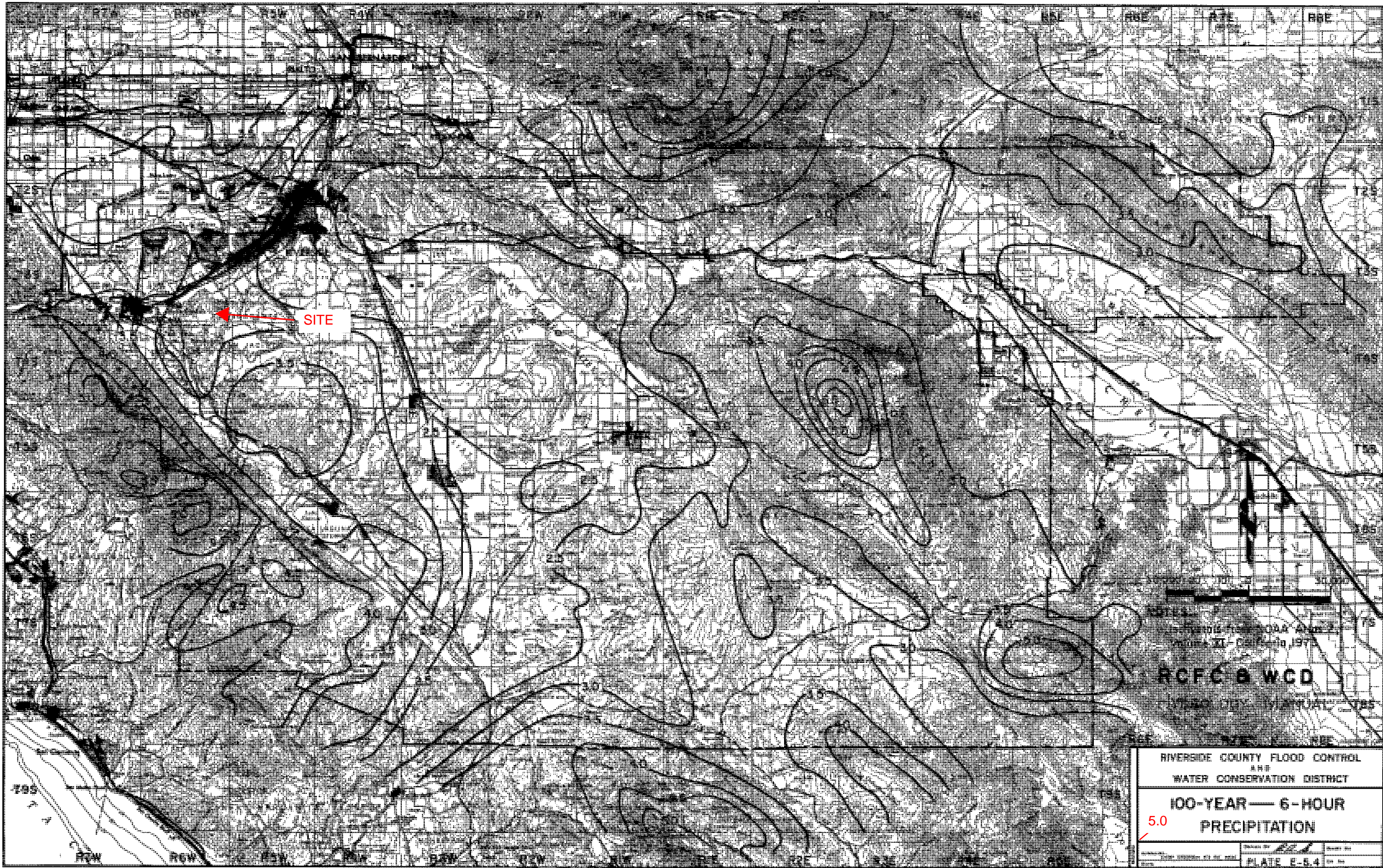
RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT

2-YEAR - 6-HOUR  
PRECIPITATION

1.2

PLATE E-53



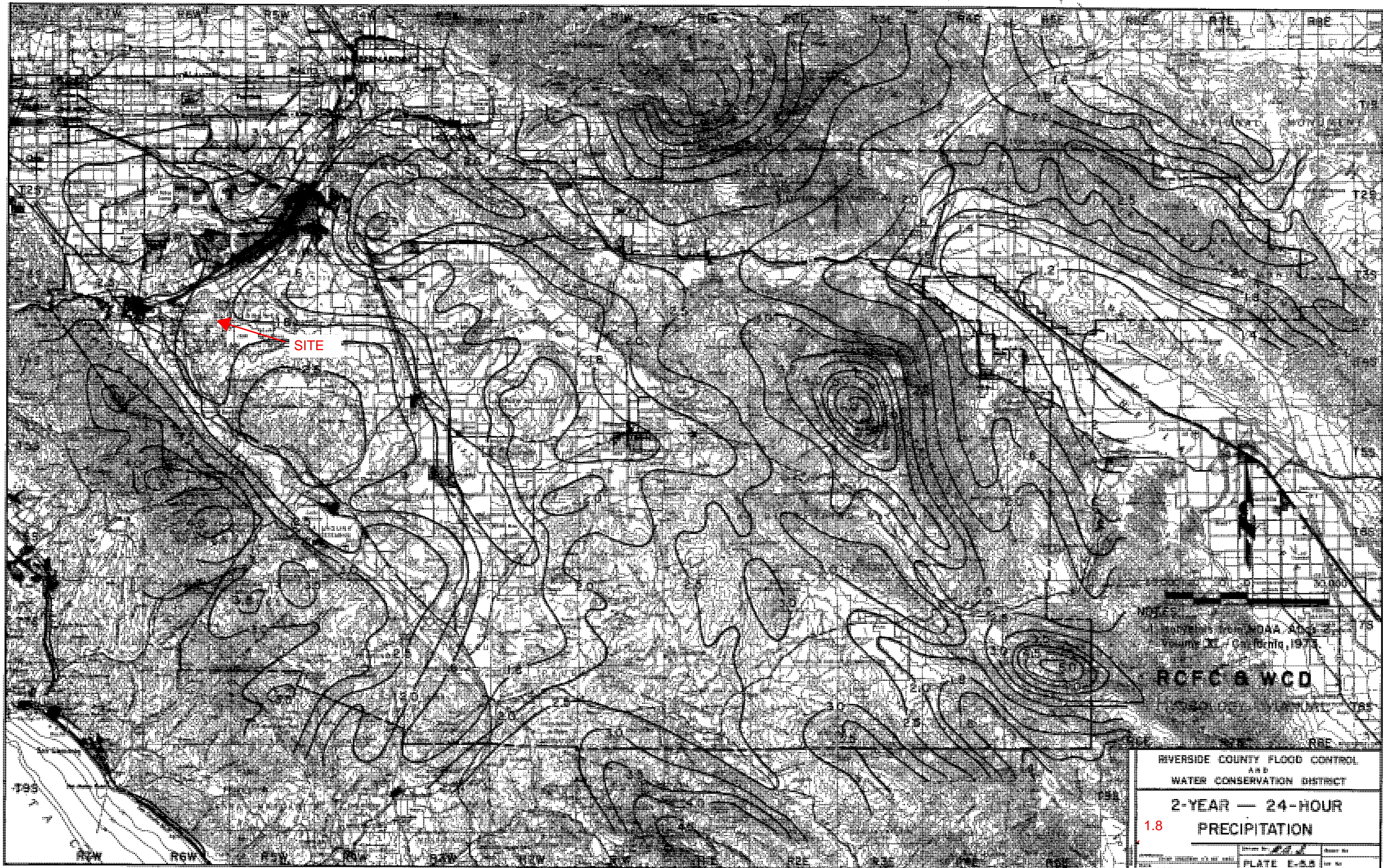


SITE

DATE: 10/10/1971  
BY: [illegible]  
RCFC & WCD  
[illegible]

RIVERSIDE COUNTY FLOOD CONTROL  
&  
WATER CONSERVATION DISTRICT  
100-YEAR — 6-HOUR  
PRECIPITATION  
5.0  
PLATE E-8.4





SITE

Map of Riverside County, California, 1975  
Volume 21 of California, 1975

RCFC & WCD

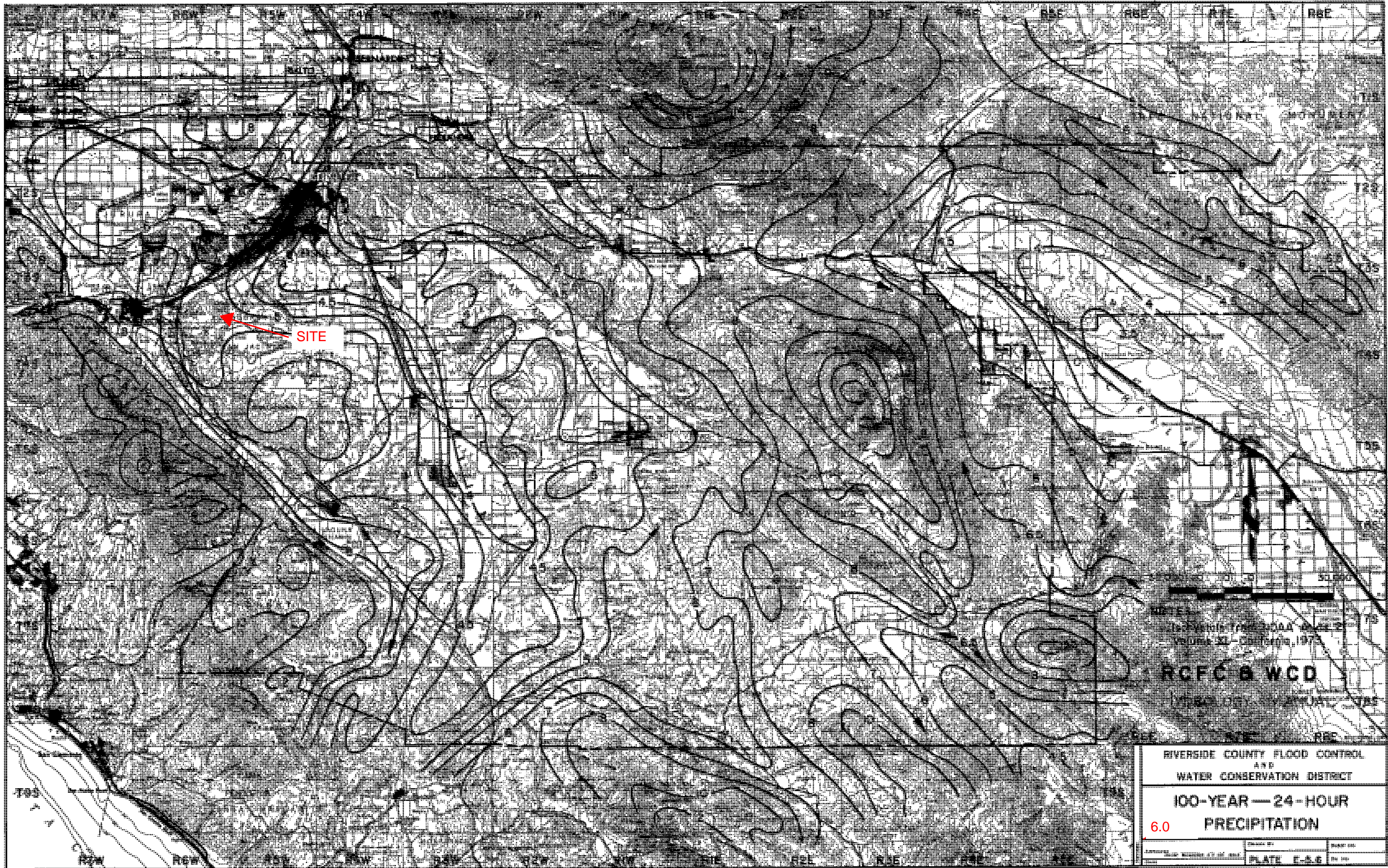
RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT

2-YEAR — 24-HOUR  
PRECIPITATION

1.8

PLATE E-55





SITE

Scale: 1" = 100'

RCFC & WCD

RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT  
100-YEAR — 24-HOUR  
PRECIPITATION  
6.0

Drawing No.	Sheet No.	Plate No.
		PLATE E-5-B