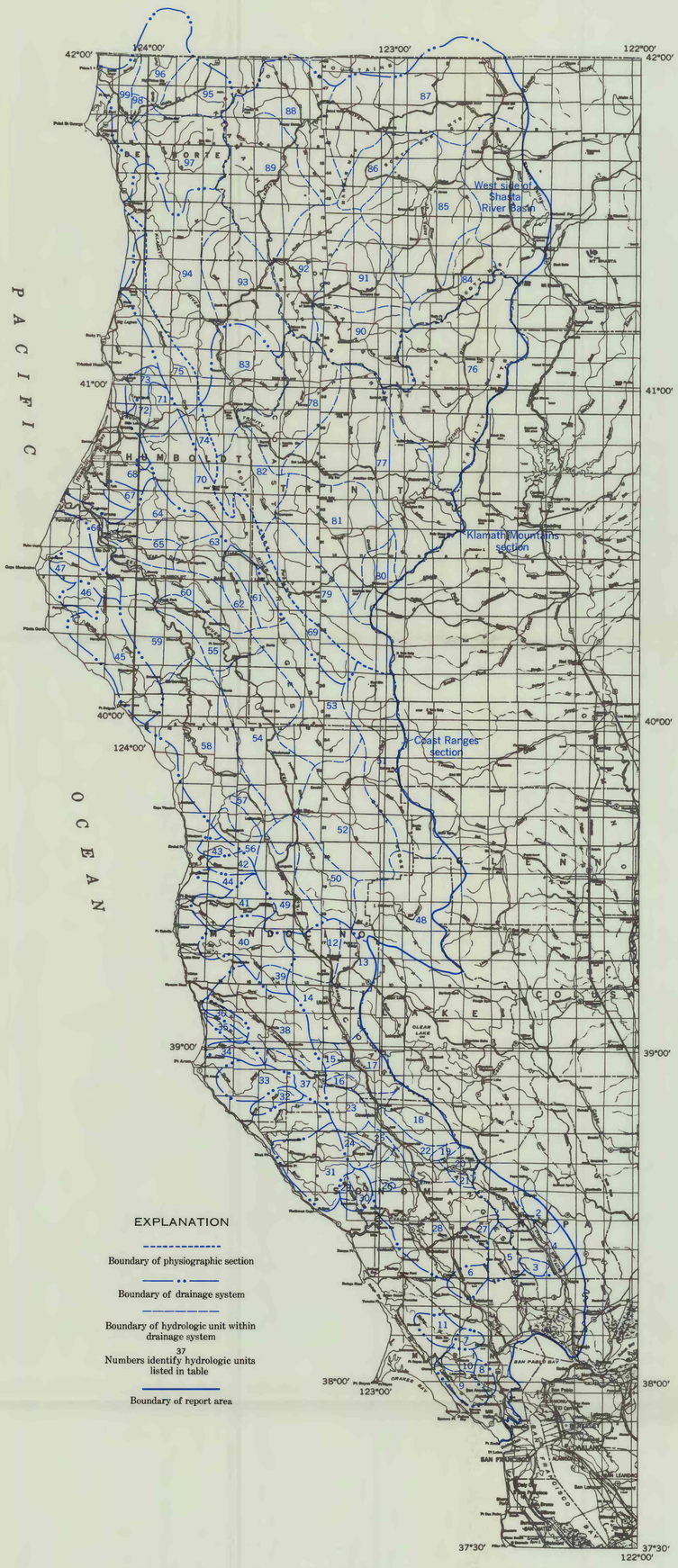
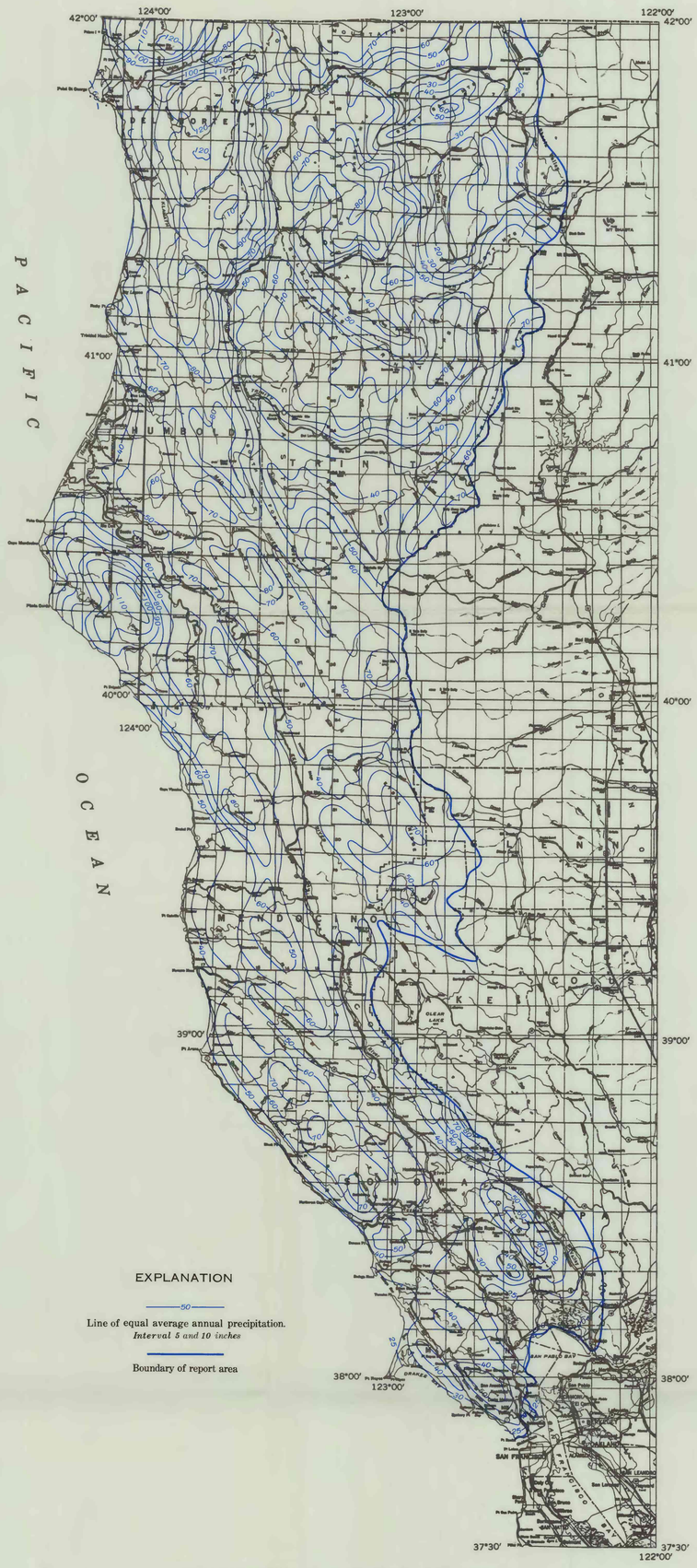
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
CALIFORNIA DEPARTMENT OF WATER RESOURCES

HYDROLOGIC INVESTIGATIONS
ATLAS HA-298



MAP SHOWING PRINCIPAL DRAINAGE SYSTEMS AND HYDROLOGIC UNITS

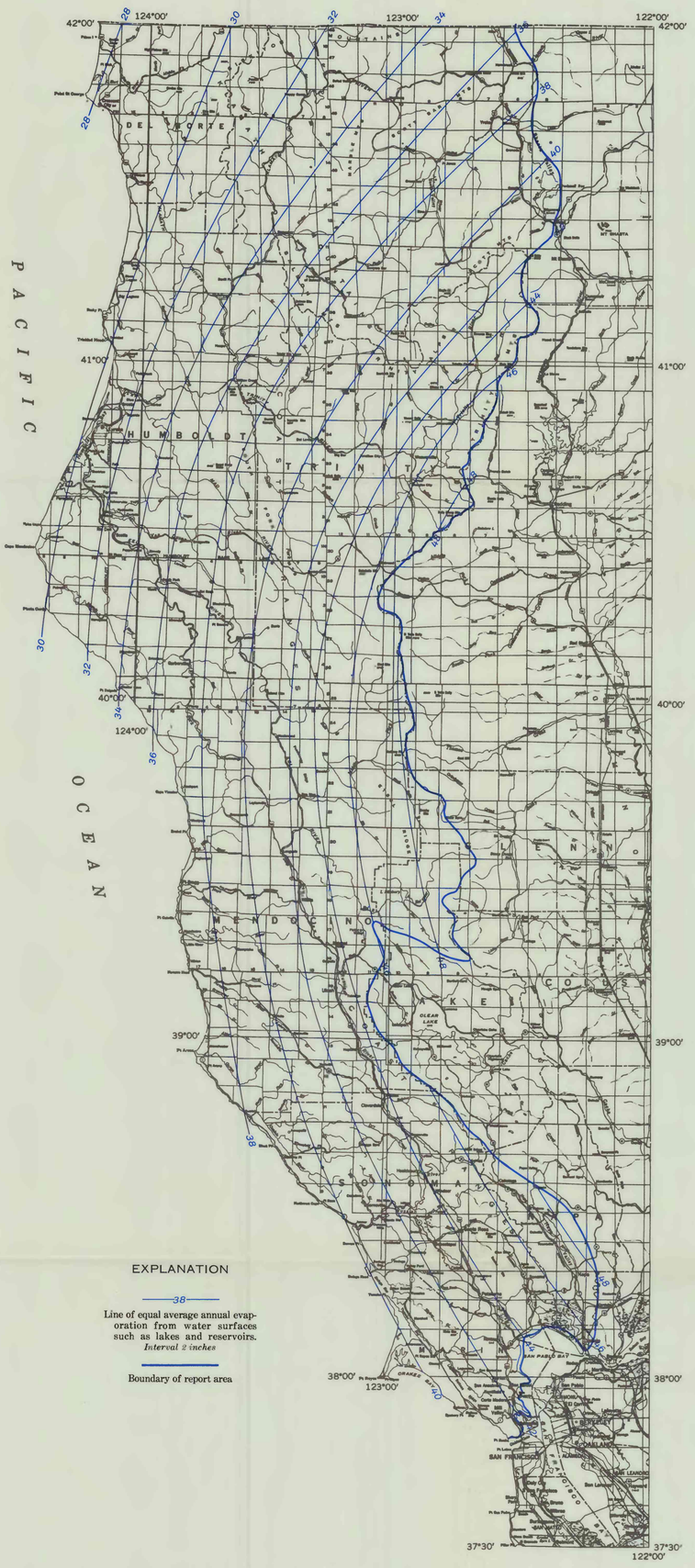


MAP OF AVERAGE ANNUAL PRECIPITATION

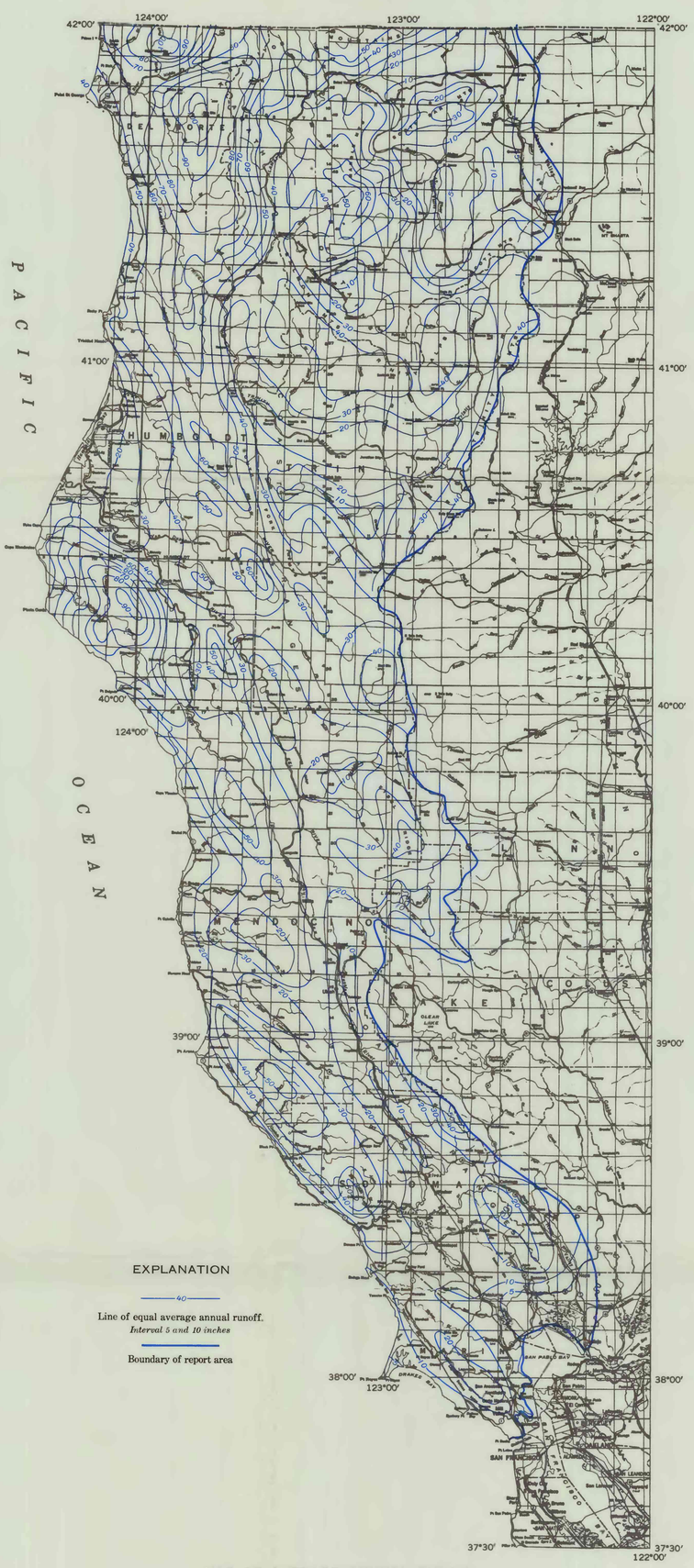
AVERAGE ANNUAL HYDROLOGIC BUDGET FOR BASINS IN NORTH COASTAL CALIFORNIA

Number	Basin	Drainage area (square miles)	Average annual basinwide values, in inches					Percent difference between computed and recorded runoff
			Precipitation (P)	Potential evapotranspiration (PET)	Water loss (L)	Natural runoff (R)		
						From streamflow records	Computed from equations[1]	
	COAST RANGES							
	NAPA RIVER DRAINAGE							
1	Napa River above gage near St. Helena	81.4	43	47.0	28	14.5	15.4	+6.2
2	Conn Creek above gage near St. Helena	53.2	37	48.0	29	8.4	9.0	+7.1
3	Dry Creek above gage near Napa	17.4	44	46.5	30	14.0	16.6	+18.6
4	Remaining drainage above Napa River gage near Napa	66.0	41	47.5	31	10.0	13.2	+32.0
	SONOMA CREEK DRAINAGE							
5	Sonoma Creek above gage at Boyes Hot Springs	62.2	45	45.5	32	13.2	18.0	+36.4
	PETALUMA RIVER DRAINAGE							
6	Petaluma River above gage at Petaluma	30.9	31	44.0	24	7.0	4.6	−34.3
	NOVATO CREEK DRAINAGE							
7	Novato Creek above gage near Novato	17.5	30	42.5	21	9.0	4.2	−53.3
	CORTE MADERA CREEK DRAINAGE							
8	Corte Madera Creek above gage at Ross	18.1	40	42.0	22	17.8	14.4	−19.1
	LAGUNITAS CREEK DRAINAGE							
9	Lagunitas Creek above mouth of Nicasio Creek	42.5	48	42.0	29	19.4	22.4	+15.5
10	Nicasio Creek above gage near Point Reyes station	36.2	38	41.5	24	14.0	12.6	−10.0
	WALKER CREEK DRAINAGE							
11	Walker Creek above gage near Tomales	37.1	40	41.5	24	15.7	14.6	−7.0
	RUSSIAN RIVER DRAINAGE							
12	Russian River above gage near Ukiah	99.7	46	43.0	23	22.8	20.0	−12.3
13	East Fork Russian River above gage near Ukiah	93.0	40	45.0	24	15.6	13.2	−15.4
14	Remaining drainage above Russian River gage near Hopland	169	47	43.0	32	14.8	21.0	+41.9
15	Feliz Creek above gage near Hopland	31.1	47	42.5	29	18.3	21.2	+15.8
16	Cummisky Creek above gage near Cloverdale	13.4	44	42.5	26	18.5	18.2	−1.6
17	Remaining drainage between Russian River gages near Hopland and Cloverdale	95.5	39	44.0	19	19.8	12.6	−36.4
18	Big Sulphur Creek above gage near Cloverdale	82.3	52	45.0	23	28.7	25.3	−11.8
19	Sausal Creek above gage near Healdsburg	11.2	47	45.0	24	22.9	20.2	−11.8
20	Maacama Creek above gage near Kellogg	43.4	56	46.0	31	25.4	28.9	+13.8
21	Franz Creek above gage near Kellogg	15.7	42	46.0	26	16.0	14.8	−7.5
22	Remaining drainage between Russian River gages near Cloverdale and Healdsburg	138	41	44.0	25	16.2	14.6	−9.9
23	Dry Creek above gage near Cloverdale	87.8	50	42.0	26	23.5	24.4	+3.8
24	Warm Springs Creek above gage at Skaggs Springs	32.7	54	42.0	25	28.6	28.5	−.4
25	Remaining drainage above Dry Creek gage near Geyserville	41.5	47	43.0	30	17.1	21.0	+22.8
26	Mill Creek above gage near Healdsburg	11.8	50	42.5	26	23.5	24.2	+3.0
27	Santa Rosa Creek above gage near Santa Rosa	12.5	48	44.5	29	19.4	21.4	+10.3
28	Remaining drainage between Russian River gages near Healdsburg and Guerneville	361	42	44.0	25	17.2	15.6	−9.3
29	Big Austin Creek above gage at Cazadero	26.5	70	41.0	22	48.3	44.9	−7.0
30	Remaining drainage above Austin Creek gage near Cazadero	36.6	61	41.5	27	34.2	35.7	+4.4
	GUALALA RIVER DRAINAGE							
31	South Fork Gualala River above gage near Annapolis	161	58	40.0	26	31.7	33.3	+5.0
32	North Fork Gualala River above gage near Gualala	39.2	67	39.5	19	47.8	42.5	−11.1
	GARCIA RIVER DRAINAGE							
33	Garcia River above gage near Point Arena	98.5	64	39.0	19	45.3	39.7	−12.4
	ALDER CREEK DRAINAGE							
34	Alder Creek above gage near Manchester	26.6	60	38.0	19	41.3	36.1	−12.6
	ELK CREEK DRAINAGE							
35	Elk Creek above gage near Elk	24.8	58	38.0	19	38.6	34.1	−11.7
	GREENWOOD CREEK DRAINAGE							
36	Greenwood Creek above gage at Elk	24.2	54	38.5	27	27.0	29.8	+10.4
	NAVARRO RIVER DRAINAGE							
37	Rancheria Creek above gage near Boonville	65.6	52	41.0	24	27.6	26.8	−2.9
38	Remaining drainage above Navarro River gage near Navarro	237	53	40.0	35	17.8	28.2	+58.4
	BIG RIVER DRAINAGE							
39	South Fork Big River above gage near Comptche	36.2	50	41.0	32	18.2	24.8	+36.3
40	Remaining drainage above Big River gage near Mendocino	116	53	40.0	36	16.6	28.2	+69.9
	NOYO RIVER DRAINAGE							
41	Noyo River above gage near Fort Bragg	106	56	39.0	32	24.4	31.6	+29.5
	TEN MILE RIVER DRAINAGE							
42	Middle Fork Ten Mile River above gage near Fort Bragg	33.3	58	39.0	24	33.8	33.7	−.3
43	North Fork Ten Mile River above gage near Fort Bragg	39.1	58	39.0	25	32.6	33.7	+3.4
44	South Fork Ten Mile River above gage near Fort Bragg	26.5	54	39.0	30	24.2	29.6	+22.3
	MATTOLE RIVER DRAINAGE							
45	Mattole River above gage near Petrolia	240	92	33.5	24	68.3	70.0	+2.5
46	North Fork Mattole River above gage at Petrolia	37.6	82	31.5	21	60.8	60.7	−.2
	BEAR RIVER DRAINAGE							
47	Bear River above gage at Capetown	78.3	75	31.5	18	56.8	53.7	−5.5
	EEL RIVER DRAINAGE							
48	Eel River above gage at Van Arsdale Dam	347	51	48.0	24	27.0	23.1	−14.4
49	Outlet Creek above mouth	162	57	42.0	21	36.4	31.5	−13.5
50	Remaining drainage into Eel River above mouth of Middle Fork	200	51	44.0	21	30.5	24.6	−19.3
51	Middle Fork Eel River below mouth of Black Butte River	367	60	47.0	25	35.2	32.5	−7.7
52	Middle Fork Eel River between Black Butte River and mouth	386	49	46.0	26	23.4	21.8	−6.8
53	North Fork Eel River above mouth	282	59	44.0	31	28.3	32.7	+15.5
54	Remaining drainage above Eel River gage at Alderpoint	335	56	41.0	31	25.0	30.9	+23.6
55	Eel River between gage at Alderpoint and mouth of South Fork	187	62	38.0	22	39.5	38.1	−3.5
56	South Fork Eel River above gage near Branscomb	43.9	79	39.5	27	52.1	54.5	+4.6
57	Tenmile Creek above mouth	65.8	66	40.5	25	41.3	41.1	−.5
58	Remaining drainage above South Fork gage near Miranda	427	70	38.0	25	45.2	46.1	+2.0
59	South Fork Eel River between gage near Miranda and mouth	152	76	36.0	22	54.4	52.9	−2.8
60	Eel River between mouth of South Fork and gage at Scotia	158	66	36.5	18	48.2	42.7	−11.4
61	Van Duzen River above mouth of South Fork	85.3	74	40.0	20	54.1	49.3	−8.9
62	South Fork Van Duzen River above mouth	58.2	75	39.0	20	55.4	50.7	−8.5
63	Van Duzen River between mouth of South Fork and gage near Bridgeville	70.5	67	37.0	22	45.0	43.5	−3.3
64	Yager Creek above mouth	135	60	35.0	21	38.9	37.3	−4.1
65	Remaining drainage into Van Duzen River above mouth	80.0	50	34.5	20	30.0	27.4	−8.7
66	Remaining drainage into Eel River above mouth	83.0	41	31.0	20	21.0	19.8	−5.7
	ELK RIVER DRAINAGE							
67	Elk River above gage near Falk	44.2	49	32.5	25	24.2	27.2	+12.4
	JACOBY CREEK DRAINAGE							
68	Jacoby Creek above gage near Freshwater	6.07	54	33.0	21	32.7	32.0	−2.1
	MAD RIVER DRAINAGE							
69	Mad River above gage near Forest Glen	144	60	43.0	28	32.3	34.1	+5.6
70	Mad River between gage near Forest Glen and mouth of North Fork	256	68	36.5	23	45.4	44.7	−1.5
71	North Fork Mad River above mouth	49.5	66	33.0	20	46.2	44.1	−4.5
72	Mad River between North Fork and gage near Arcata	35.5	55	32.0	20	34.9	33.4	−4.3
	LITTLE RIVER DRAINAGE							
73	Little River above gage at Crannell	44.3	65	32.0	23	41.5	43.5	+4.8
	REDWOOD CREEK DRAINAGE							
74	Redwood Creek above gage near Blue Lake	67.5	80	35.5	26	54.2	57.1	+5.4
75	Redwood Creek between gages near Blue Lake and at Orick	210.5	80	32.0	26	53.5	58.5	+9.3
	KLAMATH MOUNTAINS							
	TRINITY RIVER DRAINAGE							
76	Trinity River above gage at Lewiston	727	59	43.0	25	33.6	33.0	−1.8
77	Trinity River between gages at Lewiston and near Burnt Ranch	711	55	44.0	30	25.3	29.0	+14.6
78	Trinity River between gage near Burnt Ranch and mouth of South Fork	296	59	39.0	24	34.7	34.2	−1.4
79	South Fork Trinity River above mouth of Hayfork Creek	342	53	43.5	25	27.8	27.3	−1.8
80	Hayfork Creek above gage near Hayfork	87.2	47	46.0	29	18.0	20.9	+16.1
81	Hayfork Creek between gage near Hayfork and mouth	300	42	42.0	24	18.1	17.6	−2.8
82	South Fork Trinity River between Hayfork Creek and mouth	180	57	38.5	23	34.5	32.6	−5.5
83	Trinity River between South Fork and mouth	326	61	36.0	27	34.5	37.0	+7.2
	KLAMATH RIVER DRAINAGE							
84	Scott River above Callahan damsite	160	38	40.0	20	18.3	14.5	−20.8
85	Scott River between Callahan damsite and gage near Fort Jones	502	32	38.0	20	12.3	9.6	−22.0
86	Scott River between gage near Fort Jones and mouth	151	45	35.0	24	21.0	22.5	+7.1
87	Remaining drainage into Klamath River above gage near Seiad Valley	1,001	38	36.0	26	12.0	15.8	+31.7
88	Klamath River between gage near Seiad Valley and Happy Camp damsite	355	67	32.5	26	41.1	43.7	+6.3
89	Klamath River between Happy Camp damsite and mouth of Salmon River	399	77	32.5	24	53.2	53.0	−.4
90	South Fork Salmon River above mouth	290	50	39.0	21	29.2	25.9	−11.3
91	North Fork Salmon River above mouth	205	59	38.0	25	34.2	34.6	+1.2
92	Remaining drainage into Salmon River above mouth	256	63	35.5	25	37.7	39.1	+3.7
93	Klamath River between mouths of Salmon and Trinity Rivers	295	77	34.0	18	59.1	52.5	−11.2
94	Klamath River between Trinity River and mouth	351	92	31.5	25	67.3	67.2	−.1
	SMITH RIVER DRAINAGE							
95	Middle Fork above mouth of North Fork	130	100	30.0	26	74.3	75.0	+.9
96	North Fork above mouth	158	115	29.0	25	90.2	89.2	−1.1
97	South Fork above mouth	295	116	30.0	26	89.9	89.9	0
98	Remaining drainage into Smith River above gage near Crescent City	30	90	29.0	25	65.0	66.1	+1.7
99	Smith River between gage near Crescent City and mouth	106	90	28.5	25	65.0	66.3	+2.0

[1] Values in this column were produced by digital computer, using regression equations whose constants had been carried to 9 significant figures. These constants have been rounded in equations 4 and 5, and consequently runoff values computed by equations 4 and 5 may differ, in the last significant figure, from those shown in the table.



MAP OF AVERAGE ANNUAL EVAPORATION FROM WATER SURFACES
(AFTER KOHLER AND OTHERS, 1959)



MAP OF AVERAGE ANNUAL RUNOFF

Base from U.S. Geological Survey State Base Map, 1954

SCALE 1:1 000 000
20 0 20 40 60 MILES
20 0 20 40 60 KILOMETERS

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AVERAGE ANNUAL PRECIPITATION AND RUNOFF IN NORTH COASTAL CALIFORNIA

By
S. E. Rantz

1968

For sale by U.S. Geological Survey, price 75 cents
Explanatory pamphlet accompanies map