TECHNICAL DATA NOTEBOOK

Volume III
Hydrologic Analysis

for

SWEAT CANYON WASH
FLOOD INSURANCE STUDY

January,1999

Prepared for:

Federal Emergency Management Agency
Risk Studies Division
Federal Insurance Administration
500 C Street, SW Room 422
Washington, DC 20472

Submitted by:

David Evans and Associates, Inc.
7878 North 16th Street, Suite 250
Phoenix, Arizona 85020
(602) 678-5151

on behalf of:
Maricopa County Flood Control District
2801 West Durango Street
Phoenix, AZ 85009
(602) 506-1501

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Registered Professional Engineer (Civil)
CERTIFICATE NO.
30013
TERI S.
MINTZ
Date Signed 12/14/98
ARIZONA, U.S.A.

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Registered Professional Engineer (Civil)
CERTIFICATE NO. 30918
TERI S. MINTZ
Date Signed 5/26/99
ARIZONA, U.S.A.

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Registered Professional Engineer (Civil)
CERTIFICATE NO.
30013
TERI S.
MINTZ
Date Signed 5/26/99
ARIZONA, U.S.A.

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Registered Professional Engineer (Civil)
CERTIFICATE NO.
30013
TERI S.
MINTZ
Date Signed 3/1/99
ARIZONA, U.S.A.

SECTION 4: HYDROLOGIC ANALYSIS

4.1 Method description

The Army Corps of Engineers' HEC-1 computer program was utilized to estimate peak flow rate. Dodson's ProHEC1 Plus, version 4.0.1PF, April 1996 allows for 2000 time intervals to insure the entire hydrograph is analyzed. The hydrographs were generated using the S-graph method, rainfall losses were determined applying Green and Ampt methodology, and Normal Depth Routing was the mechanism utilized for hydrograph routing. The 100-year, 6-hour and 100-year, 24-hour storms were both analyzed to determine the highest peak discharge for the study area.

4.2 Parameter estimation

4.2.1 Drainage area boundaries

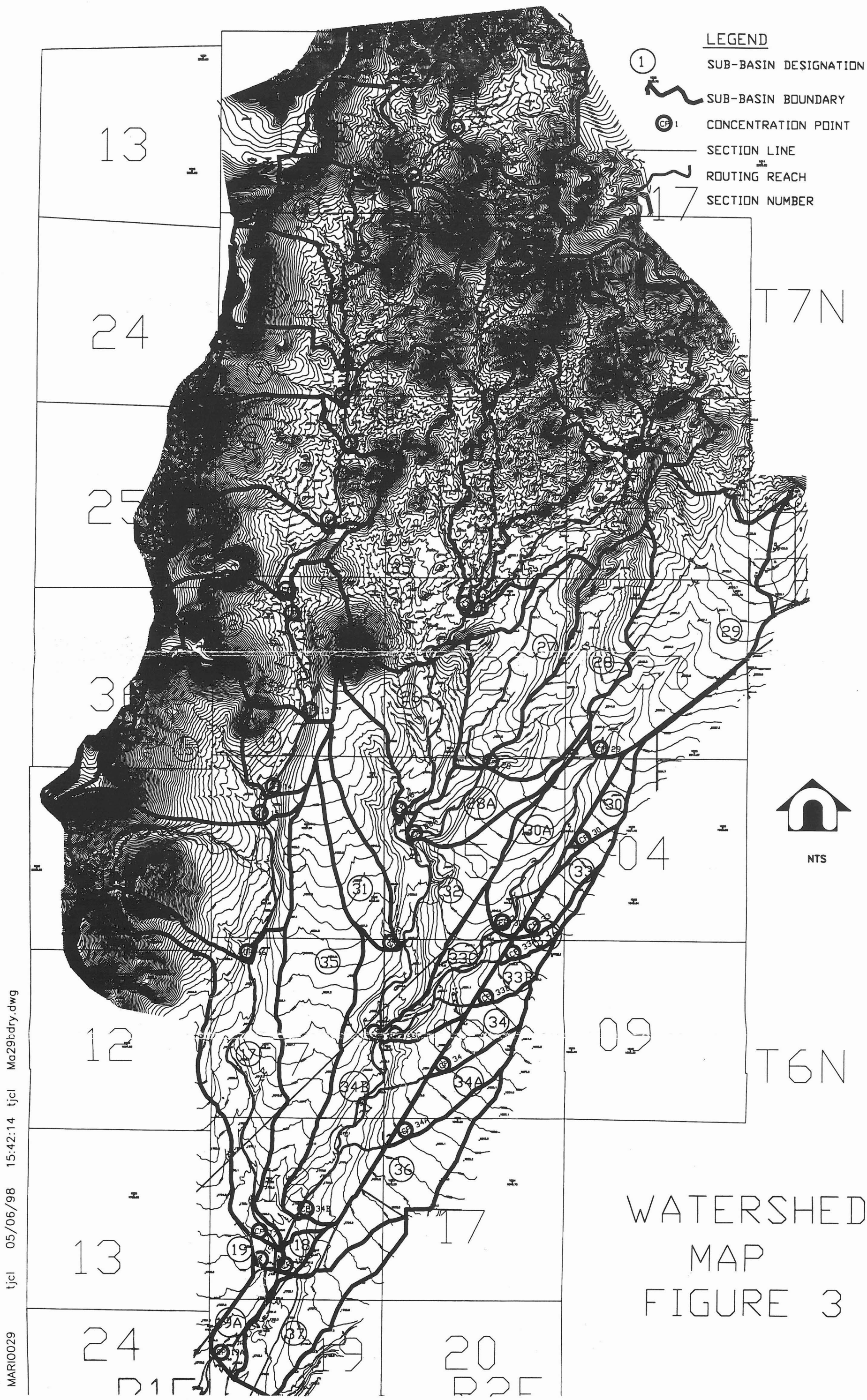
The watershed encompasses approximately 15.5 square miles. The area is semi-arid desert with sparse vegetation. The watershed is composed of steep and moderately steep mountains and less steep areas primarily used for rangeland. The general soil characteristics consist of rock outcrops on the hills and mountain slopes and gravely, loamy and clayey soils on the slopes and rangeland areas.

The drainage area boundaries for the Sweat Canyon watershed were determined from the aerial mapping which was part of this study. Figure 3, located on the following page, illustrates the watershed and sub-basin boundaries. Four wash segments were analyzed as part of this study. The main Sweat Canyon Wash watershed includes sub-basins 1-19A and 35. Sub-basins 22-24 form the drainage area for the half mile East Fork Doe Peak Wash. Sub-basins 29, 30, 30A, 33, and 33A-C form the watershed for South Fork Doe Peak Wash. The remaining sub-basins contribute runoff to the four and a half miles of the delineated Doe Peak Wash.

East Fork Doe Peak Wash is a smaller wash that feeds into the major Doe Peak Wash at concentration point (CP) 21. South Fork Doe Peak Wash joins the larger Doe Peak Wash at CP32. Doe Peak Wash combines with the major Sweat Canyon Wash approximately 500 feet upstream of Lake Pleasant Road. Figure 4, located on the following page, shows a more detailed depiction of the routing characteristics

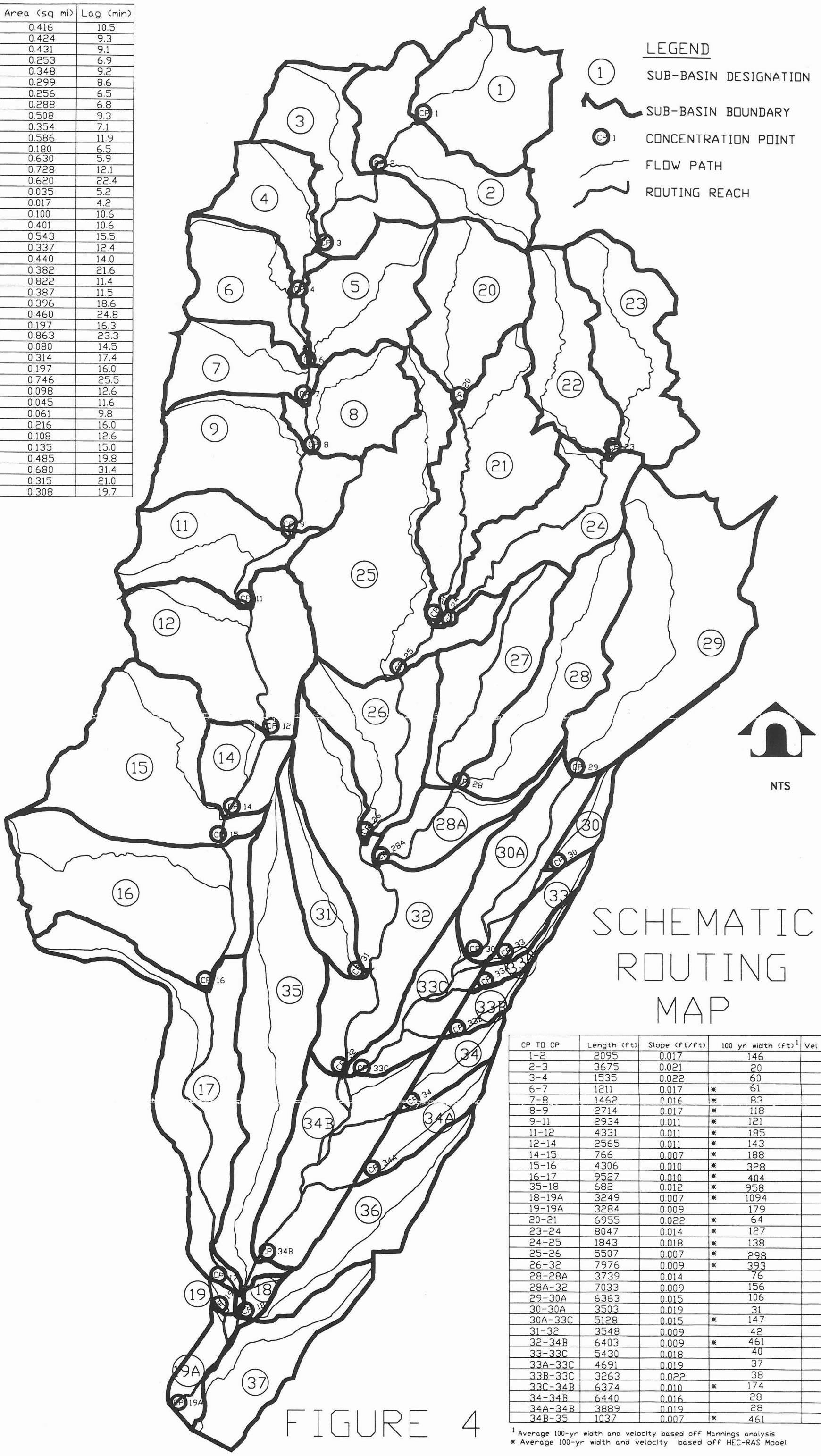
4.2.2 Watershed work maps

Exhibit A, located in a back pocket, 1"=1000' depicts the sub-basins, routing reaches, Tc flow paths, and concentration points. Exhibit D, also located in a back pocket, is a 1"=500' scale drawing of Exhibit A. Exhibit D is a working map included for reference. Detailed information is referenced in various tables in Section 4.2.6. Exhibit B, located in a back pocket, is a 1"=1000' map that depicts the soils types for the entire watershed. Exhibit C, also located in a back pocket and at 1"=1000' scale, shows the land uses in the watershed.



WATERSHED MAP
FIGURE 3

SUB-BASIN #	Area (sq mi)	Lag (min)
1	0.416	10.5
2	0.424	9.3
3	0.431	9.1
4	0.253	6.9
5	0.348	9.2
6	0.299	8.6
7	0.256	6.5
8	0.288	6.8
9	0.508	9.3
11	0.354	7.1
12	0.586	11.9
14	0.180	6.5
15	0.630	5.9
16	0.728	12.1
17	0.620	22.4
18	0.035	5.2
19	0.017	4.2
19A	0.100	10.6
20	0.401	10.6
21	0.543	15.5
22	0.337	12.4
23	0.440	14.0
24	0.382	21.6
25	0.822	11.4
26	0.387	11.5
27	0.396	18.6
28	0.460	24.8
28A	0.197	16.3
29	0.863	23.3
30	0.080	14.5
30A	0.314	17.4
31	0.197	16.0
32	0.746	25.5
33	0.098	12.6
33A	0.045	11.6
33B	0.061	9.8
33C	0.216	16.0
34	0.108	12.6
34A	0.135	15.0
34B	0.485	19.8
35	0.680	31.4
36	0.315	21.0
37	0.308	19.7



SCHEMATIC ROUTING MAP

CP TO CP	Length (ft)	Slope (ft/ft)	100 yr width (ft)[1]	Vel (fps)[1]
1-2	2095	0.017	146	3
2-3	3675	0.021	20	11
3-4	1535	0.022	60	10
6-7	1211	0.017	* 61	12
7-8	1462	0.016	* 83	11
8-9	2714	0.017	* 118	11
9-11	2934	0.011	* 121	10
11-12	4331	0.011	* 185	10
12-14	2565	0.011	* 143	8
14-15	766	0.007	* 188	11
15-16	4306	0.010	* 328	10
16-17	9527	0.010	* 404	9
35-18	682	0.012	* 958	7
18-19A	3249	0.007	* 1094	7
19-19A	3284	0.009	179	1
20-21	6955	0.022	* 64	8
23-24	8047	0.014	* 127	9
24-25	1843	0.018	* 138	9
25-26	5507	0.007	* 298	8
26-32	7976	0.009	* 393	8
28-28A	3739	0.014	76	8
28A-32	7033	0.009	156	5
29-30A	6363	0.015	106	6
30-30A	3503	0.019	31	4
30A-33C	5128	0.015	* 147	8
31-32	3548	0.009	42	5
32-34B	6403	0.009	* 461	8
33-33C	5430	0.018	40	4
33A-33C	4691	0.019	37	3
33B-33C	3263	0.022	38	4
33C-34B	6374	0.010	* 174	7
34-34B	6440	0.016	28	5
34A-34B	3889	0.019	28	5
34B-35	1037	0.007	* 461	8

[1] Average 100-yr width and velocity based off Mannings analysis
* Average 100-yr width and velocity based off HEC-RAS Model

FIGURE 4

4.2.3 Gage Data

There were no gage stations located on Sweat Canyon Wash or the other smaller tributaries. However, there is one stream-gaging station on New River, located near Rock Springs (#09513780). This gaging station was considered as part of the New River Flood Insurance Study which is the tie-in for the Sweat Canyon Wash FIS. At the time of the New River Flood Insurance Study, there existed another stream-gaging station (#09513800) on the bridge in New River. This station appears to have been removed with the construction of the new bridge.

4.2.4 Statistical parameters

There was no precipitation data for the Sweat Canyon Wash watershed; therefore, Bulletin 17B was not utilized for estimating peak discharges for this study, e.g. log-Pearson Type III analyses.

4.2.5 Precipitation

Rainfall depth for the 100-year, 6-hour storm of 3.4 inches was determined from Figure 2.7 NOAA Atlas 2, Volume III from the Drainage Design Manual for Maricopa County, Volume I Hydrology. The rainfall depth for the 100-year, 24-hour storm of 4.6 inches was determined from Figure 2.13 NOAA Atlas 2. A copy of the Figures is included in Appendix D.

Depth-area reduction factors were utilized in the two models to define the rainfall duration and the temporal distribution of the general storm. The depth-area reduction factors were determined from Tables 2.1a and 2.2 of the Design Manual Volume I Hydrology. The total watershed area for the study is 15.52 square miles. JD records were incorporated in the HEC-1 models to areally reduce the point rainfall data based on the size of the contributing watershed at a particular concentration point.

The rainfall pattern for the 6-hour storm was determined to be 3.00 as determined from Figure 2.17 from Volume I Hydrology. A copy is included in Appendix D for reference. The 24-hour storm used a 24-hour SCS Type II rainfall pattern.

4.2.6 Physical parameters

The Phoenix Mountain and Desert/Rangeland S-graphs prepared for Maricopa County were used to generate the unit hydrographs. The percentages of ultimate discharge verses time in percentage of lag are encoded in the FCDMC Drainage Design Menu System (DDMS). The watercourse length and slope of each sub-basin were incorporated into the hydrograph generation. These values are listed below in Table 4.2.6.1. Kn values were based on sub-basin gradient and degree of connected impervious areas. For areas with steep mountainous slopes and rock outcropping, 0.05 was used and 0.03 for the sub-basins characterized primarily with foothills. A 0.04 value was used for steep grades with little rock outcropping and 0.025 for Desert/Rangeland areas. It should be noted that DDMS rounds the Kn values to two decimal points.

SUB-BASIN CHARACTERISTICS
TABLE 4.2.6.1

Sub-Basin #	High Elevation	Low Elevation	Length (mi)	Slope (ft/mi)	Lca (mi)
1	2450	2250	0.90	222.2	0.40
2	2790	2215	1.08	532.4	0.38
3	2690	2136	1.38	401.4	0.39
4	2725	2102	1.10	566.4	0.28
5	2660	2062	1.14	524.6	0.55
6	2760	2062	1.46	478.1	0.35
7	2500	2041	1.08	425.0	0.21
8	2350	2018	0.93	357.0	0.25
9	2855	1983	1.38	631.9	0.32
11	2560	1951	1.21	503.3	0.26
12	2546	1906	1.41	453.9	0.51
14	2182	1879	0.76	398.7	0.29
15	2550	1874	1.29	524.0	0.15
16	2860	1832	2.06	499.0	0.61
17	2730	1738	2.64	375.8	1.30
18	1776	1730	0.40	115.0	0.10
19	1760	1737	0.22	104.5	0.10
19A	1753	1707	0.70	65.7	0.29
20	2670	2101	1.24	458.9	0.69
21	2563	1948	2.02	304.5	0.94
22	2790	2060	1.55	471.0	0.85
23	2660	2060	1.73	346.8	0.89
24	2144	1948	1.78	110.1	0.95
25	2360	1914	2.17	205.5	0.32
26	2418	1877	1.17	462.4	0.57
27	2112	1918	1.57	123.6	0.77
28	2172	1920	2.53	99.6	0.92
28A	2008	1868	1.42	98.6	0.54
29	2186	1982	1.92	106.2	1.06
30	2065	1952	1.36	83.1	0.38
30A	2016	1887	1.37	94.2	0.65
31	1982	1836	1.34	109.0	0.57
32	2182	1805	2.50	150.8	1.23
33	1984	1909	0.85	88.2	0.43
33A	1964	1897	0.81	82.7	0.35
33B	1927	1881	0.62	74.2	0.28
33C	1930	1810	1.21	99.2	0.60
34	1907	1849	0.79	73.4	0.42
34A	1891	1820	1.01	70.3	0.51
34B	1882	1745	1.62	84.6	0.73
35	1970	1738	2.82	82.3	1.39
36	1874	1739	1.67	80.8	0.81
37	1806	1707	1.45	68.3	0.72

The rainfall losses were calculated based on the Green and Ampt Loss procedure. The surface retention loss values (IA) used in the hydrologic analysis were 0.35 for Desert/Rangeland and 0.15 for Hillslopes/Mountains. The volumetric soil moisture deficit (DTHETA), wetting front capillary suction (PSIF), and the hydraulic conductivity at natural saturation (XSAT) were calculated within the Drainage Design Menu System (DDMS) program. The DDMS computer program was developed by MCFCD, January 1995, which incorporates several County programs that calculate precipitation, rainfall losses, and hydrographs based on input parameters. The soil parameters used in the DDMS calculations were derived from the soil classifications determined from the *Soil Conservation Service (SCS) Soil Survey of Aguila-Carefree Area, Parts of Maricopa and Pinal Counties, AZ* (1986). The soil type by map symbol for each sub-basin is shown below in Table 4.2.6.2. Exhibit B indicates the soil designations within each sub-basin. The DDMS input parameters and resulting output for the basin characteristics is located in Appendix D.2

Normal Depth Routing was the chosen methodology utilized for routing flows through the collector channels and the main channels. The eight point cross sections were determined from either field visits or topography generated from aerial mapping. The routing parameters are listed below in Table 4.2.6.3. The field notes used for routing purposes are located in Appendix D.3. The locations of the cross sections and routing paths are shown on Exhibits A and D.

Several culverts are present within the watershed. A majority of the culverts contain minor to significant amounts of sediment. Stage/discharge calculations were prepared to establish their impact on the routed flow. Rating tables reflecting the inlet and outlet conditions, and the amount of sediment are located in Appendix D.4. The stage/discharge information was incorporated into the HEC-1 models for each culvert, reflecting their impact on the peak discharges.

The number of time steps used on the HEC-1 RS records is based on the average velocity through the reach. The HEC-RAS model was the basis for determining average velocities for the portion of the washes that were delineated as part of this study. A Mannings analysis was used for all other reaches. Tabular results of the time step values are shown below in Table 4.2.6.4. The Manning's analyses are located in Appendix D.3.

The Sweat Canyon watershed is presently undeveloped. The land use classification for the watershed is vacant. The State Land portions of the watershed are leased for purposes of cattle grazing.

Transmission losses were determined for portions of Sweat Canyon Wash. The SCS Aguila/Carefree Soil Survey was utilized to determine the depth of water in a soil profile and the rate as which water will travel through the profile. Transmission losses were calculated for the routing reaches with the most significant flows, i.e., the most downstream reaches. The analysis utilized the average 6-hour flow rate and the soil characteristics present in that specific reach. The *Estimate of Transmission Loss* report and the Mannings analysis used in the determination of flow width are found in Appendix D.4. Table 4.2.6.5, shown below, summaries the rate of loss (Qloss in cfs). The losses were found to be so minor in these reaches, that additional analyses were deemed to be unnecessary. As a result, transmission losses were not considered in the hydrology.

SUB-BASIN SOIL TYPES
TABLE 4.2.6.2

Sub-Basin #	Sub-Basin Area (sq mi)	Soil #	Soil Area (acres)	Percentage
1	0.416	31	100	37.5
		34	73.5	27.6
		37	17	6.4
		40	53	19.9
		66	11	4.1
		72	4	1.5
		93	8	3.0
			266.5	100.0
2	0.424	31	159	58.7
		37	1	0.4
		40	39	14.4
		72	45	16.6
		93	27	10.0
			271	100.0
3	0.431	28	98	35.5
		31	115	41.7
		40	3	1.1
		72	28	10.1
		93	32	11.6
			276	100.0
4	0.253	28	124	76.5
		31	11	6.8
		41	23	14.2
		72	4	2.5
			162	100.0
5	0.348	31	222	99.6
		63	1	0.4
			223	100.0
6	0.299	28	11	5.7
		31	15	7.8
		41	108	56.3
		72	48	25.0
		93	10	5.2
			192	100.0
7	0.256	31	7	4.3
		41	109	66.5
		45	2	1.2
		72	31	18.9
		93	15	9.1
			164	100.0

Sub-Basin #	Sub-Basin Area (sq mi)	Soil #	Soil Area (acres)	Percentage
8	0.288	31	73	39.7
		34	22	12.0
		41	2	1.1
		45	12	6.5
		63	41	22.3
		93	34	18.5
			184	100.0
9	0.508	13	16	4.9
		31	34.5	10.6
		41	135	41.5
		45	96	29.5
		49	25.5	7.8
		72	18	5.5
		93	0	0.0
			325	100.0
11	0.354	13	131	57.7
		31	2	0.9
		45	32	14.1
		49	13	5.7
		72	49	21.6
			227	100.0
12	0.586	13	191	50.9
		49	8	2.1
		52	56	14.9
		72	78	20.8
		98	37	9.9
		110	5	1.3
			375	100.0
14	0.180	13	31	27.0
		52	24	20.9
		98	41	35.7
		110	19	16.5
			115	100.0
15	0.630	12	39	9.7
		13	115	28.5
		40	40	9.9
		52	19	4.7
		72	152	37.6
		98	13	3.2
		110	26	6.4
			404	100.0

Sub-Basin #	Sub-Basin Area (sq mi)	Soil #	Soil Area (acres)	Percentage
16	0.728	12	135	29.0
		45	33	7.1
		72	234	50.2
		98	48	10.3
		110	16	3.4
			466	100.0
17	0.620	12	101	25.4
		13	52	13.1
		45	19	4.8
		72	44	11.1
		98	96	24.1
		110	60	15.1
		112	26	6.5
			398	100.0
18	0.035	12	0	0.0
		98	13	59.1
		110	9	40.9
			22	100.0
19	0.017	12	1	8.3
		98	10	83.3
		112	1	8.3
			12	100.0
19A	0.100	12	18	28.1
		98	46	71.9
			64	100.0
20	0.401	31	84	32.7
		34	9	3.5
		41	92	35.8
		40	40	15.6
		63	32	12.5
			257	100.0
21	0.543	31	12	3.4
		34	12	3.4
		41	41	11.8
		49	2	0.6
		98	20	5.7
		109	248	71.3
		110	13	3.7
			348	100.0

Sub-Basin #	Sub-Basin Area (sq mi)	Soil #	Soil Area (acres)	Percentage
22	0.337	31	10	4.6
		34	4	1.9
		41	149	69.0
		40	40	18.5
		109	13	6.0
			216	100.0
23	0.440	12	2.5	0.9
		13	2	0.7
		31	26	9.2
		34	10.5	3.7
		40	85	30.1
		41	156	55.3
			282	100.0
24	0.382	13	25	10.2
		34	62	25.3
		44	25	10.2
		98	88	35.9
		109	45	18.4
			245	100.0
25	0.822	13	45	8.6
		31	98	18.7
		34	33	6.3
		44	15	2.9
		49	158	30.1
		52	54	10.3
		63	14	2.7
		68	20	3.8
		98	44	8.4
		109	14	2.7
		110	30	5.7
			525	100.0
26	0.387	13	10	4.0
		44	85	34.3
		52	27	10.9
		98	119	48.0
		110	7	2.8
			248	100.0

Sub-Basin #	Sub-Basin Area (sq mi)	Soil #	Soil Area (acres)	Percentage
27	0.396	13	21	8.3
		44	129	50.8
		52	1	0.4
		68	25	9.8
		98	3	1.2
		110	75	29.5
			254	100.0
28	0.460	13	146	49.7
		44	79	26.9
		68	0	0.0
		98	35	11.9
		110	34	11.6
			294	100.0
28A	0.197	13	33	26.2
		44	63	50.0
		98	1	0.8
		110	29	23.0
			126	100.0
29	0.863	13	259	47.0
		45	34	6.2
		48	43	7.8
		68	8	1.5
		98	77	14.0
		110	130	23.6
			551	100.0
30	0.080	13	49	96.1
		110	2	3.9
			51	100.0
30A	0.314	13	54	26.9
		98	46	22.9
		110	101	50.2
			201	100.0
31	0.197	12	1	0.8
		44	1	0.8
		98	2	1.6
		110	123	96.9
			127	100.0

Sub-Basin #	Sub-Basin Area (sq mi)	Soil #	Soil Area (acres)	Percentage
32	0.746	12	11	2.3
		13	86	18.0
		44	116	24.3
		52	3	0.6
		98	102	21.4
		110	159	33.3
			477	100.0
33	0.098	13	42	66.7
		110	21	33.3
			63	100.0
33A	0.045	12	1	3.6
		13	27	96.4
			28	100.0
33B	0.061	12	3	7.7
		13	36	92.3
			39	100.0
33C	0.216	13	60	43.5
		44	7	5.1
		98	43	31.2
		110	28	20.3
			138	100.0
34	0.108	12	10	14.5
		13	59	85.5
			69	100.0
34A	0.135	12	65	75.6
		13	21	24.4
			86	100.0
34B	0.485	12	16	5.1
		13	115	36.7
		44	8	2.6
		98	64	20.4
		110	110	35.1
			313	100.0
35	0.680	12	124	28.5
		13	81	18.6
		98	25	5.7
		110	205	47.1
			435	100.0

Sub-Basin #	Sub-Basin Area (sq mi)	Soil #	Soil Area (acres)	Percentage
36	0.315	12	187	92.6
		13	12	5.9
		110	3	1.5
			202	100.0
37	0.308	12	173	87.8
		98	24	12.2
			197	100.0

ROUTING CHARACTERISTICS
TABLE 4.2.6.3

From CP	To CP	Hi Elev	Low Elev	L (ft)	S (ft/ft)	'n' Chan/OB	Source of topo*	x' values y' values
1	2	2250	2215	2095	0.017	.08/.10	Topo	0,55,80,200,320,370,485,595
							dwg	30,20,10,0,0,10,20,30
2	3	2215	2136	3675	0.021	.05/.07	Field ck	0,2,14,22,28,43,58,60
							#2	21,19,13,0,0,15,31,35
3	4	2136	2102	1535	0.022	.05/.07	Topo	0,15,27,46,59,70,85,95
							dwg	10,8,4,0,0,2,6,10
6	7	2062	2041	1211	0.017	.05/.07	Topo	0,13,25,41,57,73,84,95
							dwg	18,12,6,0,0,6,10,14
7	8	2041	2018	1462	0.016	.05/.07	Field ck	0,5,27,50,67,95,113,121
							#4	21,15,12,0,0,14,15,21
8	9	2018	1983	2714	0.013	.05/.07	Topo	0,25,65,93,112,127,176,203
							dwg	24,14,4,0,0,4,14,18
9	11	1983	1951	2934	0.011	.05/.07	Field ck	0,8,48,54,76,92,122,132
							#5	14,4,4,0,0,8,8,14
11	12	1951	1906	4331	0.011	.05/.07	Field ck	0,15,65,75,96,121,151,166
							#6	38,13,13,0,0,4.5,4.5,12.5
12	14	1906	1879	2565	0.011	.05/.06	Topo	0,20,40,82,123,143,169,197
							dwg	14,8,2,0,0,2,6,10
14	15	1879	1874	766	0.007	.04/.05	Field ck	0,30,36,56,86,100,200,210
							#7	34,9,9,0,0,6,6,16
15	16	1874	1832	4306	0.010	.04/.05	Field ck	0,20,170,185,196,201,251,276
							#8	26.5,6.5,6.5,0,0,6,6,10.5
16	17	1832	1738	9527	0.010	.05/.06	Topo	0,7,10,16,27,94,136,202
							dwg	15,10,4,0,0,6,5,10
35	18	1738	1730	682	0.012	.05/.07	Topo	0,170,520,542,560,595,745,1020
							dwg	24,10,8,2,0,6,8,12
18	19A	1730	1707	3249	0.007	.05/.06	Top	**0,580,870,965,1130,1275,1320,1665**
							dwg	8,2,4,0,2,0,8,12
19	19A	1737	1707	3284	0.009	.05/.06	Topo	0,70,80,255,300,340,380,430
							dwg	3,2,0,0,2,4,6,8

From CP	To CP	Hi Elev	Low Elev	L (ft)	S (ft/ft)	'n' Chan/OB	Source of topo*	x' values y' values
20	21	2101	1948	6955	0.022	.05/.07	Field ck	0,2,12,72,76,146,156,158
							#10	13,11,11,0,0,13,13,15
23	24	2060	1948	8047	0.014	.05/.06	Field ck	0,15,30,45,61,66,166,181
							#11	40,25,10,0,0,4,4,19
24	25	1948	1914	1843	0.018	.05/.06	Topo	0,45,65,80,110,120,175,200
							dwg	10,4,2,0,0,2,4,6
25	26	1914	1877	5507	0.007	.04/.05	Field ck	0,2,22,77,98,148,168,170
							#14	13,12,9,0,0,15,17,17
26	32	1877	1805	7976	0.009	.04/.05	Field ck	0,100,200,204,238,258,358,360
							#19	17,2,2,0,0,8,17,18
28	28A	1920	1868	3739	0.014	.04/.05	Topo	0,52,67,82,98,116,143,190
							dwg	6,4,2,0,0,4,6,8
28A	32	1868	1805	7033	0.009	[illegible]	Field ck	0,100,200,204,238,258,358,360
							#19	17,2,2,0,0,8,17,18
29	30A	1982	1887	6363	0.015	.05/.06	Field ck	0,20,60,61,71,73,133,153
							#17	8,7,1,0,0,2,4,6
30	30A	1952	1887	3503	0.019	.05/.07	Field ck	0,20,60,61,71,73,133,153
							#17	8,7,1,0,0,2,4,6
30A	33C	1887	1810	5128	0.015	.05/.07	Field ck	0,100,200,204,238,258,358,360
							#18	17,2,2,0,0,8,17,18
31	32	1836	1805	3548	0.009	.04/.05	Field ck	0,100,200,204,238,258,358,360
							#19	17,2,2,0,0,8,17,18
32	34B	1805	1745	6403	0.009	.05/.06	Topo	0,23,30,44,52,159,266,324
							dwg	13,11,9,0,0,9,10,13
33	33C	1909	1810	5430	0.018	.05/.07	Field ck	0,100,200,204,238,258,358,360
							#18	17,2,2,0,0,8,17,18
33A	33C	1897	1810	4691	0.019	.05/.07	Field ck	0,100,200,204,238,258,358,360
							#18	17,2,2,0,0,8,17,18
33B	33C	1881	1810	3263	0.022	.05/.07	Field ck	0,100,200,204,238,258,358,360
							#18	17,2,2,0,0,8,17,18
33C	34B	1810	1745	6374	0.010	.05/.06	Field ck	0,16,216,216,241,247,307,327
							#20	18,10,10,0,0,3,6,9
34	34B	1849	1745	6440	0.016	.05/.06	Field ck	0,16,216,216,241,247,307,327
							#20	18,10,10,0,0,3,6,9
34A	34B	1820	1745	3889	0.019	.05/.06	Field ck	0,16,216,216,241,247,307,327
							#20	18,10,10,0,0,3,6,9
34B	35	1745	1738	1037	0.007	.05/.06	Topo	0,74,119,201,207,265,400,630
							dwg	9,7,5,0,0,5,7,9

Cross section locations shown on Exhibit A

TIME STEP CALCULATIONS FOR HEC-1 RS RECORDS
TABLE 4.2.6.4

From CP To CP	L (ft)	V (ft/s) [1]	dt **	NSTPS=L/(V x dt x 60)
1-2	2095	4	5	2
2-3	3675	10	5	1
3-4	1535	10	5	1
4-6	2182	12	5	1
6-7	1211	13*	5	1
7-8	1462	11*	5	1
8-9	2714	11*	5	1
9-11	2934	11*	5	1
11-12	4331	10*	5	1
12-14	2565	9*	5	1
14-15	766	11*	5	1
15-16	4306	10*	5	2
16-17	9527	9*	5	4
18-19A	3249	8*	5	1
19-19A	3284	1	5	11
20-21	6955	8*	5	3
23-24	8047	9*	5	3
24-25	1843	10*	5	1
25-26	5507	8*	5	2
26-32	7976	9*	5	3
28-28A	3739	8	5	2
28A-32	7033	5	5	5
29-30A	6363	6	5	4
30-30A	3503	4	5	3
30A-33C	5128	6	5	3
31-32	3548	3	5	4
32-34B	6403	9*	5	2
33-33C	5430	4	5	5
33A-33C	4691	3	5	5
33B-33C	3263	4	5	3
33C-34B	6374	9*	5	2
34-34B	6440	5	5	4
34A-34B	3889	6	5	2
34B-35	1037	5*	5	1
35-18	682	9*	5	1

[1] Based on Mannings analysis
* Average velocity from HEC-RAS model
** Time interval in minutes on IT record, field 1

TRANSMISSION LOSSES
TABLE 4.2.6.5

CP TO CP [1]	Q_{avg}(cfs) [2]	TOP WIDTH (ft) [3]	L (ft)	A (acres) [4]	Q rate	Qloss
11 to 12	688	74.00	4331	7.36	0.033	0.24
35 to 18	2690	200.00	682	3.13	0.044	0.14
18 to 19A	2767	310.00	3249	23.12	0.044	1.02
34B to 35	1413	103.00	1037	2.45	0.044	0.11

[1] Analyzed routing reaches with largest flows
[2] Average 6-hour flow for routing reach (HEC-1 output)
[3] Based on Mannings analysis
[4] Area of channel inundated by average 6-hour flow

4.3 Problems encountered during the study

4.3.1 Special problems and solutions

As previously discussed, the Sweat Canyon Wash FIS ties into the New River FIS. The New River FIS utilized the 100-year, 24-hour storm event. The peak discharge at the uppermost cross section (4.129) of Sweat Canyon Wash was determined to be 12,400 cfs in the effective HEC-2. The Sweat Canyon Wash FIS study found the 100-year, 24-hour peak discharge at the same location was 13,034 cfs.

It should be noted that there were several differences in the modeling techniques between the two studies. The first difference was that Depth/Area relationships were used in this study. The New River FIS used the same areal reduction factor for the entire New River study. The assumption of using the New River areal reduction factor of .94, which is based on a 77 square mile area, for the much smaller Sweat Canyon watershed was incorrect. Other variations between the studies are the differences in methods for determining losses and the routing of flows. The New River study used Curve numbers and Muskingum/Kinematic Wave routing compared to Green and Ampt method and Normal Depth Routing used in the Sweat Canyon Wash FIS.

Special routing methods were required due to culverts under Lake Pleasant Road. Some of the culverts contained large amounts of sediment. Stage/Storage/Discharge analyses were determined at these crossings to address the clogging. Photos and rating curves are located in Appendix D.4 which depict current conditions.

The public notification that is required as part of this study was advertised in two local newspapers. One notification was published in the Arizona Business Gazette November 13th and 20th, 1998. The second notification was requested of the Desert Advocate, however after almost four months of requests by DEA that went unanswered by the newspaper, a discussion was made to advertise the study in another paper-the Sonoran News. The notifications were finally run in the March 11th and 25th, 1998 editions.

4.3.2 Modeling warning and error messages

The only warning given in the HEC-1 models was *Modified Puls Routing may be numerically unstable for outflows. The routed hydrograph should be examined for oscillations or outflow greater than peak inflows.* This is a common warning when using the Normal Depth and stage/storage/discharge routing methods. The output was examined to determine if oscillations occurred or if routed peak flows increased and it was determined that this did not occur.

4.4 Calibration

No calibration was attempted because the 100-year values correlated well with the method for estimating the magnitude of the flood (Section 4.5.2) and the tie-in value with the New River FIS.

4.5 Final results

4.5.1 Hydrologic analysis results

The 100-year, 24-hour HEC-1 model resulted in a peak discharge (13,034 cfs) similar to the discharge used in the floodplain delineation for the New River Flood Insurance Study (12,400 cfs). The methods utilized for the Sweat Canyon FIS to generated hydrographs, calculating rainfall losses, and routing flows are different from those used in the New River FIS, however, these methods are the current standards for Maricopa County Flood Control District. The 6-hour storm was also analyzed and resulted in a peak discharge of 11,090 cfs. A summary of the peak discharges, time of peak, and volume is located below in Table 4.5.1.1. The 24-hour peak discharges are used in the Sweat Canyon floodplain delineation.

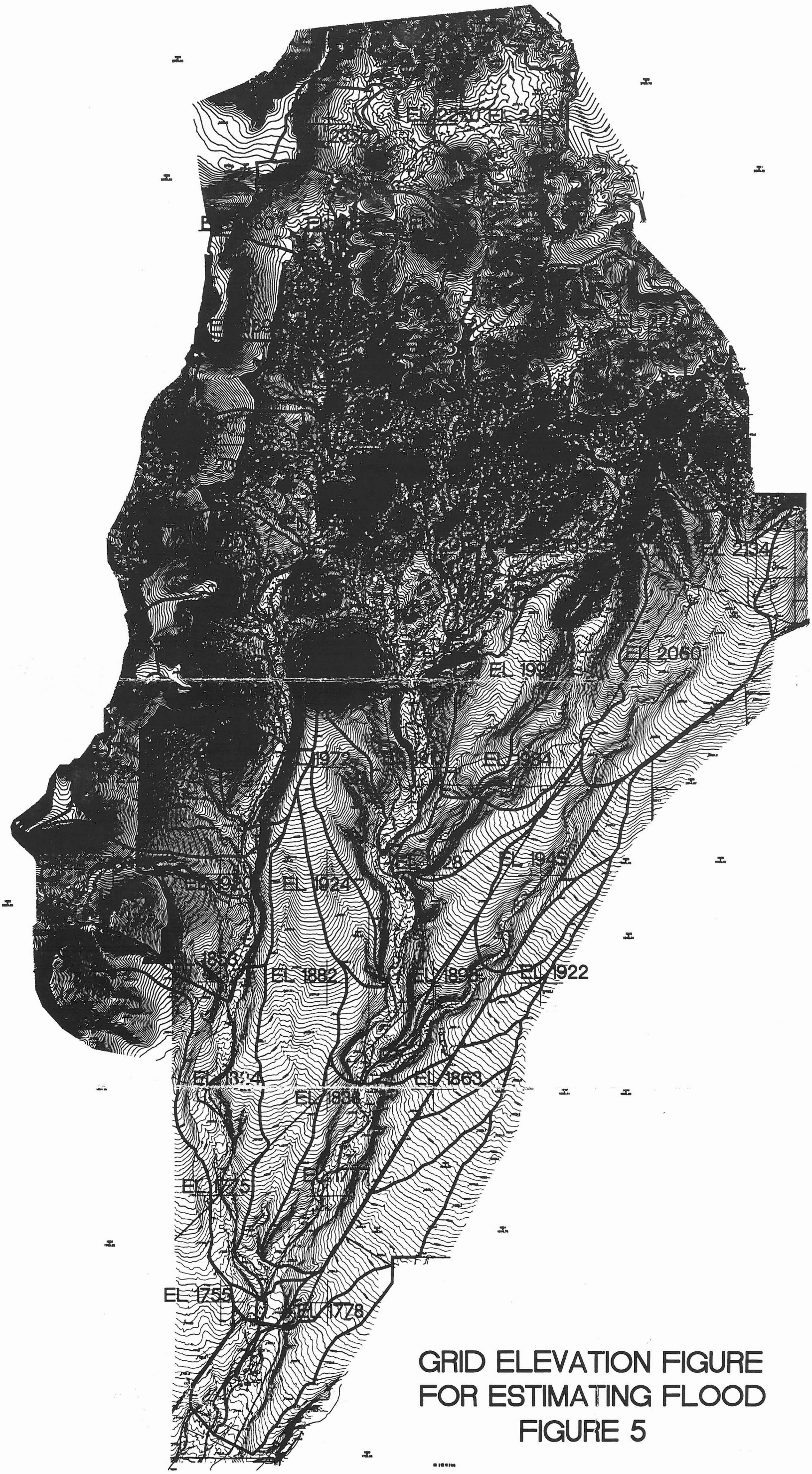
Summary of Peak Runoff
Table 4.5.1.1

CP #	6-hour storm			24-hour storm		
	Peak Discharge (cfs)	Time-of-peak (hrs)	Volume (ac-ft)	Peak Discharge (cfs)	Time-of-peak (hrs)	Volume (ac-ft)
1	498	4.00	34	729	12.00	40
2	945	4.08	74	1301	12.08	88
3	1444	4.08	117	1989	12.08	136
4	1777	4.08	149	2413	12.08	170
5	442	4.00	34	638	12.00	44
6	2551	4.08	206	3574	12.00	240
7	2841	4.08	226	3977	12.00	262
8	3153	4.08	250	4375	12.00	291
9	3668	4.17	295	5172	12.08	340
11	3954	4.17	341	5396	12.08	393
12	4393	4.25	406	5811	12.17	464
14	4458	4.33	421	5718	12.17	481
15	4941	4.25	498	6035	12.17	557
16	5395	4.42	569	6481	12.25	647
17	6062	4.58	691	7174	12.50	782
18	11499	4.75	1373	13677	12.58	1571
19	20	4.00	1	32	12.00	1
19A	11090	4.92	1414	13034	12.75	1618
20	491	4.00	34	713	12.00	40
21	1002	4.17	82	1392	12.08	99
22	396	4.08	26	564	12.00	28
23	897	4.08	59	1263	12.08	64
24	1100	4.33	87	1458	12.25	95
24A	1997	4.25	166	2735	12.17	192
25	2735	4.25	239	3719	12.08	273
26	2920	4.33	268	3715	12.17	304
27	507	4.17	39	688	12.08	41
28	1088	4.17	95	1391	12.17	99
28A	1316	4.25	118	1677	12.17	124
29	1070	4.25	93	1386	12.17	96
30	123	4.08	11	162	12.08	14
30A	1373	4.42	132	1639	12.33	138
31	231	4.08	15	335	12.08	16
32	4577	4.58	459	5677	12.42	510
33	150	4.08	13	200	12.00	14
33A	70	4.00	6	95	12.00	8
33B	99	4.00	9	134	12.00	11
33C	1662	4.58	180	1890	12.42	192
34	169	4.08	15	223	12.00	19
34A	207	4.08	19	271	12.08	23
34B	6135	4.75	701	7335	12.58	786
35	11320	4.75	1334	13562	12.58	1521
36	447	4.17	44	559	12.08	54
37	432	4.17	40	556	12.08	45

4.5.2 Verification of results

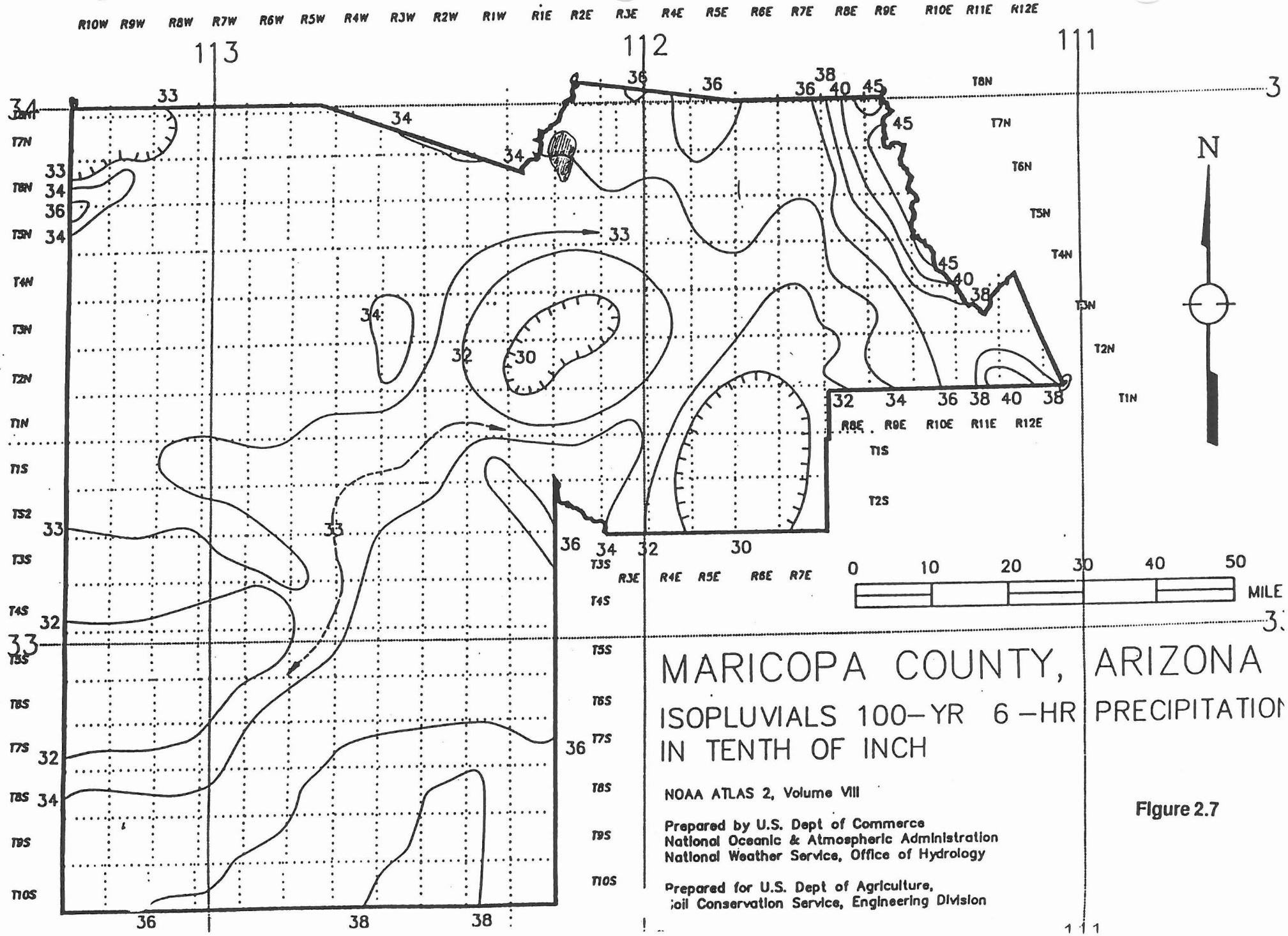
The Sweat Canyon Wash FIS will combine with the previously studied New River FIS that included approximately three and a half miles of the Sweat Canyon Wash tributary. The Sweat Canyon Wash FIS hydrology was based off new, more detailed topography. The match line for the two studies is located in Section 19 Township 7 North Range 2 East. The upper four cross sections used in the New River HEC-2 (3.712,3.873,4.019,4.129) are incorporated into the Sweat Canyon hydraulic analysis using the higher discharge of 13,034 cfs.

The United States Geological Survey *Methods for Estimating Magnitude and Frequency of Floods in the Southwestern United States* was used as an indirect method for establishing the reasonableness of the HEC-1 model. The relevant pages of the reference are included in Appendix A2 which describes the required variables and figures for the Central Arizona Region 12. Figure 5, located on the next page, establishes the mean basin elevation for the watershed. The calculations result in a 100-year storm producing 11,459 cfs of runoff which falls within the envelope curve for this study area (Figure 41).



GRID ELEVATION FIGURE
FOR ESTIMATING FLOOD
FIGURE 5

D.1 Precipitation data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113
112
111
T8N
T7N
T6N
T5N
T4N
T3N
T2N
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MILE
MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 100-YR 6-HR PRECIPITATION
IN TENTH OF INCH
NOAA ATLAS 2, Volume VIII
Prepared by U.S. Dept of Commerce
National Oceanic & Atmospheric Administration
National Weather Service, Office of Hydrology
Prepared for U.S. Dept of Agriculture,
Soil Conservation Service, Engineering Division

Figure 2.7

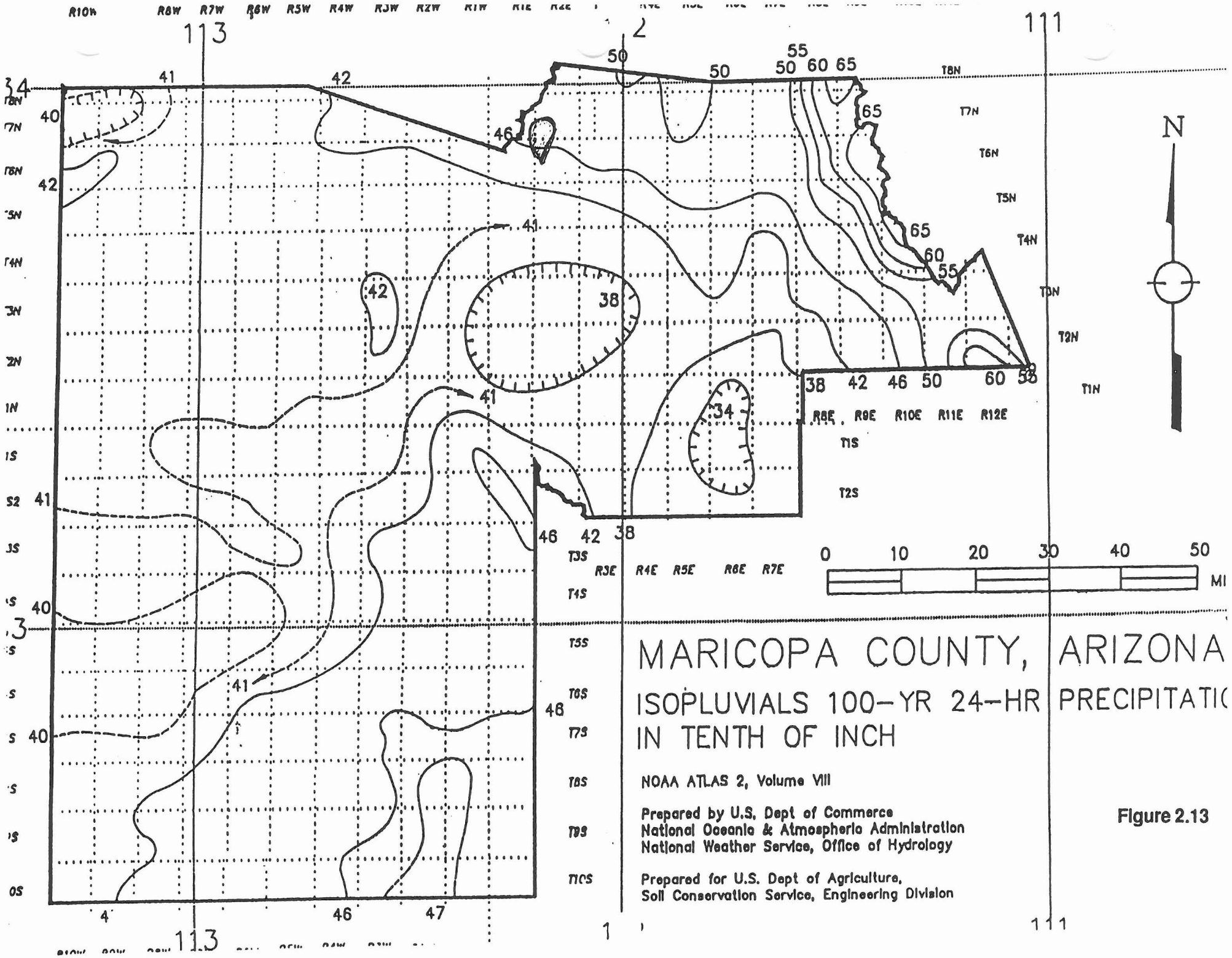
MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 100-YR 24-HR PRECIPITATIO
IN TENTH OF INCH
NOAA ATLAS 2, Volume VIII
Prepared by U.S. Dept of Commerce
National Oceanic & Atmospheric Administration
National Weather Service, Office of Hydrology
Prepared for U.S. Dept of Agriculture,
Soil Conservation Service, Engineering Division
N
0 10 20 30 40 50
MI
R10W R9W R7W R6W R5W R4W R3W R2W R1W R1E R2E
R8E R9E R10E R11E R12E
R3E R4E R5E R6E R7E
T8N T7N T6N T5N T4N T3N T2N T1N
T1S T2S T3S T4S T5S T6S T7S T8S T9S T10S
113
111
34
2
3
1

Figure 2.13

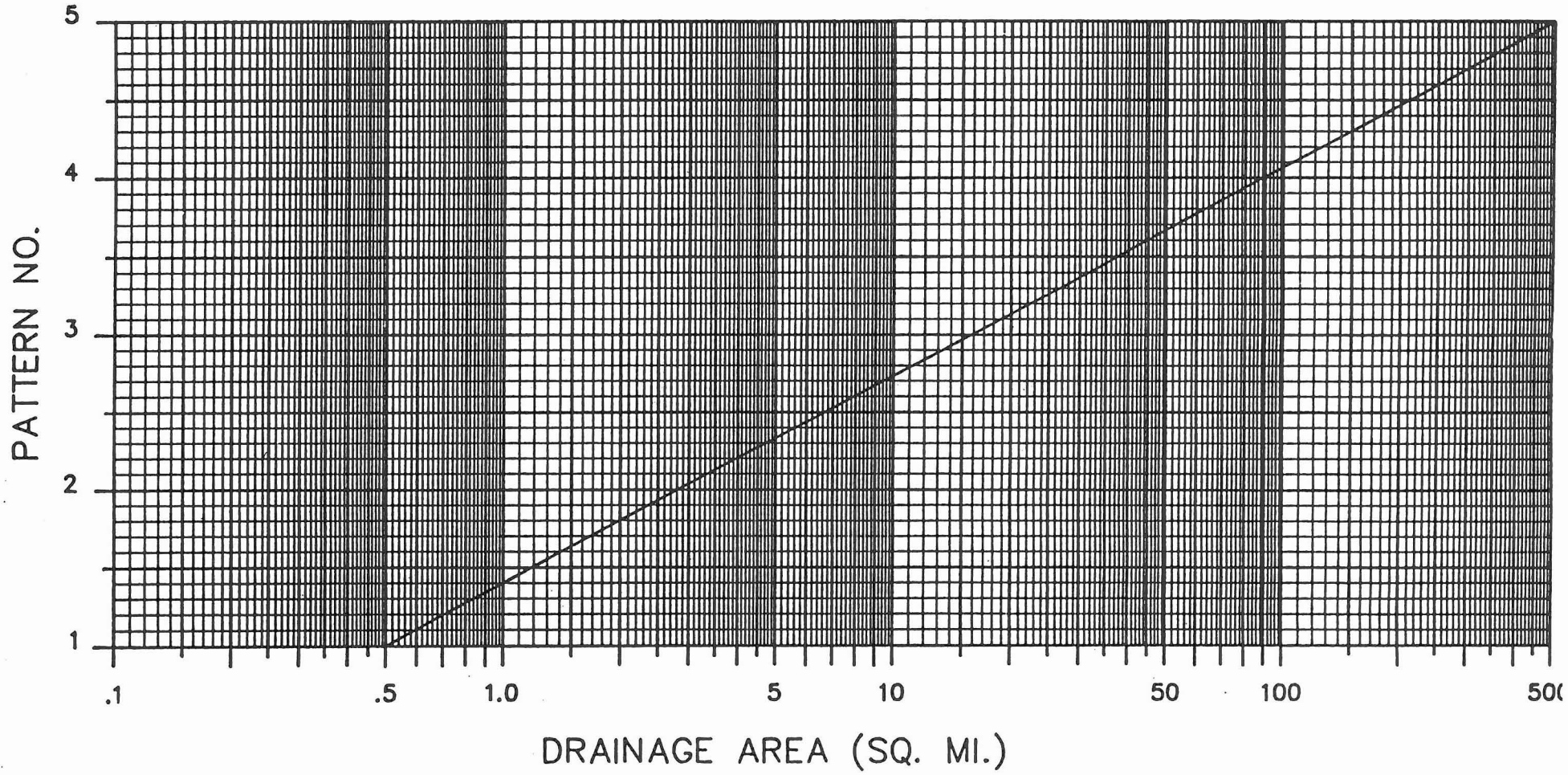

Figure 2.17
Area Versus Pattern Number for Maricopa County

D.2 Physical parameter calculations

100 YR, 24 HR

Summary of MCUHP2 Subbasin Input Parameters

YR100H24.M2R

SUBBASIN	AREA sq.miles	IA ins.	DTHETA	PSIF	XKSAT adj.	RTIMP %	LAG mins.
1	0.416	0.150	0.350	4.90	0.280	14	10.5
2	0.424	0.150	0.350	4.90	0.280	26	9.3
3	0.431	0.150	0.360	6.80	0.130	18	9.1
4	0.253	0.150	0.220	10.10	0.030	3	6.9
5	0.348	0.150	0.350	4.35	0.380	35	9.2
6	0.299	0.150	0.390	6.20	0.160	10	8.6
7	0.256	0.150	0.390	5.80	0.190	7	6.5
8	0.288	0.150	0.360	5.10	0.260	19	6.8
9	0.508	0.150	0.330	7.30	0.110	5	9.3
11	0.355	0.150	0.190	11.20	0.020	7	7.1
12	0.586	0.150	0.250	9.70	0.050	9	11.9
14	0.180	0.150	0.350	7.00	0.120	4	6.5
15	0.630	0.150	0.270	8.80	0.060	12	5.9
16	0.728	0.150	0.270	8.80	0.060	15	12.1
17	0.620	0.350	0.290	8.40	0.070	3	22.4
18	0.035	0.350	0.350	4.90	0.280	0	5.2
19	0.017	0.350	0.350	4.60	0.330	0	4.2
20	0.401	0.150	0.370	5.20	0.240	15	10.6
21	0.543	0.150	0.350	4.50	0.350	26	15.5
22	0.337	0.150	0.380	5.60	0.210	4	12.4
23	0.440	0.150	0.390	5.70	0.200	3	14.0
24	0.382	0.350	0.390	5.70	0.200	6	21.6
25	0.822	0.150	0.370	6.60	0.140	10	11.4
[illegible]	0.387	0.350	0.370	6.60	0.140	2	11.5
[illegible]	0.396	0.350	0.290	8.40	0.070	0	18.6
[illegible]	0.460	0.350	0.220	10.10	0.030	0	24.8
29	0.863	0.350	0.250	9.70	0.050	0	23.3
30	0.080	0.350	0.150	12.40	0.010	0	14.5
31	0.197	0.350	0.380	6.40	0.150	0	16.0
32	0.746	0.350	0.300	8.00	0.080	0	25.5
33	0.098	0.350	0.190	11.20	0.020	0	12.6
34	0.108	0.350	0.150	12.40	0.010	0	12.6
35	0.680	0.350	0.250	9.70	0.050	0	31.4
36	0.315	0.350	0.150	12.40	0.010	0	21.0
37	0.308	0.350	0.190	11.20	0.020	0	19.7
19A	0.100	0.350	0.380	6.40	0.150	0	10.6
28A	0.197	0.350	0.220	10.10	0.030	0	16.3
30A	0.314	0.350	0.320	7.60	0.090	0	17.4
33A	0.045	0.350	0.150	12.40	0.010	0	11.6
33B	0.061	0.350	0.150	12.40	0.010	0	9.8
33C	0.216	0.350	0.270	8.80	0.060	0	16.0
34A	0.135	0.350	0.150	12.40	0.010	0	15.0
34B	0.489	0.350	0.270	8.80	0.060	0	19.8

100YR, 24-hr

```
YR100H24.M20                          name of output file
DDM MCUHP2 Sweat Canyon Wash Flood Insurance Study
1                                     1 = single storm, 2 = multiple
1                                     storm size (sq. miles)
1                                     rain: 1=6hr, 2=2hr, 3=24hr, 4=manual
4.60                                  point rainfall depth
0.922                                 aerial reduction
1                             <*****  basin name **************************
0.416       HE=2450.0                 basin area (square miles)
0.90 0.40 222.2 0.0300                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2250.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.350 4.90 0.280 14.0           IA, DTHETA, PSIF, XKSAT, RTIMP
2                                     S-graph: 1=valley, 2=mountain
10.5                                  Lag time (minutes)
5                                     Hydrograph time step
1                                     Continue? 1 = next subbasin, 2 = stop
2                             <*****  basin name **************************
0.424       HE=2790.0                 basin area (square miles)
1.08 0.38 532.4 0.0500                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2215.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.350 4.90 0.280 26.0           IA, DTHETA, PSIF, XKSAT, RTIMP
2                                     S-graph: 1=valley, 2=mountain
9.3                                   Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
3                             <*****  basin name **************************
0.431       HE=2690.0                 basin area (square miles)
1.38 0.39 401.4 0.0500                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2136.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.360 6.80 0.130 18.0           IA, DTHETA, PSIF, XKSAT, RTIMP
1                                     S-graph: 1=valley, 2=mountain
9.                                    Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
4                             <*****  basin name **************************
0.253       HE=2725.0                 basin area (square miles)
1.10 0.28 566.4 0.0400                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2102.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.220 10.10 0.030 3.0           IA, DTHETA, PSIF, XKSAT, RTIMP
2                                     S-graph: 1=valley, 2=mountain
6.9                                   Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
5                             <*****  basin name **************************
0.348       HE=2660.0                 basin area (square miles)
1.14 0.55 524.6 0.0500                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2062.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.350 4.35 0.380 35.0           IA, DTHETA, PSIF, XKSAT, RTIMP
2                                     S-graph: 1=valley, 2=mountain
9.2                                   Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
6                             <*****  basin name **************************
0.299       HE=2760.0                 basin area (square miles)
1.46 0.35 478.1 0.0400                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2062.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.390 6.20 0.160 10.0           IA, DTHETA, PSIF, XKSAT, RTIMP
2                                     S-graph: 1=valley, 2=mountain
8                                     Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
7                             <*****  basin name **************************
0.256       HE=2500.0                 basin area (square miles)
1.08 0.21 425.0 0.0300                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2041.0                 loss method: 1=Green-Ampt, 2 = init & uniform
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0.150 0.390 5.80 0.190 7.0          IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
6.5                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
                            <*****  basin name **************************
0.[illegible]       HE=2350.0       basin area (square miles)
0.93 0.25 357.0 0.0400              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2018.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.360 5.10 0.260 19.0         IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
6.8                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
9                           <*****  basin name **************************
0.508       HE=2855.0               basin area (square miles)
1.38 0.32 631.9 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1983.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.330 7.30 0.110 5.0          IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
9.3                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
11                          <*****  basin name **************************
0.355       HE=2560.0               basin area (square miles)
1.21 0.26 503.3 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1951.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.190 11.20 0.020 7.0         IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
7.1                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
12                          <*****  basin name **************************
[illegible]         HE=2546.0       basin area (square miles)
[illegible].51 453.9 0.0300         L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1906.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.250 9.70 0.050 9.0          IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
11.9                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
14                          <*****  basin name **************************
0.180       HE=2182.0               basin area (square miles)
0.76 0.29 398.7 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1879.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.350 7.00 0.120 4.0          IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
6.5                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
15                          <*****  basin name **************************
0.630       HE=2550.0               basin area (square miles)
1.29 0.15 524.0 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1874.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.270 8.80 0.060 12.0         IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
5.9                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
16                          <*****  basin name **************************
0.728       HE=2860.0               basin area (square miles)
2.[illegible] 0.61 499.0 0.0300     L (mi), Lca (mi), S (ft/mi), Kn
            LE=1832.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.[illegible] 0.270 8.80 0.060 15.0 IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
12.1                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
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17                          <*****  basin name *************************
0.620      HE=2730.0                 basin area (square miles)
2.64 1.30 375.8 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1738.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.290 8.40 0.070 3.0                 IA, DTHETA, PSIF, XKSAT, RTIMP
3                                    S-graph: 1=valley, 2=mountain
22.4                                 Lag time (minutes)
1                                    Continue? 1 = next subbasin, 2 = stop
18                          <*****  basin name *************************
0.035      HE=1776.0                 basin area (square miles)
0.40 0.10 115.0 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1730.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.350 4.90 0.280 0.0           IA, DTHETA, PSIF, XKSAT, RTIMP
3                                    S-graph: 1=valley, 2=mountain
5.2                                  Lag time (minutes)
1                                    Continue? 1 = next subbasin, 2 = stop
19                          <*****  basin name *************************
0.017      HE=1760.0                 basin area (square miles)
0.22 0.10 104.5 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1737.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.350 4.60 0.330 0.0           IA, DTHETA, PSIF, XKSAT, RTIMP
3                                    S-graph: 1=valley, 2=mountain
4.2                                  Lag time (minutes)
1                                    Continue? 1 = next subbasin, 2 = stop
20                          <*****  basin name *************************
0.401      HE=2670.0                 basin area (square miles)
1.24 0.69 458.9 0.0400               L (mi), Lca (mi), S (ft/mi), Kn
1          LE=2101.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.370 5.20 0.240 15.0          IA, DTHETA, PSIF, XKSAT, RTIMP
                                     S-graph: 1=valley, 2=mountain
1                                    Lag time (minutes)
1                                    Continue? 1 = next subbasin, 2 = stop
21                          <*****  basin name *************************
0.543      HE=2563.0                 basin area (square miles)
2.02 0.94 304.5 0.0500               L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1948.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.350 4.50 0.350 26.0          IA, DTHETA, PSIF, XKSAT, RTIMP
2                                    S-graph: 1=valley, 2=mountain
15.5                                 Lag time (minutes)
1                                    Continue? 1 = next subbasin, 2 = stop
22                          <*****  basin name *************************
0.337      HE=2790.0                 basin area (square miles)
1.55 0.85 471.0 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1          LE=2060.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.380 5.60 0.210 4.0           IA, DTHETA, PSIF, XKSAT, RTIMP
2                                    S-graph: 1=valley, 2=mountain
12.4                                 Lag time (minutes)
1                                    Continue? 1 = next subbasin, 2 = stop
23                          <*****  basin name *************************
0.440      HE=2660.0                 basin area (square miles)
1.73 0.89 346.8 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1          LE=2060.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.390 5.70 0.200 3.0           IA, DTHETA, PSIF, XKSAT, RTIMP
2                                    S-graph: 1=valley, 2=mountain
1                                    Lag time (minutes)
                                     Continue? 1 = next subbasin, 2 = stop
24                          <*****  basin name *************************
0.382      HE=2144.0                 basin area (square miles)
1.78 0.95 110.1 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1948.0                 loss method: 1=Green-Ampt, 2 = init & uniform
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0.350 0.390 5.70 0.200 6.0        IA, DTHETA, PSIF, XKSAT, RTIMP
3                                 S-graph: 1=valley, 2=mountain
21.6                              Lag time (minutes)
1                                 Continue? 1 = next subbasin, 2 = stop
[illegible]                <*****  basin name **************************
0.022      HE=2360.0              basin area (square miles)
2.17 0.32 205.5 0.0400            L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1914.0              loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.370 6.60 0.140 10.0       IA, DTHETA, PSIF, XKSAT, RTIMP
2                                 S-graph: 1=valley, 2=mountain
11.4                              Lag time (minutes)
1                                 Continue? 1 = next subbasin, 2 = stop
26                         <*****  basin name **************************
0.387      HE=2418.0              basin area (square miles)
1.17 0.57 462.4 0.0300            L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1877.0              loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.370 6.60 0.140 2.0        IA, DTHETA, PSIF, XKSAT, RTIMP
3                                 S-graph: 1=valley, 2=mountain
11.5                              Lag time (minutes)
1                                 Continue? 1 = next subbasin, 2 = stop
27                         <*****  basin name **************************
0.396      HE=2112.0              basin area (square miles)
1.57 0.77 123.6 0.0300            L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1918.0              loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.290 8.40 0.070 0.0        IA, DTHETA, PSIF, XKSAT, RTIMP
3                                 S-graph: 1=valley, 2=mountain
18.6                              Lag time (minutes)
1                                 Continue? 1 = next subbasin, 2 = stop
28                         <*****  basin name **************************
[illegible]        HE=2172.0      basin area (square miles)
[illegible]0.92 99.6 0.0300       L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1920.0              loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.220 10.10 0.030 0.0       IA, DTHETA, PSIF, XKSAT, RTIMP
3                                 S-graph: 1=valley, 2=mountain
24.8                              Lag time (minutes)
1                                 Continue? 1 = next subbasin, 2 = stop
29                         <*****  basin name **************************
0.863      HE=2186.0              basin area (square miles)
1.92 1.06 106.2 0.0300            L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1982.0              loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.250 9.70 0.050 0.0        IA, DTHETA, PSIF, XKSAT, RTIMP
3                                 S-graph: 1=valley, 2=mountain
23.3                              Lag time (minutes)
1                                 Continue? 1 = next subbasin, 2 = stop
30                         <*****  basin name **************************
0.080      HE=2065.0              basin area (square miles)
1.36 0.38 83.1 0.0300             L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1952.0              loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.150 12.40 0.010 0.0       IA, DTHETA, PSIF, XKSAT, RTIMP
3                                 S-graph: 1=valley, 2=mountain
14.5                              Lag time (minutes)
1                                 Continue? 1 = next subbasin, 2 = stop
31                         <*****  basin name **************************
0.197      HE=1982.0              basin area (square miles)
1.[illegible] 0.57 109.0 0.0300   L (mi), Lca (mi), S (ft/mi), Kn
           LE=1836.0              loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.380 6.40 0.150 0.0        IA, DTHETA, PSIF, XKSAT, RTIMP
3                                 S-graph: 1=valley, 2=mountain
16.0                              Lag time (minutes)
1                                 Continue? 1 = next subbasin, 2 = stop
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32                          <*****  basin name *************************
0.746       HE=2182.0               basin area (square miles)
2.50 1.23 150.8 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1805.0               loss method: 1=Green-Ampt, 2 = init & uniform
(     0.300 8.00 0.080 0.0          IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
25.5                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
33                          <*****  basin name *************************
0.098       HE=1984.0               basin area (square miles)
0.85 0.43 88.2 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1909.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.190 11.20 0.020 0.0         IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
12.6                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
34                          <*****  basin name *************************
0.108       HE=1907.0               basin area (square miles)
0.79 0.42 73.4 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1849.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.150 12.40 0.010 0.0         IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
12.6                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
35                          <*****  basin name *************************
0.680       HE=1970.0               basin area (square miles)
2.82 1.39 82.3 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1738.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.250 9.70 0.050 0.0          IA, DTHETA, PSIF, XKSAT, RTIMP
                                    S-graph: 1=valley, 2=mountain
3                                   Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
36                          <*****  basin name *************************
0.315       HE=1874.0               basin area (square miles)
1.67 0.81 80.8 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1739.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.150 12.40 0.010 0.0         IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
21.0                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
37                          <*****  basin name *************************
0.308       HE=1806.0               basin area (square miles)
1.45 0.72 68.3 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1707.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.190 11.20 0.020 0.0         IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
19.7                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
19A                         <*****  basin name *************************
0.100       HE=1753.0               basin area (square miles)
0.70 0.29 65.7 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1707.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.380 6.40 0.150 0.0          IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
1[illegible]                        Lag time (minutes)
                                    Continue? 1 = next subbasin, 2 = stop
2bA                         <*****  basin name *************************
0.197       HE=2008.0               basin area (square miles)
1.42 0.54 98.6 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1868.0               loss method: 1=Green-Ampt, 2 = init & uniform
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0.350 0.220 10.10 0.030 0.0        IA, DTHETA, PSIF, XKSAT, RTIMP
3                                  S-graph: 1=valley, 2=mountain
16.3                               Lag time (minutes)
1                                  Continue? 1 = next subbasin, 2 = stop
                             <*****  basin name **************************
[illegible]        HE=2016.0       basin area (square miles)
1.37 0.65 94.2 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1887.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.320 7.60 0.090 0.0         IA, DTHETA, PSIF, XKSAT, RTIMP
3                                  S-graph: 1=valley, 2=mountain
17.4                               Lag time (minutes)
1                                  Continue? 1 = next subbasin, 2 = stop
33A                          <*****  basin name **************************
0.045      HE=1964.0               basin area (square miles)
0.81 0.35 82.7 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1897.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.150 12.40 0.010 0.0        IA, DTHETA, PSIF, XKSAT, RTIMP
3                                  S-graph: 1=valley, 2=mountain
11.6                               Lag time (minutes)
1                                  Continue? 1 = next subbasin, 2 = stop
33B                          <*****  basin name **************************
0.061      HE=1927.0               basin area (square miles)
0.62 0.28 74.2 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1881.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.150 12.40 0.010 0.0        IA, DTHETA, PSIF, XKSAT, RTIMP
3                                  S-graph: 1=valley, 2=mountain
9.8                                Lag time (minutes)
1                                  Continue? 1 = next subbasin, 2 = stop
33C                          <*****  basin name **************************
[illegible]        HE=1930.0       basin area (square miles)
[illegible].60 99.2 0.0300         L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1810.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.270 8.80 0.060 0.0         IA, DTHETA, PSIF, XKSAT, RTIMP
3                                  S-graph: 1=valley, 2=mountain
16.0                               Lag time (minutes)
1                                  Continue? 1 = next subbasin, 2 = stop
34A                          <*****  basin name **************************
0.135      HE=1891.0               basin area (square miles)
1.01 0.51 70.3 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1820.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.150 12.40 0.010 0.0        IA, DTHETA, PSIF, XKSAT, RTIMP
3                                  S-graph: 1=valley, 2=mountain
15.0                               Lag time (minutes)
1                                  Continue? 1 = next subbasin, 2 = stop
34B                          <*****  basin name **************************
0.489      HE=1882.0               basin area (square miles)
1.62 0.73 84.6 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1745.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.270 8.80 0.060 0.0         IA, DTHETA, PSIF, XKSAT, RTIMP
3                                  S-graph: 1=valley, 2=mountain
19.8                               Lag time (minutes)
2                                  Continue? 1 = next subbasin, 2 = stop
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100 YR, 6 HR

Summary of MCUHP2 Subbasin Input Parameters

YR100HR6.M2R

SUBBASIN	AREA sq.miles	IA ins.	DTHETA	PSIF	XKSAT adj.	RTIMP %	LAG mins.
1	0.416	0.150	0.350	4.90	0.280	14	10.5
2	0.424	0.150	0.350	4.90	0.280	26	9.3
3	0.431	0.150	0.360	6.80	0.130	18	9.1
4	0.253	0.150	0.220	10.10	0.030	3	6.9
5	0.348	0.150	0.350	4.35	0.380	35	9.2
6	0.299	0.150	0.390	6.20	0.160	10	8.6
7	0.256	0.150	0.390	5.80	0.190	7	6.5
8	0.288	0.150	0.360	5.10	0.260	19	6.8
9	0.508	0.150	0.330	7.30	0.110	5	9.3
11	0.355	0.150	0.190	11.20	0.020	7	7.1
12	0.586	0.150	0.250	9.70	0.050	9	11.9
14	0.180	0.150	0.350	7.00	0.120	4	6.5
15	0.630	0.150	0.270	8.80	0.060	12	5.9
16	0.728	0.150	0.270	8.80	0.060	15	12.1
17	0.620	0.350	0.290	8.40	0.070	3	22.4
18	0.035	0.350	0.350	4.90	0.280	0	5.2
19	0.017	0.350	0.350	4.60	0.330	0	4.2
20	0.401	0.150	0.370	5.20	0.240	15	10.6
21	0.543	0.150	0.350	4.50	0.350	26	15.5
22	0.337	0.150	0.380	5.60	0.210	4	12.4
23	0.440	0.150	0.390	5.70	0.200	3	14.0
24	0.382	0.350	0.390	5.70	0.200	6	21.6
25	0.822	0.150	0.370	6.60	0.140	10	11.4
-	0.387	0.350	0.370	6.60	0.140	2	11.5
	0.396	0.350	0.290	8.40	0.070	0	18.6
28	0.460	0.350	0.220	10.10	0.030	0	24.8
29	0.863	0.350	0.250	9.70	0.050	0	23.3
30	0.080	0.350	0.150	12.40	0.010	0	14.5
31	0.197	0.350	0.380	6.40	0.150	0	16.0
32	0.746	0.350	0.300	8.00	0.080	0	25.5
33	0.098	0.350	0.190	11.20	0.020	0	12.6
34	0.108	0.350	0.150	12.40	0.010	0	12.6
35	0.680	0.350	0.250	9.70	0.050	0	31.4
36	0.315	0.350	0.150	12.40	0.010	0	21.0
37	0.308	0.350	0.190	11.20	0.020	0	19.7
19A	0.100	0.350	0.380	6.40	0.150	0	10.6
28A	0.197	0.350	0.220	10.10	0.030	0	16.3
30A	0.314	0.350	0.320	7.60	0.090	0	17.4
33A	0.045	0.350	0.150	12.40	0.010	0	11.6
33B	0.061	0.350	0.150	12.40	0.010	0	9.8
33C	0.216	0.350	0.270	8.80	0.060	0	16.0
34A	0.135	0.350	0.150	12.40	0.010	0	15.0
34B	0.489	0.350	0.270	8.80	0.060	0	19.8

100-YR, 6-HR

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YR100HR6.M20                          name of output file
DDM MCUHP2 Sweat Canyon Wash Flood Insurance Study
1                                     1 = single storm, 2 = multiple
16                                    storm size (sq. miles)
                                      rain: 1=6hr, 2=2hr, 3=24hr, 4=manual
3.                                    point rainfall depth
1                             <*****  basin name **************************
0.416       HE=2450.0                 basin area (square miles)
0.90 0.40 222.2 0.0300                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2250.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.350 4.90 0.280 14.0           IA, DTHETA, PSIF, XKSAT, RTIMP
2                                     S-graph: 1=valley, 2=mountain
10.5                                  Lag time (minutes)
5                                     Hydrograph time step
1                                     Continue? 1 = next subbasin, 2 = stop
2                             <*****  basin name **************************
0.424       HE=2790.0                 basin area (square miles)
1.08 0.38 532.4 0.0500                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2215.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.350 4.90 0.280 26.0           IA, DTHETA, PSIF, XKSAT, RTIMP
2                                     S-graph: 1=valley, 2=mountain
9.3                                   Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
3                             <*****  basin name **************************
0.431       HE=2690.0                 basin area (square miles)
1.38 0.39 401.4 0.0500                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2136.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.360 6.80 0.130 18.0           IA, DTHETA, PSIF, XKSAT, RTIMP
2                                     S-graph: 1=valley, 2=mountain
6                                     Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
4                             <*****  basin name **************************
0.253       HE=2725.0                 basin area (square miles)
1.10 0.28 566.4 0.0400                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2102.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.220 10.10 0.030 3.0           IA, DTHETA, PSIF, XKSAT, RTIMP
2                                     S-graph: 1=valley, 2=mountain
6.9                                   Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
5                             <*****  basin name **************************
0.348       HE=2660.0                 basin area (square miles)
1.14 0.55 524.6 0.0500                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2062.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.350 4.35 0.380 35.0           IA, DTHETA, PSIF, XKSAT, RTIMP
2                                     S-graph: 1=valley, 2=mountain
9.2                                   Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
6                             <*****  basin name **************************
0.299       HE=2760.0                 basin area (square miles)
1.46 0.35 478.1 0.0400                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2062.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.390 6.20 0.160 10.0           IA, DTHETA, PSIF, XKSAT, RTIMP
2                                     S-graph: 1=valley, 2=mountain
8.6                                   Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
                              <*****  basin name **************************
0.          HE=2500.0                 basin area (square miles)
1.08 0.21 425.0 0.0300                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2041.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.390 5.80 0.190 7.0            IA, DTHETA, PSIF, XKSAT, RTIMP
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2                                   S-graph: 1=valley, 2=mountain
6.5                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
8                            <*****  basin name ***************************
    ,       HE=2350.0               basin area (square miles)
0.[illegible] 0.25 357.0 0.0400     L (mi), Lca (mi), S (ft/mi), Kn
1           LE=2018.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.360 5.10 0.260 19.0         IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
6.8                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
9                            <*****  basin name ***************************
0.508       HE=2855.0               basin area (square miles)
1.38 0.32 631.9 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1983.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.330 7.30 0.110 5.0          IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
9.3                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
11                           <*****  basin name ***************************
0.355       HE=2560.0               basin area (square miles)
1.21 0.26 503.3 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1951.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.190 11.20 0.020 7.0         IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
7.1                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
12                           <*****  basin name ***************************
0.586       HE=2546.0               basin area (square miles)
    0.51 453.9 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
            LE=1906.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.250 9.70 0.050 9.0          IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
11.9                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
14                           <*****  basin name ***************************
0.180       HE=2182.0               basin area (square miles)
0.76 0.29 398.7 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1879.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.350 7.00 0.120 4.0          IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
6.5                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
15                           <*****  basin name ***************************
0.630       HE=2550.0               basin area (square miles)
1.29 0.15 524.0 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1874.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.270 8.80 0.060 12.0         IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
5.9                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
16                           <*****  basin name ***************************
0.728       HE=2860.0               basin area (square miles)
2.06 0.61 499.0 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1832.0               loss method: 1=Green-Ampt, 2 = init & uniform
(     0.270 8.80 0.060 15.0         IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
12.1                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
17                           <*****  basin name ***************************
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0.620      HE=2730.0                basin area (square miles)
2.64 1.30 375.8 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1738.0                loss method: 1=Green-Ampt, 2 = init & uniform
0.[illegible]0 0.290 8.40 0.070 3.0 IA, DTHETA, PSIF, XKSAT, RTIMP
                                    S-graph: 1=valley, 2=mountain
22.                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
18                          <*****  basin name **************************
0.035      HE=1776.0                basin area (square miles)
0.40 0.10 115.0 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1730.0                loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.350 4.90 0.280 0.0          IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
5.2                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
19                          <*****  basin name **************************
0.017      HE=1760.0                basin area (square miles)
0.22 0.10 104.5 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1737.0                loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.350 4.60 0.330 0.0          IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
4.2                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
20                          <*****  basin name **************************
0.401      HE=2670.0                basin area (square miles)
1.24 0.69 458.9 0.0400              L (mi), Lca (mi), S (ft/mi), Kn
1          LE=2101.0                loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.370 5.20 0.240 15.0         IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
                                    Lag time (minutes)
                                    Continue? 1 = next subbasin, 2 = stop
21                          <*****  basin name **************************
0.543      HE=2563.0                basin area (square miles)
2.02 0.94 304.5 0.0500              L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1948.0                loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.350 4.50 0.350 26.0         IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
15.5                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
22                          <*****  basin name **************************
0.337      HE=2790.0                basin area (square miles)
1.55 0.85 471.0 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1          LE=2060.0                loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.380 5.60 0.210 4.0          IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
12.4                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
23                          <*****  basin name **************************
0.440      HE=2660.0                basin area (square miles)
1.73 0.89 346.8 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1          LE=2060.0                loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.390 5.70 0.200 3.0          IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
14.0                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
                            <*****  basin name **************************
0.[illegible]      HE=2144.0        basin area (square miles)
1.78 0.95 110.1 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1          LE=1948.0                loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.390 5.70 0.200 6.0          IA, DTHETA, PSIF, XKSAT, RTIMP
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3                                   S-graph: 1=valley, 2=mountain
21.6                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
2                           <*****  basin name *************************
    .       HE=2360.0               basin area (square miles)
2.17 0.32 205.5 0.0400              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1914.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.150 0.370 6.60 0.140 10.0         IA, DTHETA, PSIF, XKSAT, RTIMP
2                                   S-graph: 1=valley, 2=mountain
11.4                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
26                          <*****  basin name *************************
0.387       HE=2418.0               basin area (square miles)
1.17 0.57 462.4 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1877.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.370 6.60 0.140 2.0          IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
11.5                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
27                          <*****  basin name *************************
0.396       HE=2112.0               basin area (square miles)
1.57 0.77 123.6 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1918.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.290 8.40 0.070 0.0          IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
18.6                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
28                          <*****  basin name *************************
0.460       HE=2172.0               basin area (square miles)
    0.92 99.6 0.0300                L (mi), Lca (mi), S (ft/mi), Kn
            LE=1920.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.220 10.10 0.030 0.0         IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
24.8                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
29                          <*****  basin name *************************
0.863       HE=2186.0               basin area (square miles)
1.92 1.06 106.2 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1982.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.250 9.70 0.050 0.0          IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
23.3                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
30                          <*****  basin name *************************
0.080       HE=2065.0               basin area (square miles)
1.36 0.38 83.1 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1952.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.150 12.40 0.010 0.0         IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
14.5                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
31                          <*****  basin name *************************
0.197       HE=1982.0               basin area (square miles)
1.34 0.57 109.0 0.0300              L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1836.0               loss method: 1=Green-Ampt, 2 = init & uniform
    0.380 6.40 0.150 0.0            IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
16.0                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
32                          <*****  basin name *************************
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0.746       HE=2182.0                 basin area (square miles)
2.50 1.23 150.8 0.0300                L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1805.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0 [illegible] 0.300 8.00 0.080 0.0    IA, DTHETA, PSIF, XKSAT, RTIMP
                                      S-graph: 1=valley, 2=mountain
2[illegible]                          Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
33                            <*****  basin name **************************
0.098       HE=1984.0                 basin area (square miles)
0.85 0.43 88.2 0.0300                 L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1909.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.190 11.20 0.020 0.0           IA, DTHETA, PSIF, XKSAT, RTIMP
3                                     S-graph: 1=valley, 2=mountain
12.6                                  Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
34                            <*****  basin name **************************
0.108       HE=1907.0                 basin area (square miles)
0.79 0.42 73.4 0.0300                 L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1849.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.150 12.40 0.010 0.0           IA, DTHETA, PSIF, XKSAT, RTIMP
3                                     S-graph: 1=valley, 2=mountain
12.6                                  Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
35                            <*****  basin name **************************
0.680       HE=1970.0                 basin area (square miles)
2.82 1.39 82.3 0.0300                 L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1738.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.250 9.70 0.050 0.0            IA, DTHETA, PSIF, XKSAT, RTIMP
3                                     S-graph: 1=valley, 2=mountain
[illegible]                           Lag time (minutes)
                                      Continue? 1 = next subbasin, 2 = stop
36                            <*****  basin name **************************
0.315       HE=1874.0                 basin area (square miles)
1.67 0.81 80.8 0.0300                 L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1739.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.150 12.40 0.010 0.0           IA, DTHETA, PSIF, XKSAT, RTIMP
3                                     S-graph: 1=valley, 2=mountain
21.0                                  Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
37                            <*****  basin name **************************
0.308       HE=1806.0                 basin area (square miles)
1.45 0.72 68.3 0.0300                 L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1707.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.190 11.20 0.020 0.0           IA, DTHETA, PSIF, XKSAT, RTIMP
3                                     S-graph: 1=valley, 2=mountain
19.7                                  Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
19A                           <*****  basin name **************************
0.100       HE=1753.0                 basin area (square miles)
0.70 0.29 65.7 0.0300                 L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1707.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.380 6.40 0.150 0.0            IA, DTHETA, PSIF, XKSAT, RTIMP
3                                     S-graph: 1=valley, 2=mountain
10.6                                  Lag time (minutes)
1                                     Continue? 1 = next subbasin, 2 = stop
                              <*****  basin name **************************
0.[illegible]       HE=2008.0         basin area (square miles)
1.42 0.54 98.6 0.0300                 L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1868.0                 loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.220 10.10 0.030 0.0           IA, DTHETA, PSIF, XKSAT, RTIMP
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3                                   S-graph: 1=valley, 2=mountain
16.3                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
7                           <*****  basin name **************************
    +       HE=2016.0               basin area (square miles)
1.57 0.65 94.2 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1887.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.320 7.60 0.090 0.0          IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
17.4                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
33A                         <*****  basin name **************************
0.045       HE=1964.0               basin area (square miles)
0.81 0.35 82.7 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1897.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.150 12.40 0.010 0.0         IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
11.6                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
33B                         <*****  basin name **************************
0.061       HE=1927.0               basin area (square miles)
0.62 0.28 74.2 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1881.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.150 12.40 0.010 0.0         IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
9.8                                 Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
33C                         <*****  basin name **************************
0.216       HE=1930.0               basin area (square miles)
    0.60 99.2 0.0300                L (mi), Lca (mi), S (ft/mi), Kn
            LE=1810.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.270 8.80 0.060 0.0          IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
16.0                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
34A                         <*****  basin name **************************
0.135       HE=1891.0               basin area (square miles)
1.01 0.51 70.3 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1820.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.150 12.40 0.010 0.0         IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
15.0                                Lag time (minutes)
1                                   Continue? 1 = next subbasin, 2 = stop
34B                         <*****  basin name **************************
0.489       HE=1882.0               basin area (square miles)
1.62 0.73 84.6 0.0300               L (mi), Lca (mi), S (ft/mi), Kn
1           LE=1745.0               loss method: 1=Green-Ampt, 2 = init & uniform
0.350 0.270 8.80 0.060 0.0          IA, DTHETA, PSIF, XKSAT, RTIMP
3                                   S-graph: 1=valley, 2=mountain
19.8                                Lag time (minutes)
2                                   Continue? 1 = next subbasin, 2 = stop
```

LOSS PARAMETERS FOR SUBBASIN: 1

Soil survey Used Aguila/Carefree

.SBR

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
31	100.000	37.5	0.33	35
34	73.500	27.6	0.23	0
37	17.000	6.4	0.13	0
40	53.000	19.9	0.17	0
66	11.000	4.1	0.23	0
72	4.000	1.5	0.09	30
93	8.000	3.0	0.33	0

TOTAL = 266.500 Acres XKSAT = 0.24 %Rock = 14

DTHETA

Dry = 0.35 PSIF = 4.90
Normal = 0.25
Wet = 0.00

LAND USE

Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
0.416	Foothill	100.	DRY	25	0	0.15	0.03	Low	0.09

0.416 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.35

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.28

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 14

% EFFECTIVE IMP. = 14

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
1	0.416	0.90	0.40	0.03	222.2	0.15	0.35	4.90	0.28	14	11

LOSS PARAMETERS FOR SUBBASIN: 2

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
31	159.000	58.7	0.33	35
40	39.000	14.4	0.17	0
37	1.000	0.4	0.13	0
72	45.000	16.6	0.09	30
93	27.000	10.0	0.33	0

TOTAL = 271.000 Acres XKSAT = 0.24 %Rock = 26

DTHETA

Dry = 0.35 PSIF = 4.90
Normal = 0.25
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
0.424	SteepMtn	100.	DRY	25	0	0.15	0.05	Low	0.09
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.424 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.35

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.28

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 26

% EFFECTIVE IMP. = 26

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
2	0.424	1.08	0.38	0.05	532.4	0.15	0.35	4.90	0.28	26	9

LOSS PARAMETERS FOR SUBBASIN: 3

Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
28	98.000	35.5	0.02	0
31	115.000	41.7	0.33	35
40	3.000	1.1	0.17	0
72	28.000	10.1	0.09	30
93	32.000	11.6	0.33	0

TOTAL = 276.000 Acres XKSAT = 0.11 %Rock = 18

DTHETA

Dry = 0.36 PSIF = 6.80
Normal = 0.17
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
0.429	SteepMtn	100.	DRY	25	0	0.15	0.05	Low	0.09
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.429 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.36

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.13

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 18

% EFFECTIVE IMP. = 18

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
3	0.431	1.38	0.39	0.05	401.4	0.15	0.36	6.80	0.13	18	9

LOSS PARAMETERS FOR SUBBASIN: 4

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
28	124.000	76.5	0.02	0
31	11.000	6.8	0.33	35
41	23.000	14.2	0.17	0
72	4.000	2.5	0.09	30

TOTAL = 162.000 Acres XKSAT = 0.03 %Rock = 3

DTHETA

Dry = 0.22 PSIF = 10.10
Normal = 0.13
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
0.253	MedSlope	100.	DRY	25	0	0.15	0.04	Low	0.09
	Foothill		DRY	25	0	0.15	0.03	Low	

0.253 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.22

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.03

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 3

% EFFECTIVE IMP. = 3

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area	Length	Lca	Kn	Slope	IA	DTHETA	PSIF	XKSAT	RTIMP	Lag

	sq. mi.	mi.			ft/mi	in.			adj.	%	min.
4	0.253	1.10	0.28	0.04	566.4	0.15	0.22	10.10	0.03	3	7

LOSS PARAMETERS FOR SUBBASIN: 5

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
31	222.000	99.6	0.33	35
63	1.000	0.4	0.14	25

TOTAL = 223.000 Acres XKSAT = 0.33 %Rock = 35

DTHETA

Dry = 0.35 PSIF = 4.35
Normal = 0.25
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
0.348	SteepMtn	100.	DRY	25	0	0.15	0.05	Low	0.09
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.348 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.35

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.38

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 35

% EFFECTIVE IMP. = 35

T VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.

5	0.348	1.14	0.55	0.05	524.6	0.15	0.35	4.35	0.38	35	9

LOSS PARAMETERS FOR SUBBASIN: 6

Soil survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
28	11.000	5.7	0.02	0
31	15.000	7.8	0.33	35
41	108.000	56.2	0.17	0
72	48.000	25.0	0.09	30
93	10.000	5.2	0.33	0

TOTAL = 192.000 Acres XKSAT = 0.14 %Rock = 10

DTHETA

Dry = 0.39 PSIF = 6.20
Normal = 0.23
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
0.299	MedSlope	100.	DRY	25	0	0.15	0.04	Low	0.09
	Foothill		DRY	25	0	0.15	0.03	Low	

0.299 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.39

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.16

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 10

% EFFECTIVE IMP. = 10

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
6	0.299	1.46	0.35	0.04	478.1	0.15	0.39	6.20	0.16	10	9

LOSS PARAMETERS FOR SUBBASIN: 7

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
31	7.000	4.3	0.33	35
41	109.000	66.5	0.17	0
45	2.000	1.2	0.03	0
72	31.000	18.9	0.09	30
93	15.000	9.1	0.33	0

TOTAL = 164.000 Acres XKSAT = 0.16 %Rock = 7

DTHETA

Dry = 0.39 PSIF = 5.80
Normal = 0.25
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
0.256	Foothill	100.	DRY	25	0	0.15	0.03	Low	0.09

0.256 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.39

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.19

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 7

% EFFECTIVE IMP. = 7

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
7	0.256	1.08	0.21	0.03	425.0	0.15	0.39	5.80	0.19	7	7

LOSS PARAMETERS FOR SUBBASIN: 8

Soil survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
31	73.000	39.7	0.33	35
34	22.000	12.0	0.23	0
41	2.000	1.1	0.17	0
45	12.000	6.5	0.03	0
63	41.000	22.3	0.14	25
93	34.000	18.5	0.33	0

TOTAL = 184.000 Acres XKSAT = 0.22 %Rock = 19

DTHETA

Dry = 0.36 PSIF = 5.10
Normal = 0.25
Wet = 0.00

LAND USE

A	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
0.288	MedSlope	100.	DRY	25	0	0.15	0.04	Low	0.09
	Foothill		DRY	25	0	0.15	0.03	Low	

0.288 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.36

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.26

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 19

% EFFECTIVE IMP. = 19

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
-	0.288	0.93	0.25	0.04	357.0	0.15	0.36	5.10	0.26	19	7

LOSS PARAMETERS FOR SUBBASIN: 9

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	16.000	4.9	0.01	0
31	34.500	10.6	0.33	35
41	135.000	41.5	0.17	0
45	96.000	29.5	0.03	0
49	25.500	7.8	0.06	0
72	18.000	5.5	0.09	30
93	0.001	0.0	0.33	0

TOTAL = 325.001 Acres XKSAT = 0.09 %Rock = 5

DTHETA

Dry = 0.33 PSIF = 7.30
Normal = 0.15
Wet = 0.00

LAND USE

Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
0.508	Foothill	100.	DRY	25	0	0.15	0.03	Low	0.08

0.508 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.33

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.11

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 5

% EFFECTIVE IMP. = 5

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
9	0.508	1.38	0.32	0.03	631.9	0.15	0.33	7.30	0.11	5	9

LOSS PARAMETERS FOR SUBBASIN: 11

Soil survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	131.000	57.7	0.01	0
31	2.000	0.9	0.33	35
45	32.000	14.1	0.03	0
49	13.000	5.7	0.06	0
72	49.000	21.6	0.09	30

TOTAL = 227.000 Acres XKSAT = 0.02 %Rock = 7

DTHETA

Dry = 0.19 PSIF = 11.20
Normal = 0.10
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
0.354	Foothill	100.	DRY	25	0	0.15	0.03	Low	0.09

0.354 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.19

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.02

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 7

% EFFECTIVE IMP. = 7

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
1*	0.355	1.21	0.26	0.03	503.3	0.15	0.19	11.20	0.02	7	7

LOSS PARAMETERS FOR SUBBASIN: 12

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	191.000	50.9	0.01	0
110	5.000	1.3	0.13	0
49	8.000	2.1	0.06	0
52	56.000	14.9	0.16	20
72	78.000	20.8	0.09	30
98	37.000	9.9	0.37	0

TOTAL = 375.000 Acres XKSAT = 0.04 %Rock = 9

DTHETA

Dry = 0.25 PSIF = 9.70
Normal = 0.15
Wet = 0.00

LAND USE

	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
0.586	Foothill	100.	DRY	25	0	0.15	0.03	Low	0.08

0.586 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.25

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.05

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 9

% EFFECTIVE IMP. = 9

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
.	0.586	1.41	0.51	0.03	453.9	0.15	0.25	9.70	0.05	9	12

LOSS PARAMETERS FOR SUBBASIN: 14

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	31.000	27.0	0.01	0
52	24.000	20.9	0.16	20
98	41.000	35.7	0.37	0
110	19.000	16.5	0.13	0

TOTAL = 115.000 Acres XKSAT = 0.10 %Rock = 4

DTHETA

Dry = 0.35 PSIF = 7.00
Normal = 0.15
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
0.180	Foothill	100.	DRY	25	0	0.15	0.03	Low	0.09

0.180 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.35

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.12

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 4

% EFFECTIVE IMP. = 4

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN Area Length Lca Kn Slope IA DTHETA PSIF XKSAT RTIMP Lag

	sq. mi.	mi.			ft/mi	in.			adj.	%	min.
14	0.180	0.76	0.29	0.03	398.7	0.15	0.35	7.00	0.12	4	7

LOSS PARAMETERS FOR SUBBASIN: 15

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	39.000	9.7	0.01	0
13	115.000	28.5	0.01	0
40	40.000	9.9	0.17	0
52	19.000	4.7	0.16	20
72	152.000	37.6	0.09	30
98	13.000	3.2	0.37	0
110	26.000	6.4	0.13	0

TOTAL = 404.000 Acres XKSAT = 0.05 %Rock = 12

DTHETA

Dry = 0.27 PSIF = 8.80
Normal = 0.15
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
0.630	Foothill	100.	DRY	25	0	0.15	0.03	Low	0.08

0.630 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.27

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.06

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 12

% EFFECTIVE IMP. = 12

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
15	0.630	1.29	0.15	0.03	524.0	0.15	0.27	8.80	0.06	12	6

LOSS PARAMETERS FOR SUBBASIN: 16

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	135.000	29.0	0.01	0
45	33.000	7.1	0.03	0
72	234.000	50.2	0.09	30
98	48.000	10.3	0.37	0
110	16.000	3.4	0.13	0

TOTAL = 466.000 Acres XKSAT = 0.05 %Rock = 15

DTHETA

Dry = 0.27 PSIF = 8.80
Normal = 0.15
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
0.728	Foothill	100.	DRY	25	0	0.15	0.03	Low	0.08

0.728 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.27

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.06

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 15

% EFFECTIVE IMP. = 15

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
1	0.728	2.06	0.61	0.03	499.0	0.15	0.27	8.80	0.06	15	12

LOSS PARAMETERS FOR SUBBASIN: 17

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	101.000	25.4	0.01	0
13	52.000	13.1	0.01	0
45	19.000	4.8	0.03	0
72	44.000	11.1	0.09	30
98	96.000	24.1	0.37	0
110	60.000	15.1	0.13	0
112	26.000	6.5	0.39	0

TOTAL = 398.000 Acres XKSAT = 0.06 %Rock = 3

DTHETA

Dry = 0.29 PSIF = 8.40
Normal = 0.15
Wet = 0.00

LAND USE

Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.620	Desert	100.	DRY	25	0	0.35	0.03	Low	0.08
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	
0.620 = Total Area			Avg. =	25	0%	0.350			

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.29

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.07

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 3

% EFFECTIVE IMP. = 3

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
17	0.620	2.64	1.30	0.03	375.8	0.35	0.29	8.40	0.07	3	22

LOSS PARAMETERS FOR SUBBASIN: 18

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	0.000	0.0	0.01	0
98	13.000	59.1	0.37	0
110	9.000	40.9	0.13	0

TOTAL = 22.000 Acres XKSAT = 0.24 %Rock = 0

DTHETA

Dry = 0.35 PSIF = 4.90
Normal = 0.25
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
5	Desert	100.	DRY	25	0	0.35	0.03	Low	0.10
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.035 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.35

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.28

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0
% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.

18	0.035	0.40	0.10	0.03	115.0	0.35	0.35	4.90	0.28	0	5

LOSS PARAMETERS FOR SUBBASIN: 19

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	1.000	8.3	0.01	0
98	10.000	83.3	0.37	0
112	1.000	8.3	0.39	0

TOTAL = 12.000 Acres XKSAT = 0.28 %Rock = 0

DTHETA

Dry = 0.35 PSIF = 4.60
Normal = 0.25
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
7	Desert	100.	DRY	25	0	0.35	0.03	Low	0.10
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.017 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.35

SUBBASIN XKSAT ADJUSTED FOR %ROCK OUTCROP = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.

19	0.017	0.22	0.10	0.03	104.5	0.35	0.35	4.60	0.33	0	4

LOSS PARAMETERS FOR SUBBASIN: 20

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
31	84.000	32.7	0.33	35
34	9.000	3.5	0.23	0
40	40.000	15.6	0.17	0
41	92.000	35.8	0.17	0
63	32.000	12.5	0.14	25

TOTAL = 257.000 Acres XKSAT = 0.21 %Rock = 15

DTHETA

Dry = 0.37 PSIF = 5.20
Normal = 0.25
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
0.401	MedSlope	100.	DRY	25	0	0.15	0.04	Low	0.09
	Foothill		DRY	25	0	0.15	0.03	Low	

0.401 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.37

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.24

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 15

% EFFECTIVE IMP. = 15

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
7	0.401	1.24	0.69	0.04	458.9	0.15	0.37	5.20	0.24	15	11

LOSS PARAMETERS FOR SUBBASIN: 21

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
31	12.000	3.4	0.33	35
34	12.000	3.4	0.23	0
41	41.000	11.8	0.17	0
49	2.000	0.6	0.06	0
98	20.000	5.7	0.37	0
109	248.000	71.3	0.35	35
110	13.000	3.7	0.13	0

TOTAL = 348.000 Acres XKSAT = 0.30 %Rock = 26

DTHETA

Dry = 0.35 PSIF = 4.50
Normal = 0.25
Wet = 0.00

LAND USE

Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
0.543	SteepMtn	100.	DRY	25	0	0.15	0.05	Low	0.08
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.543 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.35

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.35

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 26

% EFFECTIVE IMP. = 26

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
21	0.543	2.02	0.94	0.05	304.5	0.15	0.35	4.50	0.35	26	16

LOSS PARAMETERS FOR SUBBASIN: 22

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
31	10.000	4.6	0.33	35
34	4.000	1.9	0.23	0
40	40.000	18.5	0.17	0
41	149.000	69.0	0.17	0
109	13.000	6.0	0.35	35

TOTAL = 216.000 Acres XKSAT = 0.18 %Rock = 4

DTHETA

Dry = 0.38 PSIF = 5.60
Normal = 0.25
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
0.337	Foothill	100.	DRY	25	0	0.15	0.03	Low	0.09

0.337 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.38

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.21

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 4

% EFFECTIVE IMP. = 4

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
2	0.337	1.55	0.85	0.03	471.0	0.15	0.38	5.60	0.21	4	12

LOSS PARAMETERS FOR SUBBASIN: 23

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	2.500	0.9	0.01	0
13	2.000	0.7	0.01	0
31	26.000	9.2	0.33	35
34	10.500	3.7	0.23	0
40	85.000	30.1	0.17	0
41	156.000	55.3	0.17	0

TOTAL = 282.000 Acres XKSAT = 0.17 %Rock = 3

DTHETA

Dry = 0.39 PSIF = 5.70
Normal = 0.25
Wet = 0.00

LAND USE

A	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
0.440	Foothill	100.	DRY	25	0	0.15	0.03	Low	0.08

0.440 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.39

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.20

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 3

% EFFECTIVE IMP. = 3

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
[illegible]	0.440	1.73	0.89	0.03	346.8	0.15	0.39	5.70	0.20	3	14

LOSS PARAMETERS FOR SUBBASIN: 24

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	25.000	10.2	0.01	0
34	62.000	25.3	0.23	0
44	25.000	10.2	0.03	0
98	88.000	35.9	0.37	0
109	45.000	18.4	0.35	35

TOTAL = 245.000 Acres XKSAT = 0.17 %Rock = 6

DTHETA

Dry = 0.39 PSIF = 5.70
Normal = 0.25
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.382	Desert	100.	DRY	25	0	0.35	0.03	Low	0.09
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.382 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.39

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.20

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 6

% EFFECTIVE IMP. = 6

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
?	0.382	1.78	0.95	0.03	110.1	0.35	0.39	5.70	0.20	6	22

LOSS PARAMETERS FOR SUBBASIN: 25

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	45.000	8.6	0.01	0
31	98.000	18.7	0.33	35
34	33.000	6.3	0.23	0
44	15.000	2.9	0.03	0
49	158.000	30.1	0.06	0
52	54.000	10.3	0.16	20
63	14.000	2.7	0.14	25
68	20.000	3.8	0.63	0
98	44.000	8.4	0.37	0
109	14.000	2.7	0.35	35
110	30.000	5.7	0.13	0

TOTAL = 525.000 Acres XKSAT = 0.12 %Rock = 10

DTHETA

Dry = 0.37 PSIF = 6.60

= 0.19

We 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert		DRY	25	0	0.35	0.03	Low	
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
0.822	MedSlope	100.	DRY	25	0	0.15	0.04	Low	0.08
	Foothill		DRY	25	0	0.15	0.03	Low	

0.822 = Total Area Avg. = 25 0% 0.150

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.37

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.14

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 10

% EFFECTIVE IMP. = 10

f VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
25	0.822	2.17	0.32	0.04	205.5	0.15	0.37	6.60	0.14	10	11

LOSS PARAMETERS FOR SUBBASIN: 26

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	10.000	4.0	0.01	0
44	85.000	34.3	0.03	0
52	27.000	10.9	0.16	20
98	119.000	48.0	0.37	0
110	7.000	2.8	0.13	0

TOTAL = 248.000 Acres XKSAT = 0.12 %Rock = 2

DTHETA

Dry = 0.37 PSIF = 6.60
Normal = 0.19
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.387	Desert	100.	DRY	25	0	0.35	0.03	Low	0.09
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.387 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.37

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.14

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 2

% EFFECTIVE IMP. = 2

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
2	0.387	1.17	0.57	0.03	462.4	0.35	0.37	6.60	0.14	2	12

LOSS PARAMETERS FOR SUBBASIN: 27

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	21.000	8.3	0.01	0
44	129.000	50.8	0.03	0
52	1.000	0.4	0.16	20
68	25.000	9.8	0.63	0
98	3.000	1.2	0.37	0
110	75.000	29.5	0.13	0

TOTAL = 254.000 Acres XKSAT = 0.06 %Rock = 0

DTHETA

Dry = 0.29 PSIF = 8.40
Normal = 0.15
Wet = 0.00

LAND USE

n	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.396	Desert	100.	DRY	25	0	0.35	0.03	Low	0.09
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.396 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.29

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.07

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
[illegible]	0.396	1.57	0.77	0.03	123.6	0.35	0.29	8.40	0.07	0	19

LOSS PARAMETERS FOR SUBBASIN: 28

Soil survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	146.000	49.7	0.01	0
44	79.000	26.9	0.03	0
68	0.000	0.0	0.63	0
98	35.000	11.9	0.37	0
110	34.000	11.6	0.13	0

TOTAL = 294.000 Acres XKSAT = 0.03 %Rock = 0

DTHETA

Dry = 0.22 PSIF = 10.10
Normal = 0.13
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.460	Desert	100.	DRY	25	0	0.35	0.03	Low	0.08
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.460 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.22

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.03

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
2[illegible]	0.460	2.53	0.92	0.03	99.6	0.35	0.22	10.10	0.03	0	25

LOSS PARAMETERS FOR SUBBASIN: 29

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	259.000	47.0	0.01	0
45	34.000	6.2	0.03	0
48	43.000	7.8	0.06	0
68	8.000	1.5	0.63	0
98	77.000	14.0	0.37	0
110	130.000	23.6	0.13	0

TOTAL = 551.000 Acres XKSAT = 0.04 %Rock = 0

DTHETA

Dry = 0.25 PSIF = 9.70
Normal = 0.15
Wet = 0.00

LAND USE

Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.863	Desert	100.	DRY	25	0	0.35	0.03	Low	0.08
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.863 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.25

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.05

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
	0.863	1.92	1.06	0.03	106.2	0.35	0.25	9.70	0.05	0	23

LOSS PARAMETERS FOR SUBBASIN: 30

Soil survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	49.000	96.1	0.01	0
98	0.000	0.0	0.37	0
110	2.000	3.9	0.13	0

TOTAL = 51.000 Acres XKSAT = 0.01 %Rock = 0

DTHETA

Dry = 0.15 PSIF = 12.40
Normal = 0.05
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0	Desert	100.	DRY	25	0	0.35	0.03	Low	0.10
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.080 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.15

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.01

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.

30	0.080	1.36	0.38	0.03	83.1	0.35	0.15	12.40	0.01	0	15

LOSS PARAMETERS FOR SUBBASIN: 31

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	1.000	0.8	0.01	0
44	1.000	0.8	0.03	0
98	2.000	1.6	0.37	0
110	123.000	96.9	0.13	0

TOTAL = 127.000 Acres XKSAT = 0.13 %Rock = 0

DTHETA

Dry = 0.38 PSIF = 6.40
Normal = 0.21
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
7	Desert	100.	DRY	25	0	0.35	0.03	Low	0.09
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.197 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.38

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.15

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area	Length	Lca	Kn	Slope	IA	DTHETA	PSIF	XKSAT	RTIMP	Lag

	sq. mi.	mi.			ft/mi	in.			adj.	%	min.
31	0.197	1.34	0.57	0.03	109.0	0.35	0.38	6.40	0.15	0	16

LOSS PARAMETERS FOR SUBBASIN: 32

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	11.000	2.3	0.01	0
13	86.000	18.0	0.01	0
44	116.000	24.3	0.03	0
52	3.000	0.6	0.16	20
98	102.000	21.4	0.37	0
110	159.000	33.3	0.13	0

TOTAL = 477.000 Acres XKSAT = 0.07 %Rock = 0

DTHETA

Dry = 0.30 PSIF = 8.00
Normal = 0.15
Wet = 0.00

LAND USE

A.	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.746	Desert	100.	DRY	25	0	0.35	0.03	Low	0.08
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.746 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.30

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.08

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
3	0.746	2.50	1.23	0.03	150.8	0.35	0.30	8.00	0.08	0	26

LOSS PARAMETERS FOR SUBBASIN: 33

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	0.000	0.0	0.01	0
13	42.000	66.7	0.01	0
44	0.000	0.0	0.03	0
98	0.000	0.0	0.37	0
110	21.000	33.3	0.13	0

TOTAL = 63.000 Acres XKSAT = 0.02 %Rock = 0

DTHETA

Dry = 0.19 PSIF = 11.20
Normal = 0.10
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.098	Desert	100.	DRY	25	0	0.35	0.03	Low	0.09
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.098 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.19

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.02

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
[illegible]	0.098	0.85	0.43	0.03	88.2	0.35	0.19	11.20	0.02	0	13

LOSS PARAMETERS FOR SUBBASIN: 34

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	10.000	14.5	0.01	0
13	59.000	85.5	0.01	0
44	0.000	0.0	0.03	0
98	0.000	0.0	0.37	0
110	0.000	0.0	0.13	0

TOTAL = 69.000 Acres XKSAT = 0.01 %Rock = 0

DTHETA

Dry = 0.15 PSIF = 12.40
Normal = 0.05
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.108	Desert	100.	DRY	25	0	0.35	0.03	Low	0.09
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.108 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.15

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.01

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
3	0.108	0.79	0.42	0.03	73.4	0.35	0.15	12.40	0.01	0	13

LOSS PARAMETERS FOR SUBBASIN: 35

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	124.000	28.5	0.01	0
13	81.000	18.6	0.01	0
98	25.000	5.7	0.37	0
110	205.000	47.1	0.13	0

TOTAL = 435.000 Acres XKSAT = 0.04 %Rock = 0

DTHETA

Dry = 0.25 PSIF = 9.70
Normal = 0.15
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
[illegible]30	Desert	100.	DRY	25	0	0.35	0.03	Low	0.08
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.680 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.25

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.05

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area	Length	Lca	Kn	Slope	IA	DTHETA	PSIF	XKSAT	RTIMP	Lag

	sq. mi.	mi.			ft/mi	in.			adj.	%	min.
35	0.680	2.82	1.39	0.03	82.3	0.35	0.25	9.70	0.05	0	31

LOSS PARAMETERS FOR SUBBASIN: 36

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	187.000	92.6	0.01	0
13	12.000	5.9	0.01	0
110	3.000	1.5	0.13	0

TOTAL = 202.000 Acres XKSAT = 0.01 %Rock = 0

DTHETA

Dry = 0.15 PSIF = 12.40
Normal = 0.05
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
5	Desert	100.	DRY	25	0	0.35	0.03	Low	0.09
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.315 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.15

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.01

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.

36	0.315	1.67	0.81	0.03	80.8	0.35	0.15	12.40	0.01	0	21

LOSS PARAMETERS FOR SUBBASIN: 37

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	173.000	87.8	0.01	0
13	0.000	0.0	0.01	0
98	24.000	12.2	0.37	0

TOTAL = 197.000 Acres XKSAT = 0.02 %Rock = 0

DTHETA

Dry = 0.19 PSIF = 11.20
Normal = 0.10
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
8	Desert	100.	DRY	25	0	0.35	0.03	Low	0.09
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.308 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.19

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.02

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

...UT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.

37	0.308	1.45	0.72	0.03	68.3	0.35	0.19	11.20	0.02	0	20

LOSS PARAMETERS FOR SUBBASIN: 19A

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	18.000	28.1	0.01	0
98	46.000	71.9	0.37	0

TOTAL = 64.000 Acres XKSAT = 0.13 %Rock = 0

DTHETA

Dry = 0.38 PSIF = 6.40
Normal = 0.21
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.100	Desert	100.	DRY	25	0	0.35	0.03	Low	0.09
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.100 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.38

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.15

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0
% EFFECTIVE IMP. = 0

T VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.

19A	0.100	0.70	0.29	0.03	65.7	0.35	0.38	6.40	0.15	0	11

LOSS PARAMETERS FOR SUBBASIN: 28A

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	33.000	26.2	0.01	0
44	63.000	50.0	0.03	0
98	1.000	0.8	0.37	0
110	29.000	23.0	0.13	0

TOTAL = 126.000 Acres XKSAT = 0.03 %Rock = 0

DTHETA

Dry = 0.22 PSIF = 10.10
Normal = 0.13
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert	100.	DRY	25	0	0.35	0.03	Low	0.09
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.197 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.22

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.03

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area	Length	Lca	Kn	Slope	IA	DTHETA	PSIF	XKSAT	RTIMP	Lag

	sq. mi.	mi.			ft/mi	in.			adj.	%	min.
28A	0.197	1.42	0.54	0.03	98.6	0.35	0.22	10.10	0.03	0	16

LOSS PARAMETERS FOR SUBBASIN: 30A

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	54.000	26.9	0.01	0
98	46.000	22.9	0.37	0
110	101.000	50.2	0.13	0

TOTAL = 201.000 Acres XKSAT = 0.08 %Rock = 0

DTHETA

Dry = 0.32 PSIF = 7.60
Normal = 0.15
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
4	Desert	100.	DRY	25	0	0.35	0.03	Low	0.09
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.314 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.32

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.09

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.

30A	0.314	1.37	0.65	0.03	94.2	0.35	0.32	7.60	0.09	0	17

LOSS PARAMETERS FOR SUBBASIN: 33A

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	1.000	3.6	0.01	0
13	27.000	96.4	0.01	0

TOTAL = 28.000 Acres XKSAT = 0.01 %Rock = 0

DTHETA

Dry = 0.15 PSIF = 12.40
Normal = 0.05
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.045	Desert	100.	DRY	25	0	0.35	0.03	Low	0.10
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	
0.045 = Total Area			Avg. =	25	0%	0.350			

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.15

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.01

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0
% EFFECTIVE IMP. = 0

T VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.

33A	0.045	0.81	0.35	0.03	82.7	0.35	0.15	12.40	0.01	0	12

LOSS PARAMETERS FOR SUBBASIN: 34A

Soil survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	65.000	75.6	0.01	0
13	21.000	24.4	0.01	0

TOTAL = 86.000 Acres XKSAT = 0.01 %Rock = 0

DTHETA

Dry = 0.15 PSIF = 12.40
Normal = 0.05
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.135	Desert	100.	DRY	25	0	0.35	0.03	Low	0.09
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.135 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.15

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.01

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

T VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.

34A	0.135	1.01	0.51	0.03	70.3	0.35	0.15	12.40	0.01	0	15

LOSS PARAMETERS FOR SUBBASIN: 34B

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	16.000	5.1	0.01	0
13	115.000	36.7	0.01	0
44	8.000	2.6	0.03	0
98	64.000	20.4	0.37	0
110	110.000	35.1	0.13	0

TOTAL = 313.000 Acres XKSAT = 0.05 %Rock = 0

DTHETA

Dry = 0.27 PSIF = 8.80
Normal = 0.15
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.485	Desert	100.	DRY	25	0	0.35	0.03	Low	0.08
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.485 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.27

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.06

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
[illegible]	0.489	1.62	0.73	0.03	84.6	0.35	0.27	8.80	0.06	0	20

LOSS PARAMETERS FOR SUBBASIN: 33B

Soil Survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
12	3.000	7.7	0.01	0
13	36.000	92.3	0.01	0
44	0.000	0.0	0.03	0
98	0.000	0.0	0.37	0
110	0.000	0.0	0.13	0

TOTAL = 39.000 Acres XKSAT = 0.01 %Rock = 0

DTHETA

Dry = 0.15 PSIF = 12.40
Normal = 0.05
Wet = 0.00

LAND USE

AREA	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
0.061	Desert	100.	DRY	25	0	0.35	0.03	Low	0.10
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.061 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.15

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.01

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area sq. mi.	Length mi.	Lca	Kn	Slope ft/mi	IA in.	DTHETA	PSIF	XKSAT adj.	RTIMP %	Lag min.
	0.061	0.62	0.28	0.03	74.2	0.35	0.15	12.40	0.01	0	10

LOSS PARAMETERS FOR SUBBASIN: 33C

Soil survey Used Aguila/Carefree

XKSAT

Map Unit	AREA Acres	% Area	XKSAT	% Rock Outcrop
13	60.000	43.5	0.01	0
44	7.000	5.1	0.03	0
98	43.000	31.2	0.37	0
110	28.000	20.3	0.13	0

TOTAL = 138.000 Acres XKSAT = 0.05 %Rock = 0

DTHETA

Dry = 0.27 PSIF = 8.80
Normal = 0.15
Wet = 0.00

LAND USE

AREA Acres	LAND USE Type	% Area	DTHETA condition	%Veg. cover	RTIMP%	IA in.	Kn	Kb Type	Kb
	Desert	100.	DRY	25	0	0.35	0.03	Low	0.09
	OPEN		DRY	10	0	0.10	0.02	Min	
	V.L.D.R		NORMAL	30	5	0.30	0.05	Low	
	L.D.R.		NORMAL	50	15	0.30	0.05	Low	
	M.D.R.		NORMAL	50	30	0.25	0.05	Low	
	M.F.R.		NORMAL	50	45	0.25	0.05	Low	
	Ind		NORMAL	60	55	0.15	0.03	Min	
	SteepMtn		DRY	25	0	0.15	0.05	Low	
	MedSlope		DRY	25	0	0.15	0.04	Low	
	Foothill		DRY	25	0	0.15	0.03	Low	

0.216 = Total Area Avg. = 25 0% 0.350

PERCENT OF SUBBASIN DRY = 100. %
NORMAL = 0.0 %
WET = 0.0 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.27

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.06

IMPERVIOUS AREA: URBAN @ 100 % effective = 0
ROCK OUTCROP @ 100 % effective = 0

% EFFECTIVE IMP. = 0

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	Area	Length	Lca	Kn	Slope	IA	DTHETA	PSIF	XKSAT	RTIMP	Lag

	sq. mi.	mi.			ft/mi	in.			adj.	%	min.
33C	0.216	1.21	0.60	0.03	99.2	0.35	0.27	8.80	0.06	0	16

D.3 Hydrograph routing data

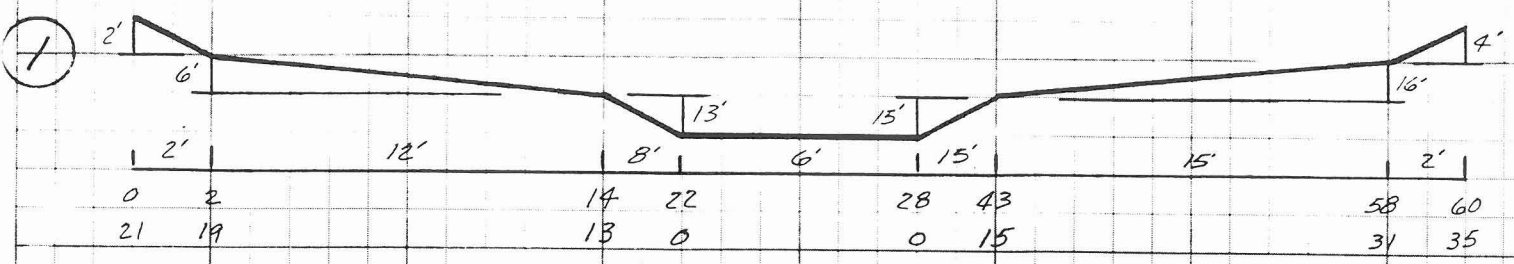
DAVID EVANS AND ASSOCIATES, INC.

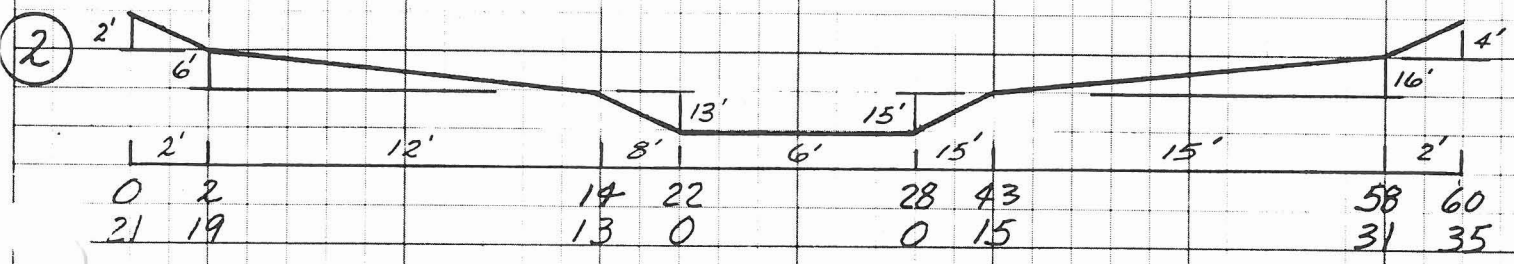
Project: Sweat Canyon Wash

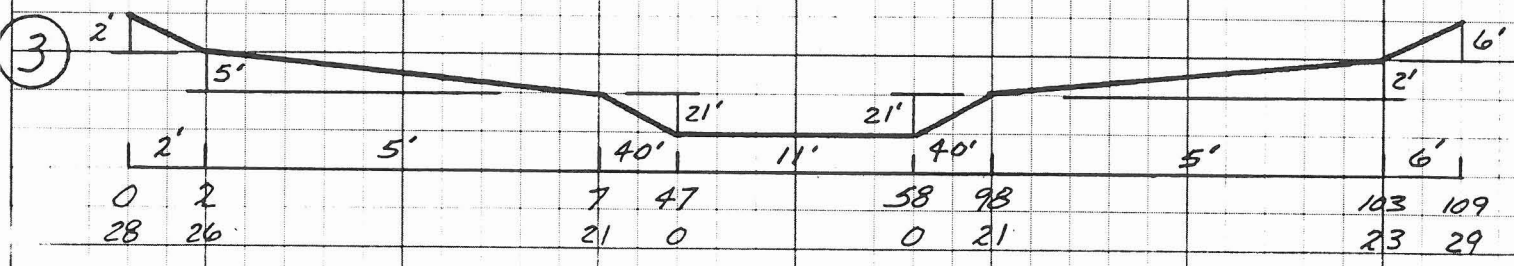
Job No. MART0029 Sht. 1 of 6

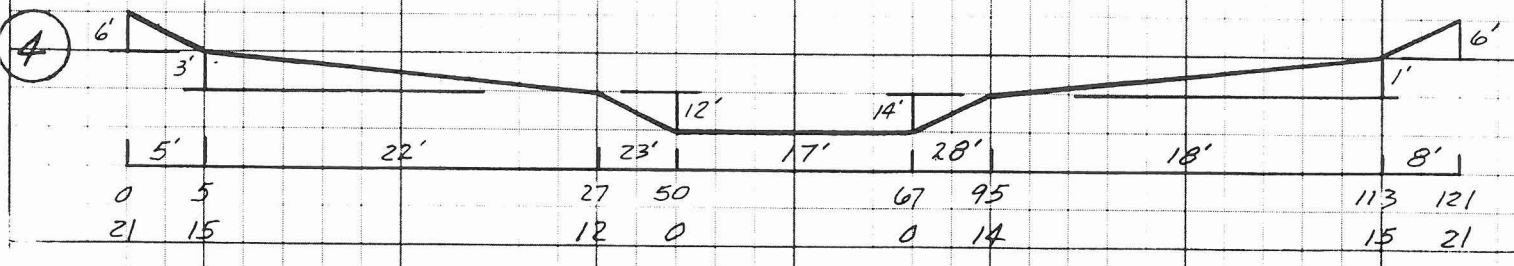
Calc. TSM Chk. DRBO B'chk.

Date 7/30/97 Date 7/30/97 Date









DAVID EVANS AND ASSOCIATES, INC.

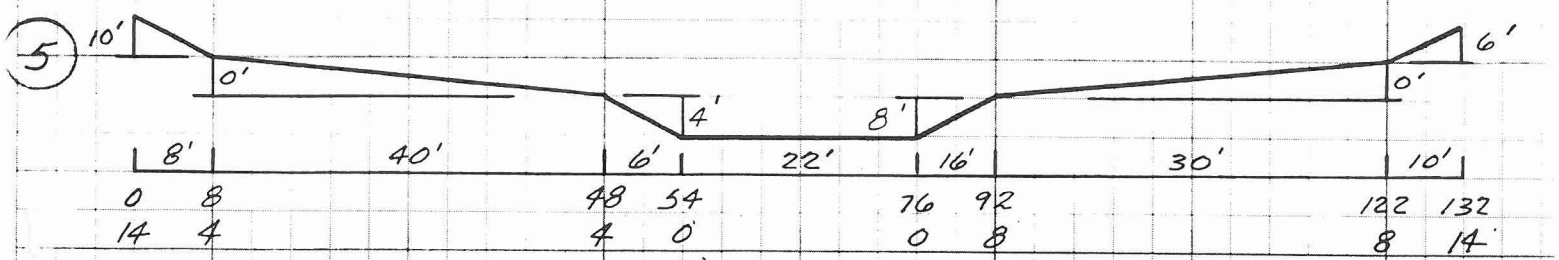
Project: Sweet Canyon Wash

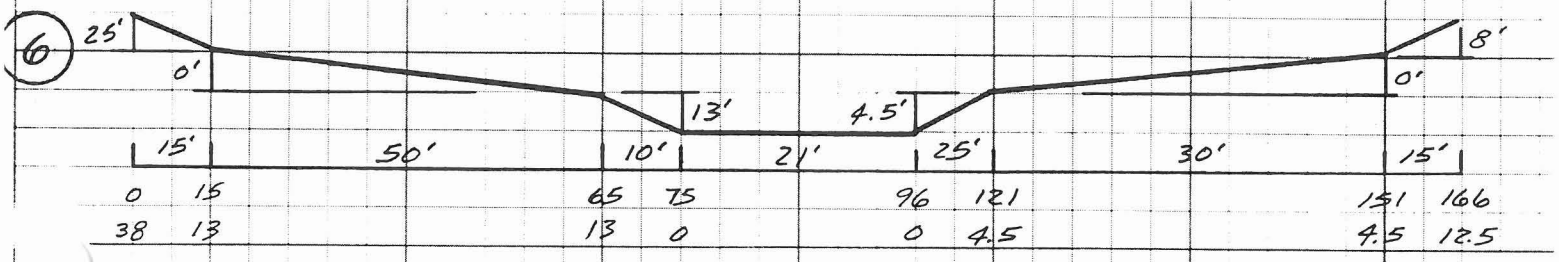
Job No. MARI0029 Sht. 2 of 6

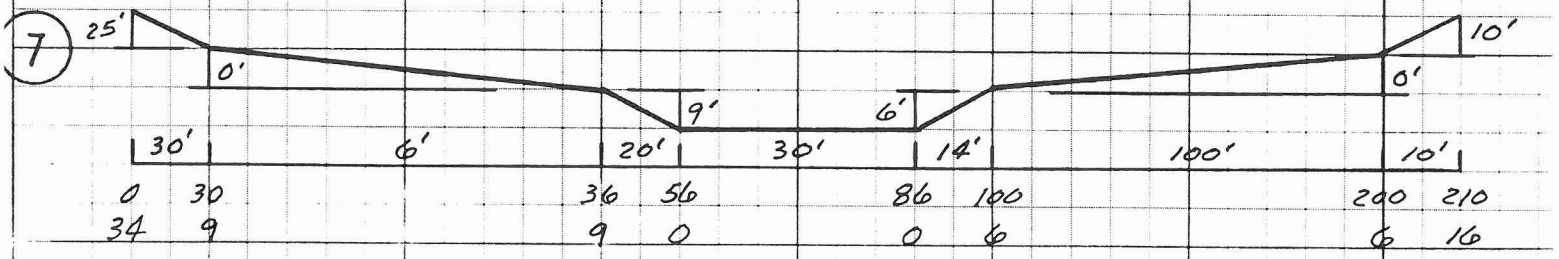
Calc. TSM Date 7/30/97

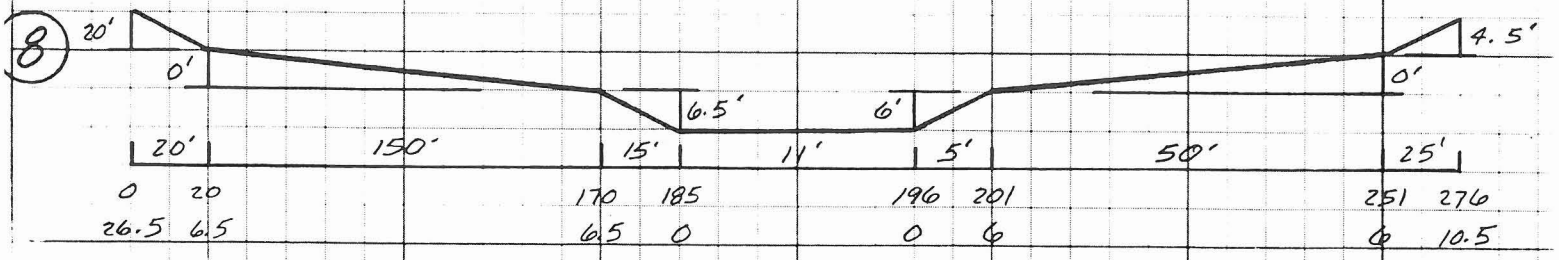
Chk. DRBO Date 7/30/97

B'chk. Date









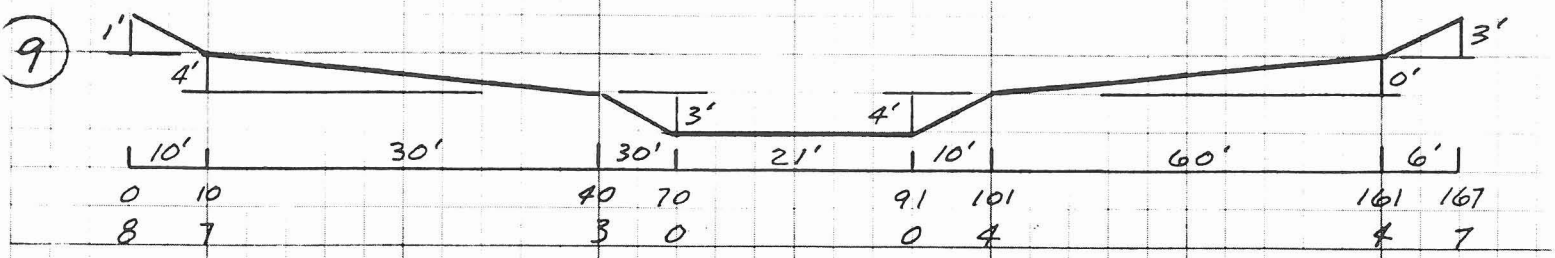
DAVID EVANS AND ASSOCIATES, INC.

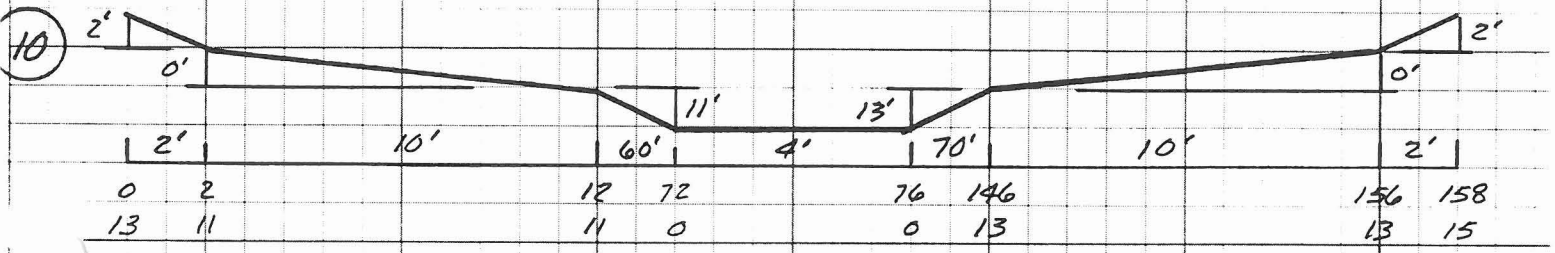
Project Sweat Canyon Wash

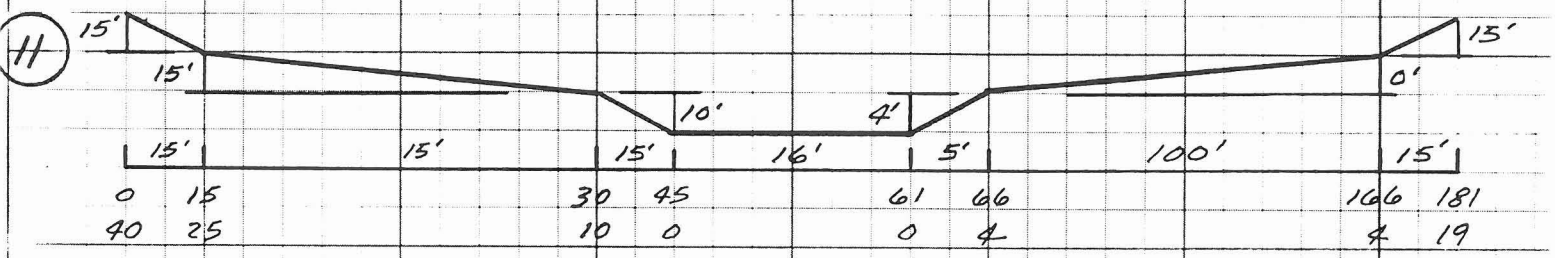
Job No. MARI0029 Sht. 3 of 6

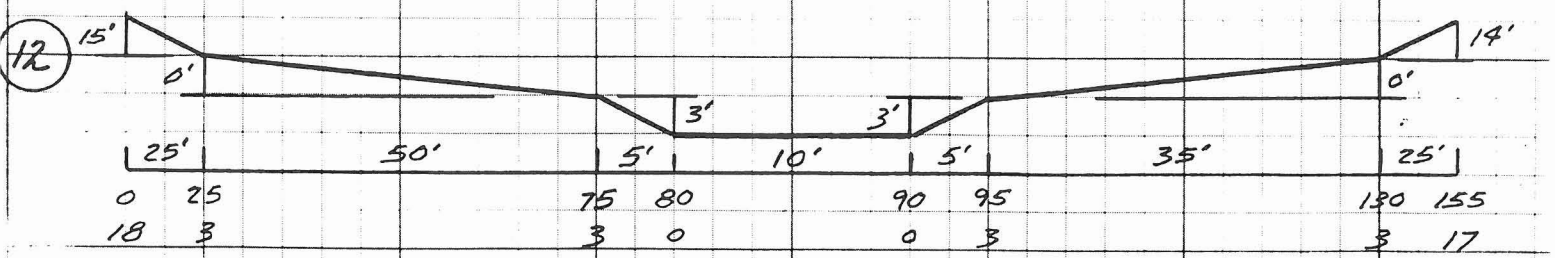
Calc. TSM Chk. DRBD B'chk.

Date 7/30/97 Date 7/30/97 Date







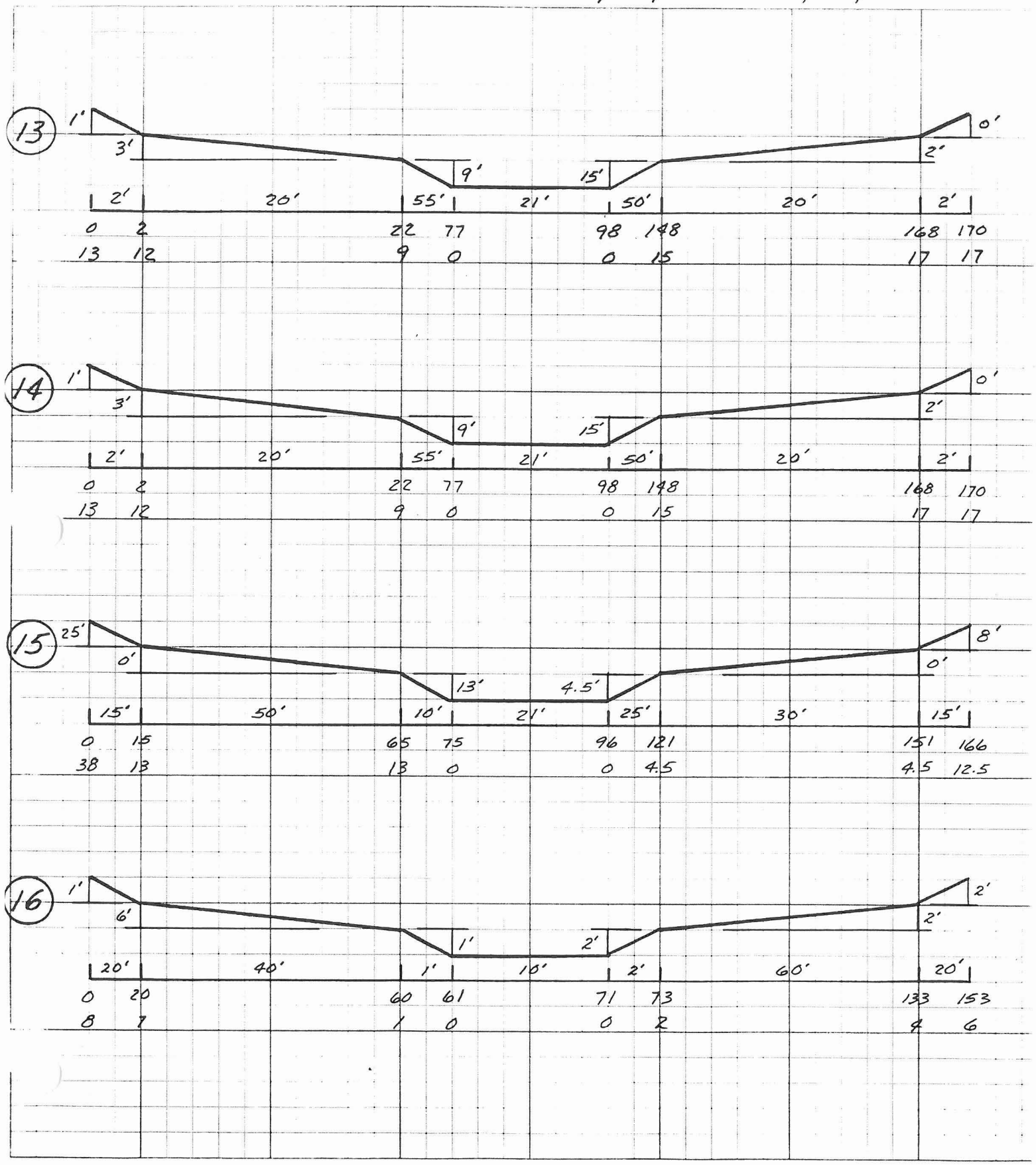


DAVID EVANS AND ASSOCIATES, INC.

Job No. MAR10029 Sht. 4 of 6

Project Sweet Canyon Wall Calc. TSIN Chk. DRBO B'chk.

Date 7/30/97 Date 7/30/97 Date



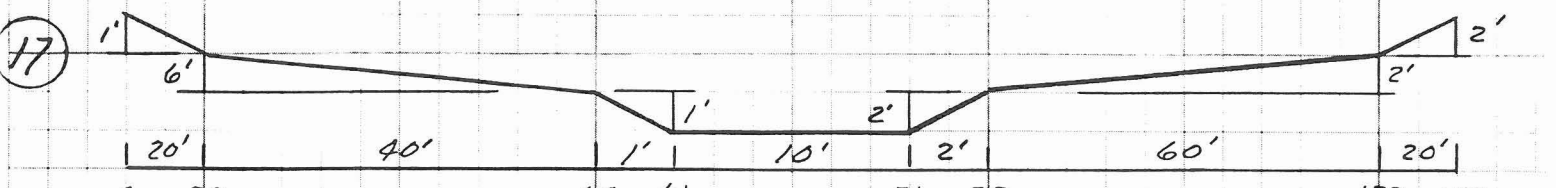
DAVID EVANS AND ASSOCIATES, INC.

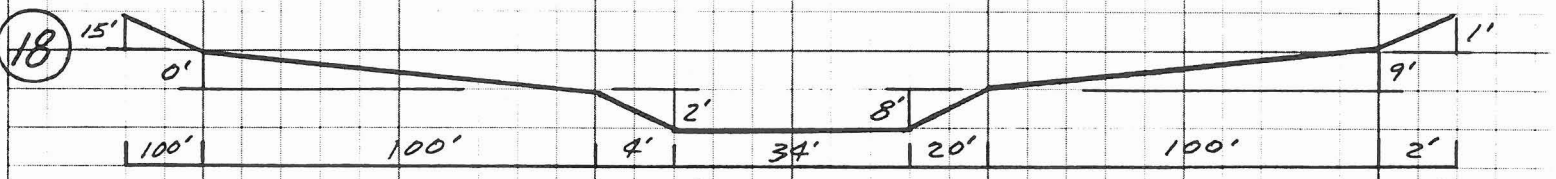
Project Sweet Canyon Wash

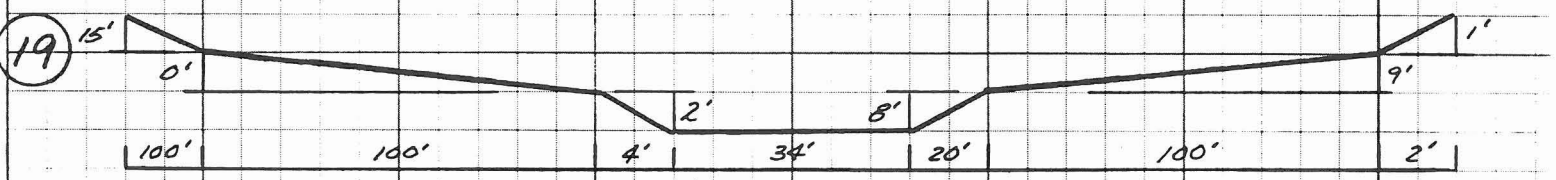
Job No. MART0029 Sht. 5 of 6

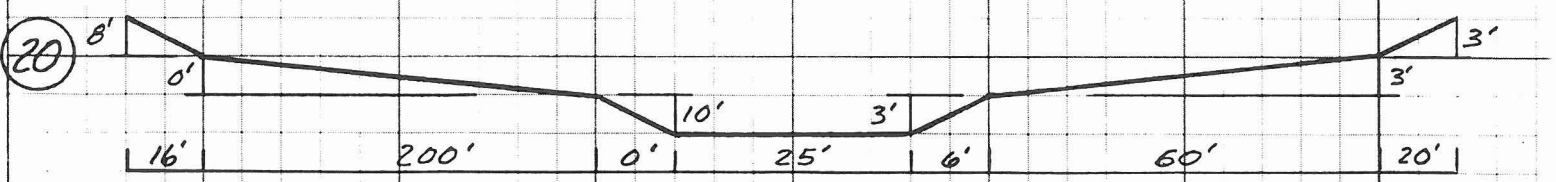
Calc. TSM Chk. DRB0 B'chk.

Date 7/30/97 Date 7/30/97 Date









DAVID EVANS AND ASSOCIATES, INC.

Project Sweet Canyon Wash

Job No. MART0029 Sht. 6 of 6

Calc. TSIX Chk. DRBO B'chk.

Date 7/30/97 Date 7/30/97 Date

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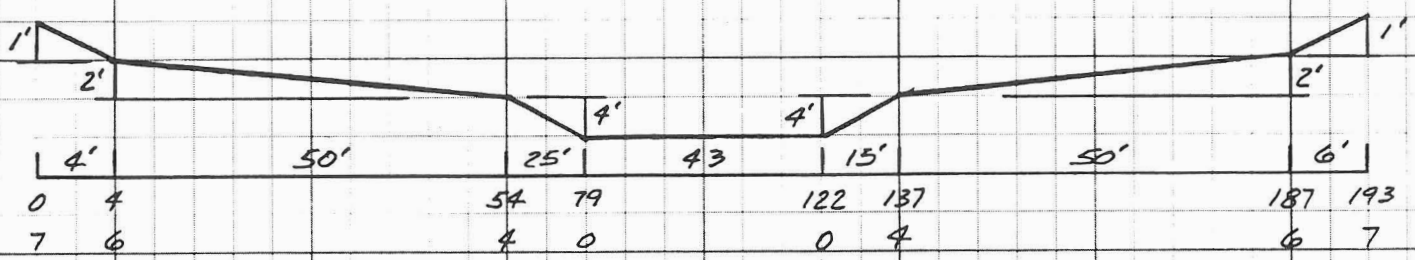

Typical section was found to not be wide enough. Used topographic mapping for 8 point cross section.

HEC-RAS Summary of Velocity & 100-yr Top Width

CP TO CP	Average 100-yr width (ft)	Average Velocity (fps)
6-7	61	12
7-8	83	11
8-9	118	11
9-11	121	10
11-12	185	10
12-14	143	8
14-15	188	11
15-16	328	10
16-17	404	9
35-18	958	7
18-19A	1094	7
20-21	64	8
23-24	127	9
24-25	138	9
25-26	298	8
26-32	393	8
30A-33C	147	8
32-34B	461	8
33C-34B	174	7
34B-35	461	8

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP1 TO CP2
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.017000 ft/ft	
Elevation range: 0.00 ft to 30.00 ft.		

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	30.00	0.00	80.00	0.100
[illegible]	[illegible]	80.00	370.00	0.080
80.00	10.00	370.00	595.00	0.100
200.00	0.00			
320.00	0.00			
370.00	10.00			
485.00	20.00			
595.00	30.00			
Discharge	631.00 cfs			

Results		
Wtd. Mannings Coefficient	0.080	
Water Surface Elevation	1.55	ft
Flow Area	207.03	ft^2
Wetted Perimeter	146.64	ft
Top Width	146.42	ft
Height	1.55	ft
Critical Depth	0.93	ft
Critical Slope	0.097610	ft/ft
Velocity	3.05	ft/s
Velocity Head	0.14	ft
Specific Energy	1.70	ft
Froude Number	0.45	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP2 TO CP3
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.021000 ft/ft	
Elevation range: 0.00 ft to 35.00 ft.		
Station (ft)	Elevation (ft)	
0.00	21.00	
[illegible]	[illegible]	
14.00	13.00	
22.00	0.00	
28.00	0.00	
43.00	15.00	
58.00	31.00	
60.00	35.00	
Discharge	1,252.00	cfs

Start Station	End Station	Roughness
0.00	14.00	0.070
14.00	43.00	0.050
43.00	60.00	0.070

Results		
Wtd. Mannings Coefficient	0.050	
Water Surface Elevation	8.79	ft
Flow Area	115.25	ft^2
Wetted Perimeter	28.76	ft
Top Width	20.21	ft
Height	8.79	ft
Critical Depth	7.85	ft
Critical Slope	0.033240	ft/ft
Velocity	10.86	ft/s
Velocity Head	1.83	ft
Specific Energy	10.63	ft
Froude Number	0.80	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP3 TP CP4
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.022000 ft/ft	
Elevation range: 0.00 ft to 10.00 ft.		
Station (ft)	Elevation (ft)	
0.00	10.00	
[illegible]	8.00	
27.00	4.00	
46.00	0.00	
59.00	0.00	
70.00	2.00	
85.00	6.00	
95.00	10.00	
Discharge	1,992.00	cfs

Start Station	End Station	Roughness
0.00	27.00	0.070
27.00	70.00	[illegible]
70.00	95.00	0.070

Results		
Wtd. Mannings Coefficient	0.051	
Water Surface Elevation	5.33	ft
Flow Area	203.90	ft^2
Wetted Perimeter	60.76	ft
Top Width	59.51	ft
Height	5.33	ft
Critical Depth	5.15	ft
Critical Slope	0.025393	ft/ft
Velocity	9.77	ft/s
Velocity Head	1.48	ft
Specific Energy	6.82	ft
Froude Number	0.93	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP19 TO CP19A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.009000 ft/ft	
Elevation range: 0.00 ft to 8.00 ft.		
Station (ft)	Elevation (ft)	
0.00	3.00	
70.00	2.00	
80.00	0.00	
255.00	0.00	
300.00	2.00	
340.00	4.00	
380.00	6.00	
430.00	8.00	
Discharge	24.00	cfs

Start Station	End Station	Roughness
0.00	70.00	0.060
70.00	430.00	[illegible]50

Results		
Wtd. Mannings Coefficient	0.050	
Water Surface Elevation	0.16	ft
Flow Area	28.82	ft²
Wetted Perimeter	179.49	ft
Top Width	179.47	ft
Height	0.16	ft
Critical Depth	0.08	ft
Critical Slope	0.083531	ft/ft
Velocity	0.83	ft/s
Velocity Head	0.01	ft
Specific Energy	0.17	ft
Froude Number	0.37	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP28 TO CP28A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.014000 ft/ft	
Elevation range: 0.00 ft to 8.00 ft.		
Station (ft)	Elevation (ft)	
0.00	6.00	
52.00	4.00	
67.00	2.00	
82.00	0.00	
98.00	0.00	
116.00	4.00	
143.00	6.00	
190.00	8.00	
Discharge	1,354.00	cfs

Start Station	End Station	Roughness
0.00	52.00	0.050
52.00	116.00	0.040
116.00	190.00	0.050

Results		
Wtd. Mannings Coefficient	0.042	
Water Surface Elevation	4.29	ft
Flow Area	180.45	ft²
Wetted Perimeter	76.30	ft
Top Width	75.58	ft
Height	4.29	ft
Critical Depth	3.89	ft
Critical Slope	0.017572	ft/ft
Velocity	7.50	ft/s
Velocity Head	0.87	ft
Specific Energy	5.17	ft
Froude Number	0.86	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP28A TO CP32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.009000 ft/ft	
Elevation range: 0.00 ft to 18.00 ft.		

Station (ft)	Elevation (ft)
0.00	17.00
100.00	2.00
200.00	2.00
204.00	0.00
238.00	0.00
258.00	8.00
358.00	17.00
360.00	18.00

Start Station	End Station	Roughness
0.00	100.00	0.050
100.00	238.00	0.040
238.00	360.00	0.050

Discharge	1,501.00	cfs

Results		
Wtd. Mannings Coefficient	0.040	
Water Surface Elevation	3.40	ft
Flow Area	286.43	ft²
Wetted Perimeter	157.08	ft
Top Width	155.85	ft
Height	3.40	ft
Critical Depth	2.97	ft
Critical Slope	0.020962	ft/ft
Velocity	5.24	ft/s
Velocity Head	0.43	ft
Specific Energy	3.83	ft
Froude Number	0.68	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP29 TO CP30A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.015000 ft/ft	
Elevation range: 0.00 ft to 8.00 ft.		

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	8.00	0.00	60.00	0.060
20.00	7.00	[illegible]	[illegible]	0.050
[illegible]	1.00	133.00	153.00	0.060
61.00	0.00			
71.00	0.00			
73.00	2.00			
133.00	4.00			
153.00	6.00			
Discharge	1,258.00 cfs			

Results		
Wtd. Mannings Coefficient	0.051	
Water Surface Elevation	4.80	ft
Flow Area	219.71	ft²
Wetted Perimeter	108.01	ft
Top Width	106.41	ft
Height	4.80	ft
Critical Depth	4.31	ft
Critical Slope	0.032145	ft/ft
Velocity	5.73	ft/s
Velocity Head	0.51	ft
Specific Energy	5.31	ft
Froude Number	0.70	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP30 TO CP30A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.019000	ft/ft

Elevation range: 0.00 ft to 8.00 ft.

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	8.00	0.00	60.00	0.070
20.00	7.00	[illegible]	133.00	0.050
60.00	1.00	133.00	153.00	0.070
61.00	0.00			
71.00	0.00			
73.00	2.00			
133.00	4.00			
153.00	6.00			
Discharge	149.00	cfs		

Results		
Wtd. Mannings Coefficient	0.050	
Water Surface Elevation	2.31	ft
Flow Area	34.77	ft²
Wetted Perimeter	32.47	ft
Top Width	31.12	ft
Height	2.31	ft
Critical Depth	1.81	ft
Critical Slope	0.045910	ft/ft
Velocity	4.29	ft/s
Velocity Head	0.29	ft
Specific Energy	2.60	ft
Froude Number	0.71	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP31 TO CP32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.009000 ft/ft	
Elevation range: 0.00 ft to 18.00 ft.		
Station (ft)	Elevation (ft)	
0.00	17.00	
100.00	2.00	
200.00	2.00	
204.00	0.00	
238.00	0.00	
258.00	8.00	
358.00	17.00	
360.00	18.00	
Discharge	310.00	cfs

Start Station	End Station	Roughness
0.00	100.00	0.050
100.00	238.00	0.040
238.00	360.00	0.050

Results		
Wtd. Mannings Coefficient	0.041	
Water Surface Elevation	1.77	ft
Flow Area	67.03	ft²
Wetted Perimeter	42.70	ft
Top Width	41.94	ft
Height	1.77	ft
Critical Depth	1.33	ft
Critical Slope	0.023210	ft/ft
Velocity	4.62	ft/s
Velocity Head	0.33	ft
Specific Energy	2.10	ft
Froude Number	0.64	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP33 TO CP33C
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.018000 ft/ft	
Elevation range: 0.00 ft to 18.00 ft.		
Station (ft)	Elevation (ft)	
0.00	17.00	
100.00	2.00	
200.00	2.00	
204.00	0.00	
238.00	0.00	
258.00	8.00	
358.00	17.00	
360.00	18.00	
Discharge	186.00	cfs

Start Station	End Station	Roughness
0.00	100.00	0.070
100.00	238.00	0.050
238.00	360.00	0.070

Results		
Wtd. Mannings Coefficient	0.052	
Water Surface Elevation	1.22	ft
Flow Area	44.80	ft²
Wetted Perimeter	40.01	ft
Top Width	39.49	ft
Height	1.22	ft
Critical Depth	0.96	ft
Critical Slope	0.040488	ft/ft
Velocity	4.15	ft/s
Velocity Head	0.27	ft
Specific Energy	1.49	ft
Froude Number	0.69	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP33A TO CP33C
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.019000 ft/ft	
Elevation range: 0.00 ft to 18.00 ft.		

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	17.00	0.00	100.00	0.070
100.00	2.00	100.00	238.00	0.050
200.00	2.00	238.00	360.00	0.070
204.00	0.00			
238.00	0.00			
258.00	8.00			
358.00	17.00			
360.00	18.00			
Discharge	79.00 cfs			

Results		
Wtd. Mannings Coefficient	0.051	
Water Surface Elevation	0.72	ft
Flow Area	25.51	ft^2
Wetted Perimeter	37.53	ft
Top Width	37.22	ft
Height	0.72	ft
Critical Depth	0.54	ft
Critical Slope	0.047098	ft/ft
Velocity	3.10	ft/s
Velocity Head	0.15	ft
Specific Energy	0.87	ft
Froude Number	0.66	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP33B TO CP33C
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.022000 ft/ft	
Elevation range: 0.00 ft to 18.00 ft.		
Station (ft)	Elevation (ft)	
0.00	17.00	
[illegible]	[illegible]	
200.00	2.00	
204.00	0.00	
238.00	0.00	
258.00	8.00	
358.00	17.00	
360.00	18.00	
Discharge	114.00	cfs

Start Station	End Station	Roughness
0.00	100.00	0.070
100.00	238.00	0.050
238.00	360.00	0.070

Results		
Wtd. Mannings Coefficient	0.051	
Water Surface Elevation	0.85	ft
Flow Area	30.71	ft²
Wetted Perimeter	38.21	ft
Top Width	37.85	ft
Height	0.85	ft
Critical Depth	0.69	ft
Critical Slope	0.044050	ft/ft
Velocity	3.71	ft/s
Velocity Head	0.21	ft
Specific Energy	1.07	ft
Froude Number	0.73	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP34 TO CP34B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.016000 ft/ft	
Elevation range: 0.00 ft to 18.00 ft.		
Station (ft)	Elevation (ft)	
0.00	18.00	
18.00	10.00	
216.00	10.00	
216.00	0.00	
241.00	0.00	
247.00	3.00	
307.00	6.00	
327.00	9.00	
Discharge	192.00	cfs

Start Station	End Station	Roughness
0.00	216.00	0.060
216.00	307.00	0.050
307.00	327.00	0.060

Results		
Wtd. Mannings Coefficient	0.051	
Water Surface Elevation	1.57	ft
Flow Area	41.59	ft²
Wetted Perimeter	30.07	ft
Top Width	28.13	ft
Height	1.57	ft
Critical Depth	1.20	ft
Critical Slope	0.037952	ft/ft
Velocity	4.62	ft/s
Velocity Head	0.33	ft
Specific Energy	1.90	ft
Froude Number	0.67	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP34A TO CP34B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.019000 ft/ft	
Elevation range: 0.00 ft to 18.00 ft.		
Station (ft)	Elevation (ft)	
0.00	18.00	
1[illegible]	10.00	
216.00	10.00	
216.00	0.00	
241.00	0.00	
247.00	3.00	
307.00	6.00	
327.00	9.00	
Discharge	246.00	cfs

Start Station	End Station	Roughness
0.00	216.00	0.060
216.00	307.00	0.060
307.00	327.00	0.060

Results		
Wtd. Mannings Coefficient	0.051	
Water Surface Elevation	1.73	ft
Flow Area	46.18	ft²
Wetted Perimeter	30.59	ft
Top Width	28.46	ft
Height	1.73	ft
Critical Depth	1.42	ft
Critical Slope	0.036527	ft/ft
Velocity	5.33	ft/s
Velocity Head	0.44	ft
Specific Energy	2.17	ft
Froude Number	0.74	
Flow is subcritical.		

The following Mannings analyses were used for preliminary calculations of estimated velocity. The results of the HEC-RAS model were used in the final hydrologic calculations i.e. number of time steps used in routing calculations. Therefore, these are included For Reference Only

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP4 TO CP6
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.018000 ft/ft	
Elevation range: 0.00 ft to 29.00 ft.		
Station (ft)	Elevation (ft)	
0.00	28.00	
2.00	26.00	
7.00	21.00	
47.00	0.00	
58.00	0.00	
98.00	21.00	
103.00	23.00	
109.00	29.00	
Discharge	1,700.00	cfs

Start Station	End Station	Roughness
0.00	47.00	0.100
47.00	58.00	0.080
58.00	109.00	0.100

Results		
Wtd. Mannings Coefficient	0.096	
Water Surface Elevation	9.37	ft
Flow Area	270.15	ft^2
Wetted Perimeter	51.30	ft
Top Width	46.68	ft
Height	9.37	ft
Critical Depth	6.35	ft
Critical Slope	0.090550	ft/ft
Velocity	6.29	ft/s
Velocity Head	0.62	ft
Specific Energy	9.98	ft
Froude Number	0.46	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP6 TO CP7
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.017000 ft/ft	
Elevation range: 0.00 ft to 18.00 ft.		

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	18.00	0.00	25.00	0.070
13.00	12.00	25.00	73.00	0.050
25.00	6.00	73.00	95.00	0.070
41.00	0.00			
57.00	0.00			
73.00	6.00			
84.00	10.00			
95.00	14.00			
Discharge	3,520.00	cfs		

Results		
Wtd. Mannings Coefficient	0.054	
Water Surface Elevation	8.54	ft
Flow Area	329.39	ft²
Wetted Perimeter	63.30	ft
Top Width	60.08	ft
Height	8.54	ft
Critical Depth	7.66	ft
Critical Slope	0.025759	ft/ft
Velocity	10.69	ft/s
Velocity Head	1.77	ft
Specific Energy	10.32	ft
Froude Number	0.80	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP7 TO CP8
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.016000	ft/ft

Elevation range: 0.00 ft to 21.00 ft.

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	21.00	0.00	27.00	0.070
5.00	15.00	27.00	95.00	0.050
27.00	12.00	95.00	121.00	0.070
50.00	0.00			
67.00	0.00			
95.00	14.00			
113.00	15.00			
121.00	21.00			
Discharge	3,945.00	cfs		

Results		
Wtd. Mannings Coefficient	0.050	
Water Surface Elevation	9.34	ft
Flow Area	329.77	ft²
Wetted Perimeter	58.09	ft
Top Width	53.59	ft
Height	9.34	ft
Critical Depth	8.59	ft
Critical Slope	0.022596	ft/ft
Velocity	11.96	ft/s
Velocity Head	2.22	ft
Specific Energy	11.57	ft
Froude Number	0.85	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP8 TO CP9
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.013000 ft/ft	
Elevation range: 0.00 ft to 24.00 ft.		
Station (ft)	Elevation (ft)	
0.00	24.00	
25.00	[illegible]	
65.00	4.00	
93.00	0.00	
112.00	0.00	
127.00	4.00	
176.00	14.00	
203.00	18.00	
Discharge	4,308.00	cfs

Start Station	End Station	Roughness
0.00	25.00	0.070
25.00	127.00	0.050
127.00	203.00	0.070

Results		
Wtd. Mannings Coefficient	0.054	
Water Surface Elevation	8.01	ft
Flow Area	482.06	ft²
Wetted Perimeter	99.39	ft
Top Width	97.68	ft
Height	8.01	ft
Critical Depth	6.78	ft
Critical Slope	0.026211	ft/ft
Velocity	8.94	ft/s
Velocity Head	1.24	ft
Specific Energy	9.25	ft
Froude Number	0.71	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP9 TO CP11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.011000 ft/ft	
Elevation range: 0.00 ft to 14.00 ft.		
Station (ft)	Elevation (ft)	
0.00	14.00	
8.00	4.00	
48.00	4.00	
54.00	0.00	
76.00	0.00	
92.00	8.00	
122.00	8.00	
132.00	14.00	
Discharge	4,819.00	cfs

Start Station	End Station	Roughness
0.00	48.00	0.070
48.00	92.00	0.050
92.00	[illegible].00	0.070

Results		
Wtd. Mannings Coefficient	0.054	
Water Surface Elevation	9.31	ft
Flow Area	597.92	ft²
Wetted Perimeter	126.44	ft
Top Width	120.43	ft
Height	9.31	ft
Critical Depth	7.46	ft
Critical Slope	0.025812	ft/ft
Velocity	8.06	ft/s
Velocity Head	1.01	ft
Specific Energy	10.32	ft
Froude Number	0.64	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP11 TO CP12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.011000 ft/ft	
Elevation range: 0.00 ft to 38.00 ft.		

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	38.00	0.00	65.00	0.070
15.00	13.00	65.00	121.00	0.050
65.00	13.00	121.00	166.00	0.070
75.00	0.00			
96.00	0.00			
121.00	4.50			
151.00	4.50			
166.00	12.50			
Discharge	5,008.00 cfs			

Results		
Wtd. Mannings Coefficient	0.051	
Water Surface Elevation	8.87	ft
Flow Area	530.84	ft²
Wetted Perimeter	96.87	ft
Top Width	91.01	ft
Height	8.87	ft
Critical Depth	7.50	ft
Critical Slope	0.031825	ft/ft
Velocity	9.43	ft/s
Velocity Head	1.38	ft
Specific Energy	10.25	ft
Froude Number	0.69	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP12 TO CP14
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.011000 ft/ft	
Elevation range: 0.00 ft to 14.00 ft.		
Station (ft)	Elevation (ft)	
0.00	14.00	
20.00	8.00	
40.00	2.00	
82.00	0.00	
123.00	0.00	
143.00	2.00	
169.00	6.00	
197.00	10.00	
Discharge	5,605.00	cfs

Start Station	End Station	Roughness
0.00	40.00	0.060
40.00	143.00	0.050
143.00	197.00	0.060

Results		
Wtd. Mannings Coefficient	0.053	
Water Surface Elevation	6.35	ft
Flow Area	684.65	ft^2
Wetted Perimeter	147.03	ft
Top Width	145.92	ft
Height	6.35	ft
Critical Depth	5.07	ft
Critical Slope	0.025833	ft/ft
Velocity	8.19	ft/s
Velocity Head	1.04	ft
Specific Energy	7.39	ft
Froude Number	0.67	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP14 TO CP15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.007000 ft/ft	
Elevation range: 0.00 ft to 34.00 ft.		
Station (ft)	Elevation (ft)	
0.00	34.00	
30.00	9.00	
36.00	0.00	
56.00	0.00	
86.00	0.00	
100.00	6.00	
200.00	6.00	
210.00	16.00	
Discharge	5,721.00	cfs

Start Station	End Station	Roughness
0.00	36.00	0.050
36.00	100.00	0.040
100.00	210.00	0.050

Results		
Wtd. Mannings Coefficient	0.045	
Water Surface Elevation	9.17	ft
Flow Area	778.11	ft²
Wetted Perimeter	177.91	ft
Top Width	173.38	ft
Height	9.17	ft
Critical Depth	7.79	ft
Critical Slope	0.021441	ft/ft
Velocity	7.35	ft/s
Velocity Head	0.84	ft
Specific Energy	10.01	ft
Froude Number	0.61	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP15 TO CP16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.010000 ft/ft	
Elevation range: 0.00 ft to 26.50 ft.		
Station (ft)	Elevation (ft)	
0.00	26.50	
20.00	6.50	
170.00	6.50	
185.00	0.00	
196.00	0.00	
201.00	6.00	
251.00	6.00	
276.00	10.50	
Discharge	5,867.00	cfs

Start Station	End Station	Roughness
0.00	170.00	0.050
170.00	201.00	0.040
201.00	276.00	0.050

Results		
Wtd. Mannings Coefficient	0.042	
Water Surface Elevation	9.06	ft
Flow Area	783.29	ft²
Wetted Perimeter	256.05	ft
Top Width	250.56	ft
Height	9.06	ft
Critical Depth	8.49	ft
Critical Slope	0.022863	ft/ft
Velocity	7.49	ft/s
Velocity Head	0.87	ft
Specific Energy	9.93	ft
Froude Number	0.75	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP16 TO CP17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.010000	ft/ft

Elevation range: 0.00 ft to 15.00 ft.

Station (ft)	Elevation (ft)
0.00	15.00
7.00	10.00
10.00	4.00
16.00	0.00
27.00	0.00
94.00	6.00
136.00	5.00
202.00	10.00

Start Station	End Station	Roughness
0.00	10.00	0.060
10.00	94.00	0.050
94.00	202.00	0.060

Discharge	6,078.00	cfs

Results		
Wtd. Mannings Coefficient	0.056	
Water Surface Elevation	9.21	ft
Flow Area	840.89	ft^2
Wetted Perimeter	189.10	ft
Top Width	184.23	ft
Height	9.21	ft
Critical Depth	7.66	ft
Critical Slope	0.029917	ft/ft
Velocity	7.23	ft/s
Velocity Head	0.81	ft
Specific Energy	10.03	ft
Froude Number	0.60	

Flow is subcritical.

ANALYSIS TO DETERMINE TOP WIDTH
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP35 TO CP18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.012000 ft/ft	
Elevation range: 0.00 ft to 24.00 ft.		
Station (ft)	Elevation (ft)	
0.00	24.00	
170.00	10.00	
520.00	8.00	
542.00	2.00	
560.00	0.00	
595.00	6.00	
745.00	8.00	
1,020.00	12.00	
Discharge	13,524.00	cfs

Start Station	End Station	Roughness
0.00	170.00	0.070
170.00	595.00	0.050
595.00	1,020.00	0.070

Results		
Wtd. Mannings Coefficient	0.056	
Water Surface Elevation	11.11	ft
Flow Area	2,293.71	ft²
Wetted Perimeter	803.65	ft
Top Width	802.14	ft
Height	11.11	ft
Critical Depth	10.21	ft
Critical Slope	0.035571	ft/ft
Velocity	5.90	ft/s
Velocity Head	0.54	ft
Specific Energy	11.65	ft
Froude Number	0.61	
Flow is subcritical.		

ANALYSIS TO DETERMINE TOP WIDTH
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP18 TO CP19A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.007000	ft/ft
Elevation range: 0.00 ft to 12.00 ft.		

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	8.00	0.00	870.00	0.060
580.00	2.00	870.00	1,320.00	0.050
870.00	4.00	1,320.00	1,665.00	0.060
965.00	0.00			
1,130.00	2.00			
1,275.00	0.00			
1,320.00	8.00			
1,665.00	12.00			
Discharge	12,953.00	cfs		

Results		
Wtd. Mannings Coefficient	0.056	
Water Surface Elevation	5.31	ft
Flow Area	2,931.63	ft^2
Wetted Perimeter	1,045.67	ft
Top Width	1,045.06	ft
Height	5.31	ft
Critical Depth	4.04	ft
Critical Slope	0.036567	ft/ft
Velocity	4.42	ft/s
Velocity Head	0.30	ft
Specific Energy	5.62	ft
Froude Number	0.47	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP20 TO CP21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.022000 ft/ft	
Elevation range: 0.00 ft to 15.00 ft.		
Station (ft)	Elevation (ft)	
0.00	13.00	
2.00	11.00	
12.00	11.00	
72.00	0.00	
76.00	0.00	
146.00	13.00	
156.00	13.00	
158.00	15.00	
Discharge	614.00	cfs

Start Station	End Station	Roughness
0.00	12.00	0.070
12.00	76.00	0.050
76.00	158.00	0.070

Results		
Wtd. Mannings Coefficient	0.056	
Water Surface Elevation	3.86	ft
Flow Area	96.36	ft^2
Wetted Perimeter	46.59	ft
Top Width	45.88	ft
Height	3.86	ft
Critical Depth	3.46	ft
Critical Slope	0.037599	ft/ft
Velocity	6.37	ft/s
Velocity Head	0.63	ft
Specific Energy	4.49	ft
Froude Number	0.78	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP23 TO CP24
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.014000	ft/ft

Elevation range: 0.00 ft to 40.00 ft.

Station (ft)	Elevation (ft)
0.00	40.00
15.00	25.00
30.00	10.00
45.00	0.00
61.00	0.00
66.00	4.00
166.00	4.00
181.00	19.00

Start Station	End Station	Roughness
0.00	30.00	0.060
30.00	66.00	0.050
66.00	181.00	0.060

Discharge	991.00	cfs

Results		
Wtd. Mannings Coefficient	0.058	
Water Surface Elevation	5.10	ft
Flow Area	227.56	ft^2
Wetted Perimeter	133.16	ft
Top Width	129.76	ft
Height	5.10	ft
Critical Depth	4.56	ft
Critical Slope	0.046808	ft/ft
Velocity	4.35	ft/s
Velocity Head	0.29	ft
Specific Energy	5.40	ft
Froude Number	0.58	

Flow is subcritical.

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP24 TO CP25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.018000 ft/ft	
Elevation range: 0.00 ft to 10.00 ft.		

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	10.00	0.00	65.00	0.060
45.00	4.00	65.00	120.00	0.050
65.00	2.00	120.00	200.00	0.060
80.00	0.00			
110.00	0.00			
120.00	2.00			
175.00	4.00			
200.00	6.00			
Discharge	2,634.00 cfs			

Results		
Wtd. Mannings Coefficient	0.051	
Water Surface Elevation	4.67	ft
Flow Area	361.60	ft^2
Wetted Perimeter	143.94	ft
Top Width	143.40	ft
Height	4.67	ft
Critical Depth	4.29	ft
Critical Slope	0.034998	ft/ft
Velocity	7.28	ft/s
Velocity Head	0.82	ft
Specific Energy	5.49	ft
Froude Number	0.81	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP25 TO CP26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.007000 ft/ft	
Elevation range: 0.00 ft to 17.00 ft.		
Station (ft)	Elevation (ft)	
0.00	13.00	
[illegible]	12.00	
22.00	9.00	
77.00	0.00	
98.00	0.00	
148.00	15.00	
168.00	17.00	
170.00	17.00	
Discharge	3,457.00	cfs

Start Station	End Station	Roughness
0.00	22.00	0.050
22.00	98.00	[illegible]
98.00	170.00	0.050

Results		
Wtd. Mannings Coefficient	0.041	
Water Surface Elevation	7.46	ft
Flow Area	419.81	ft²
Wetted Perimeter	93.19	ft
Top Width	91.49	ft
Height	7.46	ft
Critical Depth	6.16	ft
Critical Slope	0.015910	ft/ft
Velocity	8.23	ft/s
Velocity Head	1.05	ft
Specific Energy	8.52	ft
Froude Number	0.68	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP26 TO CP32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.009000 ft/ft	
Elevation range: 0.00 ft to 18.00 ft.		
Station (ft)	Elevation (ft)	
0.00	17.00	
100.00	2.00	
200.00	2.00	
204.00	0.00	
238.00	0.00	
258.00	8.00	
358.00	17.00	
360.00	18.00	
Discharge	3,351.00	cfs

Start Station	End Station	Roughness
0.00	100.00	0.050
100.00	238.00	0.040
258.00	360.00	0.050

Results		
Wtd. Mannings Coefficient	0.040	
Water Surface Elevation	4.58	ft
Flow Area	477.26	ft²
Wetted Perimeter	168.24	ft
Top Width	166.69	ft
Height	4.58	ft
Critical Depth	4.01	ft
Critical Slope	0.017841	ft/ft
Velocity	7.02	ft/s
Velocity Head	0.77	ft
Specific Energy	5.35	ft
Froude Number	0.73	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP30A TO CP33C
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.015000 ft/ft	
Elevation range: 0.00 ft to 18.00 ft.		
Station (ft)	Elevation (ft)	
0.00	17.00	
100.00	2.00	
200.00	2.00	
204.00	0.00	
238.00	0.00	
258.00	8.00	
358.00	17.00	
360.00	18.00	
Discharge	1,540.00	cfs

Start Station	End Station	Roughness
0.00	100.00	0.070
100.00	238.00	[illegible]
238.00	360.00	0.070

Results		
Wtd. Mannings Coefficient	0.050	
Water Surface Elevation	3.39	ft
Flow Area	284.71	ft^2
Wetted Perimeter	156.98	ft
Top Width	155.75	ft
Height	3.39	ft
Critical Depth	3.00	ft
Critical Slope	0.032571	ft/ft
Velocity	5.41	ft/s
Velocity Head	0.45	ft
Specific Energy	3.85	ft
Froude Number	0.71	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP32 TO CP34B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.009000 ft/ft	
Elevation range: 0.00 ft to 13.00 ft.		
Station (ft)	Elevation (ft)	
0.00	13.00	
23.00	11.00	
30.00	9.00	
44.00	0.00	
52.00	0.00	
159.00	9.00	
266.00	10.00	
324.00	13.00	
Discharge	5,275.00	cfs

Start Station	End Station	Roughness
0.00	44.00	0.060
44.00	266.00	0.050
266.00	324.00	0.060

Results		
Wtd. Mannings Coefficient	0.051	
Water Surface Elevation	10.17	ft
Flow Area	842.03	ft²
Wetted Perimeter	246.60	ft
Top Width	243.40	ft
Height	10.17	ft
Critical Depth	7.68	ft
Critical Slope	0.024667	ft/ft
Velocity	6.26	ft/s
Velocity Head	0.61	ft
Specific Energy	10.78	ft
Froude Number	0.59	
Flow is subcritical.		

ANALYSIS TO DETERMINE VELOCITY
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP33C TO CP34B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.010000 ft/ft	
Elevation range: 0.00 ft to 18.00 ft.		
Station (ft)	Elevation (ft)	
0.00	18.00	
16.00	10.00	
216.00	10.00	
216.00	0.00	
241.00	0.00	
247.00	3.00	
307.00	6.00	
327.00	9.00	
Discharge	1,748.00	cfs

Start Station	End Station	Roughness
0.00	216.00	0.060
216.00	307.00	0.050
307.00	327.00	0.060

Results		
Wtd. Mannings Coefficient	0.051	
Water Surface Elevation	6.28	ft
Flow Area	292.39	ft^2
Wetted Perimeter	99.92	ft
Top Width	92.84	ft
Height	6.28	ft
Critical Depth	5.05	ft
Critical Slope	0.030051	ft/ft
Velocity	5.98	ft/s
Velocity Head	0.56	ft
Specific Energy	6.83	ft
Froude Number	0.59	
Flow is subcritical.		

ANALYSIS TO DETERMINE TOP WIDTH
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP34B TO CP35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.007000	ft/ft

Elevation range: 0.00 ft to 9.00 ft.

Station (ft)	Elevation (ft)
0.00	9.00
74.00	7.00
119.00	5.00
201.00	0.00
207.00	0.00
265.00	5.00
400.00	7.00
630.00	9.00

Start Station	End Station	Roughness
0.00	74.00	0.060
74.00	400.00	0.050
400.00	630.00	0.060

Discharge	7,282.00	cfs

Results		
Wtd. Mannings Coefficient	0.052	
Water Surface Elevation	8.57	ft
Flow Area	1,550.40	ft²
Wetted Perimeter	564.89	ft
Top Width	564.44	ft
Height	8.57	ft
Critical Depth	6.84	ft
Critical Slope	0.026642	ft/ft
Velocity	4.70	ft/s
Velocity Head	0.34	ft
Specific Energy	8.91	ft
Froude Number	0.50	

Flow is subcritical.

D.4 Reservoir routing data

Rating Table Report
CP 30

Range Data:			
	Minimum	Maximum	Increment
Discharge	0.00	200.00	25.00 cfs

Discharge (cfs)	HW Elev (ft)
0.00	1,952.41
*21 ~~25.00~~	1,953.94
*42 ~~50.00~~	1,954.70
*64 ~~75.00~~	1,955.38
*85 ~~100.00~~	1,956.61
*106 ~~125.00~~	1,957.59
*128 ~~150.00~~	1,957.92
*149 ~~175.00~~	1,958.20
*170 ~~200.00~~	1,958.44

*15% clogged

Inlet

Outlet

Culvert Designer/Analyzer Report
CP 30

Analysis Component			
Storm Event	Design	Discharge	114.00 cfs

Peak Discharge Method: User-Specified			
Design Discharge	114.00 cfs	Check Discharge	200.00 cfs

Tailwater properties: Trapezoidal Channel			
Slope	0.036670 ft/ft	Mannings Coefficient	0.035
Depth	1.13 ft	Left Side Slope	3 H : V
Right Side Slope	3 H : V	Bottom Width	10.00 ft

Tailwater conditions for Design Storm.			
Discharge	114.00 cfs	Bottom Elevation	1,952.41 ft
Depth	1.13 ft	Velocity	7.50 ft/s

Name	Description	Discharge	HW Elev	Velocity
Culvert-1	2-27x42 inch Horiz Ellipse	110.57 cfs	1,957.39 ft	9.02 ft/s
Weir	Roadway	3.46 cfs	1,957.39 ft	N/A
Total	----------	114.02 cfs	1,957.39 ft	N/A

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Culvert Designer/Analyzer Report
CP 30

Component:Culvert-1

Culvert Summary			
Computed Headwater Elevation	1,957.39 ft	Discharge	110.57 cfs
Inlet Control HW Elev	1,957.10 ft	Tailwater Elevation	1,953.54 ft
Outlet Control HW Elev	1,957.39 ft	Control Type	Outlet Control
Headwater Depth/ Height	2.23		

Grades			
Upstream Invert	1,952.41 ft	Downstream Invert	1,950.47 ft
Length	60.00 ft	Constructed Slope	0.032333 ft/ft

Hydraulic Profile			
Profile	Pressure	Depth, Downstream	3.07 ft
Slope Type	N/A	Normal Depth	1.89 ft
Flow Regime	N/A	Critical Depth	2.01 ft
Velocity Downstream	9.02 ft/s	Critical Slope	0.030671 ft/ft

Section			
Section Shape	Horizontal Ellipse	Mannings Coefficient	0.024
Section Material	Concrete	Span	3.50 ft
Section Size	27x42 inch	Rise	2.23 ft
Number Sections	2		

Outlet Control Properties			
Outlet Control HW Elev	1,957.39 ft	Upstream Velocity Head	1.26 ft
Ke	0.50	Entrance Loss	0.63 ft

Inlet Control Properties			
Inlet Control HW Elev	1,957.10 ft	Flow Control	N/A
Inlet Type	Square edge with headwall	Area Full	12.3 ft²
K	0.01000	HDS 5 Chart	29
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Culvert Designer/Analyzer Report
CP 30

Component:Weir

Hydraulic Component(s): Roadway					
Discharge	3.46	cfs	Allowable HW Elevation	1,957.39	ft
Roadway Width	50.00	ft	Overtopping Coefficient	2.95	US
Low Point	1,957.22	ft	Headwater Elevation	1,957.39	ft
Discharge Coefficient (Cr)	2.95		Submergence Factor (Kt)	1.00	
Tailwater Elevation	1,953.54	ft			

Sta (ft)	Elev (ft)
0.00	1,957.25
20.00	1,957.22

Rating Table Report
CP 33

Range Data:

	Minimum	Maximum	Increment	
Discharge	0.00	325.00	25.00	cfs

Discharge (cfs)	HW Elev (ft)
0.00	1,907.08
*17 25.00	1,910.00
*34 50.00	1,910.76
*50 75.00	1,911.47
*67 100.00	1,912.59
*84 125.00	1,913.88
*100 150.00	1,914.23
*117 175.00	1,914.51
*134 200.00	1,914.75
*151 225.00	1,914.97
*168 250.00	1,915.18
*184 275.00	1,915.38
*201 300.00	1,915.56
*218 325.00	1,915.74

*33% clogged

Inlet

Outlet

Culvert Designer/Analyzer Report
CP 33

Analysis Component			
Storm Event	Design	Discharge	325.00 cfs

Peak Discharge Method: User-Specified			
Design Discharge	325.00 cfs	Check Discharge	150.00 cfs

Tailwater properties: Trapezoidal Channel			
Slope	0.034670 ft/ft	Mannings Coefficient	0.035
Depth	2.02 ft	Left Side Slope	3 H : V
Right Side Slope	3 H : V	Bottom Width	10.00 ft

Tailwater conditions for Design Storm.			
Discharge	325.00 cfs	Bottom Elevation	1,907.08 ft
Depth	2.02 ft	Velocity	10.01 ft/s

Name	Description	Discharge	HW Elev	Velocity
Culvert-1	2-27x42 inch Horiz Ellipse	140.56 cfs	1,915.74 ft	11.64 ft/s
Weir	Roadway	184.50 cfs	1,915.74 ft	N/A
Total	----------	325.07 cfs	1,915.74 ft	N/A

Culvert Designer/Analyzer Report
CP 33

Component:Culvert-1

Culvert Summary			
Computed Headwater Elevation	1,915.74 ft	Discharge	140.56 cfs
Inlet Control HW Elev	1,915.17 ft	Tailwater Elevation	1,909.10 ft
Outlet Control HW Elev	1,915.74 ft	Control Type	Outlet Control
Headwater Depth/ Height	3.26		

Grades			
Upstream Invert	1,908.47 ft	Downstream Invert	1,907.34 ft
Length	60.00 ft	Constructed Slope	0.018833 ft/ft

Hydraulic Profile			
Profile	CompositeM2Pressure	Depth, Downstream	2.13 ft
Slope Type	Mild	Normal Depth	N/A ft
Flow Regime	Subcritical	Critical Depth	2.13 ft
Velocity Downstream	11.64 ft/s	Critical Slope	0.049629 ft/ft

Section			
Section Shape	Horizontal Ellipse	Mannings Coefficient	0.024
Section Material	Concrete	Span	3.50 ft
Section Size	27x42 inch	Rise	2.23 ft
Number Sections	2		

Outlet Control Properties			
Outlet Control HW Elev	1,915.74 ft	Upstream Velocity Head	2.04 ft
Ke	0.50	Entrance Loss	1.02 ft

Inlet Control Properties			
Inlet Control HW Elev	1,915.17 ft	Flow Control	Submerged
Inlet Type	Square edge with headwall	Area Full	12.3 ft²
K	0.01000	HDS 5 Chart	29
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Culvert Designer/Analyzer Report
CP 33

omponent:Weir

Hydraulic Component(s): Roadway					
Discharge	184.50	cfs	Allowable HW Elevation	1,915.74	ft
Roadway Width	50.00	ft	Overtopping Coefficient	3.02	US
Low Point	1,913.58	ft	Headwater Elevation	1,915.74	ft
Discharge Coefficient (Cr)	3.02		Submergence Factor (Kt)	1.00	
Tailwater Elevation	1,909.10	ft			

Sta (ft)	Elev (ft)
0.00	1,913.58
20.00	1,913.70

Rating Table Report
CP 33A

Range Data:

	Minimum	Maximum	Increment	
Discharge	0.00	300.00	25.00	cfs

Discharge (cfs)	HW Elev (ft)
0.00	1,895.48
*21 25.00	1,898.96
*42 50.00	1,901.88
*64 75.00	1,902.33
*85 100.00	1,902.63
*106 125.00	1,902.90
*127 150.00	1,903.13
*149 175.00	1,903.35
*170 200.00	1,903.56
*191 225.00	1,903.75
*212 250.00	1,903.94
*234 275.00	1,904.12
*255 300.00	1,904.30

15% clogged

Inlet

Outlet

Culvert Designer/Analyzer Report
CP 33A

Analysis Component			
Storm Event	Design	Discharge	300.00 cfs

Peak Discharge Method: User-Specified			
Design Discharge	300.00 cfs	Check Discharge	70.00 cfs

Tailwater properties: Trapezoidal Channel			
Slope	0.018167 ft/ft	Mannings Coefficient	0.035
Depth	2.29 ft	Left Side Slope	3 H : V
Right Side Slope	3 H : V	Bottom Width	10.00 ft

Tailwater conditions for Design Storm.			
Discharge	300.00 cfs	Bottom Elevation	1,895.48 ft
Depth	2.29 ft	Velocity	7.76 ft/s

Name	Description	Discharge	HW Elev	Velocity
Culvert-1	1-24x38 inch Horiz Ellipse	58.37 cfs	1,904.30 ft	11.45 ft/s
Weir	Roadway	241.68 cfs	1,904.30 ft	N/A
Total	----------	300.06 cfs	1,904.30 ft	N/A

Culvert Designer/Analyzer Report
CP 33A

Component:Culvert-1

Culvert Summary			
Computed Headwater Elevation	1,904.30 ft	Discharge	58.37 cfs
Inlet Control HW Elev	1,903.11 ft	Tailwater Elevation	1,897.77 ft
Outlet Control HW Elev	1,904.30 ft	Control Type	Outlet Control
Headwater Depth/ Height	3.86		

Grades			
Upstream Invert	1,896.57 ft	Downstream Invert	1,895.48 ft
Length	60.00 ft	Constructed Slope	0.018167 ft/ft

Hydraulic Profile			
Profile	Pressure	Depth, Downstream	2.29 ft
Slope Type	N/A	Normal Depth	N/A ft
Flow Regime	N/A	Critical Depth	1.92 ft
Velocity Downstream	11.45 ft/s	Critical Slope	0.054905 ft/ft

Section			
Section Shape	Horizontal Ellipse	Mannings Coefficient	0.024
Section Material	Concrete	Span	3.15 ft
Section Size	24x38 inch	Rise	2.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev	1,904.30 ft	Upstream Velocity Head	2.04 ft
Ke	0.50	Entrance Loss	1.02 ft

Inlet Control Properties			
Inlet Control HW Elev	1,903.11 ft	Flow Control	Submerged
Inlet Type	Square edge with headwall	Area Full	5.1 ft^2
K	0.01000	HDS 5 Chart	29
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Culvert Designer/Analyzer Report
CP 33A

omponent:Weir

Hydraulic Component(s): Roadway					
Discharge	241.68	cfs	Allowable HW Elevation	1,904.30	ft
Roadway Width	50.00	ft	Overtopping Coefficient	3.03	US
Low Point	1,901.75	ft	Headwater Elevation	1,904.30	ft
Discharge Coefficient (Cr)	3.03		Submergence Factor (Kt)	1.00	
Tailwater Elevation	1,897.77	ft			

Sta (ft)	Elev (ft)
0.00	1,901.81
20.00	1,901.75

Rating Table Report
CP 33B

Range Data:

	Minimum	Maximum	Increment
Discharge	0.00	350.00	25.00 cfs

Discharge (cfs)	HW Elev (ft)
0.00	1,880.48
*12 ~~25.00~~	1,883.14
*25 ~~50.00~~	1,884.10
*37 ~~75.00~~	1,885.37
*50 ~~100.00~~	1,886.17
*62 ~~125.00~~	1,886.51
*75 ~~150.00~~	1,886.78
*87 ~~175.00~~	1,887.03
*100 ~~200.00~~	1,887.26
*112 ~~225.00~~	1,887.47
*125 ~~250.00~~	1,887.67
*137 ~~275.00~~	1,887.86
*150 ~~300.00~~	1,888.04
*162 ~~325.00~~	1,888.21
*175 ~~350.00~~	1,888.38

50% clogged

Inlet

Outlet

Culvert Designer/Analyzer Report
CP 33B

Analysis Component			
Storm Event	Design	Discharge	350.00 cfs

Peak Discharge Method: User-Specified			
Design Discharge	350.00 cfs	Check Discharge	100.00 cfs

Tailwater properties: Trapezoidal Channel			
Slope	0.012000 ft/ft	Mannings Coefficient	0.035
Depth	3.21 ft	Left Side Slope	2 H : V
Right Side Slope	2 H : V	Bottom Width	8.00 ft

Tailwater conditions for Design Storm.			
Discharge	350.00 cfs	Bottom Elevation	1,882.18 ft
Depth	3.21 ft	Velocity	7.56 ft/s

Name	Description	Discharge	HW Elev	Velocity
Culvert-1	2-27x42 inch Horiz Ellipse	97.53 cfs	1,888.38 ft	7.95 ft/s
Weir	Roadway	252.55 cfs	1,888.38 ft	N/A
Total	----------	350.08 cfs	1,888.38 ft	N/A

Culvert Designer/Analyzer Report
CP 33B

omponent:Culvert-1

Culvert Summary			
Computed Headwater Elevation	1,888.38 ft	Discharge	97.53 cfs
Inlet Control HW Elev	1,885.39 ft	Tailwater Elevation	1,885.39 ft
Outlet Control HW Elev	1,888.38 ft	Control Type	Outlet Control
Headwater Depth/ Height	3.54		

Grades			
Upstream Invert	1,880.48 ft	Downstream Invert	1,879.85 ft
Length	60.00 ft	Constructed Slope	0.010500 ft/ft

Hydraulic Profile			
Profile	Pressure	Depth, Downstream	5.54 ft
Slope Type	N/A	Normal Depth	N/A ft
Flow Regime	N/A	Critical Depth	1.92 ft
Velocity Downstream	7.95 ft/s	Critical Slope	0.024665 ft/ft

Section			
Section Shape	Horizontal Ellipse	Mannings Coefficient	0.024
Section Material	Concrete	Span	3.50 ft
Section Size	27x42 inch	Rise	2.23 ft
Number Sections	2		

Outlet Control Properties			
Outlet Control HW Elev	1,888.38 ft	Upstream Velocity Head	0.98 ft
Ke	0.50	Entrance Loss	0.49 ft

Inlet Control Properties			
Inlet Control HW Elev	1,885.39 ft	Flow Control	Submerged
Inlet Type	Square edge with headwall	Area Full	12.3 ft²
K	0.01000	HDS 5 Chart	29
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Culvert Designer/Analyzer Report
CP 33B

omponent:Weir

Hydraulic Component(s): Roadway					
Discharge	252.55	cfs	Allowable HW Elevation	1,888.38	ft
Roadway Width	50.00	ft	Overtopping Coefficient	3.03	US
Low Point	1,885.70	ft	Headwater Elevation	1,888.38	ft
Discharge Coefficient (Cr)	3.03		Submergence Factor (Kt)	1.00	
Tailwater Elevation	1,885.39	ft			

Sta (ft)	Elev (ft)
0.00	1,885.70
20.00	1,885.88

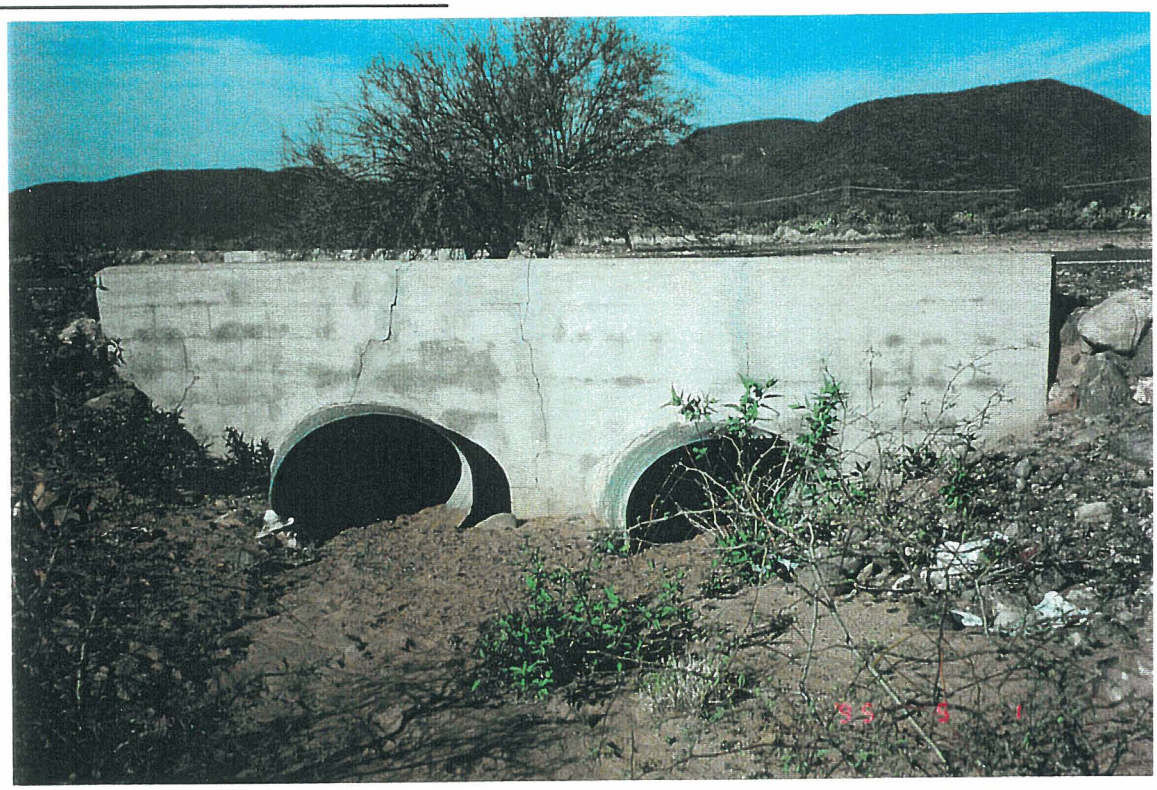
Rating Table Report
CP 34

Range Data:	Minimum	Maximum	Increment
Discharge	0.00	400.00	25.00 cfs

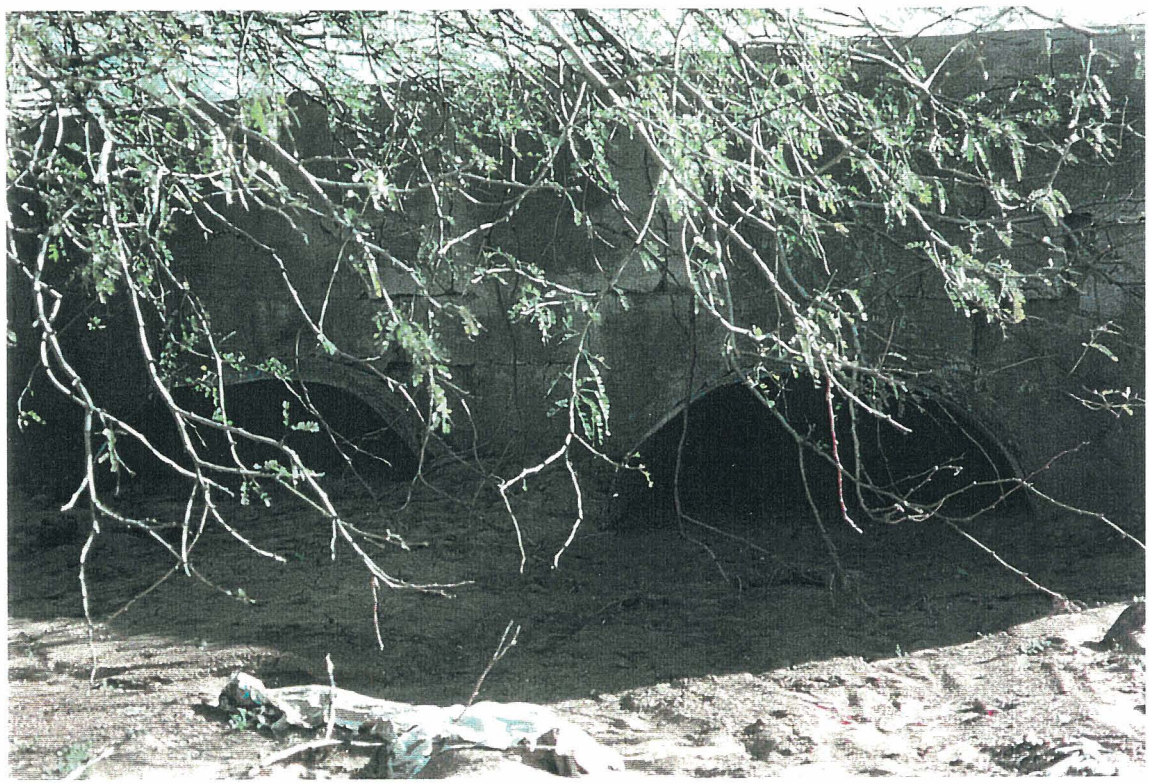
Discharge (cfs)	HW Elev (ft)
0.00	1,847.63
x17 ~~25.00~~	1,850.03
x33 ~~50.00~~	1,850.79
x50 ~~75.00~~	1,851.47
x67 ~~100.00~~	1,852.94
x84 ~~125.00~~	1,853.91
x100 ~~150.00~~	1,854.24
x117 ~~175.00~~	1,854.50
x134 ~~200.00~~	1,854.74
x151 ~~225.00~~	1,854.96
x167 ~~250.00~~	1,855.17
x184 ~~275.00~~	1,855.37
x201 ~~300.00~~	1,855.56
x218 ~~325.00~~	1,855.75
x234 ~~350.00~~	1,855.92
x251 ~~375.00~~	1,856.09
x268 ~~400.00~~	1,856.26

33% clogged

Inlet



Outlet



Culvert Designer/Analyzer Report
CP 34

Analysis Component			
Storm Event	Design	Discharge	400.00 cfs

Peak Discharge Method: User-Specified			
Design Discharge	400.00 cfs	Check Discharge	175.00 cfs

Tailwater properties: Trapezoidal Channel			
Slope	0.013500 ft/ft	Mannings Coefficient	0.035
Depth	2.86 ft	Left Side Slope	3 H : V
Right Side Slope	3 H : V	Bottom Width	10.00 ft

Tailwater conditions for Design Storm.			
Discharge	400.00 cfs	Bottom Elevation	1,847.63 ft
Depth	2.86 ft	Velocity	7.54 ft/s

Name	Description	Discharge	HW Elev	Velocity
Culvert-1	2-27x42 inch Horiz Ellipse	135.50 cfs	1,856.26 ft	11.05 ft/s
Weir	Roadway	264.58 cfs	1,856.26 ft	N/A
Total	----------	400.08 cfs	1,856.26 ft	N/A

Culvert Designer/Analyzer Report
CP 34

Component:Culvert-1

Culvert Summary					
Computed Headwater Elevation	1,856.26	ft	Discharge	135.50	cfs
Inlet Control HW Elev	1,854.84	ft	Tailwater Elevation	1,850.49	ft
Outlet Control HW Elev	1,856.26	ft	Control Type	Outlet Control	
Headwater Depth/ Height	3.48				

Grades					
Upstream Invert	1,848.50	ft	Downstream Invert	1,847.69	ft
Length	60.00	ft	Constructed Slope	0.013500	ft/ft

Hydraulic Profile					
Profile	Pressure		Depth, Downstream	2.80	ft
Slope Type	N/A		Normal Depth	N/A	ft
Flow Regime	N/A		Critical Depth	2.12	ft
Velocity Downstream	11.05	ft/s	Critical Slope	0.045969	ft/ft

Section					
Section Shape	Horizontal Ellipse		Mannings Coefficient	0.024	
Section Material	Concrete		Span	3.50	ft
Section Size	27x42 inch		Rise	2.23	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev	1,856.26	ft	Upstream Velocity Head	1.90	ft
Ke	0.50		Entrance Loss	0.95	ft

Inlet Control Properties					
Inlet Control HW Elev	1,854.84	ft	Flow Control	Submerged	
Inlet Type	Square edge with headwall		Area Full	12.3	ft^2
K	0.01000		HDS 5 Chart	29	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Culvert Designer/Analyzer Report
CP 34

omponent:Weir

Hydraulic Component(s): Roadway					
Discharge	264.58	cfs	Allowable HW Elevation	1,856.26	ft
Roadway Width	50.00	ft	Overtopping Coefficient	3.03	US
Low Point	1,853.57	ft	Headwater Elevation	1,856.26	ft
Discharge Coefficient (Cr)	3.03		Submergence Factor (Kt)	1.00	
Tailwater Elevation	1,850.49	ft			

Sta (ft)	Elev (ft)
0.00	1,853.57
20.00	1,853.60

Rating Table Report
CP 34A

Range Data:	Minimum	Maximum	Increment
Discharge	0.00	600.00	25.00 cfs

Discharge (cfs)	HW Elev (ft)
0.00	1,819.84
*12 25.00	1,821.79
*25 50.00	1,822.66
*37 75.00	1,823.86
*50 100.00	1,824.35
*62 125.00	1,824.66
*75 150.00	1,824.92
*87 175.00	1,825.16
*100 200.00	1,825.37
*112 225.00	1,825.58
*125 250.00	1,825.77
*137 275.00	1,825.96
*150 300.00	1,826.14
*162 325.00	1,826.31
*175 350.00	1,826.47
*187 375.00	1,826.63
*200 400.00	1,826.78
*212 425.00	1,826.93
*225 450.00	1,827.08
*237 475.00	1,827.22
*250 500.00	1,827.36
*262 525.00	1,827.50
*275 550.00	1,827.64
*287 575.00	1,827.78
*300 600.00	1,827.90

*50% clogged

Inlet

Outlet

Culvert Designer/Analyzer Report
CP 34A

Analysis Component			
Storm Event	Design	Discharge	600.00 cfs

Peak Discharge Method: User-Specified			
Design Discharge	600.00 cfs	Check Discharge	200.00 cfs

Tailwater properties: Trapezoidal Channel			
Slope	0.019000 ft/ft	Mannings Coefficient	0.035
Depth	3.21 ft	Left Side Slope	3 H : V
Right Side Slope	3 H : V	Bottom Width	10.00 ft

Tailwater conditions for Design Storm.			
Discharge	600.00 cfs	Bottom Elevation	1,821.01 ft
Depth	3.21 ft	Velocity	9.53 ft/s

Name	Description	Discharge	HW Elev	Velocity
Culvert-1	2-27x42 inch Horiz Ellipse	108.33 cfs	1,827.90 ft	8.84 ft/s
Weir	Roadway	491.73 cfs	1,827.91 ft	N/A
Total	----------	600.06 cfs	1,827.90 ft	N/A

Culvert Designer/Analyzer Report
CP 34A

Component:Culvert-1

Culvert Summary			
Computed Headwater Elevation	1,827.91 ft	Discharge	108.33 cfs
Inlet Control HW Elev	1,824.42 ft	Tailwater Elevation	1,824.22 ft
Outlet Control HW Elev	1,827.91 ft	Control Type	Outlet Control
Headwater Depth/ Height	3.62		

Grades			
Upstream Invert	1,819.84 ft	Downstream Invert	1,818.70 ft
Length	60.00 ft	Constructed Slope	0.019000 ft/ft

Hydraulic Profile			
Profile	Pressure	Depth, Downstream	5.52 ft
Slope Type	N/A	Normal Depth	N/A ft
Flow Regime	N/A	Critical Depth	2.00 ft
Velocity Downstream	8.84 ft/s	Critical Slope	0.029537 ft/ft

Section			
Section Shape	Horizontal Ellipse	Mannings Coefficient	0.024
Section Material	Concrete	Span	3.50 ft
Section Size	27x42 inch	Rise	2.23 ft
Number Sections	2		

Outlet Control Properties			
Outlet Control HW Elev	1,827.91 ft	Upstream Velocity Head	1.21 ft
Ke	0.50	Entrance Loss	0.61 ft

Inlet Control Properties			
Inlet Control HW Elev	1,824.42 ft	Flow Control	Submerged
Inlet Type	Square edge with headwall	Area Full	12.3 ft^2
K	0.01000	HDS 5 Chart	29
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Culvert Designer/Analyzer Report
CP 34A

Component:Weir

Hydraulic Component(s): Roadway					
Discharge	491.73	cfs	Allowable HW Elevation	1,827.91	ft
Roadway Width	50.00	ft	Overtopping Coefficient	3.05	US
Low Point	1,823.83	ft	Headwater Elevation	1,827.91	ft
Discharge Coefficient (Cr)	3.05		Submergence Factor (Kt)	1.00	
Tailwater Elevation	1,824.22	ft			

Sta (ft)	Elev (ft)
0.00	1,823.94
20.00	1,823.83

Floodplain Delineation and Topographic Mapping
For
Sweat Canyon Wash
FCD 97-12

Estimate of Transmission Loss
Phase I, Task 2

February 10, 1998

The Scope of Work for the Floodplain Delineation and Topographic Mapping for Sweat Canyon Wash, required an estimation of the loss rate within the routing channels as documented in this report. This loss rate can be incorporated into the HEC-1 model by application of the routing loss (RL) card. The RL card calculates transmission loss in a channel during hydrograph routing by the application of the equation:

$$Q(I) = (QIN(I) - Qloss) * (1 - Closs)$$

where:

- QIN(I) = the inflow hydrograph ordinate at time I before losses
- Qloss = a constant loss rate in cfs
- Closs = is a fraction of the remaining flow which is lost
- Q(I) = the hydrograph ordinate after losses are removed

The Qloss and Closs parameters will be set on the RL card.

Qloss may be determined from the SCS soil survey. The survey determines a value for the depth of water in a soil profile and the rate at which water will travel through the profile. These values are permeability and available water capacity. The calculated value for Qloss may be adjusted for other factors affecting loss rate such as depth to the groundwater or the presence of an impermeable layer. Closs will represent other features that may remove runoff from the channel. These features may be rock fissures or dry wells, which will intercept a portion of the flow. Without such features Closs will be set to 0.

Two other parameters that may be set on the RL card are PERCRT and ELVINV. PERCRT is the percolation rate of the wetted surface area of the channel and ELVINV is the average invert elevation used to compute PERCRT. These parameters are used only in conjunction with the storage routing method that should not be used for the type of terrain in this watershed.

The soil types and their characteristics are defined in the *Soil Survey of Aguila - Carefree Area, Parts of Maricopa and Pinal Counties, Arizona*. The characteristics related to loss rates are permeability and available water capacity.

Permeability is "the quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil." The soil profile is a "vertical section of the soil extending through all its horizons and into the parent material."

Available water capacity is "the capacity of soils to hold water...expressed as inches of water per inch of soil ... in a 60-inch profile".

A value for Qloss per square foot of channel area may be calculated by determining the percolation rate through the soil of a volume of water equal to the available water capacity. The Qloss for input to the RL card will be determined by the channel width as set on the RX card. The value of Qloss to be used in the RL card will vary based on location and the amount of flow in the overbank area.

The soils found within the main flow channels in Sweat Canyon Wash are listed with their characteristics below.

Pinamt -Tremant complex

Where: From FIS matching crossing to approximately 11,000 feet north along the main wash, 14,000 feet northeast along the east fork and 13,000 feet northeast along the west fork.

Make-up	45%	Pinamt extremely gravelly sandy loam		
	35%	Tremant gravelly loam		
	20%	Combination of other soil types		
Permeability	Pinamt	moderately slow	=	0.2 to 0.6 $^{in}/_{hr}$
	Tremant	moderately slow	=	0.2 to 0.6 $^{in}/_{hr}$
Avail. water cap.	Pinamt	low to moderate	=	3.5 to 7.5 in.
	Tremant	moderate	=	5.0 to 7.5 in.
Qrate	Pinamt	0.012 to 0.076 cfs / ac		
	Tremant	0.017 to 0.076 cfs / ac		
Closs	0			

Carefree - Beardsley complex

Where: Portions of overbank areas of the main wash, east fork and west fork and the channel of the main wash north of the Pinamt - Tremant complex areas.

Make-up	50%	Carefree cobbly clay		
	40%	Beardsley cobbly clay loam		
	10%	Combination of other soil types		
Permeability	Carefree	slow	=	0.06 to 0.2 $^{in}/_{hr}$
	Beardsley	slow	=	0.06 to 0.2 $^{in}/_{hr}$
Avail. water cap.	Carefree	high	=	> 7.5 in.
	Beardsley	low to moderate	=	3.5 to 7.5 in.
Qrate	Carefree	0.008 to 0.025 cfs / ac		
	Beardsley	0.004 to 0.025 cfs / ac		
Closs	0			

Suncity - Cipriano complex

Where: Portions of overbank areas of the main wash, east fork and west fork.

Make-up	55%	Suncity gravelly loam		
	30%	Cipriano very gravelly loam		
	15%	Combination of other soil types		
Permeability	Suncity	slow	=	0.06 to 0.2 $^{in}/_{hr}$
	Cipriano	moderate	=	0.6 to 2.0 $^{in}/_{hr}$
Avail. water cap.	Suncity	very low	=	0 to 3.5 in.
	Cipriano	very low	=	0 to 3.5 in.
Qrate	Suncity	0.0 to 0.012 cfs / ac		
	Cipriano	0.0 to 0.118 cfs / ac		
Closs	0			

ANALYSIS TO DETERMINE TOP WIDTH
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP11 TO CP12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.011000 ft/ft	
Elevation range: 0.00 ft to 18.00 ft.		
Discharge	688.00	cfs

Station (ft)	Elevation (ft)
0.00	18.00
40.00	12.00
60.00	6.00
78.00	0.00
85.00	0.00
116.00	2.00
180.00	6.00
250.00	7.50

Start Station	End Station	Roughness
0.00	60.00	0.060
60.00	180.00	0.050
180.00	250.00	0.060

Results		
Wtd. Mannings Coefficient	0.050	
Water Surface Elevation	3.56	ft
Flow Area	142.83	ft^2
Wetted Perimeter	74.35	ft
Top Width	73.66	ft
Height	3.56	ft
Critical Depth	2.86	ft
Critical Slope	0.031588	ft/ft
Velocity	4.82	ft/s
Velocity Head	0.36	ft
Specific Energy	3.92	ft
Froude Number	0.61	
Flow is subcritical.		

ANALYSIS TO DETERMINE TOP WIDTH
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP35 TO CP18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.012000 ft/ft	
Elevation range: 0.00 ft to 24.00 ft.		
Discharge	2,690.00	cfs

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	24.00	0.00	170.00	0.050
170.00	10.00	170.00	595.00	0.040
520.00	8.00	595.00	1,020.00	0.050
542.00	2.00			
560.00	0.00			
595.00	6.00			
745.00	8.00			
1,020.00	12.00			

Results		
Wtd. Mannings Coefficient	0.046	
Water Surface Elevation	7.68	ft
Flow Area	448.94	ft^2
Wetted Perimeter	201.19	ft
Top Width	199.79	ft
Height	7.68	ft
Critical Depth	6.87	ft
Critical Slope	0.022518	ft/ft
Velocity	5.99	ft/s
Velocity Head	0.56	ft
Specific Energy	8.24	ft
Froude Number	0.70	
Flow is subcritical.		

ANALYSIS TO DETERMINE TOP WIDTH
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP18 TO CP19A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.007000 ft/ft	
Elevation range: 0.00 ft to 18.00 ft.		
Station (ft)	Elevation (ft)	
0.00	8.00	
280.00	0.00	
338.00	7.00	
637.00	10.00	
722.00	2.00	
741.00	2.00	
970.00	12.00	
1,395.00	18.00	
Discharge	2,767.00	cfs

Start Station	End Station	Roughness
0.00	637.00	0.050
637.00	970.00	0.040
970.00	1,395.00	0.050

Results		
Wtd. Mannings Coefficient	0.047	
Water Surface Elevation	4.66	ft
Flow Area	640.54	ft^2
Wetted Perimeter	310.77	ft
Top Width	310.24	ft
Height	4.66	ft
Critical Depth	3.73	ft
Critical Slope	0.027153	ft/ft
Velocity	4.32	ft/s
Velocity Head	0.29	ft
Specific Energy	4.95	ft
Froude Number	0.53	
Flow is subcritical.		
Flow is divided.		

ANALYSIS TO DETERMINE TOP WIDTH
Worksheet for Irregular Channel

Project Description	
Project File	s:\drn\mari0029\fm2\routing.fm2
Worksheet	CP34B TO CP35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data

Channel Slope 0.007000 ft/ft

Elevation range: 0.00 ft to 8.00 ft.

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	8.00	0.00	161.00	0.050
161.00	6.00	161.00	400.00	0.040
227.00	4.00	400.00	661.00	0.050
255.00	0.00			
280.00	0.00			
332.00	4.00			
400.00	6.00			
661.00	8.00			

Discharge 1,413.00 cfs

Results		
Wtd. Mannings Coefficient	0.040	
Water Surface Elevation	3.92	ft
Flow Area	251.88	ft²
Wetted Perimeter	103.87	ft
Top Width	103.44	ft
Height	3.92	ft
Critical Depth	3.12	ft
Critical Slope	0.018574	ft/ft
Velocity	5.61	ft/s
Velocity Head	0.49	ft
Specific Energy	4.41	ft
Froude Number	0.63	

Flow is subcritical.

D.5 Flow splits and diversions data

No flow splits or diversions

D.6 Hydrologic calculations

100-year, 6-hour model

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY   1991               *
*            VERSION 4.0.1E             *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*  RUN DATE  08/25/98  TIME  10:02:02   *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID
  2           ID        FILE NAME: Y100HR6R.DAT   AUGUST 1998
  3           ID
  4           ID        UPDATED MODEL USING N VALUES DETERMINED FROM HYDRAULIC ANALYSIS
  5           ID
  6           ID        100-YEAR, 6-HOUR STORM DISTRIBUTION AS DEFINED BY PROJECT SCOPE
  7           ID
  8           ID        RAINFALL DEPTH OF 3.4 INCHES WAS DETERMINED FROM FIG. 2.7  (NOAA ATLAS)
  9           ID
 10           ID        JD RECORDS USED TO AEREALLY REDUCE POINT RAINFALL DATA
 11           ID
 12           ID
 13           ID        TOTAL WATERSHED DRAINAGE AREA IS 15.52 SQ. MI.
 14           ID
 15           ID        S-GRAPHS FOR DESERT/RANGELAND AND PHOENIX MOUNTAIN WERE UTILIZED
 16           ID                FOR ROUTING RAINFALL EXCESSES
 17           ID
 18           ID        GREEN AND AMPT INFILTRATION EQUATIONS USED TO DETERMINE RAINFALL
 19           ID
 20           ID        FCMC DDMS PROGRAM USED TO CALCULATE RAINFALL, RAINFALL LOSSES,
 21           ID                [illegible] HYDROGRAPHS
 22           ID
 23           ID        NORMAL DEPTH METHOD USED FOR CHANNEL ROUTING
 24           ID
 25           ID        TIES INTO NEW RIVER FLOOD INSURANCE STUDY CROSS SECTION 4.129
 26           ID                DISCHARGE AT CROSS SECTION 4.129 IS 12,400 CFS
 27           ID
 28           ID   DDM MCUHP2 Sweat Canyon Wash Flood Insurance Study
              *DIAGRAM
 29           IT       5                    2000
 30           IO       5
 31           IN      15
 32           JD     3.4     .01
              * The following PC records used a 6-hour rainfall with Pattern No. 3.00
 33           PC    .000    .015    .020    .030    .048    .063    .076    .090    .105    .119
 34           PC    .135    .152    .175    .222    .304    .472    .670    .796    .868    .912
 35           PC    .946    .960    .973    .987   1.000
 36           JD   3.356       1
 37           JD   3.264       5
 38           JD   3.196      10
 39           JD   3.094      20
              * DDM   ***** Updated *****

 40           KK       1
 41           KM   BASIN 1
 42           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 43           KM    L=       .9  Lca=       .4   S=  222.2  Kn= .030  LAG=  10.5
 44           KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 45           BA   0.416
 46           LG     .15     .35    4.90     .28   14.00
 47           UI    350.   1163.    756.    434.    240.    130.     72.     33.     26.      0.
 48           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 49           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  50          KK    R1-2
  51          KM        ROUTE CP1 TO CP2
  52          RS       2    FLOW
  53          RC    0.10    0.08    0.10    2095   0.017
  54          RX       0      55      80     200     320     370     485     595
  55          RY      30      20      10       0       0      10      20      30
              * DDM   ***** Updated *****

  56          KK       2
  57          KM   BASIN 2
  58          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  59          KM    L=      1.1  Lca=       .4   S=  532.4  Kn= .050  LAG=   9.3
  60          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
  61          BA   0.424
  62          LG     .15     .35    4.90     .28   26.00
  63          UI    467.   1315.    738.    384.    191.     96.     46.     29.      0.      0.
  64          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

  65          KK      [illegible]
  66          KM        COMBINE SUB-BASINS 1 & 2
  67          HC       2
              * DDM   ***** Preserved *****

  68          KK    R2-3
  69          KM        ROUTE CP2 TO CP3
  70          RS       1    FLOW
  71          RC     .07     .05     .07    3675   0.021
  72          RX       0       2      14      22      28      43      58      60
  73          RY      21      19      13       0       0      15      31      35
              * DDM   ***** Updated *****

  74          KK       3
  75          KM   BASIN 3
  76          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  77          KM    L=      1.4  Lca=       .4   S=  401.4  Kn= .050  LAG=   9.1
  78          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
  79          BA   0.431
  80          LG     .15     .36    6.80     .13   18.00
  81          UI    498.   1355.    744.    377.    185.     94.     41.     31.      0.      0.
  82          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

  83          KK     CP3
  84          KM        COMBINE SUB-BASIN 3 & CP2
  85          HC       2
              * DDM   ***** Preserved *****

  86          KK    R3-4
  87          KM        ROUTE CP3 TO CP4
  88          RS       1    FLOW
  89          RC     .07     .05     .07    1535   0.022
  90          RX       0      15      27      46      59      70      85      95
  91          RY      10       8       4       0       0       2       6      10
              * DDM   ***** Updated *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 92           KK       4
 93           KM   BASIN 4
 94           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 95           KM    L=      1.1  Lca=       .3   S=  566.4  Kn= .040  LAG=   6.9
 96           KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 97           BA   0.253
 98           LG     .15     .22   10.10     .03    3.00
 99           UI    519.    875.    344.    135.     53.     24.      0.      0.      0.      0.
100           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

101           KK     CP4
102           KM        COMBINE SUB-BASIN 4 & CP3
103           HC       2
              * ROUTING NOT MODELED DUE TO RELATIVELY SHORT FLOW LENGTH AND HIGH VELOCITY
              *   R4-6
              *       ROUTE CP4 TO CP6
              *      1    FLOW
              *    .05    .035     .05    2182   0.018
              *      2       2       7      47      58      98     103     109
              *     28      26      21       0       0      21      23      29
              * DDM   ***** Updated *****

104           KK       5
105           KM   BASIN 5
106           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
107           KM    L=      1.1  Lca=       .6   S=  524.6  Kn= .050  LAG=   9.2
108           KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
109           BA   0.348
110           LG     .15     .35    4.35     .38   35.00
111           UI    392.   1087.    603.    310.    153.     77.     36.     24.      0.      0.
112           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Updated *****

113           KK       6
114           KM   BASIN 6
115           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
116           KM    L=      1.5  Lca=       .3   S=  478.1  Kn= .040  LAG=   8.6
117           KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
118           BA   0.299
119           LG     .15     .39    6.20     .16   10.00
120           UI    390.    971.    499.    240.    115.     56.     22.      0.      0.      0.
121           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

122           KK     CP6
123           KM        COMBINE SUB-BASINS 5 & 6 & CP4
124           HC       3
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 125          KK    R6-7
 126          KM        ROUTE CP6 TO CP7
 127          RS       1    FLOW
 128          RC     .07     .05     .07    1211   0.017
 129          RX       0      13      25      41      57      73      84      95
 130          RY      18      12       6       0       0       6      10      14
              * DDM   ***** Updated *****

 131          KK       7
 132          KM   BASIN 7
 133          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 134          KM    L=      1.1  Lca=       .2   S=  425.0  Kn= .030  LAG=   6.5
 135          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 136          BA   0.256
 137          LG     .15     .39    5.80     .19    7.00
 138          UI    597.    877.    321.    119.     43.     25.      0.      0.      0.      0.
 139          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 140          KK     CP7
 141          KM        COMBINE SUB-BASIN 7 & CP6
 142          HC       2
              * DDM   ***** Preserved *****

 143          KK    R7-8
 144          KM        ROUTE CP7 TO CP8
 145          RS       1    FLOW
 146          RC     .07     .05     .07    1462   0.016
 147          RX       0       5      27      50      67      95     113     121
 148          RY      21      15      12       0       0      14      15      21
              * DDM   ***** Updated *****

 149          KK       8
 150          KM   BASIN 8
 151          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 152          KM    L=       .9  Lca=       .3   S=  357.0  Kn= .040  LAG=   6.8
 153          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 154          BA   0.288
 155          LG     .15     .36    5.10     .26   19.00
 156          UI    610.    996.    385.    150.     55.     27.      0.      0.      0.      0.
 157          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 158          KK     CP8
 159          KM        COMBINE SUB-BASIN 8 & CP7
 160          HC       2
              * DDM   ***** Preserved *****

 161          KK    R8-9
 162          KM        ROUTE CP8 TO CP9
 163          RS       1    FLOW
 164          RC     .07     .05     .07    2714   0.013
 165          RX       0      25      65      93     112     127     176     203
 166          RY      24      14       4       0       0       4      14      18
              * DDM   ***** Updated *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 167          KK       9
 168          KM   BASIN 9
 169          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 170          KM    L=       1.4 Lca=         .3  S= 631.9   Kn=.030  LAG=   9.3
 171          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 172          BA   0.508
 173          LG     .15     .33    7.30     .11    5.00
 174          UI    559.   1576.    884.    460.    229.    115.     55.     35.      0.      0.
 175          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 176          KK     CP9
 177          KM        COMBINE SUB-BASIN 9 & CP8
 178          HC       2
              * DDM   ***** Preserved *****

 179          KK   R9-11
 180          KM        ROUTE CP 9 TO CP11
 181          RS       1    FLOW
 182          RC     .07     .05     .07    2934   0.011
 183          RX       0       8      48      54      76      92     122     132
 184          RY      14       4       4       0       0       8       8      14
              * DDM   ***** Updated *****

 185          KK      11
 186          KM   BASIN 11
 187          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 188          KM    L=      1.2  Lca=       .3   S=  503.3  Kn= .030  LAG=   7.1
 189          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 190          BA   0.354
 191          LG     .15     .19   11.20     .02    7.00
 192          UI    686.   1224.    499.    199.     84.     32.      0.      0.      0.      0.
 193          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 194          KK    CP11
 195          KM        COMBINE SUB-BASIN 11 & CP9
 196          HC       2
              * DDM   ***** Preserved *****

 197          KK  R11-12
 198          KM        ROUTE CP11 TO CP12
 199          RS       1    FLOW
 200          RC     .07     .05     .07    4331  0.0110
 201          RX       0      15      65      75      96     121     151     166
 202          RY      38      13      13       0       0     4.5     4.5    12.5
              * DDM   ***** Updated *****

 203          KK      12
 204          KM   BASIN 12
 205          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 206          KM    L=       1.4 Lca=         .5 S=  453.9   Kn=.030 LAG    11.9
 207          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 208          BA    .586
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 209          LG     .15     .25    9.70     .05    9.00
 210          UI    363.   1310.   1205.    693.    407.    232.    144.     82.     39.     32.
 211          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 212          KK    CP12
 213          KM        COMBINE SUB-BASIN 12 & CP11
 214          HC       2
              * DDM   ***** Preserved *****

 215          KK  R12-14
 216          KM        ROUTE CP12 TO CP14
 217          RS       1    FLOW
 218          RC     .06     .05     .06    2565   0.011
 219          RX       0      20      40      82     123     143     169     197
 220          RY      14       8       2       0       0       2       6      10
              * DDM   ***** Updated *****

 221          KK      14
 222          KM   BASIN 14
 223          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 224          KM    L=       .8  Lca=       .3   S=  398.7  Kn= .030  LAG=   6.5
 225          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 226          BA   0.180
 227          LG     .15     .35    7.00     .12    4.00
 228          UI    420.    617.    226.     84.     30.     18.      0.      0.      0.      0.
 229          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 230          KK    CP14
 231          KM        COMBINE SUB-BASIN 14 & CP12
 232          HC       2
              * DDM   ***** Preserved *****

 233          KK  R14-15
 234          KM        ROUTE CP14 TO CP15
 235          RS       1    FLOW
 236          RC     .05     .04     .05     766   0.007
 237          RX       0      30      36      56      86     100     200     210
 238          RY      34       9       9       0       0       6       6      16
              * DDM   ***** Updated *****

 239          KK      15
 240          KM   BASIN 15
 241          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 242          KM    L=      1.3  Lca=       .2   S=  524.0  Kn= .030  LAG=   5.9
 243          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 244          BA   0.630
 245          LG     .15     .27    8.80     .06   12.00
 246          UI   1836.   2022.    678.    239.     73.      0.      0.      0.      0.      0.
 247          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 248          KK    CP15
 249          KM        COMBINE SUB-BASIN 15 & CP14
 250          HC       2
              * DDM   ***** Preserved *****

 251          KK  R15-16
 252          KM        ROUTE CP15 TO CP 16
 253          RS       2    FLOW
 254          RC     .05     .04     .05    4306   0.010
 255          RX       0      20     170     185     196     201     251     276
 256          RY    26.5     6.5     6.5       0       0       6       6    10.5
              * DDM   ***** Updated *****

 257          KK      16
 258          KM   BASIN 16
 259          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 260          KM    L=      2.1  Lca=       .6   S=  499.0  Kn= .030  LAG=  12.1
 261          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 262          BA   0.728
 263          LG     .15     .27    8.80     .06   15.00
 264          UI    436.   1563.   1524.    871.    512.    302.    183.    107.     55.     39.
 265          UI     39.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 266          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 267          KK    CP16
 268          KM        COMBINE SUB-BASIN 16 & CP15
 269          HC       2
              * DDM   ***** Preserved *****

 270          KK  R16-17
 271          KM        ROUTE CP16 TO CP17
 272          RS       4    FLOW
 273          RC     .06     .05     .06    9527   0.010
 274          RX       0       7      10      16      27      94     136     202
 275          RY      15      10       4       0       0       6       5      10
              * DDM   ***** Updated *****

 276          KK      17
 277          KM   BASIN 17
 278          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 279          KM    L=      2.6  Lca=      1.3   S=  375.8  Kn= .030  LAG=  22.4
 280          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 281          BA   0.620
 282          LG     .35     .29    8.40     .07    3.00
 283          UI     93.    358.    664.    860.    855.    642.    435.    296.    197.    135.
 284          UI     89.     64.     33.     23.     23.     23.      0.      0.      0.      0.
 285          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Updated *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 286          KK      35
 287          KM   BASIN 35
 288          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 289          KM    L=      2.8  Lca=      1.4   S=   82.3  Kn= .030  LAG=  31.4
 290          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 291          BA   0.680
 292          LG     .35     .25    9.70     .05     .00
 293          UI     73.    153.    353.    520.    645.    699.    658.    532.    401.    306.
 294          UI    230.    174.    131.    101.     77.     51.     50.     23.     18.     18.
 295          UI     18.     18.     18.      0.      0.      0.      0.      0.      0.      0.
 296          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 297          KK    CP17
 298          KM        COMBINE SUB-BASINS 17 & 35 & CP16
 299          HC       3
              * DDM   ***** Updated *****

 300          KK      20
 301          KM   BASIN 20
 302          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 303          KM    L=      1.2  Lca=       .7   S=  458.9  Kn= .040  LAG=  10.6
 304          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 305          BA   0.401
 306          LG     .15     .37    5.20     .24   15.00
 307          UI    330.   1110.    732.    422.    236.    128.     71.     34.     24.      0.
 308          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 309          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 310          KK  R20-21
 311          KM        ROUTE CP20 TO CP21
 312          RS       3    FLOW
 313          RC     .07     .05     .07    6955   0.022
 314          RX       0       2      12      72      76     146     156     158
 315          RY      13      11      11       0       0      13      13      15
              * DDM   ***** Updated *****

 316          KK      21
 317          KM   BASIN 21
 318          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 319          KM    L=      2.0  Lca=       .9   S=  304.5  Kn= .050  LAG=  15.5
 320          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 321          BA   0.543
 322          LG     .15     .35    4.50     .35   26.00
 323          UI    186.    695.   1137.    705.    504.    327.    230.    142.     99.     62.
 324          UI     44.     23.     23.     23.      0.      0.      0.      0.      0.      0.
 325          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 326          KK    CP21
 327          KM        COMBINE SUB-BASINS 20 & 21
 328          HC       2
              * DDM   ***** Updated *****

 329          KK      22
 330          KM   BASIN 22
 331          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 332          KM    L=      1.5  Lca=       .9   S=  471.0  Kn= .030  LAG=  12.4
 333          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 334          BA   0.337
 335          LG     .15     .38    5.60     .21    4.00
 336          UI    191.    682.    720.    409.    244.    148.     88.     53.     31.     18.
 337          UI     18.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 338          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Updated *****

 339          KK      23
 340          KM   BASIN 23
 341          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 342          KM    L=      1.7  Lca=       .9   S=  346.8  Kn= .030  LAG=  14.0
 343          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 344          BA   0.440
 345          LG     .15     .39    5.70     .20    3.00
 346          UI    190.    687.    966.    557.    371.    239.    145.     96.     59.     38.
 347          UI     20.     20.      0.      0.      0.      0.      0.      0.      0.      0.
 348          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 349          KK    CP23
 350          KM        COMBINE SUB-BASINS 22 & 23
 351          HC       2
              * DDM   ***** Preserved *****

 352          KK  R23-24
 353          KM        ROUTE CP23 TO CP24
 354          RS       3    FLOW
 355          RC     .06     .05     .06    8047   0.014
 356          RX       0      15      30      45      61      66     166     181
 357          RY      40      25      10       0       0       4       4      19
              * DDM   ***** Updated *****

 358          KK      24
 359          KM   BASIN 24
 360          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 361          KM    L=      1.8  Lca=       .9   S=  110.1  Kn= .030  LAG=  21.6
 362          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 363          BA   0.382
 364          LG     .35     .39    5.70     .20    6.00
 365          UI     60.    242.    441.    556.    532.    378.    254.    168.    112.     75.
 366          UI     49.     36.     14.     14.     14.      0.      0.      0.      0.      0.
 367          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 368          KK    CP24
 369          KM        COMBINE SUB-BASIN 24 & CP23
 370          HC       2
              * DDM   ***** Preserved *****

 371          KK   CP24A
 372          KM        COMBINE CP21 & CP24
 373          HC       2
              * DDM   ***** Preserved *****

 374          KK  R24-25
 375          KM        ROUTE CP24 TO CP25
 376          RS       1    FLOW
 377          RC     .06     .05     .06    1843   0.018
 378          RX       0      45      65      80     110     120     175     200
 379          RY      10       4       2       0       0       2       4       6
              * DDM   ***** Updated *****

 380          KK      25
 381          KM   BASIN 25
 382          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 383          KM    L=      2.2  Lca=        .3   S=  205.5  Kn= .040  LAG=  11.4
 384          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 385          BA   0.822
 386          LG     .15     .37    6.60     .14   10.00
 387          UI    568.   2036.   1588.    937.    538.    304.    171.    104.     47.     47.
 388          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 389          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 390          KK    CP25
 391          KM        COMBINE SUB-BASIN 25 & CP24
 392          HC       2
              * DDM   ***** Preserved *****

 393          KK  R25-26
 394          KM        ROUTE CP25 TO CP26
 395          RS       2    FLOW
 396          RC     .05    0.04     .05    5507   0.007
 397          RX       0       2      22      77      98     148     168     170
 398          RY      13      12       9       0       0      15      17      17
              * DDM   ***** Updated *****

 399          KK      26
 400          KM   BASIN 26
 401          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 402          KM    L=      1.2  Lca=       .6   S=  462.4  Kn= .030  LAG=  11.5
 403          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 404          BA   0.387
 405          LG     .35     .37    6.60     .14    2.00
 406          UI    265.    910.    940.    476.    224.    100.     42.     28.      0.      0.
 407          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 408          KK    CP26
 409          KM        COMBINE SUB-BASIN 26 & CP25
 410          HC       2
              * DDM   ***** Preserved *****

 411          KK  R26-32
 412          KM        ROUTE CP 26 TO CP32
 413          RS       3    FLOW
 414          RC     .05    0.04     .05    7976   0.009
 415          RX       0     100     200     204     238     258     358     360
 416          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 417          KK      27
 418          KM   BASIN 27
 419          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 420          KM    L=      1.6  Lca=       .8   S=  123.6  Kn= .030  LAG=  18.6
 421          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 422          BA   0.396
 423          LG     .35     .29    8.40     .07     .00
 424          UI     91.    349.    601.    674.    510.    320.    199.    126.     77.     49.
 425          UI     23.     17.     17.      0.      0.      0.      0.      0.      0.      0.
 426          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Updated *****

 427          KK      28
 428          KM   BASIN 28
 429          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 430          KM    L=      2.5  Lca=       .9   S=   99.6  Kn= .030  LAG=  24.8
 431          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 432          BA   0.460
 433          LG     .35     .22   10.10     .03     .00
 434          UI     62.    202.    397.    548.    595.    518.    373.    262.    185.    128.
 435          UI     91.     63.     43.     30.     15.     15.     15.     15.      0.      0.
 436          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 437          KK    CP28
 438          KM        COMBINE SUB-BASINS 27 & 28
 439          HC       2
              * DDM   ***** Preserved *****

 440          KK  28-28A
 441          KM        ROUTE CP28 TO CP28A
 442          RS       2    FLOW
 443          RC     .05     .04     .05    3739   0.014
 444          RX       0      52      67      82      98     116     143     190
 445          RY       6       4       2       0       0       4       6       8
              * DDM   ***** Updated *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 446          KK     28A
 447          KM   BASIN 28A
 448          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 449          KM    L=      1.4  Lca=       .5   S=   98.6  Kn= .030  LAG=  16.3
 450          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 451          BA   0.197
 452          LG     .35     .22   10.10     .03     .00
 453          UI     60.    233.    370.    348.    216.    126.     74.     42.     26.     10.
 454          UI     10.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 455          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 456          KK   CP28A
 457          KM        COMBINE SUB-BASIN 28A & CP28A
 458          HC       2
              * DDM   ***** Preserved *****

 459          KK  28A-32
 460          KM        ROUTE CP 28A TO CP32
 461          RS       5    FLOW
 462          RC     .05     .04     .05    7033   0.009
 463          RX       0     100     200     204     238     258     358     360
 464          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 465          KK      31
 466          KM   BASIN 31
 467          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 468          KM    L=      1.3  Lca=       .6   S=  109.0  Kn= .030  LAG=  16.0
 469          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 470          BA   0.197
 471          LG     .35     .38    6.40     .15     .00
 472          UI     62.    243.    379.    347.    210.    122.     72.     39.     24.     10.
 473          UI     10.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 474          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 475          KK  R31-32
 476          KM        ROUTE CP 31 TO CP32
 477          RS       4    FLOW
 478          RC     .05     .04     .05    3548   0.009
 479          RX       0     100     200     204     238     258     358     360
 480          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 481          KK      32
 482          KM   BASIN 32
 483          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 484          KM    L=      2.5  Lca=      1.2   S=  150.8  Kn= .030  LAG=  25.5
 485          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 486          BA   0.746
 487          LG     .35     .30    8.00     .08     .00
 488          UI     98.    304.    607.    846.    943.    849.    624.    444.    315.    221.
 489          UI    163.    110.     76.     65.     24.     24.     24.     24.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 490          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 491          KK    CP32
 492          KM        COMBINE SUB-BASIN 32, CP26, CP28, & CP31
 493          HC       4
              * DDM   ***** Preserved *****

 494          KK  32-34B
 495          KM        ROUTE CP32 TO CP34B
 496          RS       2    FLOW
 497          RC     .06     .05     .06    6403   0.009
 498          RX       0      23      30      44      52     159     266     324
 499          RY      13      11       9       0       0       9      10      13
              * DDM   ***** Updated *****

 500          KK      29
 501          KM   BASIN 29
 502          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 503          KM    L=      1.9  Lca=      1.1   S=  106.2  Kn= .030  LAG=  23.3
 504          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 505          BA   0.863
 506          LG     .35     .25    9.70     .05     .00
 507          UI    125.    449.    853.   1132.   1168.    932.    640.    443.    300.    211.
 508          UI    141.     93.     71.     30.     30.     30.     30.      0.      0.      0.
 509          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 510          KK  29-30A
 511          KM        ROUTE CP29 TO CP30A
 512          RS       4    FLOW
 513          RC     .06     .05     .06    6363   0.015
 514          RX       0      20      60      61      71      73     133     153
 515          RY       8       7       1       0       0       2       4       6
              * DDM   ***** Updated *****

 516          KK      30
 517          KM   BASIN 30
 518          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 519          KM    L=      1.4  Lca=       .4   S=   83.1  Kn= .030  LAG=  14.5
 520          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 521          BA   0.080
 522          LG     .35     .15   12.40     .01     .00
 523          UI     32.    121.    173.    133.     73.     40.     22.     12.      5.      5.
 524          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 525          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 526          KK     S30
 527          KM        STAGE/DISCHARGE FOR 2-40"x28" CMPA, APPROXIMATELY 15% CLOGGED
 528          RS       1    ELEV  1952.4
 529          SA       0    0.12    0.12
 530          SE  1952.4    1958    1960
 531          SQ       0     135     200
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 532          KK  30-30A
 533          KM        ROUTE CP30 TO CP30A
 534          RS       3    FLOW
 535          RC     .07     .05     .07    3503   0.019
 536          RX       0      20      60      61      71      73     133     153
 537          RY       8       7       1       0       0       2       4       6
              * DDM   ***** Updated *****

 538          KK     30A
 539          KM   BASIN 30A
 540          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 541          KM    L=      1.4  Lca=       .6   S=   94.2  Kn= .030  LAG=  17.4
 542          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 543          BA   0.314
 544          LG     .35     .32    7.60     .09     .00
 545          UI     83.    321.    533.    553.    374.    228.    137.     82.     49.     28.
 546          UI     15.     15.      0.      0.      0.      0.      0.      0.      0.      0.
 547          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 548          KK   CP30A
 549          KM        COMBINE SUB-BASIN 30A, CP29, & CP30
 550          HC       3
              * DDM   ***** Preserved *****

 551          KK  30A-33C
 552          KM        ROUTE CP30A TO CP33C
 553          RS       3    FLOW      -1
 554          RC     .07     .05     .07    5128   0.015
 555          RX       0     100     200     204     238     258     358     360
 556          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 557          KK      33
 558          KM   BASIN 33
 559          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 560          KM    L=       .9  Lca=       .4   S=   88.2  Kn= .030  LAG=  12.6
 561          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 562          BA   0.098
 563          LG     .35     .19   11.20     .02     .00
 564          UI     54.    195.    236.    138.     69.     35.     17.      6.      6.      0.
 565          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 566          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 567          KK     S33
 568          KM        STAGE/DISCHARGE FOR 2-40"x28 CMPA, APPROXIMATELY 33% CLOGGED
 569          RS       1    ELEV  1908.5
 570          SA       0    0.01    0.01    0.01
 571          SE  1908.5    1912    1914  1915.7
 572          SQ       0      58      89     218
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 573          KK  33-33C
 574          KM        ROUTE CP 33 TO CP33C
 575          RS       5    FLOW
 576          RC     .07     .05     .07    5430   0.018
 577          RX       0     100     200     204     238     258     358     360
 578          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 579          KK     33A
 580          KM   BASIN 33A
 581          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 582          KM    L=       .8  Lca=       .3   S=   82.7  Kn= .030  LAG=  11.6
 583          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 584          BA   0.045
 585          LG     .35     .15   12.40     .01     .00
 586          UI     30.    104.    109.     56.     26.     12.      5.      3.      0.      0.
 587          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 588          KK    S33A
 589          KM        STAGE/DISCHARGE FOR 1-36"x 24" CMPA, APPROXIMATELY 15% CLOGGED
 590          RS       1    ELEV  1896.6
 591          SA       0    0.21    0.21
 592          SE  1896.6    1902    1904
 593          SQ       0      47     221
              * DDM   ***** Preserved *****

 594          KK   33A-C
 595          KM        ROUTE CP 33A TO CP33C
 596          RS       5    FLOW
 597          RC     .07     .05     .07    4691   0.019
 598          RX       0     100     200     204     238     258     358     360
 599          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 600          KK     33B
 601          KM   BASIN 33B
 602          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 603          KM    L=       .6  Lca=       .3   S=   74.2  Kn= .030  LAG=   9.8
 604          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 605          BA   0.061
 606          LG     .35     .15   12.40     .01     .00
 607          UI     60.    184.    136.     56.     23.      8.      5.      0.      0.      0.
 608          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 609          KK    S33B
 610          KM        STAGE/DISCHARGE FOR 2-40"x 28" CMPA, APPROXIMATELY 50% CLOGGED
 611          RS       1    ELEV  1880.5
 612          SA       0    0.03    0.27    0.27
 613          SE  1880.5    1884    1886    1888
 614          SQ       0      25      47     150
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 615          KK   33B-C
 616          KM        ROUTE CP 33B TO CP33C
 617          RS       3    FLOW
 618          RC     .07     .05     .07    3263   0.022
 619          RX       0     100     200     204     238     258     358     360
 620          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 621          KK     33C
 622          KM   BASIN 33C
 623          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 624          KM    L=      1.2  Lca=       .6   S=   99.2  Kn= .030  LAG=  16.0
 625          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 626          BA   0.216
 627          LG     .35     .27    8.80     .06     .00
 628          UI     68.    266.    416.    381.    230.    133.     79.     42.     26.     11.
 629          UI     11.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 630          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 631          KK   CP33C
 632          KM        COMBINE SUB-BASIN 33C, CP30A, CP33, CP33A, & CP33B
 633          HC       5
              * DDM   ***** Preserved *****

 634          KK  33C-34B
 635          KM        ROUTE CP 33C TO CP34B
 636          RS       2    FLOW
 637          RC     .06     .05     .06    6374   0.010
 638          RX       0      16     216     216     241     247     307     327
 639          RY      18      10      10       0       0       3       6       9
              * DDM   ***** Updated *****

 640          KK      34
 641          KM   BASIN 34
 642          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 643          KM    L=       .8  Lca=       .4   S=   73.4  Kn= .030  LAG=  12.6
 644          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 645          BA   0.108
 646          LG     .35     .15   12.40     .01     .00
 647          UI     60.    215.    260.    152.     76.     38.     19.      7.      7.      0.
 648          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 649          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 650          KK     S34
 651          KM        STAGE/DISCHARGE FOR 2-40"x 28 CMPA, APPROXIMATELY 33% CLOGGED
 652          RS       1    ELEV  1848.5
 653          SA       0    0.07    0.22    0.22
 654          SE  1848.5    1852    1854    1856
 655          SQ       0      55      88     243
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 656          KK  34-34B
 657          KM        ROUTE CP34 TO CP34B
 658          RS       4    FLOW
 659          RC     .06     .05     .06    6440   0.016
 660          RX       0      16     216     216     241     247     307     327
 661          RY      18      10      10       0       0       3       6       9
              * DDM   ***** Updated *****

 662          KK     34A
 663          KM   BASIN 34A
 664          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 665          KM    L=      1.0  Lca=       .5   S=   70.3  Kn= .030  LAG=  15.0
 666          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 667          BA   0.135
 668          LG     .35     .15   12.40     .01     .00
 669          UI     50.    190.    282.    231.    131.     73.     41.     23.     10.      7.
 670          UI      7.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 671          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 672          KK    S34A
 673          KM        STAGE/DISCHARGE FOR 2-40"x 28" CMPA, APPROXIMATELY 50% CLOGGED
 674          RS       1    ELEV  1819.8
 675          SA       0     .03     .18     .18     .18
 676          SE  1819.8    1822    1824    1826    1828
 677          SQ       0      17      42     140     300
              * DDM   ***** Preserved *****

 678          KK   34A-B
 679          KM        ROUTE CP34A TO CP34B
 680          RS       2    FLOW
 681          RC     .06     .05     .06    3889   0.019
 682          RX       0      16     216     216     241     247     307     327
 683          RY      18      10      10       0       0       3       6       9
              * DDM   ***** Updated *****

 684          KK     34B
 685          KM   BASIN 34B
 686          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 687          KM    L=      1.6  Lca=       .7   S=   84.6  Kn= .030  LAG=  19.8
 688          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 689          BA   0.485
 690          LG     .35     .27    8.80     .06     .00
 691          UI     97.    375.    666.    786.    665.    432.    279.    179.    114.     72.
 692          UI     50.     20.     20.     20.      0.      0.      0.      0.      0.      0.
 693          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 694          KK   CP34B
 695          KM        COMBINE SUB-BASIN 34B, CP32, CP33C, CP34, & CP34A
 696          HC       5
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 697          KK  34B-35
 698          KM        ROUTE CP34B TO CP35
 699          RS       1    FLOW
 700          RC     .06     .05     .06    1037   0.007
 701          RX       0      74     119     201     207     265     400     630
 702          RY       9       7       5       0       0       5       7       9
              * DDM   ***** Preserved *****

 703          KK    CP35
 704          KM        COMBINE CP17 & CP34B
 705          HC       2
              * DDM   ***** Preserved *****

 706          KK  R35-18
 707          KM        ROUTE CP35 TO CP18
 708          RS       1    FLOW
 709          RC     .07     .05     .07     682   0.012
 710          RX       0     170     520     542     560     595     745    1020
 711          RY      24      10       8       2       0       6       8      12
              * DDM   ***** Updated *****

 712          KK      36
 713          KM   BASIN 36
 714          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 715          KM    L=      1.7  Lca=       .8   S=   80.8  Kn= .030  LAG=  21.0
 716          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 717          BA   0.315
 718          LG     .35     .15   12.40     .01     .00
 719          UI     54.    212.    384.    475.    437.    302.    200.    131.     87.     57.
 720          UI     36.     23.     12.     12.     12.      0.      0.      0.      0.      0.
 721          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Updated *****

 722          KK      18
 723          KM   BASIN 18
 724          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 725          KM    L=       .4  Lca=       .1   S=  115.0  Kn= .030  LAG=   5.2
 726          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 727          BA   0.035
 728          LG     .35     .35    4.90     .28     .00
 729          UI    127.    118.     22.      0.      0.      0.      0.      0.      0.      0.
 730          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 731          KK    CP18
 732          KM        COMBINE SUB-BASINS 18 & 36 AND CP17
 733          KM        DIP CROSSING OF LAKE PLEASANT ROAD
 734          HC       3
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 735          KK  18-19A
 736          KM        ROUTE CP18 TO CP19A
 737          RS       1    FLOW
 738          RC     .06     .05     .06    3249   0.007
 739          RX       0     580     870     965    1130    1275    1320    1665
 740          RY       8       2       4       0       2       0       8      12
              * DDM   ***** Updated *****

 741          KK      37
 742          KM   BASIN 37
 743          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 744          KM    L=       1.5  Lca=       .7   S=   68.3  Kn= .030  LAG=  19.7
 745          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 746          BA   0.308
 747          LG     .35     .19   11.20     .02     .00
 748          UI     62.    239.    423.    498.    417.    271.    174.    111.     70.     45.
 749          UI     31.     13.     13.     13.      0.      0.      0.      0.      0.      0.
 750          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Updated *****

 751          KK      19
 752          KM   BASIN 19
 753          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 754          KM    L=        .2  Lca=       .1   S=  104.5  Kn= .030  LAG=   4.2
 755          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 756          BA   0.017
 757          LG     .35     .35    4.60     .33     .00
 758          UI     84.     42.      5.      0.      0.      0.      0.      0.      0.      0.
 759          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 760          KK  19-19A
 761          KM        ROUTE CP19 TO CP19A
 762          RS      11    FLOW
 763          RC     .06     .05     .05    3284   0.009
 764          RX       0      70      80     255     300     340     380     430
 765          RY       3       2       0       0       2       4       6       8
              * DDM   ***** Updated *****

 766          KK     19A
 767          KM   BASIN 19A
 768          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 769          KM    L=        .7  Lca=       .3   S=   65.7  Kn= .030  LAG=  10.6
 770          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 771          BA   0.100
 772          LG     .35     .38    6.40     .15     .00
 773          UI     83.    269.    236.    107.     47.     20.      8.      0.      0.      0.
 774          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  775         KK   CP19A
  776         KM        COMBINE SUB-BASINS 19A, 37, CP18, & CP19
  777         HC       4
  778         ZZ
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                 SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
'          (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

NO.        (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

 40            1
               V
               V
 50          R1-2
               .
               .
 56            .           2
               .           .
               .           .
 65           CP2............
               V
               V
 68          R2-3
               .
               .
 74            .           3
               .           .
               .           .
 83           CP3............
               V
               V
 86          R3-4
               .
               .
 92            .           4
               .           .
               .           .
101           CP4............
               .
               .
               .           5
               .           .
               .           .
113            .           .           6
               .           .           .
               .           .           .
122           CP6........................
               V
               V
125          R6-7
               .
               .
131            .           7
               .           .
               .           .
140           CP7............
               V
               V
143          R7-8
               .
               .
149            .           8
               .           .
               .           .
158           CP8............
               V
               V
161          R8-9
               .
               .
167            .           9
               .           .
               .           .
176           CP9............
               V
               V
179         R9-11
               .
               .
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185          .          11
             .           .
             .           .
         CP11............
            V
            V
197     R11-12
             .
             .
203          .          12
             .           .
             .           .
212      CP12............
            V
            V
215     R12-14
             .
             .
221          .          14
             .           .
             .           .
230      CP14............
            V
            V
233     R14-15
             .
             .
239          .          15
             .           .
             .           .
248      CP15............
            V
            V
251     R15-16
             .
             .
257          .          16
             .           .
             .           .
         CP16............
            V
            V
270     R16-17
             .
             .
276          .          17
             .           .
             .           .
286          .           .          35
             .           .           .
             .           .           .
297      CP17........................
             .
             .
300          .          20
             .           V
             .           V
310          .      R20-21
             .           .
             .           .
316          .           .          21
             .           .           .
             .           .           .
326          .        CP21............
             .           .
             .           .
329          .           .          22
             .           .           .
             .           .           .
339          .           .           .          23
             .           .           .           .
             .           .           .           .
             .           .        CP23............
             .           .           V
             .           .           V
352          .           .      R23-24
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                .          .          .
                .          .          .
358             .          .          .         24
                .          .          .          .
                .          .          .          .
                .          .       CP24............
                .          .          .
                .          .          .
371             .     CP24A............
                .         V
                .         V
374             .     R24-25
                .          .
                .          .
380             .          .         25
                .          .          .
                .          .          .
390             .      CP25............
                .         V
                .         V
393             .     R25-26
                .          .
                .          .
399             .          .         26
                .          .          .
                .          .          .
408             .      CP26............
                .         V
                .         V
411             .     R26-32
                .          .
                .          .
417             .          .         27
                .          .          .
                .          .          .
427             .          .          .         28
                .          .          .          .
                .          .          .          .
                .          .       CP28............
                .          .          V
                .          .          V
440             .          .     28-28A
                .          .          .
                .          .          .
446             .          .          .        28A
                .          .          .          .
                .          .          .          .
456             .          .     CP28A............
                .          .          V
                .          .          V
459             .          .     28A-32
                .          .          .
                .          .          .
465             .          .          .         31
                .          .          .          V
                .          .          .          V
475             .          .          .     R31-32
                .          .          .          .
                .          .          .          .
481             .          .          .          .         32
                .          .          .          .          .
                .          .          .          .          .
491             .      CP32.................................
                .         V
                .         V
494             .     32-34B
                .          .
                .          .
500             .          .         29
                .          .          V
                .          .          V
                .          .     29-30A
                .          .          .
                .          .          .
516             .          .          .         30
                .          .          .          V
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                                                V
526                                           S30
                                                V
                                                V
                                          30-30A
                                                .
                                                .
538                                             .          30A
                                                .            .
                                                .            .
548                                CP30A.......................
                                           V
                                           V
551                                30A-33
                                           .
                                           .
557                                        .          33
                                           .           V
                                           .           V
567                                        .         S33
                                           .           V
                                           .           V
573                                        .      33-33C
                                           .           .
                                           .           .
579                                        .           .         33A
                                           .           .           V
                                           .           .           V
588                                        .           .         S33A
                                           .           .           V
                                           .           .           V
594                                        .           .       33A-C
                                           .           .           .
                                           .           .           .
600                                        .           .           .         33B
                                           .           .           .           V
                                           .           .           .           V
                                           .           .           .         S33B
                                           .           .           .           V
                                           .           .           .           V
615                                        .           .           .       33B-C
                                           .           .           .           .
                                           .           .           .           .
621                                        .           .           .           .         33C
                                           .           .           .           .           .
                                           .           .           .           .           .
631                                CP33C.......................................................
                                           V
                                           V
634                                33C-34
                                           .
                                           .
640                                        .          34
                                           .           V
                                           .           V
650                                        .         S34
                                           .           V
                                           .           V
656                                        .      34-34B
                                           .           .
                                           .           .
662                                        .           .         34A
                                           .           .           V
                                           .           .           V
672                                        .           .         S34A
                                           .           .           V
                                           .           .           V
678                                        .           .       34A-B
                                           .           .           .
                                           .           .           .
684                                        .           .           .         34B
                                           .           .           .           .
                                           .           .           .           .
6.4                            CP34B.......................................
                                   V
                                   V
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697          .      34B-35
             .           .
             .           .
          CP35............
             V
             V
706      R35-18
             .
             .
712          .          36
             .           .
             .           .
722          .           .          18
             .           .           .
             .           .           .
731       CP18........................
             V
             V
735      18-19A
             .
             .
741          .          37
             .           .
             .           .
751          .           .          19
                         .           V
             .           .           V
760          .           .      19-19A
             .           .           .
             .           .           .
766          .           .           .         19A
             .           .           .           .
             .           .           .           .
775       CP19A....................................
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              MAY   1991              *
*            VERSION 4.0.1E            *
*     Lahey F77L-EM/32 version 5.01    *
*       Dodson & Associates, Inc.      *
*  RUN DATE  08/25/98  TIME  10:02:02  *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
****************************************
```

```
                    FILE NAME: Y100HR6R.DAT   AUGUST 1998

                    UPDATED MODEL USING N VALUES DETERMINED FROM HYDRAULIC ANALYSIS

                    100-YEAR, 6-HOUR STORM DISTRIBUTION AS DEFINED BY PROJECT SCOPE

                    RAINFALL DEPTH OF 3.4 INCHES WAS DETERMINED FROM FIG. 2.7  (NOAA ATLAS)

                    JD RECORDS USED TO AEREALLY REDUCE POINT RAINFALL DATA

                    TOTAL WATERSHED DRAINAGE AREA IS 15.52 SQ. MI.

                    S-GRAPHS FOR DESERT/RANGELAND AND PHOENIX MOUNTAIN WERE UTILIZED
                          FOR ROUTING RAINFALL EXCESSES

                    GREEN AND AMPT INFILTRATION EQUATIONS USED TO DETERMINE RAINFALL

                    FCMC DDMS PROGRAM USED TO CALCULATE RAINFALL, RAINFALL LOSSES,
                          AND UNIT HYDROGRAPHS

                    NORMAL DEPTH METHOD USED FOR CHANNEL ROUTING

                    TIES INTO NEW RIVER FLOOD INSURANCE STUDY CROSS SECTION 4.129
                          DISCHARGE AT CROSS SECTION 4.129 IS 12,400 CFS

                DDM MCUHP2 Sweat Canyon Wash Flood Insurance Study

30 IO        OUTPUT CONTROL VARIABLES
                 IPRNT          5  PRINT CONTROL
                 IPLOT          0  PLOT CONTROL
                 QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT        HYDROGRAPH TIME DATA
                  NMIN          5  MINUTES IN COMPUTATION INTERVAL
                 IDATE      1   0  STARTING DATE
                 ITIME       0000  STARTING TIME
                    NQ       2000  NUMBER OF HYDROGRAPH ORDINATES
               NDDATE      7   0  ENDING DATE
               NDTIME       2235  ENDING TIME
                 ICENT         19  CENTURY MARK

            COMPUTATION INTERVAL    0.08 HOURS
                 TOTAL TIME BASE  166.58 HOURS

      ENGLISH UNITS
           DRAINAGE AREA          SQUARE MILES
           PRECIPITATION DEPTH    INCHES
           LENGTH, ELEVATION      FEET
           FLOW                   CUBIC FEET PER SECOND
           STORAGE VOLUME         ACRE-FEET
           SURFACE AREA           ACRES
           TEMPERATURE            DEGREES FAHRENHEIT

32 JD        INDEX STORM NO. 1
                 STRM        3.40  PRECIPITATION DEPTH
                 TRDA        0.01  TRANSPOSITION DRAINAGE AREA

-- PI          PRECIPITATION PATTERN
                0.01      0.01      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.01
                0.01      0.01      0.00      0.01      0.00      0.00      0.00      0.00      0.00      0.00
```

```
                0.00      0.00      0.01      0.00      0.00      0.00      0.00      0.01      0.01      0.01
                0.01      0.01      0.01      0.01      0.01      0.01      0.02      0.02      0.02      0.03
                0.03      0.03      0.06      0.06      0.06      0.07      0.07      0.07      0.04      0.04
                0.04      0.02      0.02      0.02      0.01      0.01      0.01      0.01      0.01      0.01
                0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                0.00      0.00

36 JD         INDEX STORM NO. 2
                    STRM        3.36  PRECIPITATION DEPTH
                    TRDA        1.00  TRANSPOSITION DRAINAGE AREA

 0 PI           PRECIPITATION PATTERN
                0.01      0.01      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.01
                0.01      0.01      0.00      0.01      0.00      0.00      0.00      0.00      0.00      0.00
                0.00      0.00      0.01      0.00      0.00      0.00      0.00      0.01      0.01      0.01
                0.01      0.01      0.01      0.01      0.01      0.01      0.02      0.02      0.02      0.03
                0.03      0.03      0.06      0.06      0.06      0.07      0.07      0.07      0.04      0.04
                0.04      0.02      0.02      0.02      0.01      0.01      0.01      0.01      0.01      0.01
                0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                0.00      0.00

37 JD         INDEX STORM NO. 3
                    STRM        3.26  PRECIPITATION DEPTH
                    TRDA        5.00  TRANSPOSITION DRAINAGE AREA

 0 PI           PRECIPITATION PATTERN
                0.01      0.01      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.01
                0.01      0.01      0.00      0.01      0.00      0.00      0.00      0.00      0.00      0.00
                0.00      0.00      0.01      0.00      0.00      0.00      0.00      0.01      0.01      0.01
                0.01      0.01      0.01      0.01      0.01      0.01      0.02      0.02      0.02      0.03
                0.03      0.03      0.06      0.06      0.06      0.07      0.07      0.07      0.04      0.04
                0.04      0.02      0.02      0.02      0.01      0.01      0.01      0.01      0.01      0.01
                0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                0.00      0.00

38 JD         INDEX STORM NO. 4
                    STRM        3.20  PRECIPITATION DEPTH
                    TRDA       10.00  TRANSPOSITION DRAINAGE AREA

 PI             PRECIPITATION PATTERN
                0.01      0.01      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.01
                0.01      0.01      0.00      0.01      0.00      0.00      0.00      0.00      0.00      0.00
                0.00      0.00      0.01      0.00      0.00      0.00      0.00      0.01      0.01      0.01
                0.01      0.01      0.01      0.01      0.01      0.01      0.02      0.02      0.02      0.03
                0.03      0.03      0.06      0.06      0.06      0.07      0.07      0.07      0.04      0.04
                0.04      0.02      0.02      0.02      0.01      0.01      0.01      0.01      0.01      0.01
                0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                0.00      0.00

39 JD         INDEX STORM NO. 5
                    STRM        3.09  PRECIPITATION DEPTH
                    TRDA       20.00  TRANSPOSITION DRAINAGE AREA

 0 PI           PRECIPITATION PATTERN
                0.01      0.01      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.01
                0.01      0.01      0.00      0.01      0.00      0.00      0.00      0.00      0.00      0.00
                0.00      0.00      0.01      0.00      0.00      0.00      0.00      0.01      0.01      0.01
                0.01      0.01      0.01      0.01      0.01      0.01      0.02      0.02      0.02      0.03
                0.03      0.03      0.06      0.06      0.06      0.07      0.07      0.07      0.04      0.04
                0.04      0.02      0.02      0.02      0.01      0.01      0.01      0.01      0.01      0.01
                0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                0.00      0.00
      WARNING EXCESS AT PONDING LESS THAN ZERO FOR PERIOD. EXCESS SET TO ZERO
      WARNING EXCESS AT PONDING LESS THAN ZERO FOR PERIOD. EXCESS SET TO ZERO
```

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	1	498.	4.00	69.	17.	6.	0.42		
ROUTED TO	R1-2	449.	4.17	68.	17.	6.	0.42		
HYDROGRAPH AT	2	546.	4.00	81.	20.	7.	0.42		
2 COMBINED AT	CP2	945.	4.08	149.	37.	12.	0.84		
ROUTED TO	R2-3	904.	4.17	149.	37.	12.	0.84		
HYDROGRAPH AT	3	597.	4.00	90.	23.	8.	0.43		
2 COMBINED AT	CP3	1444.	4.08	237.	59.	20.	1.27		
ROUTED TO	R3-4	1422.	4.08	237.	59.	20.	1.27		
HYDROGRAPH AT	[illegible]	[illegible]	[illegible]	66.	16.	5.	0.25		
2 COMBINED AT	CP4	1777.	4.08	300.	75.	25.	1.52		
HYDROGRAPH AT	5	442.	4.00	69.	17.	6.	0.35		
HYDROGRAPH AT	6	397.	4.00	54.	13.	4.	0.30		
3 COMBINED AT	CP6	2551.	4.08	417.	105.	35.	2.17		
ROUTED TO	R6-7	2555.	4.08	417.	105.	35.	2.17		
HYDROGRAPH AT	7	342.	4.00	43.	11.	4.	0.26		
2 COMBINED AT	CP7	2841.	4.08	457.	115.	38.	2.43		
ROUTED TO	R7-8	2830.	4.08	457.	115.	38.	2.43		
HYDROGRAPH AT	8	382.	4.00	52.	13.	4.	0.29		
2 COMBINED AT	CP8	3153.	4.08	505.	127.	42.	2.72		
ROUTED TO	R8-9	3049.	4.17	505.	127.	42.	2.72		
HYDROGRAPH AT	9	700.	4.00	99.	25.	8.	0.51		
2 COMBINED AT	CP9	3668.	4.08	598.	150.	50.	3.22		
ROUTED TO	R9-11	3548.	4.17	597.	150.	50.	3.22		
HYDROGRAPH AT	11	571.	4.00	98.	25.	8.	0.35		
2 COMBINED AT	CP11	3954.	4.17	690.	174.	58.	3.58		
ROUTED TO	R11-12	3750.	4.25	690.	174.	58.	3.58		
HYDROGRAPH AT	12	845.	4.08	140.	35.	12.	0.59		
2 COMBINED AT	CP12	4393.	4.25	822.	207.	69.	4.16		
ROUTED TO	R12-14	4337.	4.33	821.	207.	69.	4.16		
HYDROGRAPH AT	14	257.	4.00	34.	9.	3.	0.18		
2 COMBINED AT	CP14	4458.	4.33	852.	215.	72.	4.34		
ROUTED TO	R14-15	4464.	4.33	852.	215.	72.	4.34		
HYDROGRAPH AT	15	972.	4.00	149.	37.	12.	0.63		
2 COMBINED AT	CP15	4941.	4.25	991.	250.	83.	4.97		

ROUTED TO	R15-16	4821.	4.42	991.	250.	83.	4.97
HYDROGRAPH AT	16	1041.	4.08	176.	44.	15.	0.73
2 COMBINED AT	CP16	5395.	4.42	1151.	291.	97.	5.70
ROUTED TO	R16-17	5113.	4.67	1150.	291.	97.	5.70
HYDROGRAPH AT	17	756.	4.17	127.	32.	11.	0.62
HYDROGRAPH AT	35	766.	4.33	148.	37.	12.	0.68
3 COMBINED AT	CP17	6062.	4.58	1398.	353.	118.	7.00
HYDROGRAPH AT	20	491.	4.00	69.	17.	6.	0.40
ROUTED TO	R20-21	442.	4.25	69.	17.	6.	0.40
HYDROGRAPH AT	21	603.	4.08	99.	25.	8.	0.54
2 COMBINED AT	CP21	1002.	4.17	167.	42.	14.	0.94
HYDROGRAPH AT	22	396.	4.08	52.	13.	4.	0.34
HYDROGRAPH AT	23	507.	4.08	68.	17.	6.	0.44
2 COMBINED AT	CP23	897.	4.08	120.	30.	10.	0.78
ROUTED TO	R23-24	751.	4.42	120.	30.	10.	0.78
HYDROGRAPH AT	24	392.	4.17	57.	14.	5.	0.38
2 COMBINED AT	CP24	1100.	4.33	176.	44.	15.	1.16
2 COMBINED AT	CP24A	1997.	4.25	335.	84.	28.	2.10
ROUTED TO	R24-25	1976.	4.33	335.	84.	28.	2.10
HYDROGRAPH AT	25	1060.	4.08	155.	39.	13.	0.82
2 COMBINED AT	CP25	2735.	4.25	482.	121.	40.	2.93
ROUTED TO	R25-26	2638.	4.42	481.	121.	40.	2.93
HYDROGRAPH AT	26	490.	4.08	63.	16.	5.	0.39
2 COMBINED AT	CP26	2920.	4.33	540.	136.	45.	3.31
ROUTED TO	R26-32	2700.	4.58	539.	136.	45.	3.31
HYDROGRAPH AT	27	507.	4.17	79.	20.	7.	0.40
HYDROGRAPH AT	28	592.	4.25	112.	28.	9.	0.46
2 COMBINED AT	CP28	1088.	4.17	191.	48.	16.	0.86
ROUTED TO	28-28A	1065.	4.25	191.	48.	16.	0.86
HYDROGRAPH AT	28A	282.	4.08	48.	12.	4.	0.20
2 COMBINED AT	CP28A	1316.	4.25	238.	60.	20.	1.05
ROUTED TO	28A-32	1234.	4.58	238.	60.	20.	1.05
HYDROGRAPH AT	31	231.	4.08	30.	8.	3.	0.20
ROUTED TO	R31-32	222.	4.25	30.	8.	3.	0.20
HYDROGRAPH AT	32	856.	4.25	145.	36.	12.	0.75
4 COMBINED AT	CP32	4577.	4.58	925.	232.	77.	5.31
ROUTED TO	32-34B	4339.	4.75	924.	232.	77.	5.31
HYDROGRAPH AT	29	1070.	4.25	187.	47.	16.	0.86

ROUTED TO	29-30A	1012.	4.50	187.	47.	16.	0.86
HYDROGRAPH AT	30	123.	4.08	22.	6.	2.	0.08
ROUTED TO	S30	123.	4.08	22.	6.	2.	0.08
ROUTED TO	30-30A	118.	4.25	22.	6.	2.	0.08
HYDROGRAPH AT	30A	393.	4.08	59.	15.	5.	0.31
3 COMBINED AT	CP30A	1373.	4.42	266.	67.	22.	1.26
ROUTED TO	30A-33	1301.	4.67	266.	67.	22.	1.26
HYDROGRAPH AT	33	150.	4.08	26.	6.	2.	0.10
ROUTED TO	S33	151.	4.08	26.	6.	2.	0.10
ROUTED TO	33-33C	136.	4.33	26.	6.	2.	0.10
HYDROGRAPH AT	33A	70.	4.00	13.	3.	1.	0.05
ROUTED TO	S33A	71.	4.08	13.	3.	1.	0.05
ROUTED TO	33A-B	63.	4.42	13.	3.	1.	0.05
HYDROGRAPH AT	33B	99.	4.00	17.	4.	1.	0.06
ROUTED TO	S33B	97.	4.08	17.	4.	1.	0.06
ROUTED TO	33B-C	89.	4.25	17.	4.	1.	0.06
HYDROGRAPH AT	33C	294.	4.08	45.	11.	4.	0.22
5 COMBINED AT	CP33C	1662.	4.58	363.	91.	30.	1.68
ROUTED TO	33C-34	1541.	4.83	363.	91.	30.	1.68
HYDROGRAPH AT	34	169.	4.08	30.	8.	3.	0.11
ROUTED TO	S34	168.	4.08	30.	8.	3.	0.11
ROUTED TO	34-34B	155.	4.33	30.	8.	3.	0.11
HYDROGRAPH AT	34A	207.	4.08	38.	10.	3.	0.14
ROUTED TO	S34A	205.	4.08	38.	10.	3.	0.14
ROUTED TO	34A-B	196.	4.25	38.	10.	3.	0.14
HYDROGRAPH AT	34B	630.	4.17	102.	26.	9.	0.49
5 COMBINED AT	CP34B	6135.	4.75	1413.	355.	118.	7.71
ROUTED TO	34B-35	6076.	4.83	1413.	355.	118.	7.71
2 COMBINED AT	CP35	11320.	4.75	2693.	678.	226.	14.71
ROUTED TO	R35-18	11329.	4.75	2693.	678.	226.	14.71
HYDROGRAPH AT	36	447.	4.17	88.	22.	7.	0.31
HYDROGRAPH AT	18	43.	4.00	4.	1.	0.	0.04
3 COMBINED AT	CP18	11499.	4.75	2773.	698.	233.	15.06
ROUTED TO	18-19A	10986.	4.92	2770.	698.	233.	15.06
HYDROGRAPH AT	37	432.	4.17	80.	20.	7.	0.31
HYDROGRAPH AT	19	20.	4.00	2.	0.	0.	0.02
ROUTED TO	19-19A	16.	4.50	2.	0.	0.	0.02
HYDROGRAPH AT	19A	126.	4.00	16.	4.	1.	0.10

4 COMBINED AT	CP19A	11090.	4.92	2852.	719.	240.	15.49

* RMAL END OF HEC-1 ***

100-year, 24-hour model

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY   1991               *
*           VERSION 4.0.1E              *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
* RUN DATE  08/25/98  TIME  08:10:25    *
*****************************************
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```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
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```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID
  2           ID        FILE NAME: Y100H24R.DAT   AUGUST 1998
  3           ID
  4           ID        UPDATED MODEL USING N VALUES DETERMINED FROM HYDRAULIC ANALYSIS
  5           ID
  6           ID        100-YEAR,24-HOUR STORM DISTRIBUTION AS DEFINED BY PROJECT SCOPE
  7           ID
  8           ID        RAINFALL DEPTH OF 4.6 INCHES WAS DETERMINED FROM FIG. 2.13 (NOAA ATLAS)
  9           ID
 10           ID        JD RECORDS USED TO AEREALLY REDUCE POINT RAINFALL DATA
 11           ID
 12           ID
 13           ID        TOTAL WATERSHED DRAINAGE AREA IS 15.52 SQ. MI.
 14           ID
 15           ID        S-GRAPHS FOR DESERT/RANGELAND AND PHOENIX MOUNTAIN WERE UTILIZED
 16           ID                FOR ROUTING RAINFALL EXCESSES
 17           ID
 18           ID        GREEN AND AMPT INFILTRATION EQUATIONS USED TO DETERMINE RAINFALL
 19           ID
 20           ID        FCMC DDMS PROGRAM USED TO CALCULATE RAINFALL, RAINFALL LOSSES,
 21           ID                AND UNIT HYDROGRAPHS
 22           ID
 23           ID        NORMAL DEPTH METHOD USED FOR CHANNEL ROUTING
 24           ID
 25           ID        TIES INTO NEW RIVER FLOOD INSURANCE STUDY CROSS SECTION 4.129
 26           ID                DISCHARGE AT CROSS SECTION 4.129 IS 12,400 CFS
 27           ID
 28           ID   DDM MCUHP2 Sweat Canyon Wash Flood Insurance Study
              *DIAGRAM
 29           IT       5                    2000
 30           IO       5
 31           IN      15
 32           JD     4.6     .01
              * The following PC records used a 24-hour SCS Type II Rainfall
 33           PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
 34           PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
 35           PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
 36           PC    .110    .115    .120    .126    .135    .142    .150    .158    .166    .175
 37           PC    .184    .195    .208    .224    .243    .266    .318    .479    .678    .716
 38           PC    .743    .764    .781    .795    .808    .818    .828    .837    .844    .851
 39           PC    .858    .865    .871    .877    .883    .889    .895    .900    .905    .910
 40           PC    .915    .919    .923    .927    .931    .935    .939    .943    .947    .951
 41           PC    .954    .957    .960    .963    .966    .969    .972    .975    .978    .981
 42           PC    .984    .987    .990    .993    .996    .999   1.000
 43           JD   4.324      10
 44           JD   4.186      20
              * DDM   ***** Updated *****

 45           KK       1
 46           KM   BASIN 1
 47           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 48           KM    L=       .9  Lca=       .4   S=  222.2  Kn= .030  LAG=  10.5
 49           KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 50           BA   0.416
 51           LG     .15     .35    4.90     .28   14.00
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 52           UI    350.   1163.    756.    434.    240.    130.     72.     33.     26.      0.
 53           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 54           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 55           KK    R1-2
 56           KM        ROUTE CP1 TO CP2
 57           RS       2    FLOW
 58           RC    0.10    0.08    0.10    2095   0.017
 59           RX       0      55      80     200     320     370     485     595
 60           RY      30      20      10       0       0      10      20      30
              * DDM   ***** Updated *****

 61           KK       2
 62           KM   BASIN 2
 63           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 64           KM    L=      1.1  Lca=       .4   S=  532.4  Kn= .050  LAG=   9.3
 65           KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 66           BA   0.424
 67           LG     .15     .35    4.90     .28   26.00
 68           UI    447.   1315.    738.    384.    191.     96.     46.     29.      0.
 69           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 70           KK     CP2
 71           KM        COMBINE SUB-BASINS 1 & 2
 72           HC       2
              * DDM   ***** Preserved *****

 73           KK    R2-3
 74           KM        ROUTE CP2 TO CP3
 75           RS       1    FLOW
 76           RC     .07     .05     .07    3675   0.021
 77           RX       0       2      14      22      28      43      58      60
 78           RY      21      19      13       0       0      15      31      35
              * DDM   ***** Updated *****

 79           KK       3
 80           KM   BASIN 3
 81           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 82           KM    L=      1.4  Lca=       .4   S=  401.4  Kn= .050  LAG=   9.1
 83           KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 84           BA   0.431
 85           LG     .15     .36    6.80     .13   18.00
 86           UI    498.   1355.    744.    377.    185.     94.     41.     31.      0.      0.
 87           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 88           KK     CP3
 89           KM        COMBINE SUB-BASIN 3 & CP2
 90           HC       2
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 91           KK    R3-4
 92           KM        ROUTE CP3 TO CP4
 93           RS       1    FLOW
 94           RC     .07     .05     .07    1535   0.022
 95           RX       0      15      27      46      59      70      85      95
 96           RY      10       8       4       0       0       2       6      10
              * DDM   ***** Updated *****

 97           KK       4
 98           KM   BASIN 4
 99           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
100           KM    L=      1.1  Lca=       .3   S=  566.4  Kn= .040  LAG=   6.9
101           KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
102           BA   0.253
103           LG     .15     .22   10.10     .03    3.00
104           UI    519.    875.    344.    135.     53.     24.      0.      0.      0.      0.
105           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

              KK     CP4
107           KM      COMBINE SUB-BASIN 4 & CP3
108           HC       2
              * ROUTING NOT MODELED DUE TO RELATIVELY SHORT FLOW LENGTH AND HIGH VELOCITY
              *   R4-6
              *       ROUTE CP4 TO CP6
              *      1    FLOW
              *    .05    .035     .05    2182   0.018
              *      0       2       7      47      58      98     103     109
              *     28      26      21       0       0      21      23      29
              * DDM   ***** Updated *****

109           KK       5
110           KM   BASIN 5
111           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
112           KM    L=      1.1  Lca=       .6   S=  524.6  Kn= .050  LAG=   9.2
113           KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
114           BA   0.348
115           LG     .15     .35    4.35     .38   35.00
116           UI    392.   1087.    603.    310.    153.     77.     36.     24.      0.      0.
117           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Updated *****

118           KK       6
119           KM   BASIN 6
120           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
121           KM    L=      1.5  Lca=       .3   S=  478.1  Kn= .040  LAG=   8.6
122           KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
123           BA   0.299
124           LG     .15     .39    6.20     .16   10.00
125           UI    390.    971.    499.    240.    115.     56.     22.      0.      0.      0.
126           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 127          KK     CP6
 128          KM        COMBINE SUB-BASINS 5 & 6 & CP4
 129          HC       3
              * DDM   ***** Preserved *****

 130          KK    R6-7
 131          KM        ROUTE CP6 TO CP7
 132          RS       1    FLOW
 133          RC     .07     .05     .07    1211   0.017
 134          RX       0      13      25      41      57      73      84      95
 135          RY      18      12       6       0       0       6      10      14
              * DDM   ***** Updated *****

 136          KK       7
 137          KM   BASIN 7
 138          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 139          KM    L=      1.1  Lca=       .2   S=  425.0  Kn= .030  LAG=   6.5
 140          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 141          BA   0.256
 142          LG     .15     .39    5.80     .19    7.00
 143          UI    597.    877.    321.    119.     43.     25.      0.      0.      0.      0.
 144          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 145          KK     CP7
 146          KM        COMBINE SUB-BASIN 7 & CP6
 147          HC       2
              * DDM   ***** Preserved *****

 148          KK    R7-8
 149          KM        ROUTE CP7 TO CP8
 150          RS       1    FLOW
 151          RC     .07     .05     .07    1462   0.016
 152          RX       0       5      27      50      67      95     113     121
 153          RY      21      15      12       0       0      14      15      21
              * DDM   ***** Updated *****

 154          KK       8
 155          KM   BASIN 8
 156          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 157          KM    L=       .9  Lca=       .3   S=  357.0  Kn= .040  LAG=   6.8
 158          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 159          BA   0.288
 160          LG     .15     .36    5.10     .26   19.00
 161          UI    610.    996.    385.    150.     55.     27.      0.      0.      0.      0.
 162          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 163          KK     CP8
 164          KM        COMBINE SUB-BASIN 8 & CP7
 165          HC       2
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 166          KK    R8-9
 167          KM        ROUTE CP8 TO CP9
 168          RS       1    FLOW
 169          RC     .07     .05     .07    2714   0.013
 170          RX       0      25      65      93     112     127     176     203
 171          RY      24      14       4       0       0       4      14      18
              * DDM   ***** Updated *****

 172          KK       9
 173          KM   BASIN 9
 174          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 175          KM    L=       1.4 Lca=         .3  S= 631.9   Kn=.030  LAG=   9.3
 176          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 177          BA   0.508
 178          LG     .15     .33    7.30     .11    5.00
 179          UI    559.   1576.    884.    460.    229.    115.     55.     35.      0.      0.
 180          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 181          KK     CP9
 182          KM        COMBINE SUB-BASIN 9 & CP8
 183          HC       2
              * DDM   ***** Preserved *****

 184          KK   R9-11
 185          KM        ROUTE CP 9 TO CP11
 186          RS       1    FLOW
 187          RC     .07     .05     .07    2934   0.011
 188          RX       0       8      48      54      76      92     122     132
 189          RY      14       4       4       0       0       8       8      14
              * DDM   ***** Updated *****

 190          KK      11
 191          KM   BASIN 11
 192          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 193          KM    L=      1.2  Lca=       .3   S=  503.3  Kn= .030  LAG=   7.1
 194          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 195          BA   0.354
 196          LG     .15     .19   11.20     .02    7.00
 197          UI    686.   1224.    499.    199.     84.     32.      0.      0.      0.      0.
 198          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 199          KK    CP11
 200          KM        COMBINE SUB-BASIN 11 & CP9
 201          HC       2
              * DDM   ***** Preserved *****

 202          KK  R11-12
 203          KM        ROUTE CP11 TO CP12
 204          RS       1    FLOW
 205          RC     .07     .05     .07    4331  0.0110
 206          RX       0      15      65      75      96     121     151     166
 207          RY      38      13      13       0       0     4.5     4.5    12.5
              * DDM   ***** Updated *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 208          KK      12
 209          KM   BASIN 12
 210          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 211          KM    L=       1.4 Lca=         .5 S=  453.9   Kn=.030 LAG    11.9
 212          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 213          BA    .586
 214          LG     .15     .25    9.70     .05    9.00
 215          UI    363.   1310.   1205.    693.    407.    232.    144.     82.     39.     32.
 216          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 217          KK    CP12
 218          KM        COMBINE SUB-BASIN 12 & CP11
 219          HC       2
              * DDM   ***** Preserved *****

 220          KK  R12-14
 221          KM        ROUTE CP12 TO CP14
 222          RS       1    FLOW
 223          RC     .06     .05     .06     [illegible]   0.011
 224          RX       0      20      40      82     123     143     169     197
 225          RY      14       8       2       0       0       2       6      10
              * DDM   ***** Updated *****

 226          KK      14
 227          KM   BASIN 14
 228          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 229          KM    L=       .8  Lca=       .3   S=  398.7  Kn= .030  LAG=   6.5
 230          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 231          BA   0.180
 232          LG     .15     .35    7.00     .12    4.00
 233          UI    420.    617.    226.     84.     30.     18.      0.      0.      0.      0.
 234          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 235          KK    CP14
 236          KM        COMBINE SUB-BASIN 14 & CP12
 237          HC       2
              * DDM   ***** Preserved *****

 238          KK  R14-15
 239          KM        ROUTE CP14 TO CP15
 240          RS       1    FLOW
 241          RC     .05     .04     .05     766   0.007
 242          RX       0      30      36      56      86     100     200     210
 243          RY      34       9       9       0       0       6       6      16
              * DDM   ***** Updated *****

 244          KK      15
 245          KM   BASIN 15
 246          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 247          KM    L=      1.3  Lca=       .2   S=  524.0  Kn= .030  LAG=   5.9
 248          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 249          BA   0.630
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 250          LG      .15      .27     8.80      .06    12.00
 251          UI    1836.    2022.     678.     239.      73.       0.       0.       0.       0.       0.
 252          UI       0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
              * DDM    ***** Preserved *****

 253          KK     CP15
 254          KM         COMBINE SUB-BASIN 15 & CP14
 255          HC        2
              * DDM    ***** Preserved *****

 256          KK   R15-16
 257          KM         ROUTE CP15 TO CP 16
 258          RS        2     FLOW
 259          RC      .05      .04      .05     4306    0.010
 260          RX        0       20      170      185      196      201      251      276
 261          RY     26.5      6.5      6.5        0        0        6        6     10.5
              * DDM    ***** Updated *****

 262          KK       16
 263          KM    BASIN 16
 264          KM     THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 265          KM     L=       2.1  Lca=        .6   S=  499.0  Kn= .030  LAG=  12.1
 266          KM     PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 267          BA    0.728
 268          LG      .15      .27     8.80      .06    15.00
 269          UI     436.    1563.    1524.     871.     512.     302.     183.     107.      55.      39.
 270          UI      39.       0.       0.       0.       0.       0.       0.       0.       0.       0.
 271          UI       0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
              * DDM    ***** Preserved *****

 272          KK     CP16
 273          KM         COMBINE SUB-BASIN 16 & CP15
 274          HC        2
              * DDM    ***** Preserved *****

 275          KK   R16-17
 276          KM         ROUTE CP16 TO CP17
 277          RS        4     FLOW
 278          RC      .06      .05      .06     9527    0.010
 279          RX        0        7       10       16       27       94      136      202
 280          RY       15       10        4        0        0        6        5       10
              * DDM    ***** Updated *****

 281          KK       17
 282          KM    BASIN 17
 283          KM     THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 284          KM     L=       2.6  Lca=       1.3   S=  375.8  Kn= .030  LAG=  22.4
 285          KM     DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 286          BA    0.620
 287          LG      .35      .29     8.40      .07     3.00
 288          UI       93.     358.     664.     860.     855.     642.     435.     296.     197.     135.
 289          UI       89.      64.      33.      23.      23.      23.       0.       0.       0.       0.
 290          UI       0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
              * DDM    ***** Updated *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 291          KK      35
 292          KM   BASIN 35
 293          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 294          KM    L=      2.8  Lca=      1.4   S=   82.3  Kn= .030  LAG=  31.4
 295          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 296          BA   0.680
 297          LG     .35     .25    9.70     .05     .00
 298          UI     73.    153.    353.    520.    645.    699.    658.    532.    401.    306.
 299          UI    230.    174.    131.    101.     77.     51.     50.     23.     18.     18.
 300          UI     18.     18.     18.      0.      0.      0.      0.      0.      0.      0.
 301          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 302          KK    CP17
 303          KM        COMBINE SUB-BASINS 17 & 35 & CP16
 304          HC       3
              * DDM   ***** Updated *****

 305          KK      20
 306          KM   BASIN 20
 307          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 308          KM    L=      1.2  Lca=       .7   S=  458.9  Kn= .040  LAG=  10.6
 309          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 310          BA   0.401
 311          LG     .15     .37    5.20     .24   15.00
 312          UI    330.   1110.    732.    422.    236.    128.     71.     34.     24.      0.
 313          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 314          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 315          KK  R20-21
 316          KM        ROUTE CP20 TO CP21
 317          RS       3    FLOW
 318          RC     .07     .05     .07    6955   0.022
 319          RX       0       2      12      72      76     146     156     158
 320          RY      13      11      11       0       0      13      13      15
              * DDM   ***** Updated *****

 321          KK      21
 322          KM   BASIN 21
 323          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 324          KM    L=      2.0  Lca=       .9   S=  304.5  Kn= .050  LAG=  15.5
 325          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 326          BA   0.543
 327          LG     .15     .35    4.50     .35   26.00
 328          UI    186.    695.   1137.    705.    504.    327.    230.    142.     99.     62.
 329          UI     44.     23.     23.     23.      0.      0.      0.      0.      0.      0.
 330          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 331          KK    CP21
 332          KM        COMBINE SUB-BASINS 20 & 21
 333          HC       2
              * DDM   ***** Updated *****

 334          KK      22
 335          KM   BASIN 22
 336          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 337          KM    L=      1.5  Lca=       .9   S=  471.0  Kn= .030  LAG=  12.4
 338          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 339          BA   0.337
 340          LG     .15     .38    5.60     .21    4.00
 341          UI    191.    682.    720.    409.    244.    148.     88.     53.     31.     18.
 342          UI     18.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 343          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Updated *****

 344          KK      23
 345          KM   BASIN 23
 346          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 347          KM    L=      1.7  Lca=       .9   S=  346.8  Kn= .030  LAG=  14.0
 348          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 349          BA   0.440
 350          LG     .15     .39    5.70     .20    3.00
 351          UI    190.    687.    966.    557.    371.    239.    145.     96.     59.     38.
 352          UI     20.     20.      0.      0.      0.      0.      0.      0.      0.      0.
 353          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 354          KK    CP23
 355          KM        COMBINE SUB-BASINS 22 & 23
 356          HC       2
              * DDM   ***** Preserved *****

 357          KK  R23-24
 358          KM        ROUTE CP23 TO CP24
 359          RS       3    FLOW
 360          RC     .06     .05     .06    8047   0.014
 361          RX       0      15      30      45      61      66     166     181
 362          RY      40      25      10       0       0       4       4      19
              * DDM   ***** Updated *****

 363          KK      24
 364          KM   BASIN 24
 365          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 366          KM    L=      1.8  Lca=       .9   S=  110.1  Kn= .030  LAG=  21.6
 367          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 368          BA   0.382
 369          LG     .35     .39    5.70     .20    6.00
 370          UI     60.    242.    441.    556.    532.    378.    254.    168.    112.     75.
 371          UI     49.     36.     14.     14.     14.      0.      0.      0.      0.      0.
 372          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 373          KK    CP24
 374          KM        COMBINE SUB-BASIN 24 & CP23
 375          HC       2
              * DDM   ***** Preserved *****

 376          KK   CP24A
 377          KM        COMBINE CP21 & CP24
 378          HC       2
              * DDM   ***** Preserved *****

 379          KK  R24-25
 380          KM        ROUTE CP24 TO CP25
 381          RS       1    FLOW
 382          RC     .06     .05     .06    1843   0.018
 383          RX       0      45      65      80     110     120     175     200
 384          RY      10       4       2       0       0       2       4       6
              * DDM   ***** Updated *****

 385          KK      25
 386          KM    BASIN 25
 387          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 388          KM    L=      2.2  Lca=       .3   S=  205.5  Kn= .040  LAG=  11.4
 389          KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 390          BA   0.822
 391          LG     .15     .37    6.60     .14   10.00
 392          UI    568.   2036.   1588.    937.    538.    304.    171.    104.     47.     47.
 393          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 394          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 395          KK    CP25
 396          KM        COMBINE SUB-BASIN 25 & CP24
 397          HC       2
              * DDM   ***** Preserved *****

 398          KK  R25-26
 399          KM        ROUTE CP25 TO CP26
 400          RS       2    FLOW
 401          RC     .05    0.04     .05    5507   0.007
 402          RX       0       2      22      77      98     148     168     170
 403          RY      13      12       9       0       0      15      17      17
              * DDM   ***** Updated *****

 404          KK      26
 405          KM   BASIN 26
 406          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 407          KM    L=      1.2  Lca=       .6   S=  462.4  Kn= .030  LAG=  11.5
 408          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 409          BA   0.387
 410          LG     .35     .37    6.60     .14    2.00
 411          UI    265.    910.    940.    476.    224.    100.     42.     28.      0.      0.
 412          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 413          KK    CP26
 414          KM        COMBINE SUB-BASIN 26 & CP25
 415          HC       2
              * DDM   ***** Preserved *****

 416          KK  R26-32
 417          KM        ROUTE CP 26 TO CP32
 418          RS       3    FLOW
 419          RC     .05    0.04     .05    7976   0.009
 420          RX       0     100     200     204     238     258     358     360
 421          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 422          KK      27
 423          KM   BASIN 27
 424          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 425          KM    L=      1.6  Lca=       .8   S=  123.6  Kn= .030  LAG=  18.6
 426          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 427          BA   0.396
 428          LG     .35     .29    8.40     .07     .00
 429          UI     91.    349.    601.    674.    510.    320.    199.    126.     77.     49.
 430          UI     23.     17.     17.      0.      0.      0.      0.      0.      0.      0.
 431          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Updated *****

 432          KK      28
 433          KM   BASIN 28
 434          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 435          KM    L=      2.5  Lca=       .9   S=   99.6  Kn= .030  LAG=  24.8
 436          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 437          BA   0.460
 438          LG     .35     .22   10.10     .03     .00
 439          UI     62.    202.    397.    548.    595.    518.    373.    262.    185.    128.
 440          UI     91.     63.     43.     30.     15.     15.     15.     15.      0.      0.
 441          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 442          KK    CP28
 443          KM        COMBINE SUB-BASINS 27 & 28
 444          HC       2
              * DDM   ***** Preserved *****

 445          KK  28-28A
 446          KM        ROUTE CP28 TO CP28A
 447          RS       2    FLOW
 448          RC     .05     .04     .05    3739   0.014
 449          RX       0      52      67      82      98     116     143     190
 450          RY       6       4       2       0       0       4       6       8
              * DDM   ***** Updated *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 451          KK     28A
 452          KM   BASIN 28A
 453          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 454          KM    L=      1.4  Lca=       .5   S=   98.6  Kn= .030  LAG=  16.3
 455          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 456          BA   0.197
 457          LG     .35     .22   10.10     .03     .00
 458          UI     60.    233.    370.    348.    216.    126.     74.     42.     26.     10.
 459          UI     10.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 460          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 461          KK   CP28A
 462          KM        COMBINE SUB-BASIN 28A & CP28A
 463          HC       2
              * DDM   ***** Preserved *****

 464          KK  28A-32
 465          KM        ROUTE CP 28A TO CP32
 466          RS       4    FLOW
 467          RC     .05     .04     .05    7033   0.009
 468          RX       0     100     200     204     238     258     358     360
 469          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 470          KK      31
 471          KM   BASIN 31
 472          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 473          KM    L=      1.3  Lca=       .6   S=  109.0  Kn= .030  LAG=  16.0
 474          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 475          BA   0.197
 476          LG     .35     .38    6.40     .15     .00
 477          UI     62.    243.    379.    347.    210.    122.     72.     39.     24.     10.
 478          UI     10.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 479          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 480          KK  R31-32
 481          KM        ROUTE CP 31 TO CP32
 482          RS       4    FLOW
 483          RC     .05     .04     .05    3548   0.009
 484          RX       0     100     200     204     238     258     358     360
 485          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 486          KK      32
 487          KM   BASIN 32
 488          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 489          KM    L=      2.5  Lca=      1.2   S=  150.8  Kn= .030  LAG=  25.5
 490          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 491          BA   0.746
 492          LG     .35     .30    8.00     .08     .00
 493          UI     98.    304.    607.    846.    943.    849.    624.    444.    315.    221.
 494          UI    163.    110.     76.     65.     24.     24.     24.     24.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 495          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 496          KK    CP32
 497          KM        COMBINE SUB-BASIN 32, CP26, CP28, & CP31
 498          HC       4
              * DDM   ***** Preserved *****

 499          KK  32-34B
 500          KM        ROUTE CP32 TO CP34B
 501          RS       2    FLOW
 502          RC     .06     .05     .06    6403   0.009
 503          RX       0      23      30      44      52     159     266     324
 504          RY      13      11       9       0       0       9      10      13
              * DDM   ***** Updated *****

 505          KK      29
 506          KM   BASIN 29
 507          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 508          KM    L=      1.9  Lca=      1.1   S=  106.2  Kn= .030  LAG=  23.3
 509          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 510          BA   0.863
 511          LG     .35     .25    9.70     .05     .00
 512          UI    125.    449.    853.   1132.   1168.    932.    640.    443.    300.    211.
 513          UI    141.     93.     71.     30.     30.     30.     30.      0.      0.      0.
 514          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 515          KK  29-30A
 516          KM        ROUTE CP29 TO CP30A
 517          RS       4    FLOW
 518          RC     .06     .05     .06    6363   0.015
 519          RX       0      20      60      61      71      73     133     153
 520          RY       8       7       1       0       0       2       4       6
              * DDM   ***** Updated *****

 521          KK      30
 522          KM   BASIN 30
 523          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 524          KM    L=      1.4  Lca=       .4   S=   83.1  Kn= .030  LAG=  14.5
 525          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 526          BA   0.080
 527          LG     .35     .15   12.40     .01     .00
 528          UI     32.    121.    173.    133.     73.     40.     22.     12.      5.      5.
 529          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 530          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 531          KK     S30
 532          KM        STAGE/DISCHARGE FOR 2-40"x28" CMPA, APPROXIMATELY 15% CLOGGED
 533          RS       1    ELEV  1952.4
 534          SA       0    0.12    0.12
 535          SE  1952.4    1958    1960
 536          SQ       0     135     200
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 537          KK  30-30A
 538          KM        ROUTE CP30 TO CP30A
 539          RS       3    FLOW
 540          RC     .07     .05     .07    3503   0.019
 541          RX       0      20      60      61      71      73     133     153
 542          RY       8       7       1       0       0       2       4       6
              * DDM   ***** Updated *****

 543          KK     30A
 544          KM   BASIN 30A
 545          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 546          KM    L=      1.4  Lca=       .6   S=   94.2  Kn= .030  LAG=  17.4
 547          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 548          BA   0.314
 549          LG     .35     .32    7.60     .09     .00
 550          UI     83.    321.    533.    553.    374.    228.    137.     82.     49.     28.
 551          UI     15.     15.      0.      0.      0.      0.      0.      0.      0.      0.
 552          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 553          KK   CP30A
 554          KM        COMBINE SUB-BASIN 30A, CP29, & CP30
 555          HC       3
              * DDM   ***** Preserved *****

 556          KK  30A-33C
 557          KM        ROUTE CP30A TO CP33C
 558          RS       3    FLOW      -1
 559          RC     .07     .05     .07    5128   0.015
 560          RX       0     100     200     204     238     258     358     360
 561          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 562          KK      33
 563          KM   BASIN 33
 564          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 565          KM    L=       .9  Lca=       .4   S=   88.2  Kn= .030  LAG=  12.6
 566          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 567          BA   0.098
 568          LG     .35     .19   11.20     .02     .00
 569          UI     54.    195.    236.    138.     69.     35.     17.      6.      6.      0.
 570          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 571          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 572          KK     S33
 573          KM        STAGE/DISCHARGE FOR 2-40"x28 CMPA, APPROXIMATELY 33% CLOGGED
 574          RS       1    ELEV  1908.5
 575          SA       0    0.01    0.01    0.01
 576          SE  1908.5    1912    1914  1915.7
 577          SQ       0      58      89     218
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 578          KK  33-33C
 579          KM        ROUTE CP 33 TO CP33C
 580          RS       5    FLOW
 581          RC     .07     .05     .07    5430   0.018
 582          RX       0     100     200     204     238     258     358     360
 583          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 584          KK     33A
 585          KM   BASIN 33A
 586          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 587          KM    L=       .8  Lca=       .3   S=   82.7  Kn= .030  LAG=  11.6
 588          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 589          BA   0.045
 590          LG     .35     .15   12.40     .01     .00
 591          UI     30.    104.    109.     56.     26.     12.      5.      3.      0.      0.
 592          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 593          KK    S33A
 594          KM        STAGE/DISCHARGE FOR 1-36"x 24" CMPA, APPROXIMATELY 15% CLOGGED
 595          RS       1    ELEV  1896.6
 596          SA       0    0.21    0.21
 597          SE  1896.6    1902    1904
 598          SQ       0      47     221
              * DDM   ***** Preserved *****

 599          KK   33A-C
 600          KM        ROUTE CP 33A TO CP33C
 601          RS       5    FLOW
 602          RC     .07     .05     .07    4691   0.019
 603          RX       0     100     200     204     238     258     358     360
 604          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 605          KK     33B
 606          KM   BASIN 33B
 607          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 608          KM    L=       .6  Lca=       .3   S=   74.2  Kn= .030  LAG=   9.8
 609          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 610          BA   0.061
 611          LG     .35     .15   12.40     .01     .00
 612          UI     60.    184.    136.     56.     23.      8.      5.      0.      0.      0.
 613          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 614          KK    S33B
 615          KM        STAGE/DISCHARGE FOR 2-40"x 28" CMPA, APPROXIMATELY 50% CLOGGED
 616          RS       1    ELEV  1880.5
 617          SA       0    0.03    0.27    0.27
 618          SE  1880.5    1884    1886    1888
 619          SQ       0      25      47     150
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 620          KK   33B-C
 621          KM        ROUTE CP 33B TO CP33C
 622          RS       3    FLOW
 623          RC     .07     .05     .07    3263   0.022
 624          RX       0     100     200     204     238     258     358     360
 625          RY      17       2       2       0       0       8      17      18
              * DDM   ***** Updated *****

 626          KK     33C
 627          KM   BASIN 33C
 628          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 629          KM    L=      1.2  Lca=       .6   S=   99.2  Kn= .030  LAG=  16.0
 630          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 631          BA   0.216
 632          LG     .35     .27    8.80     .06     .00
 633          UI     68.    266.    416.    381.    230.    133.     79.     42.     26.     11.
 634          UI     11.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 635          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 636          KK   CP33C
 637          KM        COMBINE SUB-BASIN 33C, CP30A, CP33, CP33A, & CP33B
 638          HC       5
              * DDM   ***** Preserved *****

 639          KK  33C-34B
 640          KM        ROUTE CP 33C TO CP34B
 641          RS       2    FLOW
 642          RC     .06     .05     .06    6374   0.010
 643          RX       0      16     216     216     241     247     307     327
 644          RY      18      10      10       0       0       3       6       9
              * DDM   ***** Updated *****

 645          KK      34
 646          KM   BASIN 34
 647          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 648          KM    L=       .8  Lca=       .4   S=   73.4  Kn= .030  LAG=  12.6
 649          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 650          BA   0.108
 651          LG     .35     .15   12.40     .01     .00
 652          UI     60.    215.    260.    152.     76.     38.     19.      7.      7.      0.
 653          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 654          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 655          KK     S34
 656          KM        STAGE/DISCHARGE FOR 2-40"x 28 CMPA, APPROXIMATELY 33% CLOGGED
 657          RS       1    ELEV  1848.5
 658          SA       0    0.07    0.22    0.22
 659          SE  1848.5    1852    1854    1856
 660          SQ       0      55      88     243
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 661          KK  34-34B
 662          KM        ROUTE CP34 TO CP34B
 663          RS       4    FLOW
 664          RC     .06     .05     .06    6440   0.016
 665          RX       0      16     216     216     241     247     307     327
 666          RY      18      10      10       0       0       3       6       9
              * DDM   ***** Updated *****

 667          KK     34A
 668          KM   BASIN 34A
 669          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 670          KM    L=      1.0  Lca=       .5   S=   70.3  Kn= .030  LAG=  15.0
 671          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 672          BA   0.135
 673          LG     .35     .15   12.40     .01     .00
 674          UI     50.    190.    282.    231.    131.     73.     41.     23.     10.      7.
 675          UI      7.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 676          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 677          KK    S34A
 678          KM        STAGE/DISCHARGE FOR 2-40"x 28" CMPA, APPROXIMATELY 50% CLOGGED
 679          RS       1    ELEV  1819.8
 680          SA       0     .03     .18     .18     .18
 681          SE  1819.8    1822    1824    1826    1828
 682          SQ       0      17      42     140     300
              * DDM   ***** Preserved *****

 683          KK   34A-B
 684          KM        ROUTE CP34A TO CP34B
 685          RS       2    FLOW
 686          RC     .06     .05     .06    3889   0.019
 687          RX       0      16     216     216     241     247     307     327
 688          RY      18      10      10       0       0       3       6       9
              * DDM   ***** Updated *****

 689          KK     34B
 690          KM   BASIN 34B
 691          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 692          KM    L=      1.6  Lca=       .7   S=   84.6  Kn= .030  LAG=  19.8
 693          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 694          BA   0.485
 695          LG     .35     .27    8.80     .06     .00
 696          UI     97.    375.    666.    786.    665.    432.    279.    179.    114.     72.
 697          UI     50.     20.     20.     20.      0.      0.      0.      0.      0.      0.
 698          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 699          KK   CP34B
 700          KM        COMBINE SUB-BASIN 34B, CP32, CP33C, CP34, & CP34A
 701          HC       5
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 702          KK  34B-35
 703          KM        ROUTE CP34B TO CP35
 704          RS       1    FLOW
 705          RC     .06     .05     .06    1037   0.007
 706          RX       0      74     119     201     207     265     400     630
 707          RY       9       7       5       0       0       5       7       9
              * DDM   ***** Preserved *****

 708          KK    CP35
 709          KM        COMBINE CP17 & CP34B
 710          HC       2
              * DDM   ***** Preserved *****

 711          KK  R35-18
 712          KM        ROUTE CP35 TO CP18
 713          RS       1    FLOW
 714          RC     .07     .05     .07     682   0.012
 715          RX       0     170     520     542     560     595     745    1020
 716          RY      24      10       8       2       0       6       8      12
              * DDM   ***** Updated *****

 717          KK      36
 718          KM   BASIN 36
 719          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 720          KM    L=      1.7  Lca=       .8   S=   80.8  Kn= .030  LAG=  21.0
 721          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 722          BA   0.315
 723          LG     .35     .15   12.40     .01     .00
 724          UI     54.    212.    384.    475.    437.    302.    200.    131.     87.     57.
 725          UI     36.     23.     12.     12.     12.      0.      0.      0.      0.      0.
 726          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Updated *****

 727          KK      18
 728          KM   BASIN 18
 729          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 730          KM    L=       .4  Lca=       .1   S=  115.0  Kn= .030  LAG=   5.2
 731          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 732          BA   0.035
 733          LG     .35     .35    4.90     .28     .00
 734          UI    127.    118.     22.      0.      0.      0.      0.      0.      0.      0.
 735          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

 736          KK    CP18
 737          KM        COMBINE SUB-BASINS 18 & 36 AND CP17
 738          KM        DIP CROSSING OF LAKE PLEASANT ROAD
 739          HC       3
              * DDM   ***** Preserved *****
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  740         KK  18-19A
  741         KM        ROUTE CP18 TO CP19A
  742         RS       1    FLOW
  743         RC     .06     .05     .06    3249   0.007
  744         RX       0     580     870     965    1130    1275    1320    1665
  745         RY       8       2       4       0       2       0       8      12
              * DDM   ***** Updated *****

  746         KK      37
  747         KM   BASIN 37
  748         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  749         KM    L=      1.5  Lca=       .7   S=   68.3  Kn= .030  LAG=  19.7
  750         KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
  751         BA   0.308
  752         LG     .35     .19   11.20     .02     .00
  753         UI     62.    239.    423.    498.    417.    271.    174.    111.     70.     45.
  754         UI     31.     13.     13.     13.      0.      0.      0.      0.      0.      0.
  755         UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Updated *****

  756         KK      19
  757         KM   BASIN 19
  758         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  759         KM    L=       .2  Lca=       .1   S=  104.5  Kn= .030  LAG=   4.2
  760         KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
  761         BA   0.017
  762         LG     .35     .35    4.60     .33     .00
  763         UI     84.     42.      5.      0.      0.      0.      0.      0.      0.      0.
  764         UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****

  765         KK  19-19A
  766         KM        ROUTE CP19 TO CP19A
  767         RS      11    FLOW
  768         RC     .06     .05     .05    3284   0.009
  769         RX       0      70      80     255     300     340     380     430
  770         RY       3       2       0       0       2       4       6       8
              * DDM   ***** Updated *****

  771         KK     19A
  772         KM   BASIN 19A
  773         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  774         KM    L=       .7  Lca=       .3   S=   65.7  Kn= .030  LAG=  10.6
  775         KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
  776         BA   0.100
  777         LG     .35     .38    6.40     .15     .00
  778         UI     83.    269.    236.    107.     47.     20.      8.      0.      0.      0.
  779         UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  780         KK   CP19A
  781         KM        COMBINE SUB-BASINS 19A, 37, CP18, & CP19
  782         HC       4
  783         ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
                (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

 NO.            (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  45                1
                    V
                    V
  55              R1-2
                    .
                    .
  61                .           2
                    .           .
                    .           .
  70               CP2...........
                    V
                    V
  73              R2-3
                    .
                    .
  79                .           3
                    .           .
                    .           .
  88               CP3...........
                    V
                    V
  91              R3-4
                    .
                    .
  97                .           4
                    .           .
                    .           .
 106               CP4...........
                    .
                    .
 [illegible]        .           5
                    .           .
                    .           .
 118                .           .           6
                    .           .           .
                    .           .           .
 127               CP6......................
                    V
                    V
 130              R6-7
                    .
                    .
 136                .           7
                    .           .
                    .           .
 145               CP7...........
                    V
                    V
 148              R7-8
                    .
                    .
 154                .           8
                    .           .
                    .           .
 163               CP8...........
                    V
                    V
 166              R8-9
                    .
                    .
 172                .           9
                    .           .
                    .           .
 181               CP9...........
                    V
                    V
 [illegible]      R9-11
                    .
                    .
```

```
190          .          11
             .           .
             .           .
        CP11............
             V
             V
202     R11-12
             .
             .
208          .          12
             .           .
             .           .
217     CP12............
             V
             V
220     R12-14
             .
             .
226          .          14
             .           .
             .           .
235     CP14............
             V
             V
239     R14-15
             .
             .
244          .          15
             .           .
             .           .
253     CP15............
             V
             V
256     R15-16
             .
             .
262          .          16
             .           .
             .           .
272     CP16............
             V
             V
275     R16-17
             .
             .
281          .          17
             .           .
             .           .
291          .           .          35
             .           .           .
             .           .           .
302     CP17........................
             .
             .
305          .          20
             .           V
             .           V
315          .      R20-21
             .           .
             .           .
321          .           .          21
             .           .           .
             .           .           .
331          .        CP21............
             .           .
             .           .
334          .           .          22
             .           .           .
             .           .           .
344          .           .           .          23
             .           .           .           .
             .           .           .           .
             .           .        CP23............
             .           .           V
             .           .           V
357          .           .      R23-24
```

```
              .          .          .
              .          .          .          24
363           .          .          .          .
              .          .          .          .
373           .          .       CP24...........
              .          .          .
              .          .          .
376           .       CP24A..........
              .          V
              .          V
379           .       R24-25
              .          .
              .          .
385           .          .          25
              .          .          .
              .          .          .
395           .       CP25...........
              .          V
              .          V
398           .       R25-26
              .          .
              .          .
404           .          .          26
              .          .          .
              .          .          .
413           .       CP26...........
              .          V
              .          V
416           .       R26-32
              .          .
              .          .
422           .          .          27
              .          .          .
              .          .          .          28
              .          .          .          .
              .          .          .          .
442           .          .       CP28...........
              .          .          V
              .          .          V
445           .          .       28-28A
              .          .          .
              .          .          .
451           .          .          .          28A
              .          .          .          .
              .          .          .          .
461           .          .       CP28A..........
              .          .          V
              .          .          V
464           .          .       28A-32
              .          .          .
              .          .          .
470           .          .          .          31
              .          .          .          V
              .          .          .          V
480           .          .          .        R31-32
              .          .          .          .
              .          .          .          .
486           .          .          .          .          32
              .          .          .          .          .
              .          .          .          .          .
496           .       CP32..................................
              .          V
              .          V
499           .       32-34B
              .          .
              .          .
505           .          .          29
              .          .          V
              .          .          V
515           .          .       29-30A
              .          .          .
              .          .          .
521           .          .          .          30
              .          .          .          V
```

```
                 .         .         .         V
531              .         .         .       S30
                 .         .         .         V
                 .         .         .         V
                 .         .         .     30-30A
                 .         .         .         .
                 .         .         .         .
543              .         .         .         .       30A
                 .         .         .         .         .
                 .         .         .         .         .
553              .         .     CP30A.......................
                 .         .         V
                 .         .         V
556              .         .     30A-33
                 .         .         .
                 .         .         .
562              .         .         .        33
                 .         .         .         V
                 .         .         .         V
572              .         .         .       S33
                 .         .         .         V
                 .         .         .         V
578              .         .         .     33-33C
                 .         .         .         .
                 .         .         .         .
584              .         .         .         .       33A
                 .         .         .         .         V
                 .         .         .         .         V
593              .         .         .         .      S33A
                 .         .         .         .         V
                 .         .         .         .         V
599              .         .         .         .     33A-C
                 .         .         .         .         .
                 .         .         .         .         .
605              .         .         .         .         .        33B
                 .         .         .         .         .          V
                 .         .         .         .         .          V
                 .         .         .         .         .       S33B
                 .         .         .         .         .          V
                 .         .         .         .         .          V
620              .         .         .         .         .      33B-C
                 .         .         .         .         .          .
                 .         .         .         .         .          .
626              .         .         .         .         .          .        33C
                 .         .         .         .         .          .          .
                 .         .         .         .         .          .          .
636              .         .     CP33C...............................................
                 .         .         V
                 .         .         V
639              .         .     33C-34
                 .         .         .
                 .         .         .
645              .         .         .        34
                 .         .         .         V
                 .         .         .         V
655              .         .         .       S34
                 .         .         .         V
                 .         .         .         V
661              .         .         .     34-34B
                 .         .         .         .
                 .         .         .         .
667              .         .         .         .       34A
                 .         .         .         .         V
                 .         .         .         .         V
677              .         .         .         .      S34A
                 .         .         .         .         V
                 .         .         .         .         V
683              .         .         .         .     34A-B
                 .         .         .         .         .
                 .         .         .         .         .
689              .         .         .         .         .        34B
                 .         .         .         .         .          .
                 .         .         .         .         .          .
                 .     CP34B...........................................
                 .         V
                 .         V
```

```
702          .      34B-35
             .          .
             .          .
         CP35............
            V
            V
711     R35-18
             .
             .
717          .          36
             .           .
             .           .
727          .           .          18
             .           .           .
             .           .           .
736       CP18........................
            V
            V
740     18-19A
             .
             .
746          .          37
             .           .
             .           .
756          .           .          19
             .                       V
             .           .           V
765          .           .      19-19A
             .           .           .
             .           .           .
771          .           .           .         19A
             .           .           .           .
             .           .           .           .
780      CP19A.....................................
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              MAY   1991              *
*           VERSION 4.0.1E             *
*     Lahey F77L-EM/32 version 5.01    *
*       Dodson & Associates, Inc.      *
*  RUN DATE  08/25/98  TIME  08:10:25  *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
****************************************
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                    FILE NAME: Y100H24R.DAT   AUGUST 1998

                    UPDATED MODEL USING N VALUES DETERMINED FROM HYDRAULIC ANALYSIS

                    100-YEAR,24-HOUR STORM DISTRIBUTION AS DEFINED BY PROJECT SCOPE

                    RAINFALL DEPTH OF 4.6 INCHES WAS DETERMINED FROM FIG. 2.13 (NOAA ATLAS)

                    JD RECORDS USED TO AEREALLY REDUCE POINT RAINFALL DATA

                    TOTAL WATERSHED DRAINAGE AREA IS 15.52 SQ. MI.

                    S-GRAPHS FOR DESERT/RANGELAND AND PHOENIX MOUNTAIN WERE UTILIZED
                            FOR ROUTING RAINFALL EXCESSES

                    GREEN AND AMPT INFILTRATION EQUATIONS USED TO DETERMINE RAINFALL

                    FCMC DDMS PROGRAM USED TO CALCULATE RAINFALL, RAINFALL LOSSES,
                            AND UNIT HYDROGRAPHS

                    NORMAL DEPTH METHOD USED FOR CHANNEL ROUTING

                    TIES INTO NEW RIVER FLOOD INSURANCE STUDY CROSS SECTION 4.129
                            DISCHARGE AT CROSS SECTION 4.129 IS 12,400 CFS

                DDM MCUHP2 Sweat Canyon Wash Flood Insurance Study

30 IO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                      NMIN           5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME        0000  STARTING TIME
                        NQ        2000  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      7    0  ENDING DATE
                    NDTIME        2235  ENDING TIME
                    ICENT           19  CENTURY MARK

              COMPUTATION INTERVAL    0.08 HOURS
                   TOTAL TIME BASE  166.58 HOURS

        ENGLISH UNITS
             DRAINAGE AREA         SQUARE MILES
             PRECIPITATION DEPTH   INCHES
             LENGTH, ELEVATION     FEET
             FLOW                  CUBIC FEET PER SECOND
             STORAGE VOLUME        ACRE-FEET
             SURFACE AREA          ACRES
             TEMPERATURE           DEGREES FAHRENHEIT

32 JD          INDEX STORM NO. 1
                      STRM        4.60  PRECIPITATION DEPTH
                      TRDA        0.01  TRANSPOSITION DRAINAGE AREA

33 PI            PRECIPITATION PATTERN
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                    0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
```

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.05	0.05
0.05	0.07	0.07	0.07	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

43 JD INDEX STORM NO. 2

STRM 4.32 PRECIPITATION DEPTH
TRDA 10.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.05	0.05
0.05	0.07	0.07	0.07	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

44 JD INDEX STORM NO. 3

STRM 4.19 PRECIPITATION DEPTH
TRDA 20.00 TRANSPOSITION DRAINAGE AREA

0 PI PRECIPITATION PATTERN

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.05	0.05
0.05	0.07	0.07	0.07	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	1	729.	12.00	72.	20.	7.	0.42		
ROUTED TO	R1-2	631.	12.17	72.	20.	7.	0.42		
HYDROGRAPH AT	2	785.	12.00	83.	25.	8.	0.42		
2 COMBINED AT	CP2	1301.	12.08	154.	44.	15.	0.84		
ROUTED TO	R2-3	1252.	12.08	154.	44.	15.	0.84		
HYDROGRAPH AT	3	842.	12.00	89.	25.	8.	0.43		
2 COMBINED AT	CP3	1989.	12.08	240.	69.	23.	1.27		
ROUTED TO	R3-4	1992.	12.08	240.	69.	23.	1.27		
HYDROGRAPH AT	4	550.	12.00	69.	18.	6.	0.25		
2 COMBINED AT	CP4	2413.	12.08	307.	86.	29.	1.52		
HYDROGRAPH AT	5	638.	12.00	71.	22.	7.	0.35		
HYDROGRAPH AT	6	573.	12.00	55.	15.	5.	0.30		
3 COMBINED AT	CP6	3574.	12.00	428.	121.	40.	2.17		
ROUTED TO	R6-7	3520.	12.08	428.	121.	40.	2.17		
HYDROGRAPH AT	7	500.	12.00	44.	12.	4.	0.26		
2 COMBINED AT	CP7	3977.	12.00	471.	132.	44.	2.43		
ROUTED TO	R7-8	3945.	12.08	471.	132.	44.	2.43		
HYDROGRAPH AT	8	556.	12.00	53.	15.	5.	0.29		
2 COMBINED AT	CP8	4375.	12.00	522.	147.	49.	2.72		
ROUTED TO	R8-9	4308.	12.08	522.	147.	49.	2.72		
HYDROGRAPH AT	9	987.	12.00	99.	26.	9.	0.51		
2 COMBINED AT	CP9	5172.	12.08	617.	171.	57.	3.22		
ROUTED TO	R9-11	4819.	12.17	617.	171.	57.	3.22		
HYDROGRAPH AT	11	771.	12.00	103.	28.	9.	0.35		
2 COMBINED AT	CP11	5396.	12.08	716.	198.	66.	3.58		
ROUTED TO	R11-12	5008.	12.17	716.	198.	66.	3.58		
HYDROGRAPH AT	12	1127.	12.00	142.	37.	12.	0.59		
2 COMBINED AT	CP12	5811.	12.17	853.	234.	78.	4.16		
ROUTED TO	R12-14	5605.	12.25	852.	234.	78.	4.16		
HYDROGRAPH AT	14	368.	12.00	34.	9.	3.	0.18		
2 COMBINED AT	CP14	5718.	12.17	885.	243.	81.	4.34		
ROUTED TO	R14-15	5721.	12.25	885.	243.	81.	4.34		
HYDROGRAPH AT	15	1340.	12.00	149.	40.	13.	0.63		
2 COMBINED AT	CP15	6035.	12.17	1028.	281.	94.	4.97		

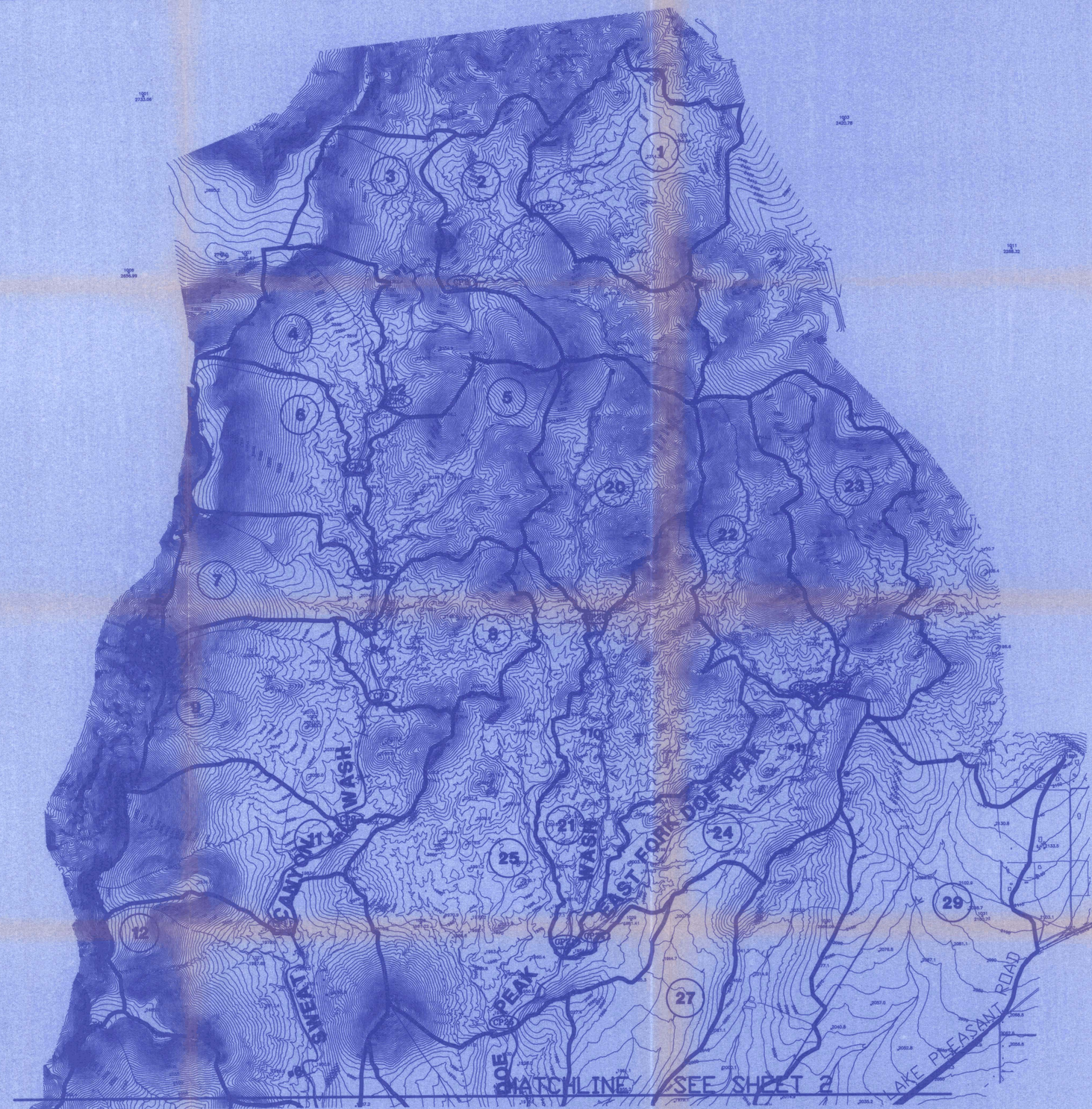
ROUTED TO	R15-16	5867.	12.33	1028.	281.	94.	4.97
HYDROGRAPH AT	16	1386.	12.00	175.	48.	16.	0.73
2 COMBINED AT	CP16	6481.	12.25	1196.	327.	109.	5.70
ROUTED TO	R16-17	6078.	12.50	1195.	326.	109.	5.70
HYDROGRAPH AT	17	991.	12.17	130.	33.	11.	0.62
HYDROGRAPH AT	35	943.	12.25	153.	38.	13.	0.68
3 COMBINED AT	CP17	7174.	12.50	1466.	395.	132.	7.00
HYDROGRAPH AT	20	713.	12.00	72.	20.	7.	0.40
ROUTED TO	R20-21	614.	12.17	72.	20.	7.	0.40
HYDROGRAPH AT	21	851.	12.08	102.	30.	10.	0.54
2 COMBINED AT	CP21	1392.	12.08	172.	50.	17.	0.94
HYDROGRAPH AT	22	564.	12.00	55.	14.	5.	0.34
HYDROGRAPH AT	23	715.	12.00	71.	18.	6.	0.44
2 COMBINED AT	CP23	1263.	12.08	125.	32.	11.	0.78
ROUTED TO	R23-24	991.	12.33	125.	32.	11.	0.78
HYDROGRAPH AT	24	548.	12.17	62.	16.	5.	0.38
2 COMBINED AT	CP24	1458.	12.25	185.	48.	16.	1.16
2 COMBINED AT	CP24A	2735.	12.17	354.	97.	32.	2.10
ROUTED TO	R24-25	2634.	12.17	354.	97.	32.	2.10
HYDROGRAPH AT	25	1483.	12.00	155.	42.	14.	0.82
2 COMBINED AT	CP25	3719.	12.08	504.	137.	46.	2.93
ROUTED TO	R25-26	3457.	12.25	504.	137.	46.	2.93
HYDROGRAPH AT	26	711.	12.00	66.	17.	6.	0.39
2 COMBINED AT	CP26	3715.	12.17	568.	153.	51.	3.31
ROUTED TO	R26-32	3351.	12.50	567.	153.	51.	3.31
HYDROGRAPH AT	27	688.	12.08	82.	20.	7.	0.40
HYDROGRAPH AT	28	745.	12.17	120.	30.	10.	0.46
2 COMBINED AT	CP28	1391.	12.17	200.	50.	17.	0.86
ROUTED TO	28-28A	1354.	12.25	199.	50.	17.	0.86
HYDROGRAPH AT	28A	377.	12.08	52.	13.	4.	0.20
2 COMBINED AT	CP28A	1677.	12.17	249.	63.	21.	1.05
ROUTED TO	28A-32	1501.	12.50	249.	63.	21.	1.05
HYDROGRAPH AT	31	335.	12.08	33.	8.	3.	0.20
ROUTED TO	R31-32	310.	12.25	33.	8.	3.	0.20
HYDROGRAPH AT	32	1110.	12.17	147.	37.	12.	0.75
4 COMBINED AT	CP32	5677.	12.42	981.	257.	86.	5.31
ROUTED TO	32-34B	5275.	12.58	981.	257.	86.	5.31
HYDROGRAPH AT	29	1386.	12.17	194.	48.	16.	0.86

ROUTED TO	29-30A	1258.	12.42	194.	48.	16.	0.86
HYDROGRAPH AT	30	162.	12.08	25.	7.	2.	0.08
ROUTED TO	S30	159.	12.08	25.	7.	2.	0.08
ROUTED TO	30-30A	149.	12.25	25.	7.	2.	0.08
HYDROGRAPH AT	30A	549.	12.08	60.	15.	5.	0.31
3 COMBINED AT	CP30A	1639.	12.33	276.	70.	23.	1.26
ROUTED TO	30A-33	1540.	12.50	276.	70.	23.	1.26
HYDROGRAPH AT	33	200.	12.00	28.	7.	2.	0.10
ROUTED TO	S33	201.	12.08	28.	7.	2.	0.10
ROUTED TO	33-33C	186.	12.25	28.	7.	2.	0.10
HYDROGRAPH AT	33A	95.	12.00	14.	4.	1.	0.05
ROUTED TO	S33A	94.	12.08	14.	4.	1.	0.05
ROUTED TO	33A-C	[illegible]	12.33	14.	4.	1.	0.05
HYDROGRAPH AT	33B	134.	12.00	19.	5.	2.	0.06
ROUTED TO	S33B	128.	12.08	19.	5.	2.	0.06
ROUTED TO	33B-C	114.	12.25	19.	5.	2.	0.06
HYDROGRAPH AT	33C	402.	12.08	47.	12.	4.	0.22
5 COMBINED AT	CP33C	1890.	12.42	379.	97.	32.	1.68
ROUTED TO	33C-34	1748.	12.67	379.	97.	32.	1.68
HYDROGRAPH AT	34	223.	12.00	33.	9.	3.	0.11
ROUTED TO	S34	223.	12.08	33.	9.	3.	0.11
ROUTED TO	34-34B	192.	12.33	33.	9.	3.	0.11
HYDROGRAPH AT	34A	271.	12.08	42.	12.	4.	0.14
ROUTED TO	S34A	269.	12.08	42.	12.	4.	0.14
ROUTED TO	34A-B	246.	12.17	42.	12.	4.	0.14
HYDROGRAPH AT	34B	834.	12.08	106.	26.	9.	0.49
5 COMBINED AT	CP34B	7335.	12.58	1518.	396.	132.	7.71
ROUTED TO	34B-35	7282.	12.67	1518.	396.	132.	7.71
2 COMBINED AT	CP35	13562.	12.58	2895.	767.	256.	14.71
ROUTED TO	R35-18	13524.	12.58	2895.	767.	256.	14.71
HYDROGRAPH AT	36	559.	12.08	96.	27.	9.	0.31
HYDROGRAPH AT	18	66.	12.00	5.	1.	0.	0.04
3 COMBINED AT	CP18	13677.	12.58	2983.	792.	264.	15.06
ROUTED TO	18-19A	12953.	12.75	2980.	792.	264.	15.06
HYDROGRAPH AT	37	556.	12.08	87.	23.	8.	0.31
HYDROGRAPH AT	19	32.	12.00	2.	1.	0.	0.02
ROUTED TO	19-19A	24.	12.42	2.	1.	0.	0.02
HYDROGRAPH AT	19A	188.	12.00	17.	4.	1.	0.10

4 COMBINED AT	CP19A	13034.	12.75	3070.	816.	272.	15.49

RMAL END OF HEC-1 ***

Hydrology watershed maps



0 500 1000 2000

SCALE: 1"=1000'

LEGEND

- (3) DRAINAGE AREA DESIGNATION
- DRAINAGE AREA BOUNDARY LINE
- (CP3) CONCENTRATION POINT
- ● SUB-BASIN CENTROID
- DRAINAGE PATH
- TIME OF CONCENTRATION PATH
- ■6 HEC-1 ROUTING XSEC

WATERSHED MAP
SWEAT CANYON WASH
FLOOD INSURANCE STUDY

EXHIBIT A

AERIAL MAPPING COMPANY, INC.
DAVID EVANS AND ASSOCIATES
FLOWN 9/23/97 AND 11/7/97

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS
1"= 600' AND 1"= 1583' HORIZONTAL SCALE AND 2' AND 10' CONTOUR INTERVALS AND BASED ON GROUND
CONTROL SURVEY DATA PROVIDED BY DAVID EVANS AND ASSOCIATES

JOB NO.MAR10029	DAVID EVANS AND ASSOCIATES, INC
DWG # M29EXHA1	2929 E. CAMELBACK ROAD PHOENIX, AZ. 85016-3446 (602) 956-9850
DATE 5/98	
SHEET 1 OF 2	

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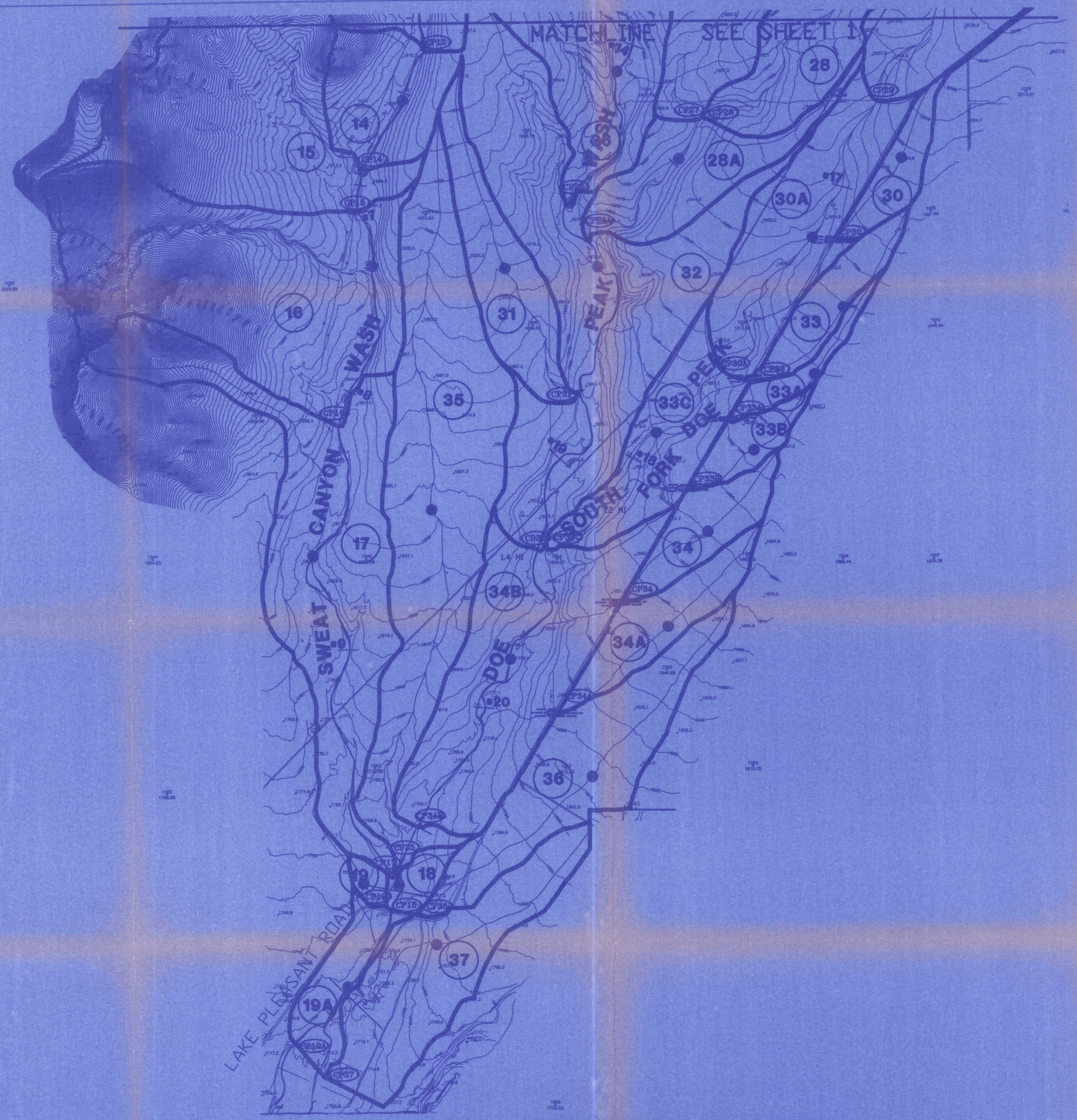

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SCALE: 1"=1000'

LEGEND

- (3) DRAINAGE AREA DESIGNATION
- DRAINAGE AREA BOUNDARY LINE
- (CP3) CONCENTRATION POINT
- ● SUB-BASIN CENTROID
- DRAINAGE PATH
- TIME OF CONCENTRATION PATH
- •6 HEC-1 ROUTING XSEC LOCATION

WATERSHED MAP
SWEAT CANYON WASH
FLOOD INSURANCE STUDY

EXHIBIT A

AERIAL MAPPING COMPANY, INC.
DAVID EVANS AND ASSOCIATES
FLOWN 9/23/97 AND 11/7/97

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS
1"= 600' AND 1"= 1583' HORIZONTAL SCALE AND 2' AND 10' CONTOUR INTERVALS AND BASED ON GROUND
CONTROL SURVEY DATA PROVIDED BY DAVID EVANS AND ASSOCIATES

JOB NO.MARI0029	DAVID EVANS AND ASSOCIATES, INC.
DWG # M29EXHA2	2929 E. CAMELBACK ROAD PHOENIX, AZ. 85016-9446 (602) 956-9650
DATE 5/98	
SHEET 2 OF 2	

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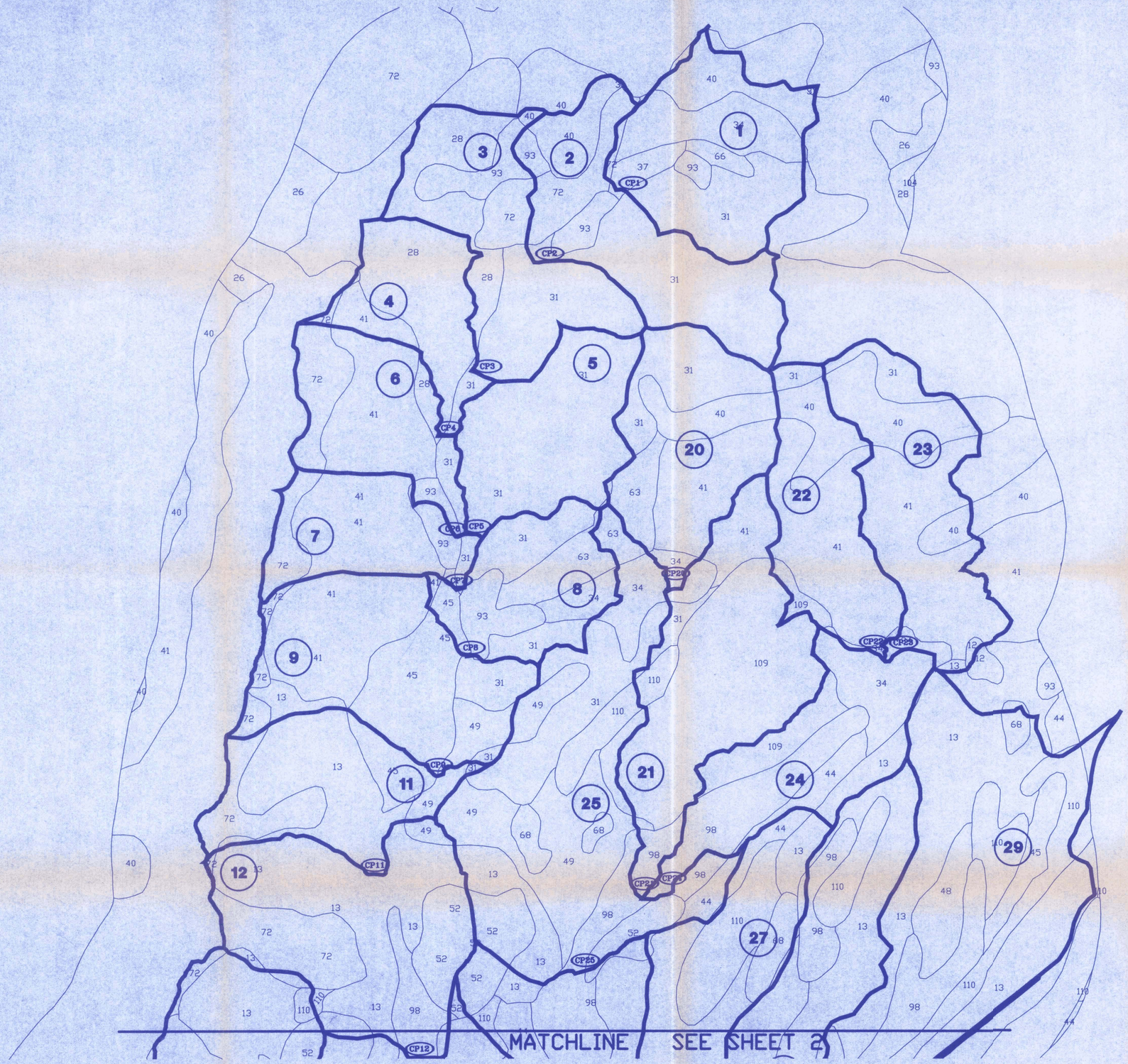
Hydrology soils maps



SCALE: 1"=1000'

LEGEND

3	DRAINAGE AREA DESIGNATION
	DRAINAGE AREA BOUNDARY LINE
CP3	CONCENTRATION POINT
13	SCS SOIL DESIGNATION
	SOIL BOUNDARY

SOILS MAP
SWEAT CANYON WASH
FLOOD INSURANCE STUDY

EXHIBIT B

SOURCE: MARICOPA COUNTY FLOOD CONTROL DISTRICT HYDROLOGIC INFORMATION SYSTEM

JOB NO. MARI0029	DAVID EVANS AND ASSOCIATES, INC.
DWG # M29EXHB1	2929 E. CAMELBACK ROAD PHOENIX, AZ. 85016-3446 (602) 956-9850
DATE 3/98	
SHEET 1 OF 2	

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0 500 1000 2000

SCALE: 1"=1000'

LEGEND

(3)	DRAINAGE AREA DESIGNATION
———	DRAINAGE AREA BOUNDARY LINE
(CP3)	CONCENTRATION POINT
13	SCS SOIL DESIGNATION
~	SOIL BOUNDARY

SOURCE: MARICOPA COUNTY FLOOD CONTROL DISTRICT HYDROLOGIC INFORMATION SYSTEM

WATERSHED MAP

SWEAT CANYON WASH

FLOOD INSURANCE STUDY

EXHIBIT B

JOB NO. MARI0029	DAVID EVANS AND ASSOCIATES, INC.
DWG # M29EXHB2	2929 E. CAMELBACK ROAD
DATE 3/98	PHOENIX, AZ. 85016-3446 (602) 956-9850
SHEET 2 OF 2	

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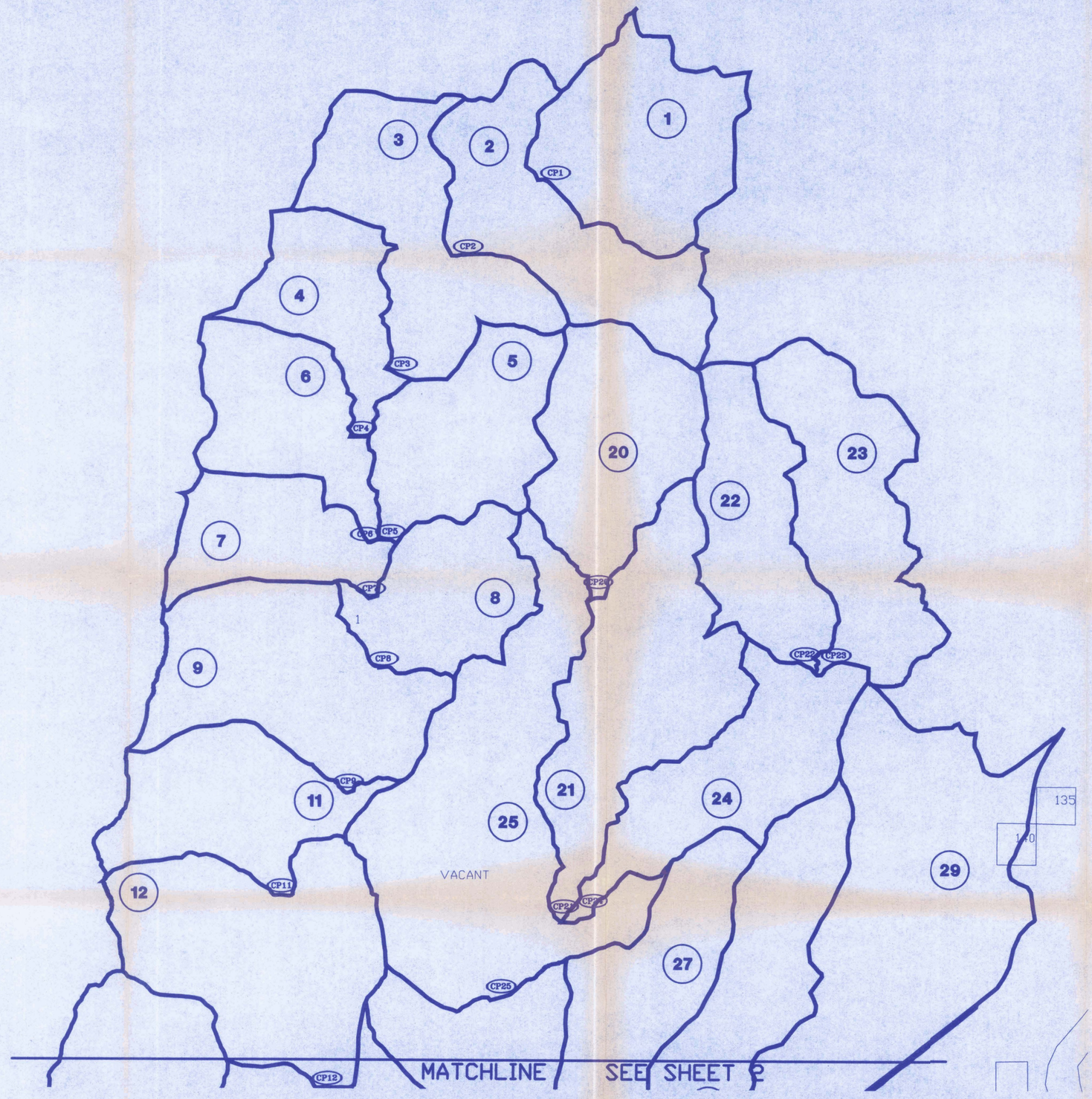
Hydrology land-use maps



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SCALE: 1"=1000'

LEGEND

3 DRAINAGE AREA DESIGNATION

DRAINAGE AREA BOUNDARY LINE

LAND USE MAP

SWEAT CANYON WASH

FLOOD INSURANCE STUDY

SOURCE: MARICOPA COUNTY FLOOD CONTROL DISTRICT HYDROLOGIC INFORMATION SYSTEM

EXHIBIT C

JOB NO.MARI0029	DAVID EVANS AND ASSOCIATES, INC
DWG # M29EXHC1	2929 E. CAMELBACK ROAD PHOENIX, AZ. 85016-3446 (602) 956-9850
DATE 3/98	
SHEET 1 OF 2	

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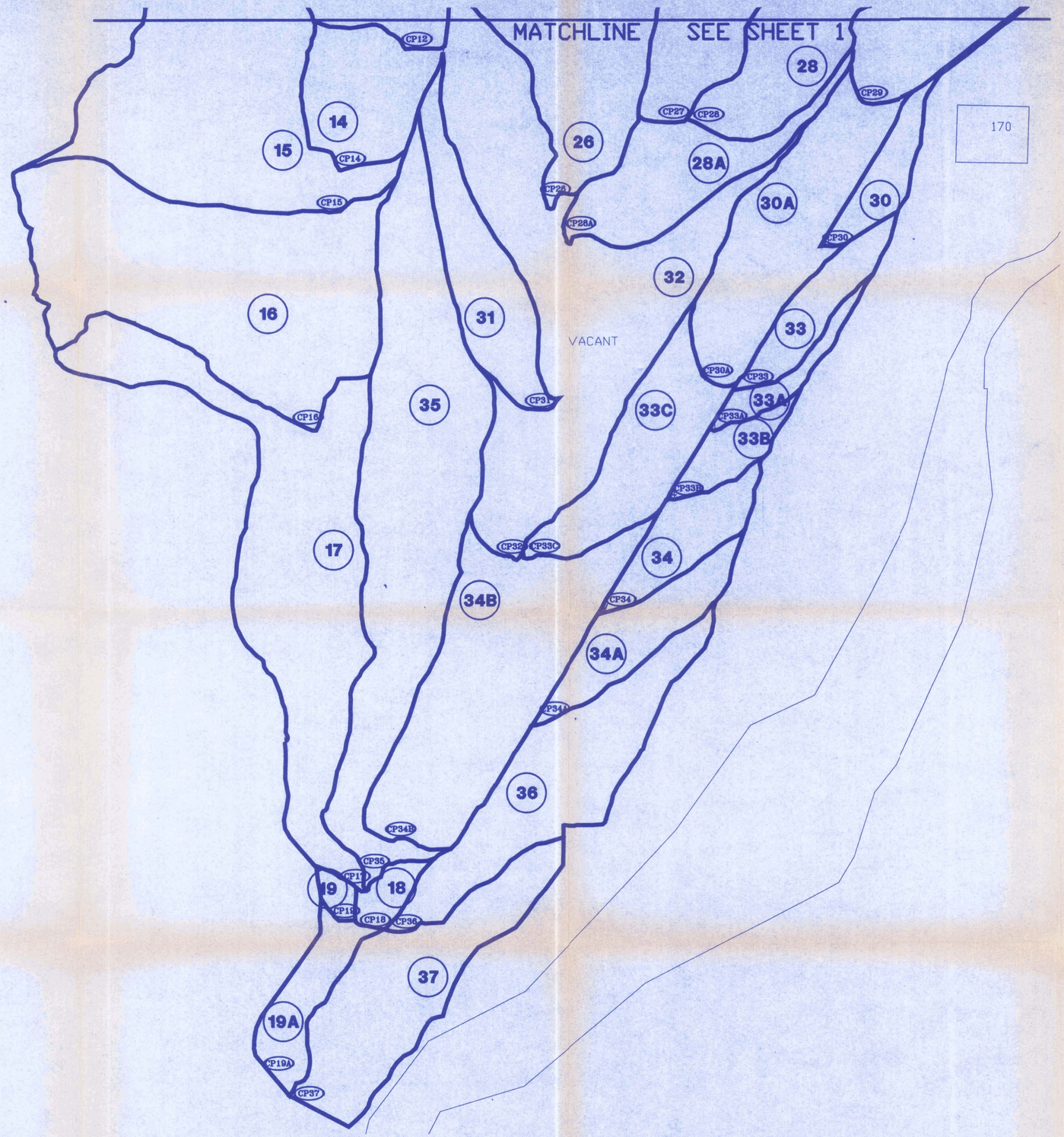

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SCALE: 1"=1000'

LEGEND

(3) DRAINAGE AREA DESIGNATION

DRAINAGE AREA BOUNDARY LINE

LAND USE MAP

SWEAT CANYON WASH

FLOOD INSURANCE STUDY

SOURCE: MARICOPA COUNTY FLOOD CONTROL DISTRICT HYDROLOGIC INFORMATION SYSTEM

EXHIBIT C

JOB NO.MARI0029	DAVID EVANS AND ASSOCIATES, INC.
DWG # M29EXHC2	2929 E. CAMELBACK ROAD PHOENIX, AZ. 85016-3446 (602) 956-9850
DATE 3/98	
SHEET 2 OF 2	

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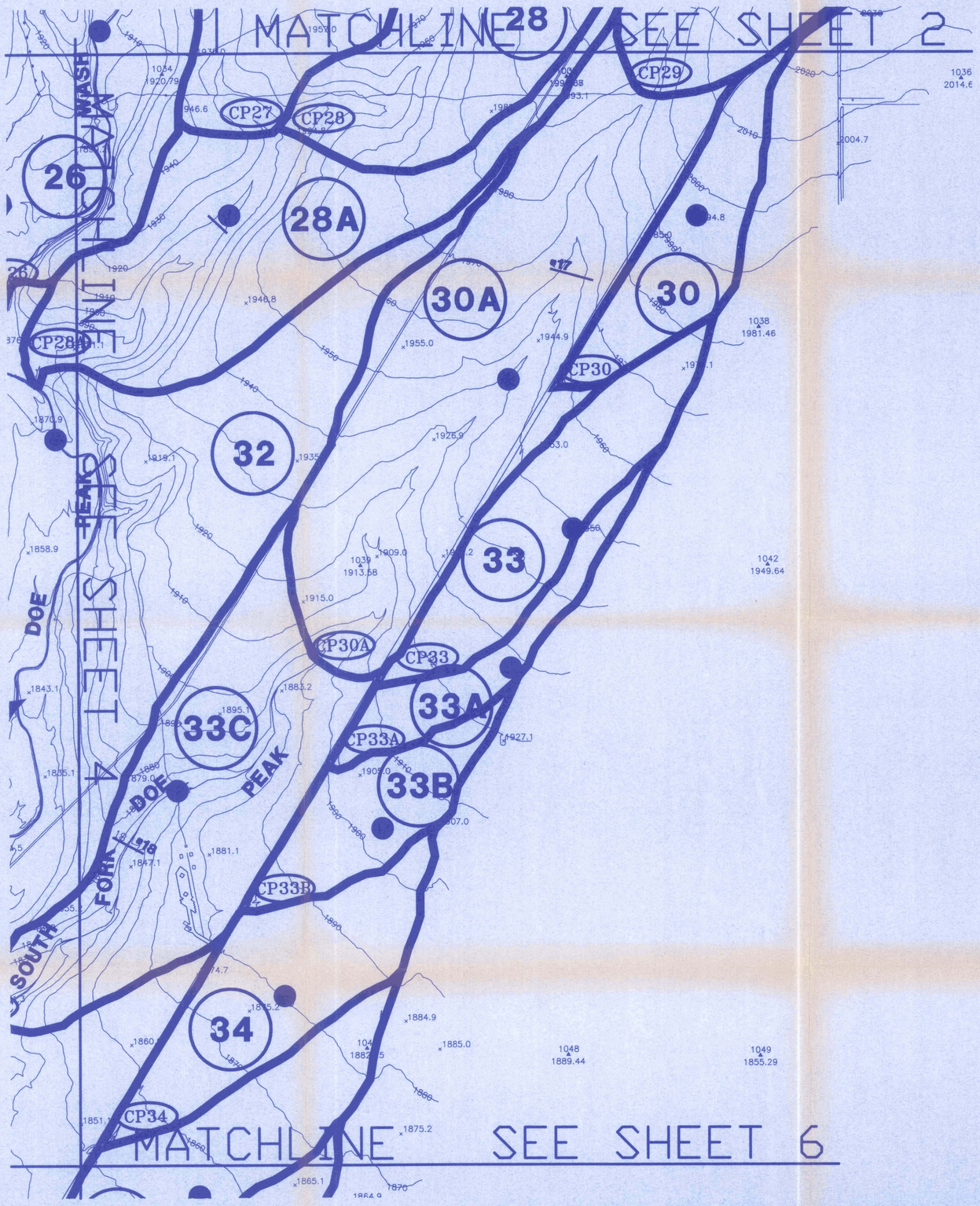
Working Watershed Maps



LEGEND

(3)	DRAINAGE AREA DESIGNATION
———	DRAINAGE AREA BOUNDARY LINE
(CP3)	CONCENTRATION POINT
●	SUB-BASIN CENTROID
———	DRAINAGE PATH
———	TIME OF CONCENTRATION PATH
#6 ———	FIELD VISIT CROSS SECTION

0 250 500 1000

SCALE: 1"=500'

SHEET 1	
SHEET 3	SHEET 2
SHEET 4	SHEET 5
SHEET 6	

WORKING WATERSHED MAP
SWEAT CANYON WASH
FLOOD INSURANCE STUDY

EXHIBIT D

AERIAL MAPPING COMPANY, INC.
DAVID EVANS AND ASSOCIATES
FLOWN 9/23/97 AND 11/7/97

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1"= 600' AND 1"= 1583' HORIZONTAL SCALE AND 2' AND 10' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY DAVID EVANS AND ASSOCIATES

JOB NO.MARI0029	DAVID EVANS AND ASSOCIATES, INC.
DWG # M29EXHD5	2929 E. CAMELBACK ROAD PHOENIX, AZ. 85016-3446 (602) 956-9850
DATE 5/98	
SHEET 5 OF 6	

MARI0029 tjcl 06/25/98 10:53:08 tjcl M29exhd5.dwg

MATCH LINE SHEET 4

MATCH LINE SEE SHEET 5

LEGEND

(3)	DRAINAGE AREA DESIGNATION
	DRAINAGE AREA BOUNDARY LINE
(CP3)	CONCENTRATION POINT
●	SUB-BASIN CENTROID
	DRAINAGE PATH
	TIME OF CONCENTRATION PATH
#6	FIELD VISIT CROSS SECTION

0 250 500 1000

SCALE: 1"=500'

	SHEET 1
SHEET 3	SHEET 2
SHEET 4	SHEET 5
	SHEET 6

WORKING WATERSHED MAP

SWEAT CANYON WASH

FLOOD INSURANCE STUDY

EXHIBIT D

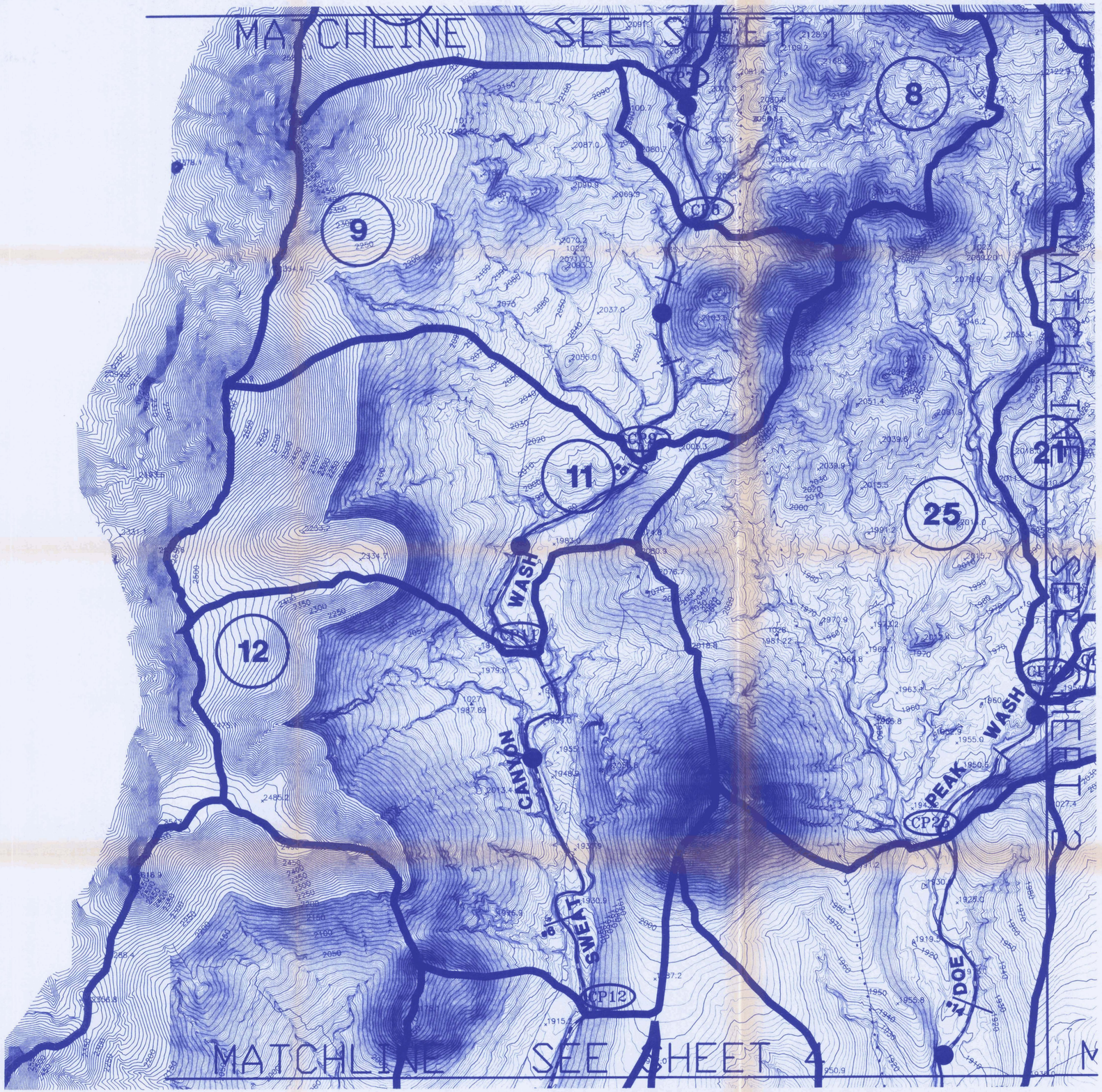
AERIAL MAPPING COMPANY, INC.
DAVID EVANS AND ASSOCIATES
FLOWN 9/23/97 AND 11/7/97

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS
1"= 600' AND 1"= 1583' HORIZONTAL SCALE AND 2' AND 10' CONTOUR INTERVALS AND BASED ON GROUND
CONTROL SURVEY DATA PROVIDED BY DAVID EVANS AND ASSOCIATES

JOB NO.MARI0029	
DWG # M29EXHD6	
DATE 5/98	
SHEET 6 OF 6	

DAVID EVANS AND ASSOCIATES, INC.
2929 E. CAMELBACK ROAD
PHOENIX, AZ. 85016-3446 (602) 956-9850

MARI0029 TSM 3/27/98 M29EXHD6.DWG



LEGEND

(3)	DRAINAGE AREA DESIGNATION
———	DRAINAGE AREA BOUNDARY LINE
(CP3)	CONCENTRATION POINT
●	SUB-BASIN CENTROID
———	DRAINAGE PATH
———	TIME OF CONCENTRATION PATH
•6	FIELD VISIT CROSS SECTION

0 250 500 1000

SCALE: 1"=500'

SHEET 1	
SHEET 3	SHEET 2
SHEET 4	SHEET 5
SHEET 6	

WORKING WATERSHED MAP
SWEAT CANYON WASH
FLOOD INSURANCE STUDY

EXHIBIT D

AERIAL MAPPING COMPANY, INC.
DAVID EVANS AND ASSOCIATES
FLOWN 9/23/97 AND 11/7/97

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS
1"= 600' AND 1"= 1583' HORIZONTAL SCALE AND 2' AND 10' CONTOUR INTERVALS AND BASED ON GROUND
CONTROL SURVEY DATA PROVIDED BY DAVID EVANS AND ASSOCIATES

JOB NO.MARI0029	
DWG # M29EXHD3	
DATE 5/98	
SHEET 3 OF 6	

DAVID EVANS AND ASSOCIATES, INC
2929 E. CAMELBACK ROAD
PHOENIX, AZ. 85016-3446 (602) 956-9850

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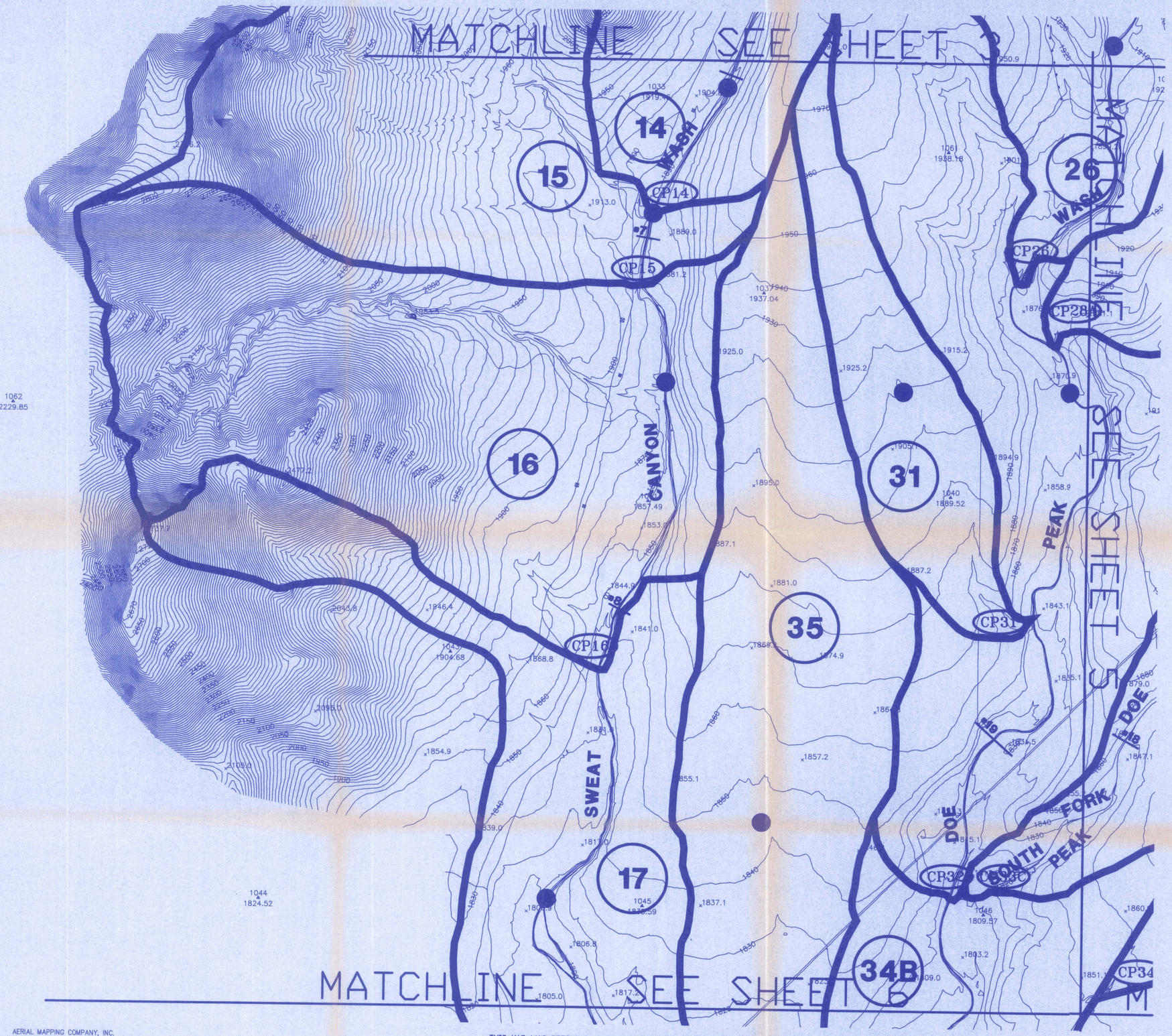

LEGEND

- (3) DRAINAGE AREA DESIGNATION
- DRAINAGE AREA BOUNDARY LINE
- (CP3) CONCENTRATION POINT
- ● SUB-BASIN CENTROID
- DRAINAGE PATH
- TIME OF CONCENTRATION PATH
- •6 FIELD VISIT CROSS SECTION

0 250 500 1000
SCALE: 1"=500'

SHEET 1	
SHEET 3	SHEET 2
SHEET 4	SHEET 5
SHEET 6	

WORKING WATERSHED MAP
SWEAT CANYON WASH
FLOOD INSURANCE STUDY

EXHIBIT D

AERIAL MAPPING COMPANY, INC.
DAVID EVANS AND ASSOCIATES
FLOWN 9/23/97 AND 11/7/97

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS
1"= 600' AND 1"= 1583' HORIZONTAL SCALE AND 2' AND 10' CONTOUR INTERVALS AND BASED ON GROUND
CONTROL SURVEY DATA PROVIDED BY DAVID EVANS AND ASSOCIATES

JOB NO.MARI0029	DAVID EVANS AND ASSOCIATES, INC.
DWG # M29EXHD4	2929 E. CAMELBACK ROAD PHOENIX, AZ. 85016-3446 (602) 956-9850
DATE 5/98	
SHEET 4 OF 6	

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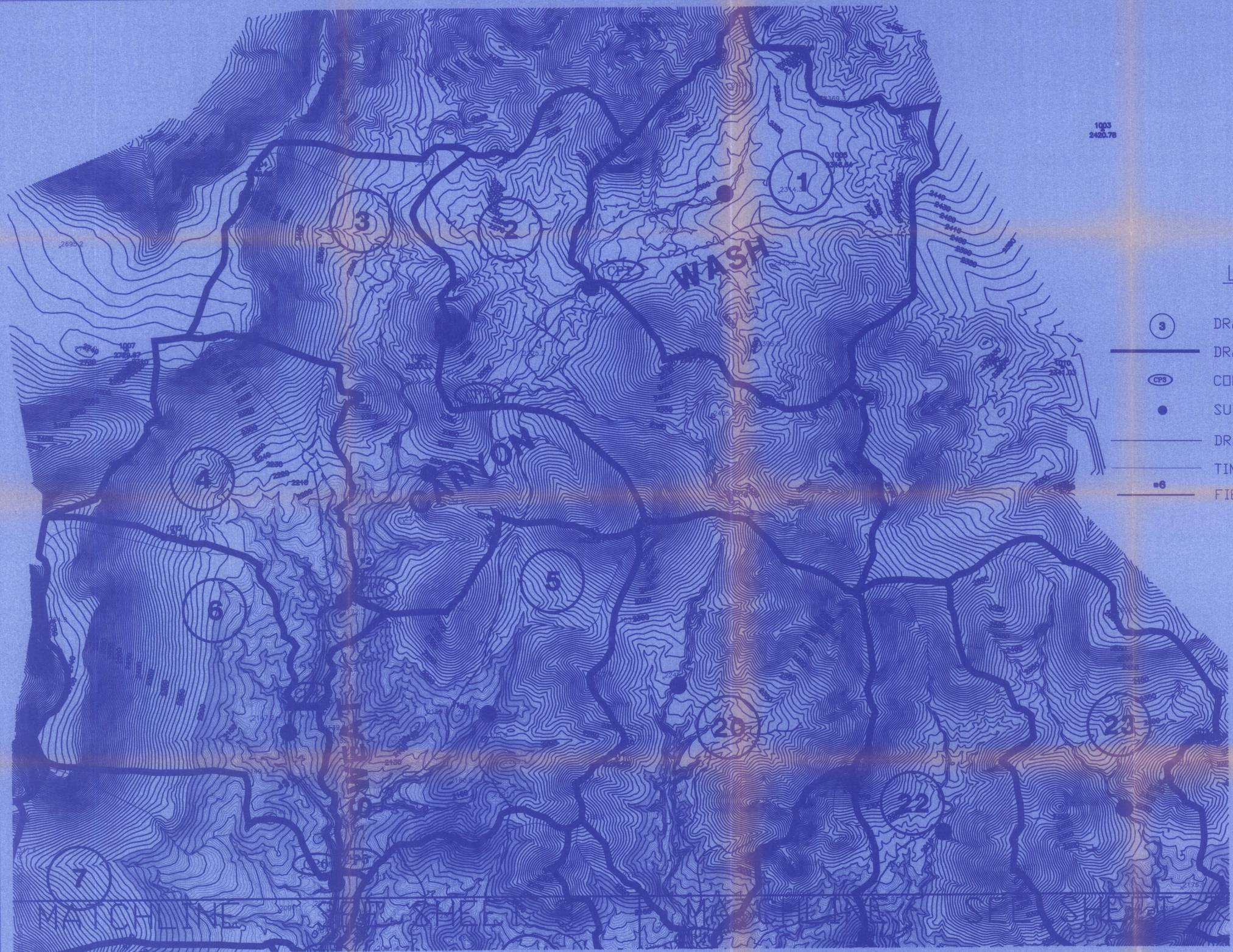


0 250 500 1000

SCALE: 1"=500'

LEGEND

- (3) DRAINAGE AREA DESIGNATION
- DRAINAGE AREA BOUNDARY LINE
- (CP3) CONCENTRATION POINT
- ● SUB-BASIN CENTROID
- DRAINAGE PATH
- TIME OF CONCENTRATION PATH
- #6 FIELD VISIT CROSS SECTION

SHEET 1	
SHEET 3	SHEET 2
SHEET 4	SHEET 5
SHEET 6	

WORKING WATERSHED MAP
SWEAT CANYON WASH
FLOOD INSURANCE STUDY

EXHIBIT D

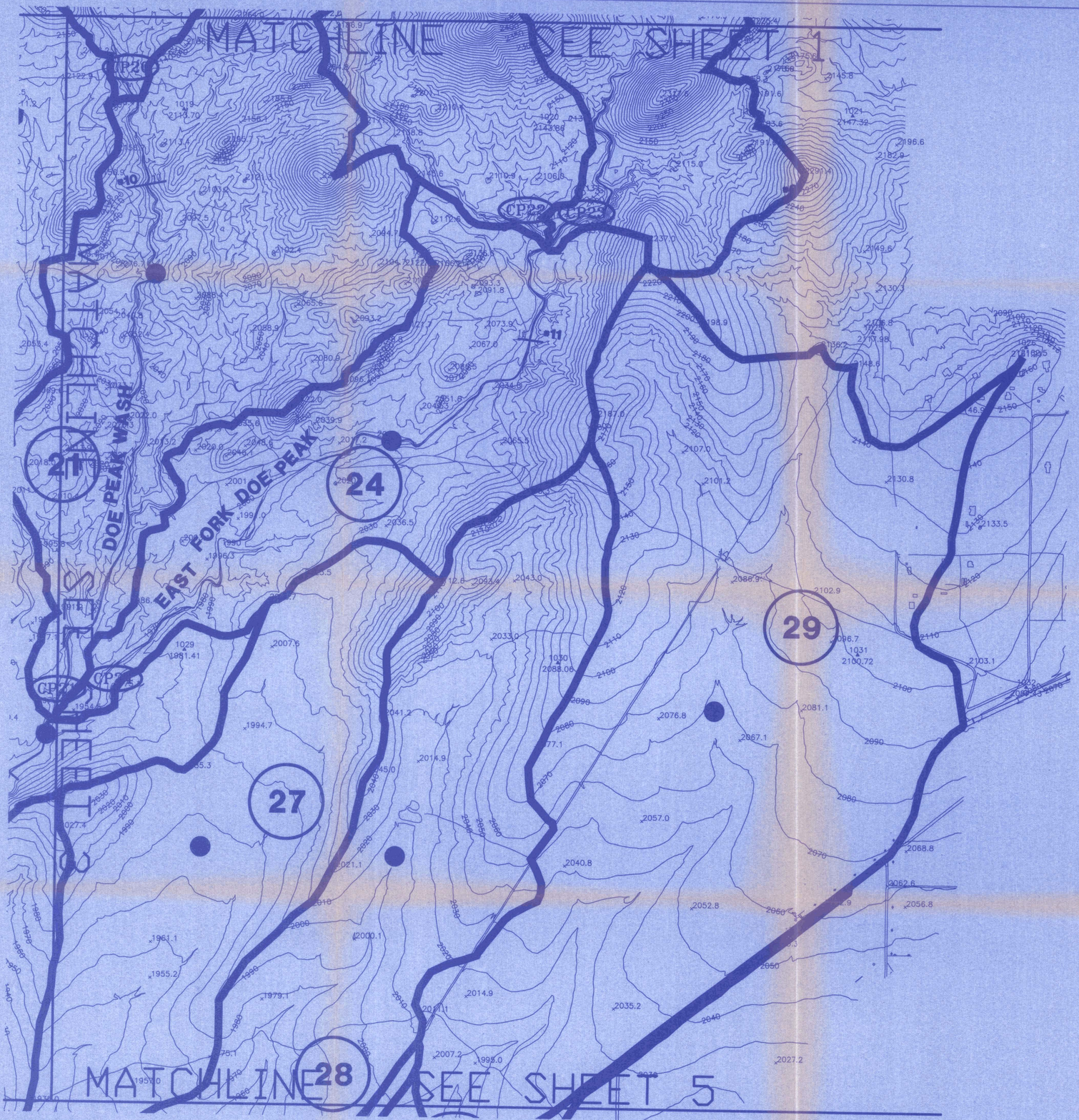
JOB NO. MARI0029	
DWG # M29EXHD1	
DATE 5/98	
SHEET 1 OF 6	

DAVID EVANS AND ASSOCIATES, INC.
2929 E. CAMELBACK ROAD
PHOENIX, AZ. 85016-8446 (602) 956-9850

AERIAL MAPPING COMPANY, INC.
DAVID EVANS AND ASSOCIATES
FLOWN 9/23/97 AND 11/7/97

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS.
1"= 600' AND 1"= 1583' HORIZONTAL SCALE AND 2' AND 10' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY DAVID EVANS AND ASSOCIATES

MARI0029 TSM 3/27/98 M29EXHD1.DWG



LEGEND

- (3) DRAINAGE AREA DESIGNATION
- DRAINAGE AREA BOUNDARY LINE
- (CP3) CONCENTRATION POINT
- ● SUB-BASIN CENTROID
- DRAINAGE PATH
- TIME OF CONCENTRATION PATH
- •6 FIELD VISIT CROSS SECTION

0 250 500 1000

SCALE: 1"=500'

SHEET 1	
SHEET 3	SHEET 2
SHEET 4	SHEET 5
SHEET 6	

WORKING WATERSHED MAP
SWEAT CANYON WASH
FLOOD INSURANCE STUDY

EXHIBIT D

AERIAL MAPPING COMPANY, INC.
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JOB NO.MARI0029	DAVID EVANS AND ASSOCIATES, INC.
DWG # M29EXHD2	2929 E. CAMELBACK ROAD PHOENIX, AZ. 85016-3446 (602) 956-9850
DATE 5/98	
SHEET 2 OF 6	

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