Lower Hassayampa River Watercourse Master Plan

Hydrology Report

February 2005

Submitted to:
Flood Control District of Maricopa County
2801 W. Durango Street
Phoenix, AZ 85009

Submitted by:
JE Fuller/Hydrology & Geomorphology, Inc.
8400 S. Kyrene Road, Suite 201
Tempe, AZ 85284

INTEROFFICE MEMORANDUM

Date: September 21, 2005

To: Timothy S. Phillips, P.E., Chief Engineer and General Manager

From: Russ Miracle, P.E., Planning & Project Management Division Manager

Subject: Evaluation of Lower Hassayampa River Hydrology

I have reviewed the draft memo prepared by John Hathaway and recommend that the response be changed to the following:

This is in response to an inquiry by Supervisor Wilcox regarding the hydrology for the peak 100-year flood for the Lower Hassayampa River. Property owners in this area have asked if a different, substantially lower, peak flow could be used for design of proposed channelization of the Hassayampa River which would reduce the size of the delineated floodway/floodplain.

At this time, the District is obligated to use the flow rate of 74,100 cfs which has been adopted by the Federal Emergency Management Agency (FEMA). To do otherwise would be in violation of state and federal statutes and FEMA regulations. Based on the analyses summarized herein, the District could support an application to FEMA by a developer for a Conditional Letter of Map Revision (CLOMR) using a flow rate of no less than 68,100 cfs if FEMA accepts using expected probability or no less than 63,900 cfs if they do not accept its use. Whether or not FEMA would decide favorably on such a CLOMR application is uncertain, and it would take perhaps a year or more to receive that determination, one way or the other.

The existing floodplain delineation was prepared by Cella Barr Associates in 1988 using a peak flow of 74,100 cfs which was based upon 22 years of recorded stream flow records. A more recent hydrologic analysis was performed for the District by JE Fuller Hydrology/Geomorphology, Inc. as a part of the Lower Hassayampa Watercourse Master Plan (WCMP) which is currently underway. The analysis performed by JE Fuller used 41 years of records plus one historical event in 1916. The 100-year peak flow resulting from that analysis is 37,200 cfs, about half the flow rate of the effective delineation and was based solely upon statistical analysis of stream flow records. After careful consideration and discussions with senior staff, the District directed the consultant, JE Fuller, to continue using the FEMA adopted flow rate of 74,100 cfs for the purposes of completing the Lower Hassayampa WCMP.

District staff has carefully further analyzed the statistical hydrology strictly following FEMA Guideline and Specifications for Flood Hazard Mapping Partners, Appendix C (April, 2003). In addition to other refinements to the initial analysis, the FEMA methodology requires establishing a peak flow rate by weighting the results of the stream gage records analysis with estimates from other

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methods, such as USGS regression equations. The staff analysis yields a calculated peak 100-year flow rate of 63,900 cfs. Alternatively, the expected probability 100-year flow rate (as opposed to the calculated probability) based on statistical flood frequency analysis is 68,100 cfs. The expected probability approach is used by the US Army Corps of Engineers when designing river works, whereas the calculated probability approach is used by FEMA for regulatory and insurance purposes. Using the expected probability for FEMA purposes would require their approval.

If you should have further questions, please contact me or John Hathaway

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March 2, 2005

TRANSMITTAL

John Hathaway, P.E.
Flood Control District of Maricopa County
2801 W. Durango
Phoenix, AZ 85009

Attached are the following materials provided by JEFuller/ Hydrology & Geomorphology, Inc.:

- Five (5) copies of the final Hydrology Report for the Lower Hassayampa River Watercourse Master Plan.

The reports include CDs with pdfs and MS Word docs of the final report, the HEC-1 models, the HECWRC files, ArcView shapefiles of the drainage basin boundaries, and other related information.

Please let me know if you have any questions.

JE Fuller/Hydrology & Geomorphology, Inc.

3/2/05
Date

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Lower Hassayampa River Watercourse Master Plan

Hydrology Report

Registered Professional Engineer (Civil)
CERTIFICATE NO.
35895
TED W.
LEHMAN
Date Signed 3-2-05
ARIZONA U.S.A.

February 2005

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Section 4: Hydrology

Introduction

This report describes the methods and results of the hydrologic analyses performed for the Lower Hassayampa River Watercourse Master Plan. This work was performed for the Flood Control District of Maricopa County under contract FCD 2004C001 by JE Fuller/Hydrology & Geomorphology, Inc. Hydrologic analyses were performed for the entire Hassayampa River watershed. The study reach for the Watercourse Master Plan (WCMP) is from approximately the Central Arizona Project (CAP) Canal to the confluence of the Gila River.

Method description

Hydrologic analyses for the Lower Hassayampa River Watercourse Master Plan (LHWCMP) were performed to estimate peak discharges for multiple frequencies and a design hydrograph for the 100-year flood event in the study reach. Peak discharges were estimated by statistical methods – in particular those outlined in Water Resources Council Bulletin 17B (USWRC, 1982). The HECFFA computer implementation of those methods was used to compute the statistical results. Design hydrographs were developed using a simplified HEC-1 model of the watershed. Comparisons to gaged hydrographs and modeled historic storms were also performed.

Peak discharges for Jackrabbit Wash, tributary to the Hassayampa, were also evaluated in support of a detailed flood insurance re-study also being performed as part of the WCMP.

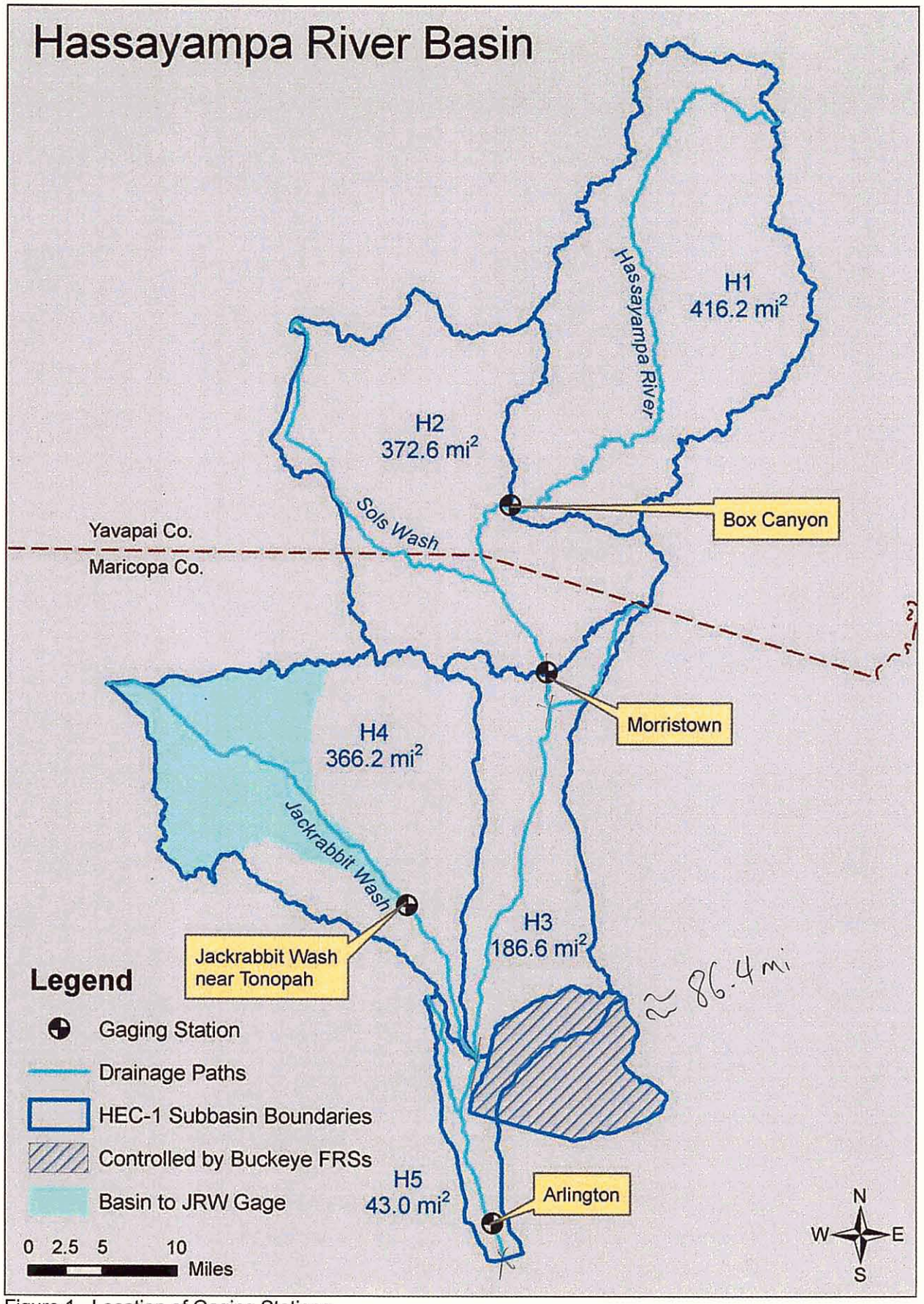
The computed results for both watercourses were compared to previous analyses and recommendations made for the WCMP.

Estimation of Peak Discharges

Frequency Analysis of Gage Data

Statistical analyses of U.S. Geological Survey streamflow gaging station data was performed for four stations for the period of record through water year 2003. The stations analyzed were Hassayampa River at Box Damsite (also called Box Canyon) – 09515500, Hassayampa River near Morristown – 09516500, Hassayampa River near Arlington – 09517000, and Jackrabbit Wash near Tonopah – 09516800. Figure 1 shows the location of these gaging stations in the Hassayampa River watershed.

The statistical analyses were performed using the U.S. Army Corps of Engineers HECFFA computer program (1995). Figure 2 shows the regional skew coefficient figure used to select the regional skew entered into the computer program. Annual peak flow data were obtained from the USGS web site and published sources and supplemented with peak flow data from the Flood Control District of Maricopa County. The complete data sets and computer program output are found in an appendix of this report.



372.6
416.2
366.2
186.6
43

Figure 1. Location of Gaging Stations

Although floods can be generated on the Hassayampa River by different types of meteorological events, the data were not analyzed for separate populations of storm types. Bulletin 17B recommends that assignment to different meteorological sources not be made based on calendar dates alone. For example, recent rains in Maricopa County in October 2004 were winter cyclonic type storms. However, past Octobers have seen tropical storm remnant events. Similarly, storms that occurred in August may be thunderstorm or tropical storm remnant type in origin. Assigning a storm type to the historic record of the Hassayampa River stream gage data is therefore not recommended and was not applied to this study. In addition, the sample size for each storm type would be reduced and increase the uncertainty of each subset of statistics.

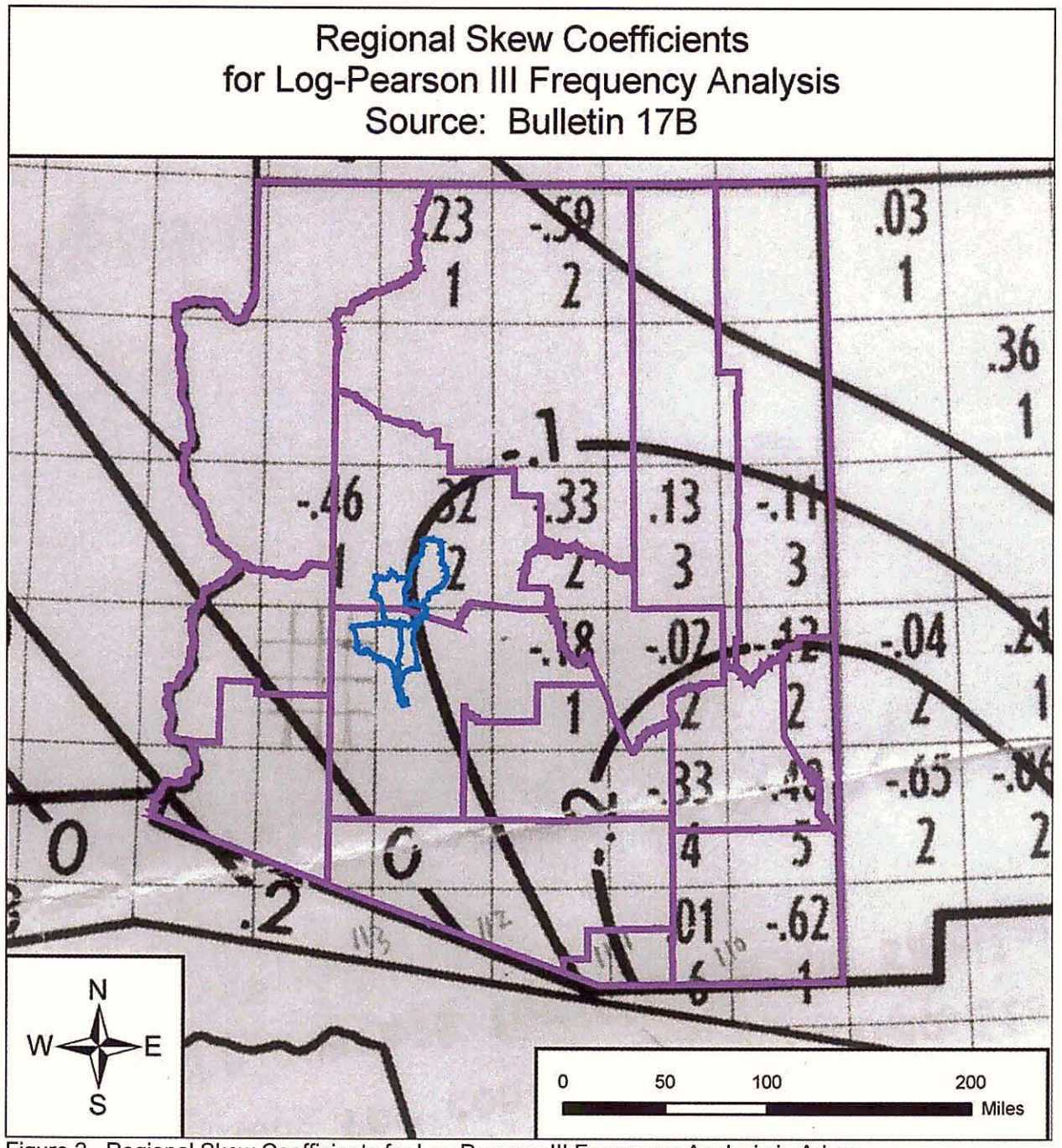


Figure 2. Regional Skew Coefficients for Log Pearson III Frequency Analysis in Arizona

The following tables and figures show the flood frequency results for each of the four stations analyzed. Table 9 provides a summary of the results for each station for the 2- through 100-year floods. Table 10 shows previously published data in the USGS Water Supply Paper 2433 for the Box Damsite and Morristown stations. Table 11 shows previously published results from USGS Water Resource Investigations Report 98-4225 (Pope & others, 1998) based on data through 1996 for all four sites.

Hassayampa River at Box Damsite (Canyon) – USGS Gage #09515500; FCD Gage #5308

The data for the Box Damsite (Canyon) station came from two sources: the USGS, intermittently from 1925 to 1982, and the FCDMC since 1992. The period of record used was through water year 2003. The USGS data contained several peak discharges identified as historic peaks in the USGS records. Specifically, for Box Canyon, Pope & others (1998) identifies three historic peak discharges for 1925, 1927, and 1937. The exact origin of these peak discharge estimates is not certain. However, they are reported in several older reports including the 1945 Hassayampa Project Planning Report No. 3-8b.1-0 by the US Bureau of Reclamation. In addition, the most recent compilation of streamflow statistics by the USGS (Pope & others, 1998) reports that the September 1970 flood was the highest peak at this site since 1890 which was the Walnut Grove Dam failure flood.

These data were analyzed in four ways to evaluate the impact of historic peak discharges on the frequency estimates at this station and take advantage of the high threshold option in the HECFFA software.

Treatment as historic peaks effectively extends the period of record assuming a similar distribution for missing years not in the systematic record. Depending on the approach, a weighting factor is also applied to any flows exceeding the maximum historic peak discharge. The HECFFA provides for an additional option for designation of high thresholds that can further affect the computed frequency statistics. In addition, for Box Canyon, designation of historic peaks also extends the record through a couple of gaps in the recent systematic record, in particular the 1983-1992 period. Analyses were computed treating the historic peaks 1) as part of a broken systematic record, 2) as historic peaks using the QH cards (old HECWRC approach), 3) with Sept. 1970 flood as a high threshold flow using the SI record in HECFFA, and 4) without inclusion at all. The results of these four approaches are compared in Table 1.

Table 1. Comparison of Flood Frequency Estimates at Box Damsite (Canyon)

Historic Peak (HP) Approach	**Nsys; Nhist**	**Peak Discharge in cfs**					
		2-yr	**5-yr**	**10-yr**	**25-yr**	**50-yr**	**100-yr**
1) HP as part of broken systematic record	53	3,470	10,600	18,600	33,700	49,100	68,600
2) HP on QH record	50; 79	3,120	9,010	15,400	26,900	38,400	52,500
3) 9/70 flood on SI	50; 114	3,000	8,380	14,100	24,000	33,700	45,400
4) No HPs	49	2,960	8,720	15,200	27,200	39,500	55,200

The results using the 1970 flood as the high threshold for a given period produce appreciably lower 100-year flood peaks that the other approaches. The results are, however, well in line with the previously published USGS results (Table 10 & Table 11). Treating the data as a broken systematic record produces the highest discharge estimates. Use of the QH records produces identical results to the HECWRC. Our recommendation is to use the results of the HECFFA analyses using SI record with the September 1970 flood as a high threshold per the USGS (Pope & others, 1998). The recommended results are summarized in Table 2 and shown on Figure 3.

Table 2. Flood Frequency Statistics for Hassayampa River at Box Damsite

BOX CANYON		N = 50; 114	Sept. 1970 highest peak since 1890	
Flow (cfs)			**Confidence Limits**	
Computed	**Expected Probability**	**Exceedance Probability (%)**	**0.05 limit**	**0.95 limit**
81800	98000	0.2	171000	47300
59400	68300	0.5	117000	35700
45400	50700	1	85700	28200
33700	36700	2	60400	21600
24000	25500	4	40700	16000
21300	22500	5	35500	14400
14100	14600	10	21900	9840
8380	8540	20	12200	6100
3000	3000	50	4030	2230
1020	995	80	1390	698
566	543	90	811	360
345	323	95	519	203
133	114	99	222	66

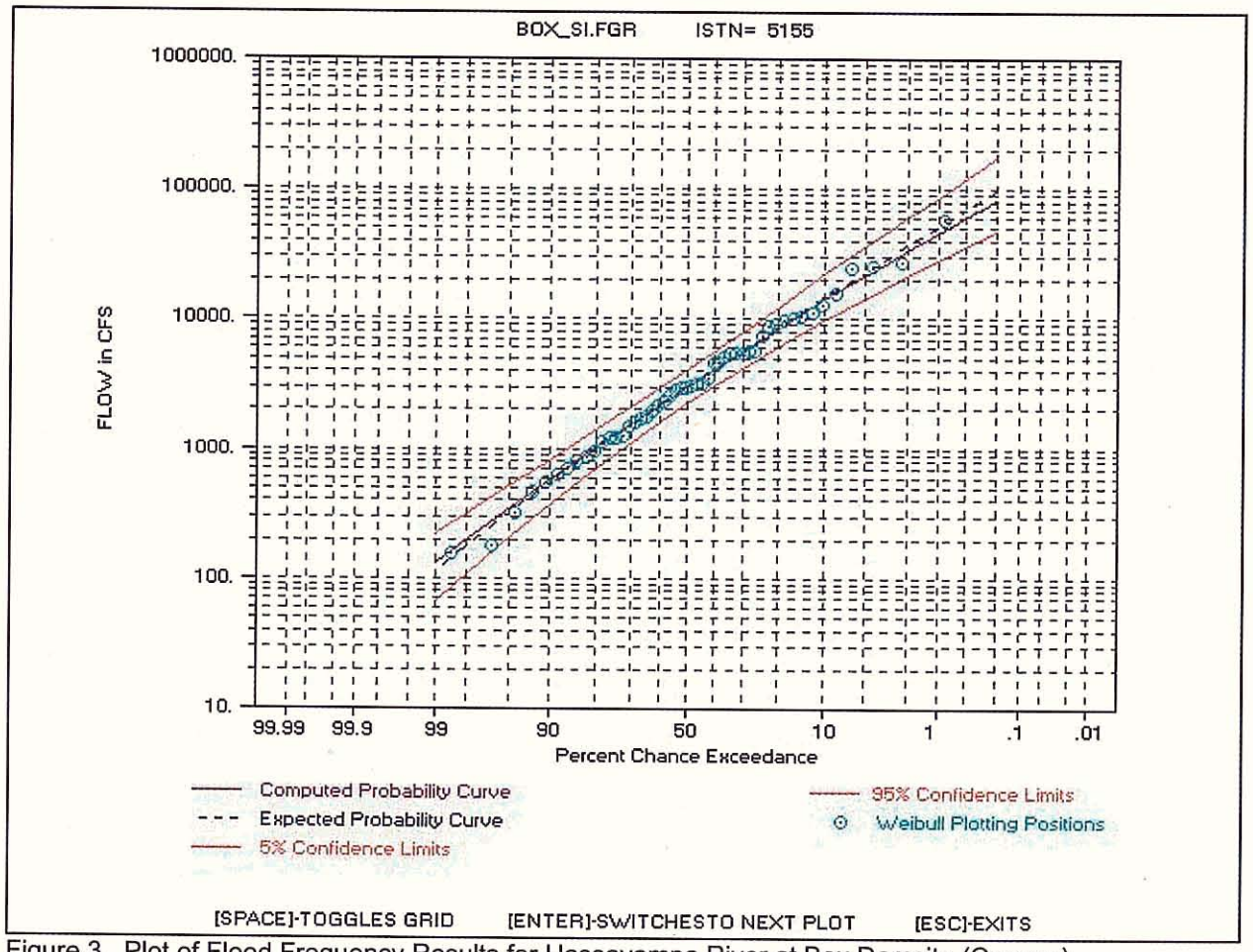


Figure 3. Plot of Flood Frequency Results for Hassayampa River at Box Damsite (Canyon)

Hassayampa River near Morristown – USGS Gage #09516500

The data for the Morristown gaging station all came from published USGS records. The period of record is discontinuous covering from 1939-1947 and again from 1964 to the present with a missing year in 1982. The period of record used was through water year 2003. As at Box Canyon, the September 1970 flood was identified as a high threshold discharge. However, rather than since 1890 it was described as the highest flood since 1916. The 1916 flood is described tenuously in the USBR 1945 report as about 50,000 cfs based on observations on the Gila River. It was judged for the purposes of this study not to rely on that estimate as a historic peak (and neither has the USGS). However, the 1916 date was used as the beginning of the period for which the 1970 flood is considered the largest flood in that period since 1916.

In addition, the USGS records indicate that floods for the years 1954 and 1956 were recorded. Though the USGS collected data for 1954 and 1956, only maximum stage values were recorded. No rated discharge values were reported. The USGS Tempe office files were searched but we were unable to find any other information beyond the maximum recorded stage numbers for 1954 and 1956. The systematic rated data stop in 1947 and restart in 1964. Examination of the stage data for these periods reveals a shift in the rating curves so that extrapolation to the 1950's data is likely error prone. Nevertheless, a frequency analysis with educated best-guesses for the reported stages was made. Comparison of the results is shown in below in Table 3. Note that without the additional two years of data, the results are slightly higher than the with "best-estimates" analysis above the 10-year return period. Use of zero discharge for these years would not be appropriate as we know from the stage data that some level of flow did occur. Since the differences are relatively small and the uncertainties surrounding estimation of the precise discharges for 1954 and 1956 are high, it is recommended that those years be excluded from the analysis.

An analyses without the identification of the Sept. 1970 flood as a historic peak was also performed. The results for that analysis are somewhat higher than the with SI record analysis due to the shorter effective period of record.

Table 3. Comparison of Flood Frequency Estimates at Morristown With and Without 1954 & 1956 Estimated Peaks

Analysis	Nsys; Nhist	Peak Discharge in cfs					
		2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Without 1954 & 1956 data	48; 88	3,230	9,570	15,800	25,500	33,900	43,000
With "best-estimates" for '54 and '56	50; 88	3,300	9,540	15,500	24,600	32,300	40,500
% Difference		-2.2	0.0	1.9	3.5	4.7	5.8
No HPs	48	3,260	10,000	17,000	28,500	38,900	50,700

The recommended frequency results for the Morristown station are summarized in Table 6 and shown on Figure 4.

Table 4. Flood Frequency Statistics for Hassayampa River near Morristown

MORRISTOWN without 1954,56		N = 48; 88	Sept. 1970 highest peak since 1916	
Flow (cfs)			**Confidence Limits**	
Computed	**Expected Probability**	**Exceedance Probability (%)**	**0.05 limit**	**0.95 limit**
66400	75500	0.2	139000	38100
52700	58500	0.5	106000	31100
43000	46900	1	83700	25900
33900	36300	2	63300	21000
25500	26900	4	45500	16300
23000	24100	5	40300	14800
15800	16300	10	26100	10500
9570	9760	20	14900	6630
3230	3230	50	4570	2300
902	877	80	1300	586
429	405	90	652	252
222	202	95	362	118
59	47	99	111	24

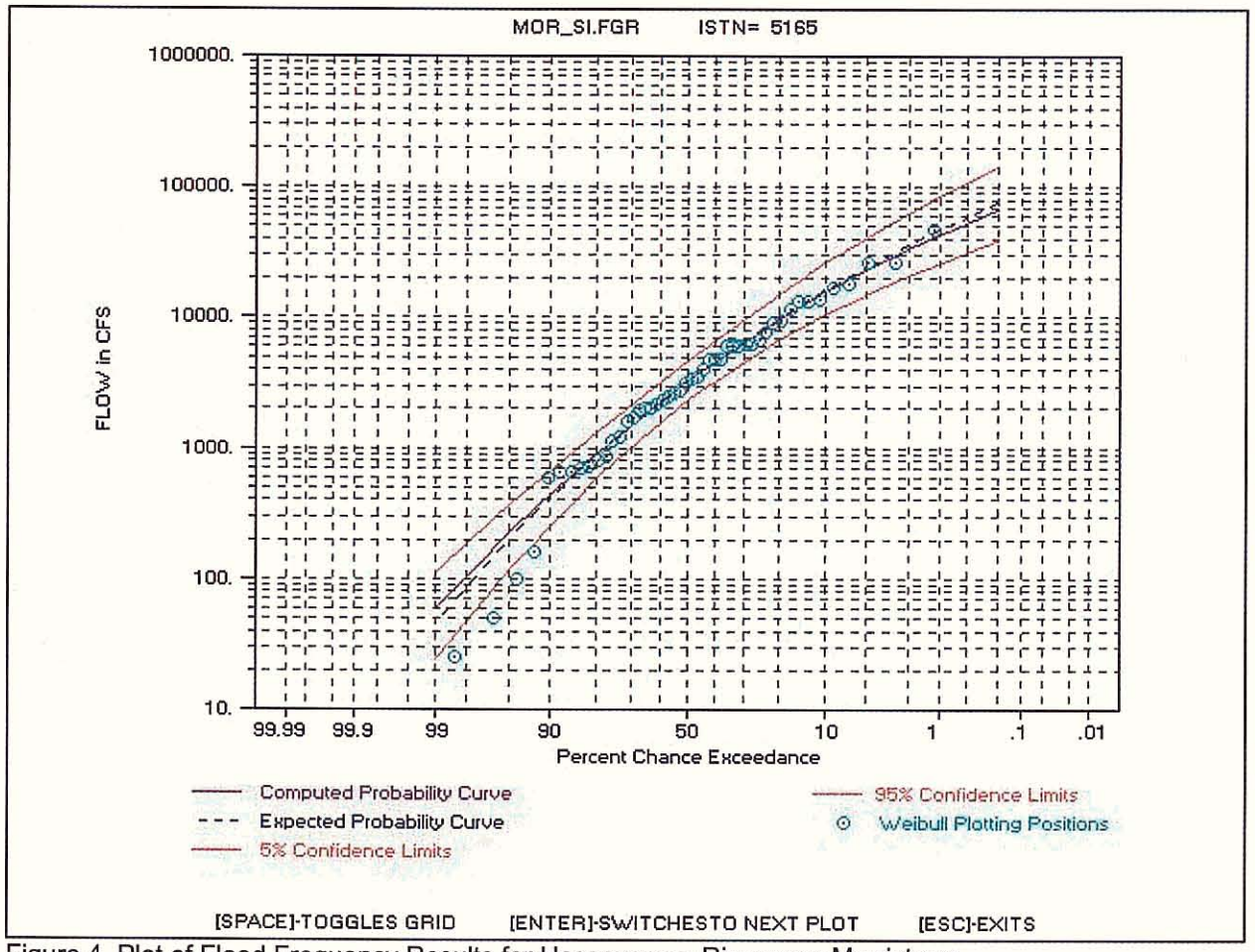


Figure 4. Plot of Flood Frequency Results for Hassayampa River near Morristown

Hassayampa River near Arlington – USGS Gage #09517000

The data for the Arlington station all came from published USGS sources. The period of record is almost continuous from 1961 to present with missing years in 1981 and 1982. The period of record used was through water year 2003. The record for the Arlington station contains one year of zero discharge in 1975. The effect of the zero flow was investigated. It is well known that this reach experiences regular irrigation tailwater flows. Therefore, it is unlikely that even in 1975 no flow occurred. An analysis assuming an annual maximum discharge of 40 cfs for 1975 was compared to the results using 0 cfs for 1975. An analysis throwing out 1975 altogether was also performed. In addition, for all three analyses, the September 1970 event was identified as the highest peak discharge since 1916 as noted in Pope & others (1998).

Table 5. Comparison of Flood Frequency Results at Arlington For Various 1975 Assumptions

Analysis	Nsys; Nhist	Peak Discharge in cfs					
		2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1975 peak = 0 cfs	41; 88	2,560	7,830	13,100	21,600	29,000	37,200
1975 peak = 40 cfs	41; 88	2,490	8,080	13,700	22,800	30,700	39,300
No 1975 observation	40; 88	2,680	8,050	13,400	21,800	29,200	37,300
No HPs	41	2,600	8,360	14,500	25,100	34,900	46,300

The results for all three analyses are similar. However, changing the flow estimate to a small positive number does increase the computation of the less frequent flood magnitudes. Unlike the Morristown zeros for 1954 and 1956, no stage is recorded for 1975 at the Arlington station. Therefore, there appears no clear justification to remove 1975 from the record. While a small positive flow for irrigation tailwater seems reasonable to assume (and some of the other small annual peaks may reflect tailwater flows), irrigation tailwater is not a meteorologically generated event. Therefore, it is recommended that an affirmative zero discharge be used for 1975.

An analyses without the identification of the Sept. 1970 flood as a historic peak was also performed. The results for that analysis are somewhat higher than the with SI record analysis due to the shorter effective period of record.

The recommended frequency results for the Morristown station are summarized in Table 6 and shown on Figure 5.

Table 6. Flood Frequency Statistics for Hassayampa River near Arlington

ARLINGTON	N = 41; 88	Sept. 1970 highest peak since 1916		
Flow (cfs)			**Confidence Limits**	
Computed	**Expected Probability**	**Exceedance Probability (%)**	**0.05 limit**	**0.95 limit**
58800	69000	0.2	137000	31800
46100	52500	0.5	102000	25700
37200	41500	1	79200	21300
29000	31700	2	58900	17100
21600	23100	4	41500	13200
19400	20600	5	36600	11900
13100	13600	10	23200	8390
7830	8010	20	12800	5220
2560	2560	50	3770	1760
696	673	80	1040	430
326	305	90	518	180
168	150	95	285	82
43	33	99	88	16

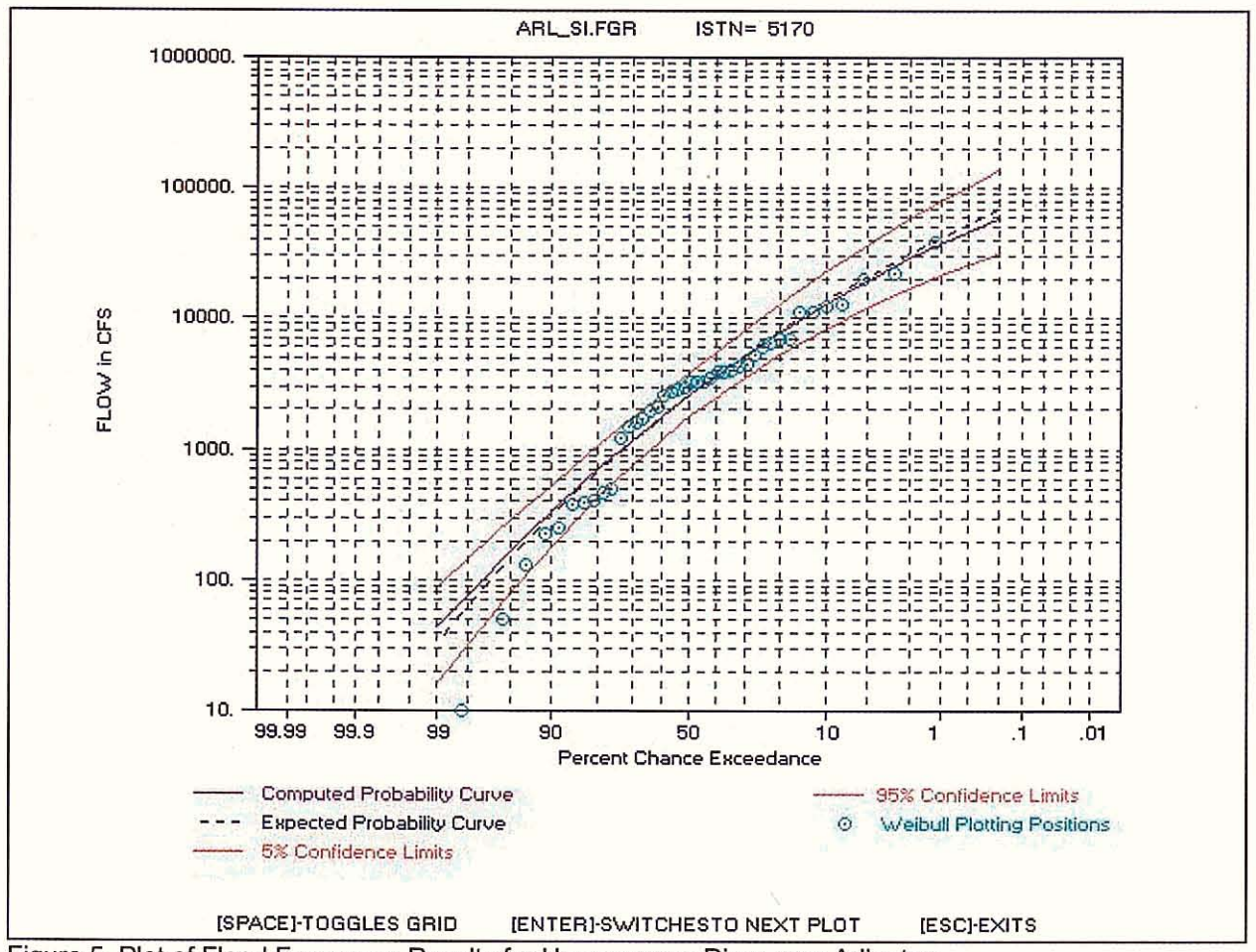


Figure 5. Plot of Flood Frequency Results for Hassayampa River near Arlington

Jackrabbit Wash near Tonopah – USGS Gage #09516800

The data for the Jackrabbit Wash near Tonopah station were taken from published USGS records. The period of record is from 1964 to 1979, 1983, and from 1991 to the present. Table 7 and Figure 6 present the HECFFA frequency results.

Table 7. HECFFA Flood Frequency Statistics for Jackrabbit Wash near Tonopah

JACKRABBIT WASH		N = 30		
Flow (cfs)			**Confidence Limits**	
Computed	**Expected Probability**	**Exceedance Probability (%)**	**0.05 limit**	**0.95 limit**
138000	211000	0.2	654000	48100
88700	124000	0.5	376000	32900
60700	79400	1	234000	23800
39600	48700	2	138000	16400
24200	28200	4	75400	10700
20200	23200	5	60700	9180
10900	11900	10	28600	5280
4930	5180	20	11200	2570
976	976	50	1830	526
166	156	80	317	74
62	55	90	129	23
27	22	95	61	8
5	3	99	15	1

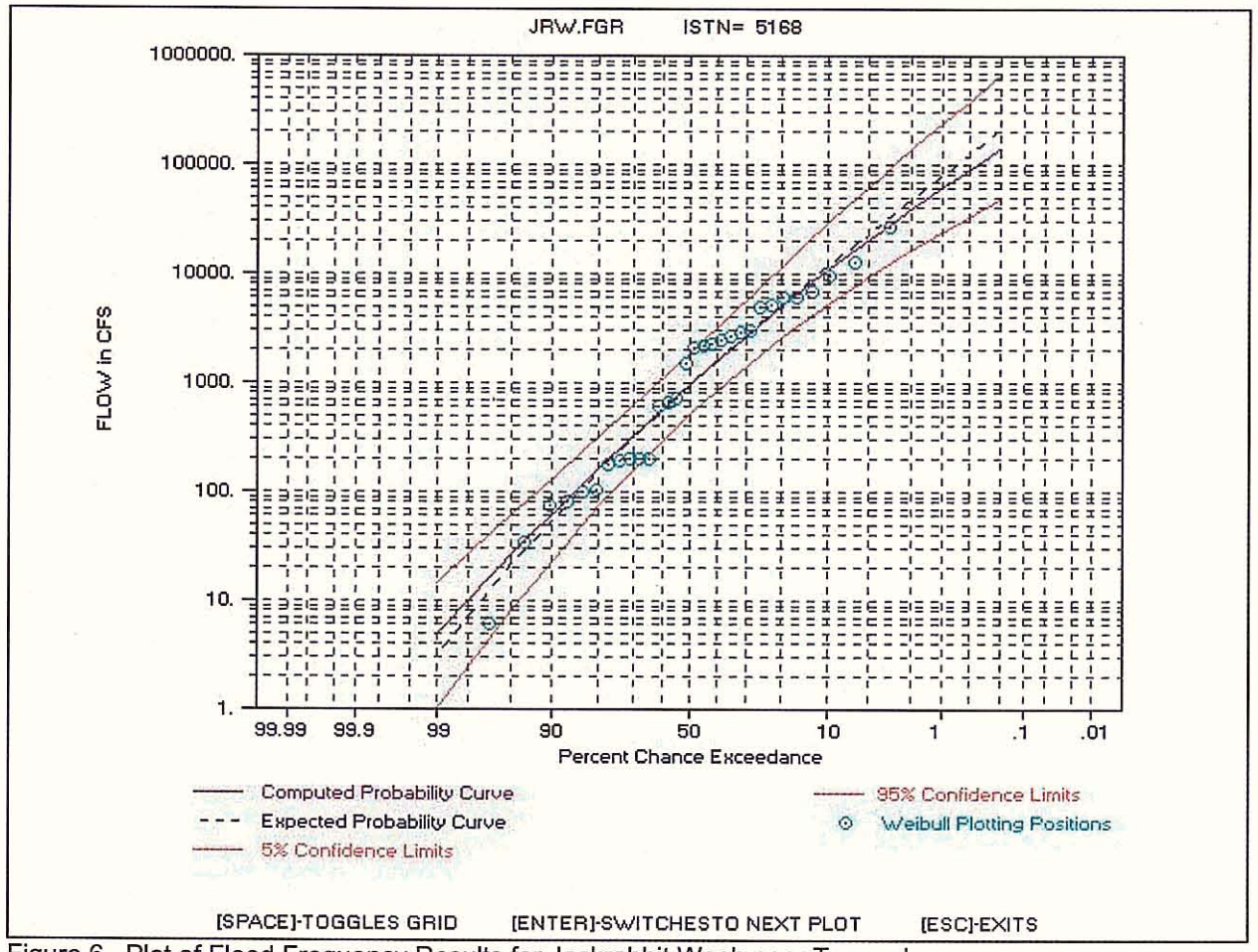


Figure 6. Plot of Flood Frequency Results for Jackrabbit Wash near Tonopah

The HECFFA results do not account for geologic non-exceedance limits. Previous work (JEF, 2002) identified a non-exceedance surface near the FCDMC Jackrabbit gaging station not far upstream from the USGS gaging station. In that report, a FLDFRQ3 model estimate of the frequency statistics was computed which incorporated the geologic non-exceedance bound. A discharge of 45,700 cfs was estimated as the highest discharge since at least the Holocene epoch (last 10,000 years). The 2002 analysis was updated to include the systematic record through water year 2003 to compare to the HECFFA results. In addition, the peak for water year 2001 was taken from the USGS data rather than the FCD data as reflected in the 2002 report.

Table 8. Comparison of FLDFRQ3 and HECFFA Frequency Estimates for Jackrabbit Wash

Analysis	**Peak Discharge in cfs**					
	2-yr	**5-yr**	**10-yr**	**25-yr**	**50-yr**	**100-yr**
FLDFRQ3 – 2003	1,400	4,400	7,200	11,400	14,600	17,900
HECFFA	1,000	4,900	10,900	24,200	39,600	60,700

The results shown in Table 8 reflect a comparable picture to that described in the JEF 2002 report. In that report the FLDFRQ3 results were also compared to the effective FDS HEC-1 model results for the 100-year flood. The 2002 report concluded that the 100-year HEC-1 results were comparable to the FLDFRQ3 results. In addition, the 2002 report further concluded that no change to the effective FDS discharges for Jackrabbit Wash were recommended. The updated FLDFRQ3 input and output files are included in the Appendices to this report and electronically along with the model executable on CD-ROM.

Summary of Recommended HECFFA Results

Table 9 summarizes the recommended HECFFA results for the Box Canyon, Morristown, Arlington, and Jackrabbit Wash gaging stations. Table 10 and Table 11 provide results from previously published USGS analyses for comparison.

It is noted that the results for the Hassayampa River are similar to the previously published results. Examination of the Hassayampa results also shows a relatively similar level of peak discharge for each station for a given frequency. That is, the statistical analyses do not reveal a significant attenuation effect from Morristown to Arlington in spite of the nearly 40 miles of channel between them. For the 100-year flood estimates, the peak at Arlington is about thirteen percent lower than at Morristown.

The results for Jackrabbit Wash predict unreasonably high values. This matches previous findings by JEF (2002). The 2002 analysis of the October 2000 flood revealed a geologic non-exceedance limit which was applied to the frequency statistics. The constrained results indicated that the Burgess & Niple synthetic analysis was not an unreasonable estimate of the 100-year flood discharges for Jackrabbit Wash.

Table 9. Summary Table of Final HECFFA (Bulletin 17B) Frequency Results

		Peak Discharge in cfs					
Gage Location	**Nsys; Nhist**	**2-yr**	**5-yr**	**10-yr**	**25-yr**	**50-yr**	**100-yr**
Hassayampa River at Box Damsite (Canyon)	50; 114	3,000	8,380	14,100	24,000	33,700	45,400
Hassayampa River near Morristown	48; 88	3,230	9,570	15,800	25,500	33,900	43,000
Hassayampa River near Arlington	41; 88	2,560	7,830	13,100	21,600	29,000	37,200
Jackrabbit Wash near Tonopah	30	976	4,930	10,900	24,200	39,600	60,700

Table 10. Flood Flow Frequency Results from WSP 2433 Basin, Climatic and Flood Characteristics table *in* Thomas, et al., 1997

		Peak Discharge in cfs					
Gage Location	**N**	**2-yr**	**5-yr**	**10-yr**	**25-yr**	**50-yr**	**100-yr**
Hassayampa River at Box Damsite (Canyon)	38	3,170	8,480	14,000	23,500	32,600	43,700
Hassayampa River near Morristown	30	2,800	7,500	12,700	22,300	32,200	45,000
Hassayampa River near Arlington	Not analyzed						
Jackrabbit Wash near Tonopah	Not analyzed						

Table 11. Flood Flow Frequency Results from WRIR 98-4225 (Pope & others, 1998)

		Peak Discharge in cfs					
Gage Location	**N**	**2-yr**	**5-yr**	**10-yr**	**25-yr**	**50-yr**	**100-yr**
Hassayampa River at Box Damsite (Canyon)	41	3,180	8,480	13,900	23,300	32,300	43,000
Hassayampa River near Morristown	41	3,030	8,540	14,300	24,400	34,000	45,600
Hassayampa River near Arlington	34	3,010	7,340	12,000	20,500	29,200	40,500
Jackrabbit Wash near Tonopah	23	847	3,400	6,860	14,200	22,600	33,900

Simplified HEC-1 modeling

A simplified HEC-1 model was developed to facilitate selection of the design hydrograph for use in the sediment transport modeling portions of the Watercourse Master Plan. The primary purpose of the model was *to develop a hydrograph shape* for application of the peak discharges computed with the statistical analyses described previously. The procedures followed were mostly those outlined in the Drainage Design Manual, Volume I (1995).

Subbasins were delineated from USGS 7.5 minute topographic quadrangles. Five subbasins were delineated as shown in Figure 7. Concentration points were selected at the Box Canyon gage site, the Morristown gage site, the Jackrabbit Wash confluence, and at the Gila River. The FCDMC MCUHP2 computer program was used to develop unit hydrographs for each subbasin. Loss parameters were estimated based on the NRCS General Soil Survey data and engineering judgment. Hydrologic routing was performed using Modified Puls routing. Historic rainfall amounts from the 1951 and 1970 events were also investigated to evaluate the general reasonableness of the models without formal calibration.

A portion of the watershed shown in Figure 7 is an area controlled by the Buckeye Flood Retarding Structures (FRS). These flood control reservoirs were constructed in the early 1970s. The eastern half of the hatched area has been effectively added to the Hassayampa River watershed. Outflows from the FRSs are limited to about 500 cfs during the 100-year event and were therefore not included in the HEC-1 modeling.

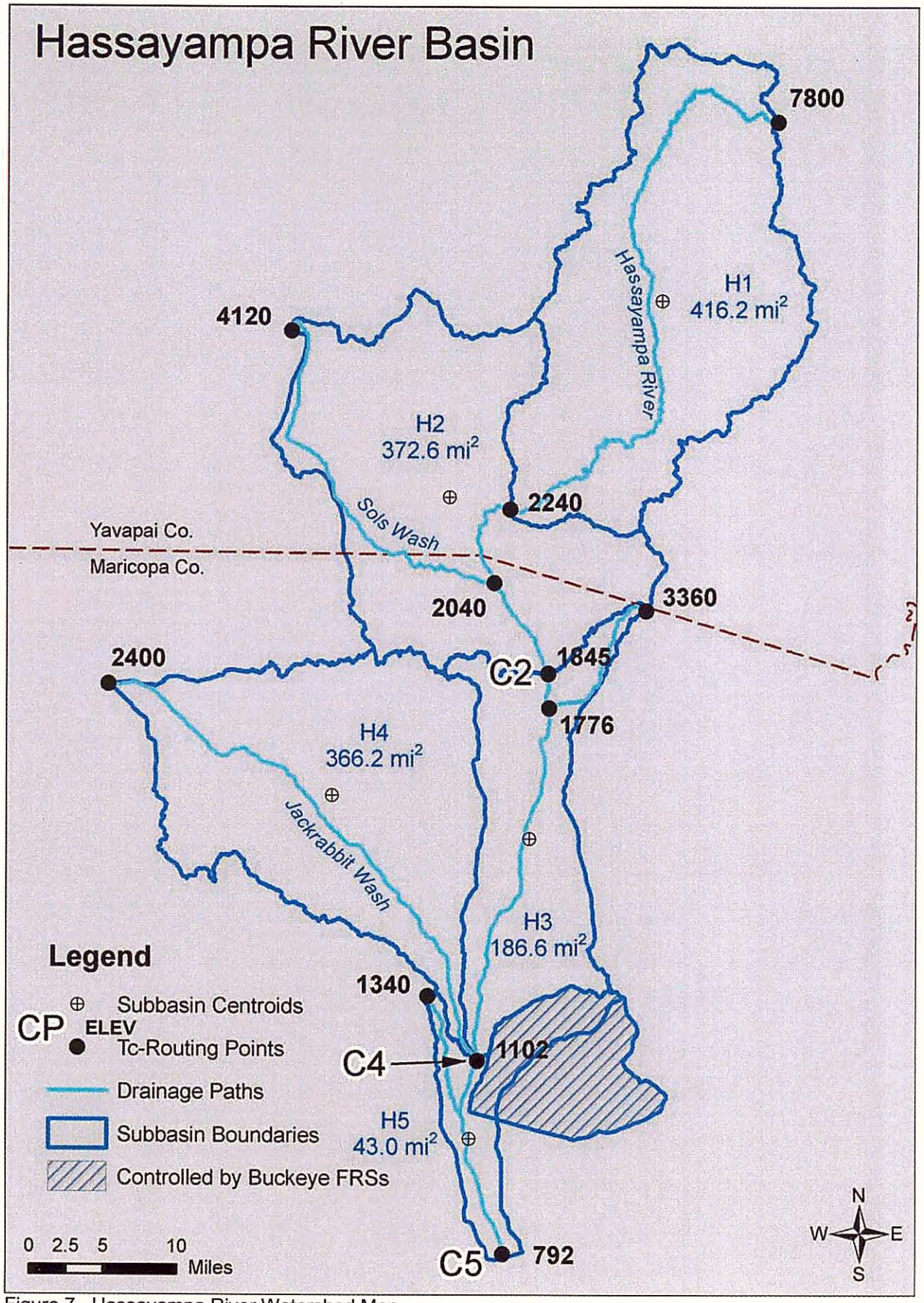


Figure 7. Hassayampa River Watershed Map

The following paragraphs provide additional details on the HEC-1 model development.

Rainfall

Rainfall depths were developed from the NOAA Atlas II isopluvial lines for the 24-hour duration as shown in Figure 8. The areal average for each subbasin was computed as shown in Table 12. Point rainfall values were areally reduced based on procedures in the FCDMC Drainage Design Manual for 24-hour storms. Reduced rainfall depths were applied to each subbasin independently. This seemed a reasonable approach given the large size of the subbasins. Also, it provided for a means to easily evaluate the effects of rain over a single subbasin and routed through the remaining watershed. The SCS Type II temporal distribution was selected per the Drainage Design Manual for 24-hour storm analysis.

Table 12. Computations of Subbasin Average Point Rainfall for 100-year 24-hour Storm

BASIN_ID Name	AREA (sq.ft.)	AREA (sq.miles)	AREA (acres)	Percent of Basin	100-yr 24-hr (inches)	weighted	Basin Avg (inches)
H1	41,443,912	416.2	951.4	0.4	6.5	0.023	
H1	296,393,925	416.2	6,804.3	2.6	6.3	0.160	
H1	1,201,052,422	416.2	27,572.4	10.4	5.8	0.595	
H1	74,545,320	416.2	1,711.3	0.6	4.6	0.030	
H1	2,270,895,762	416.2	52,132.6	19.6	5.3	1.028	
H1	837,211,273	416.2	19,219.7	7.2	5.0	0.361	
H1	3,994,365,744	416.2	91,698.0	34.4	4.9	1.687	
H1	2,474,301,947	416.2	56,802.2	21.3	4.7	1.002	
H1	411,404,054	416.2	9,444.5	3.5	4.4	0.156	5.0
H2	451,093,963	372.6	10,355.7	4.3	5.0	0.217	
H2	639,754,911	372.6	14,686.8	6.2	4.8	0.296	
H2	668,089,079	372.6	15,337.2	6.4	4.6	0.296	
H2	4,295,270,271	372.6	98,605.8	41.4	4.4	1.819	
H2	4,332,933,802	372.6	99,470.5	41.7	4.2	1.752	4.4
H3	5,201,442,480	186.6	119,408.7	100.0	4.2	4.200	4.2
H4	10,209,242,777	366.2	234,372.0	100.0	4.2	4.200	4.2
H5	1,197,938,828	43.0	27,500.9	100.0	4.1	4.100	4.1

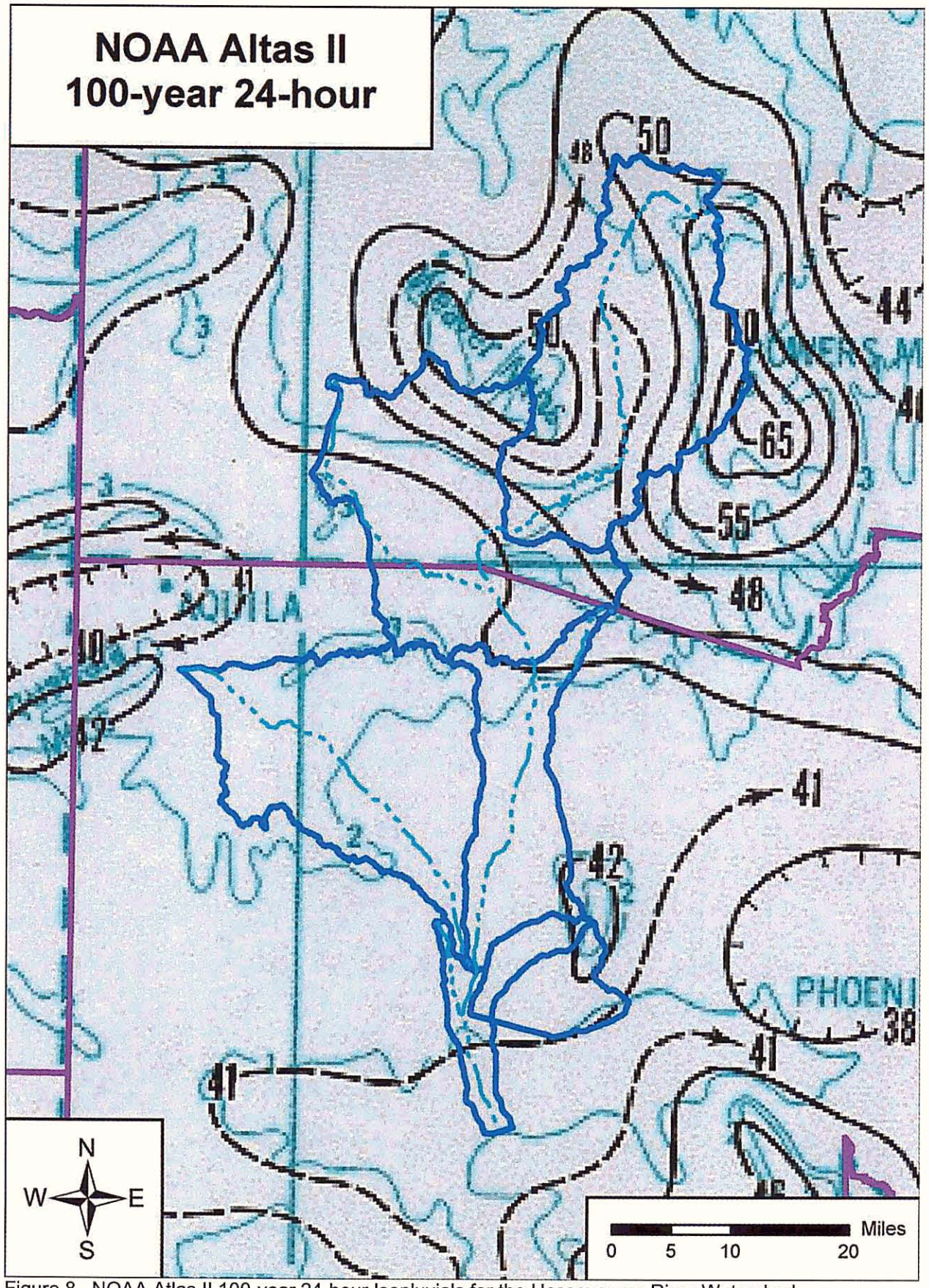


Figure 8. NOAA Atlas II 100-year 24-hour Isopluvials for the Hassayampa River Watershed

Losses

The Green-Ampt method as implemented in HEC-1 was used to compute rainfall excess. Parameters for the LG record were selected based on guidelines in the Drainage Design Manual and engineering judgment from evaluation of the NRCS General Soils Map (Figure 9). XKSAT values were assigned based on the soil texture descriptions found in the attribute tables of the NRCS SURGO digital data using an approach similar to that used in the Drainage Design Manual. Note that most of the watershed is underlain by sandy loam (XKSAT = 0.40 in/hr). The complete calculations of XKSAT values and the assignment of XKSAT to the individual map units are found in the appendices to this report. Although some rock outcrop does exist within the watershed, it was assumed that none of these were hydrologically directly connected to the subbasin outlets. Therefore, RTIMP values were all set to zero. Table 13 shows the summary of the Green-Ampt parameters selected for use in the HEC-1 model.

Table 13. Summary of Subbasin Loss Parameters

Subbasin ID	IA (in)	DTHETA	PSIF	XKSAT (in/hr)	RTIMP (%)
H1	0.80	0.25	4.3	0.34	0
H2	0.50	0.25	4.0	0.39	0
H3	0.35	0.25	4.0	0.40	0
H4	0.35	0.25	4.0	0.40	0
H5	0.30	0.25	4.0	0.39	0

Unit Hydrographs

Unit hydrographs were computed for the HEC-1 model using the Flood Control District's MCUHP2 computer program. The Phoenix Mountain S-graph was selected for subbasin H1. The Desert Rangeland S-Graph was selected for the remaining subbasins. Given the description of each S-graph and the guidance provided in the Drainage Design Manual, this assignment was deemed appropriate. Subbasin and Lca lengths were measured in GIS from flow paths delineated from the USGS 7.5 minute topographic quadrangles. Slope was computed from the high and low elevations along the flow paths as indicated on the USGS quadrangles. Kn values were assigned as shown in Table 14 which also summarizes the unit hydrograph data and the resulting computed lag times. Note that the basin roughness, Kn, are higher in basin H1. The rationale for the differences lies in the proportion of the watershed that lies within heavily forested and chaparral environments.

Table 14. Summary of Subbasin Parameters for Unit Hydrograph Development

Subbasin ID	Drainage Area (mi^2)	Length (miles)	Lca (miles)	Slope (ft/mi.)	Kn	Lag (min.)
H1	416.2	55.6	27.3	100	0.05	485
H2	372.6	36.9	12.6	61.7	0.04	271
H3	186.6	37.8	16.4	59.7	0.04	304
H4	366.2	40.0	21.7	32.5	0.04	389
H5	43.0	19.4	8.4	28.2	0.04	211

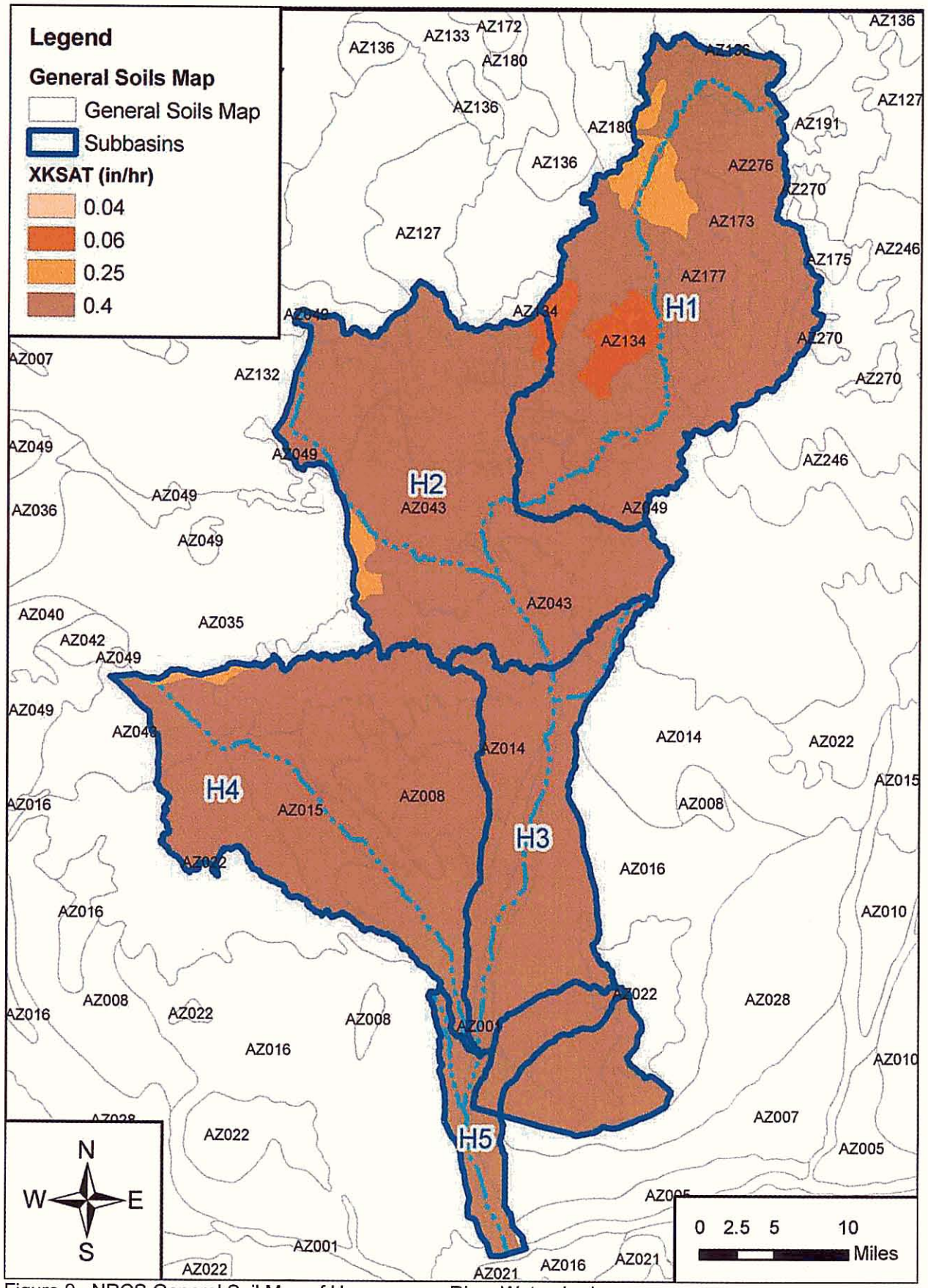


Figure 9. NRCS General Soil Map of Hassayampa River Watershed

Routing

Hydrologic routing in the HEC-1 model was performed using the Modified Puls method with a representative eight-point cross section. Table 15 shows a summary of the routing reach lengths, slopes, and NSTEPS used for each routing reach.

Table 15. Summary of Hydrologic Routings

KK ID	Length (ft)	Slope (ft/ft)	N Channel	N Overbank	NSTEPS
R1-2	78,500	0.005	0.04	0.08	7
R2-3	149,000	0.005	0.04	0.07	14
R4-5	74,000	0.004	0.04	0.07	11

NSTEPS were calculated based on the average travel time computed by the HECRAS model developed by importing the effective FIS HEC-2 model (Cella Barr, 1988). A copy of this model can be found on the CD-ROM accompanying this report. Table 16 shows the travel time computed by HECRAS for each reach, the NSTEPS resulting assuming a flood wave celerity of 1.5 and a 15-minute time step, and the HEC-1 computed travel time of the flood peak.

Table 16. NSTEPS Determination

KK ID	RAS Travel Time Avg. (hrs)	Flood Wave Celerity / Avg. Vel.[1]	Wave Time (hrs)	NSTEPS	HEC-1 Time (hrs) (HASSY.OUT Plan 6)
R1-2	2.5	1.5	1.7	7	1.25
R2-3	5.3	1.5	3.5	14	3.75
R4-5	4.0	1.5	2.7	11	2.5

[1] The ratio of wave celerity to average cross section velocity was taken from guidance for natural channels found on page 10 in Training Document No. 30 (USACE, 1990)

The representative 8-point cross sections used in HEC-1 are presented in Figure 10 to 12. The HEC-2 model was not used to develop SV-SQ records because of the desire to include transmission losses with the PERCRT option on the RL record. Transmission losses of 2 cfs/acre were applied to the two routing reaches downstream of Morristown (R2-3 and R4-5). Two cfs/acre is approximately equivalent to 2 inches/hour. Transmission losses from Box Canyon to Morristown were not computed due to the presence of near perennial flow through parts of that reach.

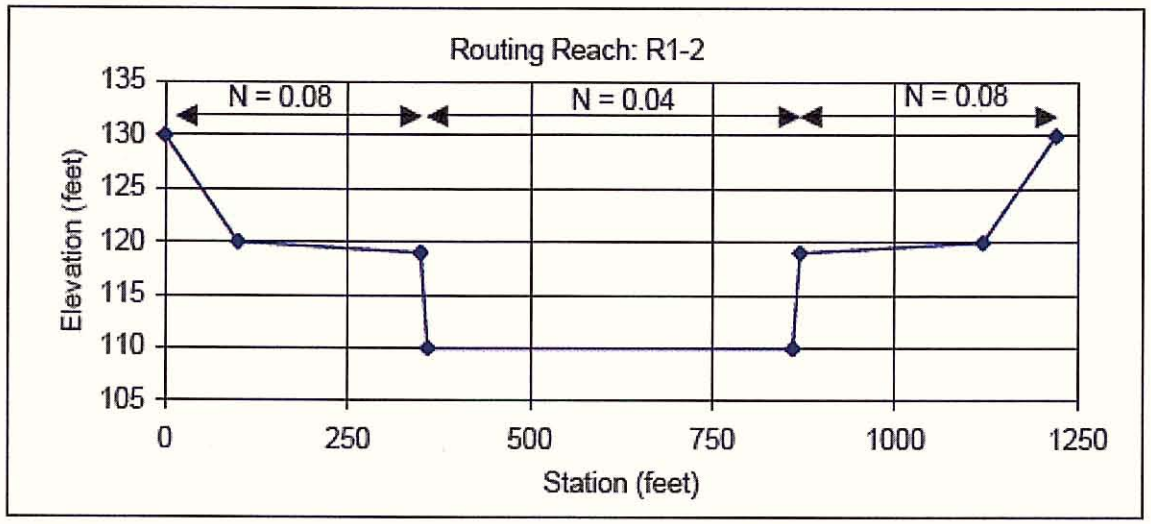


Figure 10. Representative 8-point cross section used for reach R1-2, Box Canyon to Morristown

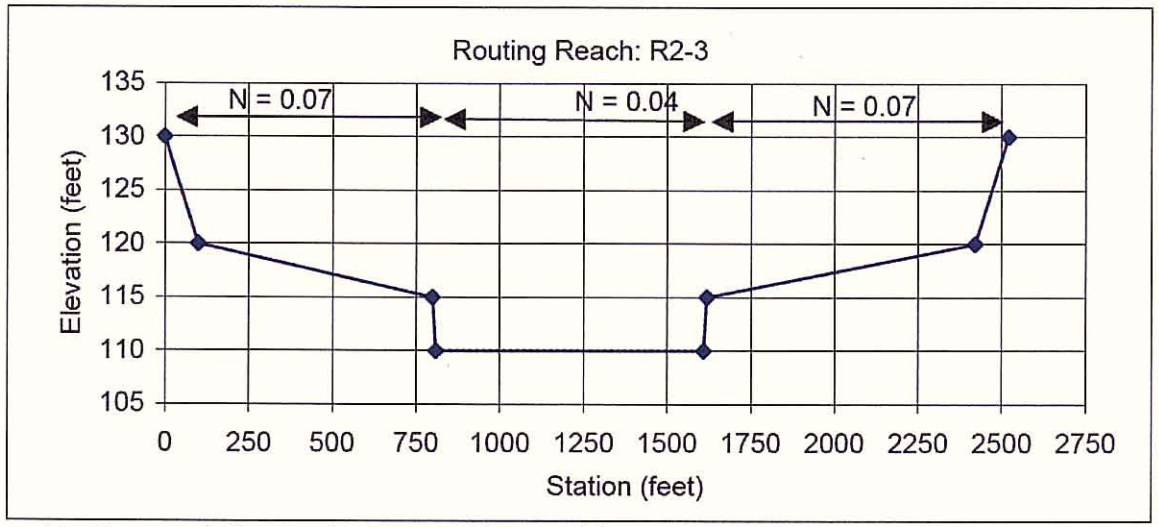


Figure 11. Representative 8-point cross section used for reach R2-3, Morristown to Jackrabbit Wash

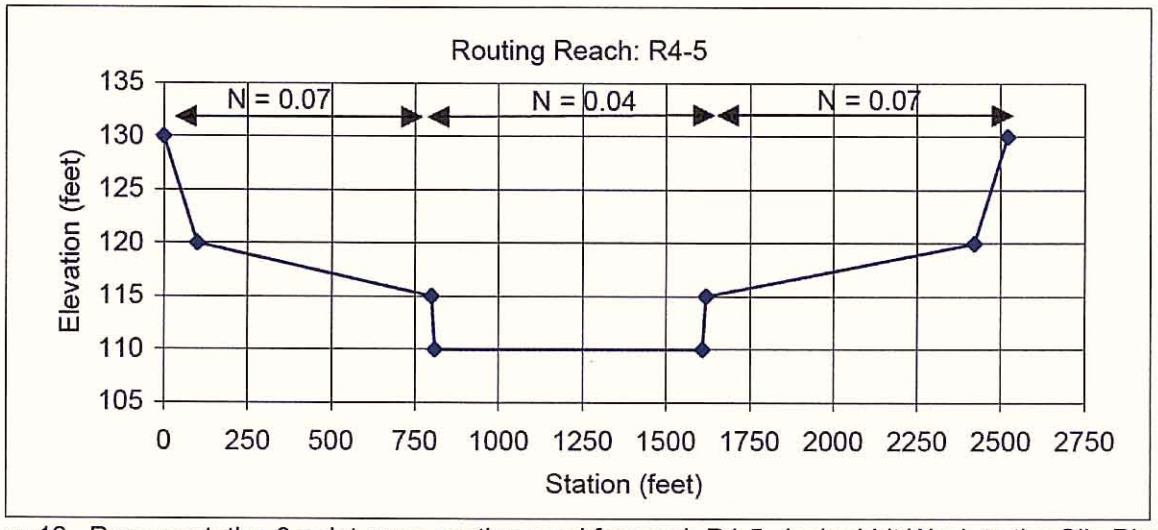


Figure 12. Representative 8-point cross section used for reach R4-5, Jackrabbit Wash to the Gila River

Results for Synthetic 100-year 24-hour Model

Figure 13 and Figure 14 show computed hydrographs for the 100-year 24-hour storm predicted by the HEC-1 model for the Hassayampa River. Note the two-peaked hydrograph downstream of Morristown (concentration points C3, C4, and C5). The synthetic rainfall input applies rainfall to the watershed simultaneously over the entire watershed. Therefore, the lower watershed drains out before the upstream peak arrives creating the two humps in the resulting hydrograph.

Table 17. Comparison of HEC-1 Model Results with Bulletin 17B Results

Location	Model 100-year Peak Discharge	Bulletin 17B 100-year Peak Discharge
Box Damsite (H1)	35,600	45,400
Morristown (C2)	40,900	43,000
Arlington (C5)	50,100	37,200
Jackrabbit Wash (H4)	24,700	N/A

Figure 15 shows the computed hydrograph for Jackrabbit Wash and the hydrograph from the effective FIS for comparison. Previous evaluation of the FIS peak discharges following the flood of October 2000 concluded that the FIS peak discharges represent reasonable estimates of the 100-year flow rates for Jackrabbit Wash (JEF, 2002). The results of the current modeling do not suggest any reasons to alter this conclusion.

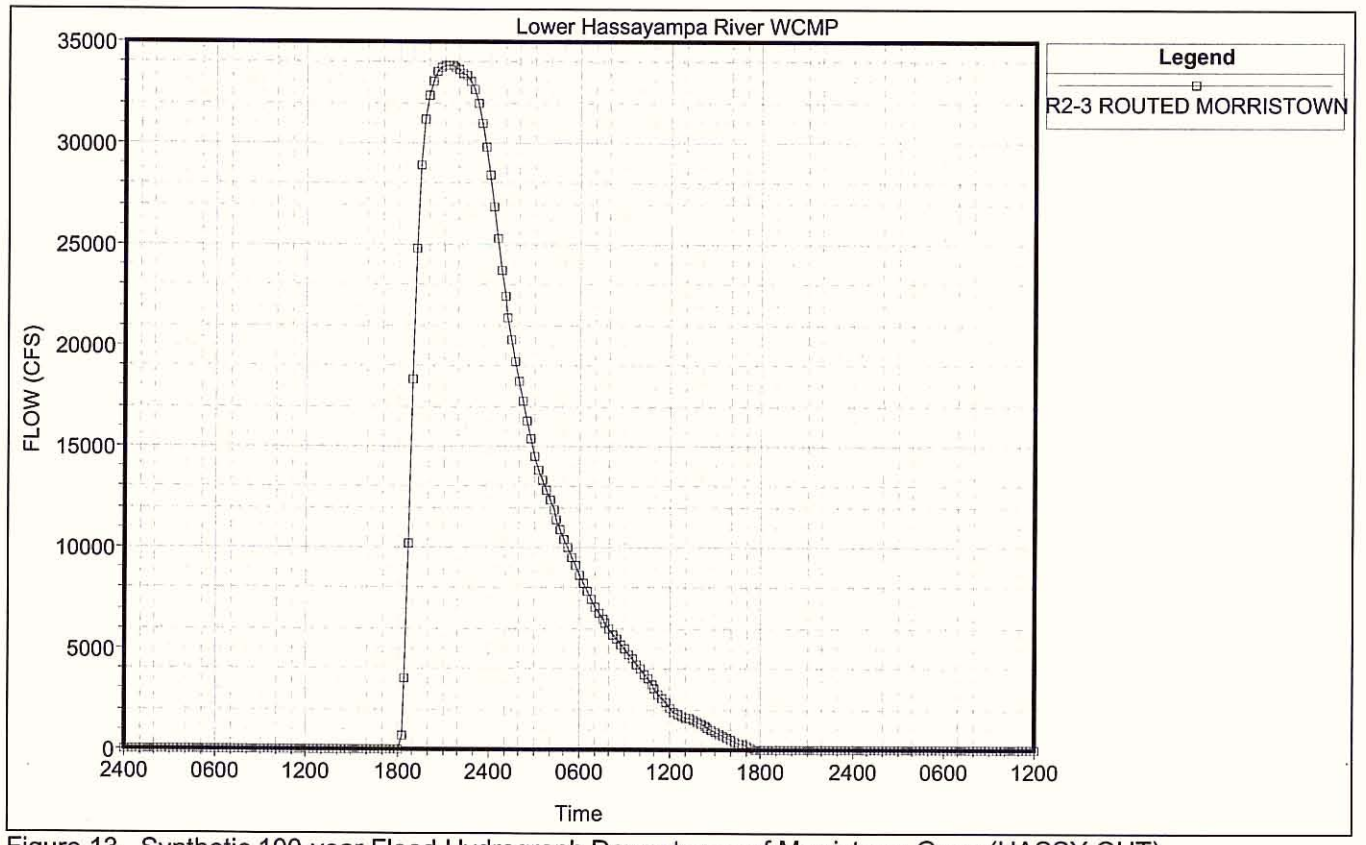


Figure 13. Synthetic 100-year Flood Hydrograph Downstream of Morristown Gage (HASSY.OUT)

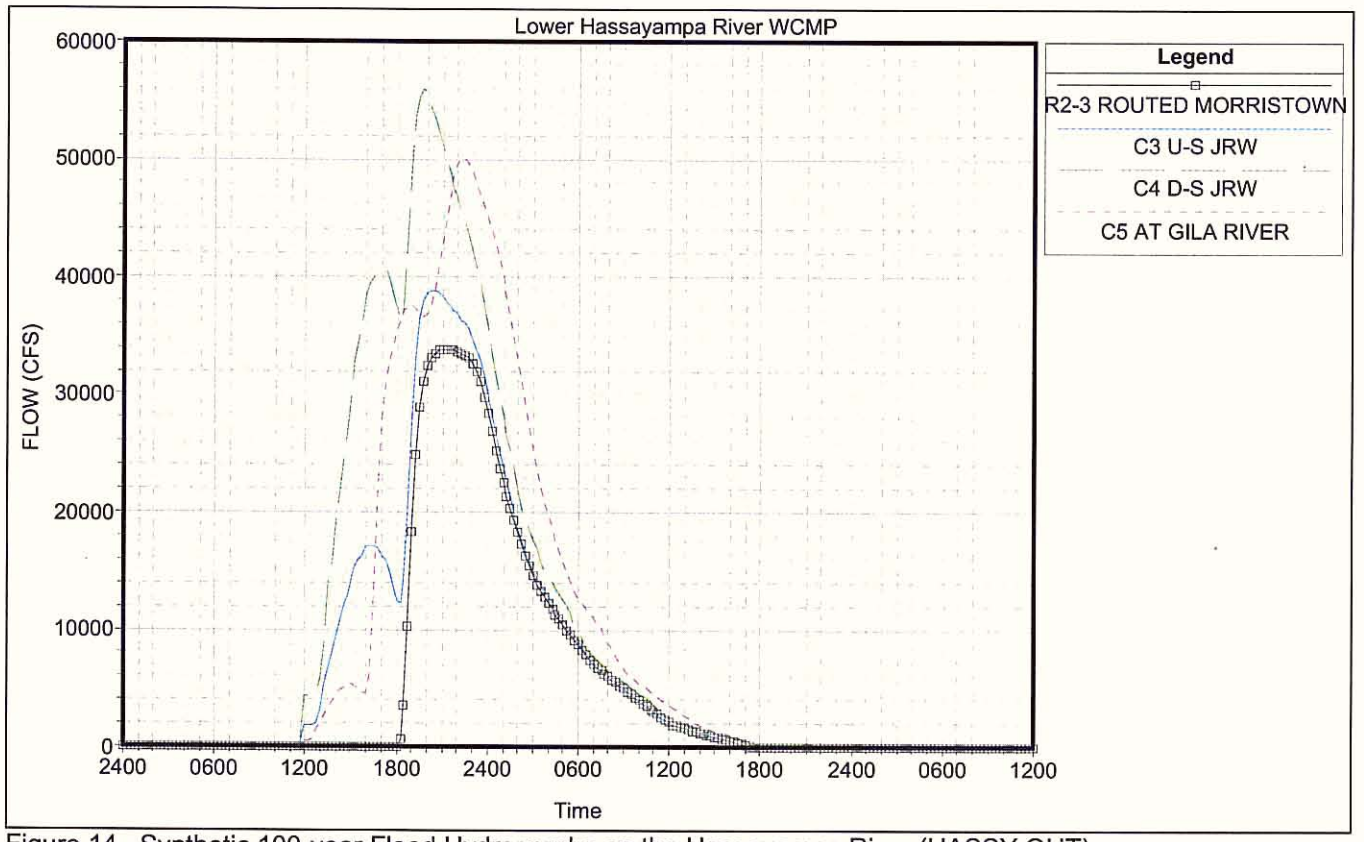


Figure 14. Synthetic 100-year Flood Hydrographs on the Hassayampa River (HASSY.OUT)

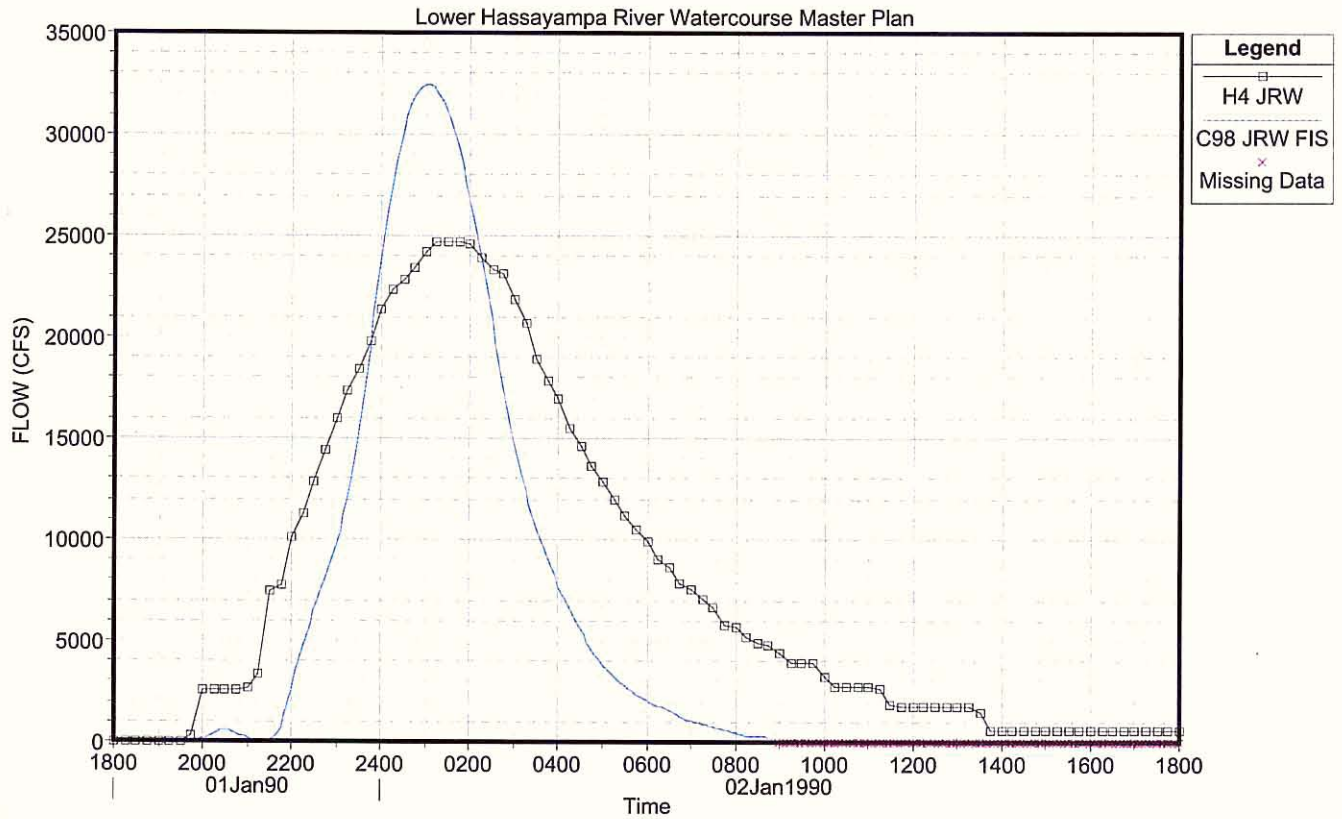


Figure 15. Comparison of WCMP and Effective FIS Model 100-year 24-hour Hydrographs for Jackrabbit Wash

Calibration – Comparison with historic floods

Although no formal calibration of the HEC-1 model was performed, the results of the model were compared with some of the significant historic flood events to investigate the reasonableness of the synthetic model results. Historic rainfall data from the storms of August 26-29, 1951 and September 4-6, 1970 were applied to the HEC-1 model. The rainfall data for these two storms was taken from figures presented in the US Army Corps of Engineers Design Memorandum No. 2, Part 2 Hydrology (1982). Tables 12 and 13 show the basin average rainfall data computed from digitized versions of the storm rainfall isohyets. The storm rainfall maps are presented in Figure 16 and Figure 17. The Corps also estimated maximum 24-hour rainfall amounts within these storms from recording gages around the area. Unfortunately none of these lie within the Hassayampa River watershed. Nevertheless the relative proportion of the storm total rainfall amounts shown in the maps is reported as about 65 percent for each storm.

The 24-hour basin average storm rainfall depths were applied to the HEC-1 model. The SCS Type II rainfall distribution was used as a proxy for the temporal distribution for each storm.

Table 18 shows the observed peak discharges recorded by the U.S. Geological Survey at their gaging stations. The rank of each flood in the period of record for each station is also listed. Table 19 shows a comparison of the observed peak discharges with computed values from the HEC-1 models. The results for the September 1970 flood compare relatively well to the observed peaks. In particular the H1 watershed

hydrograph routed without additional downstream inflows (last column of the table) compare quite well. Considering that the temporal distribution used in these models is synthetic and that the isohyets used were constructed from relatively few rain gages, the results suggest that the HEC-1 model loss parameters, unit hydrographs, and routing blocks provide a reasonable basis for selection of a design hydrograph for the Watercourse Master Plan.

Table 18. Observed Peak Discharges - Aug. 1951 & Sep. 1970

Flood	Gage	Peak Discharge	Rank
August 1951	Box Damsite	27,000	3
	Gila at Gillespie Dam	16,700	
September 1970	Box Damsite	58,000	1
	Morristown	47,500	1
	Arlington	39,000	1

Table 19. Synthetic Model Results for Rainfall of Aug. 1951 and Sep. 1970

Flood	Location	Observed Peak	24-hr Max. Model Peak	Total Storm Rainfall Model Peak	Box Damsite (H1) Only Routed
Aug. 51	Box Damsite	27,000	61,300		61,300
	Morristown		66,400		52,700
	Arlington		65,400		34,100
Sep. 70	Box Damsite	58,000	30,200	64,900	64,900
	Morristown	47,500	26,800	62,600	55,400
	Arlington	39,000	12,200	48,700	37,400

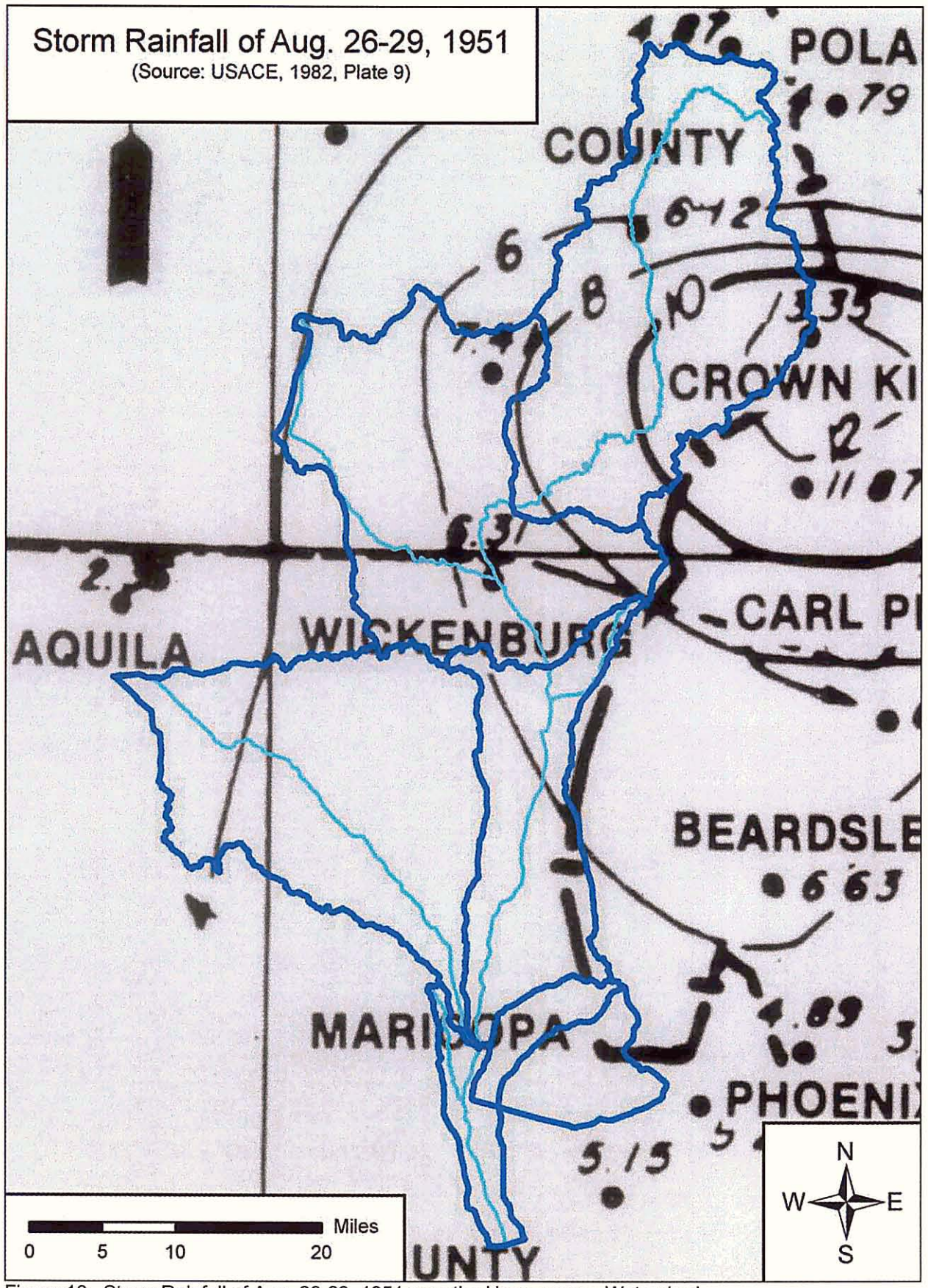


Figure 16. Storm Rainfall of Aug. 26-29, 1951 over the Hassayampa Watershed

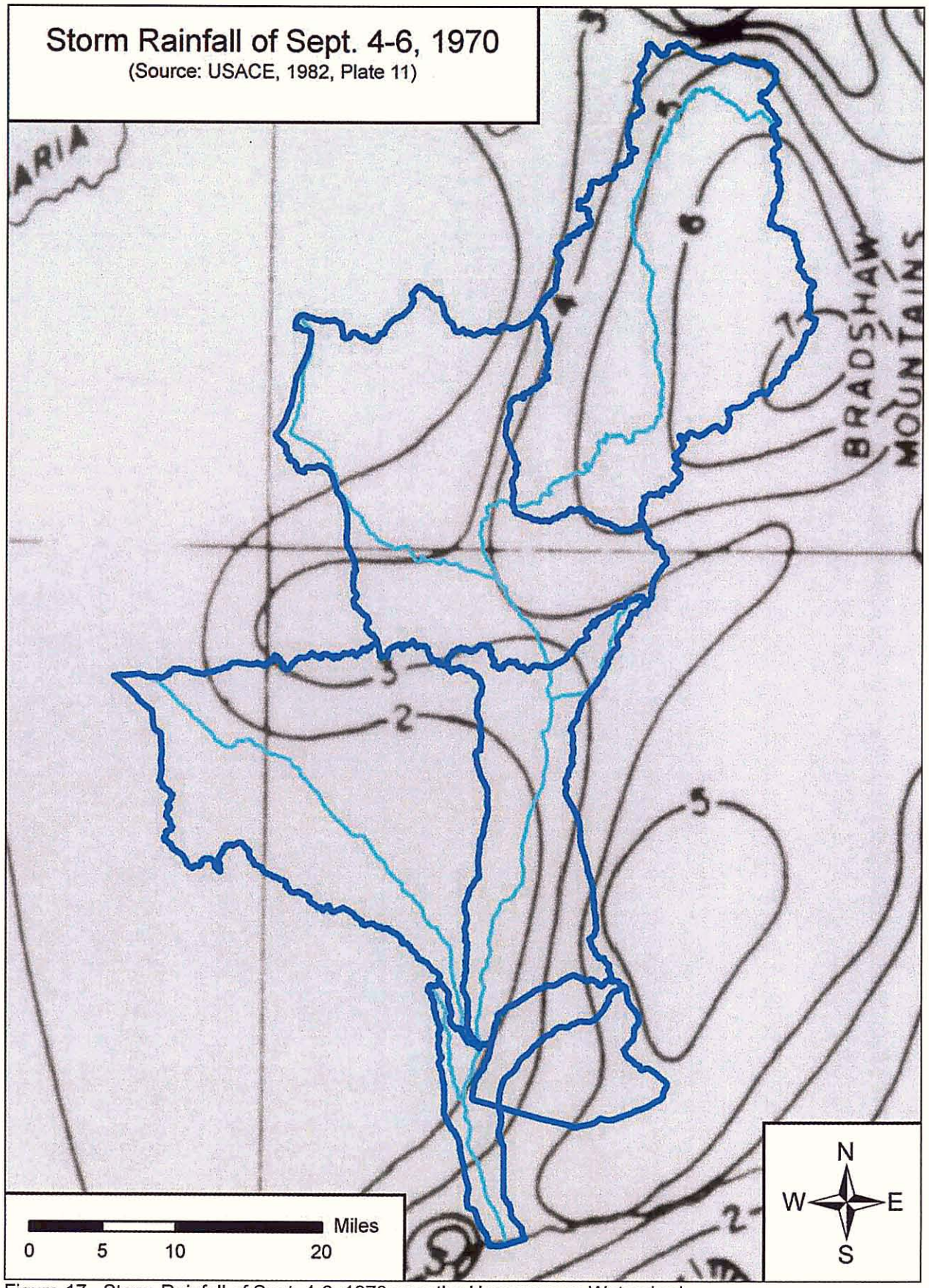


Figure 17. Storm Rainfall of Sept. 4-6, 1970 over the Hassayampa Watershed

Table 20. Rainfall Data for Storm of Aug. 26-29, 1951 (USACE, 1982, Plate 9)

		Subbasin Area	Rain Poly				
BASIN_ID	AREA	SQ_MILES	Acres	Aug51 Rain (in)	Wgtd. Rain	Basin Avg	24-hr Max
H1	407,387,958	416.2	9,352.3	12.0	0.42		
H1	2,307,863,696	416.2	52,981.3	11.0	2.19		
H1	3,082,058,331	416.2	70,754.3	5.0	1.33		
H1	1,611,353,667	416.2	36,991.6	7.0	0.97		
H1	3,891,116,435	416.2	89,327.7	9.0	3.02		
H1	301,834,273	416.2	6,929.2	7.0	0.18	8.1	5.3
H2	646,081,336	372.6	14,832.0	9.0	0.56		
H2	4,778,011,432	372.6	109,688.0	7.0	3.22		
H2	4,963,049,258	372.6	113,935.9	5.0	2.39	6.2	4.0
H3	1,367,013,950	186.6	31,382.3	7.0	1.84		
H3	3,834,428,530	186.6	88,026.4	5.0	3.69	5.5	3.6
H4	8,236,140,252	366.2	189,075.8	5.0	4.03		
H4	1,973,102,524	366.2	45,296.2	3.0	0.58	4.6	3.0
H5	1,197,938,828	43.0	27,500.9	5.0	5.00	5.0	3.3

Table 21. Rainfall Data for Storm of Sep. 4-6, 1970 (USACE, 1982, Plate 11)

		Subbasin Area	Rain Poly				
BASIN_ID	AREA	SQ_MILES	Acres	Sep70 Rain (in)	Wgtd	Basin Avg	24-hr Max
H1	189,506,822	416.2	4,350.5	7.0	0.1		
H1	3,557,457,357	416.2	81,668.0	6.5	2.0		
H1	4,624,277,650	416.2	106,158.8	5.5	2.2		
H1	86,988,736	416.2	1,997.0	4.0	0.0		
H1	384,112,480	416.2	8,818.0	3.5	0.1		
H1	2,675,703,493	416.2	61,425.7	4.5	1.0		
H1	83,567,820	416.2	1,918.5	3.5	0.0	5.5	3.6
H2	1,864,066,090	372.6	42,793.1	4.5	0.8		
H2	259,914,357	372.6	5,966.8	3.0	0.1		
H2	2,428,809,973	372.6	55,757.8	2.5	0.6		
H2	3,125,119,089	372.6	71,742.9	1.8	0.5		
H2	27,605,149	372.6	633.7	4.0	0.0		
H2	2,681,627,367	372.6	61,561.7	3.5	0.9	2.9	1.9
H3	1,958,820,938	186.6	44,968.3	1.9	0.7		
H3	326,488,848	186.6	7,495.2	3.5	0.2		
H3	2,224,738,672	186.6	51,073.0	2.5	1.1		
H3	164,894,606	186.6	3,785.5	4.5	0.1		
H3	526,499,416	186.6	12,086.8	3.5	0.4	2.5	1.6
H4	7,950,883,529	366.2	182,527.2	1.6	1.2		
H4	478,469,889	366.2	10,984.2	3.1	0.1		
H4	1,779,889,359	366.2	40,860.6	2.5	0.4	1.8	1.2
H5	411,296,984	43.0	9442.1	1.9	0.8		
H5	442,933,440	43.0	10168.4	3.5	1.4		
H5	343,708,404	43.0	7890.5	2.5	0.5	3.2	2.1

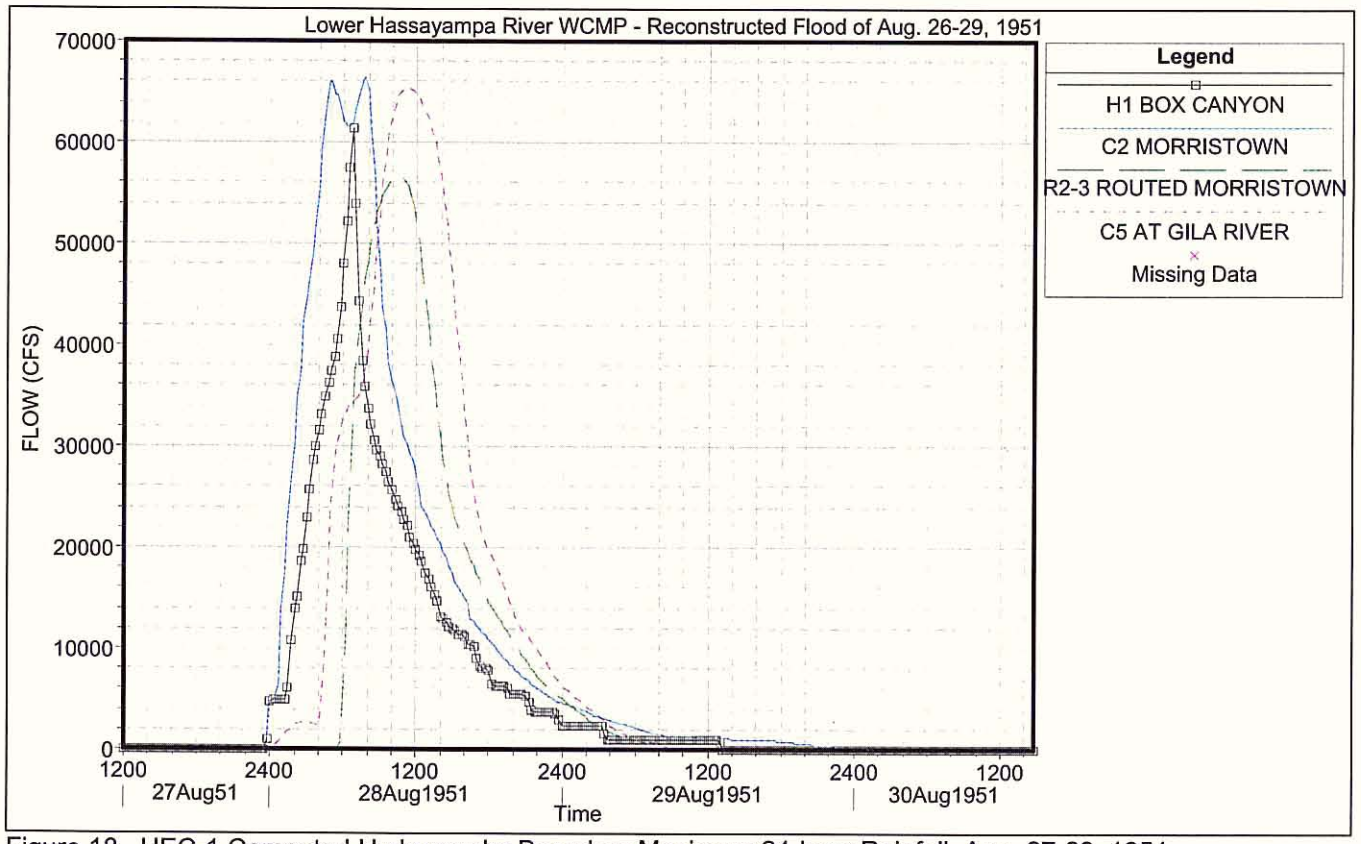


Figure 18. HEC-1 Computed Hydrographs Based on Maximum 24-hour Rainfall, Aug. 27-29, 1951

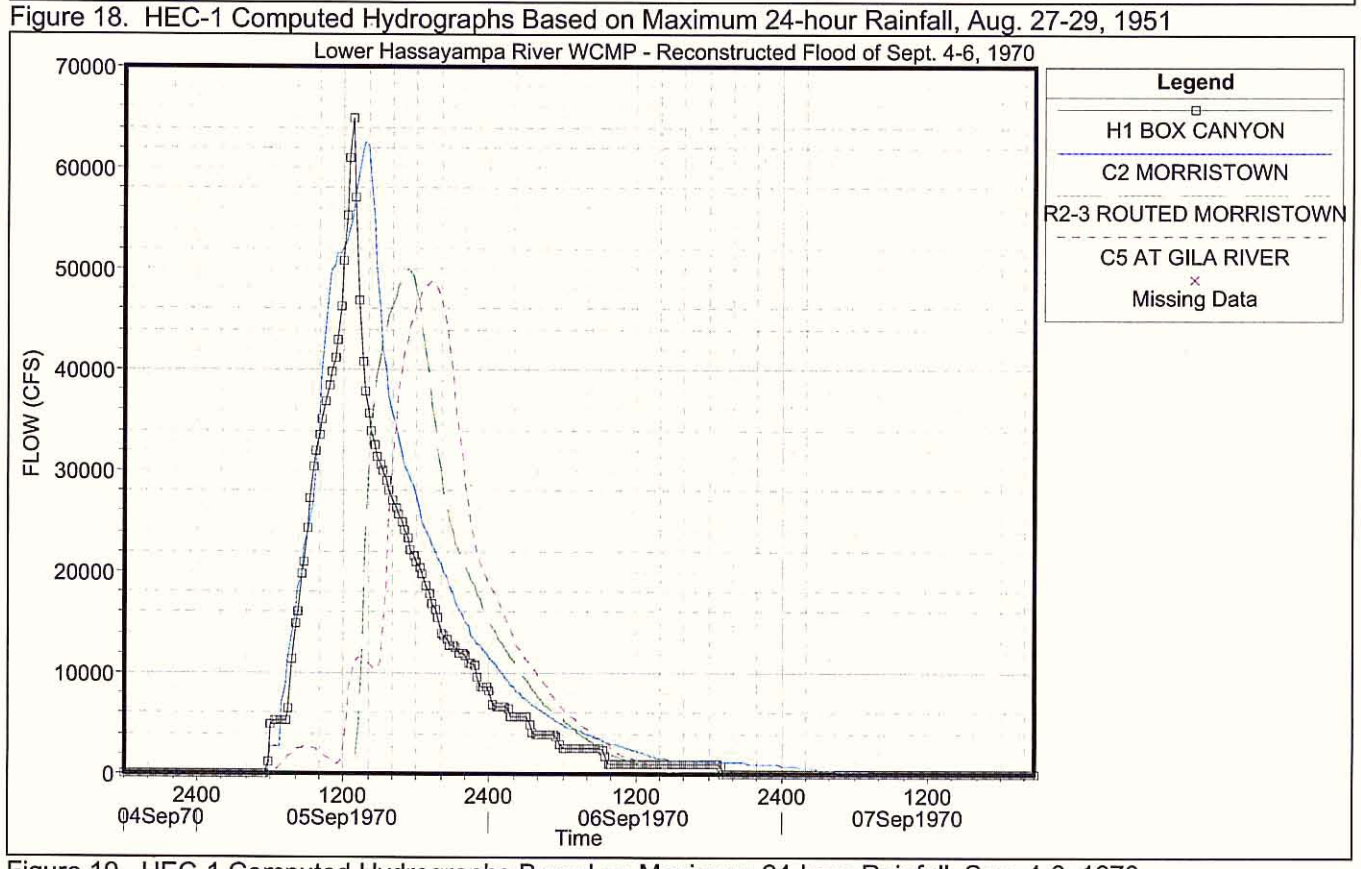


Figure 19. HEC-1 Computed Hydrographs Based on Maximum 24-hour Rainfall, Sep. 4-6, 1970

Figure 20 shows the observed hydrograph recorded by the FCDMC at Box Canyon on Feb. 14-15, 1995. Figure 21 shows the observed hydrograph recorded by the FCDMC at Morristown for the September 26, 1997 flood. The 1995 peak was about an 8-year flood at Box Canyon. The 1997 peak was about a 5-year flood at the Morristown gage location. Comparison of these hydrograph shapes to the hydrographs computed for the August 1951 (Figure 18) and September 1970 storms (Figure 19) with the HEC-1 show a reasonable similarity. This supports the comparison of peak discharges discussed above. Therefore, it is concluded that the HEC-1 model is acceptable for use in determination of the shape of the design hydrographs for the Watercourse Master Plan.

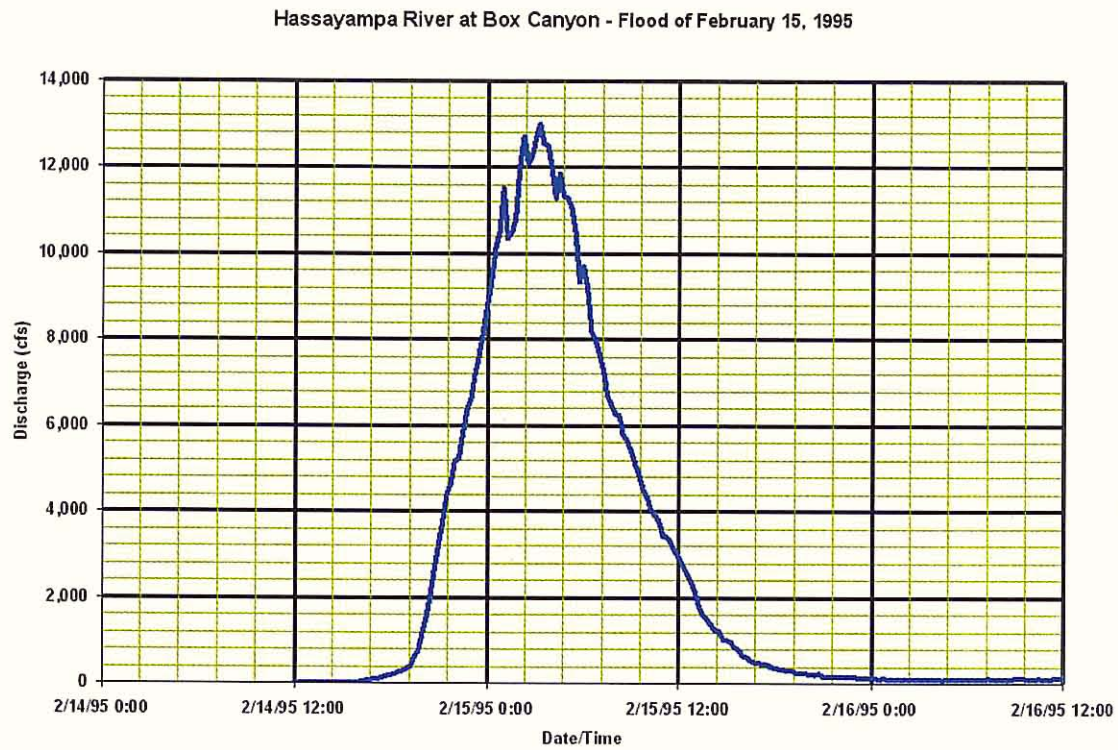


Figure 20. Observed Hydrograph at Box Canyon, Feb. 14-15, 1995

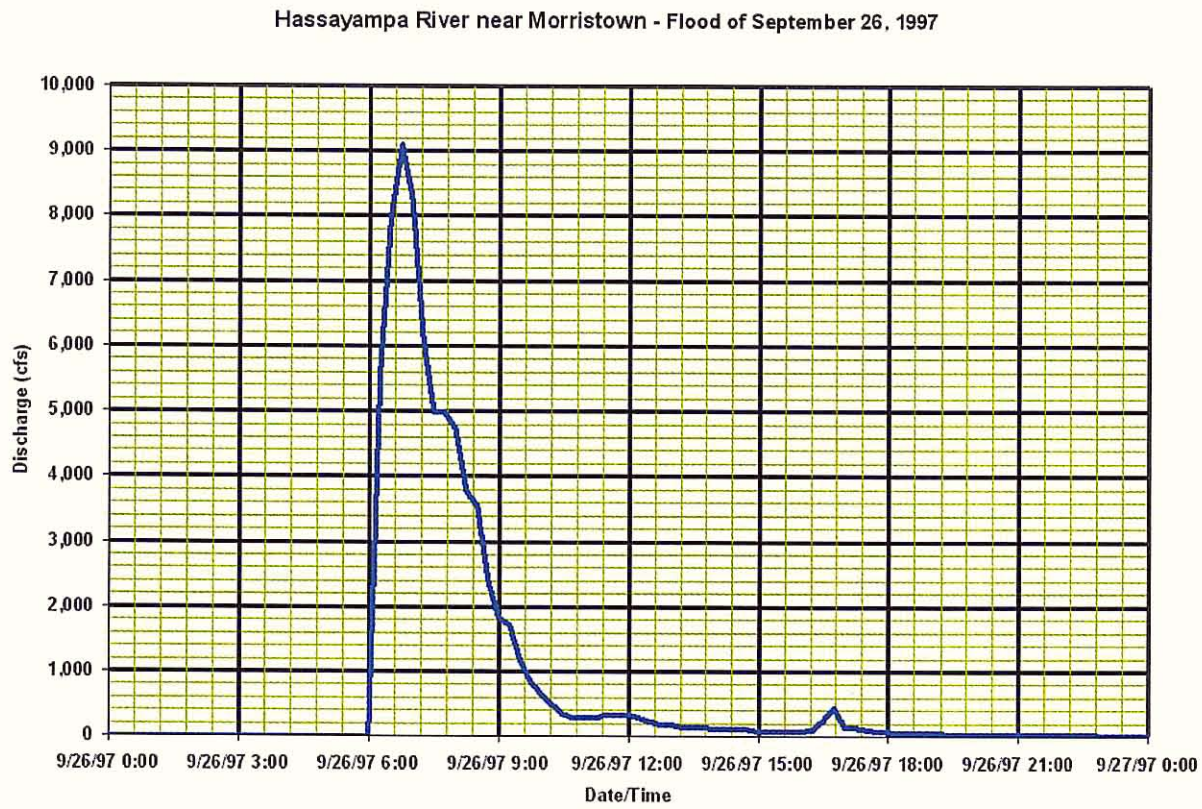


Figure 21. Observed Hydrograph at Morristown, Sep. 26, 1997

Interpolation of Qs for different locations

The scope of services for the Watercourse Master Plan specifically requests identification of peak discharges at the following locations through the study reach:

- CAP
- Wagner Wash
- Jackrabbit Wash
- I-10
- Gila

The Hassayampa watershed is quite large at almost 1,400 square miles. Intense storms over smaller portions of the watershed are capable of producing large discharges in those subwatersheds as happened on Jackrabbit Wash in October 2000 or Sols Wash and Martinez Creek in September 1997. Although such floods represent large (very) infrequent floods within the tributary watershed, upon entering the larger Hassayampa River their significance becomes somewhat diminished. It therefore seems likely that the frequency of a specific magnitude large flow rate may be the product of the combined probability of large general storms over large parts of the watershed along with larger, less frequent flows emanating from various sub-portions of the watershed.

The HEC-1 modeling shows that individual subbasins within the watershed are also capable of delivering relatively large discharges independent of one another. Flows in the range of 25,000 cfs probably represent the 25- to 100-year discharge from each of the major subbasins (H1, H2, and H4). Even subbasin H3, which contains the Daggs and Wagner Wash watersheds, can generate relatively large discharges independently of the Hassayampa. The 100-year flow estimates are 3,000 cfs and 15,700 cfs for Daggs and Wagner Washes respectively.

Examination of the flood frequency statistics suggests that there is not a significant difference in discharge for a given frequency between Box Canyon (Damsite) and Morristown. Between Morristown and Arlington, the computed peak discharges tend to be slightly lower for the same frequency in the downstream direction.

It is therefore recommended that for the study reach peak discharges be interpolated between Morristown and Arlington gage sites based on the distance along the stream between them. It is believed that this approach reflects the process of attenuation along the reach while at the same time preserving the integrity of the statistical results at each station which incorporate the effects of mixed flood peak source areas downstream of Morristown (e.g. Wagner Wash, Daggs Wash, Jackrabbit Wash, etc.). Table 22 summarizes the results of this interpolation along the study reach.

This does not mean that individual flood waves attenuate exactly as shown in Table 22 along the study reach. Nor does it mean that for a given storm event that the peak discharge could not increase in the downstream direction. Additional analysis of attenuation effects will be performed as part of the detailed hydraulic modeling portions of the WCMP.

Table 22. Peak Discharges Along the Lower Hassayampa WCMP Study Reach, in cfs

Location	R.M.	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Morristown	43.8	3,000	9,000	16,000	26,000	34,000	43,000
CAP	28.0	2,900	8,600	15,000	24,400	32,200	40,900
Wagner Wash	21.0	2,800	8,400	14,500	23,700	31,400	40,000
Jackrabbit Wash	15.0	2,700	8,200	14,100	23,100	30,700	39,200
I-10	11.0	2,700	8,100	13,800	22,700	30,300	38,700
Old US 80	2.7	2,600	7,800	13,100	21,600	29,000	37,200
Gila River	0	2,600	7,800	13,100	21,600	29,000	37,200

USGS Regression Equations

USGS regional regression equations were also used to compute peak discharges for various points in the watershed including the gaging station locations and comparison with the statistical frequency estimates. The watershed lies within the Central Arizona Region 12 of the southwestern United States as defined in Thomas, et al. (1997). The regression equations for Region 12 are given below:

$$Q_2 = 41.1A^{0.629}$$

$$Q_5 = 238A^{0.687}(ELEV/1000)^{-0.358}$$

$$Q_{10} = 479A^{0.661}(ELEV/1000)^{-0.398}$$

$$Q_{25} = 942A^{0.630}(ELEV/1000)^{-0.383}$$

$$Q_{50} = 10^{(7.36-4.17A^{(-0.08)})}(ELEV/1000)^{-0.440}$$

$$Q_{100} = 10^{(6.55-3.17A^{(-0.11)})}(ELEV/1000)^{-0.440}$$

Where A = drainage area in square miles
ELEV = mean basin elevation in feet.

Table 23 presents the results of the regression equation calculations at each gaging station as well as other concentration points defined in the synthetic rainfall-runoff modeling. Note that because drainage area is an important explanatory variable used in the equations, discharges necessarily increase with increasing drainage area.

Table 23. USGS Region 12 Regression Equation Estimates of Peak Discharge, in cfs (Thomas, et al., 1997)

Gage Site	Elev. (ft)	Drainage Area (mi^2)	2 -Yr	5 - Yr	10 - Yr	25 - Yr	50 - Yr	100 Yr
Hassayampa at Box Canyon	4750	416.2	1,800	8,600	13,900	23,200	31,000	41,000
Hassayampa nr Morristown	3190	788.7	2,700	15,400	24,800	40,400	49,000	63,000
Hassayampa nr Arlington	3010	1384.6	3,900	23,100	36,800	58,900	65,000	80,000
Jackrabbit Wash nr Tonopah	2260	137	900	5,200	8,900	15,300	25,000	35,000
Other Locations								
Jackrabbit Wash at Hassayampa	1880	366.2	1,700	11,000	18,400	30,500	44,000	59,000
Hassayampa u/s Jackrabbit	3100	975.3	3,100	18,000	28,900	46,700	55,000	69,000
Hassayampa d/s Jackrabbit	3020	1341.5	3,800	22,600	36,000	57,600	64,000	79,000
Hassayampa at Gila	3010	1384.6	3,900	23,100	36,800	58,900	65,000	80,000

Comparisons with previous studies

Peak Discharge Estimates

Peak discharge estimates for various frequencies have been made for the Hassayampa River by different investigators for different projects and purposes. The earliest reports identified began in the 1940s in conjunction with planning efforts regarding the proposed Box Canyon Dam (hence Box Damsite as the gage name). Table 24 shows a comparison of results from some of these previous reports for the 100-year peak discharge estimates at various points along the river. All of these investigators considered statistical analysis of the gage data available for the river. The difference in results between the studies relates primarily to the length of the gage records available and the treatment of the earliest flood peaks for 1925, 1927, and 1937. Estimates of peak discharge at Box Canyon were made for large floods in these years outside of the USGS systematic data collection period. Some of the investigators treated these data as historical peaks (as has been done for this study) whereas others treated these peaks as part of the systematic record. The difference in the treatment of these data is to effectively increase the length of the period of record in the Bulletin 17B methodology. That is, considering the 1925 peak as a historic peak extends the record length from 53 years to 79 years. The hydrology report for the effective FIS by Cella Barr in 1988 gives a good presentation of the different treatment of these data in previous studies.

The current study elected to treat the 1925, 1927, and 1937 peaks as historical peaks largely because this is how the U.S. Geological Survey has decided to treat these data in their previous statistical evaluations (Pope & others, 1998). In addition, as discussed earlier, the September 1970 flood was identified by the USGS as the largest flood since

1890 (Box Damsite) or 1916 (Morristown and Arlington). Designation of the 1970 peak flow in the HECFFA software also affects the final computed statistics.

The USBR 1945 report also mentions the historic flood of 1916. Their report states that while no data on the magnitude of the 1916 flood for the Hassayampa River existed, they speculated that the peak flow near Morristown may have been about 50,000 cfs based on data from the Gila River. However, the reliability of such an estimate is dubious and was not included in the current statistical analyses.

Note that the effective FDS is shown in Table 24 shaded in gray. Table 25 provides a comparison of the effective FDS peak discharges with the 95% upper confidence limits for the 100-year flood from the HECFFA results from the current study. Note that the effective FDS discharges all lie within the 95% upper confidence limit.

The District has decided that in order to maintain continuity with the existing floodplain management activities along the Hassayampa River, the effective FDS discharges will continue to be used through the WCMP study reach. The hydraulic and sediment transport analyses will consider both the effective FDS discharges and the HECFFA results as part of the WCMP technical analyses to follow this Hydrology Report.

Table 24. Comparison of 100-year Peak Discharge Estimates For Various Studies, in cfs

Location	USBR 1945	CAP Design 1976	Effective FDS (Cella Barr, 1988)	SLA 1986	B&N 1991	CAP Bank Stabilization 1997	HECFFA (WCMP 2005)
Hassayampa at Box Canyon	65,000	67,000	57,100				45,400
Hassayampa nr Morristown		54,000	61,600			42,800	43,000
Hassayampa at CAP Siphon		50,700	60,100			43,400	41,500
Hassayampa u/s Jackrabbit			59,400				40,000
Hassayampa d/s Jackrabbit			75,000				40,000
Hassayampa at I-10			74,800				39,000
Hassayampa nr Arlington		82,000	74,100	61,700		45,500	37,200
Hassayampa at Gila	75,000		74,000				37,200
Jackrabbit Wash at Hassayampa					32,500		N/A

Table 25. Comparison of Effective FDS Discharges with 95% Upper Confidence Limits from HECFFA Analyses

Location	HECFFA 95% Confidence Upper Limits	Effective FDS (Cella Barr, 1988)
Hassayampa at Box Canyon	85,700	57,100
Hassayampa nr Morristown	83,700	61,600
Hassayampa at CAP Siphon		60,100
Hassayampa u/s Jackrabbit		59,400
Hassayampa d/s Jackrabbit		75,000
Hassayampa at I-10		74,800
Hassayampa nr Arlington	79,200	74,100
Hassayampa at Gila		74,000

Hydrographs

The Simons, Li & Associates study (1986) computed a design hydrograph in addition to their peak discharge estimates. Their study focused on development of 50-year design data. Their estimate of the 50-year peak discharge was 44,400 cfs at the Old US 80 bridge (site of their design). Figure 22 shows a comparison of hydrographs from the SLA study and the simplified HEC-1 model described in the current report. Note the strong similarity in general shape and base time especially of the "at Gila River" hydrograph which is spatially very close to the SLA location of interest (Old US 80).

Also note that the "WCMP – routed Morristown" hydrograph was shifted forward 8 hours to line up for comparisons with the SLA data. Note this translation is almost exactly equivalent to the travel time computed in the HEC-1 model reflected by the non-shifted "at Gila River" hydrograph.

The peak discharges plotted for both WCMP hydrographs were taken directly from the HEC-1 model and have not been adjusted to reflect the precise magnitude of the HECFFA or other statistical results.

Again, the hydraulic and sediment transport analyses will consider both the effective FDS discharges and the HECFFA results as part of the WCMP technical analyses to follow this Hydrology Report.

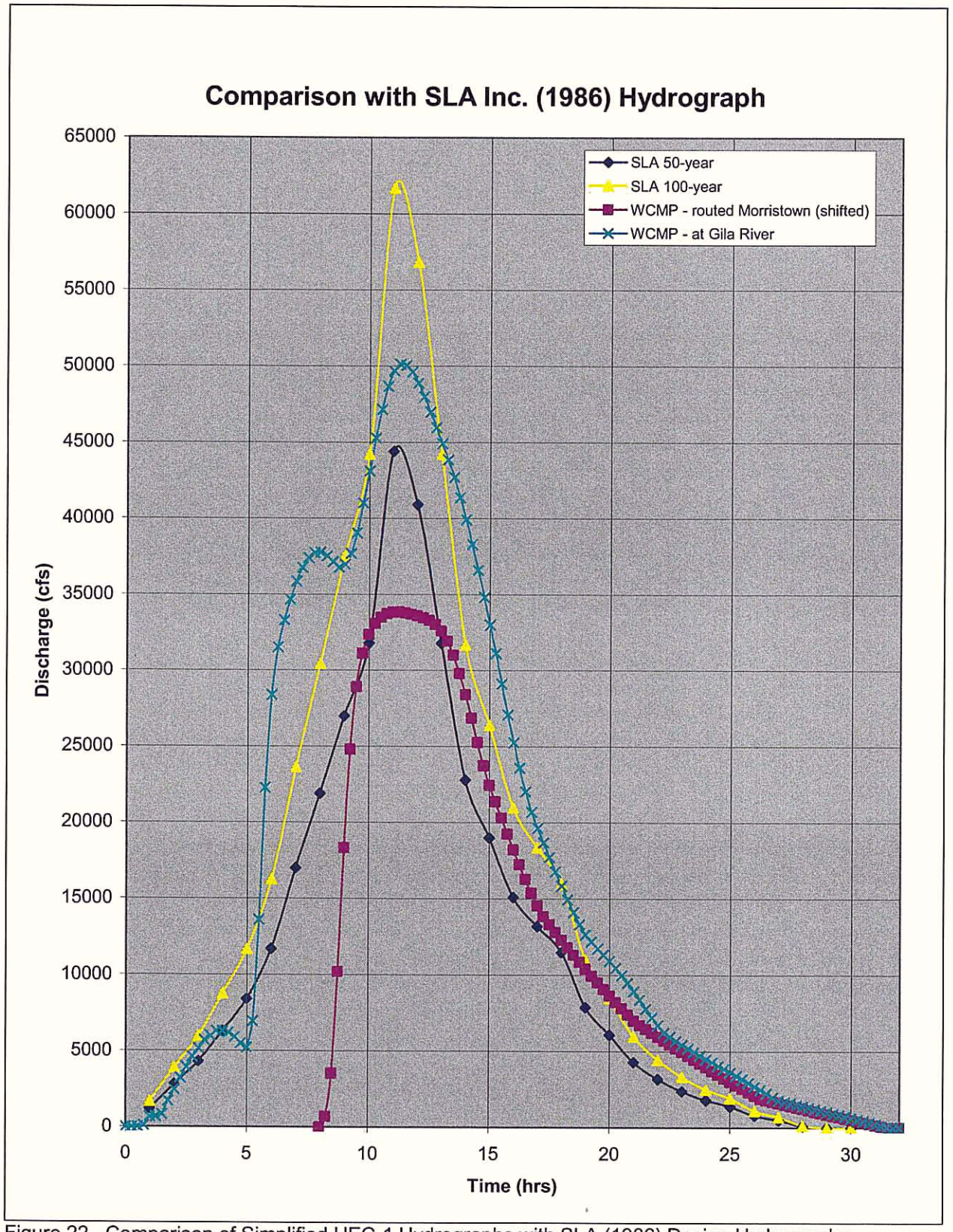


Figure 22. Comparison of Simplified HEC-1 Hydrographs with SLA (1986) Design Hydrographs

Hydrographs for HEC-6

For the WCMP, hydrographs are required for the sediment transport modeling. A smoothed, scaled version of the HEC-1 results is recommended for use in the WCMP. Figure 23 shows the recommended 100-year hydrograph at the Gila River (downstream study limit) scaled to the HECFFA results and a comparison to the HEC-1 model results at the Gila River. The recommended 100-year hydrograph has been smoothed and scaled to 37,200 cfs for use in the WCMP study reach. Figure 23 also shows the recommended 100-year hydrograph scaled to the effective FDS discharges.

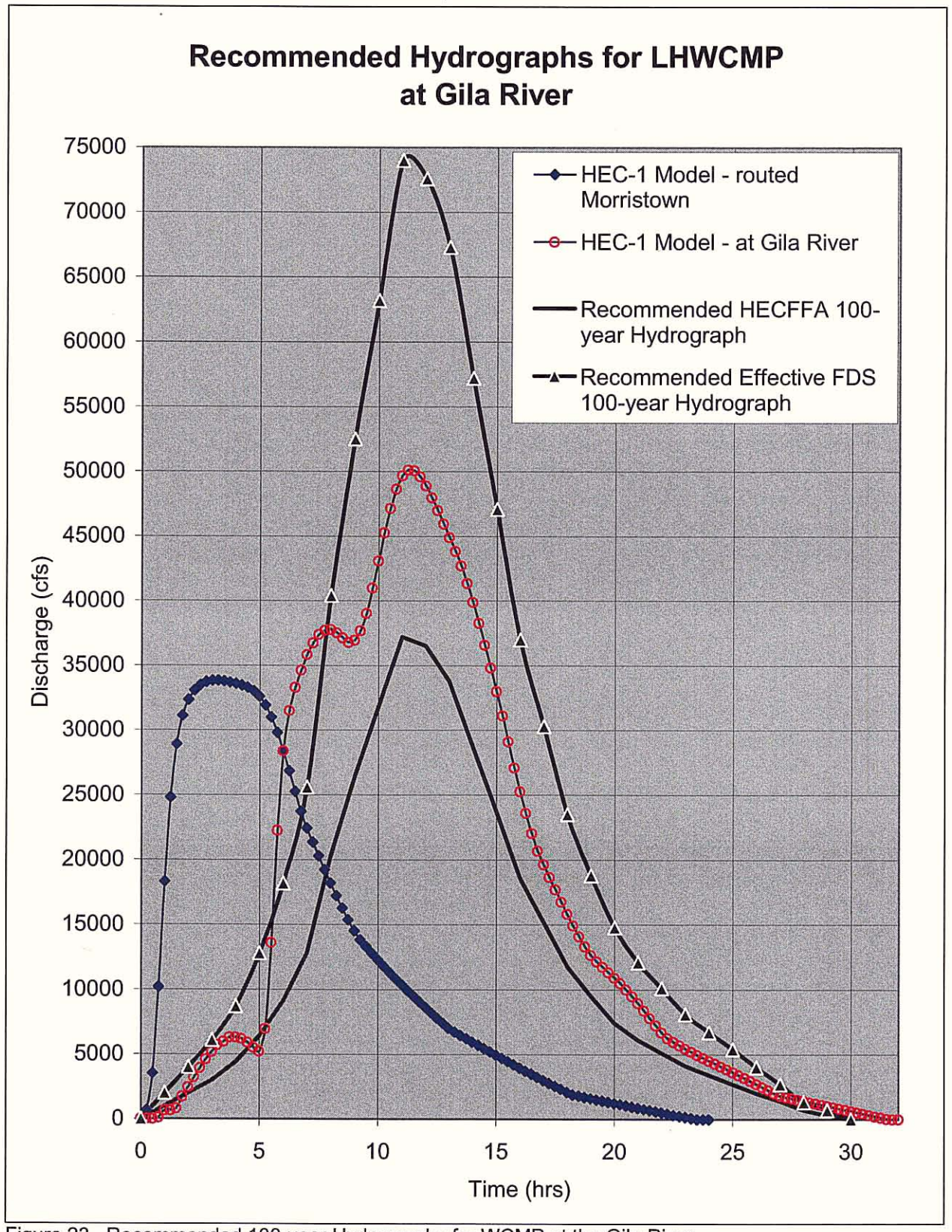


Figure 23. Recommended 100-year Hydrographs for WCMP at the Gila River

Hydrographs for other frequencies should be created by scaling to the 100-year hydrograph in Figure 23 based on a ratio of the peak discharge for each location and return period.

For Jackrabbit Wash, it is recommended that the results of the hydrology for the effective FIS by Burgess & Niple (1991) be used for the study reach from the CAP Canal to the Hassayampa River confluence. The 1991 HEC-1 result of 32,500 cfs should be used for the 100-year peak discharge. The HEC-1 model hydrograph could also be used if a design hydrograph is needed in the future (Figure 24).

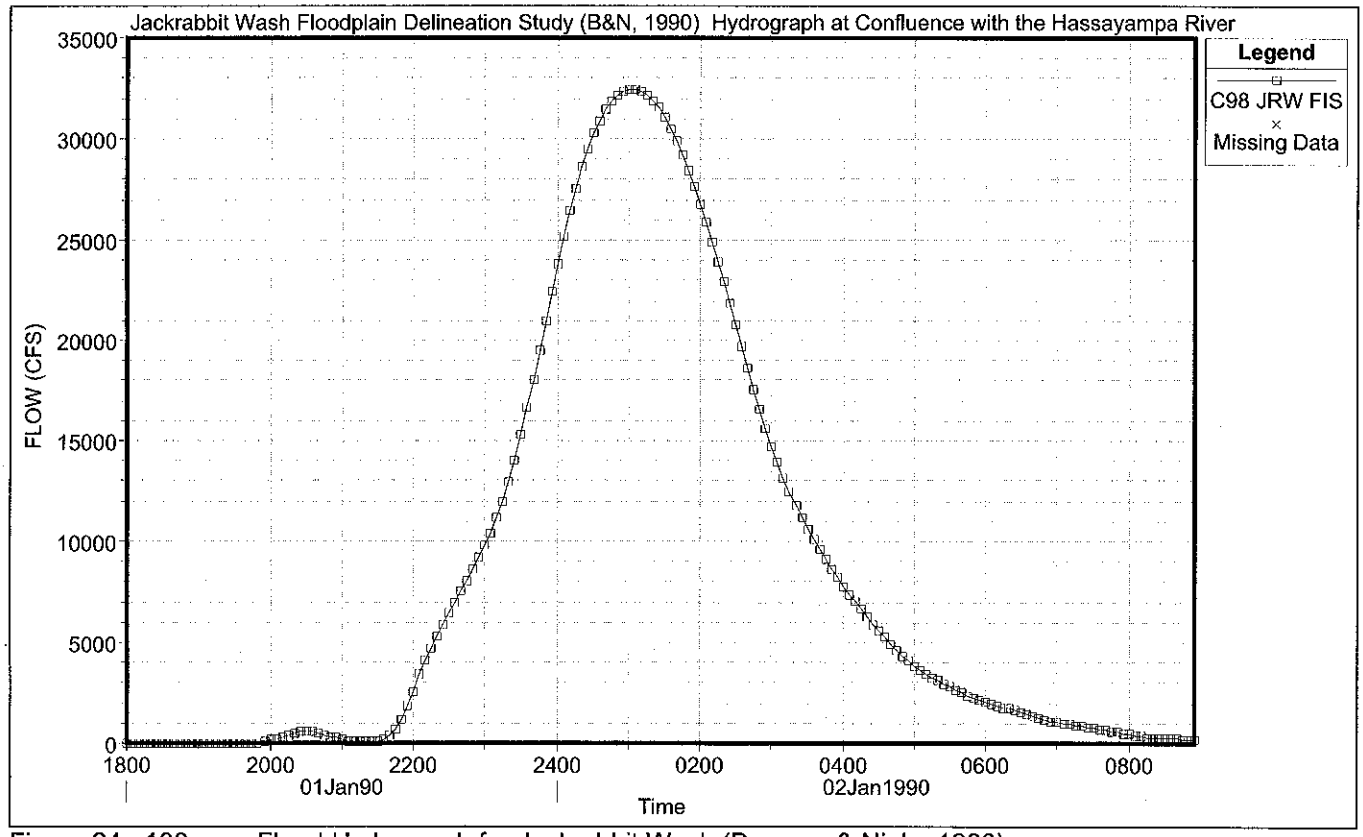


Figure 24. 100-year Flood Hydrograph for Jackrabbit Wash (Burgess & Niple, 1990)

The WCMP sediment transport analyses also call for evaluation of the observed period of record flow history. Figure 25 shows the mean daily discharge data for the period of record for the USGS gaging stations on the Hassayampa River. The data supply a nearly continuous record of flow on the river since 1937. There is a gap of data in the mid-1980s.

Specific recommendations for use of the period of record discharges in the sediment transport modeling will be made once the base model is constructed and tested. The model's sensitivity to discharge may dictate some adjustment to the mean daily flows for a period of record simulation.

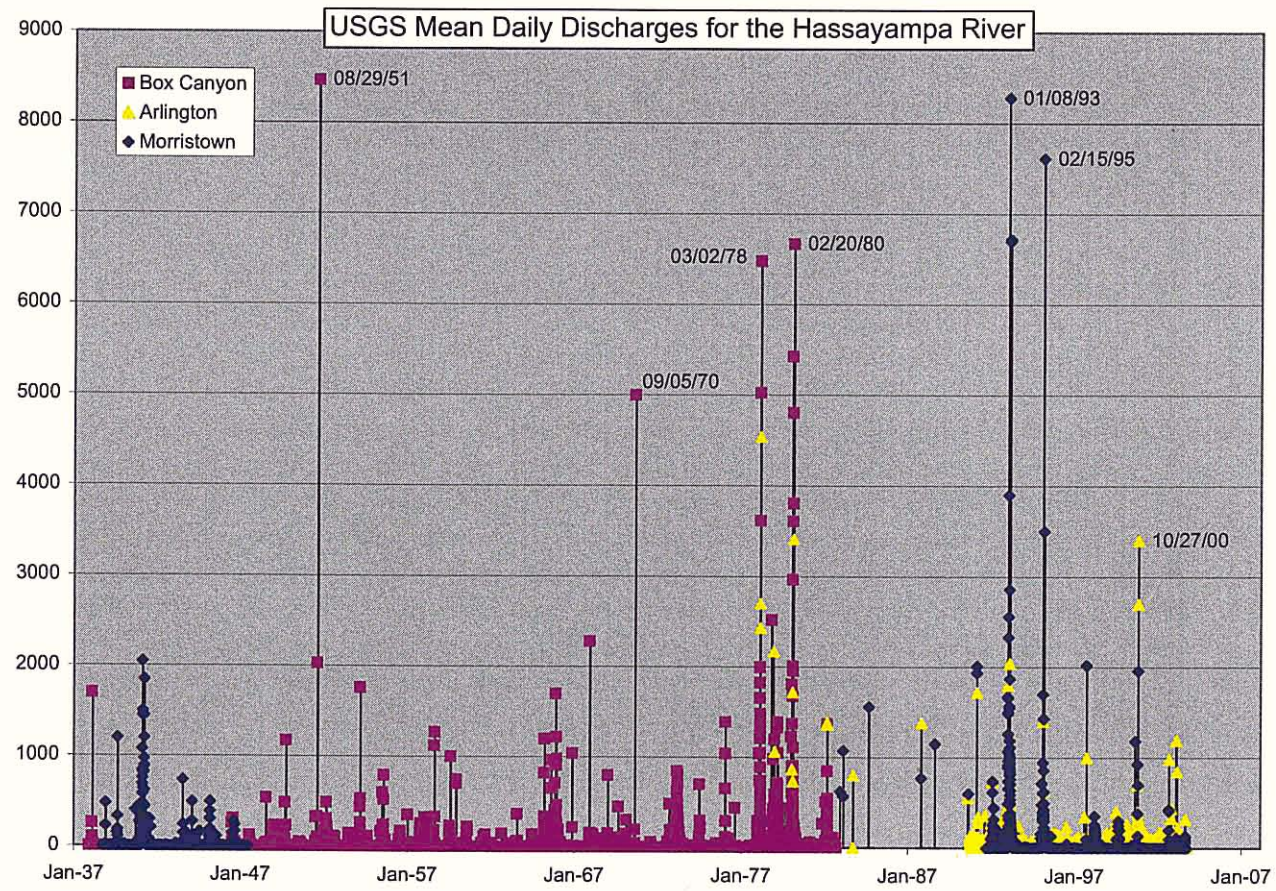


Figure 25. Period of Record USGS Mean Daily Discharges for the Hassayampa River

Future Conditions Discharges

Future conditions peak discharges were investigated with the simplified HEC-1 model. Future development was modeled solely through adjustment of the effective impervious area parameter (RTIMP) on the LG record in the model. RTIMP for all basins in the existing conditions model were assumed to be equal to zero. Table 26 shows the RTIMP values used in the future conditions model and the rationale for selection of the value.

Table 26. Future Conditions RTIMP Values

Subbasin	Future RTIMP	Note
H1	0	No significant development assumed
H2	5	Some development in the vicinity of greater Wickenburg
H3	10	Most extensive subdivision style development; some retention likely
H4	5	Large lot split style development likely; many hilly areas of Belmont and Vulture Mountains assumed without development
H5	10	Large lot split style development

Table 27 gives a comparison of the existing and future conditions results from the simplified HEC-1 models. The results show about a ten to fifteen percent increase in 100-year peak discharges as the result of development as modeled.

Table 27. Comparison of 100-year HEC-1 Results - Existing vs. Future Conditions

Location	Existing 100-year Peak	Future 100-year Peak	Difference (%)
H1	35,600	35,600	0
H2	38,200	41,500	8.6
C2 - Morristown	40,900	43,800	7.1
H3	17,200	20,100	16.9
C3 – U/S Jackrabbit Wash	38,800	43,400	11.9
H4	24,700	27,100	9.7
C4 – D/S Jackrabbit Wash	55,900	57,200	2.3
H5	6,310	7,150	13.3
C5 – at Gila River	50,100	57,500	14.8

Conclusions/Recommendations

Statistical analyses and synthetic rainfall-runoff modeling were performed for the Hassayampa River watershed. Peak discharge estimates for the 2-year through 100-year floods were computed. In addition, design hydrographs for use in the sediment transport modeling were constructed. Comparisons with the effective FDS and other previous studies was also made. The recommendations for the Hassayampa River and Jackrabbit Wash study reaches are summarized below.

Hassayampa

Peak discharge values for the WCMP study reach are summarized in Table 28 below. Again, the effective FDS numbers are recommended for continued use in the floodplain management of the lower Hassayampa River since they fall within the upper 95% confidence limits of the statistical analyses from the current study.

Table 28. Recommended Peak Discharges for the Lower Hassayampa WCMP, in cfs

Location	R.M.	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	Effective FDS
Morristown	43.8	3,000	9,000	16,000	26,000	34,000	43,000	61,600
CAP	28.0	2,900	8,600	15,000	24,400	32,200	40,900	60,100
Wagner Wash	21.0	2,800	8,400	14,500	23,700	31,400	40,000	59,400
Jackrabbit Wash	15.0	2,700	8,200	14,100	23,100	30,700	39,200	75,000
I-10	11.0	2,700	8,100	13,800	22,700	30,300	38,700	74,800
Old US 80	2.7	2,600	7,800	13,100	21,600	29,000	37,200	74,100
Gila River	0	2,600	7,800	13,100	21,600	29,000	37,200	74,000

The 100-year design hydrograph for sediment transport analyses was presented in Figure 23. Event specific hydrographs for other frequencies should be computed from the 100-year hydrograph based on the ratio of peak discharges shown in Table 28.

Jackrabbit Wash

The recommended 100-year peak discharge for use in the detailed floodplain delineation study is 32,500 cfs. This flow rate is recommended for adoption from the same Burgess & Niple (1991) hydrology study used in the detailed floodplain delineation study upstream of the CAP Canal.

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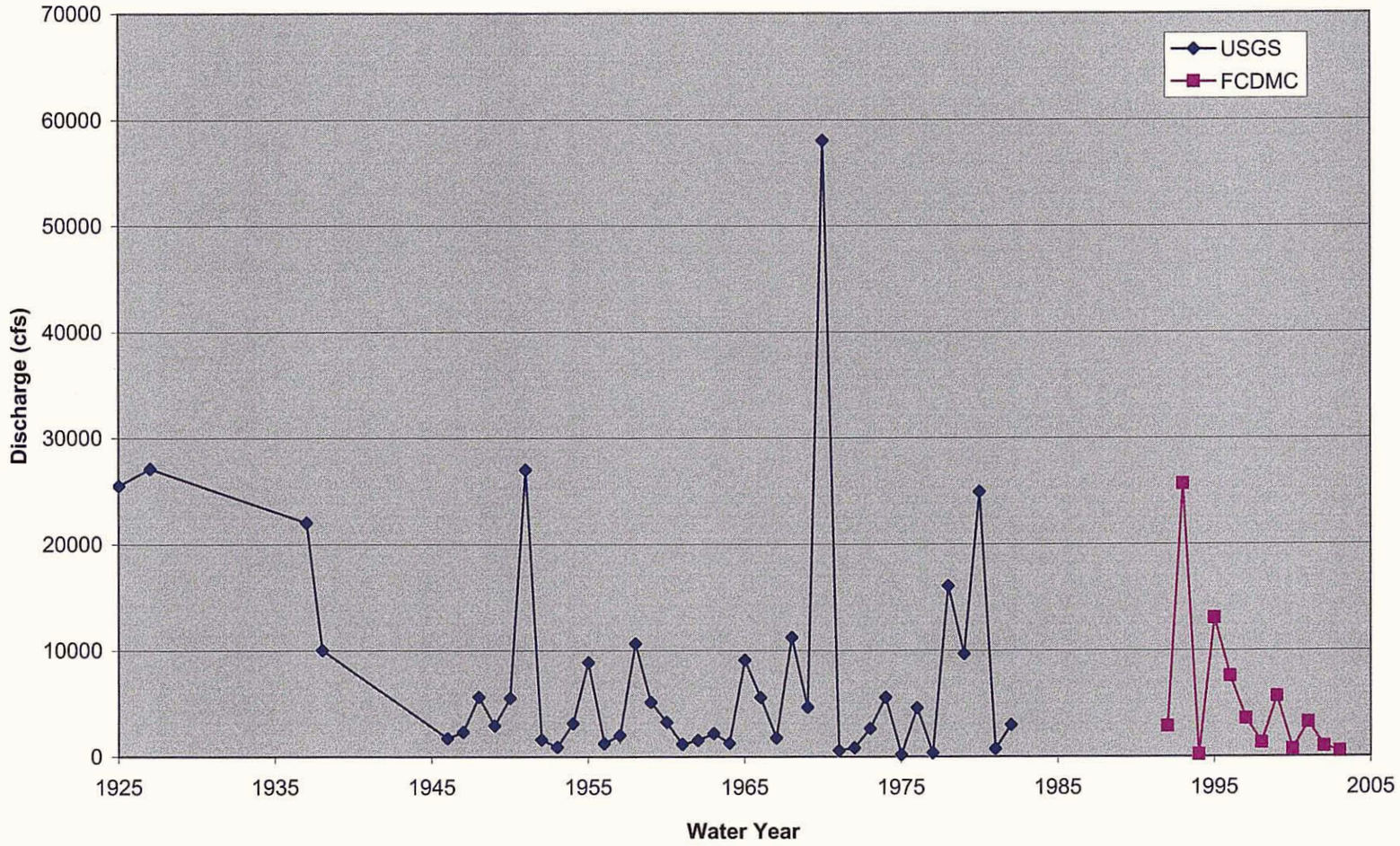
Appendices

Hassayampa River at Box Damsite (Box Canyon), near Wickenburg, AZ			
ID	9515500		
Date	Annual Peak Q, in cfs	Source	Notes
9191925	25500	USGS, Pope & others (1998)	Historic Peak
2161927	27100	USGS, Pope & others (1998)	Historic Peak
2071937	22000	USGS, Pope & others (1998)	Historic Peak
3031938	10000	USGS, Pope & others (1998)	
8111946	1710	USGS, Pope & others (1998)	
8081947	2300	USGS, Pope & others (1998)	
8051948	5600	USGS, Pope & others (1998)	
9261949	2910	USGS, Pope & others (1998)	
10181949	5500	USGS, Pope & others (1998)	
8291951	27000	USGS, Pope & others (1998)	Highest since 1927
12301951	1590	USGS, Pope & others (1998)	
7181953	865	USGS, Pope & others (1998)	
3231954	3090	USGS, Pope & others (1998)	
7231955	8840	USGS, Pope & others (1998)	
8181956	1210	USGS, Pope & others (1998)	
8101957	1980	USGS, Pope & others (1998)	
9051958	10600	USGS, Pope & others (1998)	
8241959	5110	USGS, Pope & others (1998)	
12261959	3210	USGS, Pope & others (1998)	
8191961	1150	USGS, Pope & others (1998)	
9211962	1510	USGS, Pope & others (1998)	
8171963	2150	USGS, Pope & others (1998)	
7141964	1230	USGS, Pope & others (1998)	
9021965	9060	USGS, Pope & others (1998)	
12101965	5560	USGS, Pope & others (1998)	
12071966	1740	USGS, Pope & others (1998)	
12191967	11200	USGS, Pope & others (1998)	
9131969	4630	USGS, Pope & others (1998)	
9051970	58000	USGS, Pope & others (1998)	Highest since 1890
8251971	556	USGS, Pope & others (1998)	
8271972	800	USGS, Pope & others (1998)	
10071972	2600	USGS, Pope & others (1998)	
7201974	5560	USGS, Pope & others (1998)	
7281975	154	USGS, Pope & others (1998)	
2091976	4560	USGS, Pope & others (1998)	
8151977	315	USGS, Pope & others (1998)	
3021978	16000	USGS, Pope & others (1998)	
3281979	9640	USGS, Pope & others (1998)	
2191980	24900	USGS, Pope & others (1998)	
7101981	698	USGS, Pope & others (1998)	
3151982	2940	USGS, Pope & others (1998)	
2131992	2829	FCDMC	
1081993	25640	FCDMC	Based on high water marks in stilling well.
9031994	175	FCDMC	
2151995	13000	FCDMC	
7241996	7550	FCDMC	
9261997	3550	FCDMC	
3291998	1254	FCDMC	
8311999	5650	FCDMC	

Hassayampa River at Box Damsite (Box Canyon), near Wickenburg, AZ			
ID	9515500		
Date	Annual Peak Q, in cfs	Source	Notes
8292000	636	FCDMC	
10272000	3215	FCDMC	
9072002	950	FCDMC	
2132003	467	FCDMC	

USGS Gage # 09515500 - Box Damsite Annual Peak Flow (1925-1982)
FCDMC Gage # 5308 - Box Damsite Peak Annual Flow (1992-2003)



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*              FFA                 *      *                                  *
*     FLOOD FREQUENCY ANALYSIS     *      *   U.S. ARMY CORPS OF ENGINEERS   *
*     PROGRAM DATE:  FEB 1995      *      * THE HYDROLOGIC ENGINEERING CENTER *
*          VERSION:  3.1           *      *         609 SECOND STREET        *
*     RUN  DATE   AND   TIME:      *      *      DAVIS, CALIFORNIA 95616     *
*        08 NOV 04    11:56:21     *      *          (916) 756-1104          *
*                                  *      *                                  *
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                      Unit:  71;  DSS Version: 6-JB


**TITLE RECORD(S)**
TT    HASSAYAMPARIVER AT BOX DAM SITE NR WICKENBURG, AZ
TT    LOCATED 5.5 MILES NORTHEAST OF WICKENBURG
TT    DA = 417   PERIOD OF RECORD 1925-1982,1993-2003

**JOB RECORD(S)**
     IPPC   ISKFX  IPROUT    IFMT    IWYR   IUNIT   ISMRY   IPNCH    IREG
J1     1       2       0       1       0       1       3       0       0

       A       B  CLIMIT  NDSSCV    IEXT
J2   .00     .00     .05       0       0

**FREQUENCY ARRAY**
FR    13    .200    .500   1.000   2.000   4.000   5.000  10.000  20.000  50.000
FR80.000  90.000  95.000  99.000

**STATION IDENTIFICATION**
ID     09515500

**GENERALIZED SKEW**
     ISTN   GGMSE    SKEW
GS   5155    .000    -.11

**SPECIAL STATION INFORMATION**
    IYRA    IYRL  HITHRS  LOTHRS    LOGT    NDEC    NSIG
SI  1890       0  58000.      0.       0       0       0

**HISTORIC EVENTS**
QH   9  19  1925    25500.
QH   2  16  1927    27100.
QH   2   7  1937    22000.

**SYSTEMATIC EVENTS**
     50 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

PRELIMINARY RESULTS

-PLOTTING POSITIONS- 09515500

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
3	3	1938	10000.	1	1970	58000.	1.96
8	11	1946	1710.	2	1951	27000.	3.92
8	8	1947	2300.	3	1993	25640.	5.88
8	5	1948	5600.	4	1980	24900.	7.84
9	26	1949	2910.	5	1978	16000.	9.80
10	18	1949	5500.	6	1995	13000.	11.76
8	29	1951	27000.	7	1968	11200.	13.73
12	30	1951	1590.	8	1958	10600.	15.69
7	18	1953	865.	9	1938	10000.	17.65
3	23	1954	3090.	10	1979	9640.	19.61
7	23	1955	8840.	11	1965	9060.	21.57
8	18	1956	1210.	12	1955	8840.	23.53
8	10	1957	1980.	13	1996	7550.	25.49
9	5	1958	10600.	14	1999	5650.	27.45
8	24	1959	5110.	15	1948	5600.	29.41
12	26	1959	3210.	16	1966	5560.	31.37
8	19	1961	1150.	17	1974	5560.	33.33
9	21	1962	1510.	18	1950	5500.	35.29
8	17	1963	2150.	19	1959	5110.	37.25
7	14	1964	1230.	20	1969	4630.	39.22
9	2	1965	9060.	21	1976	4560.	41.18
12	10	1965	5560.	22	1997	3550.	43.14
12	7	1966	1740.	23	2001	3215.	45.10
12	19	1967	11200.	24	1960	3210.	47.06
9	13	1969	4630.	25	1954	3090.	49.02
9	5	1970	58000.	26	1982	2940.	50.98
8	25	1971	556.	27	1949	2910.	52.94
8	27	1972	800.	28	1992	2829.	54.90
10	7	1972	2600.	29	1973	2600.	56.86
7	20	1974	5560.	30	1947	2300.	58.82
7	28	1975	154.	31	1963	2150.	60.78
2	9	1976	4560.	32	1957	1980.	62.75
8	15	1977	315.	33	1967	1740.	64.71
3	2	1978	16000.	34	1946	1710.	66.67
3	28	1979	9640.	35	1952	1590.	68.63
2	19	1980	24900.	36	1962	1510.	70.59
7	10	1981	698.	37	1998	1254.	72.55
3	15	1982	2940.	38	1964	1230.	74.51
2	13	1992	2829.	39	1956	1210.	76.47
1	8	1993	25640.	40	1961	1150.	78.43
9	3	1994	175.	41	2002	950.	80.39
2	15	1995	13000.	42	1953	865.	82.35
7	24	1996	7550.	43	1972	800.	84.31
9	26	1997	3550.	44	1981	698.	86.27
3	29	1998	1254.	45	2000	636.	88.24
8	31	1999	5650.	46	1971	556.	90.20
8	29	2000	636.	47	2003	467.	92.16
10	27	2000	3215.	48	1977	315.	94.12
9	7	2002	950.	49	1994	175.	96.08
2	13	2003	467.	50	1975	154.	98.04

-SKEW WEIGHTING -

BASED ON 50 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .110
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

PRELIMINARY RESULTS

-FREQUENCY CURVE- 09515500

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95
105000.	128000.	.20	229000.	58700.
73600.	85800.	.50	151000.	43100.
54800.	61900.	1.00	107000.	33200.
39600.	43400.	2.00	72900.	24900.
27500.	29300.	4.00	47600.	18000.
24100.	25600.	5.00	41000.	16000.
15500.	16000.	10.00	24500.	10700.
8940.	9120.	20.00	13200.	6440.
3060.	3060.	50.00	4150.	2250.
1010.	990.	80.00	1400.	686.
560.	537.	90.00	811.	351.
341.	319.	95.00	519.	198.
132.	115.	99.00	224.	66.

SYSTEMATIC STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.4752	HISTORIC EVENTS	0
STANDARD DEV	.5625	HIGH OUTLIERS	0
COMPUTED SKEW	-.1078	LOW OUTLIERS	0
REGIONAL SKEW	-.1100	ZERO OR MISSING	0
ADOPTED SKEW	-.1084	SYSTEMATIC EVENTS	50

HISTORIC RECORD FOR 9 19 1925 WITH FLOW OF 25500.
BELOW HIGH THRESHOLD OF 58000.
- PEAK USED FOR PERIOD OF KNOWLEDGE ONLY

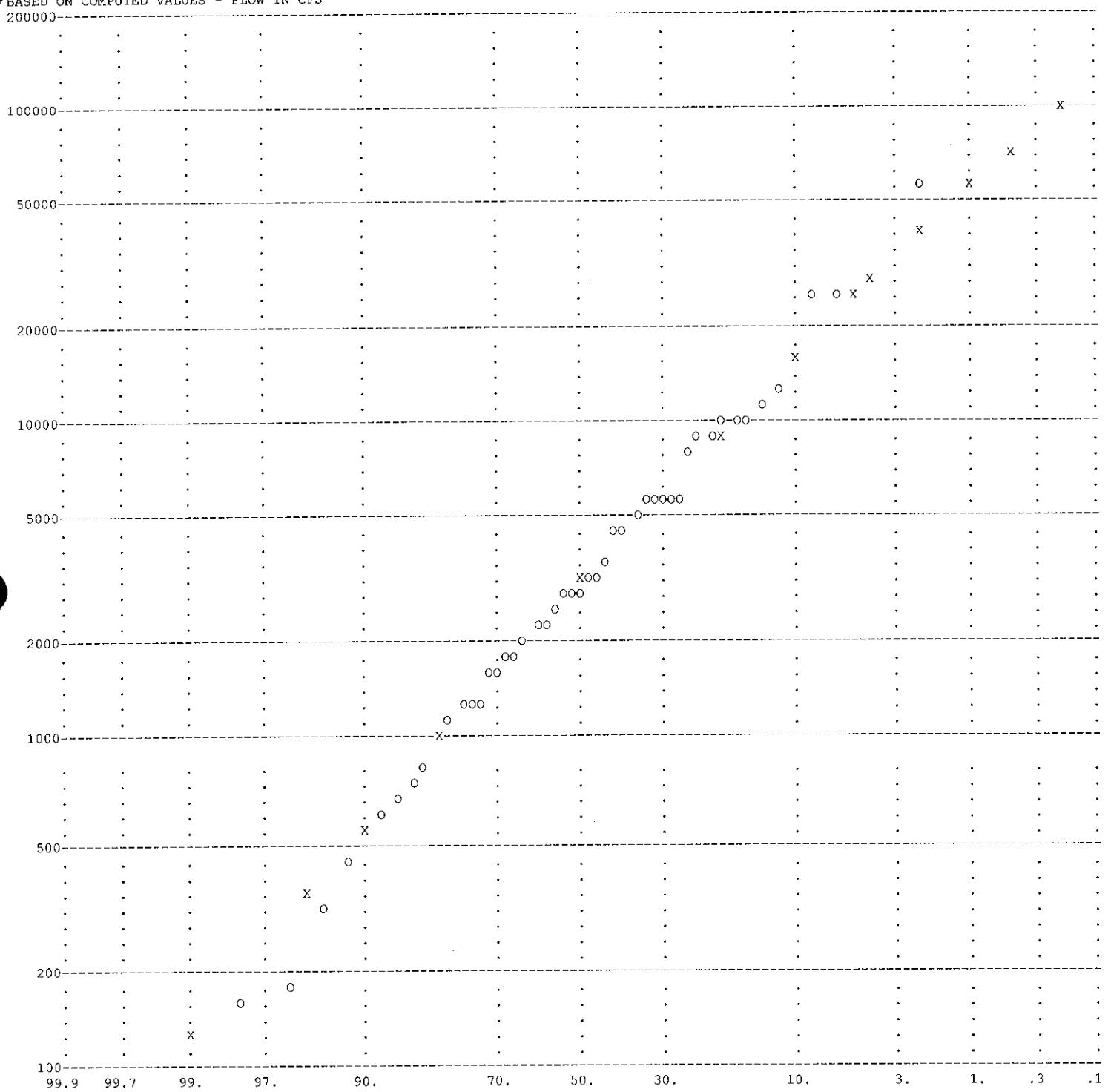
HISTORIC RECORD FOR 2 16 1927 WITH FLOW OF 27100.
BELOW HIGH THRESHOLD OF 58000.
- PEAK USED FOR PERIOD OF KNOWLEDGE ONLY

HISTORIC RECORD FOR 2 7 1937 WITH FLOW OF 22000.
BELOW HIGH THRESHOLD OF 58000.
- PEAK USED FOR PERIOD OF KNOWLEDGE ONLY

Hassayampa River at Box Canyon, 09515500, FCD 5308

PRELIMINARY RESULTS

-FREQUENCY PLOT - 09515500
BASED ON COMPUTED VALUES - FLOW IN CFS



PERCENT CHANCE EXCEEDANCE

LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

FINAL RESULTS

-PLOTTING POSITIONS- 09515500

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
3	3	1938	10000.	1	1970	58000.	.87
8	11	1946	1710.	2	1951	27000.	2.31
8	8	1947	2300.	3	1993	25640.	4.31
8	5	1948	5600.	4	1980	24900.	6.32
9	26	1949	2910.	5	1978	16000.	8.32
10	18	1949	5500.	6	1995	13000.	10.33
8	29	1951	27000.	7	1968	11200.	12.33
12	30	1951	1590.	8	1958	10600.	14.34
7	18	1953	865.	9	1938	10000.	16.34
3	23	1954	3090.	10	1979	9640.	18.35
7	23	1955	8840.	11	1965	9060.	20.35
8	18	1956	1210.	12	1955	8840.	22.36
8	10	1957	1980.	13	1996	7550.	24.37
9	5	1958	10600.	14	1999	5650.	26.37
8	24	1959	5110.	15	1948	5600.	28.38
12	26	1959	3210.	16	1966	5560.	30.38
8	19	1961	1150.	17	1974	5560.	32.39
9	21	1962	1510.	18	1950	5500.	34.39
8	17	1963	2150.	19	1959	5110.	36.40
7	14	1964	1230.	20	1969	4630.	38.40
9	2	1965	9060.	21	1976	4560.	40.41
12	10	1965	5560.	22	1997	3550.	42.41
12	7	1966	1740.	23	2001	3215.	44.42
12	19	1967	11200.	24	1960	3210.	46.42
9	13	1969	4630.	25	1954	3090.	48.43
9	5	1970	58000.	26	1982	2940.	50.43
8	25	1971	556.	27	1949	2910.	52.44
8	27	1972	800.	28	1992	2829.	54.45
10	7	1972	2600.	29	1973	2600.	56.45
7	20	1974	5560.	30	1947	2300.	58.46
7	28	1975	154.	31	1963	2150.	60.46
2	9	1976	4560.	32	1957	1980.	62.47
8	15	1977	315.	33	1967	1740.	64.47
3	2	1978	16000.	34	1946	1710.	66.48
3	28	1979	9640.	35	1952	1590.	68.48
2	19	1980	24900.	36	1962	1510.	70.49
7	10	1981	698.	37	1998	1254.	72.49
3	15	1982	2940.	38	1964	1230.	74.50
2	13	1992	2829.	39	1956	1210.	76.50
1	8	1993	25640.	40	1961	1150.	78.51
9	3	1994	175.	41	2002	950.	80.51
2	15	1995	13000.	42	1953	865.	82.52
7	24	1996	7550.	43	1972	800.	84.53
9	26	1997	3550.	44	1981	698.	86.53
3	29	1998	1254.	45	2000	636.	88.54
8	31	1999	5650.	46	1971	556.	90.54
8	29	2000	636.	47	2003	467.	92.55
10	27	2000	3215.	48	1977	315.	94.55
9	7	2002	950.	49	1994	175.	96.56
2	13	2003	467.	50	1975	154.	98.56

NOTE- PLOTTING POSITIONS BASED ON-HISTORIC PERIOD (H) = 114
NUMBER OF HISTORIC EVENTS PLUS HIGH OUTLIERS(Z) = 1
WEIGHTING FACTOR FOR SYSTEMATIC EVENTS (W) = 2.3061

-OUTLIER TESTS -

LOW OUTLIER TEST

BASED ON 50 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.768

0 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF 82.8

HIGH OUTLIER TEST

BASED ON 50 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.768

1 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF 107710.
OR INPUT BASE OF 58000.

NOTE - COLLECTION OF HISTORICAL INFORMATION AND COMPARISONS WITH SIMILAR DATA SETS SHOULD BE EXPLORED IF NOT INCORPORATED IN THIS ANALYSIS.

STATISTICS AND FREQUENCY CURVE ADJUSTED FOR 1 HIGH OUTLIER(S)
AND 0 HISTORIC EVENT(S)

-SKEW WEIGHTING -

BASED ON 114 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .055
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

FINAL RESULTS

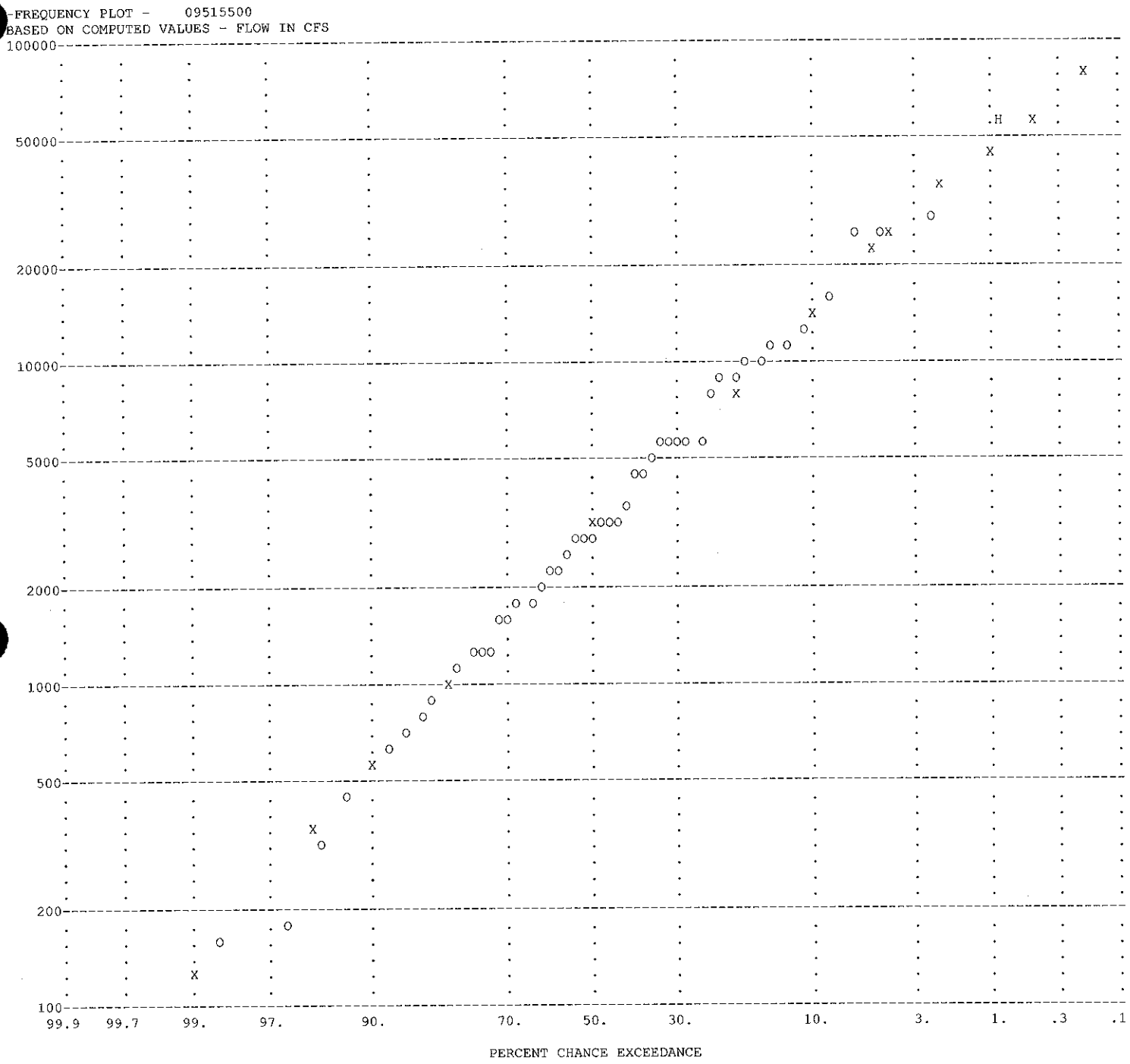
-FREQUENCY CURVE- 09515500

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95
81800.	98000.	.20	171000.	47300.
59400.	68300.	.50	117000.	35700.
45400.	50700.	1.00	85700.	28200.
33700.	36700.	2.00	60400.	21600.
24000.	25500.	4.00	40700.	16000.
21300.	22500.	5.00	35500.	14400.
14100.	14600.	10.00	21900.	9840.
8380.	8540.	20.00	12200.	6100.
3000.	3000.	50.00	4030.	2230.
1020.	995.	80.00	1390.	698.
566.	543.	90.00	811.	360.
345.	323.	95.00	519.	203.
133.	114.	99.00	222.	66.

ADJUSTED STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.4604	HISTORIC EVENTS	0
STANDARD DEV	.5450	HIGH OUTLIERS	1
COMPUTED SKEW	-.1885	LOW OUTLIERS	0
REGIONAL SKEW	-.1100	ZERO OR MISSING	0
ADOPTED SKEW	-.1763	SYSTEMATIC EVENTS	50
		HISTORIC PERIOD	114

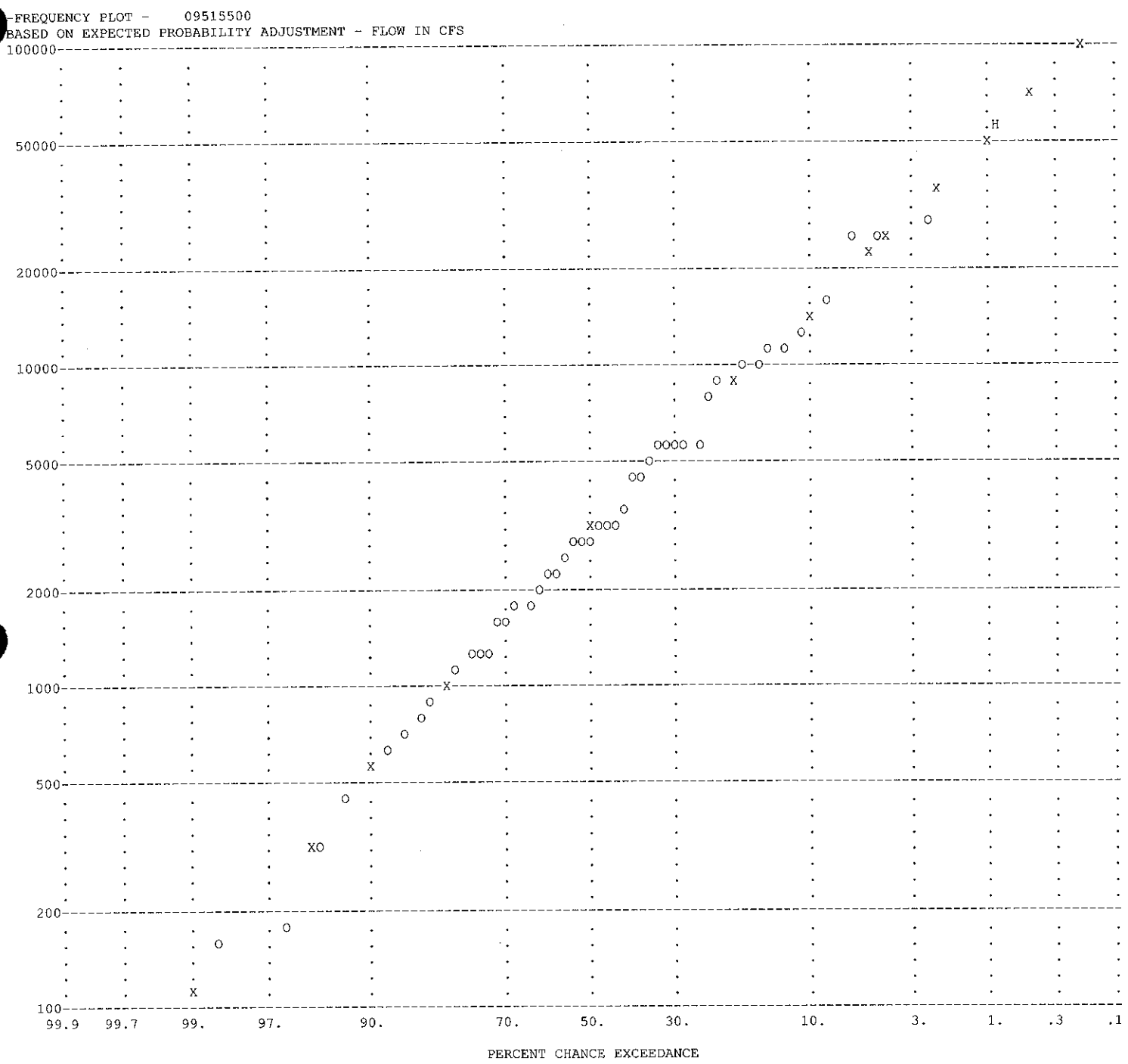
FINAL RESULTS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

Hassayampa River at Box Canyon, 09515500, FCD 5308

FINAL RESULTS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

TABLE 1. SUMMARY OF STATISTICS -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	MEAN LOG	STD DEV	SKEW ADOPT	SKEW COMP	SKEW GENRL	HIST EVENT	OUTLIER HI	OUTLIER LO	ZERO/ MSNG	
5155	09515500		50	50	0	3.475	.563	-.11	-.108	-.11	0	0	0	0	**
5155	09515500		50	50	114	3.460	.545	-.18	-.188	-.11	0	1	0	0	

** PRELIMINARY STATISTICS

TABLE 2. SUMMARY OF FREQUENCY CURVE ORDINATES -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	PERCENT CHANCE EXCEEDANCE 10.	5.	2.	1.	.5	.2
5155	09515500		50	50	0	24142	27458	39582	54805	73598	104816
5155	09515500		50	50	114	21315	24024	33691	45419	59429	81845

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+ END OF RUN            +
+ NORMAL STOP IN FFA    +
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************************************      ************************************
*              FFA                 *      *                                  *
*     FLOOD FREQUENCY ANALYSIS     *      *   U.S. ARMY CORPS OF ENGINEERS   *
*     PROGRAM DATE:  FEB 1995      *      * THE HYDROLOGIC ENGINEERING CENTER *
*          VERSIONS:  3.1          *      *         609 SECOND STREET        *
*     RUN  DATE   AND   TIME:      *      *      DAVIS, CALIFORNIA 95616     *
*        08 NOV 04    11:56:49     *      *          (916) 756-1104          *
*                                  *      *                                  *
************************************      ************************************


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                      Unit:  71;  DSS Version: 6-JB

**TITLE RECORD(S)**
TT    HASSAYAMPARIVER AT BOX DAM SITE NR WICKENBURG, AZ
TT    LOCATED 5.5 MILES NORTHEAST OF WICKENBURG
TT    DA = 417   PERIOD OF RECORD 1925-1982,1993-2003

**JOB RECORD(S)**
     IPPC   ISKFX  IPROUT    IFMT    IWYR   IUNIT   ISMRY   IPNCH    IREG
J1     1       2       0       1       0       1       3       0       0

       A       B  CLIMIT  NDSSCV    IEXT
J2   .00     .00     .05       0       0

**FREQUENCY ARRAY**
FR    13    .200    .500   1.000   2.000   4.000   5.000  10.000  20.000  50.000
FR80.000  90.000  95.000  99.000

**STATION IDENTIFICATION**
ID     09515500

**GENERALIZED SKEW**
     ISTN   GGMSE    SKEW
GS   5155    .000    -.11

**HISTORIC EVENTS**
QH   9  19  1925    25500.
QH   2  16  1927    27100.
QH   2   7  1937    22000.

**SYSTEMATIC EVENTS**
     50 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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Historic peaks treated as in HECWRC

PRELIMINARY RESULTS

-PLOTTING POSITIONS- 09515500

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
3	3	1938	10000.	1	1970	58000.	1.96
8	11	1946	1710.	2	1951	27000.	3.92
8	8	1947	2300.	3	1993	25640.	5.88
8	5	1948	5600.	4	1980	24900.	7.84
9	26	1949	2910.	5	1978	16000.	9.80
10	18	1949	5500.	6	1995	13000.	11.76
8	29	1951	27000.	7	1968	11200.	13.73
12	30	1951	1590.	8	1958	10600.	15.69
7	18	1953	865.	9	1938	10000.	17.65
3	23	1954	3090.	10	1979	9640.	19.61
7	23	1955	8840.	11	1965	9060.	21.57
8	18	1956	1210.	12	1955	8840.	23.53
8	10	1957	1980.	13	1996	7550.	25.49
9	5	1958	10600.	14	1999	5650.	27.45
8	24	1959	5110.	15	1948	5600.	29.41
12	26	1959	3210.	16	1966	5560.	31.37
8	19	1961	1150.	17	1974	5560.	33.33
9	21	1962	1510.	18	1950	5500.	35.29
8	17	1963	2150.	19	1959	5110.	37.25
7	14	1964	1230.	20	1969	4630.	39.22
9	2	1965	9060.	21	1976	4560.	41.18
12	10	1965	5560.	22	1997	3550.	43.14
12	7	1966	1740.	23	2001	3215.	45.10
12	19	1967	11200.	24	1960	3210.	47.06
9	13	1969	4630.	25	1954	3090.	49.02
9	5	1970	58000.	26	1982	2940.	50.98
8	25	1971	556.	27	1949	2910.	52.94
8	27	1972	800.	28	1992	2829.	54.90
10	7	1972	2600.	29	1973	2600.	56.86
7	20	1974	5560.	30	1947	2300.	58.82
7	28	1975	154.	31	1963	2150.	60.78
2	9	1976	4560.	32	1957	1980.	62.75
8	15	1977	315.	33	1967	1740.	64.71
3	2	1978	16000.	34	1946	1710.	66.67
3	28	1979	9640.	35	1952	1590.	68.63
2	19	1980	24900.	36	1962	1510.	70.59
7	10	1981	698.	37	1998	1254.	72.55
3	15	1982	2940.	38	1964	1230.	74.51
2	13	1992	2829.	39	1956	1210.	76.47
1	8	1993	25640.	40	1961	1150.	78.43
9	3	1994	175.	41	2002	950.	80.39
2	15	1995	13000.	42	1953	865.	82.35
7	24	1996	7550.	43	1972	800.	84.31
9	26	1997	3550.	44	1981	698.	86.27
3	29	1998	1254.	45	2000	636.	88.24
8	31	1999	5650.	46	1971	556.	90.20
8	29	2000	636.	47	2003	467.	92.16
10	27	2000	3215.	48	1977	315.	94.12
9	7	2002	950.	49	1994	175.	96.08
2	13	2003	467.	50	1975	154.	98.04

-SKEW WEIGHTING -

BASED ON 50 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .110
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

Historic peaks treated as in HECWRC

PRELIMINARY RESULTS

-FREQUENCY CURVE- 09515500

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY FLOW IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	CONFIDENCE LIMITS .95 FLOW IN CFS
105000.	128000.	.20	229000.	58700.
73600.	85800.	.50	151000.	43100.
54800.	61900.	1.00	107000.	33200.
39600.	43400.	2.00	72900.	24900.
27500.	29300.	4.00	47600.	18000.
24100.	25600.	5.00	41000.	16000.
15500.	16000.	10.00	24500.	10700.
8940.	9120.	20.00	13200.	6440.
3060.	3060.	50.00	4150.	2250.
1010.	990.	80.00	1400.	686.
560.	537.	90.00	811.	351.
341.	319.	95.00	519.	198.
132.	115.	99.00	224.	66.

SYSTEMATIC STATISTICS

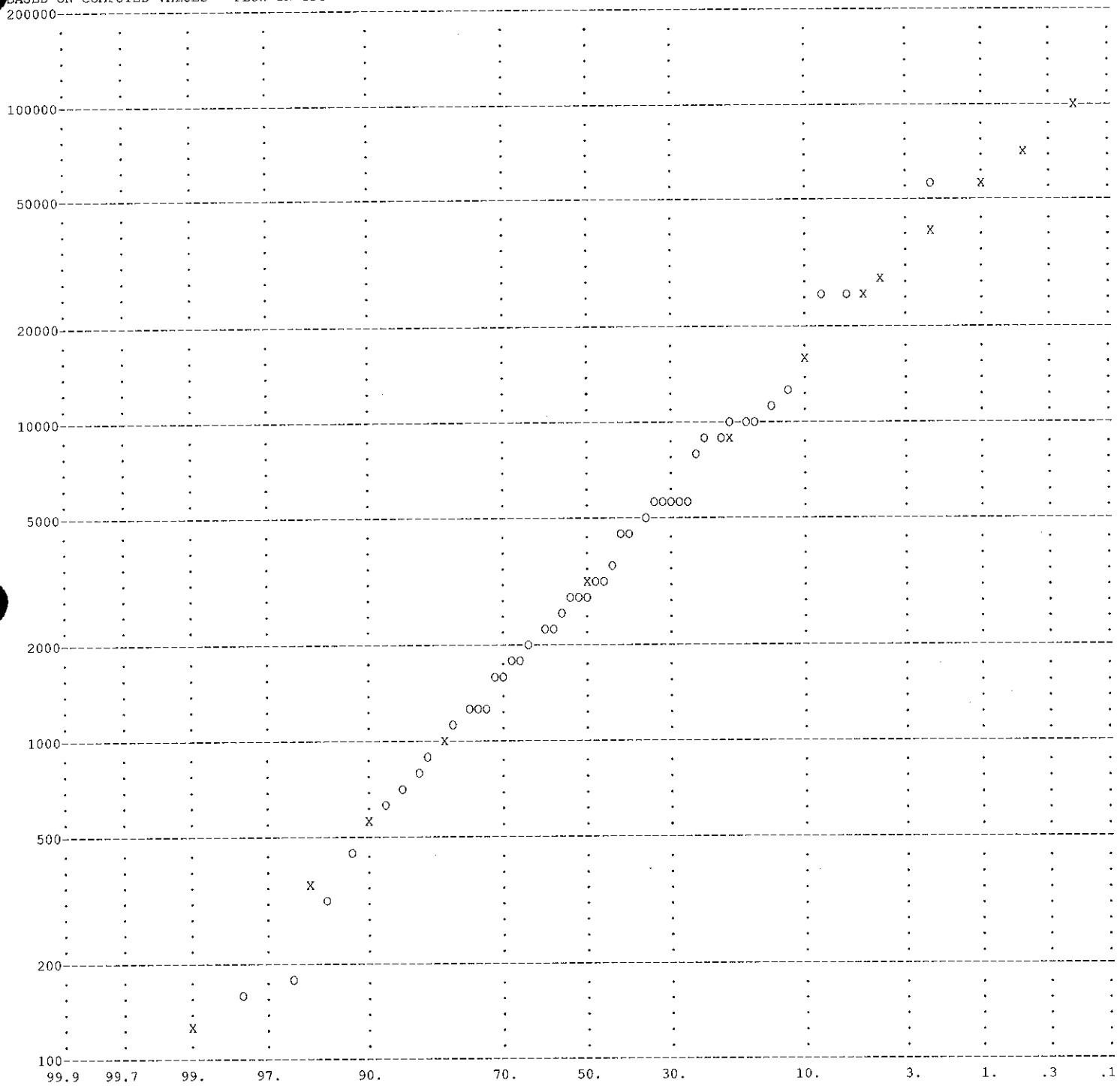
LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.4752	HISTORIC EVENTS	0
STANDARD DEV	.5625	HIGH OUTLIERS	0
COMPUTED SKEW	-.1078	LOW OUTLIERS	0
REGIONAL SKEW	-.1100	ZERO OR MISSING	0
ADOPTED SKEW	-.1084	SYSTEMATIC EVENTS	50

Historic peaks treated as in HECWRC

Hassayampa River at Box Canyon, 09515500, FCD 5308

PRELIMINARY RESULTS

-FREQUENCY PLOT - 09515500
BASED ON COMPUTED VALUES - FLOW IN CFS



PERCENT CHANCE EXCEEDANCE

LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

Historic peaks treated as in HECWRC

FINAL RESULTS

-PLOTTING POSITIONS- 09515500

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
9	19	1925	25500.	1	1970	58000.	1.25
2	16	1927	27100.	2	1927	27100.	2.50
2	7	1937	22000.	3	1951	27000.	3.75
3	3	1938	10000.	4	1993	25640.	5.00
8	11	1946	1710.	5	1925	25500.	6.25
8	8	1947	2300.	6	1980	24900.	7.50
8	5	1948	5600.	7	1937	22000.	8.75
9	26	1949	2910.	8	1978	16000.	10.35
10	18	1949	5500.	9	1995	13000.	12.31
8	29	1951	27000.	10	1968	11200.	14.27
12	30	1951	1590.	11	1958	10600.	16.22
7	18	1953	865.	12	1938	10000.	18.18
3	23	1954	3090.	13	1979	9640.	20.14
7	23	1955	8840.	14	1965	9060.	22.09
8	18	1956	1210.	15	1955	8840.	24.05
8	10	1957	1980.	16	1996	7550.	26.01
9	5	1958	10600.	17	1999	5650.	27.96
8	24	1959	5110.	18	1948	5600.	29.92
12	26	1959	3210.	19	1974	5560.	31.88
8	19	1961	1150.	20	1966	5560.	33.83
9	21	1962	1510.	21	1950	5500.	35.79
8	17	1963	2150.	22	1959	5110.	37.74
7	14	1964	1230.	23	1969	4630.	39.70
9	2	1965	9060.	24	1976	4560.	41.66
12	10	1965	5560.	25	1997	3550.	43.61
12	7	1966	1740.	26	2001	3215.	45.57
12	19	1967	11200.	27	1960	3210.	47.53
9	13	1969	4630.	28	1954	3090.	49.48
9	5	1970	58000.	29	1982	2940.	51.44
8	25	1971	556.	30	1949	2910.	53.40
8	27	1972	800.	31	1992	2829.	55.35
10	7	1972	2600.	32	1973	2600.	57.31
7	20	1974	5560.	33	1947	2300.	59.27
7	28	1975	154.	34	1963	2150.	61.22
2	9	1976	4560.	35	1957	1980.	63.18
8	15	1977	315.	36	1967	1740.	65.14
3	2	1978	16000.	37	1946	1710.	67.09
3	28	1979	9640.	38	1952	1590.	69.05
2	19	1980	24900.	39	1962	1510.	71.01
7	10	1981	698.	40	1998	1254.	72.96
3	15	1982	2940.	41	1964	1230.	74.92
2	13	1992	2829.	42	1956	1210.	76.88
1	8	1993	25640.	43	1961	1150.	78.83
9	3	1994	175.	44	2002	950.	80.79
2	15	1995	13000.	45	1953	865.	82.74
7	24	1996	7550.	46	1972	800.	84.70
9	26	1997	3550.	47	1981	698.	86.66
3	29	1998	1254.	48	2000	636.	88.61
8	31	1999	5650.	49	1971	556.	90.57
8	29	2000	636.	50	2003	467.	92.53
10	27	2000	3215.	51	1977	315.	94.48
9	7	2002	950.	52	1994	175.	96.44
2	13	2003	467.	53	1975	154.	98.40

NOTE- PLOTTING POSITIONS BASED ON-HISTORIC PERIOD (H) = 79
NUMBER OF HISTORIC EVENTS PLUS HIGH OUTLIERS(Z) = 7
WEIGHTING FACTOR FOR SYSTEMATIC EVENTS (W) = 1.5652

-OUTLIER TESTS -

LOW OUTLIER TEST

BASED ON 50 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.768

0 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF 82.8

HIGH OUTLIER TEST

BASED ON 50 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.768

4 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF 107710.
OR INPUT BASE OF 22000.

NOTE - INPUT BASE NOT SPECIFIED
THEREFORE BASE SET TO DEFAULT (LOWEST HISTORIC PEAK)

NOTE - COLLECTION OF HISTORICAL INFORMATION AND COMPARISONS
WITH SIMILAR DATA SETS SHOULD BE EXPLORED IF NOT
INCORPORATED IN THIS ANALYSIS.

STATISTICS AND FREQUENCY CURVE ADJUSTED FOR 4 HIGH OUTLIER(S)
AND 3 HISTORIC EVENT(S)

-SKEW WEIGHTING -

BASED ON 79 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .075
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

FINAL RESULTS

-FREQUENCY CURVE- 09515500

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95
97700.	118000.	.20	210000.	55400.
69700.	80700.	.50	141000.	41100.
52500.	59000.	1.00	101000.	32100.
38400.	41900.	2.00	70100.	24300.
26900.	28700.	4.00	46400.	17700.
23800.	25200.	5.00	40100.	15800.
15400.	16000.	10.00	24400.	10700.
9010.	9190.	20.00	13300.	6510.
3120.	3120.	50.00	4230.	2310.
1030.	1010.	80.00	1430.	704.
570.	547.	90.00	825.	359.
345.	323.	95.00	525.	201.
132.	114.	99.00	223.	65.

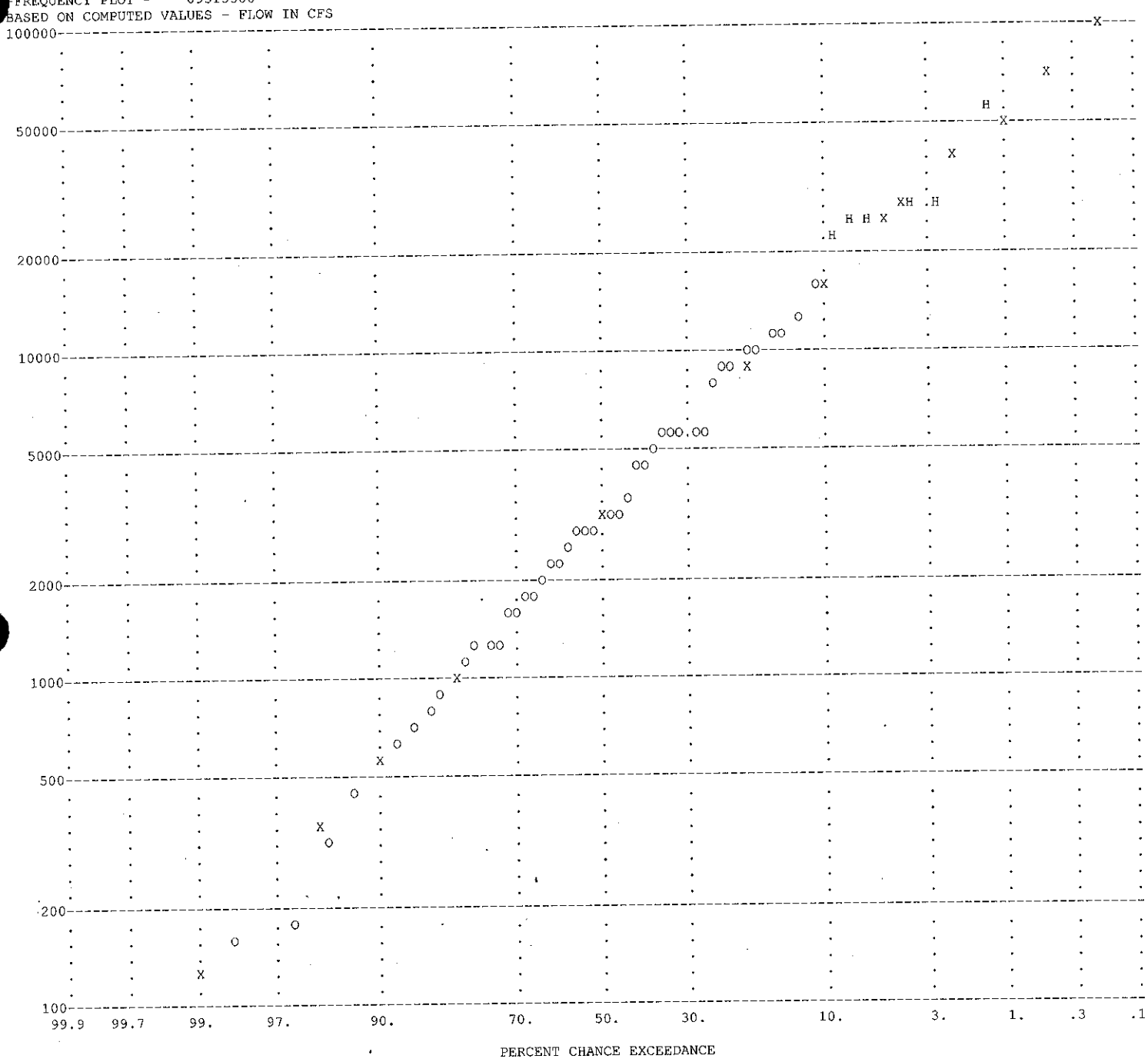
ADJUSTED STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.4807	HISTORIC EVENTS	3
STANDARD DEV	.5590	HIGH OUTLIERS	4
COMPUTED SKEW	-.1570	LOW OUTLIERS	0
REGIONAL SKEW	-.1100	ZERO OR MISSING	0
ADOPTED SKEW	-.1476	SYSTEMATIC EVENTS	50
		HISTORIC PERIOD	79

Hassayampa River at Box Canyon, 09515500, FCD 5308

FINAL RESULTS

FREQUENCY PLOT - 09515500
BASED ON COMPUTED VALUES - FLOW IN CFS



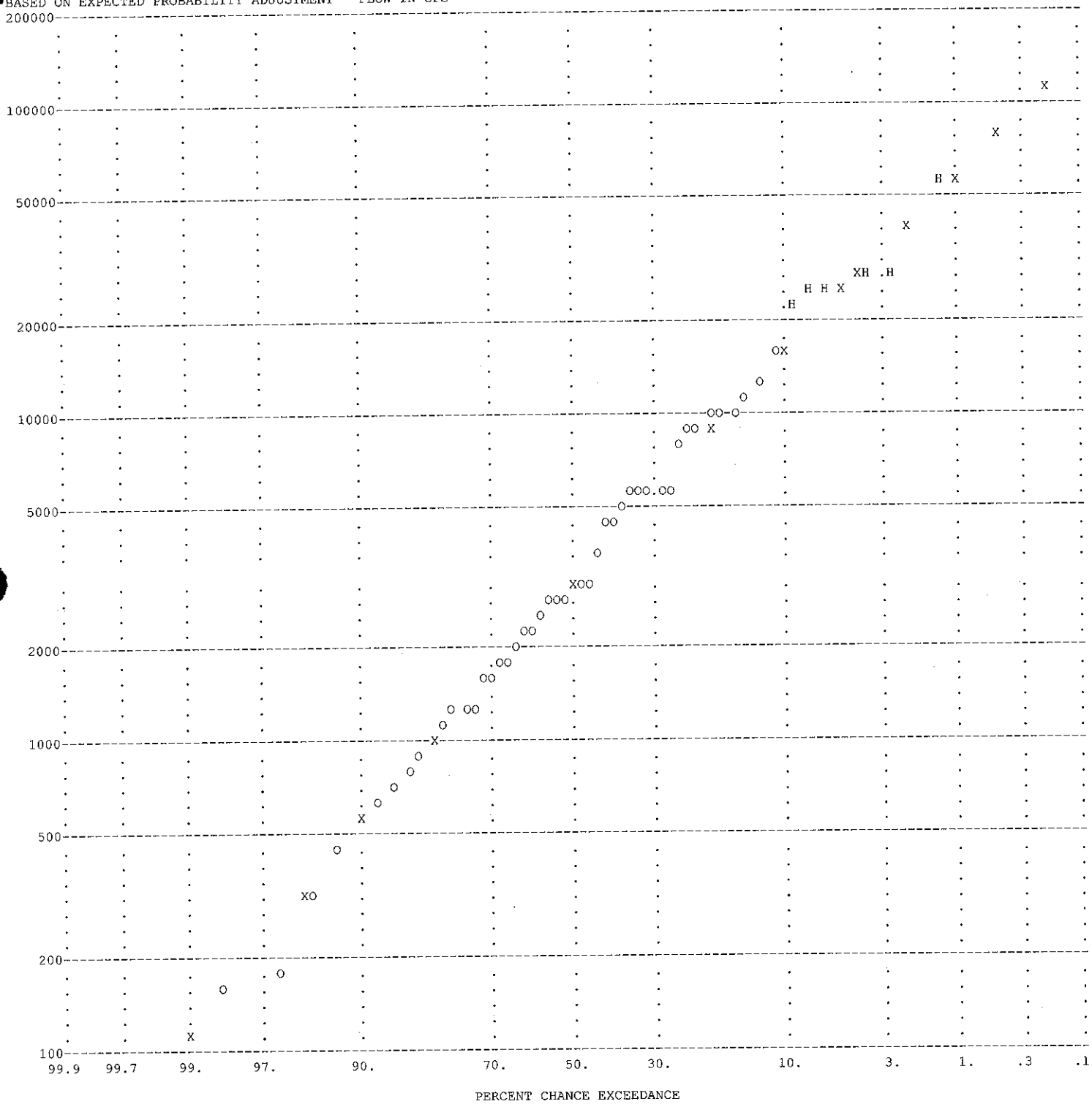
LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

Historic peaks treated as in HECWRC

Hassayampa River at Box Canyon, 09515500, FCD 5308

FINAL RESULTS

FREQUENCY PLOT - 09515500
BASED ON EXPECTED PROBABILITY ADJUSTMENT - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

Historic peaks treated as in HECWRC

TABLE 1. *SUMMARY OF STATISTICS* -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	MEAN LOG	STD DEV	SKEW ADOPT	SKEW COMP	SKEW GENRL	HIST EVENT	OUTLIER HI	OUTLIER LO	ZERO/ MSNG	
5155	09515500		50	50	0	3.475	.563	-.11	-.108	-.11	0	0	0	0	**
5155	09515500		50	50	79	3.481	.559	-.15	-.157	-.11	3	4	0	0	

** PRELIMINARY STATISTICS

TABLE 2. SUMMARY OF FREQUENCY CURVE ORDINATES -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	PERCENT CHANCE EXCEEDANCE 10.	5.	2.	1.	.5	.2
5155	09515500		50	50	0	24142	27458	39582	54805	73598	104816
5155	09515500		50	50	79	23777	26940	38378	52513	69693	97724

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+ END OF RUN            +
+ NORMAL STOP IN FFA    +
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***********************************      ************************************
*              FFA                  *      *                                  *
*     FLOOD FREQUENCY ANALYSIS      *      *   U.S. ARMY CORPS OF ENGINEERS   *
*     PROGRAM DATE:  FEB 1995       *      * THE HYDROLOGIC ENGINEERING CENTER *
*          VERSION:  3.1            *      *         609 SECOND STREET        *
*     RUN  DATE   AND   TIME:       *      *      DAVIS, CALIFORNIA 95616     *
*        08 NOV 04    11:56:07      *      *          (916) 756-1104          *
*                                   *      *                                  *
***********************************      ************************************


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                      Unit:  71;  DSS Version: 6-JB


**TITLE RECORD(S)**
TT    HASSAYAMPARIVER AT BOX DAM SITE NR WICKENBURG, AZ
TT    LOCATED 5.5 MILES NORTHEAST OF WICKENBURG
TT    DA = 417   PERIOD OF RECORD 1946-1982,1993-2003

**JOB RECORD(S)**
     IPPC   ISKFX  IPROUT    IFMT    IWYR   IUNIT   ISMRY   IPNCH    IREG
J1     1       2       0       1       0       1       3       0       0

       A       B  CLIMIT  NDSSCV    IEXT
J2   .00     .00     .05       0       0

**FREQUENCY ARRAY**
FR    13    .200    .500   1.000   2.000   4.000   5.000  10.000  20.000  50.000
FR80.000  90.000  95.000  99.000

**STATION IDENTIFICATION**
ID     09515500

**GENERALIZED SKEW**
     ISTN   GGMSE    SKEW
GS   5155    .000    -.11

**SYSTEMATIC EVENTS**
     49 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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FINAL RESULTS

-PLOTTING POSITIONS- 09515500

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
8	11	1946	1710.	1	1970	58000.	2.00
8	8	1947	2300.	2	1951	27000.	4.00
8	5	1948	5600.	3	1993	25640.	6.00
9	26	1949	2910.	4	1980	24900.	8.00
10	18	1949	5500.	5	1978	16000.	10.00
8	29	1951	27000.	6	1995	13000.	12.00
12	30	1951	1590.	7	1968	11200.	14.00
7	18	1953	865.	8	1958	10600.	16.00
3	23	1954	3090.	9	1979	9640.	18.00
7	23	1955	8840.	10	1965	9060.	20.00
8	18	1956	1210.	11	1955	8840.	22.00
8	10	1957	1980.	12	1996	7550.	24.00
9	5	1958	10600.	13	1999	5650.	26.00
8	24	1959	5110.	14	1948	5600.	28.00
12	26	1959	3210.	15	1966	5560.	30.00
8	19	1961	1150.	16	1974	5560.	32.00
9	21	1962	1510.	17	1950	5500.	34.00
8	17	1963	2150.	18	1959	5110.	36.00
7	14	1964	1230.	19	1969	4630.	38.00
9	2	1965	9060.	20	1976	4560.	40.00
12	10	1965	5560.	21	1997	3550.	42.00
12	7	1966	1740.	22	2001	3215.	44.00
12	19	1967	11200.	23	1960	3210.	46.00
9	13	1969	4630.	24	1954	3090.	48.00
9	5	1970	58000.	25	1982	2940.	50.00
8	25	1971	556.	26	1949	2910.	52.00
8	27	1972	800.	27	1992	2829.	54.00
10	7	1972	2600.	28	1973	2600.	56.00
7	20	1974	5560.	29	1947	2300.	58.00
7	28	1975	154.	30	1963	2150.	60.00
2	9	1976	4560.	31	1957	1980.	62.00
8	15	1977	315.	32	1967	1740.	64.00
3	2	1978	16000.	33	1946	1710.	66.00
3	28	1979	9640.	34	1952	1590.	68.00
2	19	1980	24900.	35	1962	1510.	70.00
7	10	1981	698.	36	1998	1254.	72.00
3	15	1982	2940.	37	1964	1230.	74.00
2	13	1992	2829.	38	1956	1210.	76.00
1	8	1993	25640.	39	1961	1150.	78.00
9	3	1994	175.	40	2002	950.	80.00
2	15	1995	13000.	41	1953	865.	82.00
7	24	1996	7550.	42	1972	800.	84.00
9	26	1997	3550.	43	1981	698.	86.00
3	29	1998	1254.	44	2000	636.	88.00
8	31	1999	5650.	45	1971	556.	90.00
8	29	2000	636.	46	2003	467.	92.00
10	27	2000	3215.	47	1977	315.	94.00
9	7	2002	950.	48	1994	175.	96.00
2	13	2003	467.	49	1975	154.	98.00

-OUTLIER TESTS -

LOW OUTLIER TEST

BASED ON 49 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.760

0 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF 81.3

HIGH OUTLIER TEST

Historic peaks removed from record

BASED ON 49 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.760

0 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF 104437.

-SKEW WEIGHTING -

BASED ON 49 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .109
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

FINAL RESULTS

-FREQUENCY CURVE- 09515500

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95
108000.	133000.	.20	239000.	59500.
74700.	87700.	.50	156000.	43300.
55200.	62700.	1.00	109000.	33200.
39500.	43500.	2.00	73700.	24700.
27200.	29200.	4.00	47600.	17700.
23900.	25400.	5.00	40900.	15700.
15200.	15800.	10.00	24200.	10500.
8720.	8900.	20.00	12900.	6260.
2960.	2960.	50.00	4040.	2180.
984.	963.	80.00	1370.	664.
547.	525.	90.00	796.	341.
335.	314.	95.00	512.	194.
132.	115.	99.00	224.	65.

SYSTEMATIC STATISTICS

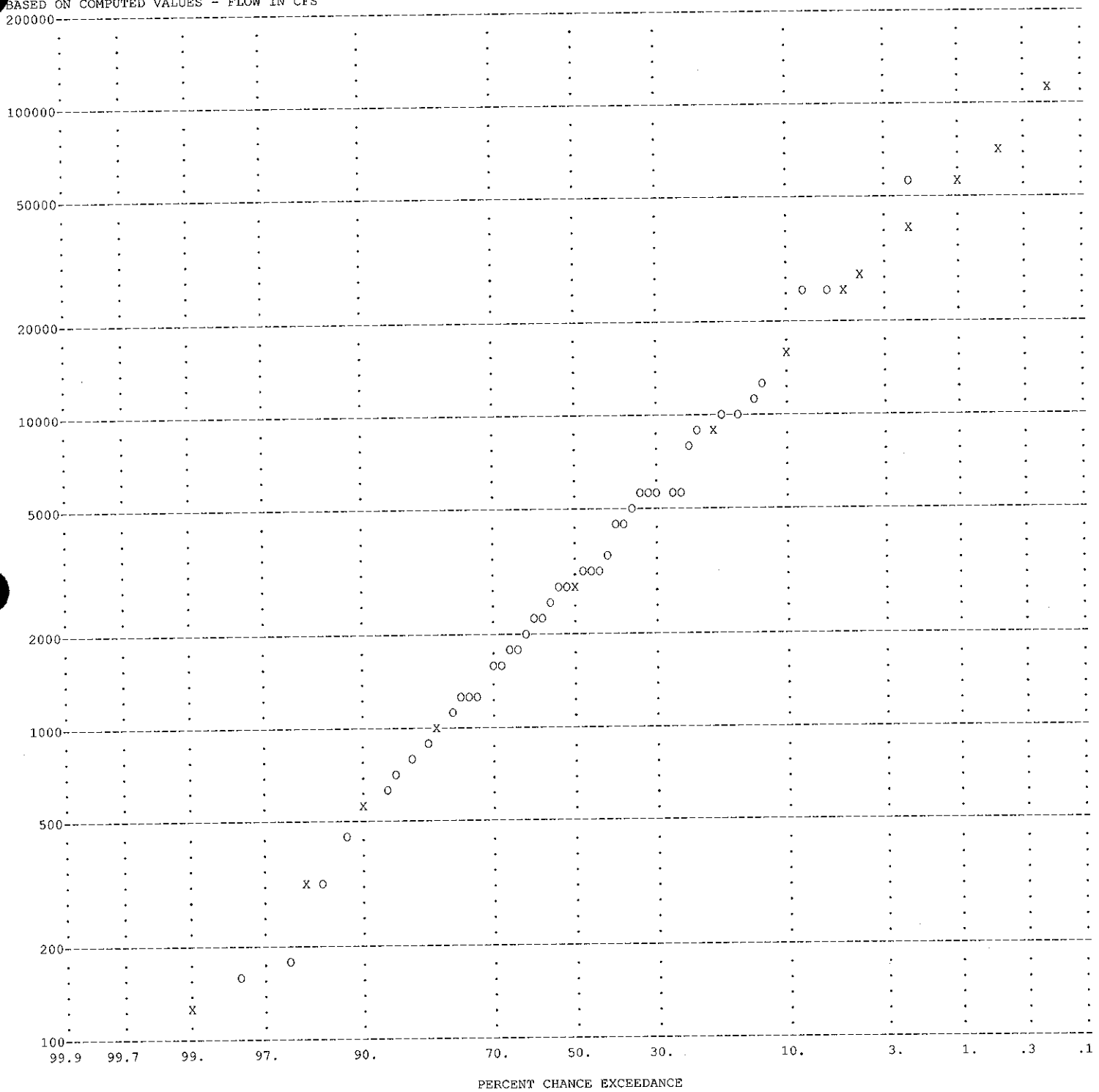
LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.4645	HISTORIC EVENTS	0
STANDARD DEV	.5632	HIGH OUTLIERS	0
COMPUTED SKEW	-.0678	LOW OUTLIERS	0
REGIONAL SKEW	-.1100	ZERO OR MISSING	0
ADOPTED SKEW	-.0790	SYSTEMATIC EVENTS	49

Historic peaks removed from record

Hassayampa River at Box Canyon, 09515500, FCD 5308

FINAL RESULTS

FREQUENCY PLOT - 09515500
BASED ON COMPUTED VALUES - FLOW IN CFS



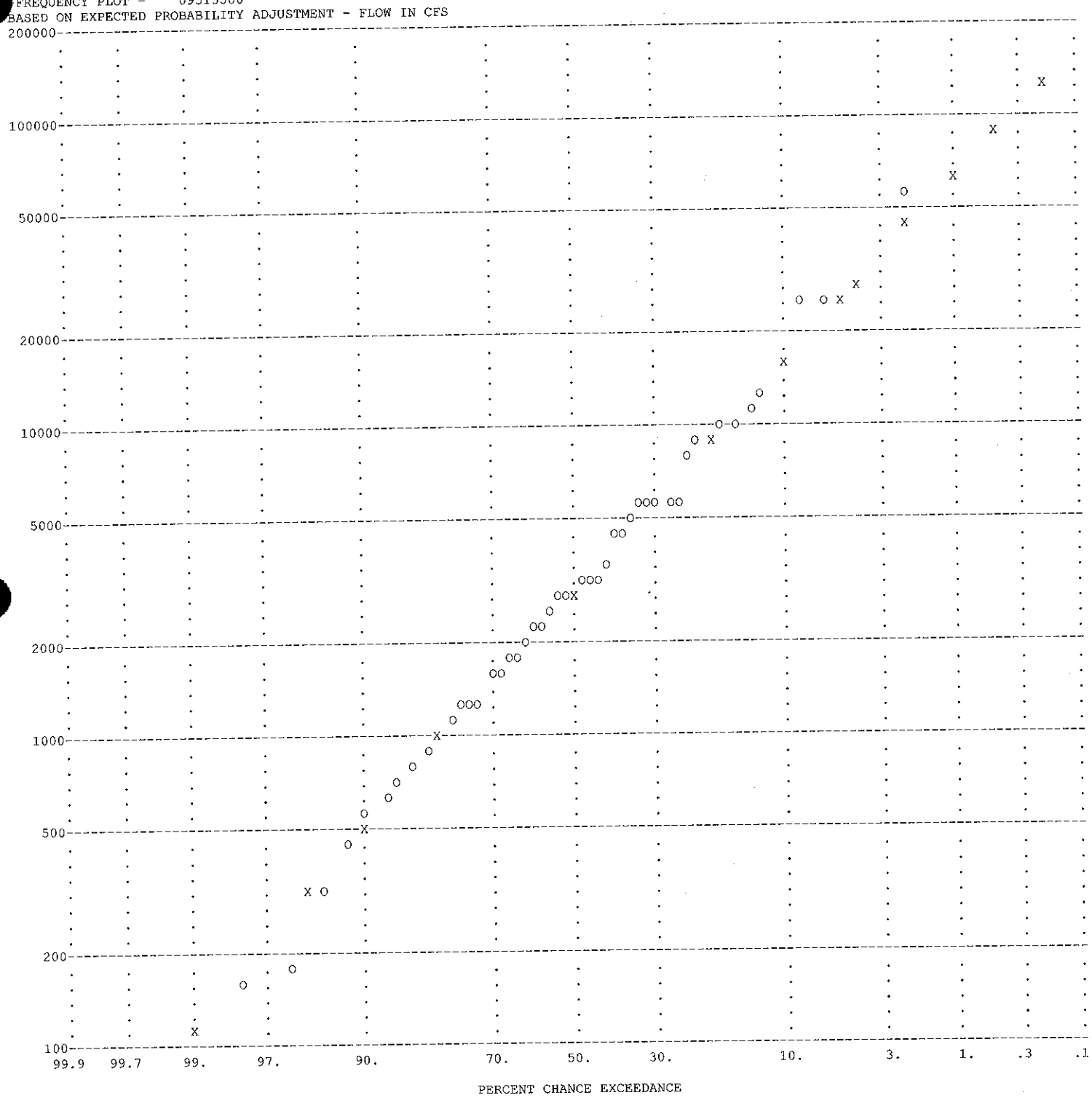
LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

Historic peaks removed from record

Hassayampa River at Box Canyon, 09515500, FCD 5308

FINAL RESULTS

FREQUENCY PLOT - 09515500
BASED ON EXPECTED PROBABILITY ADJUSTMENT - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

Historic peaks removed from record

Hassayampa River at Box Canyon, 09515500, FCD 5308

TABLE 1. SUMMARY OF STATISTICS -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	MEAN LOG	STD DEV	SKEW ADOPT	SKEW COMP	SKEW GENRL	HIST EVENT	OUTLIER HI	OUTLIER LO	ZERO/ MSNG	
5155	09515500	49	49	49	0	3.464	.563	-.08	-.068	-.11	0	0	0	0	**
5155	09515500	49	49	49	0	3.464	.563	-.08	-.068	-.11	0	0	0	0	

** PRELIMINARY STATISTICS

TABLE 2. SUMMARY OF FREQUENCY CURVE ORDINATES -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	PERCENT CHANCE EXCEEDANCE 10.	5.	2.	1.	.5	.2
5155	09515500	49	49	49	0	23875	27220	39541	55180	74697	107519
5155	09515500	49	49	49	0	23875	27220	39541	55180	74697	107519

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+ END OF RUN            +
+ NORMAL STOP IN FFA    +
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Historic peaks removed from record

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************************************      ************************************
*              FFA                 *      *                                  *
*     FLOOD FREQUENCY ANALYSIS     *      *   U.S. ARMY CORPS OF ENGINEERS   *
*     PROGRAM DATE:  FEB 1995      *      * THE HYDROLOGIC ENGINEERING CENTER *
*          VERSION:  3.1           *      *         609 SECOND STREET        *
*     RUN  DATE   AND   TIME:      *      *      DAVIS, CALIFORNIA 95616     *
*        08 NOV 04    11:56:38     *      *          (916) 756-1104          *
*                                  *      *                                  *
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                      Unit:  71;  DSS Version: 6-JB

**TITLE RECORD(S)**
TT    HASSAYAMPARIVER AT BOX DAM SITE NR WICKENBURG, AZ
TT    LOCATED 5.5 MILES NORTHEAST OF WICKENBURG
TT    DA = 417   PERIOD OF RECORD 1925-1982,1993-2003

**JOB RECORD(S)**
     IPPC   ISKFX  IPROUT    IFMT    IWYR   IUNIT   ISMRY   IPNCH    IREG
J1     1       2       0       1       0       1       3       0       0

       A       B  CLIMIT  NDSSCV    IEXT
J2   .00     .00     .05       0       0

**FREQUENCY ARRAY**
FR    13    .200    .500   1.000   2.000   4.000   5.000  10.000  20.000  50.000
80.000  90.000  95.000  99.000

**STATION IDENTIFICATION**
ID     09515500

**GENERALIZED SKEW**
     ISTN   GGMSE    SKEW
GS   5155    .000    -.11

**SYSTEMATIC EVENTS**
     53 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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FINAL RESULTS

PLOTTING POSITIONS- 09515500

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
9	19	1925	25500.	1	1970	58000.	1.85
2	16	1927	27100.	2	1927	27100.	3.70
2	7	1937	22000.	3	1951	27000.	5.56
3	3	1938	10000.	4	1993	25640.	7.41
8	11	1946	1710.	5	1925	25500.	9.26
8	8	1947	2300.	6	1980	24900.	11.11
8	5	1948	5600.	7	1937	22000.	12.96
9	26	1949	2910.	8	1978	16000.	14.81
10	18	1949	5500.	9	1995	13000.	16.67
8	29	1951	27000.	10	1968	11200.	18.52
12	30	1951	1590.	11	1958	10600.	20.37
7	18	1953	865.	12	1938	10000.	22.22
3	23	1954	3090.	13	1979	9640.	24.07
7	23	1955	8840.	14	1965	9060.	25.93
8	18	1956	1210.	15	1955	8840.	27.78
8	10	1957	1980.	16	1996	7550.	29.63
9	5	1958	10600.	17	1999	5650.	31.48
8	24	1959	5110.	18	1948	5600.	33.33
12	26	1959	3210.	19	1966	5560.	35.19
8	19	1961	1150.	20	1974	5560.	37.04
9	21	1962	1510.	21	1950	5500.	38.89
8	17	1963	2150.	22	1959	5110.	40.74
7	14	1964	1230.	23	1969	4630.	42.59
9	2	1965	9060.	24	1976	4560.	44.44
12	10	1965	5560.	25	1997	3550.	46.30
12	7	1966	1740.	26	2001	3215.	48.15
12	19	1967	11200.	27	1960	3210.	50.00
9	13	1969	4630.	28	1954	3090.	51.85
9	5	1970	58000.	29	1982	2940.	53.70
8	25	1971	556.	30	1949	2910.	55.56
8	27	1972	800.	31	1992	2829.	57.41
10	7	1972	2600.	32	1973	2600.	59.26
7	20	1974	5560.	33	1947	2300.	61.11
7	28	1975	154.	34	1963	2150.	62.96
2	9	1976	4560.	35	1957	1980.	64.81
8	15	1977	315.	36	1967	1740.	66.67
3	2	1978	16000.	37	1946	1710.	68.52
3	28	1979	9640.	38	1952	1590.	70.37
2	19	1980	24900.	39	1962	1510.	72.22
7	10	1981	698.	40	1998	1254.	74.07
3	15	1982	2940.	41	1964	1230.	75.93
2	13	1992	2829.	42	1956	1210.	77.78
1	8	1993	25640.	43	1961	1150.	79.63
9	3	1994	175.	44	2002	950.	81.48
2	15	1995	13000.	45	1953	865.	83.33
7	24	1996	7550.	46	1972	800.	85.19
9	26	1997	3550.	47	1981	698.	87.04
3	29	1998	1254.	48	2000	636.	88.89
8	31	1999	5650.	49	1971	556.	90.74
8	29	2000	636.	50	2003	467.	92.59
10	27	2000	3215.	51	1977	315.	94.44
9	7	2002	950.	52	1994	175.	96.30
2	13	2003	467.	53	1975	154.	98.15

-OUTLIER TESTS -

LOW OUTLIER TEST

BASED ON 53 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.790

0 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF 77.7

HIGH OUTLIER TEST

BASED ON 53 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.790

0 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF 145903.

-SKEW WEIGHTING -

BASED ON 53 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .106
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

FINAL RESULTS

-FREQUENCY CURVE- 09515500

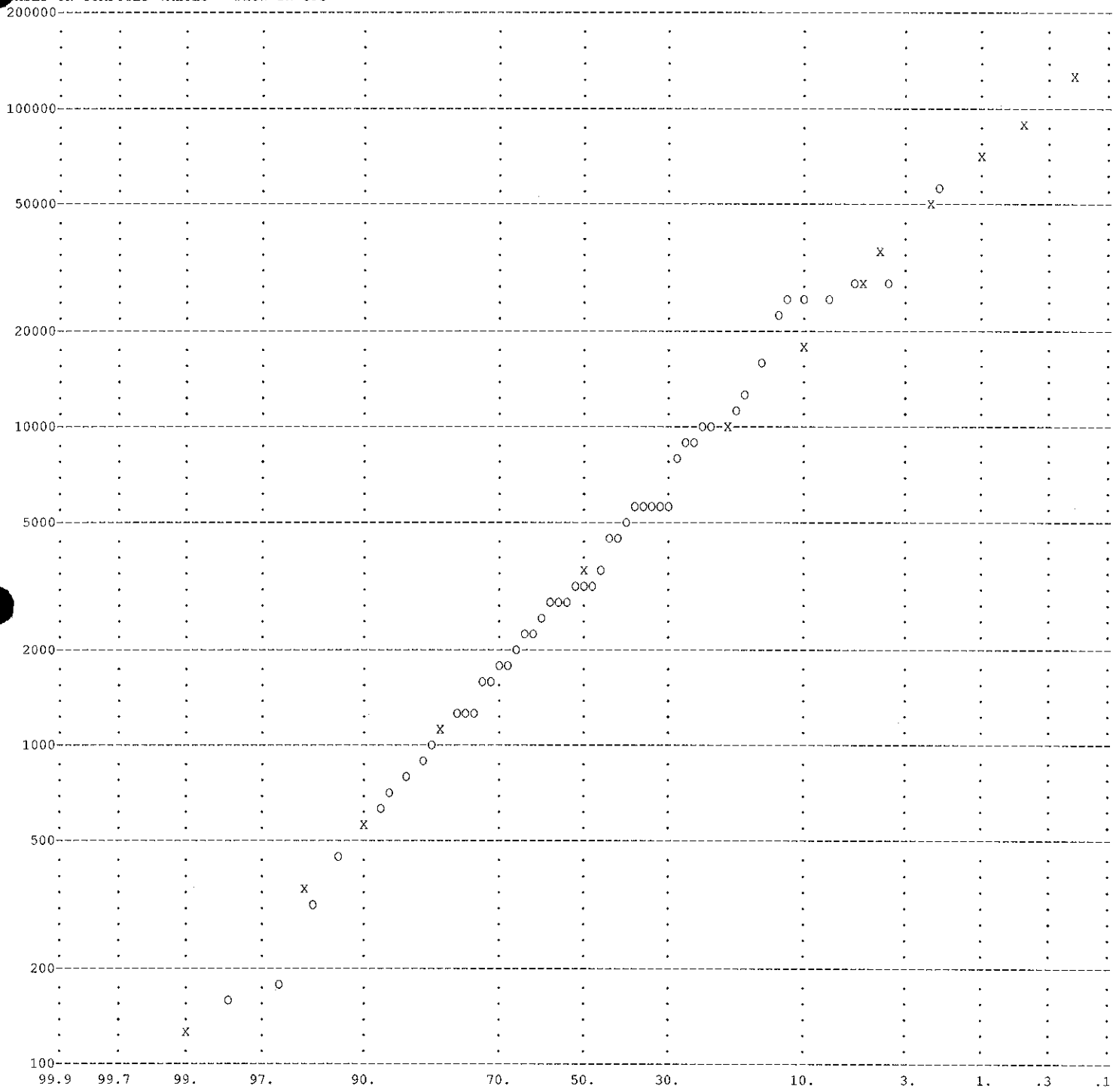
COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY FLOW IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95 FLOW IN CFS
133000.	161000.	.20	291000.	74200.
92800.	108000.	.50	190000.	54000.
68600.	77100.	1.00	134000.	41300.
49100.	53700.	2.00	90600.	30700.
33700.	36000.	4.00	58600.	21900.
29500.	31300.	5.00	50300.	19500.
18600.	19300.	10.00	29700.	12800.
10600.	10800.	20.00	15700.	7590.
3470.	3470.	50.00	4720.	2550.
1090.	1070.	80.00	1520.	737.
586.	562.	90.00	854.	366.
348.	326.	95.00	533.	201.
128.	111.	99.00	219.	63.

SYSTEMATIC STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.5272	HISTORIC EVENTS	0
STANDARD DEV .	.5867	HIGH OUTLIERS	0
COMPUTED SKEW	-.1350	LOW OUTLIERS	0
REGIONAL SKEW	-.1100	ZERO OR MISSING	0
ADOPTED SKEW	-.1285	SYSTEMATIC EVENTS	53

FINAL RESULTS

FREQUENCY PLOT - 09515500
BASED ON COMPUTED VALUES - FLOW IN CFS

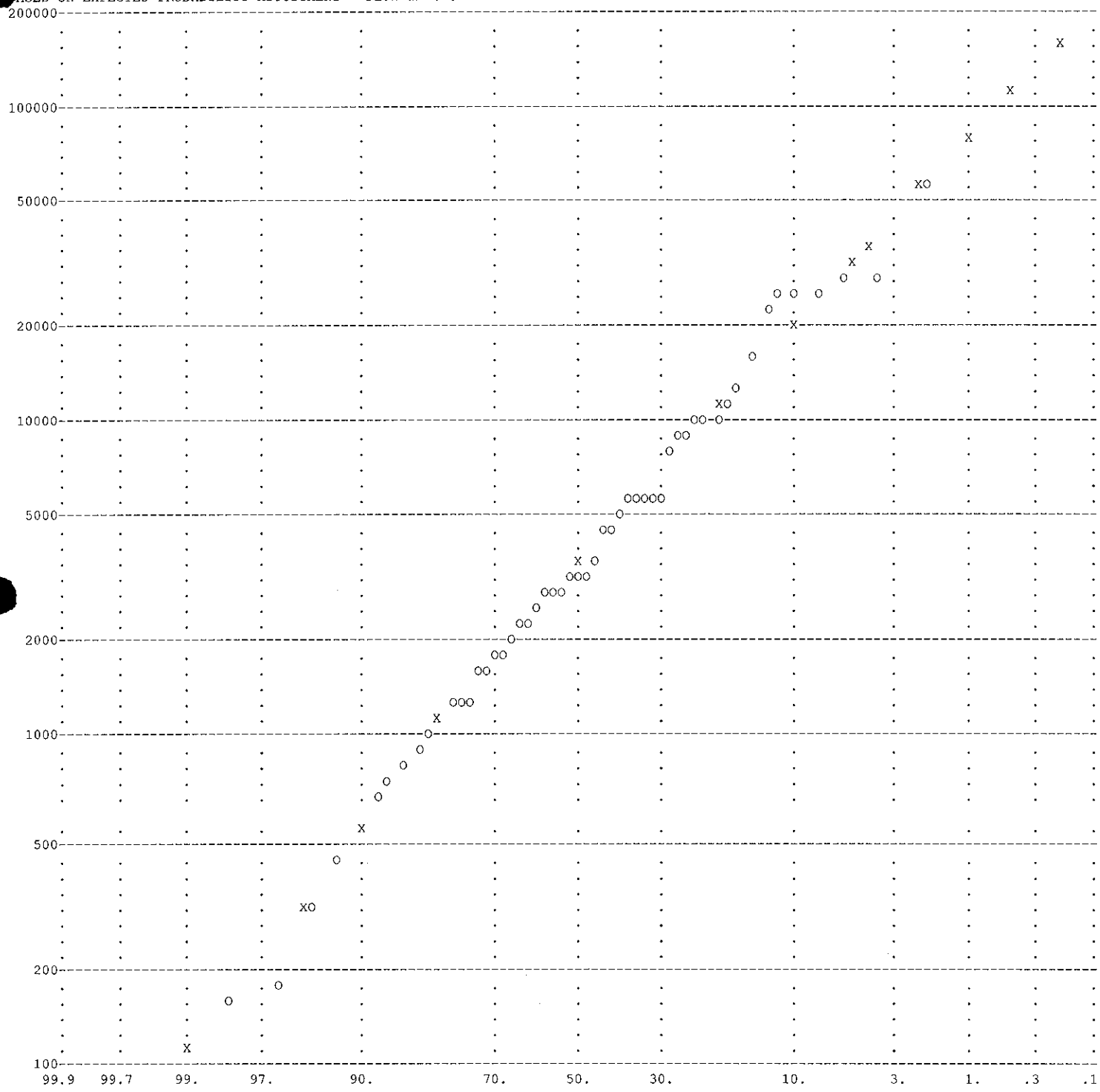


LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

All data treated as systematic record

FINAL RESULTS

FREQUENCY PLOT - 09515500
BASED ON EXPECTED PROBABILITY ADJUSTMENT - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

TABLE 1. SUMMARY OF STATISTICS -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	....YEARS..... RECD	SYST	HIST	MEAN LOG	STD DEV	.....SKEW..... ADOPT	COMP	GENRL	HIST EVENT	OUTLIER HI	OUTLIER LO	ZERO/ MSNG	
5155	09515500		53	53	0	3.527	.587	-.13	-.135	-.11	0	0	0	0	**
5155	09515500		53	53	0	3.527	.587	-.13	-.135	-.11	0	0	0	0	

** PRELIMINARY STATISTICS

TABLE 2. SUMMARY OF FREQUENCY CURVE ORDINATES -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	....YEARS..... RECD	SYST	HIST	.....PERCENT CHANCE EXCEEDANCE..... 10.	5.	2.	1.	.5	.2
5155	09515500		53	53	0	29529	33717	49121	68606	92809	133237
5155	09515500		53	53	0	29529	33717	49121	68606	92809	133237

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+++++++++++++++++++++++++
+ END OF RUN             +
+ NORMAL STOP IN FFA     +
+++++++++++++++++++++++++
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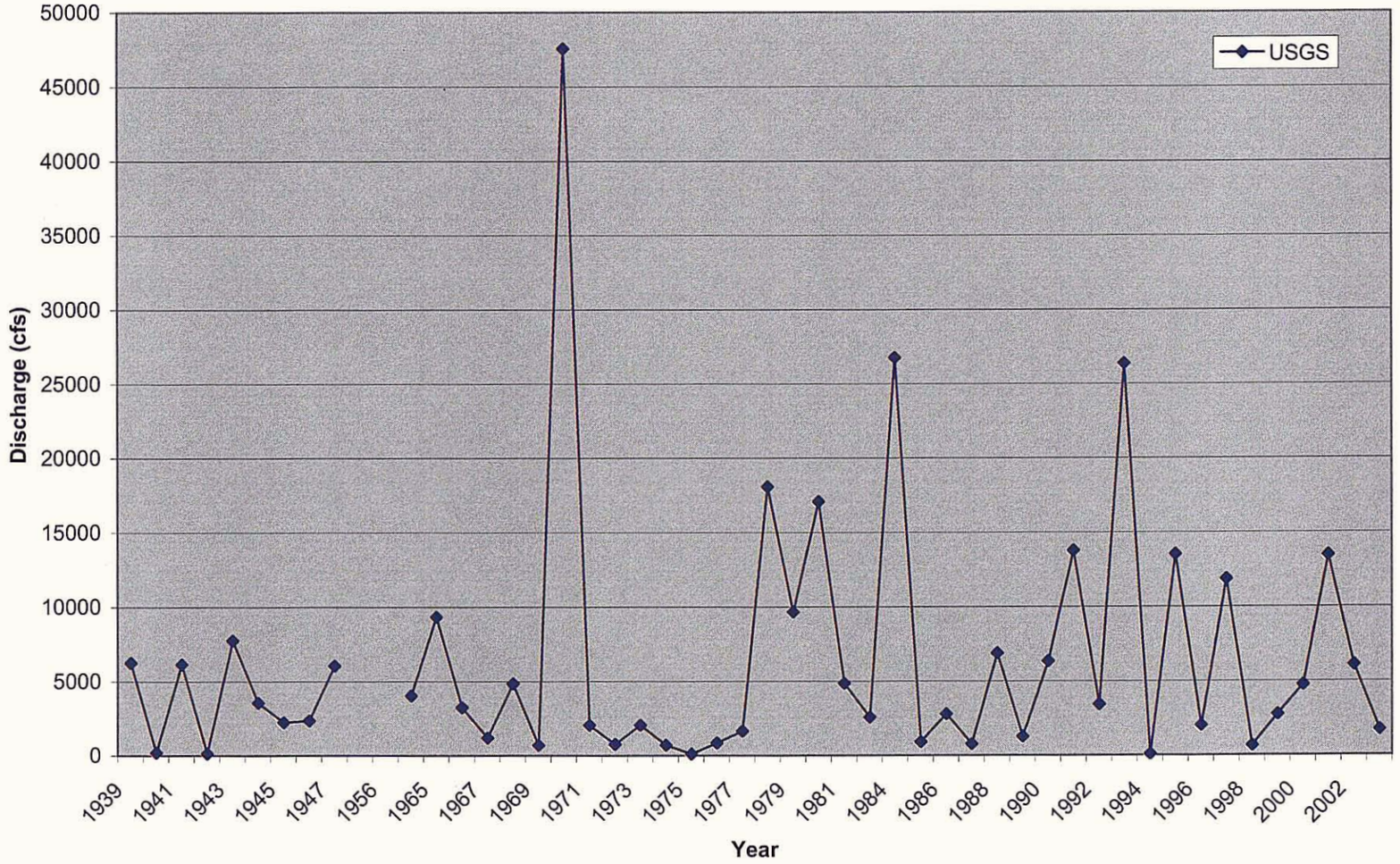
Hassayampa River near Morristown, AZ			
ID	9516500		
Date	Annual Peak Q, in cfs	Source	Notes
9061939	6200	USGS (Pope & others, 1998)	
2011940	160	USGS (Pope & others, 1998)	
3021941	6100	USGS (Pope & others, 1998)	
8051942	100	USGS (Pope & others, 1998)	estimated
8031943	7700	USGS (Pope & others, 1998)	
8091944	3520	USGS (Pope & others, 1998)	
8021945	2200	USGS (Pope & others, 1998)	
9171946	2310	USGS (Pope & others, 1998)	
8081947	6000	USGS (Pope & others, 1998)	
7121964	4000	USGS (Pope & others, 1998)	estimated
9021965	9280	USGS (Pope & others, 1998)	
9131966	3210	USGS (Pope & others, 1998)	
09 1967	1150	USGS (Pope & others, 1998)	
12191967	4800	USGS (Pope & others, 1998)	
9131969	650	USGS (Pope & others, 1998)	
9051970	47500	USGS (Pope & others, 1998)	Highest since 1916
8181971	2000	USGS (Pope & others, 1998)	
9271972	700	USGS (Pope & others, 1998)	
10071972	2000	USGS (Pope & others, 1998)	
7201974	650	USGS (Pope & others, 1998)	estimated
7291975	50	USGS (Pope & others, 1998)	actual Q less than reported
2091976	800	USGS (Pope & others, 1998)	
8151977	1600	USGS (Pope & others, 1998)	estimated
3021978	18000	USGS (Pope & others, 1998)	
12181978	9600	USGS (Pope & others, 1998)	
2201980	17000	USGS (Pope & others, 1998)	
7101981	4800	USGS (Pope & others, 1998)	
3031983	2520	USGS (Pope & others, 1998)	
9101984	26700	USGS (Pope & others, 1998)	
12281984	848	USGS (Pope & others, 1998)	
11261985	2740	USGS (Pope & others, 1998)	
11180986	714	USGS (Pope & others, 1998)	
8271988	6820	USGS (Pope & others, 1998)	
1041989	1210	USGS (Pope & others, 1998)	
9051990	6280	USGS (Pope & others, 1998)	
3021991	13700	USGS (Pope & others, 1998)	
2131992	3380	USGS (Pope & others, 1998)	
1081993	26300	USGS (Pope & others, 1998)	
8191994	25	USGS (Pope & others, 1998)	
2151995	13450	USGS, nwis.waterdata.usgs.gov	Revised since Pope & others
7261996	1970	USGS (Pope & others, 1998)	
9261997	11800	USGS, nwis.waterdata.usgs.gov	
3291998	594	USGS, nwis.waterdata.usgs.gov	
8311999	2710	USGS, nwis.waterdata.usgs.gov	
8292000	4700	USGS, nwis.waterdata.usgs.gov	
10222000	13400	USGS, nwis.waterdata.usgs.gov	
9072002	6040	USGS, nwis.waterdata.usgs.gov	
2132003	1680	USGS, nwis.waterdata.usgs.gov	

USGS Gage # 09516500 - Morristown Peak Annual Flow (1939-2003)



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************************************      ************************************
*              FFA                 *      *                                  *
*     FLOOD FREQUENCY ANALYSIS     *      *   U.S. ARMY CORPS OF ENGINEERS   *
*     PROGRAM DATE:  FEB 1995      *      * THE HYDROLOGIC ENGINEERING CENTER *
*          VERSION:  3.1           *      *         609 SECOND STREET        *
*     RUN  DATE   AND   TIME:      *      *      DAVIS, CALIFORNIA 95616     *
*        08 NOV 04    11:57:00     *      *          (916) 756-1104          *
*                                  *      *                                  *
************************************      ************************************



 INPUT FILE NAME: MOR_SI.DAT
OUTPUT FILE NAME: MOR_SI.OUT
   DSS FILE NAME: MOR_SI.DSS


   -----DSS---ZOPEN:  Existing File Opened,  File: MOR_SI.DSS
                      Unit:  71;  DSS Version: 6-JB


**TITLE RECORD(S)**
TT    HASSAYAMPA RIVER NEAR MORRISTOWN, AZ
TT    600 FT D S FROM MOUTH OF SAN DOMINGO WASH, 3 MILES NORTHWEST OF MORRISTOWN
TT    DA = 796   PERIOD OF RECORD Discontinuous from 1939-2003

**JOB RECORD(S)**
     IPPC   ISKFX  IPROUT    IFMT    IWYR   IUNIT   ISMRY   IPNCH    IREG
J1      1       2       0       1       0       1       3       0       0

       A       B  CLIMIT  NDSSCV    IEXT
J2   .00     .00     .05       0       0

**FREQUENCY ARRAY**
FR    13    .200    .500   1.000   2.000   4.000   5.000  10.000  20.000  50.000
FR80.000  90.000  95.000  99.000

**STATION IDENTIFICATION**
ID     09516500

**GENERALIZED SKEW**
     ISTN   GGMSE    SKEW
GS   5165    .000    -.10

**SPECIAL STATION INFORMATION**
    IYRA    IYRL  HITHRS  LOTHRS    LOGT    NDEC    NSIG
SI  1916       0  47500.      0.       0       0       0

**SYSTEMATIC EVENTS**
     48 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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PRELIMINARY RESULTS

-PLOTTING POSITIONS- 09516500

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
9	6	1939	6200.	1	1970	47500.	2.04
2	1	1940	160.	2	1984	26700.	4.08
3	2	1941	6100.	3	1993	26300.	6.12
8	5	1942	100.	4	1978	18000.	8.16
8	3	1943	7700.	5	1980	17000.	10.20
8	9	1944	3520.	6	1991	13700.	12.24
8	2	1945	2200.	7	1995	13450.	14.29
9	17	1946	2310.	8	2001	13400.	16.33
8	8	1947	6000.	9	1997	11800.	18.37
7	12	1964	4000.	10	1979	9600.	20.41
9	2	1965	9280.	11	1965	9280.	22.45
9	13	1966	3210.	12	1943	7700.	24.49
9	0	1967	1150.	13	1988	6820.	26.53
12	19	1967	4800.	14	1990	6280.	28.57
9	13	1969	650.	15	1939	6200.	30.61
9	5	1970	47500.	16	1941	6100.	32.65
8	18	1971	2000.	17	2002	6040.	34.69
9	27	1972	700.	18	1947	6000.	36.73
10	7	1972	2000.	19	1981	4800.	38.78
7	20	1974	650.	20	1968	4800.	40.82
7	29	1975	50.	21	2000	4700.	42.86
2	9	1976	800.	22	1964	4000.	44.90
8	15	1977	1600.	23	1944	3520.	46.94
3	2	1978	18000.	24	1992	3380.	48.98
12	18	1978	9600.	25	1966	3210.	51.02
2	20	1980	17000.	26	1986	2740.	53.06
7	10	1981	4800.	27	1999	2710.	55.10
3	3	1983	2520.	28	1983	2520.	57.14
9	10	1984	26700.	29	1946	2310.	59.18
12	28	1984	848.	30	1945	2200.	61.22
11	26	1985	2740.	31	1973	2000.	63.27
11	18	1986	714.	32	1971	2000.	65.31
8	27	1988	6820.	33	1996	1970.	67.35
1	4	1989	1210.	34	2003	1680.	69.39
9	5	1990	6280.	35	1977	1600.	71.43
3	2	1991	13700.	36	1989	1210.	73.47
2	13	1992	3380.	37	1967	1150.	75.51
1	8	1993	26300.	38	1985	848.	77.55
8	19	1994	25.	39	1976	800.	79.59
2	15	1995	13450.	40	1987	714.	81.63
7	26	1996	1970.	41	1972	700.	83.67
9	26	1997	11800.	42	1969	650.	85.71
3	29	1998	594.	43	1974	650.	87.76
8	31	1999	2710.	44	1998	594.	89.80
8	29	2000	4700.	45	1940	160.	91.84
10	22	2000	13400.	46	1942	100.	93.88
9	7	2002	6040.	47	1975	50.	95.92
2	13	2003	1680.	48	1994	25.	97.96

-SKEW WEIGHTING -

BASED ON 48 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .190
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

PRELIMINARY RESULTS

-FREQUENCY CURVE- 09516500

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY FLOW IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	CONFIDENCE LIMITS .95 FLOW IN CFS
83300.	95100.	.20	187000.	45400.
65600.	73100.	.50	141000.	36800.
52900.	58000.	1.00	110000.	30400.
41200.	44300.	2.00	81900.	24300.
30400.	32200.	4.00	57600.	18500.
27200.	28700.	5.00	50700.	16800.
18200.	18800.	10.00	31800.	11600.
10600.	10800.	20.00	17200.	7040.
3200.	3200.	50.00	4710.	2200.
775.	751.	80.00	1160.	481.
336.	315.	90.00	536.	186.
160.	144.	95.00	275.	79.
35.	27.	99.00	73.	13.

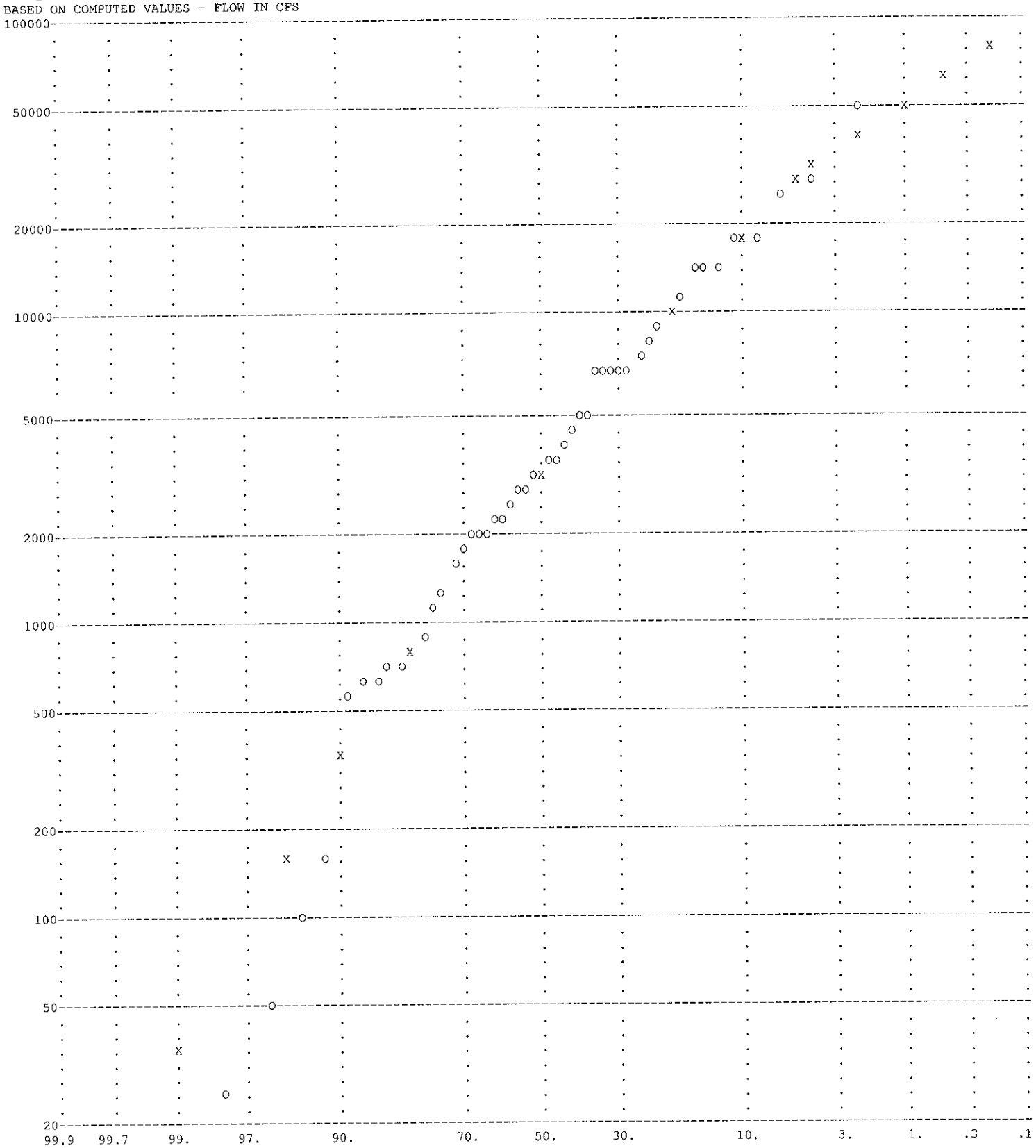
SYSTEMATIC STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.4370	HISTORIC EVENTS	0
STANDARD DEV	.6851	HIGH OUTLIERS	0
COMPUTED SKEW	-.9186	LOW OUTLIERS	0
REGIONAL SKEW	-.1000	ZERO OR MISSING	0
ADOPTED SKEW	-.6029	SYSTEMATIC EVENTS	48

Hassayampa River near Morristown, 09516500

PRELIMINARY RESULTS

-FREQUENCY PLOT - 09516500
BASED ON COMPUTED VALUES - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

Sept. 1970 flood as highest since 1916

FINAL RESULTS

-PLOTTING POSITIONS- 09516500

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
9	6	1939	6200.	1	1970	47500.	1.12
2	1	1940	160.	2	1984	26700.	2.73
3	2	1941	6100.	3	1993	26300.	4.81
8	5	1942	100.	4	1978	18000.	6.89
8	3	1943	7700.	5	1980	17000.	8.96
8	9	1944	3520.	6	1991	13700.	11.04
8	2	1945	2200.	7	1995	13450.	13.12
9	17	1946	2310.	8	2001	13400.	15.20
8	8	1947	6000.	9	1997	11800.	17.28
7	12	1964	4000.	10	1979	9600.	19.36
9	2	1965	9280.	11	1965	9280.	21.44
9	13	1966	3210.	12	1943	7700.	23.52
9	0	1967	1150.	13	1988	6820.	25.60
12	19	1967	4800.	14	1990	6280.	27.68
9	13	1969	650.	15	1939	6200.	29.76
9	5	1970	47500.	16	1941	6100.	31.84
8	18	1971	2000.	17	2002	6040.	33.92
9	27	1972	700.	18	1947	6000.	36.00
10	7	1972	2000.	19	1981	4800.	38.08
7	20	1974	650.	20	1968	4800.	40.16
7	29	1975	50.	21	2000	4700.	42.24
2	9	1976	800.	22	1964	4000.	44.32
8	15	1977	1600.	23	1944	3520.	46.40
3	2	1978	18000.	24	1992	3380.	48.48
12	18	1978	9600.	25	1966	3210.	50.56
2	20	1980	17000.	26	1986	2740.	52.64
7	10	1981	4800.	27	1999	2710.	54.72
3	3	1983	2520.	28	1983	2520.	56.80
9	10	1984	26700.	29	1946	2310.	58.88
12	28	1984	848.	30	1945	2200.	60.96
11	26	1985	2740.	31	1973	2000.	63.04
11	18	1986	714.	32	1971	2000.	65.12
8	27	1988	6820.	33	1996	1970.	67.20
1	4	1989	1210.	34	2003	1680.	69.28
9	5	1990	6280.	35	1977	1600.	71.36
3	2	1991	13700.	36	1989	1210.	73.44
2	13	1992	3380.	37	1967	1150.	75.52
1	8	1993	26300.	38	1985	848.	77.60
8	19	1994	25.	39	1976	800.	79.68
2	15	1995	13450.	40	1987	714.	81.76
7	26	1996	1970.	41	1972	700.	83.84
9	26	1997	11800.	42	1969	650.	85.92
3	29	1998	594.	43	1974	650.	88.00
8	31	1999	2710.	44	1998	594.	90.08
8	29	2000	4700.	45	1940	160.	92.16
10	22	2000	13400.	46	1942	100.	94.24
9	7	2002	6040.	47	1975	50.	96.32
2	13	2003	1680.	48	1994	25.	98.40

NOTE- PLOTTING POSITIONS BASED ON-HISTORIC PERIOD (H) = 88
NUMBER OF HISTORIC EVENTS PLUS HIGH OUTLIERS(Z) = 1
WEIGHTING FACTOR FOR SYSTEMATIC EVENTS (W) = 1.8511

-OUTLIER TESTS -

LOW OUTLIER TEST

BASED ON 48 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.753

1 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF 35.5

STATISTICS AND FREQUENCY CURVE ADJUSTED FOR 1 LOW OUTLIER(S)

HIGH OUTLIER TEST

BASED ON 47 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.744

1 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF 154198.
OR INPUT BASE OF 47500.

NOTE - COLLECTION OF HISTORICAL INFORMATION AND COMPARISONS WITH SIMILAR DATA SETS SHOULD BE EXPLORED IF NOT INCORPORATED IN THIS ANALYSIS.

STATISTICS AND FREQUENCY CURVE ADJUSTED FOR 1 HIGH OUTLIER(S)
AND 0 HISTORIC EVENT(S)

-SKEW WEIGHTING -

BASED ON 88 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .103
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

FINAL RESULTS

-FREQUENCY CURVE- 09516500

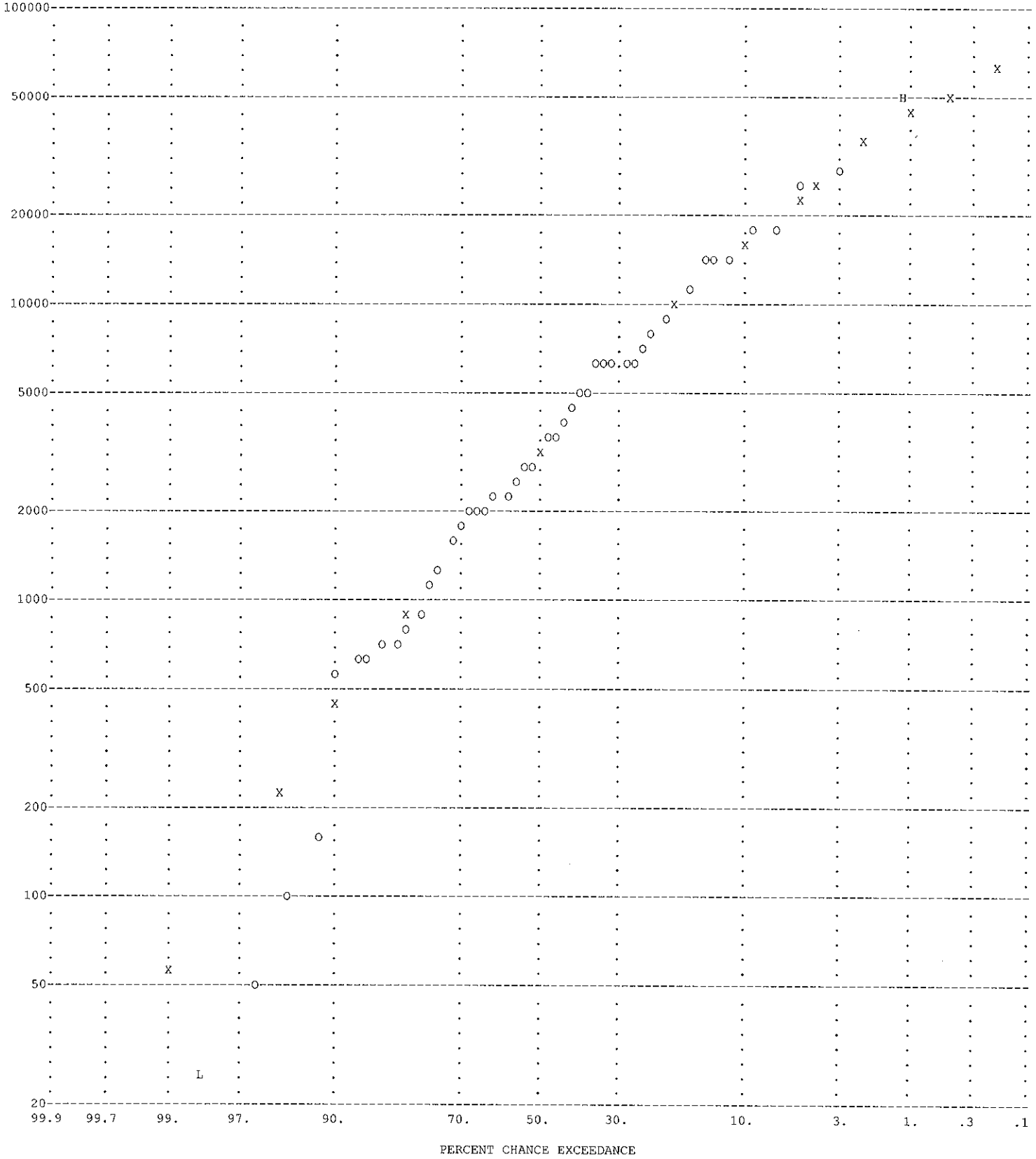
COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95
66400.	75500.	.20	139000.	38100.
52700.	58500.	.50	106000.	31100.
43000.	46900.	1.00	83700.	25900.
33900.	36300.	2.00	63300.	21000.
25500.	26900.	4.00	45500.	16300.
23000.	24100.	5.00	40300.	14800.
15800.	16300.	10.00	26100.	10500.
9570.	9760.	20.00	14900.	6630.
3230.	3230.	50.00	4570.	2300.
902.	877.	80.00	1300.	586.
429.	405.	90.00	652.	252.
222.	202.	95.00	362.	118.
59.	47.	99.00	111.	24.

SYNTHETIC STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.4516	HISTORIC EVENTS	0
STANDARD DEV	.6179	HIGH OUTLIERS	1
COMPUTED SKEW	-.7137	LOW OUTLIERS	1
REGIONAL SKEW	-.1000	ZERO OR MISSING	0
ADOPTED SKEW	-.5572	SYSTEMATIC EVENTS	48
		HISTORIC PERIOD	88

FINAL RESULTS

-FREQUENCY PLOT - 09516500
BASED ON COMPUTED VALUES - FLOW IN CFS



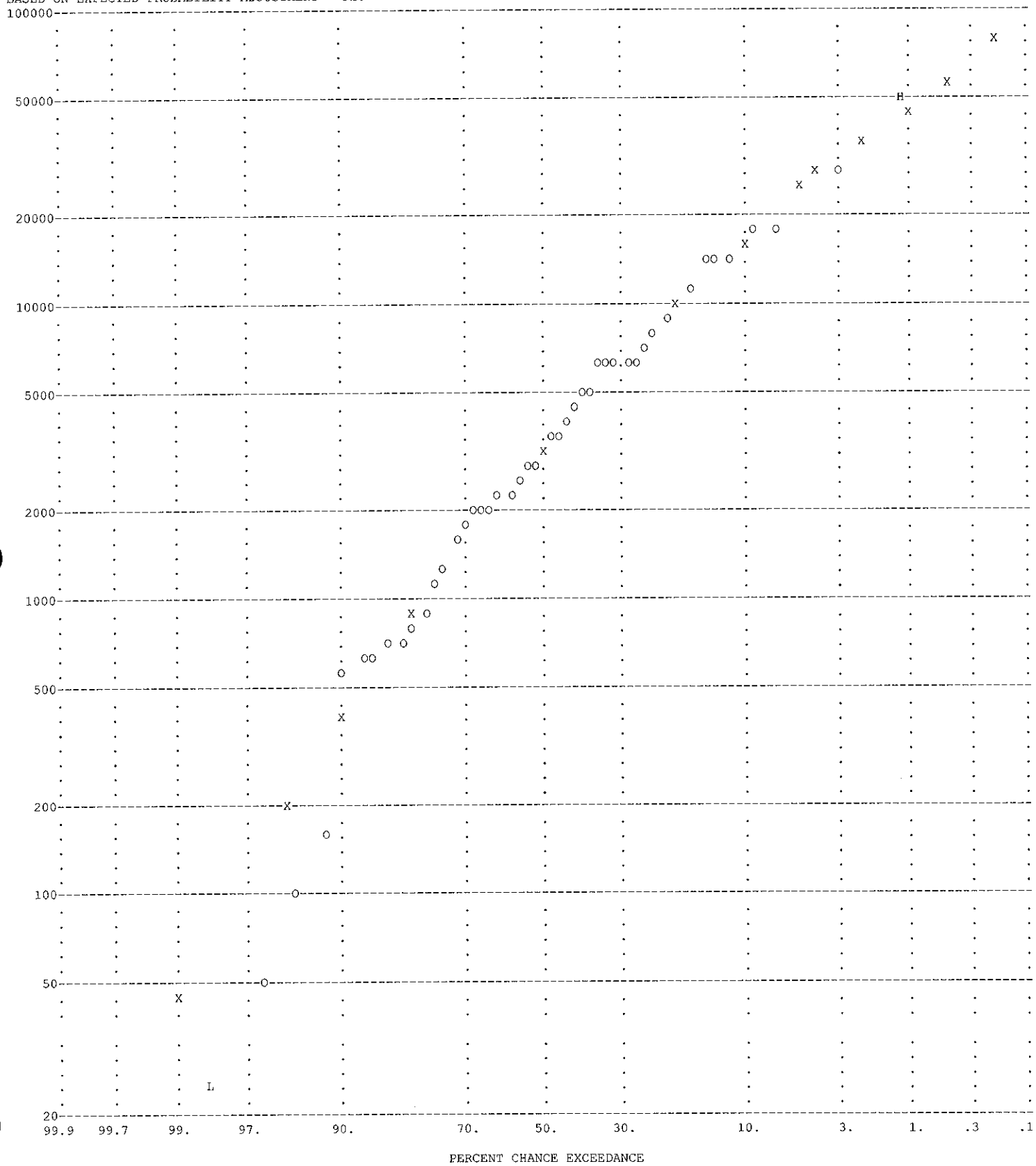
LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

Sept. 1970 flood as highest since 1916

Hassayampa River near Morristown, 09516500

FINAL RESULTS

-FREQUENCY PLOT - 09516500
BASED ON EXPECTED PROBABILITY ADJUSTMENT - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

Sept. 1970 flood as highest since 1916

TABLE 1. SUMMARY OF STATISTICS -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	MEAN LOG	STD DEV	SKEW ADOPT	SKEW COMP	SKEW GENRL	HIST EVENT	OUTLIER HI	OUTLIER LO	ZERO/ MSNG	
5165	09516500		48	48	0	3.437	.685	-.60	-.919	-.10	0	0	0	0	**
5165	09516500		48	48	88	3.452	.618	-.56	-.714	-.10	0	1	1	0	

** PRELIMINARY STATISTICS

TABLE 2. SUMMARY OF FREQUENCY CURVE ORDINATES -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	PERCENT CHANCE EXCEEDANCE 10.	5.	2.	1.	.5	.2
5165	09516500		48	48	0	27226	30429	41165	52940	65576	83319
5165	09516500		48	48	88	22969	25488	33860	42973	52714	66381

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++++++++++++++++++++++++
+ END OF RUN            +
+ NORMAL STOP IN FFA    +
++++++++++++++++++++++++
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************************************      ************************************
*              FFA                 *      *                                  *
*     FLOOD FREQUENCY ANALYSIS     *      *   U.S. ARMY CORPS OF ENGINEERS   *
*     PROGRAM DATE:  FEB 1995      *      * THE HYDROLOGIC ENGINEERING CENTER *
*          VERSION:  3.1           *      *         609 SECOND STREET        *
*     RUN  DATE   AND   TIME:      *      *      DAVIS, CALIFORNIA 95616     *
*        08 NOV 04    11:57:14     *      *          (916) 756-1104          *
*                                  *      *                                  *
************************************      ************************************


 INPUT FILE NAME: MOR_SI54.DAT
OUTPUT FILE NAME: MOR_SI54.OUT
   DSS FILE NAME: MOR_SI54.DSS


   -----DSS---ZOPEN:  Existing File Opened,  File: MOR_SI54.DSS
                      Unit:  71;  DSS Version: 6-JB


**TITLE RECORD(S)**
TT    HASSAYAMPA RIVER NEAR MORRISTOWN, AZ
TT    600 FT D S FROM MOUTH OF SAN DOMINGO WASH, 3 MILES NORTHWEST OF MORRISTOWN
TT    DA = 796   PERIOD OF RECORD Discontinuous from 1939-2003

**JOB RECORD(S)**
     IPPC   ISKFX  IPROUT    IFMT    IWYR   IUNIT   ISMRY   IPNCH    IREG
J1      1       2       0       1       0       1       3       0       0

       A       B  CLIMIT  NDSSCV    IEXT
J2   .00     .00     .05       0       0

**FREQUENCY ARRAY**
FR    13    .200    .500   1.000   2.000   4.000   5.000  10.000  20.000  50.000
FR80.000  90.000  95.000  99.000

**STATION IDENTIFICATION**
ID     09516500

**GENERALIZED SKEW**
     ISTN   GGMSE    SKEW
GS   5165    .000    -.10

**SPECIAL STATION INFORMATION**
    IYRA    IYRL  HITHRS  LOTHRS    LOGT    NDEC    NSIG
SI  1916       0  47500.      0.       0       0       0

**SYSTEMATIC EVENTS**
     50 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

Sept. 1970 flood as highest since 1916
Peaks for 1954 and 1956 estimated

PRELIMINARY RESULTS

-PLOTTING POSITIONS- 09516500

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
9	6	1939	6200.	1	1970	47500.	1.96
2	1	1940	160.	2	1984	26700.	3.92
3	2	1941	6100.	3	1993	26300.	5.88
8	5	1942	100.	4	1978	18000.	7.84
8	3	1943	7700.	5	1980	17000.	9.80
8	9	1944	3520.	6	1991	13700.	11.76
8	2	1945	2200.	7	1995	13450.	13.73
9	17	1946	2310.	8	2001	13400.	15.69
8	8	1947	6000.	9	1997	11800.	17.65
9	30	1954	4500.	10	1979	9600.	19.61
9	30	1956	4000.	11	1965	9280.	21.57
7	12	1964	4000.	12	1943	7700.	23.53
9	2	1965	9280.	13	1988	6820.	25.49
9	13	1966	3210.	14	1990	6280.	27.45
9	0	1967	1150.	15	1939	6200.	29.41
12	19	1967	4800.	16	1941	6100.	31.37
9	13	1969	650.	17	2002	6040.	33.33
9	5	1970	47500.	18	1947	6000.	35.29
8	18	1971	2000.	19	1981	4800.	37.25
9	27	1972	700.	20	1968	4800.	39.22
10	7	1972	2000.	21	2000	4700.	41.18
7	20	1974	650.	22	1954	4500.	43.14
7	29	1975	50.	23	1964	4000.	45.10
2	9	1976	800.	24	1956	4000.	47.06
8	15	1977	1600.	25	1944	3520.	49.02
3	2	1978	18000.	26	1992	3380.	50.98
12	18	1978	9600.	27	1966	3210.	52.94
2	20	1980	17000.	28	1986	2740.	54.90
7	10	1981	4800.	29	1999	2710.	56.86
3	3	1983	2520.	30	1983	2520.	58.82
9	10	1984	26700.	31	1946	2310.	60.78
12	28	1984	848.	32	1945	2200.	62.75
11	26	1985	2740.	33	1971	2000.	64.71
11	18	1986	714.	34	1973	2000.	66.67
8	27	1988	6820.	35	1996	1970.	68.63
1	4	1989	1210.	36	2003	1680.	70.59
9	5	1990	6280.	37	1977	1600.	72.55
3	2	1991	13700.	38	1989	1210.	74.51
2	13	1992	3380.	39	1967	1150.	76.47
1	8	1993	26300.	40	1985	848.	78.43
8	19	1994	25.	41	1976	800.	80.39
2	15	1995	13450.	42	1987	714.	82.35
7	26	1996	1970.	43	1972	700.	84.31
9	26	1997	11800.	44	1969	650.	86.27
3	29	1998	594.	45	1974	650.	88.24
8	31	1999	2710.	46	1998	594.	90.20
8	29	2000	4700.	47	1940	160.	92.16
10	22	2000	13400.	48	1942	100.	94.12
9	7	2002	6040.	49	1975	50.	96.08
2	13	2003	1680.	50	1994	25.	98.04

-SKEW WEIGHTING -

BASED ON 50 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .194
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

Sept. 1970 flood as highest since 1916
Peaks for 1954 and 1956 estimated

PRELIMINARY RESULTS

FREQUENCY CURVE- 09516500

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY FLOW IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	CONFIDENCE LIMITS .95 FLOW IN CFS
76200.	85800.	.20	164000.	42700.
60700.	67000.	.50	126000.	34900.
49500.	53800.	1.00	99200.	29100.
38900.	41700.	2.00	75000.	23500.
29100.	30700.	4.00	53600.	18100.
26200.	27500.	5.00	47400.	16400.
17700.	18300.	10.00	30300.	11500.
10500.	10700.	20.00	16700.	7090.
3270.	3270.	50.00	4740.	2280.
811.	787.	80.00	1190.	514.
356.	334.	90.00	557.	202.
171.	154.	95.00	288.	87.
38.	30.	99.00	76.	15.

SYSTEMATIC STATISTICS

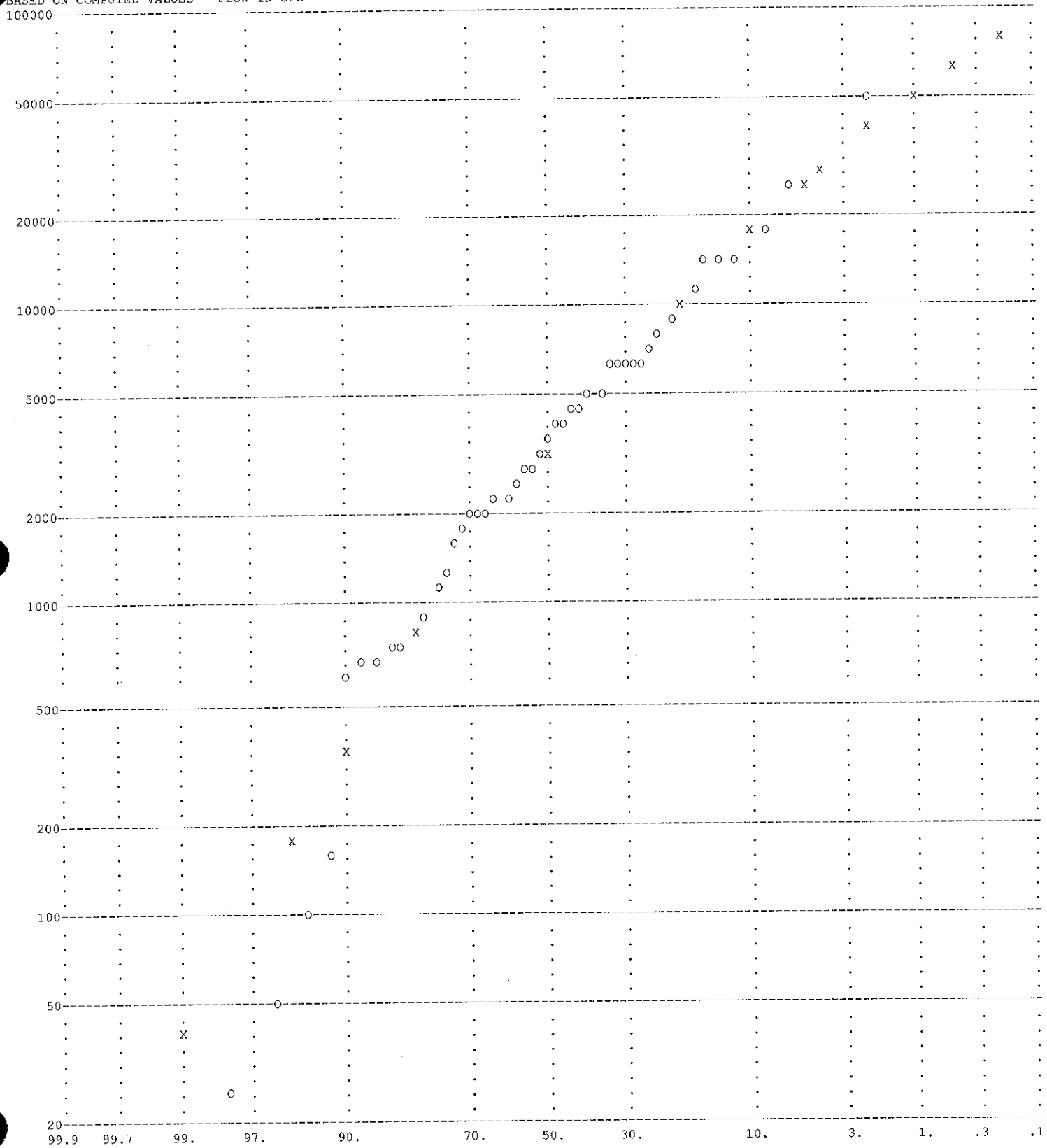
LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.4446	HISTORIC EVENTS	0
STANDARD DEV	.6721	HIGH OUTLIERS	0
COMPUTED SKEW	-.9663	LOW OUTLIERS	0
REGIONAL SKEW	-.1000	ZERO OR MISSING	0
ADOPTED SKEW	-.6271	SYSTEMATIC EVENTS	50

Sept. 1970 flood as highest since 1916
Peaks for 1954 and 1956 estimated

Hassayampa River near Morristown, 09516500

PRELIMINARY RESULTS

FREQUENCY PLOT - 09516500
BASED ON COMPUTED VALUES - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

Sept. 1970 flood as highest since 1916
Peaks for 1954 and 1956 estimated

FINAL RESULTS

-PLOTTING POSITIONS- 09516500

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
9	6	1939	6200.	1	1970	47500.	1.12
2	1	1940	160.	2	1984	26700.	2.68
3	2	1941	6100.	3	1993	26300.	4.68
8	5	1942	100.	4	1978	18000.	6.67
8	3	1943	7700.	5	1980	17000.	8.67
8	9	1944	3520.	6	1991	13700.	10.66
8	2	1945	2200.	7	1995	13450.	12.66
9	17	1946	2310.	8	2001	13400.	14.65
8	8	1947	6000.	9	1997	11800.	16.65
9	30	1954	4500.	10	1979	9600.	18.64
9	30	1956	4000.	11	1965	9280.	20.64
7	12	1964	4000.	12	1943	7700.	22.63
9	2	1965	9280.	13	1988	6820.	24.63
9	13	1966	3210.	14	1990	6280.	26.62
9	0	1967	1150.	15	1939	6200.	28.62
12	19	1967	4800.	16	1941	6100.	30.61
9	13	1969	650.	17	2002	6040.	32.61
9	5	1970	47500.	18	1947	6000.	34.60
8	18	1971	2000.	19	1981	4800.	36.60
9	27	1972	700.	20	1968	4800.	38.59
10	7	1972	2000.	21	2000	4700.	40.59
7	20	1974	650.	22	1954	4500.	42.58
7	29	1975	50.	23	1964	4000.	44.58
2	9	1976	800.	24	1956	4000.	46.57
8	15	1977	1600.	25	1944	3520.	48.57
3	2	1978	18000.	26	1992	3380.	50.56
12	18	1978	9600.	27	1966	3210.	52.56
2	20	1980	17000.	28	1986	2740.	54.55
7	10	1981	4800.	29	1999	2710.	56.55
3	3	1983	2520.	30	1983	2520.	58.54
9	10	1984	26700.	31	1946	2310.	60.54
12	28	1984	848.	32	1945	2200.	62.53
11	26	1985	2740.	33	1971	2000.	64.53
11	18	1986	714.	34	1973	2000.	66.52
8	27	1988	6820.	35	1996	1970.	68.52
1	4	1989	1210.	36	2003	1680.	70.51
9	5	1990	6280.	37	1977	1600.	72.51
3	2	1991	13700.	38	1989	1210.	74.50
2	13	1992	3380.	39	1967	1150.	76.50
1	8	1993	26300.	40	1985	848.	78.49
8	19	1994	25.	41	1976	800.	80.49
2	15	1995	13450.	42	1987	714.	82.48
7	26	1996	1970.	43	1972	700.	84.48
9	26	1997	11800.	44	1969	650.	86.47
3	29	1998	594.	45	1974	650.	88.47
8	31	1999	2710.	46	1998	594.	90.46
8	29	2000	4700.	47	1940	160.	92.46
10	22	2000	13400.	48	1942	100.	94.45
9	7	2002	6040.	49	1975	50.	96.45
2	13	2003	1680.	50	1994	25.	98.44

NOTE- PLOTTING POSITIONS BASED ON-HISTORIC PERIOD (H) = 88
NUMBER OF HISTORIC EVENTS PLUS HIGH OUTLIERS(Z) = 1
WEIGHTING FACTOR FOR SYSTEMATIC EVENTS (W) = 1.7755

-OUTLIER TESTS -

LOW OUTLIER TEST

BASED ON 50 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.768

Sept. 1970 flood as highest since 1916
Peaks for 1954 and 1956 estimated

1 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF 38.4

STATISTICS AND FREQUENCY CURVE ADJUSTED FOR 1 LOW OUTLIER(S)

HIGH OUTLIER TEST

BASED ON 49 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.760

1 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF 147878.
OR INPUT BASE OF 47500.

NOTE - COLLECTION OF HISTORICAL INFORMATION AND COMPARISONS WITH SIMILAR DATA SETS SHOULD BE EXPLORED IF NOT INCORPORATED IN THIS ANALYSIS.

STATISTICS AND FREQUENCY CURVE ADJUSTED FOR 1 HIGH OUTLIER(S)
AND 0 HISTORIC EVENT(S)

-SKEW WEIGHTING -

BASED ON 88 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .107
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

FINAL RESULTS

-FREQUENCY CURVE- 09516500

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95
61100.	68500.	.20	123000.	35900.
49100.	54000.	.50	95700.	29600.
40500.	43800.	1.00	76300.	24900.
32300.	34400.	2.00	58600.	20400.
24600.	25800.	4.00	42700.	16000.
22200.	23300.	5.00	38100.	14600.
15500.	15900.	10.00	25100.	10500.
9540.	9710.	20.00	14600.	6700.
3300.	3300.	50.00	4610.	2380.
940.	916.	80.00	1330.	622.
450.	426.	90.00	675.	270.
235.	214.	95.00	375.	127.
62.	50.	99.00	116.	27.

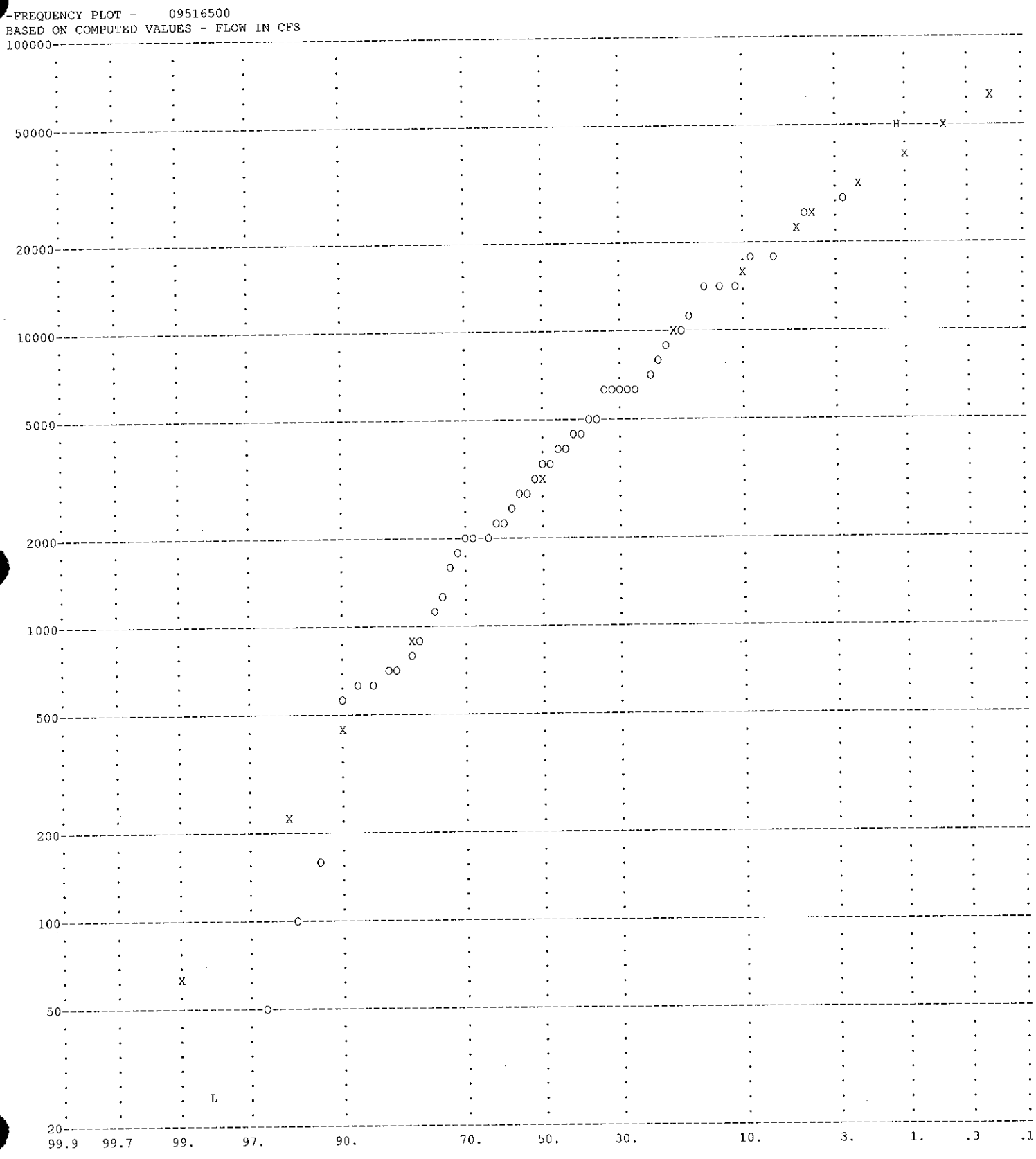
SYNTHETIC STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.4594	HISTORIC EVENTS	0
STANDARD DEV	.6070	HIGH OUTLIERS	1
COMPUTED SKEW	-.7577	LOW OUTLIERS	1
REGIONAL SKEW	-.1000	ZERO OR MISSING	0
ADOPTED SKEW	-.5858	SYSTEMATIC EVENTS	50
		HISTORIC PERIOD	88

Sept. 1970 flood as highest since 1916
Peaks for 1954 and 1956 estimated

Hassayampa River near Morristown, 09516500

FINAL RESULTS



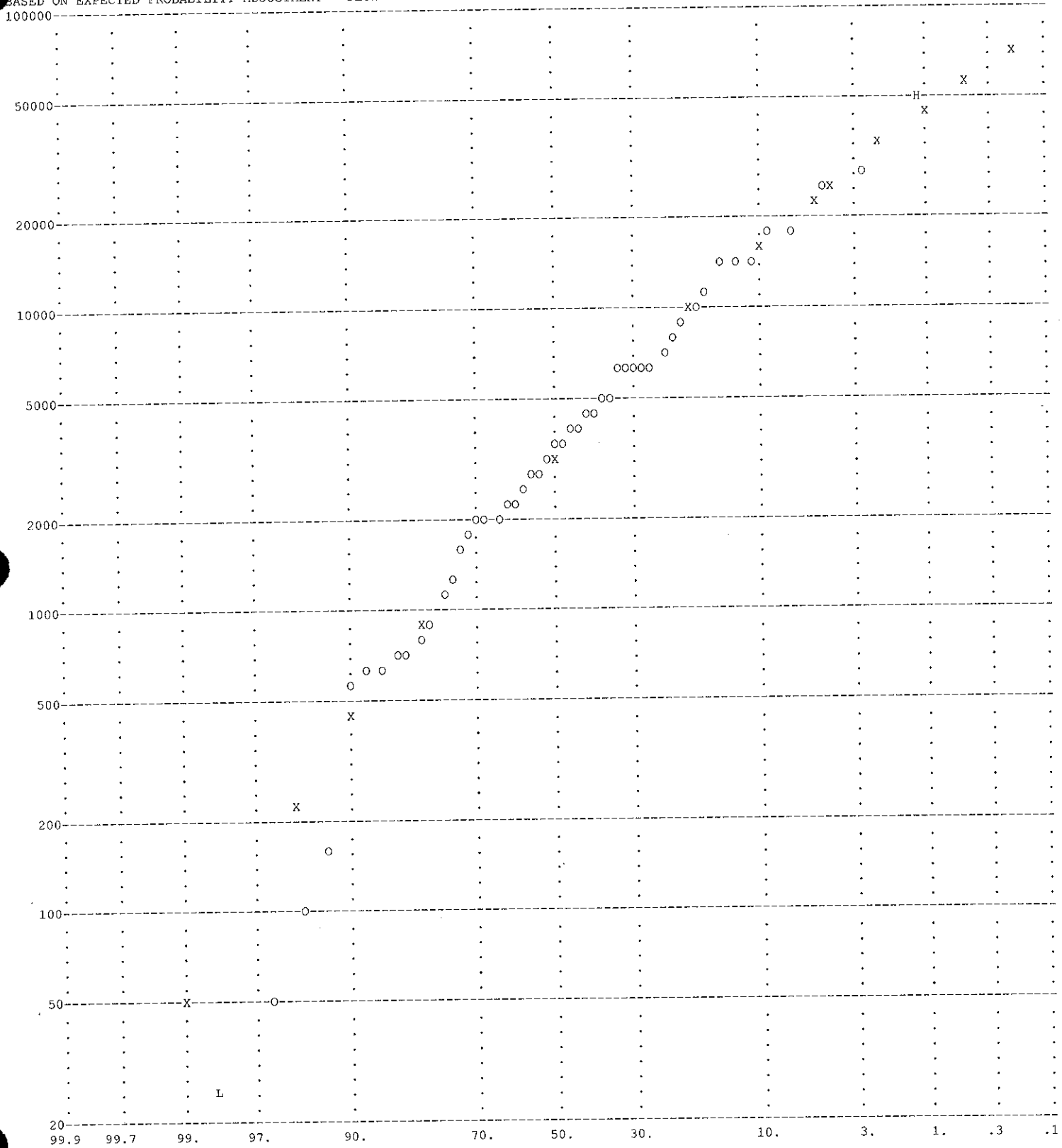
LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

Sept. 1970 flood as highest since 1916
Peaks for 1954 and 1956 estimated

Hassayampa River near Morristown, 09516500

FINAL RESULTS

FREQUENCY PLOT - 09516500
BASED ON EXPECTED PROBABILITY ADJUSTMENT - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

Sept. 1970 flood as highest since 1916
Peaks for 1954 and 1956 estimated

TABLE 1. SUMMARY OF STATISTICS -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	MEAN LOG	STD DEV	SKEW ADOPT	SKEW COMP	SKEW GENRL	HIST EVENT	OUTLIER HI	OUTLIER LO	ZERO/ MSNG	
5165	09516500		50	50	0	3.445	.672	-.63	-.966	-.10	0	0	0	0	**
5165	09516500		50	50	88	3.459	.607	-.59	-.758	-.10	0	1	1	0	

** PRELIMINARY STATISTICS

TABLE 2. SUMMARY OF FREQUENCY CURVE ORDINATES -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	PERCENT CHANCE EXCEEDANCE 10.	5.	2.	1.	.5	.2
5165	09516500		50	50	0	26183	29141	38941	49524	60716	76184
5165	09516500		50	50	88	22235	24572	32250	40471	49124	61057

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++++++++++++++++++++++++
+ END OF RUN            +
+ NORMAL STOP IN FFA    +
++++++++++++++++++++++++
```

Sept. 1970 flood as highest since 1916
Peaks for 1954 and 1956 estimated

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************************************      ************************************
*              FFA                 *      *                                  *
*     FLOOD FREQUENCY ANALYSIS     *      *   U.S. ARMY CORPS OF ENGINEERS   *
*     PROGRAM DATE:  FEB 1995      *      * THE HYDROLOGIC ENGINEERING CENTER *
*          VERSION:  3.1           *      *         609 SECOND STREET        *
*     RUN  DATE   AND   TIME:      *      *      DAVIS, CALIFORNIA 95616     *
*        15 FEB 05    14:38:47     *      *          (916) 756-1104          *
*                                  *      *                                  *
************************************      ************************************



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OUTPUT FILE NAME: MOR_NOHP.OUT
   DSS FILE NAME: MOR_NOHP.DSS



   -----DSS---ZOPEN:  New File Opened,  File: MOR_NOHP.DSS
                      Unit:  71;  DSS Version: 6-JB

**TITLE RECORD(S)**
TT    HASSAYAMPA RIVER NEAR MORRISTOWN, AZ
TT    600 FT D S FROM MOUTH OF SAN DOMINGO WASH, 3 MILES NORTHWEST OF MORRISTOWN
TT    DA = 796   PERIOD OF RECORD Discontinuous from 1939-2003

**JOB RECORD(S)**
     IPPC   ISKFX  IPROUT    IFMT    IWYR   IUNIT   ISMRY   IPNCH    IREG
J1      1       2       0       1       0       1       3       0       0

       A       B  CLIMIT  NDSSCV    IEXT
J2   .00     .00     .05       0       0

**FREQUENCY ARRAY**
FR    13    .200    .500   1.000   2.000   4.000   5.000  10.000  20.000  50.000
FR80.000  90.000  95.000  99.000

**STATION IDENTIFICATION**
ID     09516500

**GENERALIZED SKEW**
     ISTN   GGMSE    SKEW
GS   5165    .000    -.10

**SYSTEMATIC EVENTS**
     48 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

PRELIMINARY RESULTS

-SKEW WEIGHTING -

BASED ON 48 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .190
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

PRELIMINARY RESULTS

-FREQUENCY CURVE- 09516500

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY FLOW IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95 FLOW IN CFS
83300.	95100.	.20	187000.	45400.
65600.	73100.	.50	141000.	36800.
52900.	58000.	1.00	110000.	30400.
41200.	44300.	2.00	81900.	24300.
30400.	32200.	4.00	57600.	18500.
27200.	28700.	5.00	50700.	16800.
18200.	18800.	10.00	31800.	11600.
10600.	10800.	20.00	17200.	7040.
3200.	3200.	50.00	4710.	2200.
775.	751.	80.00	1160.	481.
336.	315.	90.00	536.	186.
160.	144.	95.00	275.	79.
35.	27.	99.00	73.	13.

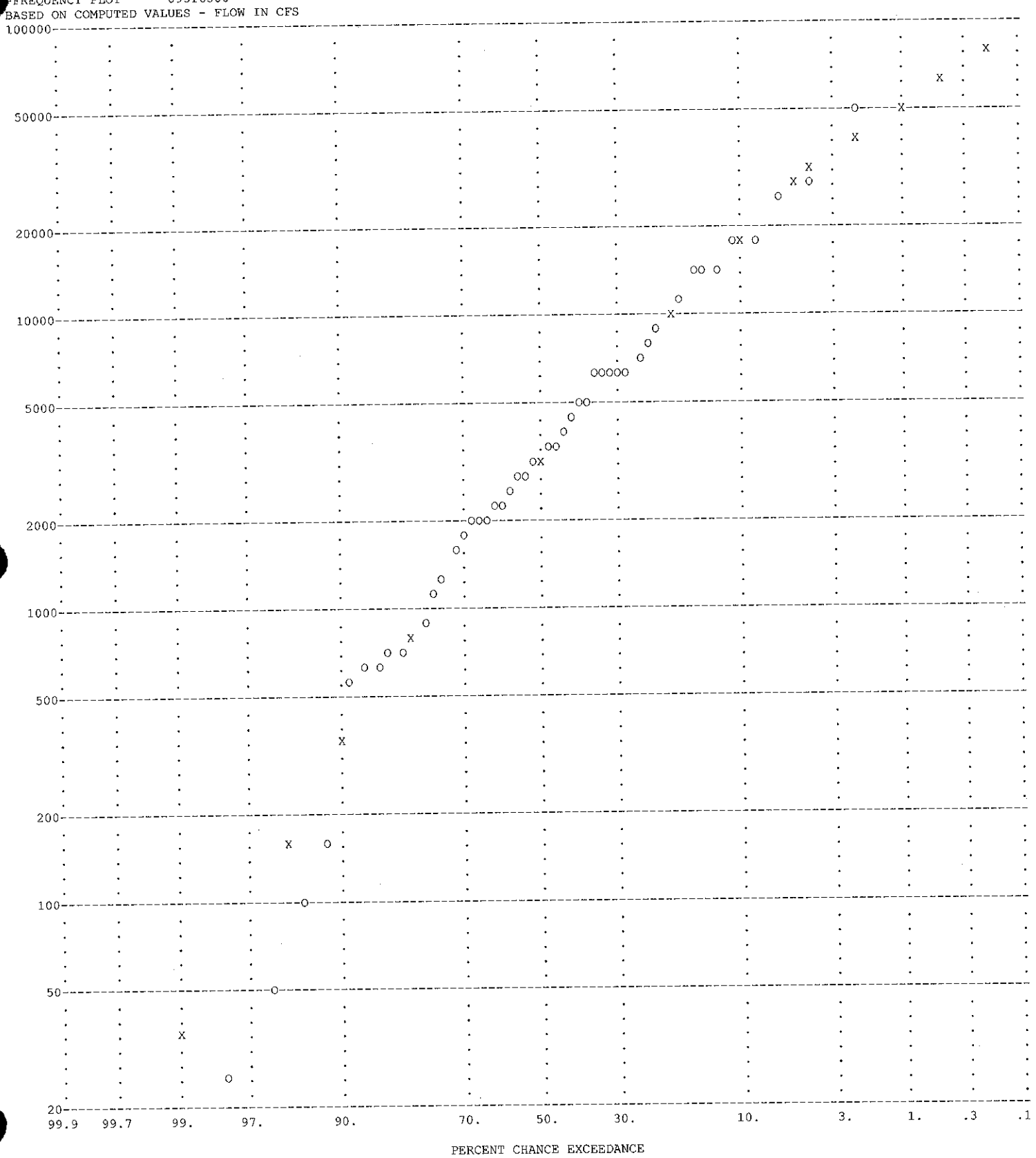
SYSTEMATIC STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.4370	HISTORIC EVENTS	0
STANDARD DEV	.6851	HIGH OUTLIERS	0
COMPUTED SKEW	-.9186	LOW OUTLIERS	0
REGIONAL SKEW	-.1000	ZERO OR MISSING	0
ADOPTED SKEW	-.6029	SYSTEMATIC EVENTS	48

Hassayampa River near Morristown, 09516500

PRELIMINARY RESULTS

FREQUENCY PLOT - 09516500
BASED ON COMPUTED VALUES - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

No Historic Peaks Designated

FINAL RESULTS

-PLOTTING POSITIONS- 09516500

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
9	6	1939	6200.	1	1970	47500.	2.04
2	1	1940	160.	2	1984	26700.	4.08
3	2	1941	6100.	3	1993	26300.	6.12
8	5	1942	100.	4	1978	18000.	8.16
8	3	1943	7700.	5	1980	17000.	10.20
8	9	1944	3520.	6	1991	13700.	12.24
8	2	1945	2200.	7	1995	13450.	14.29
9	17	1946	2310.	8	2001	13400.	16.33
8	8	1947	6000.	9	1997	11800.	18.37
7	12	1964	4000.	10	1979	9600.	20.41
9	2	1965	9280.	11	1965	9280.	22.45
9	13	1966	3210.	12	1943	7700.	24.49
9	0	1967	1150.	13	1988	6820.	26.53
12	19	1967	4800.	14	1990	6280.	28.57
9	13	1969	650.	15	1939	6200.	30.61
9	5	1970	47500.	16	1941	6100.	32.65
8	18	1971	2000.	17	2002	6040.	34.69
9	27	1972	700.	18	1947	6000.	36.73
10	7	1972	2000.	19	1981	4800.	38.78
7	20	1974	650.	20	1968	4800.	40.82
7	29	1975	50.	21	2000	4700.	42.86
2	9	1976	800.	22	1964	4000.	44.90
8	15	1977	1600.	23	1944	3520.	46.94
3	2	1978	18000.	24	1992	3380.	48.98
12	18	1978	9600.	25	1966	3210.	51.02
2	20	1980	17000.	26	1986	2740.	53.06
7	10	1981	4800.	27	1999	2710.	55.10
3	3	1983	2520.	28	1983	2520.	57.14
9	10	1984	26700.	29	1946	2310.	59.18
12	28	1984	848.	30	1945	2200.	61.22
11	26	1985	2740.	31	1973	2000.	63.27
11	18	1986	714.	32	1971	2000.	65.31
8	27	1988	6820.	33	1996	1970.	67.35
1	4	1989	1210.	34	2003	1680.	69.39
9	5	1990	6280.	35	1977	1600.	71.43
3	2	1991	13700.	36	1989	1210.	73.47
2	13	1992	3380.	37	1967	1150.	75.51
1	8	1993	26300.	38	1985	848.	77.55
8	19	1994	25.	39	1976	800.	79.59
2	15	1995	13450.	40	1987	714.	81.63
7	26	1996	1970.	41	1972	700.	83.67
9	26	1997	11800.	42	1969	650.	85.71
3	29	1998	594.	43	1974	650.	87.76
8	31	1999	2710.	44	1998	594.	89.80
8	29	2000	4700.	45	1940	160.	91.84
10	22	2000	13400.	46	1942	100.	93.88
9	7	2002	6040.	47	1975	50.	95.92
2	13	2003	1680.	48	1994	25.	97.96

-OUTLIER TESTS -

LOW OUTLIER TEST

BASED ON 48 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.753

1 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF 35.5

STATISTICS AND FREQUENCY CURVE ADJUSTED FOR 1 LOW OUTLIER(S)

HIGH OUTLIER TEST

No Historic Peaks Designated

BASED ON 47 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.744

0 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF 154198.

-SKEW WEIGHTING -

BASED ON 48 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .159
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

FINAL RESULTS

-FREQUENCY CURVE- 09516500

COMPUTED CURVE FLOW	EXPECTED PROBABILITY IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95
83000.	96300.	.20	181000.	46400.
63800.	71900.	.50	133000.	36800.
50700.	56000.	1.00	102000.	30000.
38900.	42100.	2.00	74500.	23700.
28500.	30300.	4.00	51900.	18000.
25500.	26900.	5.00	45500.	16200.
17000.	17600.	10.00	28500.	11300.
10000.	10200.	20.00	15700.	6910.
3260.	3260.	50.00	4640.	2310.
900.	876.	80.00	1300.	580.
430.	406.	90.00	659.	251.
225.	206.	95.00	368.	119.
62.	50.	99.00	117.	26.

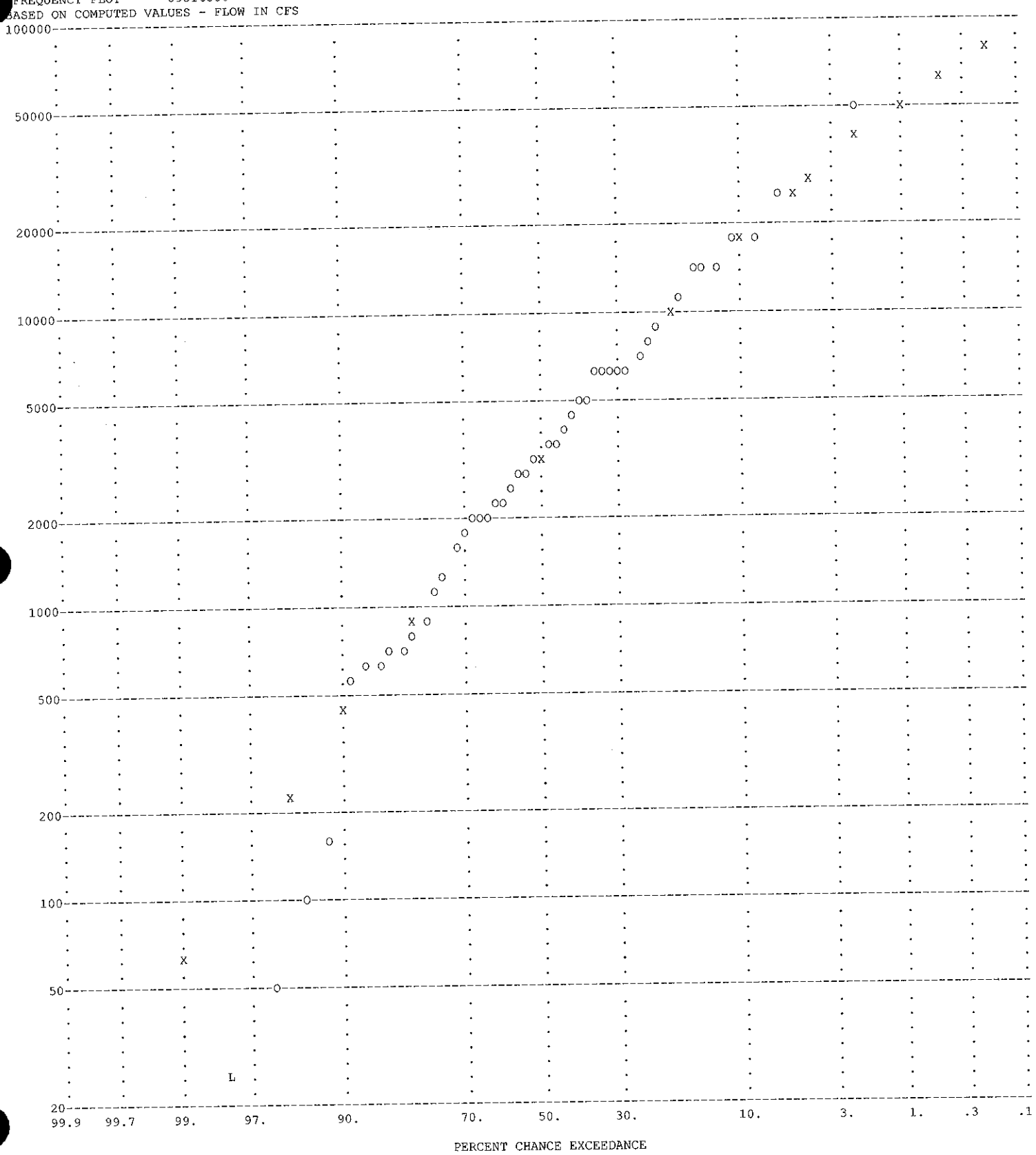
SYNTHETIC STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.4638	HISTORIC EVENTS	0
STANDARD DEV	.6284	HIGH OUTLIERS	0
COMPUTED SKEW	-.6674	LOW OUTLIERS	1
REGIONAL SKEW	-.1000	ZERO OR MISSING	0
ADOPTED SKEW	-.4718	SYSTEMATIC EVENTS	48

Hassayampa River near Morristown, 09516500

FINAL RESULTS

FREQUENCY PLOT - 09516500
BASED ON COMPUTED VALUES - FLOW IN CFS



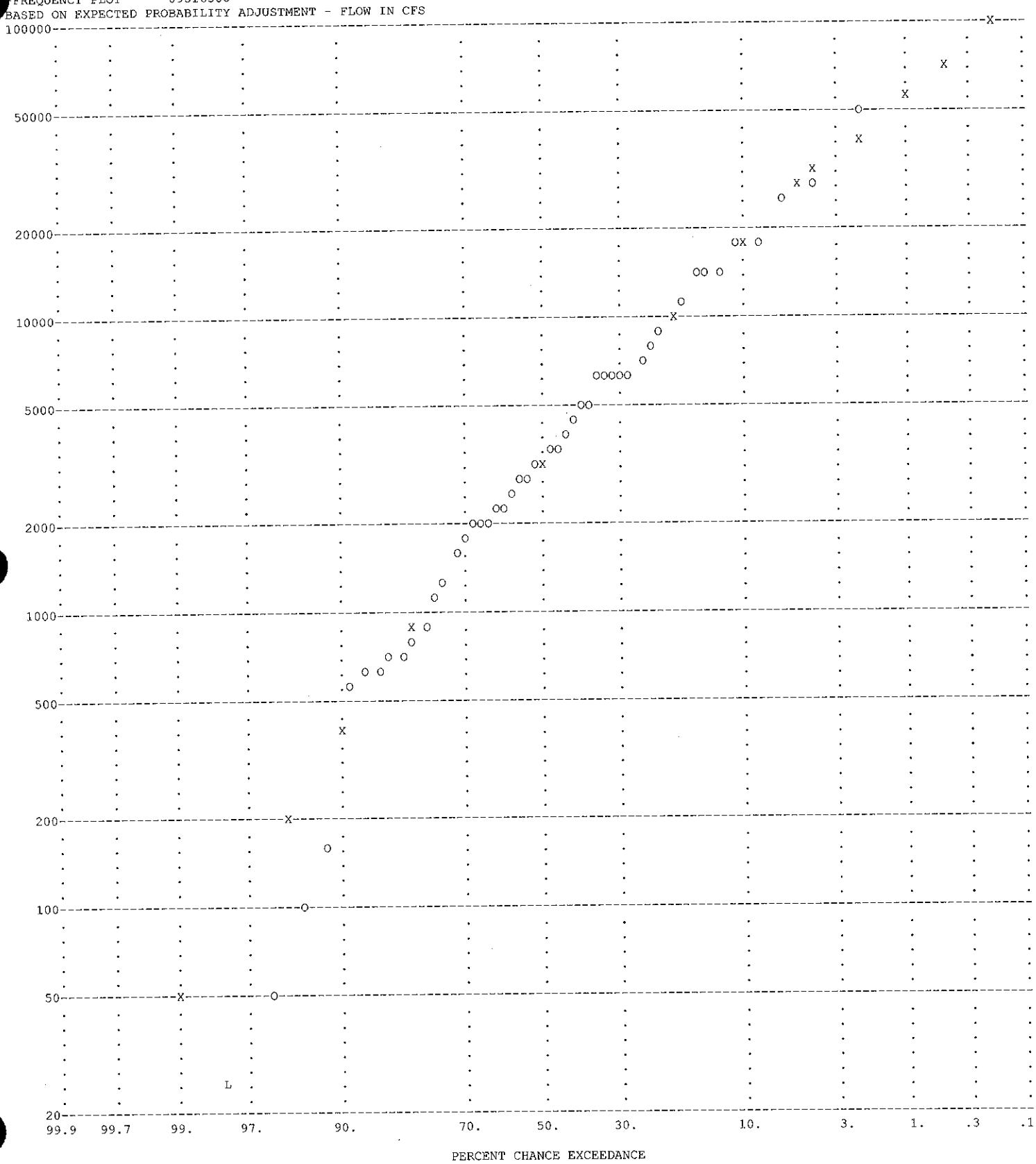
LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

No Historic Peaks Designated

Hassayampa River near Morristown, 09516500

FINAL RESULTS

FREQUENCY PLOT - 09516500
BASED ON EXPECTED PROBABILITY ADJUSTMENT - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

No Historic Peaks Designated

TABLE 1. SUMMARY OF STATISTICS -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	....YEARS..... RECD	SYST	HIST	MEAN LOG	STD DEV	.....SKEW..... ADOPT	COMP	GENRL	HIST EVENT	OUTLIER HI	LO	ZERO/ MSNG
5165	09516500		48	48	0	3.437	.685	-.60	-.919	-.10	0	0	0	0 **
5165	09516500		48	48	0	3.464	.628	-.47	-.667	-.10	0	0	1	0

** PRELIMINARY STATISTICS

TABLE 2. SUMMARY OF FREQUENCY CURVE ORDINATES -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	....YEARS..... RECD	SYST	HIST	.....PERCENT CHANCE EXCEEDANCE..... 10.	5.	2.	1.	.5	.2
5165	09516500		48	48	0	27226	30429	41165	52940	65576	83319
5165	09516500		48	48	0	25495	28541	38949	50733	63821	82992

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+++++++++++++++++++++++++
+ END OF RUN             +
+ NORMAL STOP IN FFA     +
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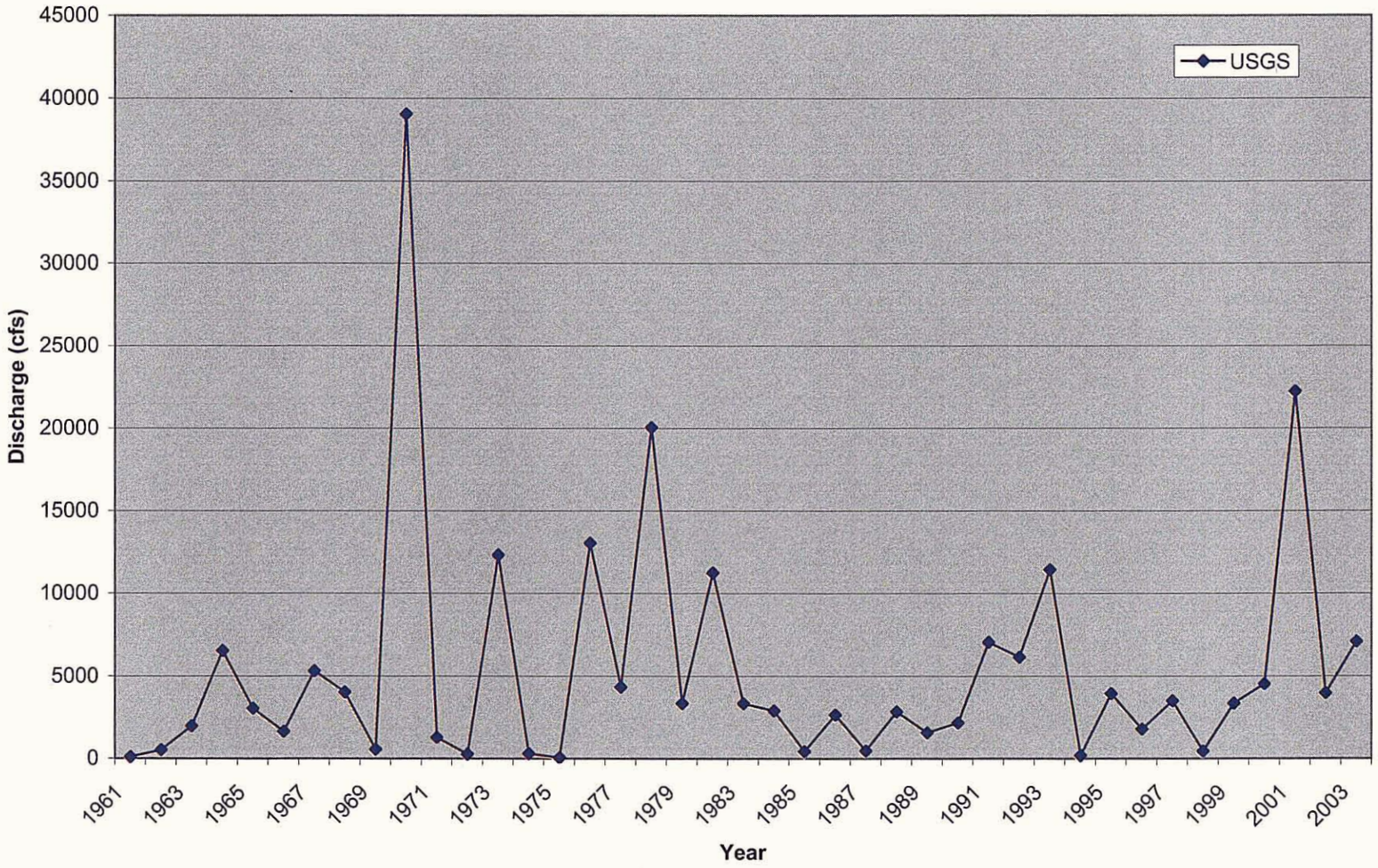
Hassayampa River near Arlington, AZ			
ID	9517000		
Date	Annual Peak Q, in cfs	Source	Notes
9111961	50	USGS (Pope & others, 1998)	estimated
9061962	470	USGS (Pope & others, 1998)	
08 1963	1930	USGS (Pope & others, 1998)	
8141964	6500	USGS (Pope & others, 1998)	
2071965	3000	USGS (Pope & others, 1998)	
12101965	1600	USGS (Pope & others, 1998)	
9051967	5270	USGS (Pope & others, 1998)	
12201967	4000	USGS (Pope & others, 1998)	
9151969	500	USGS (Pope & others, 1998)	estimated
9051970	39000	USGS (Pope & others, 1998)	Highest since 1916
8111971	1230	USGS (Pope & others, 1998)	
8121972	225	USGS (Pope & others, 1998)	
10071972	12300	USGS (Pope & others, 1998)	
9001974	250	USGS (Pope & others, 1998)	
1975	0	USGS (Pope & others, 1998)	
9261976	13000	USGS (Pope & others, 1998)	
10241976	4300	USGS (Pope & others, 1998)	
3021978	20000	USGS (Pope & others, 1998)	
11111978	3300	USGS (Pope & others, 1998)	
2201980	11200	USGS (Pope & others, 1998)	
9301983	3300	USGS (Pope & others, 1998)	
9021984	2850	USGS (Pope & others, 1998)	
12281984	372	USGS (Pope & others, 1998)	
11261985	2610	USGS (Pope & others, 1998)	
10101986	404	USGS (Pope & others, 1998)	
11011987	2800	USGS (Pope & others, 1998)	
8111989	1510	USGS (Pope & others, 1998)	
8141990	2120	USGS (Pope & others, 1998)	
3021991	7010	USGS (Pope & others, 1998)	
8221992	6110	USGS (Pope & others, 1998)	
1081993	11400	USGS (Pope & others, 1998)	
2021994	129	USGS (Pope & others, 1998)	
2151995	3900	USGS (Pope & others, 1998)	
7151996	1730	USGS (Pope & others, 1998)	
9261997	3460	USGS, nwis.waterdata.usgs.gov	
2181998	396	USGS, nwis.waterdata.usgs.gov	
7111999	3310	USGS, nwis.waterdata.usgs.gov	
8302000	4480	USGS, nwis.waterdata.usgs.gov	
10272000	22200	USGS, nwis.waterdata.usgs.gov	
9072002	3930	USGS, nwis.waterdata.usgs.gov	
2142003	7050	USGS, nwis.waterdata.usgs.gov	

USGS Gage # 09517000 - Arlington Peak Annual Flow (1961-2003)



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************************************      ************************************
*              FFA                 *      *                                  *
*     FLOOD FREQUENCY ANALYSIS     *      *   U.S. ARMY CORPS OF ENGINEERS   *
*     PROGRAM DATE:  FEB 1995      *      * THE HYDROLOGIC ENGINEERING CENTER *
*          VERSION:  3.1           *      *         609 SECOND STREET        *
*     RUN  DATE   AND   TIME:      *      *      DAVIS, CALIFORNIA 95616     *
*        08 NOV 04    11:55:25     *      *          (916) 756-1104          *
*                                  *      *                                  *
************************************      ************************************



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   DSS FILE NAME: ARL_SI.DSS


   -----DSS---ZOPEN:  Existing File Opened,  File: ARL_SI.DSS
                      Unit:  71;  DSS Version: 6-JB


**TITLE RECORD(S)**
TT    HASSAYAMPA RIVER NEAR ARLINGTON, AZ
TT    AT OLD US 80 BRIDGE 1.8 MILES UPSTREAM FROM GILA RIVER
TT    DA = 1471   PERIOD OF RECORD 1939-2003

**JOB RECORD(S)**
     IPPC   ISKFX  IPROUT    IFMT    IWYR   IUNIT   ISMRY   IPNCH    IREG
J1     1       2       0       1       0       1       3       0       0

       A       B  CLIMIT  NDSSCV    IEXT
J2   .00     .00     .05       0       0

**FREQUENCY ARRAY**
FR    13    .200    .500   1.000   2.000   4.000   5.000  10.000  20.000  50.000
FR80.000  90.000  95.000  99.000

**STATION IDENTIFICATION**
ID     09517000

**GENERALIZED SKEW**
     ISTN   GGMSE    SKEW
GS   5170    .000    -.10

**SPECIAL STATION INFORMATION**
    IYRA    IYRL  HITHRS  LOTHRS    LOGT    NDEC    NSIG
SI  1916       0  39000.      0.       0       0       0

**SYSTEMATIC EVENTS**
     41 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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PRELIMINARY RESULTS

PLOTTING POSITIONS- 09517000

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
9	11	1961	50.	1	1970	39000.	2.38
9	6	1962	470.	2	2001	22200.	4.76
8	0	1963	1930.	3	1978	20000.	7.14
8	14	1964	6500.	4	1976	13000.	9.52
2	7	1965	3000.	5	1973	12300.	11.90
12	10	1965	1600.	6	1993	11400.	14.29
9	5	1967	5270.	7	1980	11200.	16.67
12	20	1967	4000.	8	2003	7050.	19.05
9	15	1969	500.	9	1991	7010.	21.43
9	5	1970	39000.	10	1964	6500.	23.81
8	11	1971	1230.	11	1992	6110.	26.19
8	12	1972	225.	12	1967	5270.	28.57
10	7	1972	12300.	13	2000	4480.	30.95
9	0	1974	250.	14	1977	4300.	33.33
0	0	1975	0.	15	1968	4000.	35.71
9	26	1976	13000.	16	2002	3930.	38.10
10	24	1976	4300.	17	1995	3900.	40.48
3	2	1978	20000.	18	1997	3460.	42.86
11	11	1978	3300.	19	1999	3310.	45.24
2	20	1980	11200.	20	1983	3300.	47.62
9	30	1983	3300.	21	1979	3300.	50.00
9	2	1984	2850.	22	1965	3000.	52.38
12	28	1984	372.	23	1984	2850.	54.76
11	26	1985	2610.	24	1988	2800.	57.14
10	10	1986	404.	25	1986	2610.	59.52
11	1	1987	2800.	26	1990	2120.	61.90
8	11	1989	1510.	27	1963	1930.	64.29
8	14	1990	2120.	28	1996	1730.	66.67
3	2	1991	7010.	29	1966	1600.	69.05
8	22	1992	6110.	30	1989	1510.	71.43
1	8	1993	11400.	31	1971	1230.	73.81
2	2	1994	129.	32	1969	500.	76.19
2	15	1995	3900.	33	1962	470.	78.57
7	15	1996	1730.	34	1987	404.	80.95
9	26	1997	3460.	35	1998	396.	83.33
2	18	1998	396.	36	1985	372.	85.71
7	11	1999	3310.	37	1974	250.	88.10
8	30	2000	4480.	38	1972	225.	90.48
10	27	2000	22200.	39	1994	129.	92.86
9	7	2002	3930.	40	1961	50.	95.24
2	14	2003	7050.	41	1975	0.	97.62

NOTE - ADOPTED SKEW EQUALS COMPUTED SKEW AND PRELIMINARY FREQUENCY STATISTICS ARE FOR THE CONDITIONAL FREQUENCY CURVE BECAUSE OF ZERO OR MISSING EVENTS.

PRELIMINARY RESULTS

FREQUENCY CURVE- 09517000

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95
56500.	65200.	.20	130000.	30800.
45600.	51300.	.50	101000.	25500.
37600.	41600.	1.00	80000.	21600.
30000.	32500.	2.00	61100.	17600.
22800.	24300.	4.00	44200.	13800.
20600.	21800.	5.00	39200.	12600.
14200.	14800.	10.00	25400.	9040.
8650.	8850.	20.00	14300.	5720.
2860.	2860.	50.00	4250.	1940.
758.	731.	80.00	1140.	463.
345.	321.	90.00	554.	187.
172.	152.	95.00	297.	82.
41.	31.	99.00	85.	15.

CONDITIONAL STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.3889	HISTORIC EVENTS	0
STANDARD DEV	.6397	HIGH OUTLIERS	0
COMPUTED SKEW	-.6336	LOW OUTLIERS	0
REGIONAL SKEW	-.1000	ZERO OR MISSING	1
ADOPTED SKEW	-.6336	SYSTEMATIC EVENTS	41

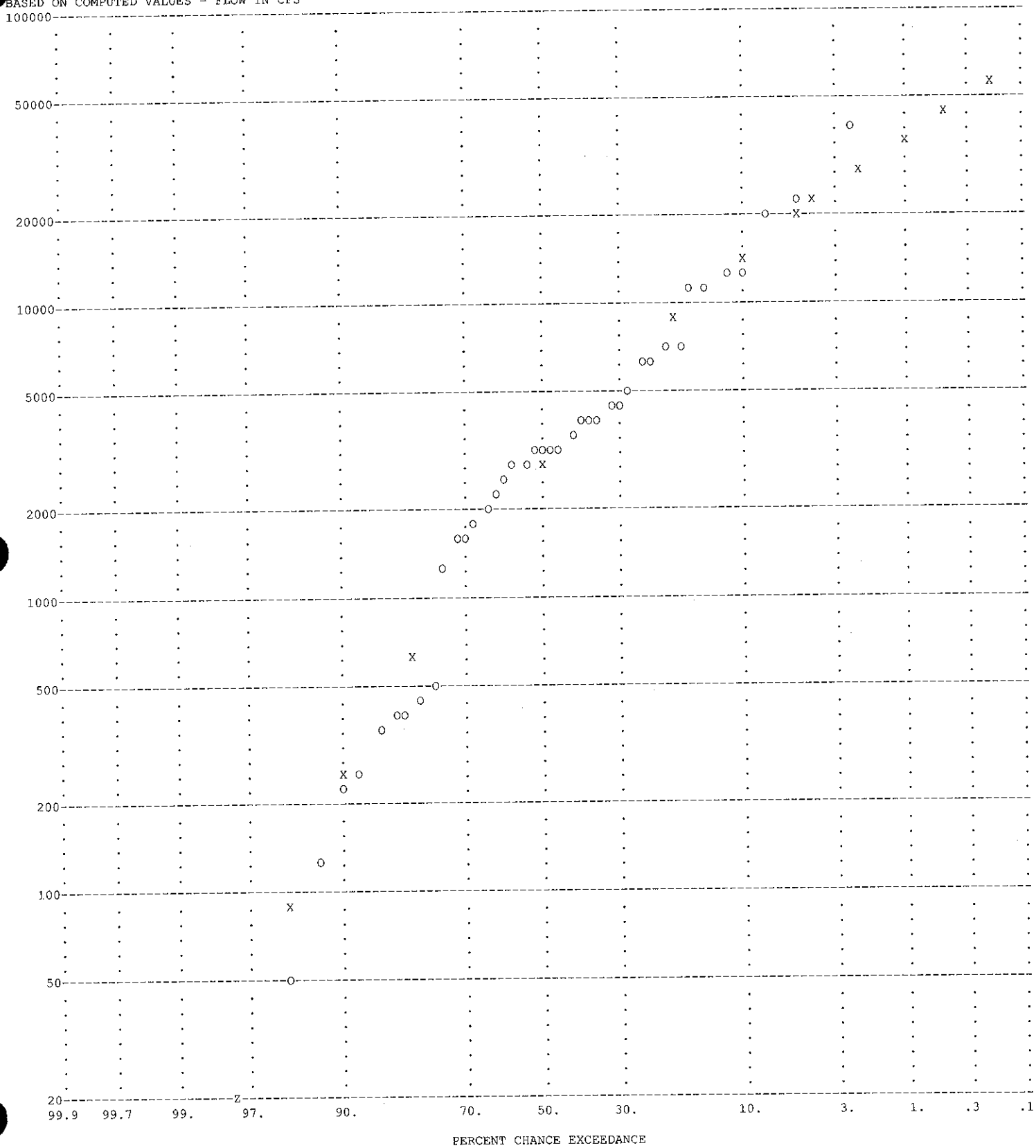
CONDITIONAL PROBABILITY ADJUSTED ORDINATES

-FREQUENCY CURVE- 09517000

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95
56206.	-1.	.20	-1.	-1.
45330.	-1.	.50	-1.	-1.
37356.	-1.	1.00	-1.	-1.
29727.	-1.	2.00	-1.	-1.
22550.	-1.	4.00	-1.	-1.
20352.	-1.	5.00	-1.	-1.
14000.	-1.	10.00	-1.	-1.
8465.	-1.	20.00	-1.	-1.
2729.	-1.	50.00	-1.	-1.
664.	-1.	80.00	-1.	-1.
263.	-1.	90.00	-1.	-1.
94.	-1.	95.00	-1.	-1.
0.	-1.	99.00	-1.	-1.

PRELIMINARY RESULTS

FREQUENCY PLOT - 09517000
BASED ON COMPUTED VALUES - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

September 1970 flood treated as highest since 1916

FINAL RESULTS

-PLOTTING POSITIONS- 09517000

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
9	11	1961	50.	1	1970	39000.	1.12
9	6	1962	470.	2	2001	22200.	2.91
8	0	1963	1930.	3	1978	20000.	5.35
8	14	1964	6500.	4	1976	13000.	7.79
2	7	1965	3000.	5	1973	12300.	10.24
12	10	1965	1600.	6	1993	11400.	12.68
9	5	1967	5270.	7	1980	11200.	15.13
12	20	1967	4000.	8	2003	7050.	17.57
9	15	1969	500.	9	1991	7010.	20.01
9	5	1970	39000.	10	1964	6500.	22.46
8	11	1971	1230.	11	1992	6110.	24.90
8	12	1972	225.	12	1967	5270.	27.35
10	7	1972	12300.	13	2000	4480.	29.79
9	0	1974	250.	14	1977	4300.	32.23
0	0	1975	0.	15	1968	4000.	34.68
9	26	1976	13000.	16	2002	3930.	37.12
10	24	1976	4300.	17	1995	3900.	39.56
3	2	1978	20000.	18	1997	3460.	42.01
11	11	1978	3300.	19	1999	3310.	44.45
2	20	1980	11200.	20	1983	3300.	46.90
9	30	1983	3300.	21	1979	3300.	49.34
9	2	1984	2850.	22	1965	3000.	51.78
12	28	1984	372.	23	1984	2850.	54.23
11	26	1985	2610.	24	1988	2800.	56.67
10	10	1986	404.	25	1986	2610.	59.12
11	1	1987	2800.	26	1990	2120.	61.56
8	11	1989	1510.	27	1963	1930.	64.00
8	14	1990	2120.	28	1996	1730.	66.45
3	2	1991	7010.	29	1966	1600.	68.89
8	22	1992	6110.	30	1989	1510.	71.33
1	8	1993	11400.	31	1971	1230.	73.78
2	2	1994	129.	32	1969	500.	76.22
2	15	1995	3900.	33	1962	470.	78.67
7	15	1996	1730.	34	1987	404.	81.11
9	26	1997	3460.	35	1998	396.	83.55
2	18	1998	396.	36	1985	372.	86.00
7	11	1999	3310.	37	1974	250.	88.44
8	30	2000	4480.	38	1972	225.	90.88
10	27	2000	22200.	39	1994	129.	93.33
9	7	2002	3930.	40	1961	50.	95.77
2	14	2003	7050.	41	1975	0.	98.22

NOTE- PLOTTING POSITIONS BASED ON-HISTORIC PERIOD (H) = 88
NUMBER OF HISTORIC EVENTS PLUS HIGH OUTLIERS(Z) = 1
WEIGHTING FACTOR FOR SYSTEMATIC EVENTS (W) = 2.1750

-OUTLIER TESTS -

LOW OUTLIER TEST

BASED ON 40 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.682

0 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF 47.1
BASED ON THE STATISTICS AFTER 1 ZERO OR MISSING EVENTS DELETED

STATISTICS AND FREQUENCY CURVE ADJUSTED FOR 0 LOW OUTLIER(S)
AND/OR 1 ZERO OR MISSING EVENT(S)

HIGH OUTLIER TEST

BASED ON 40 EVENTS, 10 *PERCENT OUTLIER TEST VALUE K(N) = 2.682*

1 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF 127191.
OR INPUT BASE OF 39000.

NOTE - COLLECTION OF HISTORICAL INFORMATION AND COMPARISONS WITH SIMILAR DATA SETS SHOULD BE EXPLORED IF NOT INCORPORATED IN THIS ANALYSIS.

STATISTICS AND FREQUENCY CURVE ADJUSTED FOR 1 HIGH OUTLIER(S)
AND 0 HISTORIC EVENT(S)

-SKEW WEIGHTING -

BASED ON 88 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .101
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

FINAL RESULTS

-FREQUENCY CURVE- 09517000

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY FLOW IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95 FLOW IN CFS
58800.	69000.	.20	137000.	31800.
46100.	52500.	.50	102000.	25700.
37200.	41500.	1.00	79200.	21300.
29000.	31700.	2.00	58900.	17100.
21600.	23100.	4.00	41500.	13200.
19400.	20600.	5.00	36600.	11900.
13100.	13600.	10.00	23200.	8390.
7830.	8010.	20.00	12800.	5220.
2560.	2560.	50.00	3770.	1760.
696.	673.	80.00	1040.	430.
326.	305.	90.00	518.	180.
168.	150.	95.00	285.	82.
43.	33.	99.00	88.	16.

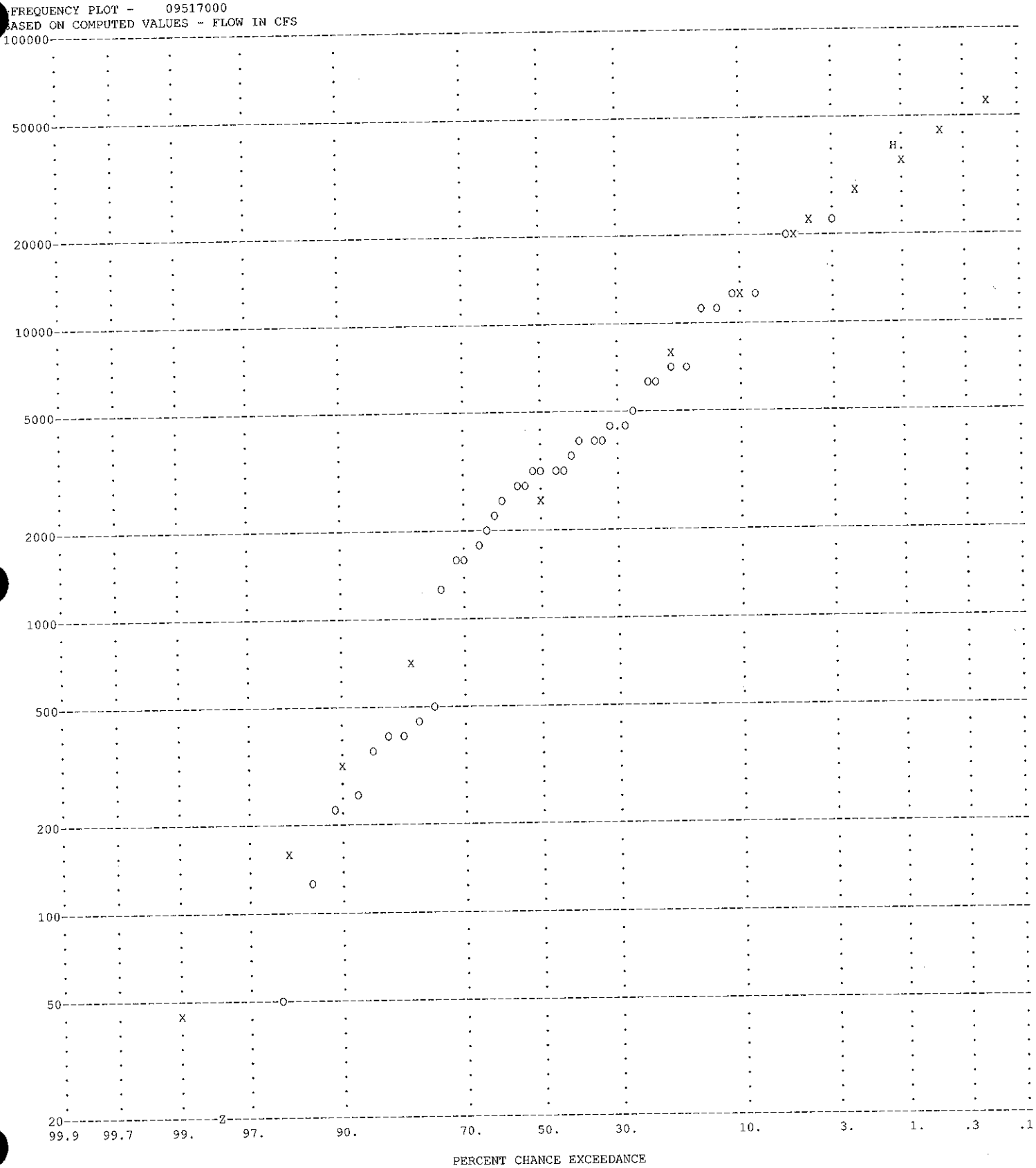
SYNTHETIC STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.3519	HISTORIC EVENTS	0
STANDARD DEV	.6326	HIGH OUTLIERS	1
COMPUTED SKEW	-.6834	LOW OUTLIERS	0
REGIONAL SKEW	-.1000	ZERO OR MISSING	1
ADOPTED SKEW	-.5371	SYSTEMATIC EVENTS	41
		HISTORIC PERIOD	88

Hassayampa River near Arlington, 09517000

FINAL RESULTS

FREQUENCY PLOT - 09517000
ASED ON COMPUTED VALUES - FLOW IN CFS



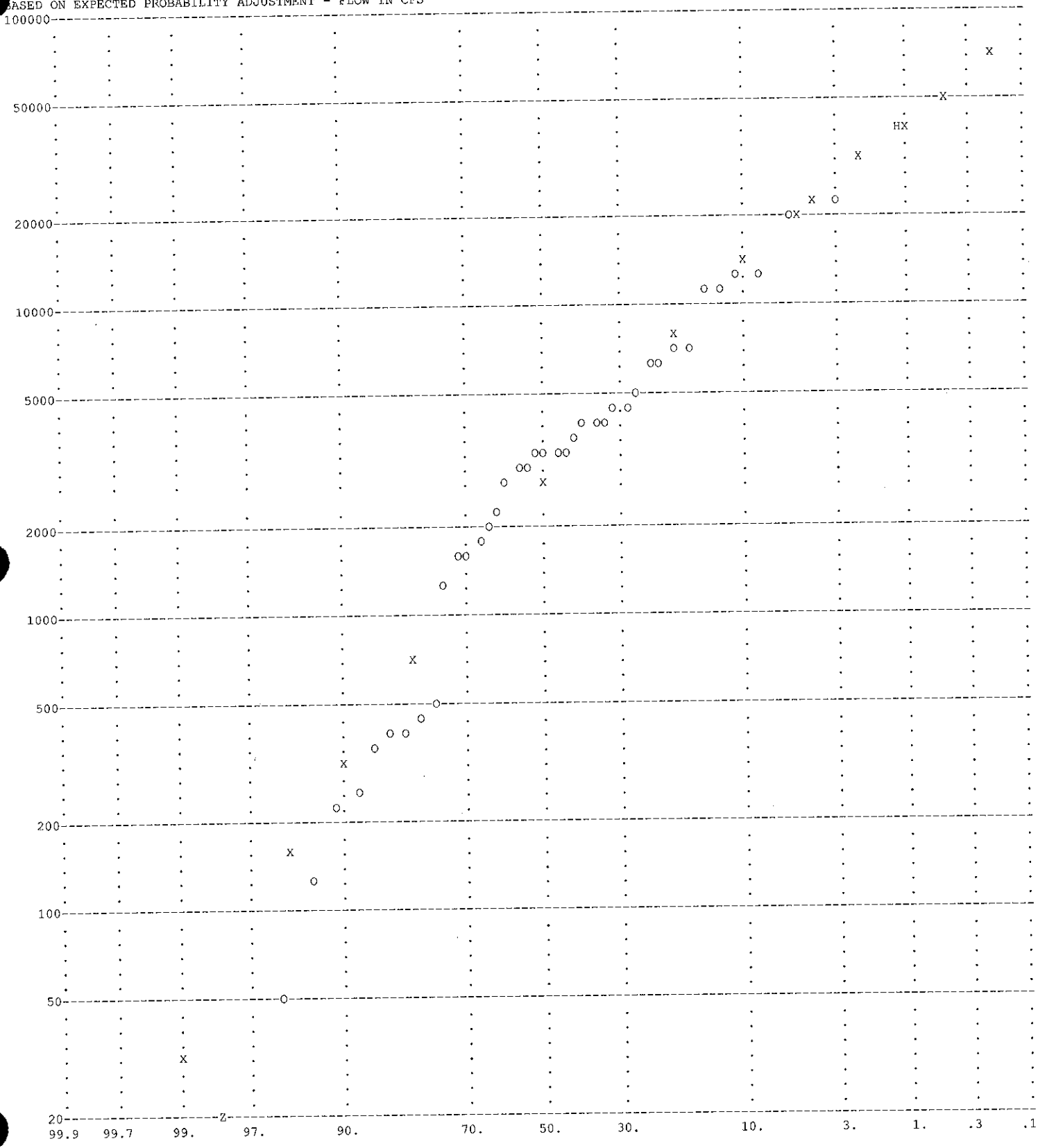
LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

September 1970 flood treated as highest since 1916

Hassayampa River near Arlington, 09517000

FINAL RESULTS

FREQUENCY PLOT - 09517000
BASED ON EXPECTED PROBABILITY ADJUSTMENT - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

September 1970 flood treated as highest since 1916

TABLE 1. SUMMARY OF STATISTICS -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	MEAN LOG	STD DEV	SKEW ADOPT	SKEW COMP	SKEW GENRL	HIST EVENT	OUTLIER HI	OUTLIER LO	ZERO/ MSNG	
5170	09517000		41	41	0	3.389	.640	-.63	-.634	-.10	0	0	0	1	**
5170	09517000		41	41	88	3.352	.633	-.54	-.683	-.10	0	1	0	1	

** PRELIMINARY STATISTICS

TABLE 2. SUMMARY OF FREQUENCY CURVE ORDINATES -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	PERCENT CHANCE EXCEEDANCE 10.	5.	2.	1.	.5	.2
5170	09517000		41	41	0	20602	22799	29995	37645	45630	56517
5170	09517000		41	41	88	19376	21589	29025	37237	46133	58798

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+++++++++++++++++++++++++
+ END OF RUN             +
+ NORMAL STOP IN FFA     +
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************************************      ************************************
*              FFA                 *      *                                  *
*     FLOOD FREQUENCY ANALYSIS     *      *   U.S. ARMY CORPS OF ENGINEERS   *
*     PROGRAM DATE:  FEB 1995      *      * THE HYDROLOGIC ENGINEERING CENTER *
*          VERSION:  3.1           *      *         609 SECOND STREET        *
*     RUN  DATE   AND   TIME:      *      *      DAVIS, CALIFORNIA 95616     *
*        09 NOV 04    15:12:01     *      *          (916) 756-1104          *
*                                  *      *                                  *
************************************      ************************************


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**TITLE RECORD(S)**
TT    HASSAYAMPA RIVER NEAR ARLINGTON, AZ
TT    AT OLD US 80 BRIDGE 1.8 MILES UPSTREAM FROM GILA RIVER
TT    DA = 1471   PERIOD OF RECORD 1939-2003

**JOB RECORD(S)**
     IPPC   ISKFX  IPROUT    IFMT    IWYR   IUNIT   ISMRY   IPNCH    IREG
J1     1       2       0       1       0       1       3       0       0

       A       B  CLIMIT  NDSSCV    IEXT
J2   .00     .00     .05       0       0

**FREQUENCY ARRAY**
FR    13    .200    .500   1.000   2.000   4.000   5.000  10.000  20.000  50.000
FR80.000  90.000  95.000  99.000

**STATION IDENTIFICATION**
ID     09517000

**GENERALIZED SKEW**
     ISTN   GGMSE    SKEW
GS   5170    .000    -.10

**SPECIAL STATION INFORMATION**
    IYRA    IYRL  HITHRS  LOTHRS    LOGT    NDEC    NSIG
SI  1916       0  39000.      0.       0       0       0

**SYSTEMATIC EVENTS**
     41 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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September 1970 flood treated as highest since 1916
Zero flow in 1975 changed to 40 cfs

PRELIMINARY RESULTS

-PLOTTING POSITIONS- 09517000

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
9	11	1961	50.	1	1970	39000.	2.38
9	6	1962	470.	2	2001	22200.	4.76
8	0	1963	1930.	3	1978	20000.	7.14
8	14	1964	6500.	4	1976	13000.	9.52
2	7	1965	3000.	5	1973	12300.	11.90
12	10	1965	1600.	6	1993	11400.	14.29
9	5	1967	5270.	7	1980	11200.	16.67
12	20	1967	4000.	8	2003	7050.	19.05
9	15	1969	500.	9	1991	7010.	21.43
9	5	1970	39000.	10	1964	6500.	23.81
8	11	1971	1230.	11	1992	6110.	26.19
8	12	1972	225.	12	1967	5270.	28.57
10	7	1972	12300.	13	2000	4480.	30.95
9	0	1974	250.	14	1977	4300.	33.33
0	0	1975	40.	15	1968	4000.	35.71
9	26	1976	13000.	16	2002	3930.	38.10
10	24	1976	4300.	17	1995	3900.	40.48
3	2	1978	20000.	18	1997	3460.	42.86
11	11	1978	3300.	19	1999	3310.	45.24
2	20	1980	11200.	20	1983	3300.	47.62
9	30	1983	3300.	21	1979	3300.	50.00
9	2	1984	2850.	22	1965	3000.	52.38
12	28	1984	372.	23	1984	2850.	54.76
11	26	1985	2610.	24	1988	2800.	57.14
10	10	1986	404.	25	1986	2610.	59.52
11	1	1987	2800.	26	1990	2120.	61.90
8	11	1989	1510.	27	1963	1930.	64.29
8	14	1990	2120.	28	1996	1730.	66.67
3	2	1991	7010.	29	1966	1600.	69.05
8	22	1992	6110.	30	1989	1510.	71.43
1	8	1993	11400.	31	1971	1230.	73.81
2	2	1994	129.	32	1969	500.	76.19
2	15	1995	3900.	33	1962	470.	78.57
7	15	1996	1730.	34	1987	404.	80.95
9	26	1997	3460.	35	1998	396.	83.33
2	18	1998	396.	36	1985	372.	85.71
7	11	1999	3310.	37	1974	250.	88.10
8	30	2000	4480.	38	1972	225.	90.48
10	27	2000	22200.	39	1994	129.	92.86
9	7	2002	3930.	40	1961	50.	95.24
2	14	2003	7050.	41	1975	40.	97.62

-SKEW WEIGHTING -

BASED ON 41 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .187
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

September 1970 flood treated as highest since 1916
Zero flow in 1975 changed to 40 cfs

PRELIMINARY RESULTS

FREQUENCY CURVE- 09517000

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY FLOW IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95 FLOW IN CFS
83700.	101000.	.20	213000.	42400.
63300.	73500.	.50	153000.	33300.
49600.	56100.	1.00	114000.	26800.
37400.	41300.	2.00	81500.	20900.
26800.	28900.	4.00	54900.	15600.
23700.	25400.	5.00	47600.	14000.
15300.	16000.	10.00	28600.	9410.
8640.	8870.	20.00	14800.	5560.
2530.	2530.	50.00	3850.	1670.
613.	591.	80.00	948.	362.
270.	251.	90.00	447.	141.
132.	117.	95.00	236.	61.
31.	23.	99.00	67.	11.

SYSTEMATIC STATISTICS

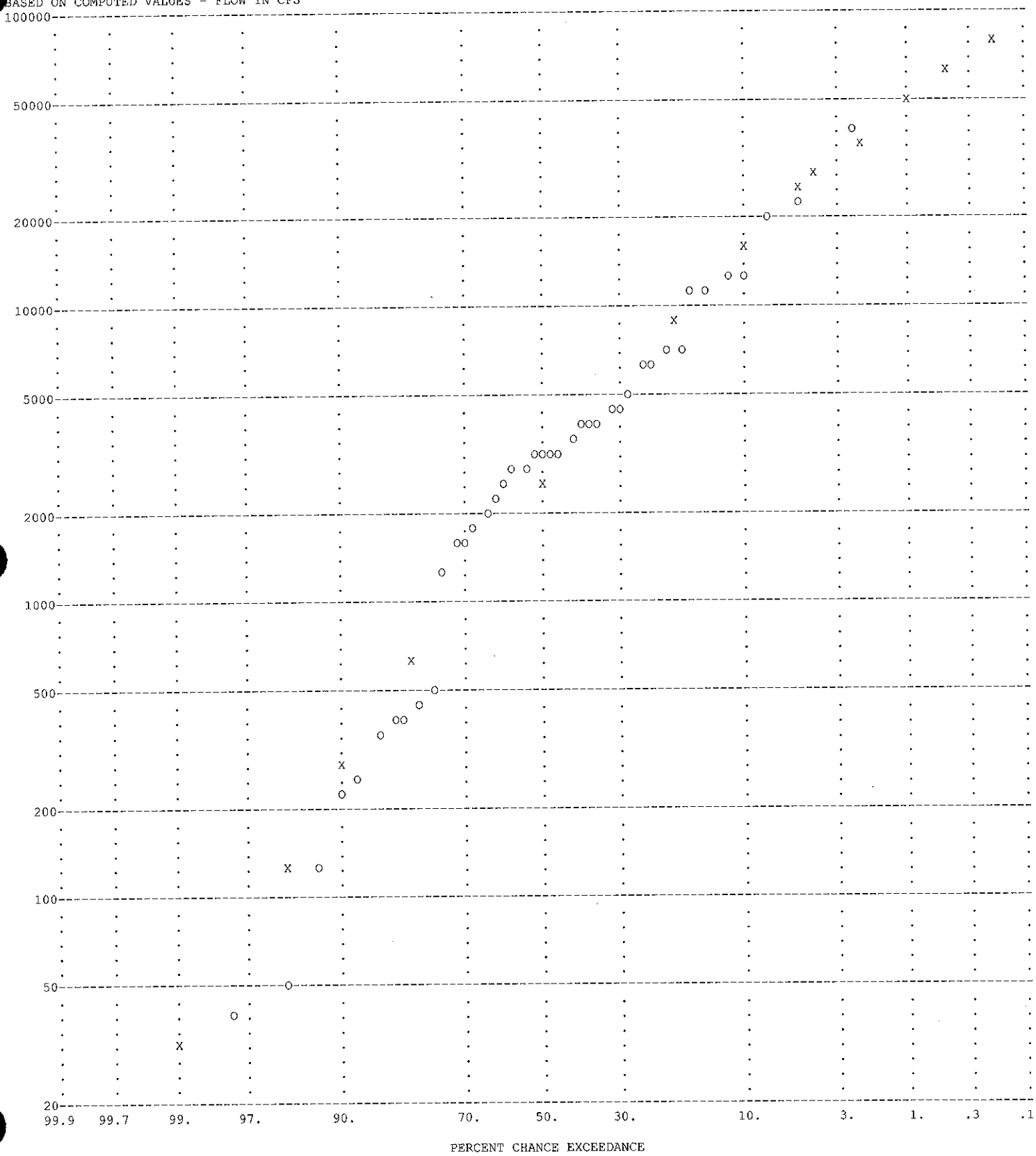
LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.3453	HISTORIC EVENTS	0
STANDARD DEV	.6905	HIGH OUTLIERS	0
COMPUTED SKEW	-.7465	LOW OUTLIERS	0
REGIONAL SKEW	-.1000	ZERO OR MISSING	0
ADOPTED SKEW	-.4990	SYSTEMATIC EVENTS	41

September 1970 flood treated as highest since 1916
Zero flow in 1975 changed to 40 cfs

Hassayampa River near Arlington, 09517000

PRELIMINARY RESULTS

FREQUENCY PLOT - 09517000
BASED ON COMPUTED VALUES - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

September 1970 flood treated as highest since 1916
Zero flow in 1975 changed to 40 cfs

FINAL RESULTS

-PLOTTING POSITIONS- 09517000

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
9	11	1961	50.	1	1970	39000.	1.12
9	6	1962	470.	2	2001	22200.	2.91
8	0	1963	1930.	3	1978	20000.	5.35
8	14	1964	6500.	4	1976	13000.	7.79
2	7	1965	3000.	5	1973	12300.	10.24
12	10	1965	1600.	6	1993	11400.	12.68
9	5	1967	5270.	7	1980	11200.	15.13
12	20	1967	4000.	8	2003	7050.	17.57
9	15	1969	500.	9	1991	7010.	20.01
9	5	1970	39000.	10	1964	6500.	22.46
8	11	1971	1230.	11	1992	6110.	24.90
8	12	1972	225.	12	1967	5270.	27.35
10	7	1972	12300.	13	2000	4480.	29.79
9	0	1974	250.	14	1977	4300.	32.23
0	0	1975	40.	15	1968	4000.	34.68
9	26	1976	13000.	16	2002	3930.	37.12
10	24	1976	4300.	17	1995	3900.	39.56
3	2	1978	20000.	18	1997	3460.	42.01
11	11	1978	3300.	19	1999	3310.	44.45
2	20	1980	11200.	20	1983	3300.	46.90
9	30	1983	3300.	21	1979	3300.	49.34
9	2	1984	2850.	22	1965	3000.	51.78
12	28	1984	372.	23	1984	2850.	54.23
11	26	1985	2610.	24	1988	2800.	56.67
10	10	1986	404.	25	1986	2610.	59.12
11	1	1987	2800.	26	1990	2120.	61.56
8	11	1989	1510.	27	1963	1930.	64.00
8	14	1990	2120.	28	1996	1730.	66.45
3	2	1991	7010.	29	1966	1600.	68.89
8	22	1992	6110.	30	1989	1510.	71.33
1	8	1993	11400.	31	1971	1230.	73.78
2	2	1994	129.	32	1969	500.	76.22
2	15	1995	3900.	33	1962	470.	78.67
7	15	1996	1730.	34	1987	404.	81.11
9	26	1997	3460.	35	1998	396.	83.55
2	18	1998	396.	36	1985	372.	86.00
7	11	1999	3310.	37	1974	250.	88.44
8	30	2000	4480.	38	1972	225.	90.88
10	27	2000	22200.	39	1994	129.	93.33
9	7	2002	3930.	40	1961	50.	95.77
2	14	2003	7050.	41	1975	40.	98.22

NOTE- PLOTTING POSITIONS BASED ON-HISTORIC PERIOD (H) = 88
NUMBER OF HISTORIC EVENTS PLUS HIGH OUTLIERS(Z) = 1
WEIGHTING FACTOR FOR SYSTEMATIC EVENTS (W) = 2.1750

-OUTLIER TESTS -

LOW OUTLIER TEST

BASED ON 41 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.692

0 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF 30.7

September 1970 flood treated as highest since 1916
Zero flow in 1975 changed to 40 cfs

HIGH OUTLIER TEST

BASED ON 41 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.692

1 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF 160018.
OR INPUT BASE OF 39000.

NOTE - COLLECTION OF HISTORICAL INFORMATION AND COMPARISONS WITH SIMILAR DATA SETS SHOULD BE EXPLORED IF NOT INCORPORATED IN THIS ANALYSIS.

STATISTICS AND FREQUENCY CURVE ADJUSTED FOR 1 HIGH OUTLIER(S)
AND 0 HISTORIC EVENT(S)

-SKEW WEIGHTING -

BASED ON 88 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .109
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

FINAL RESULTS

-FREQUENCY CURVE- 09517000

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY FLOW IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95 FLOW IN CFS
61400.	71600.	.20	147000.	32400.
48500.	55000.	.50	111000.	26300.
39300.	43800.	1.00	86700.	21900.
30700.	33500.	2.00	64600.	17600.
22800.	24400.	4.00	45500.	13500.
20500.	21800.	5.00	40000.	12300.
13700.	14300.	10.00	25200.	8560.
8080.	8270.	20.00	13700.	5240.
2490.	2490.	50.00	3760.	1670.
616.	594.	80.00	943.	369.
270.	251.	90.00	442.	143.
130.	115.	95.00	231.	61.
29.	22.	99.00	63.	10.

ADJUSTED STATISTICS

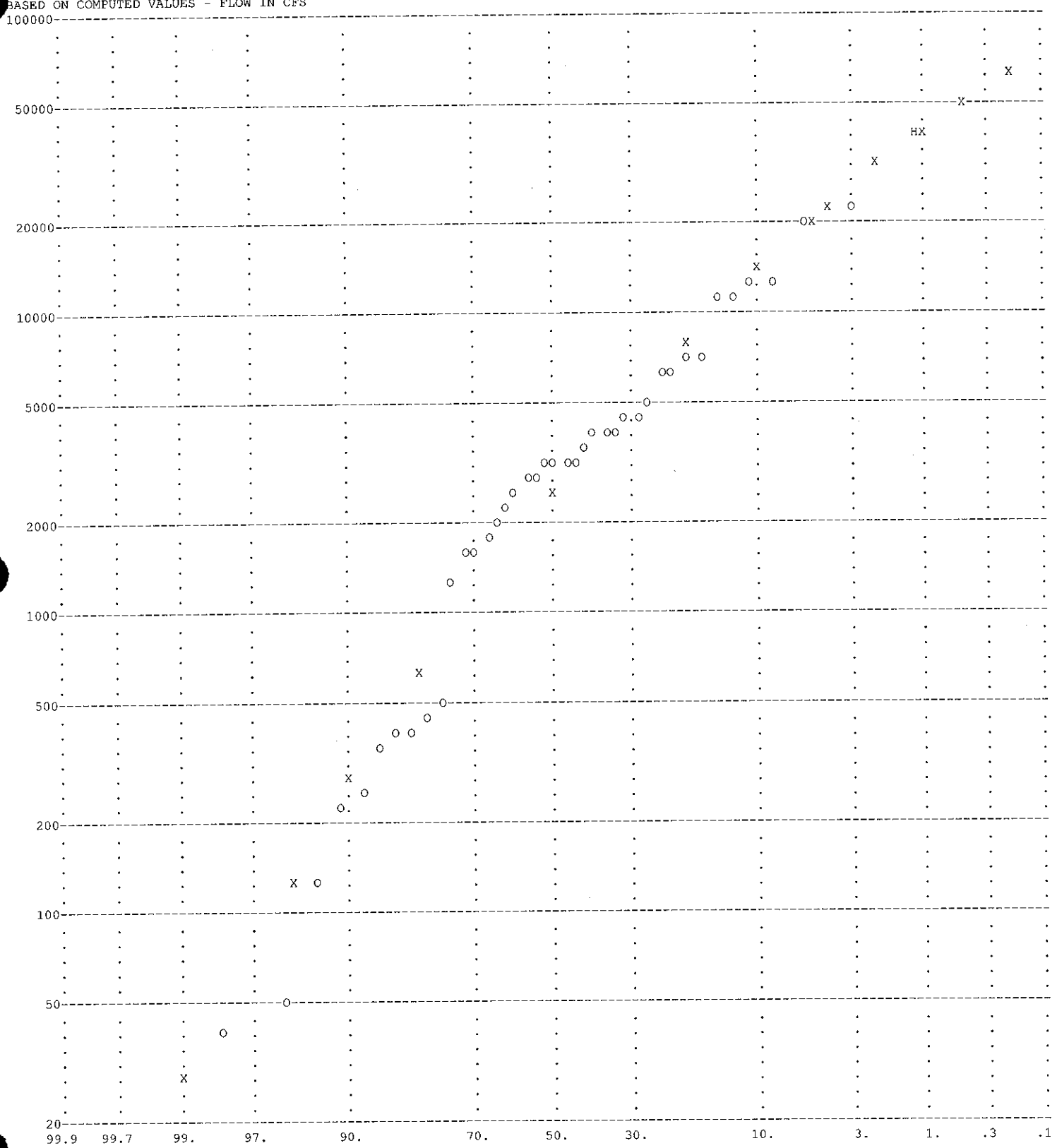
LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.3287	HISTORIC EVENTS	0
STANDARD DEV	.6750	HIGH OUTLIERS	1
COMPUTED SKEW	-.7892	LOW OUTLIERS	0
REGIONAL SKEW	-.1000	ZERO OR MISSING	0
ADOPTED SKEW	-.6059	SYSTEMATIC EVENTS	41
		HISTORIC PERIOD	88

September 1970 flood treated as highest since 1916
Zero flow in 1975 changed to 40 cfs

Hassayampa River near Arlington, 09517000

FINAL RESULTS

-FREQUENCY PLOT - 09517000
BASED ON COMPUTED VALUES - FLOW IN CFS



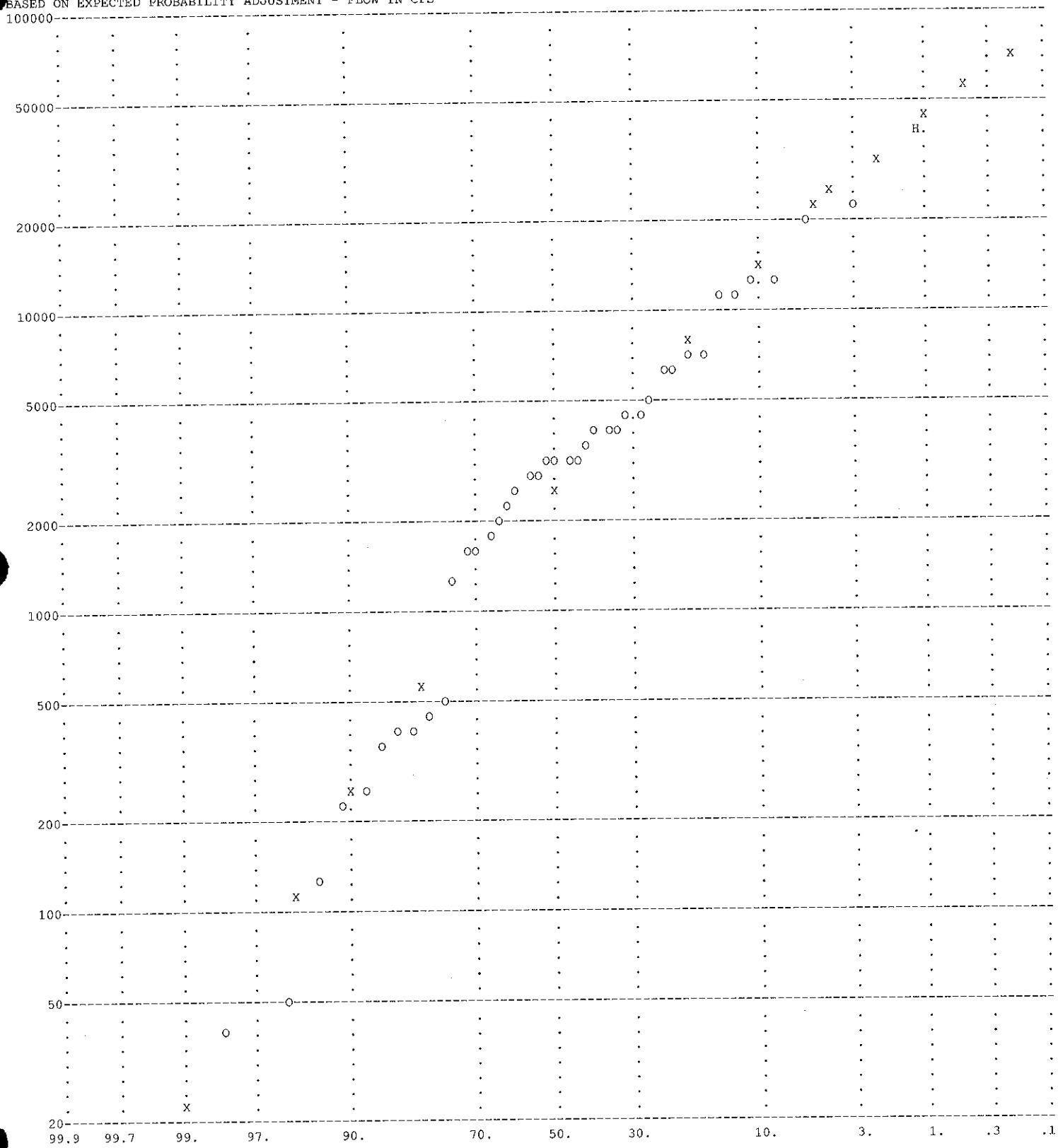
LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

September 1970 flood treated as highest since 1916
Zero flow in 1975 changed to 40 cfs

Hassayampa River near Arlington, 09517000

FINAL RESULTS

FREQUENCY PLOT - 09517000
BASED ON EXPECTED PROBABILITY ADJUSTMENT - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

September 1970 flood treated as highest since 1916
Zero flow in 1975 changed to 40 cfs

Hassayampa River near Arlington, 09517000

TABLE 1. SUMMARY OF STATISTICS -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	MEAN LOG	STD DEV	SKEW ADOPT	SKEW COMP	SKEW GENRL	HIST EVENT	OUTLIER HI	OUTLIER LO	ZERO/ MSNG	
5170	09517000		41	41	0	3.345	.691	-.50	-.747	-.10	0	0	0	0	**
5170	09517000		41	41	88	3.329	.675	-.61	-.789	-.10	0	1	0	0	

** PRELIMINARY STATISTICS

TABLE 2. SUMMARY OF FREQUENCY CURVE ORDINATES -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	PERCENT CHANCE EXCEEDANCE 10.	5.	2.	1.	.5	.2
5170	09517000		41	41	0	23718	26784	37397	49611	63346	83681
5170	09517000		41	41	88	20471	22835	30728	39339	48536	61387

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++++++++++++++++++++++++
+ END OF RUN            +
+ NORMAL STOP IN FFA    +
++++++++++++++++++++++++
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September 1970 flood treated as highest since 1916
Zero flow in 1975 changed to 40 cfs

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************************************      ************************************
*              FFA                 *      *                                  *
*     FLOOD FREQUENCY ANALYSIS     *      *   U.S. ARMY CORPS OF ENGINEERS   *
*     PROGRAM DATE:  FEB 1995      *      * THE HYDROLOGIC ENGINEERING CENTER *
*          VERSION:  3.1           *      *         609 SECOND STREET        *
*     RUN  DATE   AND   TIME:      *      *      DAVIS, CALIFORNIA 95616     *
*        08 NOV 04    11:55:52     *      *          (916) 756-1104          *
*                                  *      *                                  *
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                      Unit:  71;  DSS Version: 6-JB


**TITLE RECORD(S)**
TT    HASSAYAMPA RIVER NEAR ARLINGTON, AZ
TT    AT OLD US 80 BRIDGE 1.8 MILES UPSTREAM FROM GILA RIVER
TT    DA = 1471   PERIOD OF RECORD 1939-2003

**JOB RECORD(S)**
     IPPC   ISKFX  IPROUT    IFMT    IWYR   IUNIT   ISMRY   IPNCH    IREG
J1     1       2       0       1       0       1       3       0       0

       A       B  CLIMIT  NDSSCV    IEXT
J2   .00     .00     .05       0       0

**FREQUENCY ARRAY**
FR    13    .200    .500   1.000   2.000   4.000   5.000  10.000  20.000  50.000
FR80.000  90.000  95.000  99.000

**STATION IDENTIFICATION**
ID     09517000

**GENERALIZED SKEW**
     ISTN   GGMSE    SKEW
GS   5170    .000    -.10

**SPECIAL STATION INFORMATION**
    IYRA    IYRL  HITHRS  LOTHRS    LOGT    NDEC    NSIG
SI  1916       0  39000.      0.       0       0       0

**SYSTEMATIC EVENTS**
     40 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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September 1970 flood treated as highest since 1916
Zero flow in 1975 deleted

PRELIMINARY RESULTS

-PLOTTING POSITIONS- 09517000

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
9	11	1961	50.	1	1970	39000.	2.44
9	6	1962	470.	2	2001	22200.	4.88
8	0	1963	1930.	3	1978	20000.	7.32
8	14	1964	6500.	4	1976	13000.	9.76
2	7	1965	3000.	5	1973	12300.	12.20
12	10	1965	1600.	6	1993	11400.	14.63
9	5	1967	5270.	7	1980	11200.	17.07
12	20	1967	4000.	8	2003	7050.	19.51
9	15	1969	500.	9	1991	7010.	21.95
9	5	1970	39000.	10	1964	6500.	24.39
8	11	1971	1230.	11	1992	6110.	26.83
8	12	1972	225.	12	1967	5270.	29.27
10	7	1972	12300.	13	2000	4480.	31.71
9	0	1974	250.	14	1977	4300.	34.15
9	26	1976	13000.	15	1968	4000.	36.59
10	24	1976	4300.	16	2002	3930.	39.02
3	2	1978	20000.	17	1995	3900.	41.46
11	11	1978	3300.	18	1997	3460.	43.90
2	20	1980	11200.	19	1999	3310.	46.34
9	30	1983	3300.	20	1983	3300.	48.78
9	2	1984	2850.	21	1979	3300.	51.22
12	28	1984	372.	22	1965	3000.	53.66
11	26	1985	2610.	23	1984	2850.	56.10
10	10	1986	404.	24	1988	2800.	58.54
11	1	1987	2800.	25	1986	2610.	60.98
8	11	1989	1510.	26	1990	2120.	63.41
8	14	1990	2120.	27	1963	1930.	65.85
3	2	1991	7010.	28	1996	1730.	68.29
8	22	1992	6110.	29	1966	1600.	70.73
1	8	1993	11400.	30	1989	1510.	73.17
2	2	1994	129.	31	1971	1230.	75.61
2	15	1995	3900.	32	1969	500.	78.05
7	15	1996	1730.	33	1962	470.	80.49
9	26	1997	3460.	34	1987	404.	82.93
2	18	1998	396.	35	1998	396.	85.37
7	11	1999	3310.	36	1985	372.	87.80
8	30	2000	4480.	37	1974	250.	90.24
10	27	2000	22200.	38	1972	225.	92.68
9	7	2002	3930.	39	1994	129.	95.12
2	14	2003	7050.	40	1961	50.	97.56

-SKEW WEIGHTING -

BASED ON 40 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .179
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

September 1970 flood treated as highest since 1916
Zero flow in 1975 deleted

PRELIMINARY RESULTS

-FREQUENCY CURVE- 09517000

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY FLOW IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95 FLOW IN CFS
79000.	95900.	.20	194000.	41200.
59700.	69600.	.50	139000.	32300.
46800.	53100.	1.00	104000.	26100.
35400.	39100.	2.00	74400.	20400.
25600.	27500.	4.00	50500.	15300.
22700.	24300.	5.00	44000.	13800.
14900.	15600.	10.00	26800.	9420.
8630.	8850.	20.00	14300.	5710.
2720.	2720.	50.00	4040.	1850.
739.	714.	80.00	1110.	450.
351.	328.	90.00	562.	191.
184.	164.	95.00	315.	89.
50.	39.	99.00	102.	19.

SYSTEMATIC STATISTICS

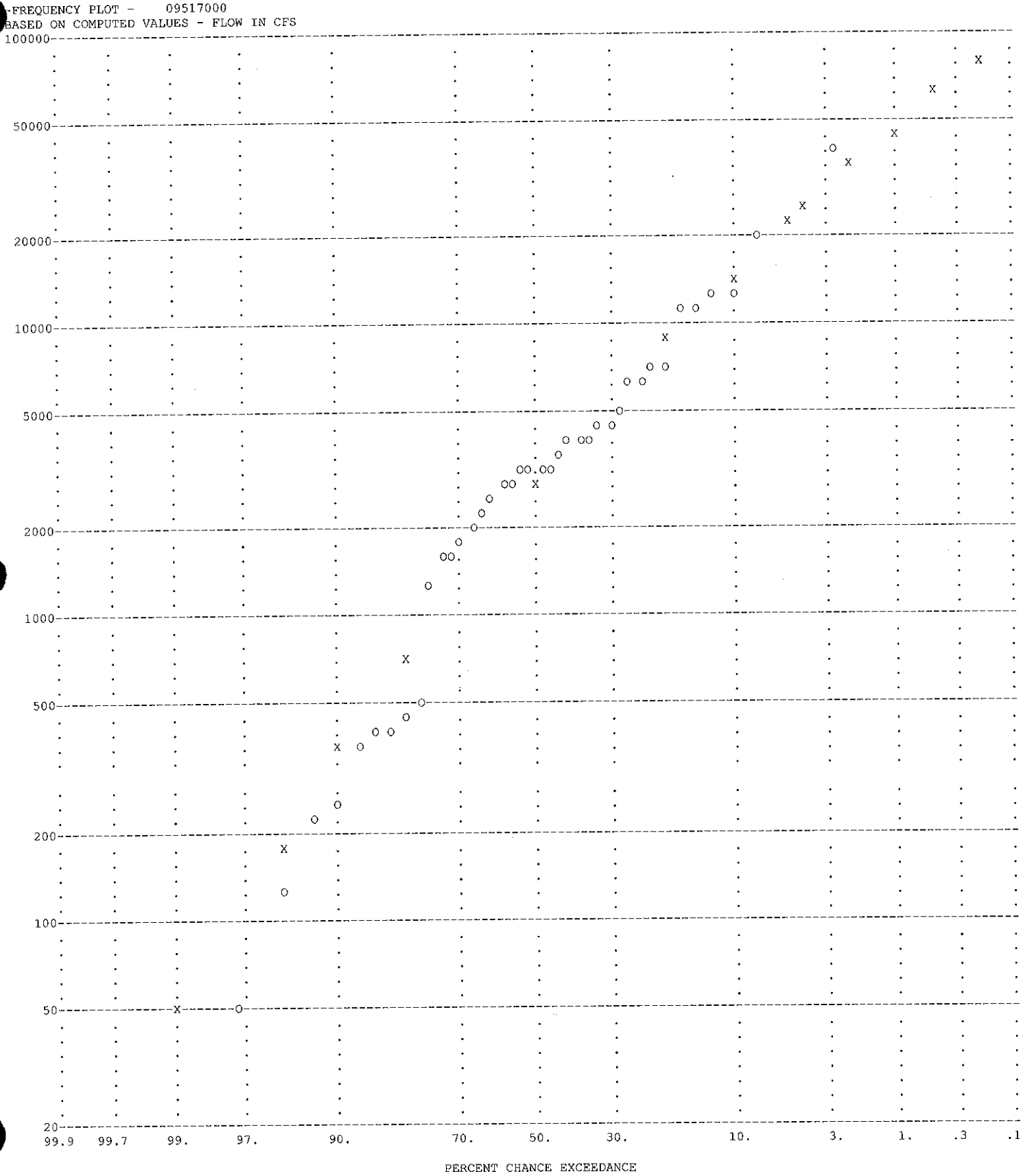
LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.3889	HISTORIC EVENTS	0
STANDARD DEV	.6397	HIGH OUTLIERS	0
COMPUTED SKEW	-.6336	LOW OUTLIERS	0
REGIONAL SKEW	-.1000	ZERO OR MISSING	0
ADOPTED SKEW	-.4347	SYSTEMATIC EVENTS	40

September 1970 flood treated as highest since 1916
Zero flow in 1975 deleted

Hassayampa River near Arlington, 09517000

PRELIMINARY RESULTS

-FREQUENCY PLOT - 09517000
BASED ON COMPUTED VALUES - FLOW IN CFS



September 1970 flood treated as highest since 1916
Zero flow in 1975 deleted

LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

FINAL RESULTS

-PLOTTING POSITIONS- 09517000

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
9	11	1961	50.	1	1970	39000.	1.12
9	6	1962	470.	2	2001	22200.	2.94
8	0	1963	1930.	3	1978	20000.	5.45
8	14	1964	6500.	4	1976	13000.	7.95
2	7	1965	3000.	5	1973	12300.	10.46
12	10	1965	1600.	6	1993	11400.	12.96
9	5	1967	5270.	7	1980	11200.	15.47
12	20	1967	4000.	8	2003	7050.	17.98
9	15	1969	500.	9	1991	7010.	20.48
9	5	1970	39000.	10	1964	6500.	22.99
8	11	1971	1230.	11	1992	6110.	25.50
8	12	1972	225.	12	1967	5270.	28.00
10	7	1972	12300.	13	2000	4480.	30.51
9	0	1974	250.	14	1977	4300.	33.02
9	26	1976	13000.	15	1968	4000.	35.52
10	24	1976	4300.	16	2002	3930.	38.03
3	2	1978	20000.	17	1995	3900.	40.54
11	11	1978	3300.	18	1997	3460.	43.04
2	20	1980	11200.	19	1999	3310.	45.55
9	30	1983	3300.	20	1983	3300.	48.06
9	2	1984	2850.	21	1979	3300.	50.56
12	28	1984	372.	22	1965	3000.	53.07
11	26	1985	2610.	23	1984	2850.	55.57
10	10	1986	404.	24	1988	2800.	58.08
11	1	1987	2800.	25	1986	2610.	60.59
8	11	1989	1510.	26	1990	2120.	63.09
8	14	1990	2120.	27	1963	1930.	65.60
3	2	1991	7010.	28	1996	1730.	68.11
8	22	1992	6110.	29	1966	1600.	70.61
1	8	1993	11400.	30	1989	1510.	73.12
2	2	1994	129.	31	1971	1230.	75.63
2	15	1995	3900.	32	1969	500.	78.13
7	15	1996	1730.	33	1962	470.	80.64
9	26	1997	3460.	34	1987	404.	83.15
2	18	1998	396.	35	1998	396.	85.65
7	11	1999	3310.	36	1985	372.	88.16
8	30	2000	4480.	37	1974	250.	90.67
10	27	2000	22200.	38	1972	225.	93.17
9	7	2002	3930.	39	1994	129.	95.68
2	14	2003	7050.	40	1961	50.	98.18

NOTE- PLOTTING POSITIONS BASED ON-HISTORIC PERIOD (H) = 88
NUMBER OF HISTORIC EVENTS PLUS HIGH OUTLIERS(Z) = 1
WEIGHTING FACTOR FOR SYSTEMATIC EVENTS (W) = 2.2308

-OUTLIER TESTS -

LOW OUTLIER TEST

BASED ON 40 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.682

0 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF 47.1

September 1970 flood treated as highest since 1916
Zero flow in 1975 deleted

HIGH OUTLIER TEST

BASED ON 40 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.682

1 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF 127191.
OR *INPUT BASE OF* 39000.

NOTE - COLLECTION OF HISTORICAL INFORMATION AND COMPARISONS WITH SIMILAR DATA SETS SHOULD BE EXPLORED IF NOT INCORPORATED IN THIS ANALYSIS.

STATISTICS AND FREQUENCY CURVE ADJUSTED FOR 1 HIGH OUTLIER(S)
AND 0 HISTORIC EVENT(S)

-SKEW WEIGHTING -

BASED ON 88 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .101
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

FINAL RESULTS

-FREQUENCY CURVE- 09517000

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY FLOW IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95 FLOW IN CFS
58500.	68700.	.20	136000.	31700.
46100.	52500.	.50	102000.	25800.
37300.	41600.	1.00	79300.	21400.
29200.	31900.	2.00	59300.	17300.
21800.	23400.	4.00	42000.	13300.
19600.	20900.	5.00	37000.	12100.
13400.	13900.	10.00	23600.	8580.
8050.	8240.	20.00	13200.	5380.
2680.	2680.	50.00	3940.	1840.
742.	717.	80.00	1110.	458.
352.	328.	90.00	557.	194.
182.	163.	95.00	310.	89.
48.	37.	99.00	97.	18.

ADJUSTED STATISTICS

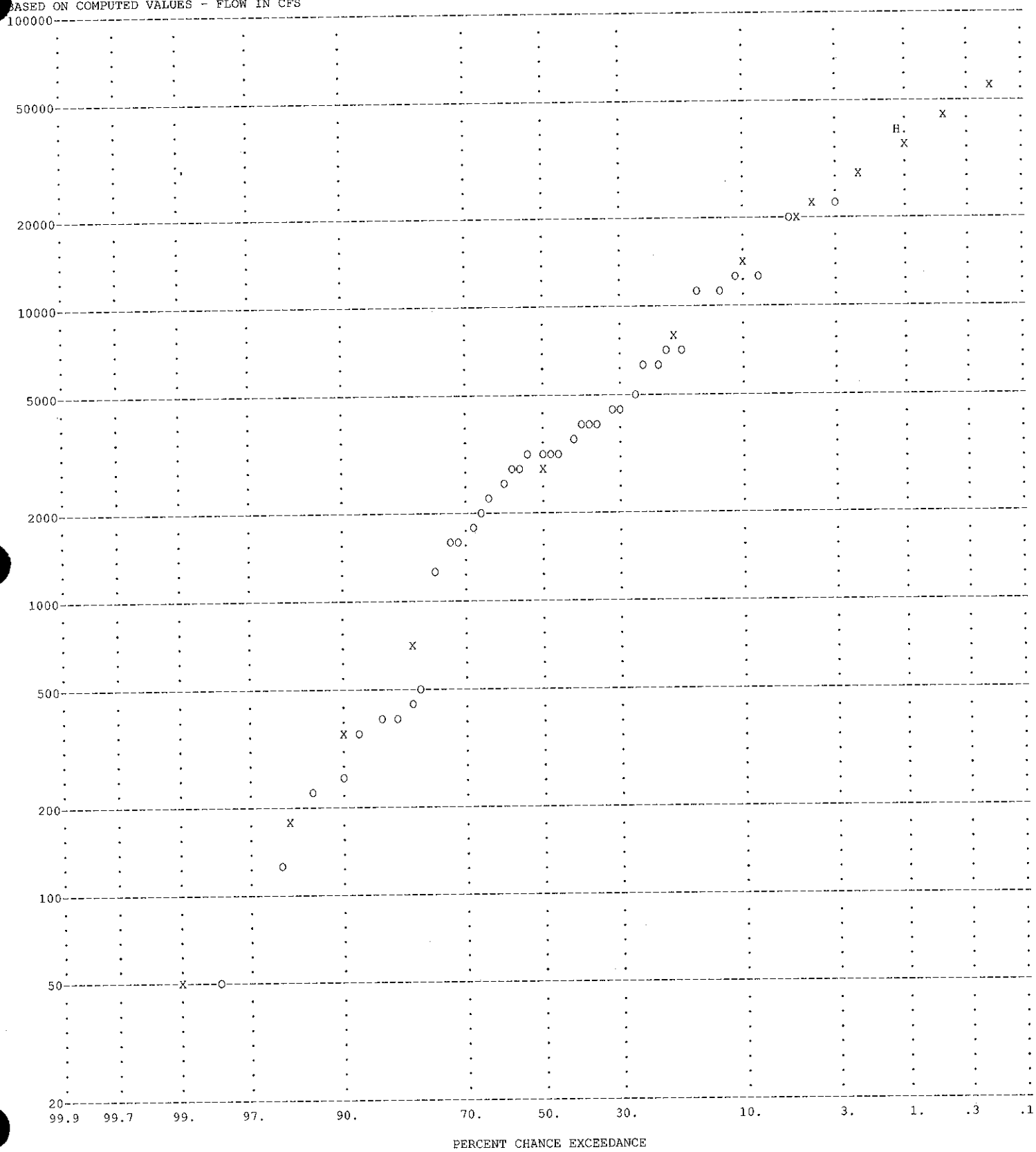
LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.3721	HISTORIC EVENTS	0
STANDARD DEV	.6232	*HIGH OUTLIERS*	1
COMPUTED SKEW	-.6869	LOW OUTLIERS	0
REGIONAL SKEW	-.1000	ZERO OR MISSING	0
ADOPTED SKEW	-.5394	SYSTEMATIC EVENTS	40
		HISTORIC PERIOD	88

September 1970 flood treated as highest since 1916
Zero flow in 1975 deleted

Hassayampa River near Arlington, 09517000

FINAL RESULTS

FREQUENCY PLOT - 09517000
BASED ON COMPUTED VALUES - FLOW IN CFS



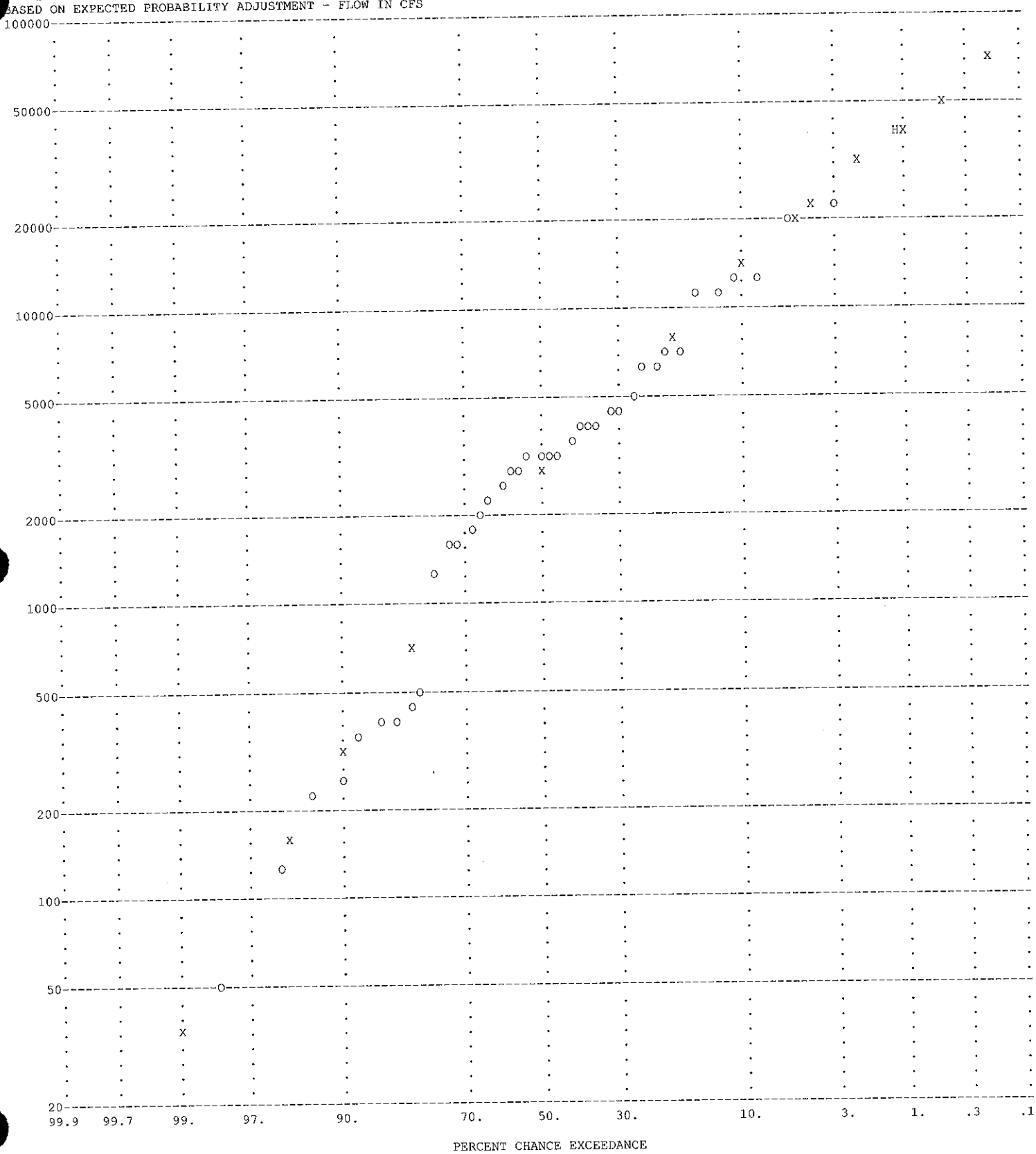
LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

September 1970 flood treated as highest since 1916
Zero flow in 1975 deleted

Hassayampa River near Arlington, 09517000

FINAL RESULTS

FREQUENCY PLOT - 09517000
BASED ON EXPECTED PROBABILITY ADJUSTMENT - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

September 1970 flood treated as highest since 1916
Zero flow in 1975 deleted

TABLE 1. *SUMMARY OF STATISTICS* -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	....YEARS..... RECD	SYST	HIST	MEAN LOG	STD DEV	.....SKEW..... ADOPT	COMP	GENRL	HIST EVENT	OUTLIER HI	LO	ZERO/ MSNG
5170	09517000	40	40	0		3.389	.640	-.43	-.634	-.10	0	0	0	0 **
5170	09517000	40	40	88		3.372	.623	-.54	-.687	-.10	0	1	0	0

** PRELIMINARY STATISTICS

TABLE 2. *SUMMARY OF FREQUENCY CURVE ORDINATES* -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	....YEARS..... RECD	SYST	HIST	.....PERCENT CHANCE EXCEEDANCE..... 10.	5.	2.	1.	.5	.2
5170	09517000		40	40	0	22710	25556	35419	46817	59724	79045
5170	09517000		40	40	88	19639	21844	29221	37328	46074	58468

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++++++++++++++++++++++++
+ END OF RUN            +
+ NORMAL STOP IN FFA    +
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September 1970 flood treated as highest since 1916
Zero flow in 1975 deleted

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************************************      ************************************
*              FFA                 *      *                                  *
*     FLOOD FREQUENCY ANALYSIS     *      *   U.S. ARMY CORPS OF ENGINEERS   *
*     PROGRAM DATE:  FEB 1995      *      * THE HYDROLOGIC ENGINEERING CENTER *
*          VERSION:  3.1           *      *         609 SECOND STREET        *
*     RUN  DATE   AND   TIME:      *      *      DAVIS, CALIFORNIA 95616     *
*        15 FEB 05    14:45:58     *      *          (916) 756-1104          *
*                                  *      *                                  *
************************************      ************************************


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OUTPUT FILE NAME: ARLNOHP.OUT
   DSS FILE NAME: ARLNOHP.DSS


   -----DSS---ZOPEN:  Existing File Opened,  File: ARLNOHP.DSS
                      Unit:  71;  DSS Version: 6-JB

**TITLE RECORD(S)**
TT    HASSAYAMPA RIVER NEAR ARLINGTON, AZ
TT    AT OLD US 80 BRIDGE 1.8 MILES UPSTREAM FROM GILA RIVER
TT    DA = 1471   PERIOD OF RECORD 1939-2003

**JOB RECORD(S)**
     IPPC   ISKFX  IPROUT    IFMT    IWYR   IUNIT   ISMRY   IPNCH    IREG
J1     1       2       0       1       1       1       1       0       0

       A       B  CLIMIT  NDSSCV    IEXT
J2   .00     .00     .05       0       0

**FREQUENCY ARRAY**
FR    13    .200    .500   1.000   2.000   4.000   5.000  10.000  20.000  50.000
FR80.000  90.000  95.000  99.000

**STATION IDENTIFICATION**
ID     09517000

**GENERALIZED SKEW**
     ISTN   GGMSE    SKEW
GS   5170    .000    -.10

**SYSTEMATIC EVENTS**
     41 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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PRELIMINARY RESULTS

NOTE - ADOPTED SKEW EQUALS COMPUTED SKEW AND PRELIMINARY FREQUENCY STATISTICS ARE FOR THE CONDITIONAL FREQUENCY CURVE BECAUSE OF ZERO OR MISSING EVENTS.

PRELIMINARY RESULTS

-FREQUENCY CURVE- 09517000

COMPUTED CURVE FLOW	EXPECTED PROBABILITY IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95
56500.	65200.	.20	130000.	30800.
45600.	51300.	.50	101000.	25500.
37600.	41600.	1.00	80000.	21600.
30000.	32500.	2.00	61100.	17600.
22800.	24300.	4.00	44200.	13800.
20600.	21800.	5.00	39200.	12600.
14200.	14800.	10.00	25400.	9040.
8650.	8850.	20.00	14300.	5720.
2860.	2860.	50.00	4250.	1940.
758.	731.	80.00	1140.	463.
345.	321.	90.00	554.	187.
172.	152.	95.00	297.	82.
41.	31.	99.00	85.	15.

CONDITIONAL STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.3889	HISTORIC EVENTS	0
STANDARD DEV	.6397	HIGH OUTLIERS	0
COMPUTED SKEW	-.6336	LOW OUTLIERS	0
REGIONAL SKEW	-.1000	ZERO OR MISSING	1
ADOPTED SKEW	-.6336	SYSTEMATIC EVENTS	41

CONDITIONAL PROBABILITY ADJUSTED ORDINATES

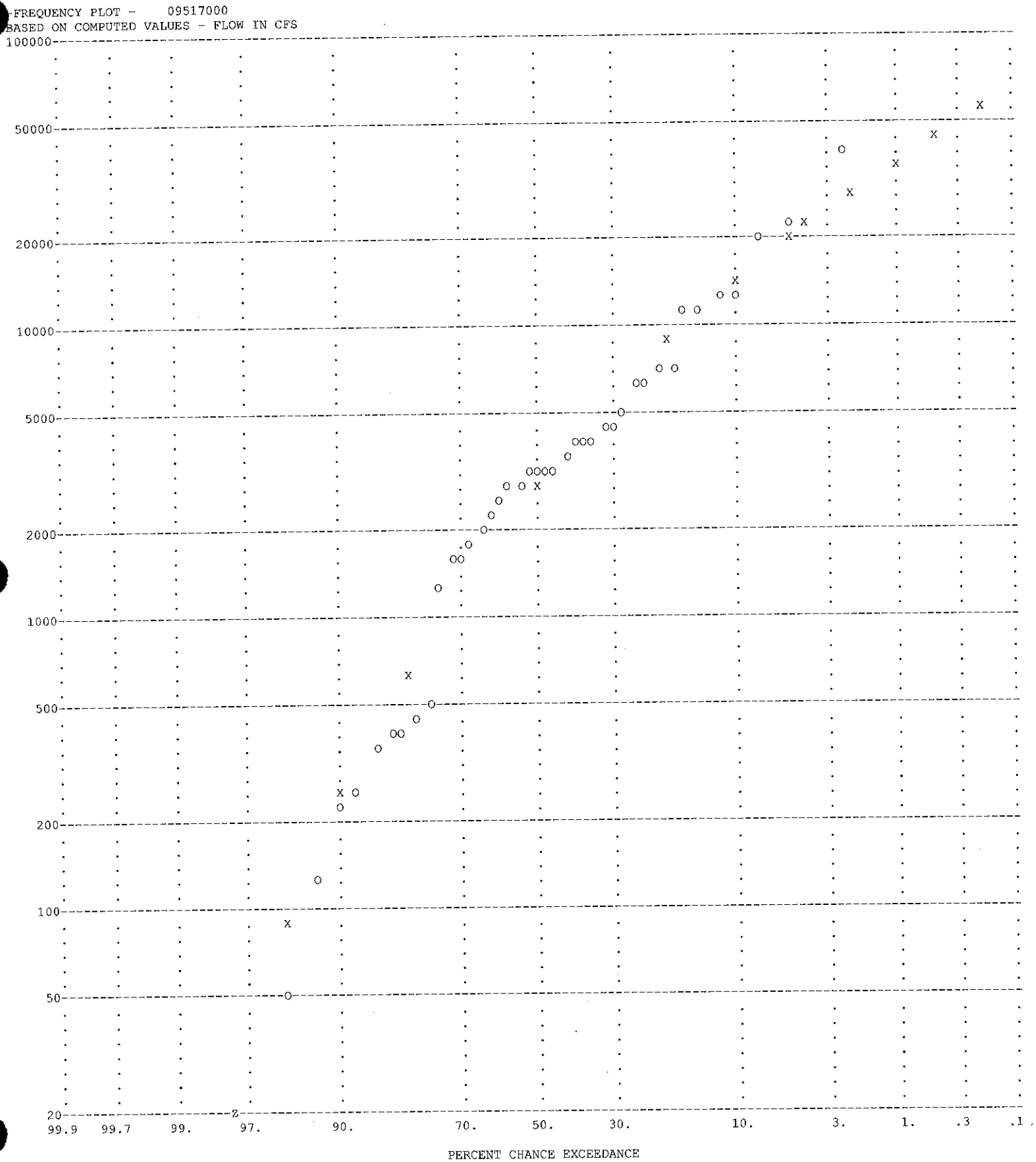
-FREQUENCY CURVE- 09517000

COMPUTED CURVE FLOW	EXPECTED PROBABILITY IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95
56206.	-1.	.20	-1.	-1.
45330.	-1.	.50	-1.	-1.
37356.	-1.	1.00	-1.	-1.
29727.	-1.	2.00	-1.	-1.
22550.	-1.	4.00	-1.	-1.
20352.	-1.	5.00	-1.	-1.
14000.	-1.	10.00	-1.	-1.
8465.	-1.	20.00	-1.	-1.
2729.	-1.	50.00	-1.	-1.
664.	-1.	80.00	-1.	-1.
263.	-1.	90.00	-1.	-1.
94.	-1.	95.00	-1.	-1.
0.	-1.	99.00	-1.	-1.

Hassayampa River near Arlington, 09517000

PRELIMINARY RESULTS

FREQUENCY PLOT - 09517000
BASED ON COMPUTED VALUES - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

No Historic Peaks Designated

FINAL RESULTS

PLOTTING POSITIONS- 09517000

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	CALENDER YEAR	FLOW CFS	WEIBULL PLOT POS
9	11	1961	50.	1	1970	39000.	2.38
9	6	1962	470.	2	2000	22200.	4.76
8	0	1963	1930.	3	1978	20000.	7.14
8	14	1964	6500.	4	1976	13000.	9.52
2	7	1965	3000.	5	1972	12300.	11.90
12	10	1965	1600.	6	1993	11400.	14.29
9	5	1967	5270.	7	1980	11200.	16.67
12	20	1967	4000.	8	2003	7050.	19.05
9	15	1969	500.	9	1991	7010.	21.43
9	5	1970	39000.	10	1964	6500.	23.81
8	11	1971	1230.	11	1992	6110.	26.19
8	12	1972	225.	12	1967	5270.	28.57
10	7	1972	12300.	13	2000	4480.	30.95
9	0	1974	250.	14	1976	4300.	33.33
0	0	1975	0.	15	1967	4000.	35.71
9	26	1976	13000.	16	2002	3930.	38.10
10	24	1976	4300.	17	1995	3900.	40.48
3	2	1978	20000.	18	1997	3460.	42.86
11	11	1978	3300.	19	1999	3310.	45.24
2	20	1980	11200.	20	1983	3300.	47.62
9	30	1983	3300.	21	1978	3300.	50.00
9	2	1984	2850.	22	1965	3000.	52.38
12	28	1984	372.	23	1984	2850.	54.76
11	26	1985	2610.	24	1987	2800.	57.14
10	10	1986	404.	25	1985	2610.	59.52
11	1	1987	2800.	26	1990	2120.	61.90
8	11	1989	1510.	27	1963	1930.	64.29
8	14	1990	2120.	28	1996	1730.	66.67
3	2	1991	7010.	29	1965	1600.	69.05
8	22	1992	6110.	30	1989	1510.	71.43
1	8	1993	11400.	31	1971	1230.	73.81
2	2	1994	129.	32	1969	500.	76.19
2	15	1995	3900.	33	1962	470.	78.57
7	15	1996	1730.	34	1986	404.	80.95
9	26	1997	3460.	35	1998	396.	83.33
2	18	1998	396.	36	1984	372.	85.71
7	11	1999	3310.	37	1974	250.	88.10
8	30	2000	4480.	38	1972	225.	90.48
10	27	2000	22200.	39	1994	129.	92.86
9	7	2002	3930.	40	1961	50.	95.24
2	14	2003	7050.	41	1974	0.	97.62

-OUTLIER TESTS -

LOW OUTLIER TEST

BASED ON 40 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.682

0 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF 47.1
BASED ON THE STATISTICS AFTER 1 ZERO OR MISSING EVENTS DELETED

STATISTICS AND FREQUENCY CURVE ADJUSTED FOR 0 LOW OUTLIER(S)
AND/OR 1 ZERO OR MISSING EVENT(S)

HIGH OUTLIER TEST

BASED ON 40 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.682

0 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF 127191.

-SKEW WEIGHTING -

BASED ON 41 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .175
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

FINAL RESULTS

-FREQUENCY CURVE- 09517000

COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY FLOW IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	.95
78700.	95300.	.20	193000.	41000.
59300.	69000.	.50	137000.	32000.
46300.	52500.	1.00	102000.	25800.
34900.	38500.	2.00	73200.	20100.
25100.	27000.	4.00	49500.	15000.
22300.	23800.	5.00	43000.	13500.
14500.	15200.	10.00	26100.	9190.
8360.	8570.	20.00	13800.	5530.
2600.	2600.	50.00	3860.	1770.
695.	673.	80.00	1050.	424.
328.	306.	90.00	525.	178.
170.	152.	95.00	292.	83.
46.	35.	99.00	93.	17.

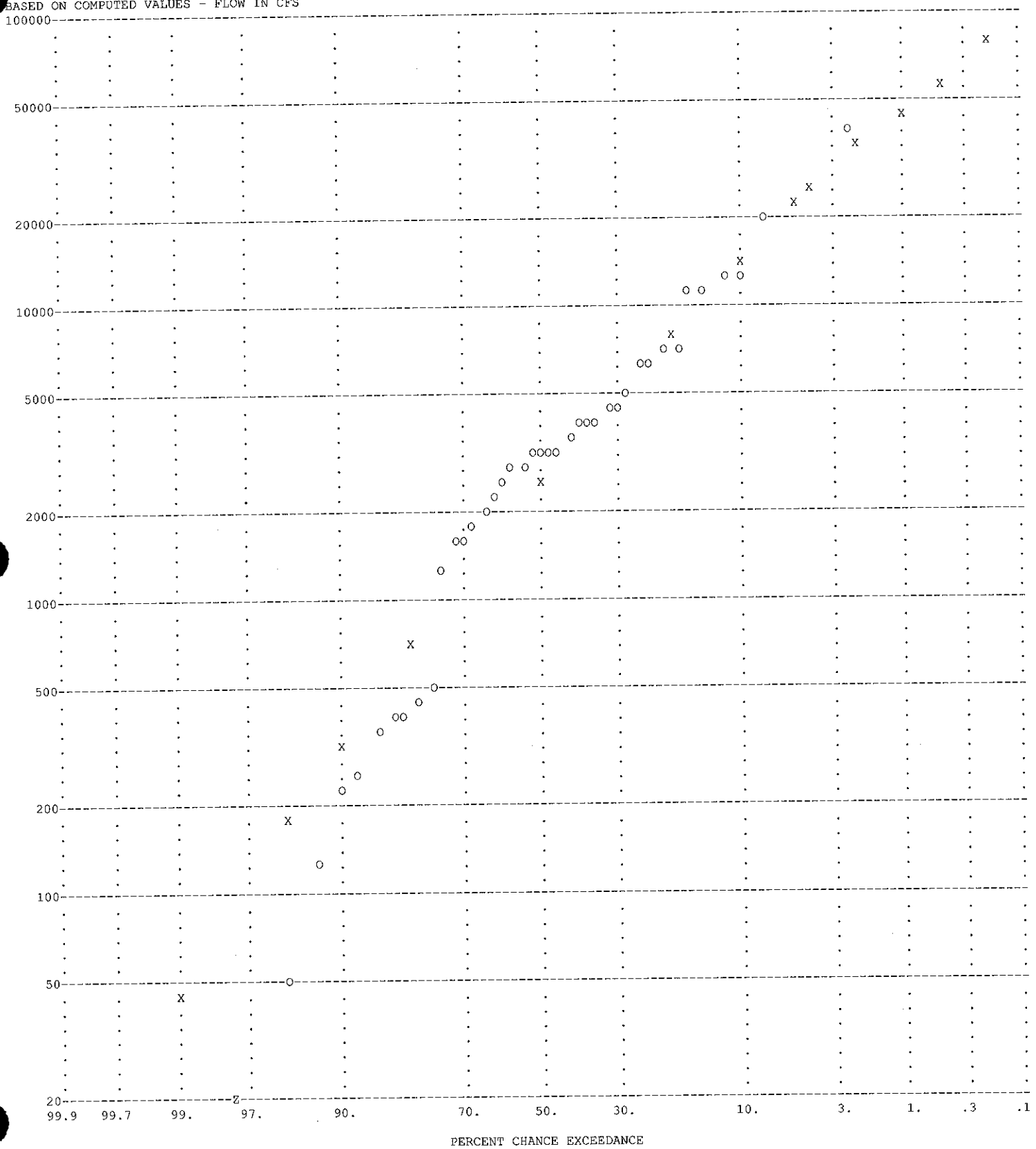
SYNTHETIC STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	3.3687	HISTORIC EVENTS	0
STANDARD DEV	.6471	HIGH OUTLIERS	0
COMPUTED SKEW	-.6273	LOW OUTLIERS	0
REGIONAL SKEW	-.1000	ZERO OR MISSING	1
ADOPTED SKEW	-.4335	SYSTEMATIC EVENTS	41

Hassayampa River near Arlington, 09517000

FINAL RESULTS

FREQUENCY PLOT - 09517000
BASED ON COMPUTED VALUES - FLOW IN CFS



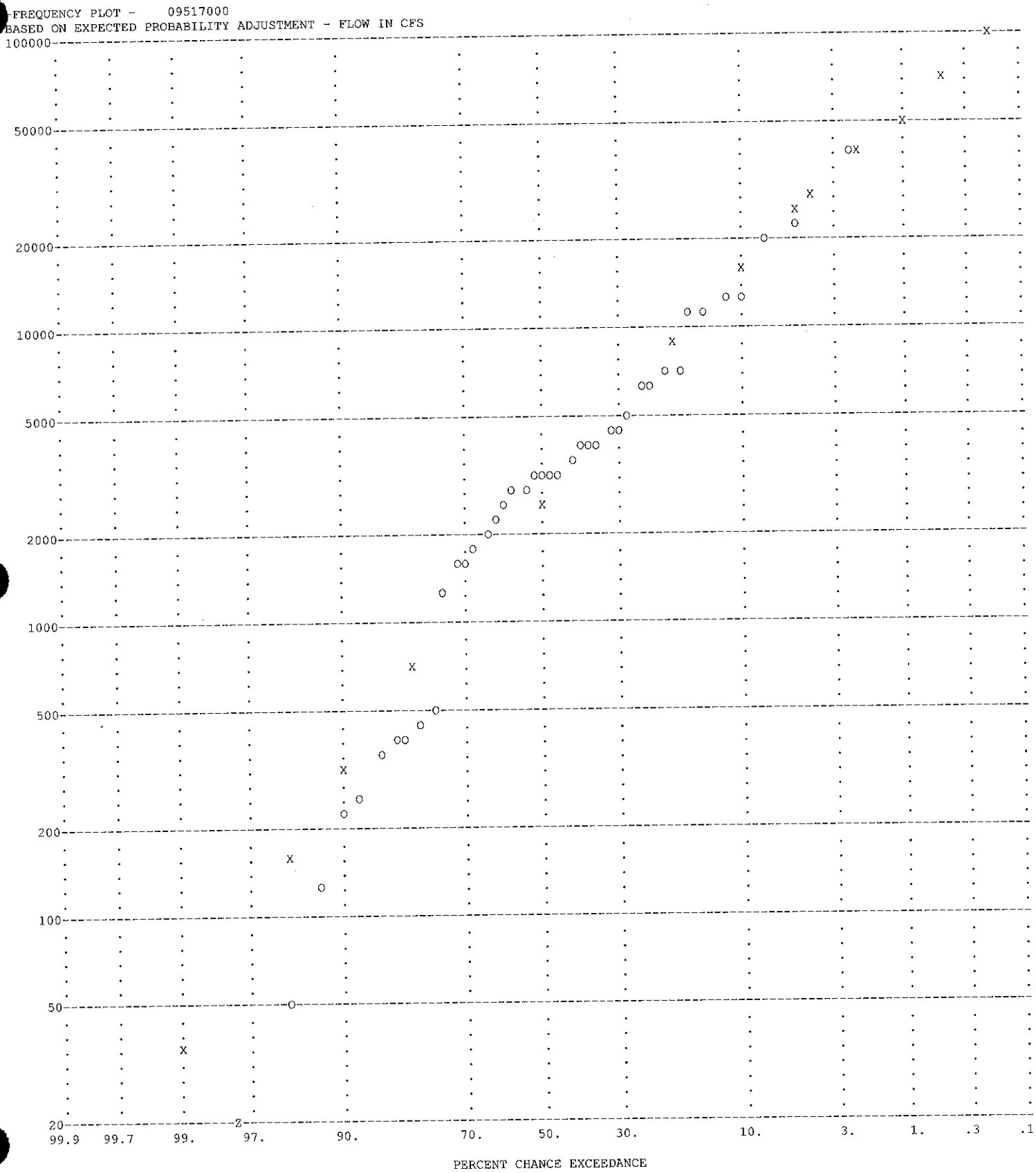
LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

No Historic Peaks Designated

Hassayampa River near Arlington, 09517000

FINAL RESULTS

FREQUENCY PLOT - 09517000
BASED ON EXPECTED PROBABILITY ADJUSTMENT - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

No Historic Peaks Designated

TABLE 1. SUMMARY OF STATISTICS -- FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	....YEARS..... RECD	SYST	HIST	MEAN LOG	STD DEV	.....SKEW..... ADOPT	COMP	GENRL	HIST EVENT	OUTLIER HI	OUTLIER LO	ZERO/ MSNG
5170	09517000		41	41	0	3.369	.647	-.43	-.627	-.10	0	0	0	1

TABLE 2. SUMMARY OF FREQUENCY CURVE ORDINATES -- FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	....YEARS..... RECD	SYST	HIST	.....PERCENT CHANCE EXCEEDANCE..... 10.	5.	2.	1.	.5	.2
5170	09517000		41	41	0	22261	25088	34913	46312	59266	78726

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++++++++++++++++++++++++
+ END OF RUN            +
+ NORMAL STOP IN FFA    +
++++++++++++++++++++++++
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Jackrabbit Wash near Tonopah, AZ			
ID	9515500		
Date	Annual Peak Q, in cfs	Source	Notes
8261964	2070	USGS, Pope & others (1998)	
4041965	200	USGS, Pope & others (1998)	estimated
9131966	200	USGS, Pope & others (1998)	estimated
9031967	6040	USGS, Pope & others (1998)	
12191967	105	USGS, Pope & others (1998)	
9131969	200	USGS, Pope & others (1998)	estimated
9051970	5000	USGS, Pope & others (1998)	estimated
8171971	2500	USGS, Pope & others (1998)	estimated
9181972	100	USGS, Pope & others (1998)	estimated
10071972	6840	USGS, Pope & others (1998)	
7071974	75	USGS, Pope & others (1998)	
3111975	6	USGS, Pope & others (1998)	estimated
9251976	2200	USGS, Pope & others (1998)	
8161977	80	USGS, Pope & others (1998)	
10061977	650	USGS, Pope & others (1998)	
1181979	1510	USGS, Pope & others (1998)	estimated
09 1983	13000	USGS, Pope & others (1998)	
8261991	2250	USGS, Pope & others (1998)	
8231992	2960	USGS, Pope & others (1998)	
2081993	2670	USGS, Pope & others (1998)	
10061993	191	USGS, Pope & others (1998)	
12231994	612	USGS, Pope & others (1998)	
9101996	3000	USGS, Pope & others (1998)	
9251997	9700	USGS, AZ-97-1	
12071997	34	USGS, AZ-98-1	
7291999	706	USGS, AZ-99-1	
8292000	180	USGS, AZ-00-1	
10272000	27000	USGS, AZ-01-1	
9082002	6000	USGS, AZ-02-1	
10262002	5200	USGS, AZ-03-1	

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************************************      ************************************
*              FFA                 *      *                                  *
*     FLOOD FREQUENCY ANALYSIS     *      *   U.S. ARMY CORPS OF ENGINEERS   *
*     PROGRAM DATE:  FEB 1995      *      * THE HYDROLOGIC ENGINEERING CENTER *
*         VERSION:  3.1            *      *         609 SECOND STREET        *
*     RUN  DATE   AND   TIME:      *      *      DAVIS, CALIFORNIA 95616     *
*        08 NOV 04    11:53:18     *      *          (916) 756-1104          *
*                                  *      *                                  *
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   DSS FILE NAME: JRW.DSS


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                      Unit:  71;  DSS Version: 6-JB

**TITLE RECORD(S)**
TT     JACKRABBIT WASH NEAR TONOPAH, AZ 100 FT U/S OF WICKENBURG-HASSAYAMPA RD
TT     DATUM OF GAGE = 1510 FT
TT     DA DELINEATED= 137   PERIOD 1964-2003

**JOB RECORD(S)**
     IPPC   ISKFX  IPROUT    IFMT    IWYR   IUNIT   ISMRY   IPNCH    IREG
J1     1       2       0       1       0       1       3       0       0

       A       B  CLIMIT  NDSSCV    IEXT
J2   .00     .00     .05       0       0

**FREQUENCY ARRAY**
FR    13    .200    .500   1.000   2.000   4.000   5.000  10.000  20.000  50.000
FR80.000  90.000  95.000  99.000

**STATION IDENTIFICATION**
ID     09516800

**GENERALIZED SKEW**
     ISTN   GGMSE    SKEW
GS   5168    .000    -.07

**SYSTEMATIC EVENTS**
     30 EVENTS TO BE ANALYZED

**END OF INPUT DATA**
ED ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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FINAL RESULTS

-PLOTTING POSITIONS- 09516800

EVENTS ANALYZED				ORDERED EVENTS			
MON	DAY	YEAR	FLOW CFS	RANK	WATER YEAR	FLOW CFS	WEIBULL PLOT POS
8	26	1964	2070.	1	2001	27000.	3.23
4	4	1965	200.	2	1983	13000.	6.45
9	13	1966	200.	3	1997	9700.	9.68
9	3	1967	6040.	4	1973	6840.	12.90
12	19	1967	105.	5	1967	6040.	16.13
9	13	1969	200.	6	2002	6000.	19.35
9	5	1970	5000.	7	2003	5200.	22.58
8	17	1971	2500.	8	1970	5000.	25.81
9	18	1972	100.	9	1996	3000.	29.03
10	7	1972	6840.	10	1992	2960.	32.26
7	7	1974	75.	11	1993	2670.	35.48
3	11	1975	6.	12	1971	2500.	38.71
9	25	1976	2200.	13	1991	2250.	41.94
8	16	1977	80.	14	1976	2200.	45.16
10	6	1977	650.	15	1964	2070.	48.39
1	18	1979	1510.	16	1979	1510.	51.61
9	0	1983	13000.	17	1999	706.	54.84
8	26	1991	2250.	18	1978	650.	58.06
8	23	1992	2960.	19	1995	612.	61.29
2	8	1993	2670.	20	1966	200.	64.52
10	6	1993	191.	21	1965	200.	67.74
12	23	1994	612.	22	1969	200.	70.97
9	10	1996	3000.	23	1994	191.	74.19
9	25	1997	9700.	24	2000	180.	77.42
12	7	1997	34.	25	1968	105.	80.65
7	29	1999	706.	26	1972	100.	83.87
8	29	2000	180.	27	1977	80.	87.10
10	27	2000	27000.	28	1974	75.	90.32
9	8	2002	6000.	29	1998	34.	93.55
10	26	2002	5200.	30	1975	6.	96.77

-OUTLIER TESTS -

LOW OUTLIER TEST

BASED ON 30 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.563

0 LOW OUTLIER(S) IDENTIFIED BELOW TEST VALUE OF 4.9

HIGH OUTLIER TEST

BASED ON 30 EVENTS, 10 PERCENT OUTLIER TEST VALUE K(N) = 2.563

0 HIGH OUTLIER(S) IDENTIFIED ABOVE TEST VALUE OF 157088.

-SKEW WEIGHTING -

BASED ON 30 EVENTS, MEAN-SQUARE ERROR OF STATION SKEW = .209
DEFAULT OR INPUT MEAN-SQUARE ERROR OF GENERALIZED SKEW = .302

Jackrabbit Wash near Tonapah

FINAL RESULTS

-FREQUENCY CURVE- 09516800

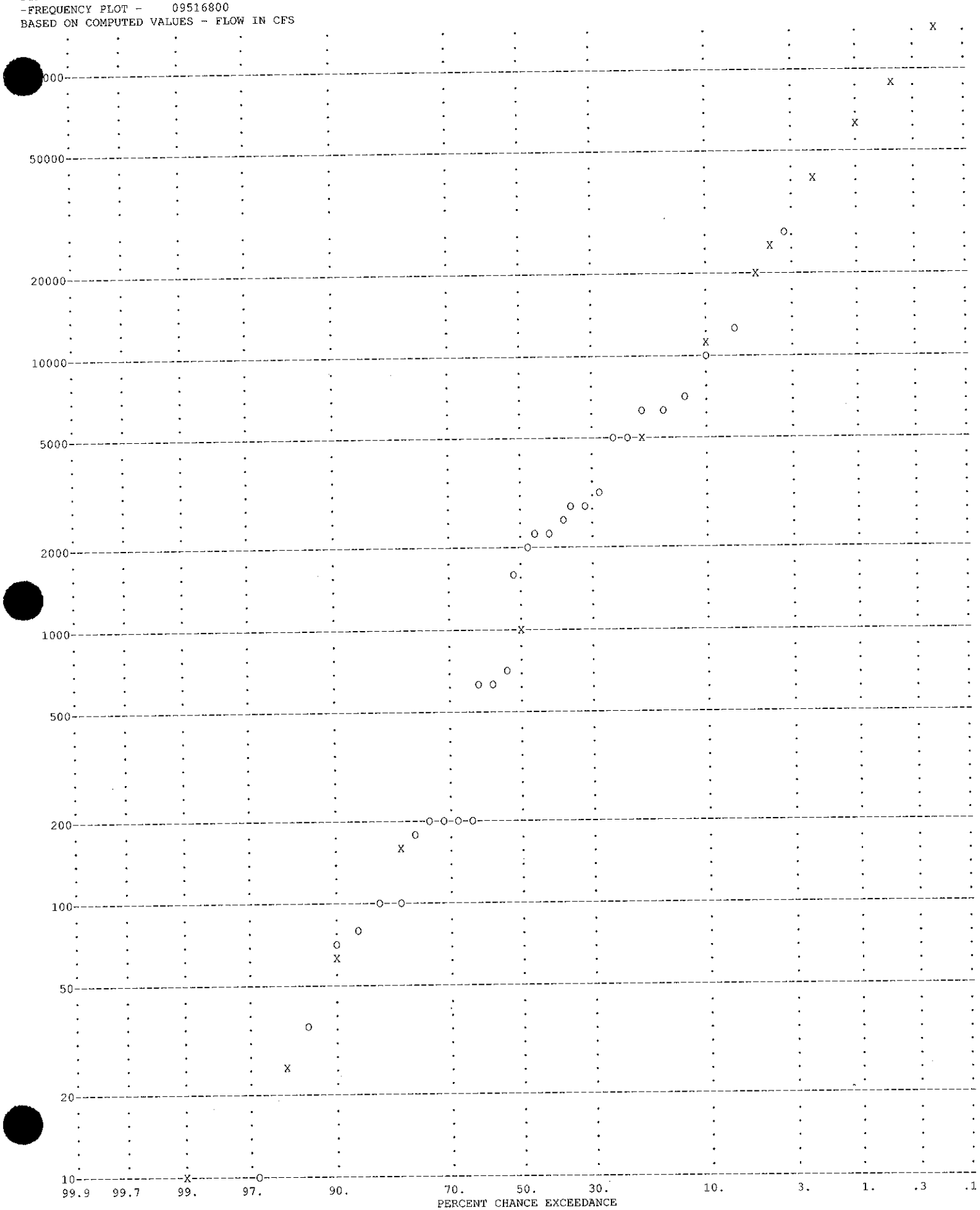
COMPUTED CURVE FLOW IN CFS	EXPECTED PROBABILITY FLOW IN CFS	PERCENT CHANCE EXCEEDANCE	CONFIDENCE LIMITS .05 FLOW IN CFS	CONFIDENCE LIMITS .95 FLOW IN CFS
138000.	211000.	.20	654000.	48100.
88700.	124000.	.50	376000.	32900.
60700.	79400.	1.00	234000.	23800.
39600.	48700.	2.00	138000.	16400.
24200.	28200.	4.00	75400.	10700.
20200.	23200.	5.00	60700.	9180.
10900.	11900.	10.00	28600.	5280.
4930.	5180.	20.00	11200.	2570.
976.	976.	50.00	1830.	526.
166.	156.	80.00	317.	74.
62.	55.	90.00	129.	23.
27.	22.	95.00	61.	8.
5.	3.	99.00	15.	1.

SYSTEMATIC STATISTICS

LOG TRANSFORM: FLOW, CFS		NUMBER OF EVENTS	
MEAN	2.9434	HISTORIC EVENTS	0
STANDARD DEV	.8790	HIGH OUTLIERS	0
COMPUTED SKEW	-.4811	LOW OUTLIERS	0
REGIONAL SKEW	-.0730	ZERO OR MISSING	0
ADOPTED SKEW	-.3143	SYSTEMATIC EVENTS	30

Jackrabbit Wash near Tonapah

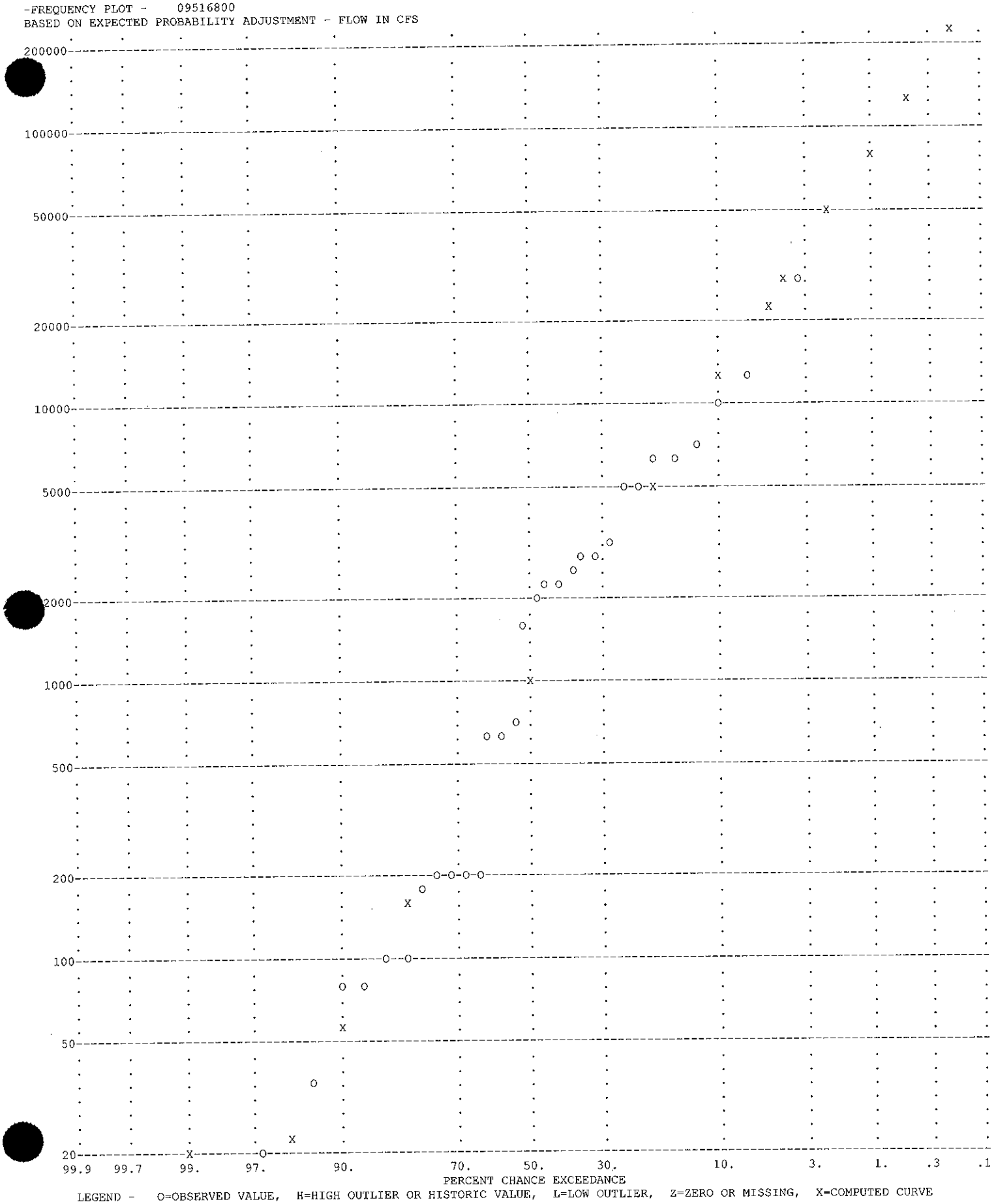
FINAL RESULTS
-FREQUENCY PLOT - 09516800
BASED ON COMPUTED VALUES - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

Jackrabbit Wash near Tonapah

FINAL RESULTS
-FREQUENCY PLOT - 09516800
BASED ON EXPECTED PROBABILITY ADJUSTMENT - FLOW IN CFS



LEGEND - O=OBSERVED VALUE, H=HIGH OUTLIER OR HISTORIC VALUE, L=LOW OUTLIER, Z=ZERO OR MISSING, X=COMPUTED CURVE

TABLE 1. SUMMARY OF STATISTICS -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	MEAN LOG	STD DEV	SKEW ADOPT	SKEW COMP	SKEW GENRL	HIST EVENT	OUTLIER HI	OUTLIER LO	ZERO/ MSNG	
5168	09516800		30	30	0	2.943	.879	-.31	-.481	-.07	0	0	0	0	**
5168	09516800		30	30	0	2.943	.879	-.31	-.481	-.07	0	0	0	0	

** PRELIMINARY STATISTICS

TABLE 2. SUMMARY OF FREQUENCY CURVE ORDINATES -- PRELIMINARY AND FINAL RESULTS

STATION NUMBER	STATION NAME AND LOCATION	AREA SQ MI	YEARS RECD	YEARS SYST	YEARS HIST	PERCENT CHANCE EXCEEDANCE 10.	5.	2.	1.	.5	.2
5168	09516800		30	30	0	20248	24155	39554	60710	88749	138431
5168	09516800		30	30	0	20248	24155	39554	60710	88749	138431

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++++++++++++++++++++++++
+ END OF RUN            +
+ NORMAL STOP IN FFA    +
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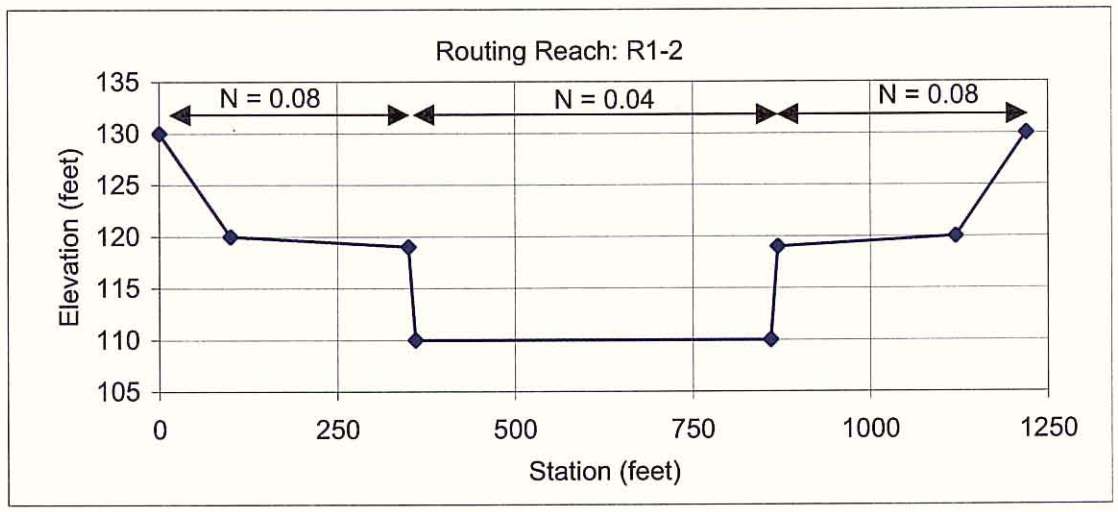
Calculation of Subbasin Average XKSAT from Arizona General Soils Survey Data

Mapunit ID	Name	Surface Texture	Texture Class	XKSAT (in/hr)	HSG	Taxonomic Class	Polygon Area (sq. ft.)	(acres)	Subbasin Name	KK ID	SQ_MILES	Wgtd Ks	Basin Avg XKSAT
AZ043	GREYEAGLE-CONTINENTAL-NICKEL (AZ043)	GRV-L	very gravelly loam	0.40	D	TYPIC DURORTHIDS, LOAMY-SKELETAL, MIXED, THERMIC, SHALLOW	364,916,998	8,377.3	Hassayampa River	H1	416.2	-0.0125	
AZ049	GRAN-ROCK OUTCROP-LEHMANS (AZ049)	GRV-SL	very gravelly sandy loam	0.40	D	TYPIC HAPLARGIDS, CLAYEY-SKELETAL, MIXED, THERMIC, SHALLOW	3,933,576,277	90,302.5	Hassayampa River	H1	416.2	-0.1349	
AZ132	CONTINENTAL-WHITLOCK-CAVE (AZ132)	GR-SL	gravelly sandy loam	0.40	C	TYPIC HAPLARGIDS, FINE, MIXED, THERMIC	232,800,021	5,344.4	Hassayampa River	H1	416.2	-0.0080	
AZ134	CABEZON-THUNDERBIRD-VENEZIA (AZ134)	ST-CL	stony clay loam	0.06	D	LITHIC ARGIUSTOLLS, CLAYEY, MONTMORILLONITIC, MESIC	192,500,013	4,419.2	Hassayampa River	H1	416.2	-0.0203	
AZ134	CABEZON-THUNDERBIRD-VENEZIA (AZ134)	ST-CL	stony clay loam	0.06	D	LITHIC ARGIUSTOLLS, CLAYEY, MONTMORILLONITIC, MESIC	607,279,156	13,941.2	Hassayampa River	H1	416.2	-0.0640	
AZ136	LONTI-BALON-LYNX (AZ136)	GR-L	gravelly loam	0.40	D	USTOLLIC HAPLARGIDS, FINE, MIXED, MESIC	514,014,999	11,800.2	Hassayampa River	H1	416.2	-0.0176	
AZ173	SPUDROCK-WINONA-ROCK OUTCROP (AZ173)	FLV-SL	very flaggy sandy loam	0.40	C	TYPIC USTOCHREPTS, LOAMY-SKELETAL, MIXED, MESIC	708,949,209	16,275.2	Hassayampa River	H1	416.2	-0.0243	
AZ175	QUINTANA (AZ175)	GR-L	gravelly loam	0.40	B	TYPIC USTOCHREPTS, FINE-LOAMY, MIXED, MESIC	244,007,961	5,601.7	Hassayampa River	H1	416.2	-0.0084	
AZ177	EUTRIC GLOSSOBORALFS-TYPIC CRYOBORALFS-ROCK OUTCROP (AZ177)	CBV-L	very cobbly loam	0.40	B	EUTRIC GLOSSOBORALFS, CLAYEY-SKELETAL, MIXED	899,678,100	20,653.8	Hassayampa River	H1	416.2	-0.0309	
AZ180	ARIDIC HAPLUSTOLLS-ARIDIC USTOCHREPTS-ROCK OUTCROP (AZ180)	L	loam	0.25	C	ARIDIC HAPLUSTALFS, FINE-LOAMY, MIXED, MESIC	705,831,070	16,203.7	Hassayampa River	H1	416.2	-0.0366	
AZ270	SOBEGA-QUINTANA-KOPIE (AZ270)	SL	sandy loam	0.40	C	UDIC USTOCHREPTS, FINE-LOAMY, MIXED, MESIC	106,168,192	2,437.3	Hassayampa River	H1	416.2	-0.0036	
AZ276	SPUDROCK-ROMBO-ROCK OUTCROP (AZ276)	FLV-SL	very flaggy sandy loam	0.40	C	TYPIC USTOCHREPTS, LOAMY-SKELETAL, MIXED, MESIC	3,091,892,361	70,980.1	Hassayampa River	H1	416.2	-0.1061	0.34
AZ014	TREMANT-EBON-PINAMT (AZ014)	GR-L	gravelly loam	0.40	B	TYPIC HAPLARGIDS, FINE-LOAMY, MIXED, HYPERTHERMIC	1,093,635	25.1	Martinez Creek - Sols Wash	H2	372.6	0.0000	
AZ035	MOHAVE-CONTINENTAL-GUEST (AZ035)	L	loam	0.25	B	TYPIC HAPLARGIDS, FINE-LOAMY, MIXED, THERMIC	227,791,533	5,229.4	Martinez Creek - Sols Wash	H2	372.6	-0.0132	
AZ043	GREYEAGLE-CONTINENTAL-NICKEL (AZ043)	GRV-L	very gravelly loam	0.40	D	TYPIC DURORTHIDS, LOAMY-SKELETAL, MIXED, THERMIC, SHALLOW	2,620,867,598	60,166.8	Martinez Creek - Sols Wash	H2	372.6	-0.1004	
AZ043	GREYEAGLE-CONTINENTAL-NICKEL (AZ043)	GRV-L	very gravelly loam	0.40	D	TYPIC DURORTHIDS, LOAMY-SKELETAL, MIXED, THERMIC, SHALLOW	623,257,607	14,308.0	Martinez Creek - Sols Wash	H2	372.6	-0.0239	
AZ049	GRAN-ROCK OUTCROP-LEHMANS (AZ049)	GRV-SL	very gravelly sandy loam	0.40	D	TYPIC HAPLARGIDS, CLAYEY-SKELETAL, MIXED, THERMIC, SHALLOW	355,350,469	8,157.7	Martinez Creek - Sols Wash	H2	372.6	-0.0136	
AZ049	GRAN-ROCK OUTCROP-LEHMANS (AZ049)	GRV-SL	very gravelly sandy loam	0.40	D	TYPIC HAPLARGIDS, CLAYEY-SKELETAL, MIXED, THERMIC, SHALLOW	43,751,562	1,004.4	Martinez Creek - Sols Wash	H2	372.6	-0.0017	
AZ049	GRAN-ROCK OUTCROP-LEHMANS (AZ049)	GRV-SL	very gravelly sandy loam	0.40	D	TYPIC HAPLARGIDS, CLAYEY-SKELETAL, MIXED, THERMIC, SHALLOW	3,156,017,262	72,452.2	Martinez Creek - Sols Wash	H2	372.6	-0.1209	
AZ127	BARKERVILLE-MOANO (AZ127)	CB-SL	cobbly sandy loam	0.40	C	TYPIC USTORTHENTS, SANDY-SKELETAL, MIXED, MESIC	389,700,873	8,946.3	Martinez Creek - Sols Wash	H2	372.6	-0.0149	
AZ132	CONTINENTAL-WHITLOCK-CAVE (AZ132)	GR-SL	gravelly sandy loam	0.40	C	TYPIC HAPLARGIDS, FINE, MIXED, THERMIC	2,841,689,147	65,236.2	Martinez Creek - Sols Wash	H2	372.6	-0.1089	
AZ134	CABEZON-THUNDERBIRD-VENEZIA (AZ134)	ST-CL	stony clay loam	0.06	D	LITHIC ARGIUSTOLLS, CLAYEY, MONTMORILLONITIC, MESIC	127,622,352	2,929.8	Martinez Creek - Sols Wash	H2	372.6	-0.0150	0.39
AZ001	CARRIZO-BRIOS-ANTHO (AZ001)	GRV-SL	very gravelly sandy loam	0.40	A	TYPIC TORRIORTHENTS, SANDY-SKELETAL, MIXED, HYPERTHERMIC	744,696,731	17,095.9	Wagner & Daggs Wash	H3	186.6	-0.0570	
AZ007	DENURE-MOHALL-LAVEEN (AZ007)	GR-COSL	gravelly coarse sandy loam	0.40	B	TYPIC CAMBORTHIDS, COARSE-LOAMY, MIXED, HYPERTHERMIC	7,054,227	161.9	Wagner & Daggs Wash	H3	186.6	-0.0005	
AZ008	MOMOLI-CARRIZO-DENURE (AZ008)	GRV-SL	very gravelly sandy loam	0.40	B	TYPIC CAMBORTHIDS, LOAMY-SKELETAL, MIXED, HYPERTHERMIC	135,626,470	3,113.6	Wagner & Daggs Wash	H3	186.6	-0.0104	
AZ014	TREMANT-EBON-PINAMT (AZ014)	GR-L	gravelly loam	0.40	B	TYPIC HAPLARGIDS, FINE-LOAMY, MIXED, HYPERTHERMIC	262,237,810	6,020.2	Wagner & Daggs Wash	H3	186.6	-0.0201	
AZ014	TREMANT-EBON-PINAMT (AZ014)	GR-L	gravelly loam	0.40	B	TYPIC HAPLARGIDS, FINE-LOAMY, MIXED, HYPERTHERMIC	823,629,528	18,907.9	Wagner & Daggs Wash	H3	186.6	-0.0630	
AZ016	GUNSIGHT-RILLITO-CHUCKAWALLA (AZ016)	GRX-SL	extremely gravelly sandy loam	0.40	B	TYPIC CALCIORTHIDS, LOAMY-SKELETAL, MIXED, HYPERTHERMIC	602,773,831	13,837.8	Wagner & Daggs Wash	H3	186.6	-0.0461	
AZ016	GUNSIGHT-RILLITO-CHUCKAWALLA (AZ016)	GRX-SL	extremely gravelly sandy loam	0.40	B	TYPIC CALCIORTHIDS, LOAMY-SKELETAL, MIXED, HYPERTHERMIC	1,907,406,683	43,788.0	Wagner & Daggs Wash	H3	186.6	-0.1459	
AZ022	QUILOTOSA-GACHADO-HYDER (AZ022)	STX-COSL	extremely stony coarse sandy loam	0.40	D	LITHIC TORRIORTHENTS, LOAMY-SKELETAL, MIXED (CALCAREOUS), HYPERTHERMIC	140,227,576	3,219.2	Wagner & Daggs Wash	H3	186.6	-0.0107	
AZ043	GREYEAGLE-CONTINENTAL-NICKEL (AZ043)	GRV-L	very gravelly loam	0.40	D	TYPIC DURORTHIDS, LOAMY-SKELETAL, MIXED, THERMIC, SHALLOW	34,311,572	787.7	Wagner & Daggs Wash	H3	186.6	-0.0026	
AZ049	GRAN-ROCK OUTCROP-LEHMANS (AZ049)	GRV-SL	very gravelly sandy loam	0.40	D	TYPIC HAPLARGIDS, CLAYEY-SKELETAL, MIXED, THERMIC, SHALLOW	543,478,050	12,476.5	Wagner & Daggs Wash	H3	186.6	-0.0416	0.40
AZ001	CARRIZO-BRIOS-ANTHO (AZ001)	GRV-SL	very gravelly sandy loam	0.40	A	TYPIC TORRIORTHENTS, SANDY-SKELETAL, MIXED, HYPERTHERMIC	4,680,998	107.5	Jackrabbit Wash	H4	366.2	-0.0002	
AZ008	MOMOLI-CARRIZO-DENURE (AZ008)	GRV-SL	very gravelly sandy loam	0.40	B	TYPIC CAMBORTHIDS, LOAMY-SKELETAL, MIXED, HYPERTHERMIC	1,786,432,124	41,010.8	Jackrabbit Wash	H4	366.2	-0.0696	
AZ014	TREMANT-EBON-PINAMT (AZ014)	GR-L	gravelly loam	0.40	B	TYPIC HAPLARGIDS, FINE-LOAMY, MIXED, HYPERTHERMIC	440,979,841	10,123.5	Jackrabbit Wash	H4	366.2	-0.0172	
AZ015	CIPRIANO-SUNCITY-CAREFREE (AZ015)	GRV-L	very gravelly loam	0.40	D	TYPIC DURORTHIDS, LOAMY-SKELETAL, MIXED, HYPERTHERMIC, SHALLOW	1,391,359,049	31,941.2	Jackrabbit Wash	H4	366.2	-0.0542	
AZ016	GUNSIGHT-RILLITO-CHUCKAWALLA (AZ016)	GRX-SL	extremely gravelly sandy loam	0.40	B	TYPIC CALCIORTHIDS, LOAMY-SKELETAL, MIXED, HYPERTHERMIC	2,314,783,774	53,140.1	Jackrabbit Wash	H4	366.2	-0.0902	
AZ022	QUILOTOSA-GACHADO-HYDER (AZ022)	STX-COSL	extremely stony coarse sandy loam	0.40	D	LITHIC TORRIORTHENTS, LOAMY-SKELETAL, MIXED (CALCAREOUS), HYPERTHERMIC	1,713,322,194	39,332.5	Jackrabbit Wash	H4	366.2	-0.0668	
AZ035	MOHAVE-CONTINENTAL-GUEST (AZ035)	L	loam	0.25	B	TYPIC HAPLARGIDS, FINE-LOAMY, MIXED, THERMIC	130,714,992	3,000.8	Jackrabbit Wash	H4	366.2	-0.0077	
AZ043	GREYEAGLE-CONTINENTAL-NICKEL (AZ043)	GRV-L	very gravelly loam	0.40	D	TYPIC DURORTHIDS, LOAMY-SKELETAL, MIXED, THERMIC, SHALLOW	764,278,925	17,545.4	Jackrabbit Wash	H4	366.2	-0.0298	
AZ049	GRAN-ROCK OUTCROP-LEHMANS (AZ049)	GRV-SL	very gravelly sandy loam	0.40	D	TYPIC HAPLARGIDS, CLAYEY-SKELETAL, MIXED, THERMIC, SHALLOW	1,662,690,887	38,170.1	Jackrabbit Wash	H4	366.2	-0.0648	0.40
AZ001	CARRIZO-BRIOS-ANTHO (AZ001)	GRV-SL	very gravelly sandy loam	0.40	A	TYPIC TORRIORTHENTS, SANDY-SKELETAL, MIXED, HYPERTHERMIC	406133385	9323.5		H5	43.0	-0.1349	
AZ007	DENURE-MOHALL-LAVEEN (AZ007)	GR-COSL	gravelly coarse sandy loam	0.40	B	TYPIC CAMBORTHIDS, COARSE-LOAMY, MIXED, HYPERTHERMIC	263670623	6053.0		H5	43.0	-0.0876	
AZ016	GUNSIGHT-RILLITO-CHUCKAWALLA (AZ016)	GRX-SL	extremely gravelly sandy loam	0.40	B	TYPIC CALCIORTHIDS, LOAMY-SKELETAL, MIXED, HYPERTHERMIC	515136329	11825.9		H5	43.0	-0.1711	
AZ028	PAHAKA-ESTRELLA-ANTHO (AZ028)	FSL	fine sandy loam	0.40	B	TYPIC CAMBORTHIDS, COARSE-LOAMY, MIXED, HYPERTHERMIC	3062502	70.3		H5	43.0	-0.001017	0.39
AZ005	MARANA-SASCO-DENURE (AZ005)	SICL	silty clay loam	0.04	B	TYPIC CAMBORTHIDS, FINE-SILTY, MIXED, HYPERTHERMIC	9935989	228.1		H5	43.0	-0.0116	

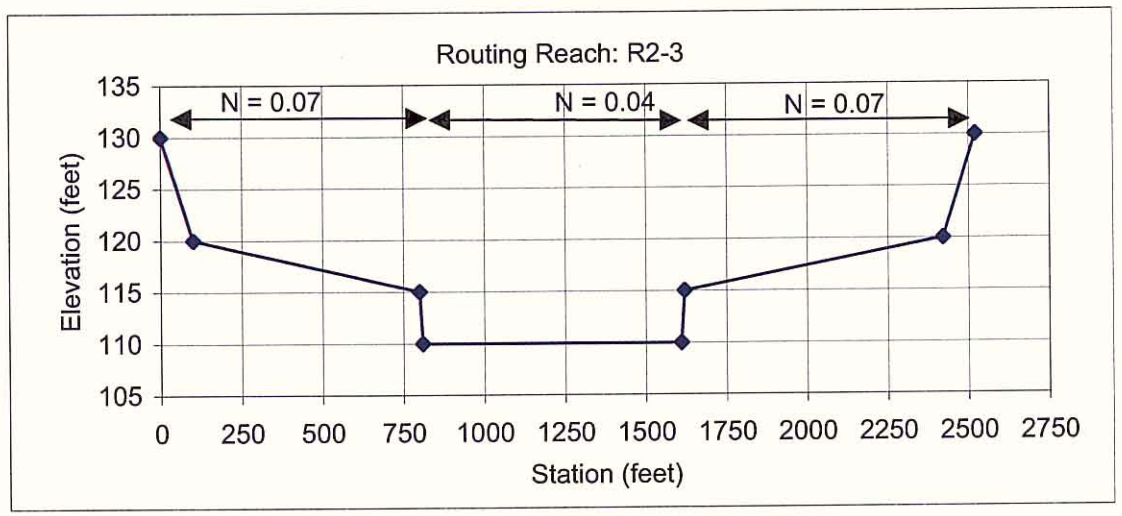
Routing Reach: R1-2

RS	7	FLOW	-1					
RC	0.08	0.04	0.08	78500	0.005	130		
RX	0	100	350	360	860	870	1120	1220
RY	130	120	119	110	110	119	120	130



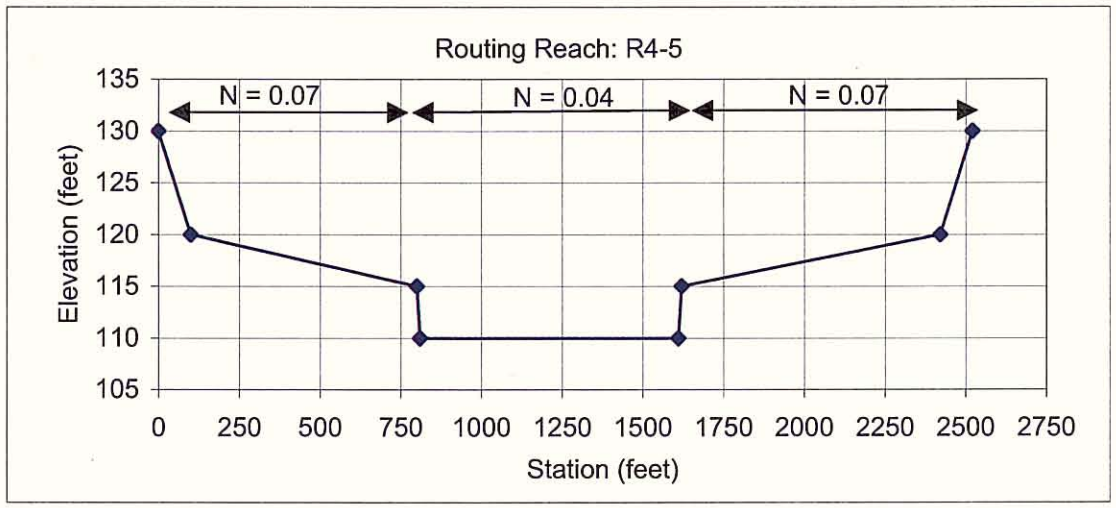
Routing Reach: R2-3

RS	14	FLOW	-1					
RC	0.07	0.04	0.07	149000	0.005	130		
RX	0	100	800	810	1610	1620	2420	2520
RY	130	120	115	110	110	115	120	130



Routing Reach: R4-5

RS	11	FLOW	-1					
RC	0.07	0.04	0.07	74000	0.004	130		
RX	0	100	800	810	1610	1620	2420	2520
RY	130	120	115	110	110	115	120	130



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*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN   1998              *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   26JUL04  TIME  09:58:56  *
*                                      *
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*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
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XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
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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

1 HEC-1 INPUT PAGE 1

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

  1           ID   Lower Hassayampa River Watercourse Master Plan          FILE: HASSY.DAT
  2           ID                                                           DATE: 07-25-2004
  3           ID
  4           ID      MULTIPLE PLAN MODEL RUN TO INVESTIGATE SINGLE
  5           ID      SUBBASIN RESPONSE AS WELL AS WHOLE BASIN RESPONSE
  6           ID
  7           ID      MODEL BASIS:
  8           ID        - NOAA ATLAS II POINT RAINFALL AVERAGED FOR EACH SUBBASIN
  9           ID          INDEPENDENTLY
 10           ID        - AREAL REDUCTION FOR EACH SUBBASIN INDIVIDUALLY
 11           ID        - SCS TYPE II 24-HR TEMPORAL DISTRIBUTION
 12           ID        - GREEN-AMPT LOSS PARAMETERS BASED ON NRCS DIGITAL SURGO GENERAL
 13           ID          SOIL MAP
 14           ID        - UNIT HYDROGRAPHS CONSTRUCTED USING MCUHP2 WITH PARAMETERS AS
 15           ID          INDICATED IN KM RECORDS OF EACH SUBBASIN KK BLOCK
 16           ID        - CHANNEL ROUTINGS BASED ON NORMAL-DEPTH WITH TRANSMISSION LOSSES
 17           ID
 18           IT      15 15JUL04    0000    2000
 19           IO       3
 20           IN      15
 21           JP       6
              *

 22           KK      H1
 23           KM   BASIN H1 - HASSAYAMPA ABOVE BOX CANYON
 24           KM
 25           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 26           KM    L=     55.6  Lca=     27.3   S=  100.0  Kn= .050  LAG= 485.0
 27           KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 28           KM     100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 5.0"
 29           KM     AREAL REDUCED FOR 416.2 SQ.MI. = 5.0*0.78 = 3.9"
 30           KP       1
 31           BA  416.20
 32           PB     3.9
 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    .133    .140    .147    .155    .163    .172
 37           PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
 38           PC    .735    .758    .776    .791    .804    .815    .825    .834    .842    .849
 39           PC    .856    .863    .869    .875    .881    .887    .893    .898    .903    .908
 40           PC    .913    .918    .922    .926    .930    .934    .938    .942    .946    .950
 41           PC    .953    .956    .959    .962    .965    .968    .971    .974    .977    .980
 42           PC    .983    .986    .989    .992    .995    .998   1.000
 43           LG     .80     .25    4.30     .34     .00
 44           UI   2889.   2889.   2889.   2889.   2889.   2889.   2889.   5941.   8307.   8307.
 45           UI  11011.  11157.  13291.  14686.  16724.  17488.  18360.  19257.  20321.  21169.
```

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 46          UI  21864.  22631.  23480.  25166.  27772.  30061.  32997.  36969.  32740.  26474.
 47          UI  22671.  21180.  19953.  18929.  18068.  17410.  17040.  16650.  16123.  15634.
 48          UI  15103.  14552.  14235.  13845.  13401.  13110.  12306.  12023.  11659.  11312.
 49          UI  11076.  10318.   9919.   9460.   8980.   8852.   7638.   7638.   7478.   7070.
 50          UI   7070.   6966.   6645.   6645.   6639.   6041.   6041.   6041.   5454.   4747.
 51          UI   4747.   4747.   4747.   3769.   3692.   3692.   3692.   3692.   3636.   3165.
 52          UI   3164.   3164.   3164.   3165.   3164.   2864.   2215.   2215.   2215.   2215.
 53          UI   2215.   2215.   2215.   2215.   2215.   1721.   1414.   1414.   1414.   1414.
1                                          HEC-1 INPUT                                          PAGE  2

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

 54          UI   1414.   1414.   1414.   1414.   1414.   1414.   1414.   1414.   1414.   1414.
 55          UI   1053.    554.    554.    554.    554.    554.    554.    554.    554.    554.
 56          UI    554.    554.    554.    554.    554.    554.    554.    554.    554.    554.
 57          UI    554.    554.    554.    554.    554.    554.    554.    554.    554.    554.
 58          UI    554.    554.    554.    554.    554.    554.    554.    554.    554.      0.
 59          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 60          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 61          ZW      C=FLOW    F=BOX CANYON
             *
 62          KP       2
 63          PB     0.0
             *
 64          KP       3
 65          PB     0.0
             *
 66          KP       4
 67          PB     0.0
             *
 68          KP       5
 69          PB     0.0
             *
 70          KP       6
 71          PB     3.9
             *

 72          KK    R1-2
 73          KM    ROUTE RUNOFF AT BOX CANYON TO MORRISTOWN
 74          KM     SLOPE = (2240 - 1845) / 78,500 = 0.005
 75          RS       7    FLOW      -1
 76          RC    0.08    0.04    0.08   78500   0.005     130
 77          RX       0     100     350     360     860     870    1120    1220
 78          RY     130     120     119     110     110     119     120     130
 79          ZW      C=FLOW    F=ROUTED BOX
             *

 80          KK      H2
 81          KM   BASIN H2 - MARTINEZ CREEK, SOLS WASH, SAN DOMINGO WASH
 82          KM
 83          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 84          KM    L=     36.9  Lca=     12.6   S=   61.7  Kn= .040  LAG= 271.0
 85          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 86          KM     100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.4"
 87          KM     AREAL REDUCED FOR 372.6 SQ.MI = 4.4*0.79 = 3.5"
 88          KP       1
 89          BA  372.60
 90          PB     0.0
 91          LG     .50     .25    4.00     .39     .00
 92          UI   4629.   4629.   4629.   4629.  11961.  15201.  19425.  23659.  27288.  31529.
 93          UI  33690.  38311.  40518.  41691.  43865.  44363.  44363.  43680.  41820.  40821.
 94          UI  37700.  33304.  31189.  27832.  25179.  22959.  20945.  19026.  17289.  15768.
 95          UI  14196.  12789.  11722.  10337.   9457.   8727.   8169.   7098.   7098.   5711.
 96          UI   4907.   4907.   4907.   3669.   3169.   3169.   3169.   3169.   3169.   1858.
 97          UI   1127.   1127.   1127.   1127.   1127.   1127.   1127.   1127.   1127.   1127.
 98          UI   1127.   1127.   1127.   1127.   1127.   1127.      0.      0.      0.      0.
 99          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
             *
1                                          HEC-1 INPUT                                          PAGE  3

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

100          KP       2
101          PB     3.5
             *
102          KP       3
103          PB     0.0
             *
104          KP       4
105          PB     0.0
             *
106          KP       5
107          PB     0.0
             *
108          KP       6
```

```
109          PB     3.5
110          ZW     C=FLOW   F=SOLSPLUS
             *

111          KK      C2
112          KM    COMBINE ROUTED FLOW FROM BOX CANYON WITH RUNOFF FROM H2
113          KM     (H2 SUBBASIN CONTAINS MARTINEZ CREEK AND SOLS WASH PLUS
114          KM      OTHER SMALL WICKENBURG AREA TRIBUTARIES)
115          KM    THIS IS THE TOTAL FLOW AT MORRISTOWN GAGE LOCATION
116          HC       2
117          ZW          C=FLOW     F=MORRISTOWN
             *

118          KK    R2-3
119          KM    ROUTE COMBINED FLOWS AT MORRISTOWN TO JACKRABBIT WASH
120          KM     SLOPE = (1845 - 1102) / 149,000 = 0.005
121          RS      14    FLOW      -1
122          RL                       2     110
123          RC    0.07    0.04    0.07  149000   0.005     130
124          RX       0     100     800     810    1610    1620    2420    2520
125          RY     130     120     115     110     110     115     120     130
126          ZW      C=FLOW    F=ROUTED MORRISTOWN
             *

127          KK      H3
128          KM   BASIN H3 - WAGNER WASH AND DAGGS WASH WATERSHEDS
129          KM
130          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
131          KM    L=     37.8  Lca=     16.4   S=   59.7  Kn= .040  LAG= 304.0
132          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
133          KM     100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.2"
134          KM     AREAL REDUCED FOR 186.6 SQ.MI. = 4.2*0.82 = 3.44"
135          KP       1
136          BA  186.60
137          PB     0.0
138          LG     .35     .25    4.00     .40     .00
139          UI   2067.   2067.   2067.   2067.   3379.   5942.   7459.   9020.  10679.  12149.
140          UI  13781.  14598.  16721.  17606.  18403.  18732.  19806.  19806.  19806.  19616.
141          UI  18848.  18522.  17485.  15851.  14513.  13555.  12319.  11202.  10355.   9519.
142          UI   8810.   8057.   7329.   6668.   6242.   5659.   5201.   4615.   4362.   3896.
143          UI   3896.   3257.   3169.   3169.   2348.   2190.   2191.   2190.   1848.   1415.
144          UI   1415.   1415.   1415.   1415.   1415.    839.    503.    503.    503.    503.
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

145          UI    503.    503.    503.    503.    503.    503.    503.    503.    503.    503.
146          UI    503.    503.    503.    503.      0.      0.      0.      0.      0.      0.
147          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
             *
148          KP       2
149          PB     0.0
             *
150          KP       3
151          PB    3.44
             *
152          KP       4
153          PB     0.0
             *
154          KP       5
155          PB     0.0
             *
156          KP       6
157          PB    3.44
158          ZW     C=FLOW   F=WAGNER-DAGGS
             *

159          KK      C3
160          KM     COMBINE ROUTED FLOW FROM MORRISTOWN WITH RUNOFF FROM SUBBASIN H3
161          KM     COMBINED FLOW UPSTREAM OF JACKRABBIT WASH
162          KM     LOCAL RUNOFF INCLUDES WAGNER AND DAGGS WASH WATERSHEDS
163          HC       2
164          ZW       C=FLOW    F=U-S JRW
             *

165          KK      H4
166          KM   BASIN H4 - JACKRABBIT WASH
167          KM
168          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
169          KM    L=     40.0  Lca=     21.7   S=   32.5  Kn= .040  LAG= 389.0
170          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
171          KM     100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.2"
172          KM     AREAL REDUCED FOR 366.2 SQ.MI. = 4.2*0.79 = 3.32"
173          KP       1
174          BA  366.20
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```
175          PB     0.0
176          LG     .35      .25     4.00      .40      .00
177          UI   3170.    3170.    3170.    3170.    3170.    3380.    9113.    9113.   12228.   13575.
178          UI  15591.   17534.   19367.   21226.   22524.   24134.   26099.   27380.   28058.   28747.
179          UI  29661.   30375.   30375.   30375.   30375.   29507.   28691.   28666.   27000.   25706.
180          UI  23410.   22091.   21070.   19230.   18083.   16932.   15935.   14878.   13834.   12978.
181          UI  12327.   11215.   10708.    9720.    9309.    8679.    8332.    7078.    7078.    6477.
182          UI   5975.    5976.    5550.    4860.    4860.    4860.    4123.    3360.    3359.    3360.
183          UI   3359.    3359.    2332.    2170.    2170.    2170.    2170.    2170.    2170.    2170.
184          UI   1960.     771.     771.     771.     771.     771.     771.     771.     771.     771.
185          UI    771.     771.     771.     771.     771.     771.     771.     771.     771.     771.
186          UI    771.     771.     771.     771.     771.      0.       0.       0.       0.       0.
187          UI      0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
             *
188          KP       2
189          PB     0.0
             *
```

1 HEC-1 INPUT PAGE 5

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

190          KP       3
191          PB     0.0
             *
192          KP       4
193          PB    3.32
             *
194          KP       5
195          PB     0.0
             *
196          KP       6
197          PB    3.32
198          ZW      C=FLOW    F=JRW
             *

199          KK      C4
200          KM    COMBINE RUNOFF FROM JACKRABBIT WASH WITH COMBINED FLOWS IN HASSAYAMPA
201          KM     THIS IS THE TOTAL FLOW OF THE HASSAYAMPA RIVER JUST DOWNSTREAM OF
202          KM     JACKRABBIT WASH
203          HC       2
204          ZW      C=FLOW     F=D-S JRW
             *

205          KK    R4-5
206          KM    ROUTE COMBINED FLOWS AT JACKRABBIT WASH TO THE GILA RIVER
207          KM     SLOPE = (1102 - 792) / 74,000 = 0.004
208          RS      11     FLOW      -1
209          RL                       2     110
210          RC    0.07     0.04     0.07   74000    0.004     130
211          RX       0      100      800     810     1610     1620     2420     2520
212          RY     130      120      115     110      110      115      120      130
213          ZW      C=FLOW     F=ROUTED
             *

214          KK      H5
215          KM   BASIN H5
216          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
217          KM    L=      19.4  Lca=      8.4   S=   28.2  Kn= .040  LAG= 211.0
218          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
219          KM     100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.1"
220          KM     AREAL REDUCED FOR 43.0 SQ.MI. = 4.1*0.88 = 3.6"
221          KP       1
222          BA    43.0
223          PB     0.0
224          LG     .30      .25     4.00      .39      .00
225          UI    686.     686.     686.    1670.    2422.    3234.    3976.    4717.    5297.    5904.
226          UI   6155.    6568.    6576.    6501.    6224.    5866.    5117.    4611.    4012.    3578.
227          UI   3136.    2795.    2484.    2149.    1923.    1663.    1490.    1294.    1183.    1052.
228          UI    939.     727.     727.     651.     470.     470.     470.     470.     297.     167.
229          UI    167.     167.     167.     167.     167.     167.     167.     167.     167.     167.
230          UI    167.       0.       0.       0.       0.       0.       0.       0.       0.       0.
231          UI      0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
             *
232          KP       2
233          PB     0.0
             *
```

1 HEC-1 INPUT PAGE 6

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

234          KP       3
235          PB     0.0
             *
236          KP       4
237          PB     0.0
```

```
                    *
        238         KP       5
        239         PB     3.6
                    *
        240         KP       6
        241         PB     3.6
                    *

        242         KK      C5
        243         KM     COMBINE ROUTED FLOWS IN HASSAYAMPA WITH RUNOFF FROM SUBBASIN H5
        244         KM     THIS IS THE TOTAL FLOW AT THE CONFLUENCE OF THE GILA RIVER
        245         HC       2
        246         ZW      C=FLOW    F=AT GILA RIVER
                    *
        247         ZZ
1****************************************                                    ****************************************
 *                                      *                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                                    *          609 SECOND STREET           *
 *                                      *                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   26JUL04  TIME  09:58:56  *                                    *           (916) 756-1104             *
 *                                      *                                    *                                      *
 ****************************************                                    ****************************************
```

Lower Hassayampa River Watercourse Master Plan

FILE: HASSY.DAT
DATE: 07-25-2004

MULTIPLE PLAN MODEL RUN TO INVESTIGATE SINGLE
SUBBASIN RESPONSE AS WELL AS WHOLE BASIN RESPONSE

MODEL BASIS:
- NOAA ATLAS II POINT RAINFALL AVERAGED FOR EACH SUBBASIN INDEPENDENTLY
- AREAL REDUCTION FOR EACH SUBBASIN INDIVIDUALLY
- SCS TYPE II 24-HR TEMPORAL DISTRIBUTION
- GREEN-AMPT LOSS PARAMETERS BASED ON NRCS DIGITAL SURGO GENERAL SOIL MAP
- UNIT HYDROGRAPHS CONSTRUCTED USING MCUHP2 WITH PARAMETERS AS INDICATED IN KM RECORDS OF EACH SUBBASIN KK BLOCK
- CHANNEL ROUTINGS BASED ON NORMAL-DEPTH WITH TRANSMISSION LOSSES

```
 19 IO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN          15  MINUTES IN COMPUTATION INTERVAL
                      IDATE     15JUL 4  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ        2000  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      4AUG 4  ENDING DATE
                     NDTIME        1945  ENDING TIME
                      ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL     .25 HOURS
                      TOTAL TIME BASE  499.75 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

    JP          MULTI-PLAN OPTION
                      NPLAN           6  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF RUNOFF
                   1.00
```

*** ***

```
              **************
              *            *
   22 KK      *        H1  *
              *            *
              **************
                          BASIN H1 - HASSAYAMPA ABOVE BOX CANYON

                           THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
                           L=     55.6  Lca=     27.3   S=  100.0  Kn= .050  LAG= 485.0
                           PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
                            100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 5.0"
                            AREAL REDUCED FOR 416.2 SQ.MI. = 5.0*0.78 = 3.9"

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

   30 KP        PLAN  1 FOR STATION       H1

   20 IN          TIME DATA FOR INPUT TIME SERIES
                        JXMIN          15  TIME INTERVAL IN MINUTES
                       JXDATE     15JUL 4  STARTING DATE
                       JXTIME           0  STARTING TIME

                SUBBASIN RUNOFF DATA

   31 BA          SUBBASIN CHARACTERISTICS
                        TAREA      416.20  SUBBASIN AREA

                  PRECIPITATION DATA

   32 PB                STORM        3.90  BASIN TOTAL PRECIPITATION

   33 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

   43 LG          GREEN AND AMPT LOSS RATE
                        STRTL         .80  STARTING LOSS
                          DTH         .25  MOISTURE DEFICIT
                         PSIF        4.30  WETTING FRONT SUCTION
                        XKSAT         .34  HYDRAULIC CONDUCTIVITY
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

   43 UI          INPUT UNITGRAPH, 149 ORDINATES,  VOLUME = 1.00
                     2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    5941.0    8307.0    8307.0
                    11011.0   11157.0   13291.0   14686.0   16724.0   17488.0   18360.0   19257.0   20321.0   21169.0
                    21864.0   22631.0   23480.0   25166.0   27772.0   30061.0   32997.0   36969.0   32740.0   26474.0
                    22671.0   21180.0   19953.0   18929.0   18068.0   17410.0   17040.0   16650.0   16123.0   15634.0
                    15103.0   14552.0   14235.0   13845.0   13401.0   13110.0   12306.0   12023.0   11659.0   11312.0
                    11076.0   10318.0    9919.0    9460.0    8980.0    8852.0    7638.0    7638.0    7478.0    7070.0
                     7070.0    6966.0    6645.0    6645.0    6639.0    6041.0    6041.0    6041.0    5454.0    4747.0
                     4747.0    4747.0    4747.0    3769.0    3692.0    3692.0    3692.0    3692.0    3636.0    3165.0
                     3164.0    3164.0    3164.0    3165.0    3164.0    2864.0    2215.0    2215.0    2215.0    2215.0
                     2215.0    2215.0    2215.0    2215.0    2215.0    1721.0    1414.0    1414.0    1414.0    1414.0
                     1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0
                     1053.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                      554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                      554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                      554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                                                                      ***

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H1
                         FOR PLAN 1, RATIO = 1.00

    TOTAL RAINFALL =    3.90, TOTAL LOSS =    2.92, TOTAL EXCESS =     .98

  PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR        72-HR    499.75-HR
+   (CFS)        (HR)
                            (CFS)
+  35589.      18.75                22157.       10484.       3640.         524.
                         (INCHES)     .495         .937        .976         .976
                          (AC-FT)   10987.       20795.      21657.       21657.
```

```
                    CUMULATIVE AREA =  416.20 SQ MI

     ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H1
                        FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   35589.     18.75                22157.      10484.       3640.         524.
                       (INCHES)      .495        .937        .976         .976
                        (AC-FT)    10987.      20795.      21657.       21657.

                    CUMULATIVE AREA =  416.20 SQ MI

    -----DSS---ZOPEN:  New File Opened,  File: HASSY.DSS
                       Unit:  71;  DSS Version: 6-JG
 -----DSS---ZWRITE Unit  71; Vers.    1:  //H1/FLOW/01JUL1904/15MIN/BOX CANYON/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //H1/FLOW/01AUG1904/15MIN/BOX CANYON/

***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  62 KP        PLAN  2 FOR STATION       H1

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                      TAREA      416.20  SUBBASIN AREA

                 PRECIPITATION DATA

  63 PB               STORM         .00  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

  43 LG          GREEN AND AMPT LOSS RATE
                      STRTL         .80  STARTING LOSS
                        DTH         .25  MOISTURE DEFICIT
                       PSIF        4.30  WETTING FRONT SUCTION
                      XKSAT         .34  HYDRAULIC CONDUCTIVITY
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  43 UI          INPUT UNITGRAPH, 149 ORDINATES,  VOLUME = 1.00
                   2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    5941.0    8307.0    8307.0
                  11011.0   11157.0   13291.0   14686.0   16724.0   17488.0   18360.0   19257.0   20321.0   21169.0
                  21864.0   22631.0   23480.0   25166.0   27772.0   30061.0   32997.0   36969.0   32740.0   26474.0
                  22671.0   21180.0   19953.0   18929.0   18068.0   17410.0   17040.0   16650.0   16123.0   15634.0
                  15103.0   14552.0   14235.0   13845.0   13401.0   13110.0   12306.0   12023.0   11659.0   11312.0
                  11076.0   10318.0    9919.0    9460.0    8980.0    8852.0    7638.0    7638.0    7478.0    7070.0
                   7070.0    6966.0    6645.0    6645.0    6639.0    6041.0    6041.0    6041.0    5454.0    4747.0
                   4747.0    4747.0    4747.0    3769.0    3692.0    3692.0    3692.0    3692.0    3636.0    3165.0
                   3164.0    3164.0    3164.0    3165.0    3164.0    2864.0    2215.0    2215.0    2215.0    2215.0
                   2215.0    2215.0    2215.0    2215.0    2215.0    1721.0    1414.0    1414.0    1414.0    1414.0
                   1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0
                   1053.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0

                                                                  ***

     ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H1
                        FOR PLAN 2, RATIO = 1.00

    TOTAL RAINFALL =      .00, TOTAL LOSS =      .00, TOTAL EXCESS =      .00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
```

```
                    (CFS)
+     0.      .00                  0.          0.          0.          0.
                  (INCHES)       .000        .000        .000        .000
                   (AC-FT)         0.          0.          0.          0.

                  CUMULATIVE AREA =  416.20 SQ MI


   ***          ***          ***          ***          ***

                    HYDROGRAPH AT STATION       H1
                      FOR PLAN 2, RATIO = 1.00

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                    (CFS)
+     0.      .00                  0.          0.          0.          0.
                  (INCHES)       .000        .000        .000        .000
                   (AC-FT)         0.          0.          0.          0.

                  CUMULATIVE AREA =  416.20 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    1:  //H1/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    1:  //H1/FLOW/01AUG1904/15MIN//

***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  64 KP        PLAN  3 FOR STATION       H1

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA      416.20  SUBBASIN AREA

                 PRECIPITATION DATA

  65 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

  43 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .80  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.30  WETTING FRONT SUCTION
                       XKSAT         .34  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  43 UI          INPUT UNITGRAPH, 149 ORDINATES,  VOLUME = 1.00
                   2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    5941.0    8307.0    8307.0
                  11011.0   11157.0   13291.0   14686.0   16724.0   17488.0   18360.0   19257.0   20321.0   21169.0
                  21864.0   22631.0   23480.0   25166.0   27772.0   30061.0   32997.0   36969.0   32740.0   26474.0
                  22671.0   21180.0   19953.0   18929.0   18068.0   17410.0   17040.0   16650.0   16123.0   15634.0
                  15103.0   14552.0   14235.0   13845.0   13401.0   13110.0   12306.0   12023.0   11659.0   11312.0
                  11076.0   10318.0    9919.0    9460.0    8980.0    8852.0    7638.0    7638.0    7478.0    7070.0
                   7070.0    6966.0    6645.0    6645.0    6639.0    6041.0    6041.0    6041.0    5454.0    4747.0
                   4747.0    4747.0    4747.0    3769.0    3692.0    3692.0    3692.0    3692.0    3636.0    3165.0
                   3164.0    3164.0    3164.0    3165.0    3164.0    2864.0    2215.0    2215.0    2215.0    2215.0
                   2215.0    2215.0    2215.0    2215.0    2215.0    1721.0    1414.0    1414.0    1414.0    1414.0
                   1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0
                   1053.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                                                                    ***

   ***          ***          ***          ***          ***

                    HYDROGRAPH AT STATION       H1
                      FOR PLAN 3, RATIO = 1.00

  TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00
```

```
 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                  0.          0.          0.           0.
                        (INCHES)    .000        .000        .000         .000
                         (AC-FT)      0.          0.          0.           0.

                        CUMULATIVE AREA =  416.20 SQ MI


      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H1
                          FOR PLAN 3, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                  0.          0.          0.           0.
                        (INCHES)    .000        .000        .000         .000
                         (AC-FT)      0.          0.          0.           0.

                        CUMULATIVE AREA =  416.20 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    2:  //H1/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    2:  //H1/FLOW/01AUG1904/15MIN//

***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  66 KP        PLAN  4 FOR STATION       H1

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA      416.20  SUBBASIN AREA

                 PRECIPITATION DATA

  67 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

  43 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .80  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.30  WETTING FRONT SUCTION
                       XKSAT         .34  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  43 UI          INPUT UNITGRAPH, 149 ORDINATES,  VOLUME = 1.00
                    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    5941.0    8307.0    8307.0
                   11011.0   11157.0   13291.0   14686.0   16724.0   17488.0   18360.0   19257.0   20321.0   21169.0
                   21864.0   22631.0   23480.0   25166.0   27772.0   30061.0   32997.0   36969.0   32740.0   26474.0
                   22671.0   21180.0   19953.0   18929.0   18068.0   17410.0   17040.0   16650.0   16123.0   15634.0
                   15103.0   14552.0   14235.0   13845.0   13401.0   13110.0   12306.0   12023.0   11659.0   11312.0
                   11076.0   10318.0    9919.0    9460.0    8980.0    8852.0    7638.0    7638.0    7478.0    7070.0
                    7070.0    6966.0    6645.0    6645.0    6639.0    6041.0    6041.0    6041.0    5454.0    4747.0
                    4747.0    4747.0    4747.0    3769.0    3692.0    3692.0    3692.0    3692.0    3636.0    3165.0
                    3164.0    3164.0    3164.0    3165.0    3164.0    2864.0    2215.0    2215.0    2215.0    2215.0
                    2215.0    2215.0    2215.0    2215.0    2215.0    1721.0    1414.0    1414.0    1414.0    1414.0
                    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0
                    1053.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                                                                   ***

      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H1
                          FOR PLAN 4, RATIO = 1.00
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    TOTAL RAINFALL =      .00, TOTAL LOSS =      .00, TOTAL EXCESS =      .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR        72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+      0.        .00                 0.           0.           0.           0.
                          (INCHES)  .000         .000         .000         .000
                           (AC-FT)    0.           0.           0.           0.

                          CUMULATIVE AREA =  416.20 SQ MI


      ***            ***            ***            ***            ***

                           HYDROGRAPH AT STATION       H1
                             FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR        72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+      0.        .00                 0.           0.           0.           0.
                          (INCHES)  .000         .000         .000         .000
                           (AC-FT)    0.           0.           0.           0.

                          CUMULATIVE AREA =  416.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    3:  //H1/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    3:  //H1/FLOW/01AUG1904/15MIN//


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  68 KP        PLAN  5 FOR STATION       H1

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA      416.20  SUBBASIN AREA

                 PRECIPITATION DATA

  69 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

  43 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .80  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.30  WETTING FRONT SUCTION
                       XKSAT         .34  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  43 UI          INPUT UNITGRAPH, 149 ORDINATES,  VOLUME = 1.00
                   2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    5941.0    8307.0    8307.0
                  11011.0   11157.0   13291.0   14686.0   16724.0   17488.0   18360.0   19257.0   20321.0   21169.0
                  21864.0   22631.0   23480.0   25166.0   27772.0   30061.0   32997.0   36969.0   32740.0   26474.0
                  22671.0   21180.0   19953.0   18929.0   18068.0   17410.0   17040.0   16650.0   16123.0   15634.0
                  15103.0   14552.0   14235.0   13845.0   13401.0   13110.0   12306.0   12023.0   11659.0   11312.0
                  11076.0   10318.0    9919.0    9460.0    8980.0    8852.0    7638.0    7638.0    7478.0    7070.0
                   7070.0    6966.0    6645.0    6645.0    6639.0    6041.0    6041.0    6041.0    5454.0    4747.0
                   4747.0    4747.0    4747.0    3769.0    3692.0    3692.0    3692.0    3692.0    3636.0    3165.0
                   3164.0    3164.0    3164.0    3165.0    3164.0    2864.0    2215.0    2215.0    2215.0    2215.0
                   2215.0    2215.0    2215.0    2215.0    2215.0    1721.0    1414.0    1414.0    1414.0    1414.0
                   1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0
                   1053.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0

                                                                  ***

      ***            ***            ***            ***            ***
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                    HYDROGRAPH AT STATION       H1
                      FOR PLAN 5, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                  0.          0.          0.          0.
                        (INCHES)     .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

                        CUMULATIVE AREA =  416.20 SQ MI


      ***            ***            ***            ***            ***

                    HYDROGRAPH AT STATION       H1
                      FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                  0.          0.          0.          0.
                        (INCHES)     .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

                        CUMULATIVE AREA =  416.20 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    4:  //H1/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    4:  //H1/FLOW/01AUG1904/15MIN//

***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  70 KP        PLAN  6 FOR STATION       H1

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA      416.20  SUBBASIN AREA

                 PRECIPITATION DATA

  71 PB                STORM        3.90  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

  43 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .80  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.30  WETTING FRONT SUCTION
                       XKSAT         .34  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  43 UI          INPUT UNITGRAPH, 149 ORDINATES,  VOLUME = 1.00
                    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    5941.0    8307.0    8307.0
                   11011.0   11157.0   13291.0   14686.0   16724.0   17488.0   18360.0   19257.0   20321.0   21169.0
                   21864.0   22631.0   23480.0   25166.0   27772.0   30061.0   32997.0   36969.0   32740.0   26474.0
                   22671.0   21180.0   19953.0   18929.0   18068.0   17410.0   17040.0   16650.0   16123.0   15634.0
                   15103.0   14552.0   14235.0   13845.0   13401.0   13110.0   12306.0   12023.0   11659.0   11312.0
                   11076.0   10318.0    9919.0    9460.0    8980.0    8852.0    7638.0    7638.0    7478.0    7070.0
                    7070.0    6966.0    6645.0    6645.0    6639.0    6041.0    6041.0    6041.0    5454.0    4747.0
                    4747.0    4747.0    4747.0    3769.0    3692.0    3692.0    3692.0    3692.0    3636.0    3165.0
                    3164.0    3164.0    3164.0    3165.0    3164.0    2864.0    2215.0    2215.0    2215.0    2215.0
                    2215.0    2215.0    2215.0    2215.0    2215.0    1721.0    1414.0    1414.0    1414.0    1414.0
                    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0
                    1053.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
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                                                                    ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H1
                          FOR PLAN 6, RATIO = 1.00

    TOTAL RAINFALL =    3.90, TOTAL LOSS =    2.92, TOTAL EXCESS =     .98

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   35589.     18.75                22157.      10484.       3640.         524.
                        (INCHES)     .495        .937        .976         .976
                         (AC-FT)   10987.      20795.      21657.       21657.

                        CUMULATIVE AREA =  416.20 SQ MI

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H1
                          FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   35589.     18.75                22157.      10484.       3640.         524.
                        (INCHES)     .495        .937        .976         .976
                         (AC-FT)   10987.      20795.      21657.       21657.

                        CUMULATIVE AREA =  416.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    5:  //H1/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    5:  //H1/FLOW/01AUG1904/15MIN//

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
  72 KK     *      R1-2  *
            *            *
            **************
                          ROUTE RUNOFF AT BOX CANYON TO MORRISTOWN
                           SLOPE = (2240 - 1845) / 78,500 = 0.005

              HYDROGRAPH ROUTING DATA

  75 RS          STORAGE ROUTING
                      NSTPS           7  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                      RSVRIC       -1.00  INITIAL CONDITION
                           X         .00 WORKING R AND D COEFFICIENT

  76 RC          NORMAL DEPTH CHANNEL
                        ANL        .080  LEFT OVERBANK N-VALUE
                       ANCH        .040  MAIN CHANNEL N-VALUE
                        ANR        .080  RIGHT OVERBANK N-VALUE
                      RLNTH      78500.  REACH LENGTH
                        SEL      .0050  ENERGY SLOPE
                      ELMAX      130.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                          CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
  78 RY        ELEVATION   130.00    120.00    119.00    110.00    110.00    119.00    120.00    130.00
  77 RX        DISTANCE       .00    100.00    350.00    360.00    860.00    870.00   1120.00   1220.00

                                                                    ***

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE        .00    950.70   1905.84   2865.42   3829.43   4797.88   5770.77   6748.10   7729.86   8816.71
          OUTFLOW        .00   1434.12   4551.81   8944.56  14443.97  20946.26  28378.25  36684.34  45820.28  55873.02
        ELEVATION     110.00    111.05    112.11    113.16    114.21    115.26    116.32    117.37    118.42    119.47

          STORAGE   10631.83  12606.67  14621.45  16676.17  18770.82  20905.41  23079.94  25294.40  27548.79  29843.11
          OUTFLOW   67455.63  80691.84  95338.45 111305.70 128537.80 146995.50 166649.40 187476.80 209459.80 232583.80
        ELEVATION     120.53    121.58    122.63    123.68    124.74    125.79    126.84    127.89    128.95    130.00
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     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     R1-2
                          FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+   29696.     20.00                21737.      10242.       3640.         524.
                          (INCHES)    .486        .915        .976         .976
                           (AC-FT)  10779.      20314.      21657.       21657.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
      847.     20.00                  696.        411.        158.          23.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    116.48     20.00                115.34      113.17      111.22       110.18

                        CUMULATIVE AREA =  416.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //R1-2/FLOW/01JUL1904/15MIN/ROUTED BOX/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //R1-2/FLOW/01AUG1904/15MIN/ROUTED BOX/

 ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  2 INPUT DATA FOR STATION     R1-2 ARE SAME AS FOR PLAN  1

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     R1-2
                          FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+       0.       .00                    0.          0.          0.           0.
                          (INCHES)   .000        .000        .000         .000
                           (AC-FT)     0.          0.          0.           0.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
        0.       .00                    0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    110.00       .00                 110.00      110.00      110.00       110.00

                        CUMULATIVE AREA =  416.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //R1-2/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    1:  //R1-2/FLOW/01AUG1904/15MIN//

 ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  3 INPUT DATA FOR STATION     R1-2 ARE SAME AS FOR PLAN  1

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     R1-2
                          FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+       0.       .00                    0.          0.          0.           0.
                          (INCHES)   .000        .000        .000         .000
                           (AC-FT)     0.          0.          0.           0.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
        0.       .00                    0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
```

```
                                        6-HR        24-HR        72-HR     499.75-HR
+   (FEET)       (HR)
    110.00        .00                 110.00       110.00       110.00        110.00

                          CUMULATIVE AREA =  416.20 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    2:  //R1-2/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    2:  //R1-2/FLOW/01AUG1904/15MIN//

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  4 INPUT DATA FOR STATION     R1-2 ARE SAME AS FOR PLAN  1

      ***             ***             ***             ***             ***

                            HYDROGRAPH AT STATION     R1-2
                              FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR     499.75-HR
+   (CFS)        (HR)
                                  (CFS)
+       0.        .00                    0.           0.           0.            0.
                            (INCHES)   .000         .000         .000          .000
                             (AC-FT)      0.           0.           0.            0.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                        6-HR        24-HR        72-HR     499.75-HR
+  (AC-FT)       (HR)
        0.        .00                    0.           0.           0.            0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR        24-HR        72-HR     499.75-HR
+   (FEET)       (HR)
    110.00        .00                 110.00       110.00       110.00        110.00

                          CUMULATIVE AREA =  416.20 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    3:  //R1-2/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    3:  //R1-2/FLOW/01AUG1904/15MIN//

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  5 INPUT DATA FOR STATION     R1-2 ARE SAME AS FOR PLAN  1

      ***             ***             ***             ***             ***

                            HYDROGRAPH AT STATION     R1-2
                              FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR     499.75-HR
+   (CFS)        (HR)
                                  (CFS)
+       0.        .00                    0.           0.           0.            0.
                            (INCHES)   .000         .000         .000          .000
                             (AC-FT)      0.           0.           0.            0.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                        6-HR        24-HR        72-HR     499.75-HR
+  (AC-FT)       (HR)
        0.        .00                    0.           0.           0.            0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR        24-HR        72-HR     499.75-HR
+   (FEET)       (HR)
    110.00        .00                 110.00       110.00       110.00        110.00

                          CUMULATIVE AREA =  416.20 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    4:  //R1-2/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    4:  //R1-2/FLOW/01AUG1904/15MIN//

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  6 INPUT DATA FOR STATION     R1-2 ARE SAME AS FOR PLAN  1

      ***             ***             ***             ***             ***

                            HYDROGRAPH AT STATION     R1-2
                              FOR PLAN 6, RATIO = 1.00
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 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+   29696.     20.00                21737.      10242.       3640.         524.
                          (INCHES)    .486        .915        .976         .976
                           (AC-FT)  10779.      20314.      21657.       21657.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
      847.     20.00                  696.        411.        158.          23.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    116.48     20.00                115.34      113.17      111.22       110.18

                         CUMULATIVE AREA =  416.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    5:  //R1-2/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    5:  //R1-2/FLOW/01AUG1904/15MIN//


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  80 KK     *        H2  *
            *            *
            **************
                          BASIN H2 - MARTINEZ CREEK, SOLS WASH, SAN DOMINGO WASH

                           THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
                           L=     36.9  Lca=     12.6   S=   61.7  Kn= .040  LAG= 271.0
                           DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
                            100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.4"
                            AREAL REDUCED FOR 372.6 SQ.MI. = 4.4*0.79 = 3.5"

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

  88 KP        PLAN  1 FOR STATION       H2

               SUBBASIN RUNOFF DATA

  89 BA          SUBBASIN CHARACTERISTICS
                       TAREA      372.60  SUBBASIN AREA

                 PRECIPITATION DATA

  90 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

  91 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .50  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .39  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  91 UI          INPUT UNITGRAPH,  66 ORDINATES,  VOLUME = 1.00
                   4629.0    4629.0    4629.0    4629.0   11961.0   15201.0   19425.0   23659.0   27288.0   31529.0
                  33690.0   38311.0   40518.0   41691.0   43865.0   44363.0   44363.0   43680.0   41820.0   40821.0
                  37700.0   33304.0   31189.0   27832.0   25179.0   22959.0   20945.0   19026.0   17289.0   15768.0
                  14196.0   12789.0   11722.0   10337.0    9457.0    8727.0    8169.0    7098.0    7098.0    5711.0
                   4907.0    4907.0    4907.0    3669.0    3169.0    3169.0    3169.0    3169.0    3169.0    1858.0
                   1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0
                   1127.0    1127.0    1127.0    1127.0    1127.0    1127.0

                                                   ***
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    ***             ***             ***             ***             ***

                      HYDROGRAPH AT STATION       H2
                        FOR PLAN 1, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                 0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)     0.          0.          0.          0.

                       CUMULATIVE AREA =  372.60 SQ MI


    ***             ***             ***             ***             ***

                      HYDROGRAPH AT STATION       H2
                        FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                 0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)     0.          0.          0.          0.

                       CUMULATIVE AREA =  372.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 100 KP        PLAN  2 FOR STATION       H2

               SUBBASIN RUNOFF DATA

  89 BA          SUBBASIN CHARACTERISTICS
                       TAREA      372.60  SUBBASIN AREA

                 PRECIPITATION DATA

 101 PB                STORM        3.50  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

  91 LG          GREEN AND AMPT LOSS RATE
                       STRTL        .50  STARTING LOSS
                         DTH        .25  MOISTURE DEFICIT
                        PSIF       4.00  WETTING FRONT SUCTION
                       XKSAT        .39  HYDRAULIC CONDUCTIVITY
                       RTIMP        .00  PERCENT IMPERVIOUS AREA

  91 UI          INPUT UNITGRAPH,  66 ORDINATES,  VOLUME = 1.00
                   4629.0    4629.0    4629.0    4629.0   11961.0   15201.0   19425.0   23659.0   27288.0   31529.0
                  33690.0   38311.0   40518.0   41691.0   43865.0   44363.0   44363.0   43680.0   41820.0   40821.0
                  37700.0   33304.0   31189.0   27832.0   25179.0   22959.0   20945.0   19026.0   17289.0   15768.0
                  14196.0   12789.0   11722.0   10337.0    9457.0    8727.0    8169.0    7098.0    7098.0    5711.0
                   4907.0    4907.0    4907.0    3669.0    3169.0    3169.0    3169.0    3169.0    3169.0    1858.0
                   1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0
                   1127.0    1127.0    1127.0    1127.0    1127.0    1127.0

                                                                   ***

    ***             ***             ***             ***             ***

                      HYDROGRAPH AT STATION       H2
                        FOR PLAN 2, RATIO = 1.00

   TOTAL RAINFALL =    3.50, TOTAL LOSS =    2.64, TOTAL EXCESS =     .86
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 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+  (CFS)        (HR)
                          (CFS)
+  38235.      15.75                27495.       8631.       2877.         414.
                        (INCHES)     .686        .861        .861         .861
                         (AC-FT)   13634.      17118.      17118.       17118.

                        CUMULATIVE AREA =  372.60 SQ MI


     ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H2
                          FOR PLAN 2, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+  (CFS)        (HR)
                          (CFS)
+  38235.      15.75                27495.       8631.       2877.         414.
                        (INCHES)     .686        .861        .861         .861
                         (AC-FT)   13634.      17118.      17118.       17118.

                        CUMULATIVE AREA =  372.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 102 KP        PLAN  3 FOR STATION       H2

               SUBBASIN RUNOFF DATA

  89 BA          SUBBASIN CHARACTERISTICS
                       TAREA      372.60  SUBBASIN AREA

                 PRECIPITATION DATA

 103 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

  91 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .50  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .39  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  91 UI          INPUT UNITGRAPH,  66 ORDINATES,  VOLUME = 1.00
                    4629.0    4629.0    4629.0    4629.0   11961.0   15201.0   19425.0   23659.0   27288.0   31529.0
                   33690.0   38311.0   40518.0   41691.0   43865.0   44363.0   44363.0   43680.0   41820.0   40821.0
                   37700.0   33304.0   31189.0   27832.0   25179.0   22959.0   20945.0   19026.0   17289.0   15768.0
                   14196.0   12789.0   11722.0   10337.0    9457.0    8727.0    8169.0    7098.0    7098.0    5711.0
                    4907.0    4907.0    4907.0    3669.0    3169.0    3169.0    3169.0    3169.0    3169.0    1858.0
                    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0
                    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0

                                                                   ***

     ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H2
                          FOR PLAN 3, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+  (CFS)        (HR)
                          (CFS)
+      0.        .00                   0.          0.          0.           0.
                        (INCHES)     .000        .000        .000         .000
                         (AC-FT)      0.          0.          0.           0.
```

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                    CUMULATIVE AREA =  372.60 SQ MI

     ***            ***            ***            ***            ***

                     HYDROGRAPH AT STATION       H2
                       FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                  0.          0.          0.          0.
                        (INCHES)     .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

                    CUMULATIVE AREA =  372.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 104 KP        PLAN  4 FOR STATION       H2

               SUBBASIN RUNOFF DATA

  89 BA          SUBBASIN CHARACTERISTICS
                       TAREA      372.60  SUBBASIN AREA

                 PRECIPITATION DATA

 105 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                     .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                     .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00

  91 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .50  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .39  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  91 UI          INPUT UNITGRAPH,  66 ORDINATES,  VOLUME = 1.00
                   4629.0    4629.0    4629.0    4629.0   11961.0   15201.0   19425.0   23659.0   27288.0   31529.0
                  33690.0   38311.0   40518.0   41691.0   43865.0   44363.0   44363.0   43680.0   41820.0   40821.0
                  37700.0   33304.0   31189.0   27832.0   25179.0   22959.0   20945.0   19026.0   17289.0   15768.0
                  14196.0   12789.0   11722.0   10337.0    9457.0    8727.0    8169.0    7098.0    7098.0    5711.0
                   4907.0    4907.0    4907.0    3669.0    3169.0    3169.0    3169.0    3169.0    3169.0    1858.0
                   1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0
                   1127.0    1127.0    1127.0    1127.0    1127.0    1127.0

                                                                   ***

     ***            ***            ***            ***            ***

                     HYDROGRAPH AT STATION       H2
                       FOR PLAN 4, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                  0.          0.          0.          0.
                        (INCHES)     .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

                    CUMULATIVE AREA =  372.60 SQ MI

     ***            ***            ***            ***            ***

                     HYDROGRAPH AT STATION       H2
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```
                    FOR PLAN 4, RATIO = 1.00

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                  6-HR       24-HR       72-HR    499.75-HR
+  (CFS)       (HR)
                         (CFS)
+      0.       .00                 0.          0.          0.           0.
                       (INCHES)    .000        .000        .000         .000
                        (AC-FT)     0.          0.          0.           0.

                       CUMULATIVE AREA =  372.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 106 KP       PLAN  5 FOR STATION       H2

              SUBBASIN RUNOFF DATA

  89 BA         SUBBASIN CHARACTERISTICS
                      TAREA      372.60  SUBBASIN AREA

                PRECIPITATION DATA

 107 PB               STORM         .00  BASIN TOTAL PRECIPITATION

  33 PI           INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                     .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                     .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00

  91 LG         GREEN AND AMPT LOSS RATE
                      STRTL         .50  STARTING LOSS
                        DTH         .25  MOISTURE DEFICIT
                       PSIF        4.00  WETTING FRONT SUCTION
                      XKSAT         .39  HYDRAULIC CONDUCTIVITY
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  91 UI         INPUT UNITGRAPH,  66 ORDINATES,  VOLUME = 1.00
                  4629.0    4629.0    4629.0    4629.0   11961.0   15201.0   19425.0   23659.0   27288.0   31529.0
                 33690.0   38311.0   40518.0   41691.0   43865.0   44363.0   44363.0   43680.0   41820.0   40821.0
                 37700.0   33304.0   31189.0   27832.0   25179.0   22959.0   20945.0   19026.0   17289.0   15768.0
                 14196.0   12789.0   11722.0   10337.0    9457.0    8727.0    8169.0    7098.0    7098.0    5711.0
                  4907.0    4907.0    4907.0    3669.0    3169.0    3169.0    3169.0    3169.0    3169.0    1858.0
                  1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0
                  1127.0    1127.0    1127.0    1127.0    1127.0    1127.0

                                                          ***

     ***          ***          ***          ***          ***

                    HYDROGRAPH AT STATION       H2
                      FOR PLAN 5, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                  6-HR       24-HR       72-HR    499.75-HR
+  (CFS)       (HR)
                         (CFS)
+      0.       .00                 0.          0.          0.           0.
                       (INCHES)    .000        .000        .000         .000
                        (AC-FT)     0.          0.          0.           0.

                       CUMULATIVE AREA =  372.60 SQ MI

     ***          ***          ***          ***          ***

                    HYDROGRAPH AT STATION       H2
                      FOR PLAN 5, RATIO = 1.00

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                  6-HR       24-HR       72-HR    499.75-HR
+  (CFS)       (HR)
                         (CFS)
+      0.       .00                 0.          0.          0.           0.
```

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                    (INCHES)      .000        .000        .000        .000
                     (AC-FT)        0.          0.          0.          0.

                    CUMULATIVE AREA =  372.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 108 KP        PLAN  6 FOR STATION       H2

               SUBBASIN RUNOFF DATA

  89 BA          SUBBASIN CHARACTERISTICS
                      TAREA      372.60  SUBBASIN AREA

                 PRECIPITATION DATA

 109 PB                STORM        3.50  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

  91 LG          GREEN AND AMPT LOSS RATE
                      STRTL         .50  STARTING LOSS
                        DTH         .25  MOISTURE DEFICIT
                       PSIF        4.00  WETTING FRONT SUCTION
                      XKSAT         .39  HYDRAULIC CONDUCTIVITY
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  91 UI          INPUT UNITGRAPH,  66 ORDINATES,  VOLUME = 1.00
                   4629.0    4629.0    4629.0    4629.0   11961.0   15201.0   19425.0   23659.0   27288.0   31529.0
                  33690.0   38311.0   40518.0   41691.0   43865.0   44363.0   44363.0   43680.0   41820.0   40821.0
                  37700.0   33304.0   31189.0   27832.0   25179.0   22959.0   20945.0   19026.0   17289.0   15768.0
                  14196.0   12789.0   11722.0   10337.0    9457.0    8727.0    8169.0    7098.0    7098.0    5711.0
                   4907.0    4907.0    4907.0    3669.0    3169.0    3169.0    3169.0    3169.0    3169.0    1858.0
                   1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0
                   1127.0    1127.0    1127.0    1127.0    1127.0    1127.0

                                                                                  ***

     ***            ***            ***            ***            ***

                       HYDROGRAPH AT STATION       H2
                         FOR PLAN 6, RATIO = 1.00

   TOTAL RAINFALL =    3.50, TOTAL LOSS =    2.64, TOTAL EXCESS =     .86

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   38235.     15.75                27495.       8631.       2877.        414.
                        (INCHES)      .686        .861        .861        .861
                         (AC-FT)    13634.      17118.      17118.      17118.

                        CUMULATIVE AREA =  372.60 SQ MI


     ***            ***            ***            ***            ***

                       HYDROGRAPH AT STATION       H2
                         FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   38235.     15.75                27495.       8631.       2877.        414.
                        (INCHES)      .686        .861        .861        .861
                         (AC-FT)    13634.      17118.      17118.      17118.

                        CUMULATIVE AREA =  372.60 SQ MI

 ------DSS---ZWRITE Unit  71; Vers.    1:  //H2/FLOW/01JUL1904/15MIN/SOLSPLUS/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //H2/FLOW/01AUG1904/15MIN/SOLSPLUS/
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 111 KK     *        C2  *
            *            *
            **************
                          COMBINE ROUTED FLOW FROM BOX CANYON WITH RUNOFF FROM H2
                           (H2 SUBBASIN CONTAINS MARTINEZ CREEK AND SOLS WASH PLUS
                            OTHER SMALL WICKENBURG AREA TRIBUTARIES)
                          THIS IS THE TOTAL FLOW AT MORRISTOWN GAGE LOCATION

 116 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C2
                          FOR PLAN 1, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   29696.     20.00                21737.      10242.       3640.         524.
                       (INCHES)      .256        .483        .515         .515
                        (AC-FT)    10779.      20314.      21657.       21657.

                       CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C2/FLOW/01JUL1904/15MIN/MORRISTOWN/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C2/FLOW/01AUG1904/15MIN/MORRISTOWN/

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C2
                          FOR PLAN 2, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   38235.     15.75                27495.       8631.       2877.         414.
                       (INCHES)      .324        .407        .407         .407
                        (AC-FT)    13634.      17118.      17118.       17118.

                       CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C2/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C2/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C2
                          FOR PLAN 3, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+       0.       .00                    0.          0.          0.           0.
                       (INCHES)      .000        .000        .000         .000
                        (AC-FT)        0.          0.          0.           0.

                       CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    2:  //C2/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    2:  //C2/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C2
                          FOR PLAN 4, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+       0.       .00                    0.          0.          0.           0.
```

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                    (INCHES)      .000        .000        .000        .000
                     (AC-FT)        0.          0.          0.          0.

                    CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    3:  //C2/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    3:  //C2/FLOW/01AUG1904/15MIN//

      ***            ***            ***            ***            ***

                     HYDROGRAPH AT STATION       C2
                       FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+       0.       .00                  0.          0.          0.          0.
                    (INCHES)      .000        .000        .000        .000
                     (AC-FT)        0.          0.          0.          0.

                    CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    4:  //C2/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    4:  //C2/FLOW/01AUG1904/15MIN//

      ***            ***            ***            ***            ***

                     HYDROGRAPH AT STATION       C2
                       FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   40916.     17.50               38607.      18471.       6516.        939.
                    (INCHES)      .455        .871        .922        .922
                     (AC-FT)    19144.      36637.      38775.      38775.

                    CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C2/FLOW/01JUL1904/15MIN/SOLSPLUS/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C2/FLOW/01AUG1904/15MIN/SOLSPLUS/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 118 KK     *      R2-3  *
            *            *
            **************
                         ROUTE COMBINED FLOWS AT MORRISTOWN TO JACKRABBIT WASH
                          SLOPE = (1845 - 1102) / 149,000 = 0.005

              HYDROGRAPH ROUTING DATA

 122 RL          ROUTING LOSSES
                       QLOSS         .00  INITIAL LOSS
                       CLOSS         .00  ADDITIONAL FRACTION LOST
                      PERCRT        2.00  CHANNEL PERCOLATION RATE
                      ELVINV      110.00  INVERT ELEVATION

 121 RS          STORAGE ROUTING
                       NSTPS          14  NUMBER OF SUBREACHES
                        ITYP        FLOW  TYPE OF INITIAL CONDITION
                      RSVRIC       -1.00  INITIAL CONDITION
                           X         .00 WORKING R AND D COEFFICIENT

 123 RC          NORMAL DEPTH CHANNEL
                         ANL        .070  LEFT OVERBANK N-VALUE
                        ANCH        .040  MAIN CHANNEL N-VALUE
                         ANR        .070  RIGHT OVERBANK N-VALUE
                       RLNTH     149000.  REACH LENGTH
                         SEL       .0050  ENERGY SLOPE
                       ELMAX       130.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                   CROSS-SECTION DATA
                         --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 125 RY        ELEVATION    130.00    120.00    115.00    110.00    110.00    115.00    120.00    130.00
 124 RX        DISTANCE        .00    100.00    800.00    810.00   1610.00   1620.00   2420.00   2520.00

                                                  ***
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COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	2888.07	5791.30	8709.69	11643.24	14627.02	18432.32	23374.65	29454.04	36670.45
OUTFLOW	.00	2296.33	7293.90	14343.62	23179.71	33673.65	46069.73	60738.03	78014.90	98187.63
ELEVATION	110.00	111.05	112.11	113.16	114.21	115.26	116.32	117.37	118.42	119.47

STORAGE	44891.24	53320.46	61825.48	70406.32	79062.95	87795.38	96603.62	105487.70	114447.50	123483.10
OUTFLOW	122183.30	149976.90	180693.40	214188.00	250349.10	289087.00	330327.60	374008.50	420075.80	468482.70
ELEVATION	120.53	121.58	122.63	123.68	124.74	125.79	126.84	127.89	128.95	130.00

*** *** *** *** ***

HYDROGRAPH AT STATION R2-3
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	499.75-HR
+ (CFS)	(HR)					
		(CFS)				
+ 17504.	24.75		12731.	4755.	1585.	228.
		(INCHES)	.150	.224	.224	.224
		(AC-FT)	6313.	9432.	9432.	9432.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	499.75-HR
+ (AC-FT)	(HR)				
706.	24.75	581.	268.	89.	13.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	499.75-HR
+ (FEET)	(HR)				
113.58	24.75	112.95	111.36	110.45	110.07

CUMULATIVE AREA = 788.80 SQ MI

-----DSS---ZWRITE Unit 71; Vers. 1: //R2-3/FLOW/01JUL1904/15MIN/ROUTED MORRISTOWN/
-----DSS---ZWRITE Unit 71; Vers. 1: //R2-3/FLOW/01AUG1904/15MIN/ROUTED MORRISTOWN/

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

PLAN 2 INPUT DATA FOR STATION R2-3 ARE SAME AS FOR PLAN 1

*** *** *** *** ***

HYDROGRAPH AT STATION R2-3
FOR PLAN 2, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	499.75-HR
+ (CFS)	(HR)					
		(CFS)				
+ 26791.	19.75		16752.	4948.	1649.	238.
		(INCHES)	.197	.233	.233	.233
		(AC-FT)	8307.	9814.	9814.	9814.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	499.75-HR
+ (AC-FT)	(HR)				
913.	19.75	677.	234.	78.	11.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	499.75-HR
+ (FEET)	(HR)				
114.61	19.75	113.43	111.19	110.40	110.06

CUMULATIVE AREA = 788.80 SQ MI

-----DSS---ZWRITE Unit 71; Vers. 1: //R2-3/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit 71; Vers. 1: //R2-3/FLOW/01AUG1904/15MIN//

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

PLAN 3 INPUT DATA FOR STATION R2-3 ARE SAME AS FOR PLAN 1

*** *** *** *** ***

HYDROGRAPH AT STATION R2-3
FOR PLAN 3, RATIO = 1.00

PEAK FLOW TIME MAXIMUM AVERAGE FLOW 6-HR 24-HR 72-HR 499.75-HR

```
  (CFS)        (HR)
                          (CFS)
+      0.        .00                    0.          0.          0.          0.
                        (INCHES)      .000        .000        .000        .000
                         (AC-FT)        0.          0.          0.          0.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
      0.        .00                    0.          0.          0.          0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
   110.00       .00                  110.00      110.00      110.00      110.00

                         CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    2:  //R2-3/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    2:  //R2-3/FLOW/01AUG1904/15MIN//


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  4 INPUT DATA FOR STATION     R2-3 ARE SAME AS FOR PLAN  1

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     R2-3
                            FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                    0.          0.          0.          0.
                        (INCHES)      .000        .000        .000        .000
                         (AC-FT)        0.          0.          0.          0.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
      0.        .00                    0.          0.          0.          0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
   110.00       .00                  110.00      110.00      110.00      110.00

                         CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    3:  //R2-3/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    3:  //R2-3/FLOW/01AUG1904/15MIN//


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  5 INPUT DATA FOR STATION     R2-3 ARE SAME AS FOR PLAN  1

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     R2-3
                            FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                    0.          0.          0.          0.
                        (INCHES)      .000        .000        .000        .000
                         (AC-FT)        0.          0.          0.          0.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
      0.        .00                    0.          0.          0.          0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
   110.00       .00                  110.00      110.00      110.00      110.00

                         CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    4:  //R2-3/FLOW/01JUL1904/15MIN//
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-----DSS---ZWRITE Unit  71; Vers.    4:  //R2-3/FLOW/01AUG1904/15MIN//

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

               PLAN  6 INPUT DATA FOR STATION     R2-3 ARE SAME AS FOR PLAN  1

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     R2-3
                            FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   33849.     21.25                30693.      12357.       4119.         593.
                         (INCHES)     .362        .583        .583         .583
                         (AC-FT)    15219.      24509.      24509.       24509.

  PEAK STORAGE  TIME                          MAXIMUM AVERAGE STORAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
     1057.     21.25                  992.        502.        168.          24.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    115.31     21.25                115.00      112.54      110.85       110.12

                         CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //R2-3/FLOW/01JUL1904/15MIN/SOLSPLUS/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //R2-3/FLOW/01AUG1904/15MIN/SOLSPLUS/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 127 KK     *        H3  *
            *            *
            **************
                          BASIN H3 - WAGNER WASH AND DAGGS WASH WATERSHEDS

                           THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
                           L=     37.8  Lca=     16.4   S=    59.7  Kn= .040  LAG= 304.0
                           DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
                            100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.2"
                            AREAL REDUCED FOR 186.6 SQ.MI. = 4.2*0.82 = 3.44"

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 135 KP         PLAN  1 FOR STATION       H3

                SUBBASIN RUNOFF DATA

 136 BA           SUBBASIN CHARACTERISTICS
                       TAREA      186.60  SUBBASIN AREA

                  PRECIPITATION DATA

 137 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  33 PI             INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

 138 LG           GREEN AND AMPT LOSS RATE
                       STRTL         .35  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .40  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA
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138 UI          INPUT UNITGRAPH,  74 ORDINATES,  VOLUME = 1.00
                  2067.0    2067.0    2067.0    2067.0    3379.0    5942.0    7459.0    9020.0   10679.0   12149.0
                 13781.0   14598.0   16721.0   17606.0   18403.0   18732.0   19806.0   19806.0   19806.0   19616.0
                 18848.0   18522.0   17485.0   15851.0   14513.0   13555.0   12319.0   11202.0   10355.0    9519.0
                  8810.0    8057.0    7329.0    6668.0    6242.0    5659.0    5201.0    4615.0    4362.0    3896.0
                  3896.0    3257.0    3169.0    3169.0    2348.0    2190.0    2191.0    2190.0    1848.0    1415.0
                  1415.0    1415.0    1415.0    1415.0    1415.0     839.0     503.0     503.0     503.0     503.0
                   503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0
                   503.0     503.0     503.0     503.0

                                                                  ***

     ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION       H3
                         FOR PLAN 1, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+     0.        .00                   0.          0.          0.          0.
                        (INCHES)     .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

                        CUMULATIVE AREA =  186.60 SQ MI


     ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION       H3
                         FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+     0.        .00                   0.          0.          0.          0.
                        (INCHES)     .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

                        CUMULATIVE AREA =  186.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

148 KP          PLAN  2 FOR STATION       H3

                SUBBASIN RUNOFF DATA

136 BA            SUBBASIN CHARACTERISTICS
                        TAREA      186.60  SUBBASIN AREA

                  PRECIPITATION DATA

149 PB                  STORM         .00  BASIN TOTAL PRECIPITATION

 33 PI              INCREMENTAL PRECIPITATION PATTERN
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                        .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                        .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00

138 LG            GREEN AND AMPT LOSS RATE
                        STRTL         .35  STARTING LOSS
                          DTH         .25  MOISTURE DEFICIT
                         PSIF        4.00  WETTING FRONT SUCTION
                        XKSAT         .40  HYDRAULIC CONDUCTIVITY
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

138 UI          INPUT UNITGRAPH,  74 ORDINATES,  VOLUME = 1.00
                  2067.0    2067.0    2067.0    2067.0    3379.0    5942.0    7459.0    9020.0   10679.0   12149.0
                 13781.0   14598.0   16721.0   17606.0   18403.0   18732.0   19806.0   19806.0   19806.0   19616.0
                 18848.0   18522.0   17485.0   15851.0   14513.0   13555.0   12319.0   11202.0   10355.0    9519.0
                  8810.0    8057.0    7329.0    6668.0    6242.0    5659.0    5201.0    4615.0    4362.0    3896.0
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                3896.0    3257.0    3169.0    3169.0    2348.0    2190.0    2191.0    2190.0    1848.0    1415.0
                1415.0    1415.0    1415.0    1415.0    1415.0     839.0     503.0     503.0     503.0     503.0
                 503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0
                 503.0     503.0     503.0     503.0

                                                          ***

    ***             ***             ***             ***             ***

                      HYDROGRAPH AT STATION       H3
                        FOR PLAN 2, RATIO = 1.00

  TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+  (CFS)       (HR)
                        (CFS)
+      0.       .00                 0.          0.          0.          0.
                      (INCHES)    .000        .000        .000        .000
                       (AC-FT)      0.          0.          0.          0.

                      CUMULATIVE AREA =  186.60 SQ MI


    ***             ***             ***             ***             ***

                      HYDROGRAPH AT STATION       H3
                        FOR PLAN 2, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+  (CFS)       (HR)
                        (CFS)
+      0.       .00                 0.          0.          0.          0.
                      (INCHES)    .000        .000        .000        .000
                       (AC-FT)      0.          0.          0.          0.

                      CUMULATIVE AREA =  186.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 150 KP        PLAN  3 FOR STATION       H3

               SUBBASIN RUNOFF DATA

 136 BA          SUBBASIN CHARACTERISTICS
                       TAREA      186.60  SUBBASIN AREA

                 PRECIPITATION DATA

 151 PB                STORM        3.44  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

 138 LG          GREEN AND AMPT LOSS RATE
                       STRTL        .35  STARTING LOSS
                         DTH        .25  MOISTURE DEFICIT
                        PSIF       4.00  WETTING FRONT SUCTION
                       XKSAT        .40  HYDRAULIC CONDUCTIVITY
                       RTIMP        .00  PERCENT IMPERVIOUS AREA

 138 UI          INPUT UNITGRAPH,  74 ORDINATES,  VOLUME = 1.00
                   2067.0    2067.0    2067.0    2067.0    3379.0    5942.0    7459.0    9020.0   10679.0   12149.0
                  13781.0   14598.0   16721.0   17606.0   18403.0   18732.0   19806.0   19806.0   19806.0   19616.0
                  18848.0   18522.0   17485.0   15851.0   14513.0   13555.0   12319.0   11202.0   10355.0    9519.0
                   8810.0    8057.0    7329.0    6668.0    6242.0    5659.0    5201.0    4615.0    4362.0    3896.0
                   3896.0    3257.0    3169.0    3169.0    2348.0    2190.0    2191.0    2190.0    1848.0    1415.0
                   1415.0    1415.0    1415.0    1415.0    1415.0     839.0     503.0     503.0     503.0     503.0
                    503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0
                    503.0     503.0     503.0     503.0

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    ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H3
                          FOR PLAN 3, RATIO = 1.00

    TOTAL RAINFALL =    3.44, TOTAL LOSS =    2.57, TOTAL EXCESS =     .87

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+   17183.     16.00                13052.       4351.       1450.         209.
                         (INCHES)     .650        .867        .867         .867
                          (AC-FT)    6472.       8629.       8629.        8629.

                         CUMULATIVE AREA =  186.60 SQ MI


    ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H3
                          FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+   17183.     16.00                13052.       4351.       1450.         209.
                         (INCHES)     .650        .867        .867         .867
                          (AC-FT)    6472.       8629.       8629.        8629.

                         CUMULATIVE AREA =  186.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 152 KP        PLAN  4 FOR STATION       H3

               SUBBASIN RUNOFF DATA

 136 BA          SUBBASIN CHARACTERISTICS
                       TAREA      186.60  SUBBASIN AREA

                 PRECIPITATION DATA

 153 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

 138 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .35  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .40  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 138 UI          INPUT UNITGRAPH,  74 ORDINATES,  VOLUME = 1.00
                   2067.0    2067.0    2067.0    2067.0    3379.0    5942.0    7459.0    9020.0   10679.0   12149.0
                  13781.0   14598.0   16721.0   17606.0   18403.0   18732.0   19806.0   19806.0   19806.0   19616.0
                  18848.0   18522.0   17485.0   15851.0   14513.0   13555.0   12319.0   11202.0   10355.0    9519.0
                   8810.0    8057.0    7329.0    6668.0    6242.0    5659.0    5201.0    4615.0    4362.0    3896.0
                   3896.0    3257.0    3169.0    3169.0    2348.0    2190.0    2191.0    2190.0    1848.0    1415.0
                   1415.0    1415.0    1415.0    1415.0    1415.0     839.0     503.0     503.0     503.0     503.0
                    503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0
                    503.0     503.0     503.0     503.0

                                                                  ***

    ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H3
                          FOR PLAN 4, RATIO = 1.00
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   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                  0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

                         CUMULATIVE AREA =  186.60 SQ MI


      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H3
                          FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                  0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

                         CUMULATIVE AREA =  186.60 SQ MI


 ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  154 KP        PLAN  5 FOR STATION       H3

                SUBBASIN RUNOFF DATA

  136 BA          SUBBASIN CHARACTERISTICS
                        TAREA      186.60  SUBBASIN AREA

                  PRECIPITATION DATA

  155 PB                STORM         .00  BASIN TOTAL PRECIPITATION

   33 PI            INCREMENTAL PRECIPITATION PATTERN
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                        .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                        .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00

  138 LG          GREEN AND AMPT LOSS RATE
                        STRTL         .35  STARTING LOSS
                          DTH         .25  MOISTURE DEFICIT
                         PSIF        4.00  WETTING FRONT SUCTION
                        XKSAT         .40  HYDRAULIC CONDUCTIVITY
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

  138 UI          INPUT UNITGRAPH,  74 ORDINATES,  VOLUME = 1.00
                     2067.0    2067.0    2067.0    2067.0    3379.0    5942.0    7459.0    9020.0   10679.0   12149.0
                    13781.0   14598.0   16721.0   17606.0   18403.0   18732.0   19806.0   19806.0   19806.0   19616.0
                    18848.0   18522.0   17485.0   15851.0   14513.0   13555.0   12319.0   11202.0   10355.0    9519.0
                     8810.0    8057.0    7329.0    6668.0    6242.0    5659.0    5201.0    4615.0    4362.0    3896.0
                     3896.0    3257.0    3169.0    3169.0    2348.0    2190.0    2191.0    2190.0    1848.0    1415.0
                     1415.0    1415.0    1415.0    1415.0    1415.0     839.0     503.0     503.0     503.0     503.0
                      503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0
                      503.0     503.0     503.0     503.0

                                                                  ***

      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H3
                          FOR PLAN 5, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
```

```
     0.       .00                    0.          0.          0.          0.
                          (INCHES)  .000        .000        .000        .000
                           (AC-FT)   0.          0.          0.          0.

                          CUMULATIVE AREA =  186.60 SQ MI

    ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H3
                          FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+     0.        .00                    0.          0.          0.          0.
                          (INCHES)  .000        .000        .000        .000
                           (AC-FT)   0.          0.          0.          0.

                          CUMULATIVE AREA =  186.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 156 KP        PLAN  6 FOR STATION       H3

               SUBBASIN RUNOFF DATA

 136 BA          SUBBASIN CHARACTERISTICS
                       TAREA      186.60  SUBBASIN AREA

                 PRECIPITATION DATA

 157 PB                STORM        3.44  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00        .00        .00        .00        .00        .00        .00        .00        .00        .00
                       .00        .00        .00        .00        .00        .00        .00        .00        .00        .00
                       .00        .00        .00        .00        .01        .01        .00        .01        .00        .01
                       .01        .00        .01        .01        .01        .01        .01        .01        .01        .01
                       .01        .01        .02        .02        .02        .03        .10        .28        .04        .03
                       .02        .02        .01        .01        .01        .01        .01        .01        .01        .01
                       .01        .01        .01        .01        .01        .01        .00        .00        .00        .00
                       .00        .00        .00        .00        .00        .00        .00        .00        .00        .00
                       .00        .00        .00        .00        .00        .00        .00        .00        .00        .00
                       .00        .00        .00        .00        .00        .00

 138 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .35  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .40  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 138 UI          INPUT UNITGRAPH,  74 ORDINATES,  VOLUME = 1.00
                    2067.0     2067.0     2067.0     2067.0     3379.0     5942.0     7459.0     9020.0    10679.0    12149.0
                   13781.0    14598.0    16721.0    17606.0    18403.0    18732.0    19806.0    19806.0    19806.0    19616.0
                   18848.0    18522.0    17485.0    15851.0    14513.0    13555.0    12319.0    11202.0    10355.0     9519.0
                    8810.0     8057.0     7329.0     6668.0     6242.0     5659.0     5201.0     4615.0     4362.0     3896.0
                    3896.0     3257.0     3169.0     3169.0     2348.0     2190.0     2191.0     2190.0     1848.0     1415.0
                    1415.0     1415.0     1415.0     1415.0     1415.0      839.0      503.0      503.0      503.0      503.0
                     503.0      503.0      503.0      503.0      503.0      503.0      503.0      503.0      503.0      503.0
                     503.0      503.0      503.0      503.0

                                                                  ***

    ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H3
                          FOR PLAN 6, RATIO = 1.00

   TOTAL RAINFALL =    3.44, TOTAL LOSS =    2.57, TOTAL EXCESS =     .87

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
   (CFS)        (HR)
                          (CFS)
+  17183.      16.00                13052.       4351.       1450.        209.
                          (INCHES)   .650        .867        .867        .867
                           (AC-FT)  6472.       8629.       8629.       8629.

                          CUMULATIVE AREA =  186.60 SQ MI
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     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H3
                          FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   17183.     16.00                13052.       4351.       1450.         209.
                        (INCHES)      .650        .867        .867         .867
                         (AC-FT)     6472.       8629.       8629.        8629.

                        CUMULATIVE AREA =  186.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //H3/FLOW/01JUL1904/15MIN/WAGNER-DAGGS/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //H3/FLOW/01AUG1904/15MIN/WAGNER-DAGGS/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 159 KK     *        C3  *
            *            *
            **************
                            COMBINE ROUTED FLOW FROM MORRISTOWN WITH RUNOFF FROM SUBBASIN H3
                            COMBINED FLOW UPSTREAM OF JACKRABBIT WASH
                            LOCAL RUNOFF INCLUDES WAGNER AND DAGGS WASH WATERSHEDS

 163 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C3
                          FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   17504.     24.75                12731.       4755.       1585.         228.
                        (INCHES)      .121        .181        .181         .181
                         (AC-FT)     6313.       9432.       9432.        9432.

                        CUMULATIVE AREA =  975.40 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C3/FLOW/01JUL1904/15MIN/U-S JRW/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C3/FLOW/01AUG1904/15MIN/U-S JRW/

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C3
                          FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   26791.     19.75                16752.       4948.       1649.         238.
                        (INCHES)      .160        .189        .189         .189
                         (AC-FT)     8307.       9814.       9814.        9814.

                        CUMULATIVE AREA =  975.40 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C3/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C3/FLOW/01AUG1904/15MIN//

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C3
                          FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   17183.     16.00                13052.       4351.       1450.         209.
                        (INCHES)      .124        .166        .166         .166
```

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                    (AC-FT)      6472.       8629.       8629.       8629.

                    CUMULATIVE AREA =  975.40 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    2:  //C3/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    2:  //C3/FLOW/01AUG1904/15MIN//

      ***            ***            ***            ***            ***

                     HYDROGRAPH AT STATION       C3
                       FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+      0.        .00                 0.          0.          0.          0.
                       (INCHES)     .000        .000        .000        .000
                       (AC-FT)       0.          0.          0.          0.

                    CUMULATIVE AREA =  975.40 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    3:  //C3/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    3:  //C3/FLOW/01AUG1904/15MIN//

      ***            ***            ***            ***            ***

                     HYDROGRAPH AT STATION       C3
                       FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+      0.        .00                 0.          0.          0.          0.
                       (INCHES)     .000        .000        .000        .000
                       (AC-FT)       0.          0.          0.          0.

                    CUMULATIVE AREA =  975.40 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    4:  //C3/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    4:  //C3/FLOW/01AUG1904/15MIN//

      ***            ***            ***            ***            ***

                     HYDROGRAPH AT STATION       C3
                       FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   38846.     20.50               34421.      16474.       5569.        802.
                       (INCHES)     .328        .628        .637        .637
                       (AC-FT)    17068.      32676.      33139.      33139.

                    CUMULATIVE AREA =  975.40 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C3/FLOW/01JUL1904/15MIN/WAGNER-DAGGS/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C3/FLOW/01AUG1904/15MIN/WAGNER-DAGGS/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 165 KK     *        H4  *
            *            *
            **************
                     BASIN H4 - JACKRABBIT WASH

                      THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
                      L=     40.0  Lca=     21.7   S=   32.5  Kn= .040  LAG= 389.0
                      DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
                       100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.2"
                       AREAL REDUCED FOR 366.2 SQ.MI. = 4.2*0.79 = 3.32"


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 173 KP        PLAN  1 FOR STATION       H4

               SUBBASIN RUNOFF DATA
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174 BA          SUBBASIN CHARACTERISTICS
                      TAREA      366.20  SUBBASIN AREA

                PRECIPITATION DATA

175 PB                STORM         .00  BASIN TOTAL PRECIPITATION

 33 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

176 LG          GREEN AND AMPT LOSS RATE
                      STRTL         .35  STARTING LOSS
                        DTH         .25  MOISTURE DEFICIT
                       PSIF        4.00  WETTING FRONT SUCTION
                      XKSAT         .40  HYDRAULIC CONDUCTIVITY
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

176 UI          INPUT UNITGRAPH,  95 ORDINATES,  VOLUME = 1.00
                   3170.0    3170.0    3170.0    3170.0    3170.0    3380.0    9113.0    9113.0   12228.0   13575.0
                  15591.0   17534.0   19367.0   21226.0   22524.0   24134.0   26099.0   27380.0   28058.0   28747.0
                  29661.0   30375.0   30375.0   30375.0   30375.0   29507.0   28691.0   28666.0   27000.0   25706.0
                  23410.0   22091.0   21070.0   19230.0   18083.0   16932.0   15935.0   14878.0   13834.0   12978.0
                  12327.0   11215.0   10708.0    9720.0    9309.0    8679.0    8332.0    7078.0    7078.0    6477.0
                   5975.0    5976.0    5550.0    4860.0    4860.0    4860.0    4123.0    3360.0    3359.0    3360.0
                   3359.0    3359.0    2332.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0
                   1960.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                    771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                    771.0     771.0     771.0     771.0     771.0
                                                                    ***
    ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H4
                          FOR PLAN 1, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                 0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)     0.          0.          0.          0.

                        CUMULATIVE AREA =  366.20 SQ MI


    ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H4
                          FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                 0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)     0.          0.          0.          0.

                        CUMULATIVE AREA =  366.20 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

188 KP          PLAN  2 FOR STATION       H4

                SUBBASIN RUNOFF DATA

174 BA          SUBBASIN CHARACTERISTICS
                      TAREA      366.20  SUBBASIN AREA
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                PRECIPITATION DATA

 189 PB                STORM          .00  BASIN TOTAL PRECIPITATION

  33 PI             INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

 176 LG          GREEN AND AMPT LOSS RATE
                       STRTL          .35  STARTING LOSS
                         DTH          .25  MOISTURE DEFICIT
                        PSIF         4.00  WETTING FRONT SUCTION
                       XKSAT          .40  HYDRAULIC CONDUCTIVITY
                       RTIMP          .00  PERCENT IMPERVIOUS AREA

 176 UI          INPUT UNITGRAPH,  95 ORDINATES,  VOLUME = 1.00
                    3170.0    3170.0    3170.0    3170.0    3170.0    3380.0    9113.0    9113.0   12228.0   13575.0
                   15591.0   17534.0   19367.0   21226.0   22524.0   24134.0   26099.0   27380.0   28058.0   28747.0
                   29661.0   30375.0   30375.0   30375.0   30375.0   29507.0   28691.0   28666.0   27000.0   25706.0
                   23410.0   22091.0   21070.0   19230.0   18083.0   16932.0   15935.0   14878.0   13834.0   12978.0
                   12327.0   11215.0   10708.0    9720.0    9309.0    8679.0    8332.0    7078.0    7078.0    6477.0
                    5975.0    5976.0    5550.0    4860.0    4860.0    4860.0    4123.0    3360.0    3359.0    3360.0
                    3359.0    3359.0    2332.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0
                    1960.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                     771.0     771.0     771.0     771.0     771.0
                                                                                  ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H4
                          FOR PLAN 2, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                 0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)     0.          0.          0.          0.

                        CUMULATIVE AREA =  366.20 SQ MI


     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H4
                          FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                 0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)     0.          0.          0.          0.

                        CUMULATIVE AREA =  366.20 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 190 KP         PLAN  3 FOR STATION       H4

                SUBBASIN RUNOFF DATA

 174 BA           SUBBASIN CHARACTERISTICS
                       TAREA      366.20  SUBBASIN AREA

                  PRECIPITATION DATA

 191 PB                STORM          .00  BASIN TOTAL PRECIPITATION
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 33 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                     .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                     .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00

176 LG          GREEN AND AMPT LOSS RATE
                     STRTL         .35  STARTING LOSS
                       DTH         .25  MOISTURE DEFICIT
                      PSIF        4.00  WETTING FRONT SUCTION
                     XKSAT         .40  HYDRAULIC CONDUCTIVITY
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

176 UI          INPUT UNITGRAPH,  95 ORDINATES,  VOLUME = 1.00
                  3170.0    3170.0    3170.0    3170.0    3170.0    3380.0    9113.0    9113.0   12228.0   13575.0
                 15591.0   17534.0   19367.0   21226.0   22524.0   24134.0   26099.0   27380.0   28058.0   28747.0
                 29661.0   30375.0   30375.0   30375.0   30375.0   29507.0   28691.0   28666.0   27000.0   25706.0
                 23410.0   22091.0   21070.0   19230.0   18083.0   16932.0   15935.0   14878.0   13834.0   12978.0
                 12327.0   11215.0   10708.0    9720.0    9309.0    8679.0    8332.0    7078.0    7078.0    6477.0
                  5975.0    5976.0    5550.0    4860.0    4860.0    4860.0    4123.0    3360.0    3359.0    3360.0
                  3359.0    3359.0    2332.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0
                  1960.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                   771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                   771.0     771.0     771.0     771.0     771.0
                                                                   ***

     ***            ***            ***            ***            ***

                       HYDROGRAPH AT STATION       H4
                         FOR PLAN 3, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                        (CFS)
+      0.        .00                 0.          0.          0.          0.
                     (INCHES)      .000        .000        .000        .000
                      (AC-FT)        0.          0.          0.          0.

                      CUMULATIVE AREA =  366.20 SQ MI


     ***            ***            ***            ***            ***

                       HYDROGRAPH AT STATION       H4
                         FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                        (CFS)
+      0.        .00                 0.          0.          0.          0.
                     (INCHES)      .000        .000        .000        .000
                      (AC-FT)        0.          0.          0.          0.

                      CUMULATIVE AREA =  366.20 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 192 KP         PLAN  4 FOR STATION       H4

                SUBBASIN RUNOFF DATA

 174 BA          SUBBASIN CHARACTERISTICS
                      TAREA      366.20  SUBBASIN AREA

                 PRECIPITATION DATA

 193 PB               STORM        3.32  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
```

```
                    .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                    .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00

176 LG          GREEN AND AMPT LOSS RATE
                    STRTL         .35  STARTING LOSS
                      DTH         .25  MOISTURE DEFICIT
                     PSIF        4.00  WETTING FRONT SUCTION
                    XKSAT         .40  HYDRAULIC CONDUCTIVITY
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

176 UI          INPUT UNITGRAPH,  95 ORDINATES,  VOLUME = 1.00
                  3170.0    3170.0    3170.0    3170.0    3170.0    3380.0    9113.0    9113.0   12228.0   13575.0
                 15591.0   17534.0   19367.0   21226.0   22524.0   24134.0   26099.0   27380.0   28058.0   28747.0
                 29661.0   30375.0   30375.0   30375.0   30375.0   29507.0   28691.0   28666.0   27000.0   25706.0
                 23410.0   22091.0   21070.0   19230.0   18083.0   16932.0   15935.0   14878.0   13834.0   12978.0
                 12327.0   11215.0   10708.0    9720.0    9309.0    8679.0    8332.0    7078.0    7078.0    6477.0
                  5975.0    5976.0    5550.0    4860.0    4860.0    4860.0    4123.0    3360.0    3359.0    3360.0
                  3359.0    3359.0    2332.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0
                  1960.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                   771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                   771.0     771.0     771.0     771.0     771.0

                                                                  ***

    ***             ***             ***             ***             ***

                      HYDROGRAPH AT STATION       H4
                        FOR PLAN 4, RATIO = 1.00

   TOTAL RAINFALL =    3.32, TOTAL LOSS =    2.51, TOTAL EXCESS =     .81

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+  (CFS)       (HR)
                        (CFS)
+  24696.     17.25                20635.       8002.       2668.         384.
                      (INCHES)      .524        .813        .813         .813
                       (AC-FT)    10232.      15871.      15874.       15874.

                      CUMULATIVE AREA =  366.20 SQ MI


    ***             ***             ***             ***             ***

                      HYDROGRAPH AT STATION       H4
                        FOR PLAN 4, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+  (CFS)       (HR)
                        (CFS)
+  24696.     17.25                20635.       8002.       2668.         384.
                      (INCHES)      .524        .813        .813         .813
                       (AC-FT)    10232.      15871.      15874.       15874.

                      CUMULATIVE AREA =  366.20 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

194 KP          PLAN  5 FOR STATION       H4

                SUBBASIN RUNOFF DATA

174 BA            SUBBASIN CHARACTERISTICS
                    TAREA      366.20  SUBBASIN AREA

                  PRECIPITATION DATA

195 PB              STORM         .00  BASIN TOTAL PRECIPITATION

 33 PI            INCREMENTAL PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                    .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                    .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
```

```
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00

176 LG          GREEN AND AMPT LOSS RATE
                    STRTL         .35  STARTING LOSS
                      DTH         .25  MOISTURE DEFICIT
                     PSIF        4.00  WETTING FRONT SUCTION
                    XKSAT         .40  HYDRAULIC CONDUCTIVITY
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

176 UI          INPUT UNITGRAPH,  95 ORDINATES,  VOLUME = 1.00
                  3170.0    3170.0    3170.0    3170.0    3170.0    3380.0    9113.0    9113.0   12228.0   13575.0
                 15591.0   17534.0   19367.0   21226.0   22524.0   24134.0   26099.0   27380.0   28058.0   28747.0
                 29661.0   30375.0   30375.0   30375.0   30375.0   29507.0   28691.0   28666.0   27000.0   25706.0
                 23410.0   22091.0   21070.0   19230.0   18083.0   16932.0   15935.0   14878.0   13834.0   12978.0
                 12327.0   11215.0   10708.0    9720.0    9309.0    8679.0    8332.0    7078.0    7078.0    6477.0
                  5975.0    5976.0    5550.0    4860.0    4860.0    4860.0    4123.0    3360.0    3359.0    3360.0
                  3359.0    3359.0    2332.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0
                  1960.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                   771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                   771.0     771.0     771.0     771.0     771.0
                                                                   ***

     ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H4
                        FOR PLAN 5, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+      0.        .00                 0.          0.          0.          0.
                       (INCHES)     .000        .000        .000        .000
                        (AC-FT)      0.          0.          0.          0.

                       CUMULATIVE AREA =  366.20 SQ MI


     ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H4
                        FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+      0.        .00                 0.          0.          0.          0.
                       (INCHES)     .000        .000        .000        .000
                        (AC-FT)      0.          0.          0.          0.

                       CUMULATIVE AREA =  366.20 SQ MI


***   ***   ***   ***   ***   ***   ***   ***   ***   ***   ***   ***   ***   ***   ***   ***   ***

196 KP          PLAN  6 FOR STATION       H4

                SUBBASIN RUNOFF DATA

174 BA            SUBBASIN CHARACTERISTICS
                    TAREA      366.20  SUBBASIN AREA

                  PRECIPITATION DATA

197 PB              STORM        3.32  BASIN TOTAL PRECIPITATION

 33 PI            INCREMENTAL PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                    .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                    .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00
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```
176 LG          GREEN AND AMPT LOSS RATE
                     STRTL         .35  STARTING LOSS
                       DTH         .25  MOISTURE DEFICIT
                      PSIF        4.00  WETTING FRONT SUCTION
                     XKSAT         .40  HYDRAULIC CONDUCTIVITY
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

176 UI          INPUT UNITGRAPH,  95 ORDINATES,  VOLUME = 1.00
                   3170.0    3170.0    3170.0    3170.0    3170.0    3380.0    9113.0    9113.0   12228.0   13575.0
                  15591.0   17534.0   19367.0   21226.0   22524.0   24134.0   26099.0   27380.0   28058.0   28747.0
                  29661.0   30375.0   30375.0   30375.0   30375.0   29507.0   28691.0   28666.0   27000.0   25706.0
                  23410.0   22091.0   21070.0   19230.0   18083.0   16932.0   15935.0   14878.0   13834.0   12978.0
                  12327.0   11215.0   10708.0    9720.0    9309.0    8679.0    8332.0    7078.0    7078.0    6477.0
                   5975.0    5976.0    5550.0    4860.0    4860.0    4860.0    4123.0    3360.0    3359.0    3360.0
                   3359.0    3359.0    2332.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0
                   1960.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                    771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                    771.0     771.0     771.0     771.0     771.0

                                                                  ***

     ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H4
                          FOR PLAN 6, RATIO = 1.00

   TOTAL RAINFALL =    3.32, TOTAL LOSS =    2.51, TOTAL EXCESS =     .81

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   24696.     17.25                20635.       8002.       2668.         384.
                        (INCHES)     .524        .813        .813         .813
                         (AC-FT)   10232.      15871.      15874.       15874.

                        CUMULATIVE AREA =  366.20 SQ MI


     ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H4
                          FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   24696.     17.25                20635.       8002.       2668.         384.
                        (INCHES)     .524        .813        .813         .813
                         (AC-FT)   10232.      15871.      15874.       15874.

                        CUMULATIVE AREA =  366.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //H4/FLOW/01JUL1904/15MIN/JRW/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //H4/FLOW/01AUG1904/15MIN/JRW/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 199 KK     *        C4  *
            *            *
            **************
                        COMBINE RUNOFF FROM JACKRABBIT WASH WITH COMBINED FLOWS IN HASSAYAMPA
                         THIS IS THE TOTAL FLOW OF THE HASSAYAMPA RIVER JUST DOWNSTREAM OF
                         JACKRABBIT WASH

 203 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

     ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       C4
                          FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
```

```
  17504.     24.75                12731.       4755.       1585.         228.
                        (INCHES)     .088        .132        .132         .132
                         (AC-FT)    6313.       9432.       9432.        9432.

                        CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C4/FLOW/01JUL1904/15MIN/D-S JRW/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C4/FLOW/01AUG1904/15MIN/D-S JRW/

      ***            ***            ***            ***            ***

                         HYDROGRAPH AT STATION       C4
                           FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   26791.     19.75                16752.       4948.       1649.         238.
                        (INCHES)     .116        .137        .137         .137
                         (AC-FT)    8307.       9814.       9814.        9814.

                        CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C4/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C4/FLOW/01AUG1904/15MIN//

      ***            ***            ***            ***            ***

                         HYDROGRAPH AT STATION       C4
                           FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   17183.     16.00                13052.       4351.       1450.         209.
                        (INCHES)     .090        .121        .121         .121
                         (AC-FT)    6472.       8629.       8629.        8629.

                        CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    2:  //C4/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    2:  //C4/FLOW/01AUG1904/15MIN//

      ***            ***            ***            ***            ***

                         HYDROGRAPH AT STATION       C4
                           FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   24696.     17.25                20635.       8002.       2668.         384.
                        (INCHES)     .143        .222        .222         .222
                         (AC-FT)   10232.      15871.      15874.       15874.

                        CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    3:  //C4/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    3:  //C4/FLOW/01AUG1904/15MIN//

      ***            ***            ***            ***            ***

                         HYDROGRAPH AT STATION       C4
                           FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                    0.          0.          0.           0.
                        (INCHES)     .000        .000        .000         .000
                         (AC-FT)       0.          0.          0.           0.

                        CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    4:  //C4/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    4:  //C4/FLOW/01AUG1904/15MIN//

      ***            ***            ***            ***            ***

                         HYDROGRAPH AT STATION       C4
                           FOR PLAN 6, RATIO = 1.00
```

```
 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   55884.     19.75                46735.      24460.       8237.        1187.
                        (INCHES)      .324        .678        .685         .685
                         (AC-FT)    23174.      48517.      49013.       49013.

                        CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C4/FLOW/01JUL1904/15MIN/JRW/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C4/FLOW/01AUG1904/15MIN/JRW/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


           **************
           *            *
 205 KK    *      R4-5  *
           *            *
           **************
                          ROUTE COMBINED FLOWS AT JACKRABBIT WASH TO THE GILA RIVER
                           SLOPE = (1102 - 792) / 74,000 = 0.004

              HYDROGRAPH ROUTING DATA

 209 RL          ROUTING LOSSES
                       QLOSS         .00  INITIAL LOSS
                       CLOSS         .00  ADDITIONAL FRACTION LOST
                      PERCRT        2.00  CHANNEL PERCOLATION RATE
                      ELVINV      110.00  INVERT ELEVATION

 208 RS          STORAGE ROUTING
                       NSTPS          11  NUMBER OF SUBREACHES
                        ITYP        FLOW  TYPE OF INITIAL CONDITION
                      RSVRIC       -1.00  INITIAL CONDITION
                           X         .00 WORKING R AND D COEFFICIENT

 210 RC          NORMAL DEPTH CHANNEL
                         ANL        .070  LEFT OVERBANK N-VALUE
                        ANCH        .040  MAIN CHANNEL N-VALUE
                         ANR        .070  RIGHT OVERBANK N-VALUE
                       RLNTH      74000.  REACH LENGTH
                         SEL       .0040  ENERGY SLOPE
                       ELMAX       130.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                          CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 212 RY        ELEVATION    130.00    120.00    115.00    110.00    110.00    115.00    120.00    130.00
 211 RX        DISTANCE        .00    100.00    800.00    810.00   1610.00   1620.00   2420.00   2520.00

                                                          ***

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

           STORAGE        .00   1434.34   2876.22   4325.62   5782.55   7264.42   9154.31  11608.89  14628.18  18212.17
           OUTFLOW        .00   2053.90   6523.86  12829.32  20732.56  30118.63  41206.02  54325.75  69778.65  87821.69
         ELEVATION     110.00    111.05    112.11    113.16    114.21    115.26    116.32    117.37    118.42    119.47

           STORAGE   22294.98  26481.30  30705.27  34966.90  39266.16  43603.07  47977.64  52389.85  56839.70  61327.17
           OUTFLOW  109284.10 134143.40 161617.10 191575.60 223919.00 258567.30 295454.00 334523.30 375727.20 419023.70
         ELEVATION     120.53    121.58    122.63    123.68    124.74    125.79    126.84    127.89    128.95    130.00


*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN   295454. TO   419024.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     R4-5
                          FOR PLAN 1, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
   (CFS)       (HR)
                          (CFS)
+   11194.     28.50                 8076.       2740.        913.         132.
                        (INCHES)      .056        .076        .076         .076
                         (AC-FT)     4005.       5434.       5434.        5434.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
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                                        6-HR        24-HR        72-HR     499.75-HR
  (AC-FT)       (HR)
     364.      28.50                    297.         119.          40.            6.

 PEAK STAGE    TIME                                MAXIMUM AVERAGE STAGE
                                        6-HR        24-HR        72-HR     499.75-HR
+  (FEET)       (HR)
   112.93      28.50                  112.39       110.95       110.32        110.05

                          CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //R4-5/FLOW/01JUL1904/15MIN/ROUTED/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //R4-5/FLOW/01AUG1904/15MIN/ROUTED/


 ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  2 INPUT DATA FOR STATION     R4-5 ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN   295454. TO   419024.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     R4-5
                            FOR PLAN 2, RATIO = 1.00

 PEAK FLOW     TIME                                MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR     499.75-HR
+  (CFS)        (HR)
                                 (CFS)
+  19034.      22.75                 11436.        3346.        1115.          161.
                            (INCHES)    .079         .093         .093          .093
                             (AC-FT)   5671.        6637.        6637.         6637.

 PEAK STORAGE  TIME                                MAXIMUM AVERAGE STORAGE
                                        6-HR        24-HR        72-HR     499.75-HR
+  (AC-FT)      (HR)
     501.      22.75                    361.         121.          40.            6.

 PEAK STAGE    TIME                                MAXIMUM AVERAGE STAGE
                                        6-HR        24-HR        72-HR     499.75-HR
+  (FEET)       (HR)
   114.02      22.75                  112.90       110.97       110.32        110.05

                          CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //R4-5/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    1:  //R4-5/FLOW/01AUG1904/15MIN//


 ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  3 INPUT DATA FOR STATION     R4-5 ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN   295454. TO   419024.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     R4-5
                            FOR PLAN 3, RATIO = 1.00

 PEAK FLOW     TIME                                MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR     499.75-HR
+  (CFS)        (HR)
                                 (CFS)
+  13430.      18.75                  8878.        2592.         864.          124.
                            (INCHES)    .062         .072         .072          .072
                             (AC-FT)   4402.        5141.        5141.         5141.

 PEAK STORAGE  TIME                                MAXIMUM AVERAGE STORAGE
                                        6-HR        24-HR        72-HR     499.75-HR
+  (AC-FT)      (HR)
     407.      18.75                    312.         104.          35.            5.

 PEAK STAGE    TIME                                MAXIMUM AVERAGE STAGE
                                        6-HR        24-HR        72-HR     499.75-HR
+  (FEET)       (HR)
   113.27      18.75                  112.51       110.84       110.28        110.04

                          CUMULATIVE AREA = 1341.60 SQ MI
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-----DSS---ZWRITE Unit  71; Vers.    2:  //R4-5/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    2:  //R4-5/FLOW/01AUG1904/15MIN//

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  4 INPUT DATA FOR STATION     R4-5 ARE SAME AS FOR PLAN  1

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN   295454. TO   419024.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     R4-5
                            FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+   21473.     19.50                16966.       5669.       1890.         272.
                          (INCHES)    .118        .157        .157         .157
                           (AC-FT)   8413.      11245.      11245.       11245.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
      540.     19.50                  465.        186.         62.           9.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
   114.32     19.50                 113.73      111.49      110.50       110.07

                          CUMULATIVE AREA = 1341.60 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    3:  //R4-5/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    3:  //R4-5/FLOW/01AUG1904/15MIN//

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  5 INPUT DATA FOR STATION     R4-5 ARE SAME AS FOR PLAN  1

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN   295454. TO   419024.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     R4-5
                            FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+       0.       .00                    0.          0.          0.           0.
                          (INCHES)   .000        .000        .000         .000
                           (AC-FT)      0.          0.          0.           0.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
        0.       .00                    0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
   110.00       .00                 110.00      110.00      110.00       110.00

                          CUMULATIVE AREA = 1341.60 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    4:  //R4-5/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    4:  //R4-5/FLOW/01AUG1904/15MIN//

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  6 INPUT DATA FOR STATION     R4-5 ARE SAME AS FOR PLAN  1

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN   295454. TO   419024.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)
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    ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     R4-5
                          FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+   49968.     22.25                43606.      21283.       7114.        1025.
                         (INCHES)     .302        .590        .592         .592
                          (AC-FT)   21623.      42215.      42328.       42328.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
      986.     22.25                  879.        503.        170.          24.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    117.04     22.25                116.52      113.88      111.31       110.19

                         CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //R4-5/FLOW/01JUL1904/15MIN/JRW/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //R4-5/FLOW/01AUG1904/15MIN/JRW/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 214 KK     *        H5  *
            *            *
            **************
                          BASIN H5
                           THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
                           L=     19.4  Lca=      8.4   S=   28.2  Kn= .040  LAG= 211.0
                           DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
                            100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.1"
                            AREAL REDUCED FOR 43.0 SQ.MI. = 4.1*0.88 = 3.6"


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 221 KP        PLAN  1 FOR STATION       H5

               SUBBASIN RUNOFF DATA

 222 BA          SUBBASIN CHARACTERISTICS
                       TAREA       43.00  SUBBASIN AREA

                 PRECIPITATION DATA

 223 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

 224 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .30  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .39  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 224 UI          INPUT UNITGRAPH,  51 ORDINATES,  VOLUME = 1.00
                     686.0     686.0     686.0    1670.0    2422.0    3234.0    3976.0    4717.0    5297.0    5904.0
                    6155.0    6568.0    6576.0    6501.0    6224.0    5866.0    5117.0    4611.0    4012.0    3578.0
                    3136.0    2795.0    2484.0    2149.0    1923.0    1663.0    1490.0    1294.0    1183.0    1052.0
                     939.0     727.0     727.0     651.0     470.0     470.0     470.0     470.0     297.0     167.0
                     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0
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                    167.0
                                                                    ***

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H5
                          FOR PLAN 1, RATIO = 1.00

    TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                  0.          0.          0.          0.
                        (INCHES)     .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

                        CUMULATIVE AREA =   43.00 SQ MI


      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H5
                          FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                  0.          0.          0.          0.
                        (INCHES)     .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

                        CUMULATIVE AREA =   43.00 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  232 KP        PLAN  2 FOR STATION       H5

                SUBBASIN RUNOFF DATA

  222 BA          SUBBASIN CHARACTERISTICS
                        TAREA       43.00  SUBBASIN AREA

                  PRECIPITATION DATA

  233 PB                STORM         .00  BASIN TOTAL PRECIPITATION

   33 PI            INCREMENTAL PRECIPITATION PATTERN
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                        .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                        .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00

  224 LG          GREEN AND AMPT LOSS RATE
                        STRTL         .30  STARTING LOSS
                          DTH         .25  MOISTURE DEFICIT
                         PSIF        4.00  WETTING FRONT SUCTION
                        XKSAT         .39  HYDRAULIC CONDUCTIVITY
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

  224 UI          INPUT UNITGRAPH,  51 ORDINATES,  VOLUME = 1.00
                      686.0     686.0     686.0    1670.0    2422.0    3234.0    3976.0    4717.0    5297.0    5904.0
                     6155.0    6568.0    6576.0    6501.0    6224.0    5866.0    5117.0    4611.0    4012.0    3578.0
                     3136.0    2795.0    2484.0    2149.0    1923.0    1663.0    1490.0    1294.0    1183.0    1052.0
                      939.0     727.0     727.0     651.0     470.0     470.0     470.0     470.0     297.0     167.0
                      167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0
                      167.0
                                                                    ***

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H5
                          FOR PLAN 2, RATIO = 1.00
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   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+      0.        .00                 0.          0.          0.          0.
                         (INCHES)   .000        .000        .000        .000
                          (AC-FT)     0.          0.          0.          0.

                          CUMULATIVE AREA =   43.00 SQ MI


     ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H5
                          FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+      0.        .00                 0.          0.          0.          0.
                         (INCHES)   .000        .000        .000        .000
                          (AC-FT)     0.          0.          0.          0.

                          CUMULATIVE AREA =   43.00 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 234 KP        PLAN  3 FOR STATION       H5

               SUBBASIN RUNOFF DATA

 222 BA          SUBBASIN CHARACTERISTICS
                      TAREA       43.00  SUBBASIN AREA

                 PRECIPITATION DATA

 235 PB               STORM         .00  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

 224 LG          GREEN AND AMPT LOSS RATE
                      STRTL         .30  STARTING LOSS
                        DTH         .25  MOISTURE DEFICIT
                       PSIF        4.00  WETTING FRONT SUCTION
                      XKSAT         .39  HYDRAULIC CONDUCTIVITY
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 224 UI          INPUT UNITGRAPH,  51 ORDINATES,  VOLUME = 1.00
                    686.0     686.0     686.0    1670.0    2422.0    3234.0    3976.0    4717.0    5297.0    5904.0
                   6155.0    6568.0    6576.0    6501.0    6224.0    5866.0    5117.0    4611.0    4012.0    3578.0
                   3136.0    2795.0    2484.0    2149.0    1923.0    1663.0    1490.0    1294.0    1183.0    1052.0
                    939.0     727.0     727.0     651.0     470.0     470.0     470.0     470.0     297.0     167.0
                    167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0
                    167.0

                                                                   ***

     ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H5
                          FOR PLAN 3, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+      0.        .00                 0.          0.          0.          0.
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                    (INCHES)      .000        .000        .000        .000
                     (AC-FT)       0.          0.          0.          0.

                    CUMULATIVE AREA =   43.00 SQ MI

     ***          ***          ***          ***          ***

                      HYDROGRAPH AT STATION       H5
                        FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+      0.        .00                0.          0.          0.          0.
                    (INCHES)      .000        .000        .000        .000
                     (AC-FT)       0.          0.          0.          0.

                    CUMULATIVE AREA =   43.00 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  236 KP        PLAN  4 FOR STATION       H5

                SUBBASIN RUNOFF DATA

  222 BA          SUBBASIN CHARACTERISTICS
                        TAREA       43.00  SUBBASIN AREA

                  PRECIPITATION DATA

  237 PB                STORM         .00  BASIN TOTAL PRECIPITATION

   33 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

  224 LG          GREEN AND AMPT LOSS RATE
                        STRTL         .30  STARTING LOSS
                          DTH         .25  MOISTURE DEFICIT
                         PSIF        4.00  WETTING FRONT SUCTION
                        XKSAT         .39  HYDRAULIC CONDUCTIVITY
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

  224 UI          INPUT UNITGRAPH,  51 ORDINATES,  VOLUME = 1.00
                     686.0     686.0     686.0    1670.0    2422.0    3234.0    3976.0    4717.0    5297.0    5904.0
                    6155.0    6568.0    6576.0    6501.0    6224.0    5866.0    5117.0    4611.0    4012.0    3578.0
                    3136.0    2795.0    2484.0    2149.0    1923.0    1663.0    1490.0    1294.0    1183.0    1052.0
                     939.0     727.0     727.0     651.0     470.0     470.0     470.0     470.0     297.0     167.0
                     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0
                     167.0

                                                                  ***

     ***          ***          ***          ***          ***

                      HYDROGRAPH AT STATION       H5
                        FOR PLAN 4, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+      0.        .00                0.          0.          0.          0.
                    (INCHES)      .000        .000        .000        .000
                     (AC-FT)       0.          0.          0.          0.

                    CUMULATIVE AREA =   43.00 SQ MI

     ***          ***          ***          ***          ***
```

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                    HYDROGRAPH AT STATION       H5
                      FOR PLAN 4, RATIO = 1.00

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+  (CFS)       (HR)
                         (CFS)
+      0.       .00                 0.          0.          0.          0.
                       (INCHES)    .000        .000        .000        .000
                        (AC-FT)     0.          0.          0.          0.

                       CUMULATIVE AREA =   43.00 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 238 KP        PLAN  5 FOR STATION       H5

               SUBBASIN RUNOFF DATA

 222 BA          SUBBASIN CHARACTERISTICS
                       TAREA       43.00  SUBBASIN AREA

                 PRECIPITATION DATA

 239 PB                STORM        3.60  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

 224 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .30  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .39  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 224 UI          INPUT UNITGRAPH,  51 ORDINATES,  VOLUME = 1.00
                    686.0     686.0     686.0    1670.0    2422.0    3234.0    3976.0    4717.0    5297.0    5904.0
                   6155.0    6568.0    6576.0    6501.0    6224.0    5866.0    5117.0    4611.0    4012.0    3578.0
                   3136.0    2795.0    2484.0    2149.0    1923.0    1663.0    1490.0    1294.0    1183.0    1052.0
                    939.0     727.0     727.0     651.0     470.0     470.0     470.0     470.0     297.0     167.0
                    167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0
                    167.0
                                                                    ***

    ***            ***            ***            ***            ***

                    HYDROGRAPH AT STATION       H5
                      FOR PLAN 5, RATIO = 1.00

   TOTAL RAINFALL =    3.60, TOTAL LOSS =    2.64, TOTAL EXCESS =     .96

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+  (CFS)       (HR)
                         (CFS)
+   6307.     14.75               3910.       1109.        370.         53.
                       (INCHES)    .845        .959        .959        .959
                        (AC-FT)   1939.       2199.       2199.       2199.

                       CUMULATIVE AREA =   43.00 SQ MI

    ***            ***            ***            ***            ***

                    HYDROGRAPH AT STATION       H5
                      FOR PLAN 5, RATIO = 1.00

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+  (CFS)       (HR)
                         (CFS)
+   6307.     14.75               3910.       1109.        370.         53.
```

```
                    (INCHES)      .845        .959        .959        .959
                     (AC-FT)     1939.       2199.       2199.       2199.

                    CUMULATIVE AREA =   43.00 SQ MI


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 240 KP        PLAN  6 FOR STATION       H5

               SUBBASIN RUNOFF DATA

 222 BA          SUBBASIN CHARACTERISTICS
                      TAREA       43.00  SUBBASIN AREA

                 PRECIPITATION DATA

 241 PB                STORM        3.60  BASIN TOTAL PRECIPITATION

  33 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

 224 LG          GREEN AND AMPT LOSS RATE
                      STRTL         .30  STARTING LOSS
                        DTH         .25  MOISTURE DEFICIT
                       PSIF        4.00  WETTING FRONT SUCTION
                      XKSAT         .39  HYDRAULIC CONDUCTIVITY
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 224 UI          INPUT UNITGRAPH,  51 ORDINATES,  VOLUME = 1.00
                     686.0     686.0     686.0    1670.0    2422.0    3234.0    3976.0    4717.0    5297.0    5904.0
                    6155.0    6568.0    6576.0    6501.0    6224.0    5866.0    5117.0    4611.0    4012.0    3578.0
                    3136.0    2795.0    2484.0    2149.0    1923.0    1663.0    1490.0    1294.0    1183.0    1052.0
                     939.0     727.0     727.0     651.0     470.0     470.0     470.0     470.0     297.0     167.0
                     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0
                     167.0

                                                                    ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H5
                          FOR PLAN 6, RATIO = 1.00

   TOTAL RAINFALL =    3.60, TOTAL LOSS =    2.64, TOTAL EXCESS =     .96

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+    6307.     14.75                3910.       1109.        370.         53.
                         (INCHES)     .845        .959        .959        .959
                          (AC-FT)    1939.       2199.       2199.       2199.

                        CUMULATIVE AREA =   43.00 SQ MI


     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H5
                          FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+    6307.     14.75                3910.       1109.        370.         53.
                         (INCHES)     .845        .959        .959        .959
                          (AC-FT)    1939.       2199.       2199.       2199.

                        CUMULATIVE AREA =   43.00 SQ MI
```

```
*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
  242 KK    *        C5  *
            *            *
            **************
                              COMBINE ROUTED FLOWS IN HASSAYAMPA WITH RUNOFF FROM SUBBASIN H5
                              THIS IS THE TOTAL FLOW AT THE CONFLUENCE OF THE GILA RIVER

  245 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

      ***             ***             ***             ***             ***

                         HYDROGRAPH AT STATION       C5
                           FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                           (CFS)
+   11194.     28.50                 8076.       2740.        913.         132.
                         (INCHES)     .054        .074        .074         .074
                          (AC-FT)    4005.       5434.       5434.        5434.

                         CUMULATIVE AREA = 1384.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C5/FLOW/01JUL1904/15MIN/AT GILA RIVER/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C5/FLOW/01AUG1904/15MIN/AT GILA RIVER/

      ***             ***             ***             ***             ***

                         HYDROGRAPH AT STATION       C5
                           FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                           (CFS)
+   19034.     22.75                11436.       3346.       1115.         161.
                         (INCHES)     .077        .090        .090         .090
                          (AC-FT)    5671.       6637.       6637.        6637.

                         CUMULATIVE AREA = 1384.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C5/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C5/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                         HYDROGRAPH AT STATION       C5
                           FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                           (CFS)
+   13430.     18.75                 8878.       2592.        864.         124.
                         (INCHES)     .060        .070        .070         .070
                          (AC-FT)    4402.       5141.       5141.        5141.

                         CUMULATIVE AREA = 1384.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    2:  //C5/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    2:  //C5/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                         HYDROGRAPH AT STATION       C5
                           FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
    (CFS)       (HR)
                           (CFS)
+   21473.     19.50                16966.       5669.       1890.         272.
                         (INCHES)     .114        .152        .152         .152
                          (AC-FT)    8413.      11245.      11245.       11245.

                         CUMULATIVE AREA = 1384.60 SQ MI
```

```
-----DSS---ZWRITE Unit  71; Vers.    3:  //C5/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    3:  //C5/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C5
                          FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+    6307.     14.75                3910.       1109.        370.          53.
                        (INCHES)     .026        .030        .030         .030
                         (AC-FT)    1939.       2199.       2199.        2199.

                        CUMULATIVE AREA = 1384.60 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    4:  //C5/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    4:  //C5/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C5
                          FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   50128.     22.25               43870.      22129.       7483.        1078.
                        (INCHES)     .295        .594        .603         .603
                         (AC-FT)   21754.      43893.      44528.       44528.

                        CUMULATIVE AREA = 1384.60 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    1:  //C5/FLOW/01JUL1904/15MIN/JRW/
-----DSS---ZWRITE Unit  71; Vers.    1:  //C5/FLOW/01AUG1904/15MIN/JRW/

              PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                              FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                          TIME TO PEAK IN HOURS


                                                                  RATIOS APPLIED TO FLOWS
 OPERATION       STATION     AREA    PLAN            RATIO 1
                                                       1.00

 HYDROGRAPH AT
+                   H1     416.20     1   FLOW       35589.
                                          TIME        18.75
                                       2  FLOW           0.
                                          TIME         .00
                                       3  FLOW           0.
                                          TIME         .00
                                       4  FLOW           0.
                                          TIME         .00
                                       5  FLOW           0.
                                          TIME         .00
                                       6  FLOW       35589.
                                          TIME        18.75

 ROUTED TO
+                 R1-2     416.20     1   FLOW       29696.
                                          TIME        20.00
                                       2  FLOW           0.
                                          TIME         .00
                                       3  FLOW           0.
                                          TIME         .00
                                       4  FLOW           0.
                                          TIME         .00
                                       5  FLOW           0.
                                          TIME         .00
                                       6  FLOW       29696.
                                          TIME        20.00

                                       ** PEAK STAGES IN FEET **
                                       1  STAGE      116.48
                                          TIME        20.00
                                       2  STAGE      110.00
                                          TIME         .00
                                       3  STAGE      110.00
                                          TIME         .00
                                       4  STAGE      110.00
```

```
                                    TIME          .00
                                5   STAGE      110.00
                                    TIME          .00
                                6   STAGE      116.48
                                    TIME        20.00

 HYDROGRAPH AT
+                    H2     372.60   1   FLOW          0.
                                        TIME          .00
                                2   FLOW       38235.
                                    TIME        15.75
                                3   FLOW          0.
                                    TIME          .00
                                4   FLOW          0.
                                    TIME          .00
                                5   FLOW          0.
                                    TIME          .00
                                6   FLOW       38235.
                                    TIME        15.75

  2 COMBINED AT
+                    C2     788.80   1   FLOW       29696.
                                    TIME        20.00
                                2   FLOW       38235.
                                    TIME        15.75
                                3   FLOW          0.
                                    TIME          .00
                                4   FLOW          0.
                                    TIME          .00
                                5   FLOW          0.
                                    TIME          .00
                                6   FLOW       40916.
                                    TIME        17.50

 ROUTED TO
+                  R2-3     788.80   1   FLOW       17504.
                                    TIME        24.75
                                2   FLOW       26791.
                                    TIME        19.75
                                3   FLOW          0.
                                    TIME          .00
                                4   FLOW          0.
                                    TIME          .00
                                5   FLOW          0.
                                    TIME          .00
                                6   FLOW       33849.
                                    TIME        21.25

                                ** PEAK STAGES IN FEET **
                                1   STAGE      113.58
                                    TIME        24.75
                                2   STAGE      114.61
                                    TIME        19.75
                                3   STAGE      110.00
                                    TIME          .00
                                4   STAGE      110.00
                                    TIME          .00
                                5   STAGE      110.00
                                    TIME          .00
                                6   STAGE      115.31
                                    TIME        21.25

 HYDROGRAPH AT
+                    H3     186.60   1   FLOW          0.
                                    TIME          .00
                                2   FLOW          0.
                                    TIME          .00
                                3   FLOW       17183.
                                    TIME        16.00
                                4   FLOW          0.
                                    TIME          .00
                                5   FLOW          0.
                                    TIME          .00
                                6   FLOW       17183.
                                    TIME        16.00

  2 COMBINED AT
                     C3     975.40   1   FLOW       17504.
                                    TIME        24.75
                                2   FLOW       26791.
                                    TIME        19.75
                                3   FLOW       17183.
                                    TIME        16.00
                                4   FLOW          0.
                                    TIME          .00
```

```
                                  5   FLOW          0.
                                      TIME        .00
                                  6   FLOW      38846.
                                      TIME      20.50

 HYDROGRAPH AT
+                    H4    366.20   1   FLOW          0.
                                      TIME        .00
                                  2   FLOW          0.
                                      TIME        .00
                                  3   FLOW          0.
                                      TIME        .00
                                  4   FLOW      24696.
                                      TIME      17.25
                                  5   FLOW          0.
                                      TIME        .00
                                  6   FLOW      24696.
                                      TIME      17.25

  2 COMBINED AT
+                    C4   1341.60   1   FLOW      17504.
                                      TIME      24.75
                                  2   FLOW      26791.
                                      TIME      19.75
                                  3   FLOW      17183.
                                      TIME      16.00
                                  4   FLOW      24696.
                                      TIME      17.25
                                  5   FLOW          0.
                                      TIME        .00
                                  6   FLOW      55884.
                                      TIME      19.75

 ROUTED TO
+                   R4-5   1341.60   1   FLOW      11194.
                                      TIME      28.50
                                  2   FLOW      19034.
                                      TIME      22.75
                                  3   FLOW      13430.
                                      TIME      18.75
                                  4   FLOW      21473.
                                      TIME      19.50
                                  5   FLOW          0.
                                      TIME        .00
                                  6   FLOW      49968.
                                      TIME      22.25

                                  ** PEAK STAGES IN FEET **
                                  1   STAGE     112.93
                                      TIME      28.50
                                  2   STAGE     114.02
                                      TIME      22.75
                                  3   STAGE     113.27
                                      TIME      18.75
                                  4   STAGE     114.32
                                      TIME      19.50
                                  5   STAGE     110.00
                                      TIME        .00
                                  6   STAGE     117.04
                                      TIME      22.25

 HYDROGRAPH AT
+                    H5     43.00   1   FLOW          0.
                                      TIME        .00
                                  2   FLOW          0.
                                      TIME        .00
                                  3   FLOW          0.
                                      TIME        .00
                                  4   FLOW          0.
                                      TIME        .00
                                  5   FLOW       6307.
                                      TIME      14.75
                                  6   FLOW       6307.
                                      TIME      14.75

  2 COMBINED AT
+                    C5   1384.60   1   FLOW      11194.
                                      TIME      28.50
                                  2   FLOW      19034.
                                      TIME      22.75
                                  3   FLOW      13430.
                                      TIME      18.75
                                  4   FLOW      21473.
                                      TIME      19.50
                                  5   FLOW       6307.
```

```
                                        TIME        14.75
                                    6   FLOW       50128.
                                        TIME        22.25


*** NORMAL END OF HEC-1 ***


  -----DSS---ZCLOSE Unit:  71,   File: HASSY.DSS
            Pointer Utilization:   .26
            Number of Records:     50
            File Size:    636.7  Kbytes
            Percent Inactive:    .0
```

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN   1998              *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   26JUL04  TIME  09:59:10  *
*                                      *
****************************************
```

```
****************************************
*                                      *
*   U.S. ARMY CORPS OF ENGINEERS       *
*   HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET            *
*      DAVIS, CALIFORNIA 95616         *
*          (916) 756-1104              *
*                                      *
****************************************
```

```
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

1 HEC-1 INPUT PAGE 1

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

  1           ID   Lower Hassayampa River Watercourse Master Plan          FILE: HASSYFU.DAT
  2           ID                                                           DATE: 07-25-2004
  3           ID    FUTURE CONDITIONS MODEL:
  4           ID      FUTURE CONDITIONS ASSUMED TO AFFECT ONLY WATERSHED LAND USE IN
  5           ID      SUBBASINS H3-H5.  ADJUSTMENTS MADE TO RTIMP ONLY.
  6           ID
  7           ID      MULTIPLE PLAN MODEL RUN TO INVESTIGATE SINGLE
  8           ID      SUBBASIN RESPONSE AS WELL AS WHOLE BASIN RESPONSE
  9           ID
 10           ID      MODEL BASIS:
 11           ID        - NOAA ATLAS II POINT RAINFALL AVERAGED FOR EACH SUBBASIN
 12           ID          INDEPENDENTLY
 13           ID        - AREAL REDUCTION FOR EACH SUBBASIN INDIVIDUALLY
 14           ID        - SCS TYPE II 24-HR TEMPORAL DISTRIBUTION
 15           ID        - GREEN-AMPT LOSS PARAMETERS BASED ON NRCS DIGITAL SURGO GENERAL
 16           ID          SOIL MAP
 17           ID        - UNIT HYDROGRAPHS CONSTRUCTED USING MCUHP2 WITH PARAMETERS AS
 18           ID          INDICATED IN KM RECORDS OF EACH SUBBASIN KK BLOCK
 19           ID        - CHANNEL ROUTINGS BASED ON NORMAL-DEPTH WITH TRANSMISSION LOSSES
 20           ID
 21           IT      15 15JUL04    0000    2000
 22           IO       3
 23           IN      15
 24           JP       6
              *

 25           KK      H1
 26           KM   BASIN H1 - HASSAYAMPA ABOVE BOX CANYON
 27           KM
 28           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 29           KM    L=     55.6  Lca=     27.3   S=  100.0  Kn= .050  LAG= 485.0
 30           KM    PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
 31           KM     100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 5.0"
 32           KM     AREAL REDUCED FOR 416.2 SQ.MI. = 5.0*0.78 = 3.9"
 33           KP       1
 34           BA  416.20
 35           PB     3.9
 36           PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
 37           PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
 38           PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
 39           PC    .110    .115    .120    .126    .133    .140    .147    .155    .163    .172
 40           PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
 41           PC    .735    .758    .776    .791    .804    .815    .825    .834    .842    .849
 42           PC    .856    .863    .869    .875    .881    .887    .893    .898    .903    .908
 43           PC    .913    .918    .922    .926    .930    .934    .938    .942    .946    .950
 44           PC    .953    .956    .959    .962    .965    .968    .971    .974    .977    .980
 45           PC    .983    .986    .989    .992    .995    .998   1.000
```

```
 46          LG     .80     .25    4.30     .34     .00
 47          UI   2889.   2889.   2889.   2889.   2889.   2889.   2889.   5941.   8307.   8307.
 48          UI  11011.  11157.  13291.  14686.  16724.  17488.  18360.  19257.  20321.  21169.
 49          UI  21864.  22631.  23480.  25166.  27772.  30061.  32997.  36969.  32740.  26474.
 50          UI  22671.  21180.  19953.  18929.  18068.  17410.  17040.  16650.  16123.  15634.
 51          UI  15103.  14552.  14235.  13845.  13401.  13110.  12306.  12023.  11659.  11312.
 52          UI  11076.  10318.   9919.   9460.   8980.   8852.   7638.   7638.   7478.   7070.
 53          UI   7070.   6966.   6645.   6645.   6639.   6041.   6041.   6041.   5454.   4747.
1                                          HEC-1 INPUT                                          PAGE  2

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

 54          UI   4747.   4747.   4747.   3769.   3692.   3692.   3692.   3692.   3636.   3165.
 55          UI   3164.   3164.   3164.   3165.   3164.   2864.   2215.   2215.   2215.   2215.
 56          UI   2215.   2215.   2215.   2215.   2215.   1721.   1414.   1414.   1414.   1414.
 57          UI   1414.   1414.   1414.   1414.   1414.   1414.   1414.   1414.   1414.   1414.
 58          UI   1053.    554.    554.    554.    554.    554.    554.    554.    554.    554.
 59          UI    554.    554.    554.    554.    554.    554.    554.    554.    554.    554.
 60          UI    554.    554.    554.    554.    554.    554.    554.    554.    554.    554.
 61          UI    554.    554.    554.    554.    554.    554.    554.    554.    554.      0.
 62          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 63          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 64          ZW      C=FLOW    F=BOX CANYON
             *
 65          KP       2
 66          PB     0.0
             *
 67          KP       3
 68          PB     0.0
             *
 69          KP       4
 70          PB     0.0
             *
 71          KP       5
 72          PB     0.0
             *
 73          KP       6
 74          PB     3.9
             *

 75          KK    R1-2
 76          KM    ROUTE RUNOFF AT BOX CANYON TO MORRISTOWN
 77          KM     SLOPE = (2240 - 1845) / 78,500 = 0.005
 78          RS       7    FLOW      -1
 79          RC    0.08    0.04    0.08   78500   0.005     130
 80          RX       0     100     350     360     860     870    1120    1220
 81          RY     130     120     119     110     110     119     120     130
 82          ZW      C=FLOW    F=ROUTED BOX
             *

 83          KK      H2
 84          KM   BASIN H2 - MARTINEZ CREEK, SOLS WASH, SAN DOMINGO WASH
 85          KM
 86          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 87          KM    L=      36.9  Lca=      12.6   S=    61.7  Kn= .040  LAG= 271.0
 88          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 89          KM     100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.4"
 90          KM     AREAL REDUCED FOR 372.6 SQ.MI. = 4.4*0.79 = 3.5"
 91          KP       1
 92          BA  372.60
 93          PB     3.5
 94          LG     .50     .25    4.00     .39     5.0
 95          UI   4629.   4629.   4629.   4629.  11961.  15201.  19425.  23659.  27288.  31529.
 96          UI  33690.  38311.  40518.  41691.  43865.  44363.  44363.  43680.  41820.  40821.
 97          UI  37700.  33304.  31189.  27832.  25179.  22959.  20945.  19026.  17289.  15768.
 98          UI  14196.  12789.  11722.  10337.   9457.   8727.   8169.   7098.   7098.   5711.
 99          UI   4907.   4907.   4907.   3669.   3169.   3169.   3169.   3169.   3169.   1858.
1                                          HEC-1 INPUT                                          PAGE  3

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

100          UI   1127.   1127.   1127.   1127.   1127.   1127.   1127.   1127.   1127.   1127.
101          UI   1127.   1127.   1127.   1127.   1127.   1127.      0.      0.      0.      0.
102          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
             *
103          KP       2
104          PB     3.5
             *
105          KP       3
106          PB     0.0
             *
107          KP       4
108          PB     0.0
             *
109          KP       5
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110          PB     0.0
             *
111          KP       6
112          PB     3.5
113          ZW     C=FLOW   F=SOLSPLUS
             *

114          KK      C2
115          KM    COMBINE ROUTED FLOW FROM BOX CANYON WITH RUNOFF FROM H2
116          KM     (H2 SUBBASIN CONTAINS MARTINEZ CREEK AND SOLS WASH PLUS
117          KM      OTHER SMALL WICKENBURG AREA TRIBUTARIES)
118          KM    THIS IS THE TOTAL FLOW AT MORRISTOWN GAGE LOCATION
119          HC       2
120          ZW          C=FLOW     F=MORRISTOWN
             *

121          KK    R2-3
122          KM    ROUTE COMBINED FLOWS AT MORRISTOWN TO JACKRABBIT WASH
123          KM     SLOPE = (1845 - 1102) / 149,000 = 0.005
124          RS      14    FLOW      -1
125          RL                       2     110
126          RC    0.07    0.04    0.07  149000   0.005     130
127          RX       0     100     800     810    1610    1620    2420    2520
128          RY     130     120     115     110     110     115     120     130
129          ZW       C=FLOW   F=ROUTED MORRISTOWN
             *

130          KK      H3
131          KM   BASIN H3 - WAGNER WASH AND DAGGS WASH WATERSHEDS
132          KM
133          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
134          KM    L=     37.8  Lca=     16.4   S=   59.7  Kn= .040  LAG= 304.0
135          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
136          KM     100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.2"
137          KM     AREAL REDUCED FOR 186.6 SQ.MI. = 4.2*0.82 = 3.44"
138          KP       1
139          BA  186.60
140          PB    3.44
141          LG     .35     .25    4.00     .40   10.00
142          UI   2067.   2067.   2067.   2067.   3379.   5942.   7459.   9020.  10679.  12149.
143          UI  13781.  14598.  16721.  17606.  18403.  18732.  19806.  19806.  19806.  19616.
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

144          UI  18848.  18522.  17485.  15851.  14513.  13555.  12319.  11202.  10355.   9519.
145          UI   8810.   8057.   7329.   6668.   6242.   5659.   5201.   4615.   4362.   3896.
146          UI   3896.   3257.   3169.   3169.   2348.   2190.   2191.   2190.   1848.   1415.
147          UI   1415.   1415.   1415.   1415.   1415.    839.    503.    503.    503.    503.
148          UI    503.    503.    503.    503.    503.    503.    503.    503.    503.    503.
149          UI    503.    503.    503.    503.      0.      0.      0.      0.      0.      0.
150          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
             *
151          KP       2
152          PB     0.0
             *
153          KP       3
154          PB    3.44
             *
155          KP       4
156          PB     0.0
             *
157          KP       5
158          PB     0.0
             *
159          KP       6
160          PB    3.44
161          ZW     C=FLOW   F=WAGNER-DAGGS
             *

162          KK      C3
163          KM     COMBINE ROUTED FLOW FROM MORRISTOWN WITH RUNOFF FROM SUBBASIN H3
164          KM     COMBINED FLOW UPSTREAM OF JACKRABBIT WASH
165          KM     LOCAL RUNOFF INCLUDES WAGNER AND DAGGS WASH WATERSHEDS
166          HC       2
167          ZW       C=FLOW    F=U-S JRW
             *

168          KK      H4
169          KM   BASIN H4 - JACKRABBIT WASH
170          KM
171          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
172          KM    L=     40.0  Lca=     21.7   S=   32.5  Kn= .040  LAG= 389.0
173          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
174          KM     100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.2"
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 175          KM     AREAL REDUCED FOR 366.2 SQ.MI. = 4.2*0.79 = 3.32"
 176          KP       1
 177          BA  366.20
 178          PB     0.0
 179          LG     .35     .25    4.00     .40    5.00
 180          UI   3170.   3170.   3170.   3170.   3170.   3380.   9113.   9113.  12228.  13575.
 181          UI  15591.  17534.  19367.  21226.  22524.  24134.  26099.  27380.  28058.  28747.
 182          UI  29661.  30375.  30375.  30375.  30375.  29507.  28691.  28666.  27000.  25706.
 183          UI  23410.  22091.  21070.  19230.  18083.  16932.  15935.  14878.  13834.  12978.
 184          UI  12327.  11215.  10708.   9720.   9309.   8679.   8332.   7078.   7078.   6477.
 185          UI   5975.   5976.   5550.   4860.   4860.   4860.   4123.   3360.   3359.   3360.
 186          UI   3359.   3359.   2332.   2170.   2170.   2170.   2170.   2170.   2170.   2170.
 187          UI   1960.    771.    771.    771.    771.    771.    771.    771.    771.    771.
 188          UI    771.    771.    771.    771.    771.    771.    771.    771.    771.    771.
 189          UI    771.    771.    771.    771.    771.      0.      0.      0.      0.      0.
1                                          HEC-1 INPUT                                          PAGE  5

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

 190          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              *
 191          KP       2
 192          PB     0.0
              *
 193          KP       3
 194          PB     0.0
              *
 195          KP       4
 196          PB    3.32
              *
 197          KP       5
 198          PB     0.0
              *
 199          KP       6
 200          PB    3.32
 201          ZW      C=FLOW   F=JRW
              *

 202          KK      C4
 203          KM    COMBINE RUNOFF FROM JACKRABBIT WASH WITH COMBINED FLOWS IN HASSAYAMPA
 204          KM     THIS IS THE TOTAL FLOW OF THE HASSAYAMPA RIVER JUST DOWNSTREAM OF
 205          KM     JACKRABBIT WASH
 206          HC       2
 207          ZW      C=FLOW   F=D-S JRW
              *

 208          KK    R4-5
 209          KM    ROUTE COMBINED FLOWS AT JACKRABBIT WASH TO THE GILA RIVER
 210          KM     SLOPE = (1102 - 792) / 74,000 = 0.004
 211          RS      11    FLOW      -1
 212          RL                      2     110
 213          RC    0.07    0.04    0.07   74000   0.004     130
 214          RX       0     100     800     810    1610    1620    2420    2520
 215          RY     130     120     115     110     110     115     120     130
 216          ZW      C=FLOW   F=ROUTED
              *

 217          KK      H5
 218          KM   BASIN H5
 219          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 220          KM    L=     19.4  Lca=      8.4   S=   28.2  Kn= .040  LAG= 211.0
 221          KM    DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
 222          KM     100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.1"
 223          KM     AREAL REDUCED FOR 43.0 SQ.MI. = 4.1*0.88 = 3.6"
 224          KP       1
 225          BA    43.0
 226          PB     0.0
 227          LG     .30     .25    4.00     .39    10.0
 228          UI    686.    686.    686.   1670.   2422.   3234.   3976.   4717.   5297.   5904.
 229          UI   6155.   6568.   6576.   6501.   6224.   5866.   5117.   4611.   4012.   3578.
 230          UI   3136.   2795.   2484.   2149.   1923.   1663.   1490.   1294.   1183.   1052.
 231          UI    939.    727.    727.    651.    470.    470.    470.    470.    297.    167.
 232          UI    167.    167.    167.    167.    167.    167.    167.    167.    167.    167.
 233          UI    167.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1                                          HEC-1 INPUT                                          PAGE  6

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

 234          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
              *
 235          KP       5
 236          PB     3.6
              *
 237          KP       6
 238          PB     3.6
```

```
                        *
          239           KK      C5
          240           KM     COMBINE ROUTED FLOWS IN HASSAYAMPA WITH RUNOFF FROM SUBBASIN H5
          241           KM     THIS IS THE TOTAL FLOW AT THE CONFLUENCE OF THE GILA RIVER
          242           HC       2
          243           ZW      C=FLOW    F=AT GILA RIVER
                        *
          244           ZZ
1****************************************                                    ****************************************
 *                                      *                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                                    *          609 SECOND STREET           *
 *                                      *                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   26JUL04  TIME  09:59:10  *                                    *           (916) 756-1104             *
 *                                      *                                    *                                      *
 ****************************************                                    ****************************************


                        Lower Hassayampa River Watercourse Master Plan          FILE: HASSYFU.DAT
                                                                                DATE: 07-25-2004
                         FUTURE CONDITIONS MODEL:
                           FUTURE CONDITIONS ASSUMED TO AFFECT ONLY WATERSHED LAND USE IN
                           SUBBASINS H3-H5.  ADJUSTMENTS MADE TO RTIMP ONLY.

                           MULTIPLE PLAN MODEL RUN TO INVESTIGATE SINGLE
                           SUBBASIN RESPONSE AS WELL AS WHOLE BASIN RESPONSE

                           MODEL BASIS:
                             - NOAA ATLAS II POINT RAINFALL AVERAGED FOR EACH SUBBASIN
                               INDEPENDENTLY
                             - AREAL REDUCTION FOR EACH SUBBASIN INDIVIDUALLY
                             - SCS TYPE II 24-HR TEMPORAL DISTRIBUTION
                             - GREEN-AMPT LOSS PARAMETERS BASED ON NRCS DIGITAL SURGO GENERAL
                               SOIL MAP
                             - UNIT HYDROGRAPHS CONSTRUCTED USING MCUHP2 WITH PARAMETERS AS
                               INDICATED IN KM RECORDS OF EACH SUBBASIN KK BLOCK
                             - CHANNEL ROUTINGS BASED ON NORMAL-DEPTH WITH TRANSMISSION LOSSES


  22 IO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN          15  MINUTES IN COMPUTATION INTERVAL
                       IDATE     15JUL 4  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ        2000  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      4AUG 4  ENDING DATE
                      NDTIME        1945  ENDING TIME
                      ICENT           19  CENTURY MARK

                  COMPUTATION INTERVAL     .25 HOURS
                       TOTAL TIME BASE  499.75 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

     JP          MULTI-PLAN OPTION
                       NPLAN           6  NUMBER OF PLANS

     JR          MULTI-RATIO OPTION
                     RATIOS OF RUNOFF
                    1.00


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  25 KK     *        H1  *
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*            *
**************
                    BASIN H1 - HASSAYAMPA ABOVE BOX CANYON

                     THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
                     L=     55.6  Lca=     27.3   S=  100.0  Kn= .050  LAG= 485.0
                     PHOENIX MOUNTAIN S-GRAPH WAS USED FOR THIS BASIN
                      100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 5.0"
                      AREAL REDUCED FOR 416.2 SQ.MI. = 5.0*0.78 = 3.9"

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 33 KP        PLAN  1 FOR STATION       H1

 23 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN          15  TIME INTERVAL IN MINUTES
                     JXDATE     15JUL 4  STARTING DATE
                     JXTIME           0  STARTING TIME

              SUBBASIN RUNOFF DATA

 34 BA          SUBBASIN CHARACTERISTICS
                      TAREA      416.20  SUBBASIN AREA

                PRECIPITATION DATA

 35 PB                STORM        3.90  BASIN TOTAL PRECIPITATION

 36 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                     .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                     .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00

 46 LG          GREEN AND AMPT LOSS RATE
                      STRTL         .80  STARTING LOSS
                        DTH         .25  MOISTURE DEFICIT
                       PSIF        4.30  WETTING FRONT SUCTION
                      XKSAT         .34  HYDRAULIC CONDUCTIVITY
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 46 UI          INPUT UNITGRAPH, 149 ORDINATES,  VOLUME = 1.00
                   2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    5941.0    8307.0    8307.0
                  11011.0   11157.0   13291.0   14686.0   16724.0   17488.0   18360.0   19257.0   20321.0   21169.0
                  21864.0   22631.0   23480.0   25166.0   27772.0   30061.0   32997.0   36969.0   32740.0   26474.0
                  22671.0   21180.0   19953.0   18929.0   18068.0   17410.0   17040.0   16650.0   16123.0   15634.0
                  15103.0   14552.0   14235.0   13845.0   13401.0   13110.0   12306.0   12023.0   11659.0   11312.0
                  11076.0   10318.0    9919.0    9460.0    8980.0    8852.0    7638.0    7638.0    7478.0    7070.0
                   7070.0    6966.0    6645.0    6645.0    6639.0    6041.0    6041.0    6041.0    5454.0    4747.0
                   4747.0    4747.0    4747.0    3769.0    3692.0    3692.0    3692.0    3692.0    3636.0    3165.0
                   3164.0    3164.0    3164.0    3165.0    3164.0    2864.0    2215.0    2215.0    2215.0    2215.0
                   2215.0    2215.0    2215.0    2215.0    2215.0    1721.0    1414.0    1414.0    1414.0    1414.0
                   1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0
                   1053.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0

                                                                   ***

    ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H1
                          FOR PLAN 1, RATIO = 1.00

   TOTAL RAINFALL =    3.90, TOTAL LOSS =    2.92, TOTAL EXCESS =     .98

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+  (CFS)       (HR)
                          (CFS)
  35589.     18.75                 22157.      10484.       3640.         524.
                        (INCHES)     .495        .937        .976         .976
                         (AC-FT)   10987.      20795.      21657.       21657.

                        CUMULATIVE AREA =  416.20 SQ MI
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    ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H1
                          FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+   35589.     18.75                22157.      10484.       3640.         524.
                         (INCHES)     .495        .937        .976         .976
                          (AC-FT)   10987.      20795.      21657.       21657.

                         CUMULATIVE AREA =  416.20 SQ MI

    -----DSS---ZOPEN:  New File Opened,  File: HASSYFU.DSS
                       Unit:  71;  DSS Version: 6-JG
 -----DSS---ZWRITE Unit  71; Vers.    1:  //H1/FLOW/01JUL1904/15MIN/BOX CANYON/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //H1/FLOW/01AUG1904/15MIN/BOX CANYON/


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  65 KP        PLAN  2 FOR STATION       H1

               SUBBASIN RUNOFF DATA

  34 BA          SUBBASIN CHARACTERISTICS
                       TAREA      416.20  SUBBASIN AREA

                 PRECIPITATION DATA

  66 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

  46 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .80  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.30  WETTING FRONT SUCTION
                       XKSAT         .34  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  46 UI          INPUT UNITGRAPH, 149 ORDINATES,  VOLUME = 1.00
                    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    5941.0    8307.0    8307.0
                   11011.0   11157.0   13291.0   14686.0   16724.0   17488.0   18360.0   19257.0   20321.0   21169.0
                   21864.0   22631.0   23480.0   25166.0   27772.0   30061.0   32997.0   36969.0   32740.0   26474.0
                   22671.0   21180.0   19953.0   18929.0   18068.0   17410.0   17040.0   16650.0   16123.0   15634.0
                   15103.0   14552.0   14235.0   13845.0   13401.0   13110.0   12306.0   12023.0   11659.0   11312.0
                   11076.0   10318.0    9919.0    9460.0    8980.0    8852.0    7638.0    7638.0    7478.0    7070.0
                    7070.0    6966.0    6645.0    6645.0    6639.0    6041.0    6041.0    6041.0    5454.0    4747.0
                    4747.0    4747.0    4747.0    3769.0    3692.0    3692.0    3692.0    3692.0    3636.0    3165.0
                    3164.0    3164.0    3164.0    3165.0    3164.0    2864.0    2215.0    2215.0    2215.0    2215.0
                    2215.0    2215.0    2215.0    2215.0    2215.0    1721.0    1414.0    1414.0    1414.0    1414.0
                    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0
                    1053.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0

                                                                  ***

    ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H1
                          FOR PLAN 2, RATIO = 1.00

   TOTAL RAINFALL =      .00, TOTAL LOSS =      .00, TOTAL EXCESS =      .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+       0.        .00                   0.          0.          0.           0.
                         (INCHES)    .000        .000        .000         .000
```

```
                    (AC-FT)        0.          0.          0.          0.

                    CUMULATIVE AREA =  416.20 SQ MI


     ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H1
                        FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                        (CFS)
+      0.        .00                 0.          0.          0.          0.
                    (INCHES)       .000        .000        .000        .000
                    (AC-FT)        0.          0.          0.          0.

                    CUMULATIVE AREA =  416.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //H1/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    1:  //H1/FLOW/01AUG1904/15MIN//


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  67 KP        PLAN  3 FOR STATION       H1

               SUBBASIN RUNOFF DATA

  34 BA          SUBBASIN CHARACTERISTICS
                      TAREA      416.20  SUBBASIN AREA

                 PRECIPITATION DATA

  68 PB               STORM         .00  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

  46 LG          GREEN AND AMPT LOSS RATE
                      STRTL         .80  STARTING LOSS
                        DTH         .25  MOISTURE DEFICIT
                       PSIF        4.30  WETTING FRONT SUCTION
                      XKSAT         .34  HYDRAULIC CONDUCTIVITY
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  46 UI          INPUT UNITGRAPH, 149 ORDINATES,  VOLUME = 1.00
                   2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    5941.0    8307.0    8307.0
                  11011.0   11157.0   13291.0   14686.0   16724.0   17488.0   18360.0   19257.0   20321.0   21169.0
                  21864.0   22631.0   23480.0   25166.0   27772.0   30061.0   32997.0   36969.0   32740.0   26474.0
                  22671.0   21180.0   19953.0   18929.0   18068.0   17410.0   17040.0   16650.0   16123.0   15634.0
                  15103.0   14552.0   14235.0   13845.0   13401.0   13110.0   12306.0   12023.0   11659.0   11312.0
                  11076.0   10318.0    9919.0    9460.0    8980.0    8852.0    7638.0    7638.0    7478.0    7070.0
                   7070.0    6966.0    6645.0    6645.0    6639.0    6041.0    6041.0    6041.0    5454.0    4747.0
                   4747.0    4747.0    4747.0    3769.0    3692.0    3692.0    3692.0    3692.0    3636.0    3165.0
                   3164.0    3164.0    3164.0    3165.0    3164.0    2864.0    2215.0    2215.0    2215.0    2215.0
                   2215.0    2215.0    2215.0    2215.0    2215.0    1721.0    1414.0    1414.0    1414.0    1414.0
                   1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0
                   1053.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                                                                    ***

     ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H1
                        FOR PLAN 3, RATIO = 1.00

    TOTAL RAINFALL =      .00, TOTAL LOSS =      .00, TOTAL EXCESS =      .00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
```

```
                    (CFS)
      0.      .00                  0.          0.          0.          0.
                (INCHES)         .000        .000        .000        .000
                 (AC-FT)          0.          0.          0.          0.

                 CUMULATIVE AREA =  416.20 SQ MI


    ***          ***          ***          ***          ***

                  HYDROGRAPH AT STATION       H1
                    FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                    (CFS)
+     0.        .00                  0.          0.          0.          0.
                (INCHES)         .000        .000        .000        .000
                 (AC-FT)          0.          0.          0.          0.

                 CUMULATIVE AREA =  416.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    2:  //H1/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    2:  //H1/FLOW/01AUG1904/15MIN//

***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  69 KP        PLAN  4 FOR STATION       H1

               SUBBASIN RUNOFF DATA

  34 BA          SUBBASIN CHARACTERISTICS
                      TAREA      416.20  SUBBASIN AREA

                 PRECIPITATION DATA

  70 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

  46 LG          GREEN AND AMPT LOSS RATE
                      STRTL         .80  STARTING LOSS
                        DTH         .25  MOISTURE DEFICIT
                       PSIF        4.30  WETTING FRONT SUCTION
                      XKSAT         .34  HYDRAULIC CONDUCTIVITY
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  46 UI          INPUT UNITGRAPH, 149 ORDINATES,  VOLUME = 1.00
                   2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    5941.0    8307.0    8307.0
                  11011.0   11157.0   13291.0   14686.0   16724.0   17488.0   18360.0   19257.0   20321.0   21169.0
                  21864.0   22631.0   23480.0   25166.0   27772.0   30061.0   32997.0   36969.0   32740.0   26474.0
                  22671.0   21180.0   19953.0   18929.0   18068.0   17410.0   17040.0   16650.0   16123.0   15634.0
                  15103.0   14552.0   14235.0   13845.0   13401.0   13110.0   12306.0   12023.0   11659.0   11312.0
                  11076.0   10318.0    9919.0    9460.0    8980.0    8852.0    7638.0    7638.0    7478.0    7070.0
                   7070.0    6966.0    6645.0    6645.0    6639.0    6041.0    6041.0    6041.0    5454.0    4747.0
                   4747.0    4747.0    4747.0    3769.0    3692.0    3692.0    3692.0    3692.0    3636.0    3165.0
                   3164.0    3164.0    3164.0    3165.0    3164.0    2864.0    2215.0    2215.0    2215.0    2215.0
                   2215.0    2215.0    2215.0    2215.0    2215.0    1721.0    1414.0    1414.0    1414.0    1414.0
                   1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0
                   1053.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0

                                                          ***

    ***          ***          ***          ***          ***

                  HYDROGRAPH AT STATION       H1
                    FOR PLAN 4, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00
```

```
 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                  0.          0.          0.           0.
                        (INCHES)     .000        .000        .000         .000
                         (AC-FT)      0.          0.          0.           0.

                        CUMULATIVE AREA =  416.20 SQ MI


      ***            ***            ***            ***            ***

                          HYDROGRAPH AT STATION       H1
                            FOR PLAN 4, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                  0.          0.          0.           0.
                        (INCHES)     .000        .000        .000         .000
                         (AC-FT)      0.          0.          0.           0.

                        CUMULATIVE AREA =  416.20 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    3:  //H1/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    3:  //H1/FLOW/01AUG1904/15MIN//


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  71 KP        PLAN  5 FOR STATION       H1

               SUBBASIN RUNOFF DATA

  34 BA          SUBBASIN CHARACTERISTICS
                       TAREA      416.20  SUBBASIN AREA

                 PRECIPITATION DATA

  72 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

  46 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .80  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.30  WETTING FRONT SUCTION
                       XKSAT         .34  HYDRAULIC CONDUCTIVITY
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  46 UI          INPUT UNITGRAPH, 149 ORDINATES,  VOLUME = 1.00
                   2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    5941.0    8307.0    8307.0
                  11011.0   11157.0   13291.0   14686.0   16724.0   17488.0   18360.0   19257.0   20321.0   21169.0
                  21864.0   22631.0   23480.0   25166.0   27772.0   30061.0   32997.0   36969.0   32740.0   26474.0
                  22671.0   21180.0   19953.0   18929.0   18068.0   17410.0   17040.0   16650.0   16123.0   15634.0
                  15103.0   14552.0   14235.0   13845.0   13401.0   13110.0   12306.0   12023.0   11659.0   11312.0
                  11076.0   10318.0    9919.0    9460.0    8980.0    8852.0    7638.0    7638.0    7478.0    7070.0
                   7070.0    6966.0    6645.0    6645.0    6639.0    6041.0    6041.0    6041.0    5454.0    4747.0
                   4747.0    4747.0    4747.0    3769.0    3692.0    3692.0    3692.0    3692.0    3636.0    3165.0
                   3164.0    3164.0    3164.0    3165.0    3164.0    2864.0    2215.0    2215.0    2215.0    2215.0
                   2215.0    2215.0    2215.0    2215.0    2215.0    1721.0    1414.0    1414.0    1414.0    1414.0
                   1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0
                   1053.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0

                                                          ***

      ***            ***            ***            ***            ***

                          HYDROGRAPH AT STATION       H1
                            FOR PLAN 5, RATIO = 1.00
```

```
   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                  0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

                        CUMULATIVE AREA =  416.20 SQ MI


     ***            ***            ***            ***            ***

                         HYDROGRAPH AT STATION       H1
                           FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                  0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

                        CUMULATIVE AREA =  416.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    4:  //H1/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    4:  //H1/FLOW/01AUG1904/15MIN//

***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  73 KP        PLAN  6 FOR STATION       H1

               SUBBASIN RUNOFF DATA

  34 BA          SUBBASIN CHARACTERISTICS
                       TAREA      416.20  SUBBASIN AREA

                 PRECIPITATION DATA

  74 PB                STORM        3.90  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

  46 LG          GREEN AND AMPT LOSS RATE
                       STRTL        .80  STARTING LOSS
                         DTH        .25  MOISTURE DEFICIT
                        PSIF       4.30  WETTING FRONT SUCTION
                       XKSAT        .34  HYDRAULIC CONDUCTIVITY
                       RTIMP        .00  PERCENT IMPERVIOUS AREA

  46 UI          INPUT UNITGRAPH, 149 ORDINATES,  VOLUME = 1.00
                   2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    2889.0    5941.0    8307.0    8307.0
                  11011.0   11157.0   13291.0   14686.0   16724.0   17488.0   18360.0   19257.0   20321.0   21169.0
                  21864.0   22631.0   23480.0   25166.0   27772.0   30061.0   32997.0   36969.0   32740.0   26474.0
                  22671.0   21180.0   19953.0   18929.0   18068.0   17410.0   17040.0   16650.0   16123.0   15634.0
                  15103.0   14552.0   14235.0   13845.0   13401.0   13110.0   12306.0   12023.0   11659.0   11312.0
                  11076.0   10318.0    9919.0    9460.0    8980.0    8852.0    7638.0    7638.0    7478.0    7070.0
                   7070.0    6966.0    6645.0    6645.0    6639.0    6041.0    6041.0    6041.0    5454.0    4747.0
                   4747.0    4747.0    4747.0    3769.0    3692.0    3692.0    3692.0    3692.0    3636.0    3165.0
                   3164.0    3164.0    3164.0    3165.0    3164.0    2864.0    2215.0    2215.0    2215.0    2215.0
                   2215.0    2215.0    2215.0    2215.0    2215.0    1721.0    1414.0    1414.0    1414.0    1414.0
                   1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0    1414.0
                   1053.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0
                    554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0     554.0

                                                          ***

     ***            ***            ***            ***            ***
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```
                    HYDROGRAPH AT STATION       H1
                      FOR PLAN 6, RATIO = 1.00

   TOTAL RAINFALL =    3.90, TOTAL LOSS =    2.92, TOTAL EXCESS =     .98

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   35589.     18.75                22157.      10484.       3640.         524.
                        (INCHES)      .495        .937        .976         .976
                         (AC-FT)    10987.      20795.      21657.       21657.

                        CUMULATIVE AREA =  416.20 SQ MI


      ***             ***             ***             ***             ***

                    HYDROGRAPH AT STATION       H1
                      FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   35589.     18.75                22157.      10484.       3640.         524.
                        (INCHES)      .495        .937        .976         .976
                         (AC-FT)    10987.      20795.      21657.       21657.

                        CUMULATIVE AREA =  416.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    5:  //H1/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    5:  //H1/FLOW/01AUG1904/15MIN//


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
  75 KK   *      R1-2  *
          *            *
          **************
                        ROUTE RUNOFF AT BOX CANYON TO MORRISTOWN
                         SLOPE = (2240 - 1845) / 78,500 = 0.005

             HYDROGRAPH ROUTING DATA

  78 RS          STORAGE ROUTING
                      NSTPS           7  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC       -1.00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

  79 RC          NORMAL DEPTH CHANNEL
                        ANL        .080  LEFT OVERBANK N-VALUE
                       ANCH        .040  MAIN CHANNEL N-VALUE
                        ANR        .080  RIGHT OVERBANK N-VALUE
                      RLNTH      78500.  REACH LENGTH
                        SEL       .0050  ENERGY SLOPE
                      ELMAX       130.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                          CROSS-SECTION DATA
                        --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
  81 RY        ELEVATION    130.00    120.00    119.00    110.00    110.00    119.00    120.00    130.00
  80 RX        DISTANCE        .00    100.00    350.00    360.00    860.00    870.00   1120.00   1220.00

                                                      ***

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE        .00    950.70   1905.84   2865.42   3829.43   4797.88   5770.77   6748.10   7729.86   8816.71
          OUTFLOW        .00   1434.12   4551.81   8944.56  14443.97  20946.26  28378.25  36684.34  45820.28  55873.02
        ELEVATION     110.00    111.05    112.11    113.16    114.21    115.26    116.32    117.37    118.42    119.47

          STORAGE   10631.83  12606.67  14621.45  16676.17  18770.82  20905.41  23079.94  25294.40  27548.79  29843.11
          OUTFLOW   67455.63  80691.84  95338.45 111305.70 128537.80 146995.50 166649.40 187476.80 209459.80 232583.80
        ELEVATION     120.53    121.58    122.63    123.68    124.74    125.79    126.84    127.89    128.95    130.00


      ***             ***             ***             ***             ***

                    HYDROGRAPH AT STATION     R1-2
```

```
                    FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   29696.     20.00               21737.      10242.       3640.        524.
                        (INCHES)     .486        .915        .976        .976
                         (AC-FT)   10779.      20314.      21657.      21657.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                   6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
      847.     20.00                 696.        411.        158.         23.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                   6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    116.48     20.00               115.34      113.17      111.22      110.18

                     CUMULATIVE AREA =  416.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //R1-2/FLOW/01JUL1904/15MIN/ROUTED BOX/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //R1-2/FLOW/01AUG1904/15MIN/ROUTED BOX/

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

               PLAN  2 INPUT DATA FOR STATION     R1-2 ARE SAME AS FOR PLAN  1

      ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION     R1-2
                         FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
       0.        .00                  0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                   6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
       0.        .00                  0.          0.          0.          0.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                   6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    110.00       .00               110.00      110.00      110.00      110.00

                     CUMULATIVE AREA =  416.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //R1-2/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    1:  //R1-2/FLOW/01AUG1904/15MIN//

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

               PLAN  3 INPUT DATA FOR STATION     R1-2 ARE SAME AS FOR PLAN  1

      ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION     R1-2
                         FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                  0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                   6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
       0.        .00                  0.          0.          0.          0.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                   6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    110.00       .00               110.00      110.00      110.00      110.00
```

```
                    CUMULATIVE AREA =  416.20 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    2:  //R1-2/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    2:  //R1-2/FLOW/01AUG1904/15MIN//

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

               PLAN  4 INPUT DATA FOR STATION     R1-2 ARE SAME AS FOR PLAN  1

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     R1-2
                          FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                  0.          0.          0.           0.
                       (INCHES)      .000        .000        .000         .000
                       (AC-FT)        0.          0.          0.           0.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
       0.       .00                  0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
   110.00       .00                110.00      110.00      110.00       110.00

                    CUMULATIVE AREA =  416.20 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    3:  //R1-2/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    3:  //R1-2/FLOW/01AUG1904/15MIN//

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

               PLAN  5 INPUT DATA FOR STATION     R1-2 ARE SAME AS FOR PLAN  1

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     R1-2
                          FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                  0.          0.          0.           0.
                       (INCHES)      .000        .000        .000         .000
                       (AC-FT)        0.          0.          0.           0.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
       0.       .00                  0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                      6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
   110.00       .00                110.00      110.00      110.00       110.00

                    CUMULATIVE AREA =  416.20 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    4:  //R1-2/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    4:  //R1-2/FLOW/01AUG1904/15MIN//

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

               PLAN  6 INPUT DATA FOR STATION     R1-2 ARE SAME AS FOR PLAN  1

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     R1-2
                          FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
```

```
                                (CFS)
+   29696.      20.00                 21737.       10242.        3640.          524.
                            (INCHES)     .486         .915         .976          .976
                             (AC-FT)   10779.       20314.       21657.        21657.

 PEAK STORAGE   TIME                            MAXIMUM AVERAGE STORAGE
                                        6-HR        24-HR        72-HR     499.75-HR
+  (AC-FT)      (HR)
      847.     20.00                    696.         411.         158.           23.

  PEAK STAGE    TIME                            MAXIMUM AVERAGE STAGE
                                        6-HR        24-HR        72-HR     499.75-HR
+   (FEET)      (HR)
    116.48     20.00                  115.34       113.17       111.22        110.18

                          CUMULATIVE AREA =  416.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    5:  //R1-2/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    5:  //R1-2/FLOW/01AUG1904/15MIN//


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  83 KK     *        H2  *
            *            *
            **************
                          BASIN H2 - MARTINEZ CREEK, SOLS WASH, SAN DOMINGO WASH

                           THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
                           L=     36.9  Lca=     12.6   S=   61.7  Kn= .040  LAG= 271.0
                           DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
                            100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.4"
                            AREAL REDUCED FOR 372.6 SQ.MI. = 4.4*0.79 = 3.5"

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

  91 KP        PLAN  1 FOR STATION       H2

               SUBBASIN RUNOFF DATA

  92 BA          SUBBASIN CHARACTERISTICS
                       TAREA      372.60  SUBBASIN AREA

                 PRECIPITATION DATA

  93 PB                STORM        3.50  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

  94 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .50  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .39  HYDRAULIC CONDUCTIVITY
                       RTIMP        5.00  PERCENT IMPERVIOUS AREA

  94 UI          INPUT UNITGRAPH,  66 ORDINATES,  VOLUME = 1.00
                    4629.0    4629.0    4629.0    4629.0   11961.0   15201.0   19425.0   23659.0   27288.0   31529.0
                   33690.0   38311.0   40518.0   41691.0   43865.0   44363.0   44363.0   43680.0   41820.0   40821.0
                   37700.0   33304.0   31189.0   27832.0   25179.0   22959.0   20945.0   19026.0   17289.0   15768.0
                   14196.0   12789.0   11722.0   10337.0    9457.0    8727.0    8169.0    7098.0    7098.0    5711.0
                    4907.0    4907.0    4907.0    3669.0    3169.0    3169.0    3169.0    3169.0    3169.0    1858.0
                    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0
                    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0

                                                                  ***

     ***            ***            ***            ***            ***

                          HYDROGRAPH AT STATION       H2
```

```
                    FOR PLAN 1, RATIO = 1.00

   TOTAL RAINFALL =    3.50, TOTAL LOSS =    2.51, TOTAL EXCESS =     .99

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   41471.     15.75               30175.       9908.       3317.         478.
                       (INCHES)      .753        .989        .993         .993
                        (AC-FT)    14963.      19651.      19738.       19738.

                       CUMULATIVE AREA =  372.60 SQ MI


      ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H2
                        FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   41471.     15.75               30175.       9908.       3317.         478.
                       (INCHES)      .753        .989        .993         .993
                        (AC-FT)    14963.      19651.      19738.       19738.

                       CUMULATIVE AREA =  372.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 103 KP        PLAN  2 FOR STATION       H2

               SUBBASIN RUNOFF DATA

  92 BA          SUBBASIN CHARACTERISTICS
                       TAREA      372.60  SUBBASIN AREA

                 PRECIPITATION DATA

 104 PB                STORM        3.50  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00        .00        .00        .00        .00        .00        .00        .00        .00        .00
                       .00        .00        .00        .00        .00        .00        .00        .00        .00        .00
                       .00        .00        .00        .00        .01        .01        .00        .01        .00        .01
                       .01        .00        .01        .01        .01        .01        .01        .01        .01        .01
                       .01        .01        .02        .02        .02        .03        .10        .28        .04        .03
                       .02        .02        .01        .01        .01        .01        .01        .01        .01        .01
                       .01        .01        .01        .01        .01        .01        .00        .00        .00        .00
                       .00        .00        .00        .00        .00        .00        .00        .00        .00        .00
                       .00        .00        .00        .00        .00        .00        .00        .00        .00        .00
                       .00        .00        .00        .00        .00        .00

  94 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .50  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .39  HYDRAULIC CONDUCTIVITY
                       RTIMP        5.00  PERCENT IMPERVIOUS AREA

  94 UI          INPUT UNITGRAPH,  66 ORDINATES,  VOLUME = 1.00
                     4629.0     4629.0     4629.0     4629.0    11961.0    15201.0    19425.0    23659.0    27288.0    31529.0
                    33690.0    38311.0    40518.0    41691.0    43865.0    44363.0    44363.0    43680.0    41820.0    40821.0
                    37700.0    33304.0    31189.0    27832.0    25179.0    22959.0    20945.0    19026.0    17289.0    15768.0
                    14196.0    12789.0    11722.0    10337.0     9457.0     8727.0     8169.0     7098.0     7098.0     5711.0
                     4907.0     4907.0     4907.0     3669.0     3169.0     3169.0     3169.0     3169.0     3169.0     1858.0
                     1127.0     1127.0     1127.0     1127.0     1127.0     1127.0     1127.0     1127.0     1127.0     1127.0
                     1127.0     1127.0     1127.0     1127.0     1127.0     1127.0

                                                                   ***

      ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H2
                        FOR PLAN 2, RATIO = 1.00

   TOTAL RAINFALL =    3.50, TOTAL LOSS =    2.51, TOTAL EXCESS =     .99

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
```

```
                          (CFS)
  41471.     15.75                30175.       9908.       3317.         478.
                        (INCHES)     .753        .989        .993         .993
                         (AC-FT)   14963.      19651.      19738.       19738.

                         CUMULATIVE AREA =  372.60 SQ MI


     ***            ***            ***            ***            ***

                          HYDROGRAPH AT STATION       H2
                            FOR PLAN 2, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+  (CFS)       (HR)
                          (CFS)
+  41471.     15.75                30175.       9908.       3317.         478.
                        (INCHES)     .753        .989        .993         .993
                         (AC-FT)   14963.      19651.      19738.       19738.

                         CUMULATIVE AREA =  372.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 105 KP        PLAN  3 FOR STATION       H2

               SUBBASIN RUNOFF DATA

  92 BA          SUBBASIN CHARACTERISTICS
                       TAREA      372.60  SUBBASIN AREA

                 PRECIPITATION DATA

 106 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

  94 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .50  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .39  HYDRAULIC CONDUCTIVITY
                       RTIMP        5.00  PERCENT IMPERVIOUS AREA

  94 UI          INPUT UNITGRAPH,  66 ORDINATES,  VOLUME = 1.00
                    4629.0    4629.0    4629.0    4629.0   11961.0   15201.0   19425.0   23659.0   27288.0   31529.0
                   33690.0   38311.0   40518.0   41691.0   43865.0   44363.0   44363.0   43680.0   41820.0   40821.0
                   37700.0   33304.0   31189.0   27832.0   25179.0   22959.0   20945.0   19026.0   17289.0   15768.0
                   14196.0   12789.0   11722.0   10337.0    9457.0    8727.0    8169.0    7098.0    7098.0    5711.0
                    4907.0    4907.0    4907.0    3669.0    3169.0    3169.0    3169.0    3169.0    3169.0    1858.0
                    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0
                    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0

                                                                   ***

     ***            ***            ***            ***            ***

                          HYDROGRAPH AT STATION       H2
                            FOR PLAN 3, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
  (CFS)       (HR)
                          (CFS)
+     0.        .00                   0.          0.          0.           0.
                        (INCHES)     .000        .000        .000         .000
                         (AC-FT)      0.          0.          0.           0.

                         CUMULATIVE AREA =  372.60 SQ MI
```

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     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H2
                          FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                  0.          0.          0.           0.
                       (INCHES)      .000        .000        .000         .000
                        (AC-FT)       0.          0.          0.           0.

                       CUMULATIVE AREA =  372.60 SQ MI


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 107 KP        PLAN  4 FOR STATION       H2

               SUBBASIN RUNOFF DATA

  92 BA          SUBBASIN CHARACTERISTICS
                       TAREA      372.60  SUBBASIN AREA

                 PRECIPITATION DATA

 108 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

  94 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .50  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .39  HYDRAULIC CONDUCTIVITY
                       RTIMP        5.00  PERCENT IMPERVIOUS AREA

  94 UI          INPUT UNITGRAPH,  66 ORDINATES,  VOLUME = 1.00
                    4629.0    4629.0    4629.0    4629.0   11961.0   15201.0   19425.0   23659.0   27288.0   31529.0
                   33690.0   38311.0   40518.0   41691.0   43865.0   44363.0   44363.0   43680.0   41820.0   40821.0
                   37700.0   33304.0   31189.0   27832.0   25179.0   22959.0   20945.0   19026.0   17289.0   15768.0
                   14196.0   12789.0   11722.0   10337.0    9457.0    8727.0    8169.0    7098.0    7098.0    5711.0
                    4907.0    4907.0    4907.0    3669.0    3169.0    3169.0    3169.0    3169.0    3169.0    1858.0
                    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0
                    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0

                                                                    ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H2
                          FOR PLAN 4, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                  0.          0.          0.           0.
                       (INCHES)      .000        .000        .000         .000
                        (AC-FT)       0.          0.          0.           0.

                       CUMULATIVE AREA =  372.60 SQ MI

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H2
                          FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
```

```
                                        6-HR        24-HR        72-HR    499.75-HR
+   (CFS)        (HR)
                          (CFS)
+       0.        .00                     0.           0.           0.           0.
                        (INCHES)        .000         .000         .000         .000
                         (AC-FT)          0.           0.           0.           0.

                        CUMULATIVE AREA =  372.60 SQ MI


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 109 KP         PLAN  5 FOR STATION       H2

                SUBBASIN RUNOFF DATA

  92 BA          SUBBASIN CHARACTERISTICS
                       TAREA      372.60  SUBBASIN AREA

                 PRECIPITATION DATA

 110 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

  94 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .50  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .39  HYDRAULIC CONDUCTIVITY
                       RTIMP        5.00  PERCENT IMPERVIOUS AREA

  94 UI          INPUT UNITGRAPH,  66 ORDINATES,  VOLUME = 1.00
                    4629.0    4629.0    4629.0    4629.0   11961.0   15201.0   19425.0   23659.0   27288.0   31529.0
                   33690.0   38311.0   40518.0   41691.0   43865.0   44363.0   44363.0   43680.0   41820.0   40821.0
                   37700.0   33304.0   31189.0   27832.0   25179.0   22959.0   20945.0   19026.0   17289.0   15768.0
                   14196.0   12789.0   11722.0   10337.0    9457.0    8727.0    8169.0    7098.0    7098.0    5711.0
                    4907.0    4907.0    4907.0    3669.0    3169.0    3169.0    3169.0    3169.0    3169.0    1858.0
                    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0
                    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0

                                                                  ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H2
                          FOR PLAN 5, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR    499.75-HR
+   (CFS)        (HR)
                          (CFS)
+       0.        .00                     0.           0.           0.           0.
                        (INCHES)        .000         .000         .000         .000
                         (AC-FT)          0.           0.           0.           0.

                        CUMULATIVE AREA =  372.60 SQ MI


     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H2
                          FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR    499.75-HR
+   (CFS)        (HR)
                          (CFS)
+       0.        .00                     0.           0.           0.           0.
                        (INCHES)        .000         .000         .000         .000
                         (AC-FT)          0.           0.           0.           0.
```

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                    CUMULATIVE AREA =  372.60 SQ MI

***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 111 KP        PLAN  6 FOR STATION       H2

               SUBBASIN RUNOFF DATA

  92 BA          SUBBASIN CHARACTERISTICS
                      TAREA      372.60  SUBBASIN AREA

                 PRECIPITATION DATA

 112 PB                STORM        3.50  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00 .

  94 LG          GREEN AND AMPT LOSS RATE
                      STRTL         .50  STARTING LOSS
                        DTH         .25  MOISTURE DEFICIT
                       PSIF        4.00  WETTING FRONT SUCTION
                      XKSAT         .39  HYDRAULIC CONDUCTIVITY
                      RTIMP        5.00  PERCENT IMPERVIOUS AREA

  94 UI          INPUT UNITGRAPH,  66 ORDINATES,  VOLUME = 1.00
                   4629.0    4629.0    4629.0    4629.0   11961.0   15201.0   19425.0   23659.0   27288.0   31529.0
                  33690.0   38311.0   40518.0   41691.0   43865.0   44363.0   44363.0   43680.0   41820.0   40821.0
                  37700.0   33304.0   31189.0   27832.0   25179.0   22959.0   20945.0   19026.0   17289.0   15768.0
                  14196.0   12789.0   11722.0   10337.0    9457.0    8727.0    8169.0    7098.0    7098.0    5711.0
                   4907.0    4907.0    4907.0    3669.0    3169.0    3169.0    3169.0    3169.0    3169.0    1858.0
                   1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0    1127.0
                   1127.0    1127.0    1127.0    1127.0    1127.0    1127.0
                                                                   ***

     ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H2
                        FOR PLAN 6, RATIO = 1.00

   TOTAL RAINFALL =    3.50, TOTAL LOSS =    2.51, TOTAL EXCESS =     .99

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   41471.     15.75                30175.       9908.       3317.         478.
                        (INCHES)      .753        .989        .993         .993
                         (AC-FT)    14963.      19651.      19738.       19738.

                      CUMULATIVE AREA =  372.60 SQ MI

     ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H2
                        FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   41471.     15.75                30175.       9908.       3317.         478.
                        (INCHES)      .753        .989        .993         .993
                         (AC-FT)    14963.      19651.      19738.       19738.

                      CUMULATIVE AREA =  372.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //H2/FLOW/01JUL1904/15MIN/SOLSPLUS/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //H2/FLOW/01AUG1904/15MIN/SOLSPLUS/
```

```
*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
  114 KK    *        C2  *
            *            *
            **************
                            COMBINE ROUTED FLOW FROM BOX CANYON WITH RUNOFF FROM H2
                             (H2 SUBBASIN CONTAINS MARTINEZ CREEK AND SOLS WASH PLUS
                              OTHER SMALL WICKENBURG AREA TRIBUTARIES)
                            THIS IS THE TOTAL FLOW AT MORRISTOWN GAGE LOCATION

  119 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION       C2
                            FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+   43848.     17.00                41096.      19598.       6957.        1002.
                         (INCHES)     .484        .924        .984         .984
                          (AC-FT)   20378.      38872.      41395.       41395.

                         CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C2/FLOW/01JUL1904/15MIN/MORRISTOWN/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C2/FLOW/01AUG1904/15MIN/MORRISTOWN/

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION       C2
                            FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+   41471.     15.75                30175.       9908.       3317.         478.
                         (INCHES)     .356        .467        .469         .469
                          (AC-FT)   14963.      19651.      19738.       19738.

                         CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C2/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C2/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION       C2
                            FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+       0.       .00                    0.          0.          0.           0.
                         (INCHES)     .000        .000        .000         .000
                          (AC-FT)       0.          0.          0.           0.

                         CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    2:  //C2/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    2:  //C2/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION       C2
                            FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+       0.       .00                    0.          0.          0.           0.
                         (INCHES)     .000        .000        .000         .000
                          (AC-FT)       0.          0.          0.           0.
```

```
                    CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    3:  //C2/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    3:  //C2/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                      HYDROGRAPH AT STATION       C2
                        FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                   0.          0.          0.          0.
                       (INCHES)      .000        .000        .000        .000
                        (AC-FT)        0.          0.          0.          0.

                    CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    4:  //C2/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    4:  //C2/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                      HYDROGRAPH AT STATION       C2
                        FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   43848.     17.00                41096.      19598.       6957.       1002.
                       (INCHES)      .484        .924        .984        .984
                        (AC-FT)    20378.      38872.      41395.      41395.

                    CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C2/FLOW/01JUL1904/15MIN/SOLSPLUS/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C2/FLOW/01AUG1904/15MIN/SOLSPLUS/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 121 KK     *      R2-3  *
            *            *
            **************
                     ROUTE COMBINED FLOWS AT MORRISTOWN TO JACKRABBIT WASH
                      SLOPE = (1845 - 1102) / 149,000 = 0.005

              HYDROGRAPH ROUTING DATA

 125 RL          ROUTING LOSSES
                      QLOSS         .00  INITIAL LOSS
                      CLOSS         .00  ADDITIONAL FRACTION LOST
                     PERCRT        2.00  CHANNEL PERCOLATION RATE
                     ELVINV      110.00  INVERT ELEVATION

 124 RS          STORAGE ROUTING
                      NSTPS          14  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC       -1.00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

 126 RC          NORMAL DEPTH CHANNEL
                        ANL        .070  LEFT OVERBANK N-VALUE
                       ANCH        .040  MAIN CHANNEL N-VALUE
                        ANR        .070  RIGHT OVERBANK N-VALUE
                      RLNTH     149000.  REACH LENGTH
                        SEL       .0050  ENERGY SLOPE
                      ELMAX       130.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                   CROSS-SECTION DATA
                         --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 128 RY        ELEVATION    130.00    120.00    115.00    110.00    110.00    115.00    120.00    130.00
 127 RX        DISTANCE        .00    100.00    800.00    810.00   1610.00   1620.00   2420.00   2520.00

                                                   ***

                                COMPUTED STORAGE-OUTFLOW-ELEVATION DATA
```

```
          STORAGE        .00   2888.07   5791.30   8709.69  11643.24  14627.02  18432.32  23374.65  29454.04  36670.45
          OUTFLOW        .00   2296.33   7293.90  14343.62  23179.71  33673.65  46069.73  60738.03  78014.90  98187.63
        ELEVATION     110.00    111.05    112.11    113.16    114.21    115.26    116.32    117.37    118.42    119.47

          STORAGE   44891.24  53320.46  61825.48  70406.32  79062.95  87795.38  96603.62 105487.70 114447.50 123483.10
          OUTFLOW  122183.30 149976.90 180693.40 214188.00 250349.10 289087.00 330327.60 374008.50 420075.80 468482.70
        ELEVATION     120.53    121.58    122.63    123.68    124.74    125.79    126.84    127.89    128.95    130.00


     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     R2-3
                          FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   36508.     21.00                33233.      13465.       4488.         647.
                        (INCHES)     .392        .635        .635         .635
                         (AC-FT)   16479.      26708.      26708.       26708.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
     1116.     21.00                 1046.        532.        178.          26.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    115.54     21.00                115.24      112.68      110.90       110.13

                       CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //R2-3/FLOW/01JUL1904/15MIN/ROUTED MORRISTOWN/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //R2-3/FLOW/01AUG1904/15MIN/ROUTED MORRISTOWN/


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

                PLAN  2 INPUT DATA FOR STATION     R2-3 ARE SAME AS FOR PLAN  1

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     R2-3
                          FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   30590.     19.75                19537.       5861.       1954.         281.
                        (INCHES)     .230        .276        .276         .276
                         (AC-FT)    9688.      11624.      11624.       11624.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
      990.     19.75                  743.        263.         88.          13.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    114.99     19.75                113.76      111.34      110.45       110.06

                       CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //R2-3/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    1:  //R2-3/FLOW/01AUG1904/15MIN//


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

                PLAN  3 INPUT DATA FOR STATION     R2-3 ARE SAME AS FOR PLAN  1

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     R2-3
                          FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                    0.          0.          0.           0.
```

```
                    (INCHES)      .000        .000        .000        .000
                     (AC-FT)        0.          0.          0.          0.

 PEAK STORAGE   TIME                        MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
       0.        .00                  0.          0.          0.          0.

  PEAK STAGE    TIME                         MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
   110.00        .00               110.00      110.00      110.00      110.00

                     CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    2:  //R2-3/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    2:  //R2-3/FLOW/01AUG1904/15MIN//

 ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

                PLAN  4 INPUT DATA FOR STATION     R2-3 ARE SAME AS FOR PLAN  1

      ***            ***            ***            ***            ***

                     HYDROGRAPH AT STATION     R2-3
                       FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                         MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                  0.          0.          0.          0.
                    (INCHES)      .000        .000        .000        .000
                     (AC-FT)        0.          0.          0.          0.

 PEAK STORAGE   TIME                        MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
       0.        .00                  0.          0.          0.          0.

  PEAK STAGE    TIME                         MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
   110.00        .00               110.00      110.00      110.00      110.00

                     CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    3:  //R2-3/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    3:  //R2-3/FLOW/01AUG1904/15MIN//

 ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

                PLAN  5 INPUT DATA FOR STATION     R2-3 ARE SAME AS FOR PLAN  1

      ***            ***            ***            ***            ***

                     HYDROGRAPH AT STATION     R2-3
                       FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                         MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                  0.          0.          0.          0.
                    (INCHES)      .000        .000        .000        .000
                     (AC-FT)        0.          0.          0.          0.

 PEAK STORAGE   TIME                        MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
       0.        .00                  0.          0.          0.          0.

  PEAK STAGE    TIME                         MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
   110.00        .00               110.00      110.00      110.00      110.00

                     CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    4:  //R2-3/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    4:  //R2-3/FLOW/01AUG1904/15MIN//
```

```
***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  6 INPUT DATA FOR STATION     R2-3 ARE SAME AS FOR PLAN  1

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     R2-3
                            FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                       6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                              (CFS)
+   36508.     21.00                 33233.      13465.       4488.         647.
                           (INCHES)    .392        .635        .635         .635
                            (AC-FT)  16479.      26708.      26708.       26708.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                       6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
     1116.     21.00                  1046.        532.        178.          26.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                       6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    115.54     21.00                 115.24      112.68      110.90       110.13

                          CUMULATIVE AREA =  788.80 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //R2-3/FLOW/01JUL1904/15MIN/SOLSPLUS/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //R2-3/FLOW/01AUG1904/15MIN/SOLSPLUS/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 130 KK     *        H3  *
            *            *
            **************
                          BASIN H3 - WAGNER WASH AND DAGGS WASH WATERSHEDS

                           THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
                           L=     37.8  Lca=     16.4   S=   59.7  Kn= .040  LAG= 304.0
                           DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
                            100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.2"
                            AREAL REDUCED FOR 186.6 SQ.MI. = 4.2*0.82 = 3.44"


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 138 KP         PLAN  1 FOR STATION       H3

                SUBBASIN RUNOFF DATA

 139 BA           SUBBASIN CHARACTERISTICS
                        TAREA      186.60  SUBBASIN AREA

                  PRECIPITATION DATA

 140 PB                 STORM        3.44  BASIN TOTAL PRECIPITATION

  36 PI             INCREMENTAL PRECIPITATION PATTERN
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                        .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                        .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00

 141 LG           GREEN AND AMPT LOSS RATE
                        STRTL        .35  STARTING LOSS
                          DTH        .25  MOISTURE DEFICIT
                         PSIF       4.00  WETTING FRONT SUCTION
                        XKSAT        .40  HYDRAULIC CONDUCTIVITY
                        RTIMP      10.00  PERCENT IMPERVIOUS AREA

 141 UI           INPUT UNITGRAPH,  74 ORDINATES,  VOLUME = 1.00
                     2067.0    2067.0    2067.0    2067.0    3379.0    5942.0    7459.0    9020.0   10679.0   12149.0
```

```
                13781.0   14598.0   16721.0   17606.0   18403.0   18732.0   19806.0   19806.0   19806.0   19616.0
                18848.0   18522.0   17485.0   15851.0   14513.0   13555.0   12319.0   11202.0   10355.0    9519.0
                 8810.0    8057.0    7329.0    6668.0    6242.0    5659.0    5201.0    4615.0    4362.0    3896.0
                 3896.0    3257.0    3169.0    3169.0    2348.0    2190.0    2191.0    2190.0    1848.0    1415.0
                 1415.0    1415.0    1415.0    1415.0    1415.0     839.0     503.0     503.0     503.0     503.0
                  503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0
                  503.0     503.0     503.0     503.0

                                                          ***

     ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H3
                        FOR PLAN 1, RATIO = 1.00

   TOTAL RAINFALL =    3.44, TOTAL LOSS =    2.32, TOTAL EXCESS =    1.12

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   20112.     16.25                15550.       5586.       1880.        271.
                       (INCHES)      .775       1.113       1.124       1.124
                        (AC-FT)     7711.      11079.      11188.      11188.

                       CUMULATIVE AREA =  186.60 SQ MI


     ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H3
                        FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   20112.     16.25                15550.       5586.       1880.        271.
                       (INCHES)      .775       1.113       1.124       1.124
                        (AC-FT)     7711.      11079.      11188.      11188.

                       CUMULATIVE AREA =  186.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 151 KP        PLAN  2 FOR STATION       H3

               SUBBASIN RUNOFF DATA

 139 BA          SUBBASIN CHARACTERISTICS
                       TAREA      186.60  SUBBASIN AREA

                 PRECIPITATION DATA

 152 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

 141 LG          GREEN AND AMPT LOSS RATE
                      STRTL         .35  STARTING LOSS
                        DTH         .25  MOISTURE DEFICIT
                       PSIF        4.00  WETTING FRONT SUCTION
                      XKSAT         .40  HYDRAULIC CONDUCTIVITY
                      RTIMP       10.00  PERCENT IMPERVIOUS AREA

 141 UI          INPUT UNITGRAPH,  74 ORDINATES,  VOLUME = 1.00
                   2067.0    2067.0    2067.0    2067.0    3379.0    5942.0    7459.0    9020.0   10679.0   12149.0
                  13781.0   14598.0   16721.0   17606.0   18403.0   18732.0   19806.0   19806.0   19806.0   19616.0
                  18848.0   18522.0   17485.0   15851.0   14513.0   13555.0   12319.0   11202.0   10355.0    9519.0
                   8810.0    8057.0    7329.0    6668.0    6242.0    5659.0    5201.0    4615.0    4362.0    3896.0
                   3896.0    3257.0    3169.0    3169.0    2348.0    2190.0    2191.0    2190.0    1848.0    1415.0
                   1415.0    1415.0    1415.0    1415.0    1415.0     839.0     503.0     503.0     503.0     503.0
                    503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0
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                    503.0     503.0     503.0     503.0
                                                                  ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H3
                          FOR PLAN 2, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                 0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)     0.          0.          0.          0.

                        CUMULATIVE AREA =  186.60 SQ MI


     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H3
                          FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                 0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)     0.          0.          0.          0.

                        CUMULATIVE AREA =  186.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

  153 KP        PLAN  3 FOR STATION       H3

                SUBBASIN RUNOFF DATA

  139 BA          SUBBASIN CHARACTERISTICS
                        TAREA      186.60  SUBBASIN AREA

                  PRECIPITATION DATA

  154 PB                STORM        3.44  BASIN TOTAL PRECIPITATION

   36 PI            INCREMENTAL PRECIPITATION PATTERN
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                        .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                        .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00

  141 LG          GREEN AND AMPT LOSS RATE
                        STRTL        .35  STARTING LOSS
                          DTH        .25  MOISTURE DEFICIT
                         PSIF       4.00  WETTING FRONT SUCTION
                        XKSAT        .40  HYDRAULIC CONDUCTIVITY
                        RTIMP      10.00  PERCENT IMPERVIOUS AREA

  141 UI          INPUT UNITGRAPH,  74 ORDINATES,  VOLUME = 1.00
                     2067.0    2067.0    2067.0    2067.0    3379.0    5942.0    7459.0    9020.0   10679.0   12149.0
                    13781.0   14598.0   16721.0   17606.0   18403.0   18732.0   19806.0   19806.0   19806.0   19616.0
                    18848.0   18522.0   17485.0   15851.0   14513.0   13555.0   12319.0   11202.0   10355.0    9519.0
                     8810.0    8057.0    7329.0    6668.0    6242.0    5659.0    5201.0    4615.0    4362.0    3896.0
                     3896.0    3257.0    3169.0    3169.0    2348.0    2190.0    2191.0    2190.0    1848.0    1415.0
                     1415.0    1415.0    1415.0    1415.0    1415.0     839.0     503.0     503.0     503.0     503.0
                      503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0
                      503.0     503.0     503.0     503.0
                                                                  ***

     ***             ***             ***             ***             ***
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                    HYDROGRAPH AT STATION       H3
                      FOR PLAN 3, RATIO = 1.00

   TOTAL RAINFALL =    3.44, TOTAL LOSS =    2.32, TOTAL EXCESS =    1.12

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   20112.     16.25               15550.       5586.       1880.         271.
                       (INCHES)      .775       1.113       1.124        1.124
                        (AC-FT)     7711.      11079.      11188.       11188.

                       CUMULATIVE AREA =  186.60 SQ MI


     ***            ***            ***            ***            ***

                    HYDROGRAPH AT STATION       H3
                      FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   20112.     16.25               15550.       5586.       1880.         271.
                       (INCHES)      .775       1.113       1.124        1.124
                        (AC-FT)     7711.      11079.      11188.       11188.

                       CUMULATIVE AREA =  186.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 155 KP        PLAN  4 FOR STATION       H3

               SUBBASIN RUNOFF DATA

 139 BA          SUBBASIN CHARACTERISTICS
                      TAREA      186.60  SUBBASIN AREA

                 PRECIPITATION DATA

 156 PB               STORM        .00  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

 141 LG          GREEN AND AMPT LOSS RATE
                      STRTL        .35  STARTING LOSS
                        DTH        .25  MOISTURE DEFICIT
                       PSIF       4.00  WETTING FRONT SUCTION
                      XKSAT        .40  HYDRAULIC CONDUCTIVITY
                      RTIMP      10.00  PERCENT IMPERVIOUS AREA

 141 UI          INPUT UNITGRAPH,  74 ORDINATES,  VOLUME = 1.00
                   2067.0    2067.0    2067.0    2067.0    3379.0    5942.0    7459.0    9020.0   10679.0   12149.0
                  13781.0   14598.0   16721.0   17606.0   18403.0   18732.0   19806.0   19806.0   19806.0   19616.0
                  18848.0   18522.0   17485.0   15851.0   14513.0   13555.0   12319.0   11202.0   10355.0    9519.0
                   8810.0    8057.0    7329.0    6668.0    6242.0    5659.0    5201.0    4615.0    4362.0    3896.0
                   3896.0    3257.0    3169.0    3169.0    2348.0    2190.0    2191.0    2190.0    1848.0    1415.0
                   1415.0    1415.0    1415.0    1415.0    1415.0     839.0     503.0     503.0     503.0     503.0
                    503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0
                    503.0     503.0     503.0     503.0

                                                                  ***

     ***            ***            ***            ***            ***

                    HYDROGRAPH AT STATION       H3
                      FOR PLAN 4, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
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                                        6-HR        24-HR        72-HR    499.75-HR
  (CFS)        (HR)
                          (CFS)
+       0.       .00                     0.           0.           0.           0.
                       (INCHES)        .000         .000         .000         .000
                        (AC-FT)         0.           0.           0.           0.

                       CUMULATIVE AREA =  186.60 SQ MI


     ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H3
                          FOR PLAN 4, RATIO = 1.00

 PEAK FLOW     TIME                           MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR    499.75-HR
+  (CFS)        (HR)
                          (CFS)
+       0.       .00                     0.           0.           0.           0.
                       (INCHES)        .000         .000         .000         .000
                        (AC-FT)         0.           0.           0.           0.

                       CUMULATIVE AREA =  186.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 157 KP        PLAN  5 FOR STATION       H3

               SUBBASIN RUNOFF DATA

 139 BA          SUBBASIN CHARACTERISTICS
                       TAREA      186.60  SUBBASIN AREA

                 PRECIPITATION DATA

 158 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

 141 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .35  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .40  HYDRAULIC CONDUCTIVITY
                       RTIMP       10.00  PERCENT IMPERVIOUS AREA

 141 UI          INPUT UNITGRAPH,  74 ORDINATES,  VOLUME = 1.00
                    2067.0    2067.0    2067.0    2067.0    3379.0    5942.0    7459.0    9020.0   10679.0   12149.0
                   13781.0   14598.0   16721.0   17606.0   18403.0   18732.0   19806.0   19806.0   19806.0   19616.0
                   18848.0   18522.0   17485.0   15851.0   14513.0   13555.0   12319.0   11202.0   10355.0    9519.0
                    8810.0    8057.0    7329.0    6668.0    6242.0    5659.0    5201.0    4615.0    4362.0    3896.0
                    3896.0    3257.0    3169.0    3169.0    2348.0    2190.0    2191.0    2190.0    1848.0    1415.0
                    1415.0    1415.0    1415.0    1415.0    1415.0     839.0     503.0     503.0     503.0     503.0
                     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0
                     503.0     503.0     503.0     503.0

                                                                  ***

     ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H3
                          FOR PLAN 5, RATIO = 1.00

   TOTAL RAINFALL =      .00, TOTAL LOSS =      .00, TOTAL EXCESS =      .00

 PEAK FLOW     TIME                           MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR    499.75-HR
+  (CFS)        (HR)
                          (CFS)
+       0.       .00                     0.           0.           0.           0.
                       (INCHES)        .000         .000         .000         .000
                        (AC-FT)         0.           0.           0.           0.
```

```
                    CUMULATIVE AREA =  186.60 SQ MI

     ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H3
                        FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                 0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)      0.          0.          0.          0.

                    CUMULATIVE AREA =  186.60 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 159 KP        PLAN  6 FOR STATION       H3

               SUBBASIN RUNOFF DATA

 139 BA          SUBBASIN CHARACTERISTICS
                       TAREA      186.60  SUBBASIN AREA

                 PRECIPITATION DATA

 160 PB                STORM        3.44  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

 141 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .35  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .40  HYDRAULIC CONDUCTIVITY
                       RTIMP       10.00  PERCENT IMPERVIOUS AREA

 141 UI          INPUT UNITGRAPH,  74 ORDINATES,  VOLUME = 1.00
                    2067.0    2067.0    2067.0    2067.0    3379.0    5942.0    7459.0    9020.0   10679.0   12149.0
                   13781.0   14598.0   16721.0   17606.0   18403.0   18732.0   19806.0   19806.0   19806.0   19616.0
                   18848.0   18522.0   17485.0   15851.0   14513.0   13555.0   12319.0   11202.0   10355.0    9519.0
                    8810.0    8057.0    7329.0    6668.0    6242.0    5659.0    5201.0    4615.0    4362.0    3896.0
                    3896.0    3257.0    3169.0    3169.0    2348.0    2190.0    2191.0    2190.0    1848.0    1415.0
                    1415.0    1415.0    1415.0    1415.0    1415.0     839.0     503.0     503.0     503.0     503.0
                     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0     503.0
                     503.0     503.0     503.0     503.0

                                                                                                   ***

     ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION       H3
                        FOR PLAN 6, RATIO = 1.00

   TOTAL RAINFALL =    3.44, TOTAL LOSS =    2.32, TOTAL EXCESS =    1.12

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   20112.     16.25               15550.       5586.       1880.        271.
                        (INCHES)    .775       1.113       1.124       1.124
                         (AC-FT)   7711.      11079.      11188.      11188.

                    CUMULATIVE AREA =  186.60 SQ MI

     ***            ***            ***            ***            ***
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                    HYDROGRAPH AT STATION       H3
                      FOR PLAN 6, RATIO = 1.00

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   20112.     16.25                15550.       5586.       1880.         271.
                       (INCHES)      .775       1.113       1.124        1.124
                        (AC-FT)     7711.      11079.      11188.       11188.

                       CUMULATIVE AREA =  186.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //H3/FLOW/01JUL1904/15MIN/WAGNER-DAGGS/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //H3/FLOW/01AUG1904/15MIN/WAGNER-DAGGS/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 162 KK     *        C3  *
            *            *
            **************
                        COMBINE ROUTED FLOW FROM MORRISTOWN WITH RUNOFF FROM SUBBASIN H3
                        COMBINED FLOW UPSTREAM OF JACKRABBIT WASH
                        LOCAL RUNOFF INCLUDES WAGNER AND DAGGS WASH WATERSHEDS

 166 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***

      ***             ***             ***             ***             ***

                    HYDROGRAPH AT STATION       C3
                      FOR PLAN 1, RATIO = 1.00

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   43373.     20.00                38604.      18681.       6369.         918.
                       (INCHES)      .368        .712        .728         .728
                        (AC-FT)    19143.      37053.      37896.       37896.

                       CUMULATIVE AREA =  975.40 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C3/FLOW/01JUL1904/15MIN/U-S JRW/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C3/FLOW/01AUG1904/15MIN/U-S JRW/

      ***             ***             ***             ***             ***

                    HYDROGRAPH AT STATION       C3
                      FOR PLAN 2, RATIO = 1.00

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   30590.     19.75                19537.       5861.       1954.         281.
                       (INCHES)      .186        .223        .223         .223
                        (AC-FT)     9688.      11624.      11624.       11624.

                       CUMULATIVE AREA =  975.40 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C3/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C3/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                    HYDROGRAPH AT STATION       C3
                      FOR PLAN 3, RATIO = 1.00

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
   (CFS)       (HR)
                         (CFS)
+   20112.     16.25                15550.       5586.       1880.         271.
                       (INCHES)      .148        .213        .215         .215
                        (AC-FT)     7711.      11079.      11188.       11188.

                       CUMULATIVE AREA =  975.40 SQ MI
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```
-----DSS---ZWRITE Unit  71; Vers.    2:  //C3/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    2:  //C3/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C3
                          FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                   0.          0.          0.           0.
                       (INCHES)      .000        .000        .000         .000
                        (AC-FT)        0.          0.          0.           0.

                       CUMULATIVE AREA =  975.40 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    3:  //C3/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    3:  //C3/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C3
                          FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                   0.          0.          0.           0.
                       (INCHES)      .000        .000        .000         .000
                        (AC-FT)        0.          0.          0.           0.

                       CUMULATIVE AREA =  975.40 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    4:  //C3/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    4:  //C3/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C3
                          FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   43373.     20.00                38604.      18681.       6369.         918.
                       (INCHES)      .368        .712        .728         .728
                        (AC-FT)    19143.      37053.      37896.       37896.

                       CUMULATIVE AREA =  975.40 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    1:  //C3/FLOW/01JUL1904/15MIN/WAGNER-DAGGS/
-----DSS---ZWRITE Unit  71; Vers.    1:  //C3/FLOW/01AUG1904/15MIN/WAGNER-DAGGS/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  168 KK    *        H4  *
            *            *
            **************
                          BASIN H4 - JACKRABBIT WASH

                           THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
                           L=     40.0  Lca=     21.7   S=   32.5  Kn= .040  LAG= 389.0
                           DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
                            100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.2"
                            AREAL REDUCED FOR 366.2 SQ.MI. = 4.2*0.79 = 3.32"


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

  176 KP        PLAN  1 FOR STATION       H4

                SUBBASIN RUNOFF DATA

  177 BA          SUBBASIN CHARACTERISTICS
                        TAREA      366.20  SUBBASIN AREA
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                PRECIPITATION DATA

178 PB                STORM          .00  BASIN TOTAL PRECIPITATION

 36 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                     .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                     .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00

179 LG          GREEN AND AMPT LOSS RATE
                     STRTL         .35  STARTING LOSS
                       DTH         .25  MOISTURE DEFICIT
                      PSIF        4.00  WETTING FRONT SUCTION
                     XKSAT         .40  HYDRAULIC CONDUCTIVITY
                     RTIMP        5.00  PERCENT IMPERVIOUS AREA

179 UI          INPUT UNITGRAPH,  95 ORDINATES,  VOLUME = 1.00
                   3170.0    3170.0    3170.0    3170.0    3170.0    3380.0    9113.0    9113.0   12228.0   13575.0
                  15591.0   17534.0   19367.0   21226.0   22524.0   24134.0   26099.0   27380.0   28058.0   28747.0
                  29661.0   30375.0   30375.0   30375.0   30375.0   29507.0   28691.0   28666.0   27000.0   25706.0
                  23410.0   22091.0   21070.0   19230.0   18083.0   16932.0   15935.0   14878.0   13834.0   12978.0
                  12327.0   11215.0   10708.0    9720.0    9309.0    8679.0    8332.0    7078.0    7078.0    6477.0
                   5975.0    5976.0    5550.0    4860.0    4860.0    4860.0    4123.0    3360.0    3359.0    3360.0
                   3359.0    3359.0    2332.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0
                   1960.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                    771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                    771.0     771.0     771.0     771.0     771.0
                                                                                  ***

    ***             ***             ***             ***             ***

                      HYDROGRAPH AT STATION       H4
                        FOR PLAN 1, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                   0.          0.          0.          0.
                        (INCHES)      .000        .000        .000        .000
                         (AC-FT)        0.          0.          0.          0.

                        CUMULATIVE AREA =  366.20 SQ MI


    ***             ***             ***             ***             ***

                      HYDROGRAPH AT STATION       H4
                        FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                   0.          0.          0.          0.
                        (INCHES)      .000        .000        .000        .000
                         (AC-FT)        0.          0.          0.          0.

                        CUMULATIVE AREA =  366.20 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 191 KP         PLAN  2 FOR STATION       H4

                SUBBASIN RUNOFF DATA

 177 BA           SUBBASIN CHARACTERISTICS
                       TAREA      366.20  SUBBASIN AREA

                  PRECIPITATION DATA

 192 PB                STORM          .00  BASIN TOTAL PRECIPITATION
```

```
 36 PI            INCREMENTAL PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                    .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                    .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00

179 LG          GREEN AND AMPT LOSS RATE
                    STRTL        .35  STARTING LOSS
                      DTH        .25  MOISTURE DEFICIT
                     PSIF       4.00  WETTING FRONT SUCTION
                    XKSAT        .40  HYDRAULIC CONDUCTIVITY
                    RTIMP       5.00  PERCENT IMPERVIOUS AREA

179 UI          INPUT UNITGRAPH,  95 ORDINATES,  VOLUME = 1.00
                  3170.0    3170.0    3170.0    3170.0    3170.0    3380.0    9113.0    9113.0   12228.0   13575.0
                 15591.0   17534.0   19367.0   21226.0   22524.0   24134.0   26099.0   27380.0   28058.0   28747.0
                 29661.0   30375.0   30375.0   30375.0   30375.0   29507.0   28691.0   28666.0   27000.0   25706.0
                 23410.0   22091.0   21070.0   19230.0   18083.0   16932.0   15935.0   14878.0   13834.0   12978.0
                 12327.0   11215.0   10708.0    9720.0    9309.0    8679.0    8332.0    7078.0    7078.0    6477.0
                  5975.0    5976.0    5550.0    4860.0    4860.0    4860.0    4123.0    3360.0    3359.0    3360.0
                  3359.0    3359.0    2332.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0
                  1960.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                   771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                   771.0     771.0     771.0     771.0     771.0
                                                                   ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H4
                          FOR PLAN 2, RATIO = 1.00

   TOTAL RAINFALL =      .00, TOTAL LOSS =      .00, TOTAL EXCESS =      .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR        24-HR        72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                   0.           0.           0.           0.
                        (INCHES)      .000         .000         .000         .000
                         (AC-FT)       0.           0.           0.           0.

                        CUMULATIVE AREA =  366.20 SQ MI


     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H4
                          FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR        24-HR        72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                   0.           0.           0.           0.
                        (INCHES)      .000         .000         .000         .000
                         (AC-FT)       0.           0.           0.           0.

                        CUMULATIVE AREA =  366.20 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 193 KP         PLAN  3 FOR STATION       H4

                SUBBASIN RUNOFF DATA

 177 BA           SUBBASIN CHARACTERISTICS
                      TAREA      366.20  SUBBASIN AREA

                  PRECIPITATION DATA

 194 PB               STORM         .00  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
```

```
                .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00

179 LG        GREEN AND AMPT LOSS RATE
                STRTL         .35  STARTING LOSS
                  DTH         .25  MOISTURE DEFICIT
                 PSIF        4.00  WETTING FRONT SUCTION
                XKSAT         .40  HYDRAULIC CONDUCTIVITY
                RTIMP        5.00  PERCENT IMPERVIOUS AREA

179 UI        INPUT UNITGRAPH,  95 ORDINATES,  VOLUME = 1.00
                 3170.0    3170.0    3170.0    3170.0    3170.0    3380.0    9113.0    9113.0   12228.0   13575.0
                15591.0   17534.0   19367.0   21226.0   22524.0   24134.0   26099.0   27380.0   28058.0   28747.0
                29661.0   30375.0   30375.0   30375.0   30375.0   29507.0   28691.0   28666.0   27000.0   25706.0
                23410.0   22091.0   21070.0   19230.0   18083.0   16932.0   15935.0   14878.0   13834.0   12978.0
                12327.0   11215.0   10708.0    9720.0    9309.0    8679.0    8332.0    7078.0    7078.0    6477.0
                 5975.0    5976.0    5550.0    4860.0    4860.0    4860.0    4123.0    3360.0    3359.0    3360.0
                 3359.0    3359.0    2332.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0
                 1960.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                  771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                  771.0     771.0     771.0     771.0     771.0

                                                                  ***

    ***           ***           ***           ***           ***

                    HYDROGRAPH AT STATION       H4
                      FOR PLAN 3, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
    (CFS)       (HR)
                          (CFS)
+       0.       .00                 0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)     0.          0.          0.          0.

                        CUMULATIVE AREA =  366.20 SQ MI


    ***           ***           ***           ***           ***

                    HYDROGRAPH AT STATION       H4
                      FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                 0.          0.          0.          0.
                        (INCHES)    .000        .000        .000        .000
                         (AC-FT)     0.          0.          0.          0.

                        CUMULATIVE AREA =  366.20 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

195 KP        PLAN  4 FOR STATION       H4

              SUBBASIN RUNOFF DATA

177 BA        SUBBASIN CHARACTERISTICS
                TAREA      366.20  SUBBASIN AREA

              PRECIPITATION DATA

196 PB          STORM        3.32  BASIN TOTAL PRECIPITATION

 36 PI          INCREMENTAL PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
```

```
                    .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00

179 LG          GREEN AND AMPT LOSS RATE
                    STRTL        .35  STARTING LOSS
                      DTH        .25  MOISTURE DEFICIT
                     PSIF       4.00  WETTING FRONT SUCTION
                    XKSAT        .40  HYDRAULIC CONDUCTIVITY
                    RTIMP       5.00  PERCENT IMPERVIOUS AREA

179 UI          INPUT UNITGRAPH,  95 ORDINATES,  VOLUME = 1.00
                  3170.0    3170.0    3170.0    3170.0    3170.0    3380.0    9113.0    9113.0   12228.0   13575.0
                 15591.0   17534.0   19367.0   21226.0   22524.0   24134.0   26099.0   27380.0   28058.0   28747.0
                 29661.0   30375.0   30375.0   30375.0   30375.0   29507.0   28691.0   28666.0   27000.0   25706.0
                 23410.0   22091.0   21070.0   19230.0   18083.0   16932.0   15935.0   14878.0   13834.0   12978.0
                 12327.0   11215.0   10708.0    9720.0    9309.0    8679.0    8332.0    7078.0    7078.0    6477.0
                  5975.0    5976.0    5550.0    4860.0    4860.0    4860.0    4123.0    3360.0    3359.0    3360.0
                  3359.0    3359.0    2332.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0
                  1960.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                   771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                   771.0     771.0     771.0     771.0     771.0
                                                                   ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H4
                          FOR PLAN 4, RATIO = 1.00

   TOTAL RAINFALL =    3.32, TOTAL LOSS =    2.38, TOTAL EXCESS =     .94

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   27117.     17.75               22804.       9113.       3079.        444.
                       (INCHES)      .579        .926        .938        .938
                        (AC-FT)    11308.      18076.      18322.      18322.

                       CUMULATIVE AREA =  366.20 SQ MI


     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H4
                          FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   27117.     17.75               22804.       9113.       3079.        444.
                       (INCHES)      .579        .926        .938        .938
                        (AC-FT)    11308.      18076.      18322.      18322.

                       CUMULATIVE AREA =  366.20 SQ MI


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 197 KP         PLAN  5 FOR STATION       H4

                SUBBASIN RUNOFF DATA

 177 BA          SUBBASIN CHARACTERISTICS
                     TAREA      366.20  SUBBASIN AREA

                 PRECIPITATION DATA

 198 PB              STORM         .00  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                    .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                    .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00
```

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179 LG          GREEN AND AMPT LOSS RATE
                     STRTL         .35  STARTING LOSS
                       DTH         .25  MOISTURE DEFICIT
                      PSIF        4.00  WETTING FRONT SUCTION
                     XKSAT         .40  HYDRAULIC CONDUCTIVITY
                     RTIMP        5.00  PERCENT IMPERVIOUS AREA

179 UI          INPUT UNITGRAPH,  95 ORDINATES,  VOLUME = 1.00
                   3170.0    3170.0    3170.0    3170.0    3170.0    3380.0    9113.0    9113.0   12228.0   13575.0
                  15591.0   17534.0   19367.0   21226.0   22524.0   24134.0   26099.0   27380.0   28058.0   28747.0
                  29661.0   30375.0   30375.0   30375.0   30375.0   29507.0   28691.0   28666.0   27000.0   25706.0
                  23410.0   22091.0   21070.0   19230.0   18083.0   16932.0   15935.0   14878.0   13834.0   12978.0
                  12327.0   11215.0   10708.0    9720.0    9309.0    8679.0    8332.0    7078.0    7078.0    6477.0
                   5975.0    5976.0    5550.0    4860.0    4860.0    4860.0    4123.0    3360.0    3359.0    3360.0
                   3359.0    3359.0    2332.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0
                   1960.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                    771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                    771.0     771.0     771.0     771.0     771.0
                                                                  ***

     ***            ***            ***            ***            ***

                       HYDROGRAPH AT STATION       H4
                         FOR PLAN 5, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+      0.        .00                   0.          0.          0.          0.
                       (INCHES)      .000        .000        .000        .000
                        (AC-FT)        0.          0.          0.          0.

                       CUMULATIVE AREA =  366.20 SQ MI


     ***            ***            ***            ***            ***

                       HYDROGRAPH AT STATION       H4
                         FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+      0.        .00                   0.          0.          0.          0.
                       (INCHES)      .000        .000        .000        .000
                        (AC-FT)        0.          0.          0.          0.

                       CUMULATIVE AREA =  366.20 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

199 KP          PLAN  6 FOR STATION       H4

                SUBBASIN RUNOFF DATA

177 BA          SUBBASIN CHARACTERISTICS
                     TAREA      366.20  SUBBASIN AREA

                PRECIPITATION DATA

200 PB               STORM        3.32  BASIN TOTAL PRECIPITATION

 36 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                     .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                     .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00

179 LG          GREEN AND AMPT LOSS RATE
                     STRTL         .35  STARTING LOSS
                       DTH         .25  MOISTURE DEFICIT
```

```
                    PSIF        4.00  WETTING FRONT SUCTION
                   XKSAT         .40  HYDRAULIC CONDUCTIVITY
                   RTIMP        5.00  PERCENT IMPERVIOUS AREA

179 UI          INPUT UNITGRAPH,  95 ORDINATES,  VOLUME = 1.00
                   3170.0    3170.0    3170.0    3170.0    3170.0    3380.0    9113.0    9113.0   12228.0   13575.0
                  15591.0   17534.0   19367.0   21226.0   22524.0   24134.0   26099.0   27380.0   28058.0   28747.0
                  29661.0   30375.0   30375.0   30375.0   30375.0   29507.0   28691.0   28666.0   27000.0   25706.0
                  23410.0   22091.0   21070.0   19230.0   18083.0   16932.0   15935.0   14878.0   13834.0   12978.0
                  12327.0   11215.0   10708.0    9720.0    9309.0    8679.0    8332.0    7078.0    7078.0    6477.0
                   5975.0    5976.0    5550.0    4860.0    4860.0    4860.0    4123.0    3360.0    3359.0    3360.0
                   3359.0    3359.0    2332.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0    2170.0
                   1960.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                    771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0     771.0
                    771.0     771.0     771.0     771.0     771.0

                                                                  ***

     ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION       H4
                         FOR PLAN 6, RATIO = 1.00

   TOTAL RAINFALL =    3.32, TOTAL LOSS =    2.38, TOTAL EXCESS =     .94

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   27117.     17.75                 22804.       9113.       3079.         444.
                        (INCHES)      .579        .926        .938         .938
                         (AC-FT)    11308.      18076.      18322.       18322.

                        CUMULATIVE AREA =  366.20 SQ MI


     ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION       H4
                         FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   27117.     17.75                 22804.       9113.       3079.         444.
                        (INCHES)      .579        .926        .938         .938
                         (AC-FT)    11308.      18076.      18322.       18322.

                        CUMULATIVE AREA =  366.20 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //H4/FLOW/01JUL1904/15MIN/JRW/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //H4/FLOW/01AUG1904/15MIN/JRW/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 202 KK     *        C4  *
            *            *
            **************
                        COMBINE RUNOFF FROM JACKRABBIT WASH WITH COMBINED FLOWS IN HASSAYAMPA
                         THIS IS THE TOTAL FLOW OF THE HASSAYAMPA RIVER JUST DOWNSTREAM OF
                         JACKRABBIT WASH

 206 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

     ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION       C4
                         FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   43373.     20.00                 38604.      18681.       6369.         918.
                        (INCHES)      .268        .518        .530         .530
                         (AC-FT)    19143.      37053.      37896.       37896.
```

```
                    CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C4/FLOW/01JUL1904/15MIN/D-S JRW/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C4/FLOW/01AUG1904/15MIN/D-S JRW/

      ***             ***             ***             ***             ***

                     HYDROGRAPH AT STATION       C4
                       FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   30590.     19.75                19537.       5861.       1954.         281.
                        (INCHES)      .135        .162        .162         .162
                         (AC-FT)     9688.      11624.      11624.       11624.

                    CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C4/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C4/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                     HYDROGRAPH AT STATION       C4
                       FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   20112.     16.25                15550.       5586.       1880.         271.
                        (INCHES)      .108        .155        .156         .156
                         (AC-FT)     7711.      11079.      11188.       11188.

                    CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    2:  //C4/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    2:  //C4/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                     HYDROGRAPH AT STATION       C4
                       FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   27117.     17.75                22804.       9113.       3079.         444.
                        (INCHES)      .158        .253        .256         .256
                         (AC-FT)    11308.      18076.      18322.       18322.

                    CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    3:  //C4/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    3:  //C4/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                     HYDROGRAPH AT STATION       C4
                       FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                    0.          0.          0.           0.
                        (INCHES)     .000        .000        .000         .000
                         (AC-FT)       0.          0.          0.           0.

                    CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    4:  //C4/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    4:  //C4/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                     HYDROGRAPH AT STATION       C4
                       FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
```

```
  (CFS)       (HR)
                          (CFS)
+   63608.     19.25                53437.      27785.       9448.        1361.
                         (INCHES)     .370        .770        .786         .786
                          (AC-FT)   26498.      55110.      56218.       56218.

                         CUMULATIVE AREA = 1341.60 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    1:  //C4/FLOW/01JUL1904/15MIN/JRW/
-----DSS---ZWRITE Unit  71; Vers.    1:  //C4/FLOW/01AUG1904/15MIN/JRW/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 208 KK     *      R4-5  *
            *            *
            **************
                            ROUTE COMBINED FLOWS AT JACKRABBIT WASH TO THE GILA RIVER
                             SLOPE = (1102 - 792) / 74,000 = 0.004

               HYDROGRAPH ROUTING DATA

 212 RL          ROUTING LOSSES
                       QLOSS         .00  INITIAL LOSS
                       CLOSS         .00  ADDITIONAL FRACTION LOST
                      PERCRT        2.00  CHANNEL PERCOLATION RATE
                      ELVINV      110.00  INVERT ELEVATION

 211 RS          STORAGE ROUTING
                       NSTPS          11  NUMBER OF SUBREACHES
                        ITYP        FLOW  TYPE OF INITIAL CONDITION
                      RSVRIC       -1.00  INITIAL CONDITION
                           X         .00 WORKING R AND D COEFFICIENT

 213 RC          NORMAL DEPTH CHANNEL
                         ANL        .070  LEFT OVERBANK N-VALUE
                        ANCH        .040  MAIN CHANNEL N-VALUE
                         ANR        .070  RIGHT OVERBANK N-VALUE
                       RLNTH      74000.  REACH LENGTH
                         SEL      .0040  ENERGY SLOPE
                       ELMAX      130.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                          CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 215 RY        ELEVATION    130.00    120.00    115.00    110.00    110.00    115.00    120.00    130.00
 214 RX        DISTANCE        .00    100.00    800.00    810.00   1610.00   1620.00   2420.00   2520.00

                                                          ***

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

           STORAGE        .00   1434.34   2876.22   4325.62   5782.55   7264.42   9154.31  11608.89  14628.18  18212.17
           OUTFLOW        .00   2053.90   6523.86  12829.32  20732.56  30118.63  41206.02  54325.75  69778.65  87821.69
         ELEVATION     110.00    111.05    112.11    113.16    114.21    115.26    116.32    117.37    118.42    119.47

           STORAGE   22294.98  26481.30  30705.27  34966.90  39266.16  43603.07  47977.64  52389.85  56839.70  61327.17
           OUTFLOW  109284.10 134143.40 161617.10 191575.60 223919.00 258567.30 295454.00 334523.30 375727.20 419023.70
         ELEVATION     120.53    121.58    122.63    123.68    124.74    125.79    126.84    127.89    128.95    130.00


*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN   295454. TO   419024.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     R4-5
                          FOR PLAN 1, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR        72-HR    499.75-HR
+  (CFS)       (HR)
                          (CFS)
   39621.     22.50                34970.      15643.       5223.         753.
                         (INCHES)     .242        .434        .434         .434
                          (AC-FT)   17340.      31027.      31082.       31082.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR        24-HR        72-HR    499.75-HR
+  (AC-FT)      (HR)
     812.     22.50                  740.        409.        138.          20.
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 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    116.19     22.50                115.74      113.24      111.09       110.16

                        CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //R4-5/FLOW/01JUL1904/15MIN/ROUTED/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //R4-5/FLOW/01AUG1904/15MIN/ROUTED/

 ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  2 INPUT DATA FOR STATION     R4-5 ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN   295454. TO   419024.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

      ***             ***             ***             ***             ***

                         HYDROGRAPH AT STATION     R4-5
                           FOR PLAN 2, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   23327.     22.25                14007.       4166.       1389.         200.
                        (INCHES)     .097        .115        .115         .115
                         (AC-FT)    6946.       8263.       8263.        8263.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
      567.     22.25                  409.        141.         47.           7.

 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    114.53     22.25                113.28      111.13      110.38       110.05

                        CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //R4-5/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    1:  //R4-5/FLOW/01AUG1904/15MIN//

 ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  3 INPUT DATA FOR STATION     R4-5 ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN   295454. TO   419024.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

      ***             ***             ***             ***             ***

                         HYDROGRAPH AT STATION     R4-5
                           FOR PLAN 3, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   16481.     18.50                11480.       3509.       1170.         169.
                        (INCHES)     .080        .097        .097         .097
                         (AC-FT)    5693.       6960.       6960.        6960.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
      459.     18.50                  365.        130.         43.           6.

 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    113.68     18.50                112.93      111.05      110.35       110.05

                        CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    2:  //R4-5/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    2:  //R4-5/FLOW/01AUG1904/15MIN//
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***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  4 INPUT DATA FOR STATION     R4-5 ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN   295454. TO   419024.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     R4-5
                            FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+   23874.     19.50                19244.       6656.       2219.         320.
                         (INCHES)     .133        .185        .185         .185
                          (AC-FT)    9542.      13202.      13202.       13202.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR        24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
      574.     19.50                  502.        210.         70.          10.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR        24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    114.59     19.50                114.02      111.68      110.56       110.08

                          CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    3:  //R4-5/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    3:  //R4-5/FLOW/01AUG1904/15MIN//

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  5 INPUT DATA FOR STATION     R4-5 ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN   295454. TO   419024.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION     R4-5
                            FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+       0.       .00                    0.          0.          0.           0.
                         (INCHES)    .000        .000        .000         .000
                          (AC-FT)       0.          0.          0.           0.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR        24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
        0.       .00                    0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR        24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
    110.00       .00                110.00      110.00      110.00       110.00

                          CUMULATIVE AREA = 1341.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    4:  //R4-5/FLOW/01JUL1904/15MIN//
 -----DSS---ZWRITE Unit  71; Vers.    4:  //R4-5/FLOW/01AUG1904/15MIN//

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  6 INPUT DATA FOR STATION     R4-5 ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN   295454. TO   419024.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

      ***             ***             ***             ***             ***
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                    HYDROGRAPH AT STATION     R4-5
                      FOR PLAN 6, RATIO = 1.00

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                         (CFS)
+   57189.     22.25               50106.      24574.       8220.        1184.
                       (INCHES)      .347        .681        .684         .684
                        (AC-FT)    24846.      48741.      48910.       48910.

 PEAK STORAGE  TIME                        MAXIMUM AVERAGE STORAGE
                                   6-HR       24-HR       72-HR    499.75-HR
+  (AC-FT)      (HR)
    1111.     22.25                 989.        561.        190.          27.

 PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                   6-HR       24-HR       72-HR    499.75-HR
+   (FEET)      (HR)
   117.58     22.25               117.04      114.24      111.43       110.21

                      CUMULATIVE AREA = 1341.60 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    1:  //R4-5/FLOW/01JUL1904/15MIN/JRW/
-----DSS---ZWRITE Unit  71; Vers.    1:  //R4-5/FLOW/01AUG1904/15MIN/JRW/


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


           **************
           *            *
 217 KK    *        H5  *
           *            *
           **************
                         BASIN H5
                          THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
                          L=     19.4  Lca=      8.4   S=   28.2  Kn= .040  LAG= 211.0
                          DESERT/RANGELAND S-GRAPH WAS USED FOR THE BASIN
                           100-YR 24-HR POINT RAINFALL WEIGHTED FOR BASIN FROM NOAA ATLAS II = 4.1"
                           AREAL REDUCED FOR 43.0 SQ.MI. = 4.1*0.88 = 3.6"


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 224 KP        PLAN  1 FOR STATION       H5

               SUBBASIN RUNOFF DATA

 225 BA          SUBBASIN CHARACTERISTICS
                       TAREA       43.00  SUBBASIN AREA

                 PRECIPITATION DATA

 226 PB                STORM         .00  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                       .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                       .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

 227 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .30  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .39  HYDRAULIC CONDUCTIVITY
                       RTIMP       10.00  PERCENT IMPERVIOUS AREA

 227 UI          INPUT UNITGRAPH,  51 ORDINATES,  VOLUME = 1.00
                     686.0     686.0     686.0    1670.0    2422.0    3234.0    3976.0    4717.0    5297.0    5904.0
                    6155.0    6568.0    6576.0    6501.0    6224.0    5866.0    5117.0    4611.0    4012.0    3578.0
                    3136.0    2795.0    2484.0    2149.0    1923.0    1663.0    1490.0    1294.0    1183.0    1052.0
                     939.0     727.0     727.0     651.0     470.0     470.0     470.0     470.0     297.0     167.0
                     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0
                     167.0
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    ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H5
                          FOR PLAN 1, RATIO = 1.00

   TOTAL RAINFALL =     .00, TOTAL LOSS =     .00, TOTAL EXCESS =     .00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                   0.          0.          0.          0.
                        (INCHES)      .000        .000        .000        .000
                         (AC-FT)        0.          0.          0.          0.

                        CUMULATIVE AREA =   43.00 SQ MI


    ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H5
                          FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+      0.        .00                   0.          0.          0.          0.
                        (INCHES)      .000        .000        .000        .000
                         (AC-FT)        0.          0.          0.          0.

                        CUMULATIVE AREA =   43.00 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 235 KP        PLAN  5 FOR STATION       H5

               SUBBASIN RUNOFF DATA

 225 BA          SUBBASIN CHARACTERISTICS
                       TAREA       43.00  SUBBASIN AREA

                 PRECIPITATION DATA

 236 PB                STORM        3.60  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

 227 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .30  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .39  HYDRAULIC CONDUCTIVITY
                       RTIMP       10.00  PERCENT IMPERVIOUS AREA

 227 UI          INPUT UNITGRAPH,  51 ORDINATES,  VOLUME = 1.00
                    686.0     686.0     686.0    1670.0    2422.0    3234.0    3976.0    4717.0    5297.0    5904.0
                   6155.0    6568.0    6576.0    6501.0    6224.0    5866.0    5117.0    4611.0    4012.0    3578.0
                   3136.0    2795.0    2484.0    2149.0    1923.0    1663.0    1490.0    1294.0    1183.0    1052.0
                    939.0     727.0     727.0     651.0     470.0     470.0     470.0     470.0     297.0     167.0
                    167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0
                    167.0

                                                                  ***

    ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       H5
                          FOR PLAN 5, RATIO = 1.00

   TOTAL RAINFALL =    3.60, TOTAL LOSS =    2.38, TOTAL EXCESS =    1.22
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 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR        24-HR        72-HR     499.75-HR
+   (CFS)       (HR)
                          (CFS)
+    7148.     15.00                4562.        1406.         471.          68.
                        (INCHES)     .986        1.216        1.223        1.223
                         (AC-FT)    2262.        2789.        2804.        2804.

                        CUMULATIVE AREA =   43.00 SQ MI


      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H5
                          FOR PLAN 5, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR        24-HR        72-HR     499.75-HR
+   (CFS)       (HR)
                          (CFS)
+    7148.     15.00                4562.        1406.         471.          68.
                        (INCHES)     .986        1.216        1.223        1.223
                         (AC-FT)    2262.        2789.        2804.        2804.

                        CUMULATIVE AREA =   43.00 SQ MI


***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***    ***

 237 KP        PLAN  6 FOR STATION       H5

               SUBBASIN RUNOFF DATA

 225 BA          SUBBASIN CHARACTERISTICS
                       TAREA       43.00  SUBBASIN AREA

                 PRECIPITATION DATA

 238 PB                STORM        3.60  BASIN TOTAL PRECIPITATION

  36 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .01       .01       .00       .01       .00       .01
                      .01       .00       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .02       .02       .02       .03       .10       .28       .04       .03
                      .02       .02       .01       .01       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

 227 LG          GREEN AND AMPT LOSS RATE
                       STRTL         .30  STARTING LOSS
                         DTH         .25  MOISTURE DEFICIT
                        PSIF        4.00  WETTING FRONT SUCTION
                       XKSAT         .39  HYDRAULIC CONDUCTIVITY
                       RTIMP       10.00  PERCENT IMPERVIOUS AREA

 227 U1          INPUT UNITGRAPH,  51 ORDINATES,  VOLUME = 1.00
                    686.0     686.0     686.0    1670.0    2422.0    3234.0    3976.0    4717.0    5297.0    5904.0
                   6155.0    6568.0    6576.0    6501.0    6224.0    5866.0    5117.0    4611.0    4012.0    3578.0
                   3136.0    2795.0    2484.0    2149.0    1923.0    1663.0    1490.0    1294.0    1183.0    1052.0
                    939.0     727.0     727.0     651.0     470.0     470.0     470.0     470.0     297.0     167.0
                    167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0     167.0
                    167.0

                                                                   ***

      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION       H5
                          FOR PLAN 6, RATIO = 1.00

   TOTAL RAINFALL =    3.60, TOTAL LOSS =    2.38, TOTAL EXCESS =    1.22

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR        24-HR        72-HR     499.75-HR
+   (CFS)       (HR)
                          (CFS)
+    7148.     15.00                4562.        1406.         471.          68.
                        (INCHES)     .986        1.216        1.223        1.223
                         (AC-FT)    2262.        2789.        2804.        2804.
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                    CUMULATIVE AREA =   43.00 SQ MI

     ***            ***            ***            ***            ***

                     HYDROGRAPH AT STATION       H5
                       FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+    7148.     15.00                4562.       1406.        471.          68.
                        (INCHES)     .986       1.216       1.223        1.223
                         (AC-FT)    2262.       2789.       2804.        2804.

                    CUMULATIVE AREA =   43.00 SQ MI


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  2 INPUT DATA FOR STATION       H5 ARE SAME AS FOR PLAN  1

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  3 INPUT DATA FOR STATION       H5 ARE SAME AS FOR PLAN  1

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

                PLAN  4 INPUT DATA FOR STATION       H5 ARE SAME AS FOR PLAN  1


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 239 KK     *        C5  *
            *            *
            **************
                          COMBINE ROUTED FLOWS IN HASSAYAMPA WITH RUNOFF FROM SUBBASIN H5
                          THIS IS THE TOTAL FLOW AT THE CONFLUENCE OF THE GILA RIVER

 242 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***

     ***            ***            ***            ***            ***

                     HYDROGRAPH AT STATION       C5
                       FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                          (CFS)
+   39621.     22.50               34970.      15643.       5223.         753.
                        (INCHES)     .235        .420        .421         .421
                         (AC-FT)   17340.      31027.      31082.       31082.

                    CUMULATIVE AREA = 1384.60 SQ MI

 -----DSS---ZWRITE Unit  71; Vers.    1:  //C5/FLOW/01JUL1904/15MIN/AT GILA RIVER/
 -----DSS---ZWRITE Unit  71; Vers.    1:  //C5/FLOW/01AUG1904/15MIN/AT GILA RIVER/

     ***            ***            ***            ***            ***

                     HYDROGRAPH AT STATION       C5
                       FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR    499.75-HR
   (CFS)        (HR)
                          (CFS)
+   23327.     22.25               14007.       4166.       1389.         200.
                        (INCHES)     .094        .112        .112         .112
                         (AC-FT)    6946.       8263.       8263.        8263.

                    CUMULATIVE AREA = 1384.60 SQ MI
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-----DSS---ZWRITE Unit  71; Vers.    1:  //C5/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    1:  //C5/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C5
                          FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+   16481.     18.50                 11480.       3509.       1170.         169.
                         (INCHES)     .077        .094        .094         .094
                          (AC-FT)    5693.       6960.       6960.        6960.

                        CUMULATIVE AREA = 1384.60 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    2:  //C5/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    2:  //C5/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C5
                          FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+   23874.     19.50                 19244.       6656.       2219.         320.
                         (INCHES)     .129        .179        .179         .179
                          (AC-FT)    9542.      13202.      13202.       13202.

                        CUMULATIVE AREA = 1384.60 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    3:  //C5/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    3:  //C5/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C5
                          FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+    7148.     15.00                  4562.       1406.        471.          68.
                         (INCHES)     .031        .038        .038         .038
                          (AC-FT)    2262.       2789.       2804.        2804.

                        CUMULATIVE AREA = 1384.60 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    4:  //C5/FLOW/01JUL1904/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    4:  //C5/FLOW/01AUG1904/15MIN//

      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION       C5
                          FOR PLAN 6, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR    499.75-HR
+   (CFS)       (HR)
                            (CFS)
+   57542.     22.25                 50599.      25637.       8691.        1252.
                         (INCHES)     .340        .689        .700         .700
                          (AC-FT)   25090.      50850.      51714.       51714.

                        CUMULATIVE AREA = 1384.60 SQ MI

-----DSS---ZWRITE Unit  71; Vers.    1:  //C5/FLOW/01JUL1904/15MIN/JRW/
-----DSS---ZWRITE Unit  71; Vers.    1:  //C5/FLOW/01AUG1904/15MIN/JRW/
1

          PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                              FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                          TIME TO PEAK IN HOURS

                                                                RATIOS APPLIED TO FLOWS
 OPERATION       STATION     AREA    PLAN            RATIO 1
                                                       1.00
```

```
HYDROGRAPH AT
                    H1     416.20     1   FLOW       35589.
                                          TIME        18.75
                                       2  FLOW           0.
                                          TIME         .00
                                       3  FLOW           0.
                                          TIME         .00
                                       4  FLOW           0.
                                          TIME         .00
                                       5  FLOW           0.
                                          TIME         .00
                                       6  FLOW       35589.
                                          TIME        18.75

 ROUTED TO
+                  R1-2     416.20     1   FLOW       29696.
                                          TIME        20.00
                                       2  FLOW           0.
                                          TIME         .00
                                       3  FLOW           0.
                                          TIME         .00
                                       4  FLOW           0.
                                          TIME         .00
                                       5  FLOW           0.
                                          TIME         .00
                                       6  FLOW       29696.
                                          TIME        20.00

                                       ** PEAK STAGES IN FEET **
                                       1  STAGE      116.48
                                          TIME        20.00
                                       2  STAGE      110.00
                                          TIME         .00
                                       3  STAGE      110.00
                                          TIME         .00
                                       4  STAGE      110.00
                                          TIME         .00
                                       5  STAGE      110.00
                                          TIME         .00
                                       6  STAGE      116.48
                                          TIME        20.00

 HYDROGRAPH AT
+                   H2     372.60     1   FLOW       41471.
                                          TIME        15.75
                                       2  FLOW       41471.
                                          TIME        15.75
                                       3  FLOW           0.
                                          TIME         .00
                                       4  FLOW           0.
                                          TIME         .00
                                       5  FLOW           0.
                                          TIME         .00
                                       6  FLOW       41471.
                                          TIME        15.75

  2 COMBINED AT
+                   C2     788.80     1   FLOW       43848.
                                          TIME        17.00
                                       2  FLOW       41471.
                                          TIME        15.75
                                       3  FLOW           0.
                                          TIME         .00
                                       4  FLOW           0.
                                          TIME         .00
                                       5  FLOW           0.
                                          TIME         .00
                                       6  FLOW       43848.
                                          TIME        17.00

 ROUTED TO
+                  R2-3     788.80     1   FLOW       36508.
                                          TIME        21.00
                                       2  FLOW       30590.
                                          TIME        19.75
                                       3  FLOW           0.
                                          TIME         .00
                                       4  FLOW           0.
                                          TIME         .00
                                       5  FLOW           0.
                                          TIME         .00
                                       6  FLOW       36508.
                                          TIME        21.00

                                       ** PEAK STAGES IN FEET **
```

```
                                  1   STAGE      115.54
                                      TIME        21.00
                                  2   STAGE      114.99
                                      TIME        19.75
                                  3   STAGE      110.00
                                      TIME          .00
                                  4   STAGE      110.00
                                      TIME          .00
                                  5   STAGE      110.00
                                      TIME          .00
                                  6   STAGE      115.54
                                      TIME        21.00

 HYDROGRAPH AT
+                    H3    186.60   1   FLOW       20112.
                                      TIME        16.25
                                  2   FLOW           0.
                                      TIME          .00
                                  3   FLOW       20112.
                                      TIME        16.25
                                  4   FLOW           0.
                                      TIME          .00
                                  5   FLOW           0.
                                      TIME          .00
                                  6   FLOW       20112.
                                      TIME        16.25

  2 COMBINED AT
+                    C3    975.40   1   FLOW       43373.
                                      TIME        20.00
                                  2   FLOW       30590.
                                      TIME        19.75
                                  3   FLOW       20112.
                                      TIME        16.25
                                  4   FLOW           0.
                                      TIME          .00
                                  5   FLOW           0.
                                      TIME          .00
                                  6   FLOW       43373.
                                      TIME        20.00

 HYDROGRAPH AT
+                    H4    366.20   1   FLOW           0.
                                      TIME          .00
                                  2   FLOW           0.
                                      TIME          .00
                                  3   FLOW           0.
                                      TIME          .00
                                  4   FLOW       27117.
                                      TIME        17.75
                                  5   FLOW           0.
                                      TIME          .00
                                  6   FLOW       27117.
                                      TIME        17.75

  2 COMBINED AT
+                    C4   1341.60   1   FLOW       43373.
                                      TIME        20.00
                                  2   FLOW       30590.
                                      TIME        19.75
                                  3   FLOW       20112.
                                      TIME        16.25
                                  4   FLOW       27117.
                                      TIME        17.75
                                  5   FLOW           0.
                                      TIME          .00
                                  6   FLOW       63608.
                                      TIME        19.25

 ROUTED TO
+                  R4-5   1341.60   1   FLOW       39621.
                                      TIME        22.50
                                  2   FLOW       23327.
                                      TIME        22.25
                                  3   FLOW       16481.
                                      TIME        18.50
                                  4   FLOW       23874.
                                      TIME        19.50
                                  5   FLOW           0.
                                      TIME          .00
                                  6   FLOW       57189.
                                      TIME        22.25

                                 ** PEAK STAGES IN FEET **
                                  1   STAGE      116.19
```

```
                                        TIME        22.50
                                    2   STAGE      114.53
                                        TIME        22.25
                                    3   STAGE      113.68
                                        TIME        18.50
                                    4   STAGE      114.59
                                        TIME        19.50
                                    5   STAGE      110.00
                                        TIME          .00
                                    6   STAGE      117.58
                                        TIME        22.25

 HYDROGRAPH AT
+                   H5     43.00    1   FLOW           0.
                                        TIME          .00
                                    2   FLOW           0.
                                        TIME          .00
                                    3   FLOW           0.
                                        TIME          .00
                                    4   FLOW           0.
                                        TIME          .00
                                    5   FLOW        7148.
                                        TIME        15.00
                                    6   FLOW        7148.
                                        TIME        15.00

  2 COMBINED AT
+                   C5   1384.60    1   FLOW       39621.
                                        TIME        22.50
                                    2   FLOW       23327.
                                        TIME        22.25
                                    3   FLOW       16481.
                                        TIME        18.50
                                    4   FLOW       23874.
                                        TIME        19.50
                                    5   FLOW        7148.
                                        TIME        15.00
                                    6   FLOW       57542.
                                        TIME        22.25


 *** NORMAL END OF HEC-1 ***


    -----DSS---ZCLOSE Unit:  71,   File: HASSYFU.DSS
              Pointer Utilization:   .26
              Number of Records:     50
              File Size:    636.7  Kbytes
              Percent Inactive:    .0
```