HYDROLOGIC REPORT
EVANS CREEK BLOCK "N"
HYDROLOGIC INVESTIGATION

Volume II - Technical Appendix

Washoe County, NV
For
Washoe County Water Resources Department

Nimbus Job No. 9912
July, 1999

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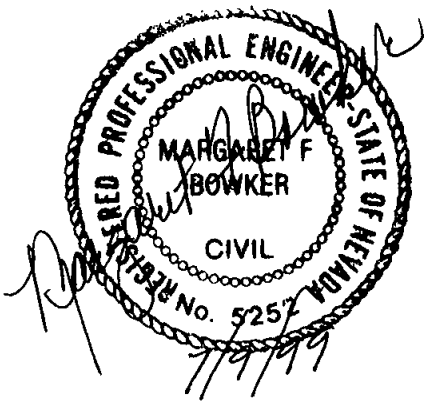

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APPENDICES

Appendix A. Rainfall Depth Calculations

Appendix B. SCS Runoff Curve Number Calculations

Appendix C. Lag Time/Time of Concentration Calculations

Appendix D. HEC-1 Model Results and Hydrographs

Appendix A

RAINFALL DISTRIBUTION CALCULATION FOR HEC-1 INPUT

Methodology per the Washoe County Criteria and Drainage Manual

1) Calculate average D(2,X) storm depth using isohyetal method

Sub-Basin		Sub-area, (miles^2)			Sub-area Precip Depth (in)			D(2,1)	D(2,6) Precip*Area	D(2,24)
		1 hour	6 hour	24hour	1 hour	6 hour	24hour	1 hour	6 hour	24hour
E1	A1	0.77	0.77	0.29	0.40	0.90	1.40	0.31	0.69	0.41
	A2	0.00	0.00	0.48	0.40	0.80	1.30	0.00	0.00	0.62
Total Sub-basin Area		**0.77**	**0.77**	**0.77**						
Weighted Precip.								**0.40**	**0.90**	**1.34**
E2	A1	1.20	0.21	0.405	0.40	0.90	1.30	0.48	0.19	0.53
	A2	0.00	0.99	0.792	0.40	0.80	1.20	0.00	0.79	0.95
Total Sub-basin Area		**1.20**	**1.20**	**1.20**						
Weighted Precip.								**0.40**	**0.82**	**1.23**
E3	A1	1.51	0.37	0.953	0.40	0.90	1.30	0.60	0.33	1.24
	A2	0.00	1.14	0.557	0.40	0.80	1.20	0.00	0.91	0.67
Total Sub-basin Area		**1.51**	**1.51**	**1.51**						
Weighted Precip.								**0.40**	**0.82**	**1.26**
E4	A1	0.58	0.58	0.45	0.40	0.80	1.20	0.23	0.46	0.54
	A2	0.00	0.00	0.13	0.40	0.70	1.10	0.00	0.00	0.14
Total Sub-basin Area		**0.58**	**0.58**	**0.58**						
Weighted Precip.								**0.40**	**0.79**	**1.17**
E5	A1	0.31	0.31	0.026	0.40	0.80	1.20	0.12	0.25	0.03
	A2	0.00	0.00	0.284	0.40	0.70	1.10	0.00	0.00	0.31
Total Sub-basin Area		**0.31**	**0.31**	**0.31**						
Weighted Precip.								**0.39**	**0.81**	**1.10**

RAINFALL DISTRIBUTION CALCULATION FOR HEC-1 INPUT

Methodology per the Washoe County Criteria and Drainage Manual

1) Calculate average D(2,X) storm depth using isohyetal method

Sub-Basin	E1	E2	E3	E4	E5
D(2,1)	0.40	0.40	0.40	0.40	0.40
D(2,6)	0.90	0.82	0.82	0.79	0.81
D(2,24)	1.34	1.23	1.26	1.17	1.10

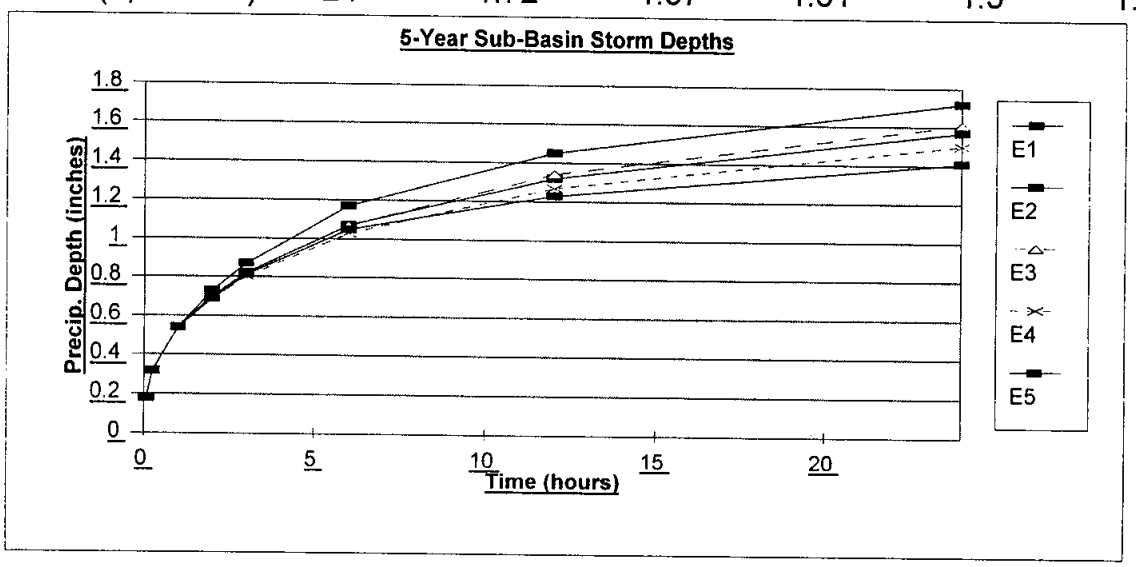
INPUT

	RGF
(5,1 hour)	1.36
(5,6 hour)	1.30
(5,24 hour)	1.28

	RATIO
(5, 5 min)	0.33
(5, 15 min)	0.60

OUTPUT

		Sub-Basin 5-Year Precip Depth				
	Time (hr)	E1	E2	E3	E4	E5
(5,5 min)	0.08	0.18	0.18	0.18	0.18	0.18
(5,15 min)	0.25	0.32	0.32	0.32	0.32	0.32
(5,1 hour)	1	0.54	0.54	0.54	0.54	0.54
(5,2 hour)	2	0.73	0.70	0.70	0.69	0.69
(5,3 hour)	3	0.87	0.82	0.82	0.80	0.81
(5,6 hour)	6	1.17	1.07	1.07	1.03	1.05
(5,12 hour)	12	1.45	1.32	1.34	1.27	1.23
(5,24 hour)	24	1.72	1.57	1.61	1.5	1.41



RAINFALL DISTRIBUTION CALCULATION FOR HEC-1 INPUT

Methodology per the Washoe County Criteria and Drainage Manual

1) Calculate average D(2,X) storm depth using isohyetal method

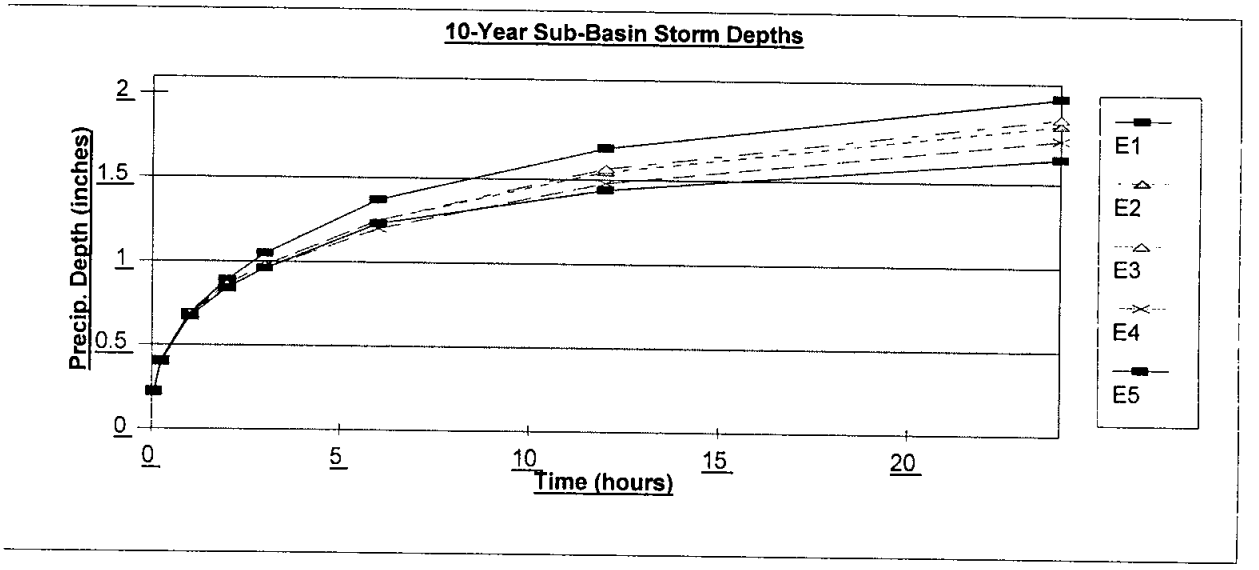
Sub-Basin	E1	E2	E3	E4	E5
D(2,1)	0.40	0.40	0.40	0.40	0.39
D(2,6)	0.90	0.82	0.82	0.79	0.81
D(2,24)	1.34	1.23	1.26	1.17	1.10

INPUT

	RGF		RATIO
(10,1 hour)	1.72	(10, 5 min)	0.33
(10,6 hour)	1.52	(10, 15 min)	0.60
(10,24 hour)	1.50		

OUTPUT

		Sub-Basin 10-Year Precip Depth				
	Time (hr)	E1	E2	E3	E4	E5
(10,5 min)	0.08	0.23	0.23	0.23	0.23	0.22
(10,15 min)	0.25	0.41	0.41	0.41	0.41	0.4
(10,1 hour)	1	0.69	0.69	0.69	0.69	0.67
(10,2 hour)	2	0.89	0.86	0.86	0.84	0.84
(10,3 hour)	3	1.05	0.98	0.98	0.96	0.96
(10,6 hour)	6	1.37	1.25	1.25	1.2	1.23
(10,12 hour)	12	1.69	1.55	1.57	1.48	1.44
(10,24 hour)	24	2.01	1.85	1.89	1.76	1.65



RAINFALL DISTRIBUTION CALCULATION FOR HEC-1 INPUT

Methodology per the Washoe County Criteria and Drainage Manual

1) Calculate average D(2,X) storm depth using isohyetal method

Sub-Basin	E1	E2	E3	E4	E5
D(2,1)	0.4	0.4	0.4	0.4	0.39
D(2,6)	0.9	0.82	0.82	0.79	0.81
D(2,24)	1.34	1.23	1.26	1.17	1.1

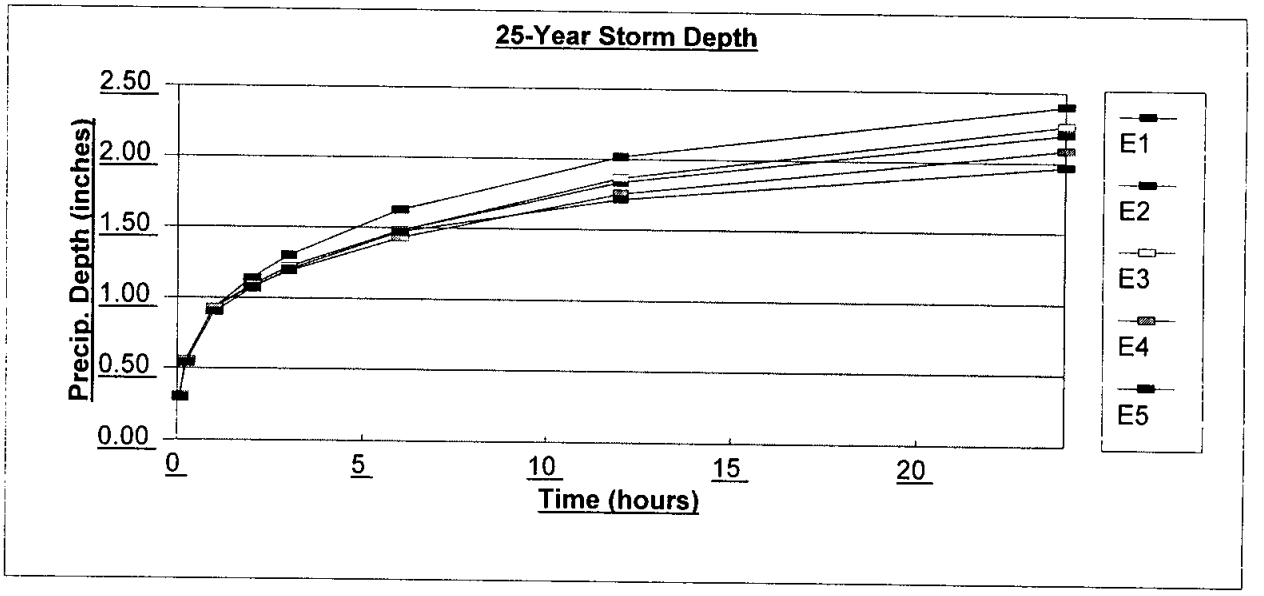
INPUT

	RGF
(25,1 hour)	2.32
(25,6 hour)	1.81
(25,24 hour)	1.79

	RATIO
(25, 5 min)	0.33
(25, 15 min)	0.60

OUTPUT

	Time (hrs)	E1	E2	E3	E4	E5
(25,5 min)	0.08	0.31	0.31	0.31	0.31	0.30
(25,15 min)	0.25	0.56	0.56	0.56	0.56	0.54
(25,1 hour)	1	0.93	0.93	0.93	0.93	0.90
(25,2 hour)	2	1.14	1.09	1.09	1.08	1.07
(25,3 hour)	3	1.30	1.22	1.22	1.19	1.20
(25,6 hour)	6	1.63	1.48	1.48	1.43	1.47
(25,12 hour)	12	2.02	1.84	1.87	1.76	1.72
(25,24 hour)	24	2.40	2.20	2.26	2.09	1.97



RAINFALL DISTRIBUTION CALCULATION FOR HEC-1 INPUT

Methodology per the Washoe County Criteria and Drainage Manual

1) Calculate average D(2,X) storm depth using isohyetal method

Sub-Basin	E1	E2	E3	E4	E5
D(2,1)	0.4	0.4	0.4	0.4	0.39
D(2,6)	0.9	0.82	0.82	0.79	0.81
D(2,24)	1.34	1.23	1.26	1.17	1.1

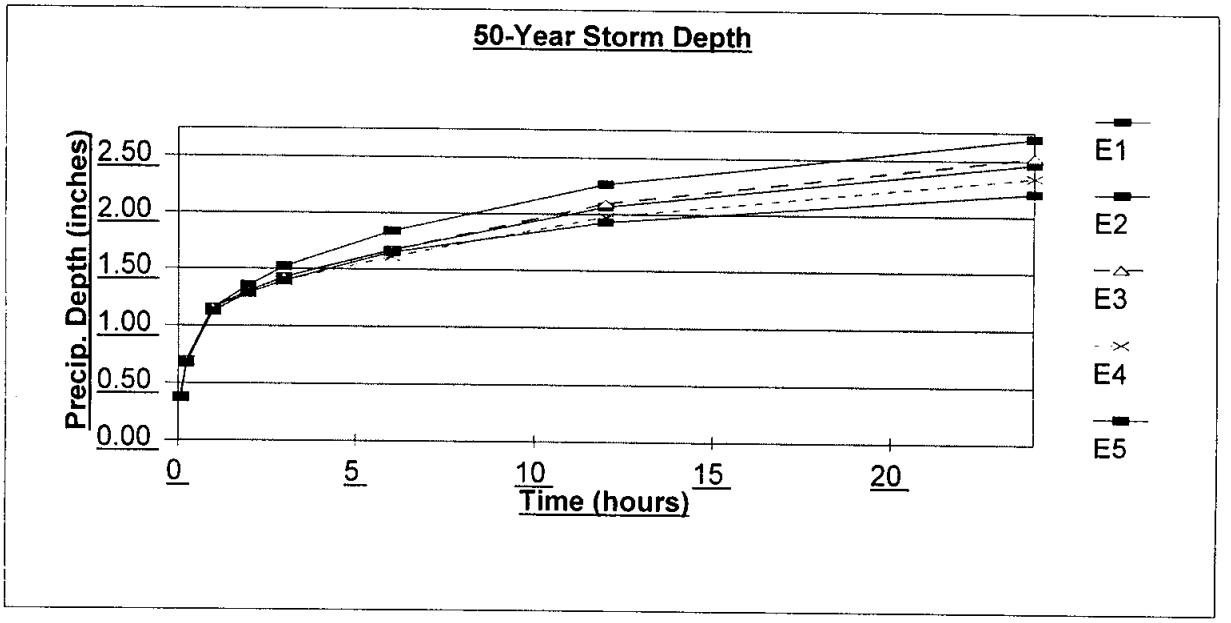
INPUT

	RGF
(50,1 hour)	2.91
(50,6 hour)	2.04
(50,24 hour)	2.01

	RATIO
(50, 5 min)	0.33
(50, 15 min)	0.60

OUTPUT

	Time (hrs)	E1	E2	E3	E4	E5
(50,5 min)	0.08	0.38	0.38	0.38	0.38	0.37
(50,15 min)	0.25	0.70	0.70	0.70	0.70	0.68
(50,1 hour)	1	1.16	1.16	1.16	1.16	1.13
(50,2 hour)	2	1.36	1.31	1.31	1.29	1.29
(50,3 hour)	3	1.52	1.43	1.43	1.40	1.40
(50,6 hour)	6	1.84	1.67	1.67	1.61	1.65
(50,12 hour)	12	2.27	2.07	2.10	1.98	1.93
(50,24 hour)	24	2.69	2.47	2.53	2.35	2.21



RAINFALL DISTRIBUTION CALCULATION FOR HEC-1 INPUT

Methodology per the Washoe County Criteria and Drainage Manual

1) Calculate average D(2,X) storm depth using isohyetal method

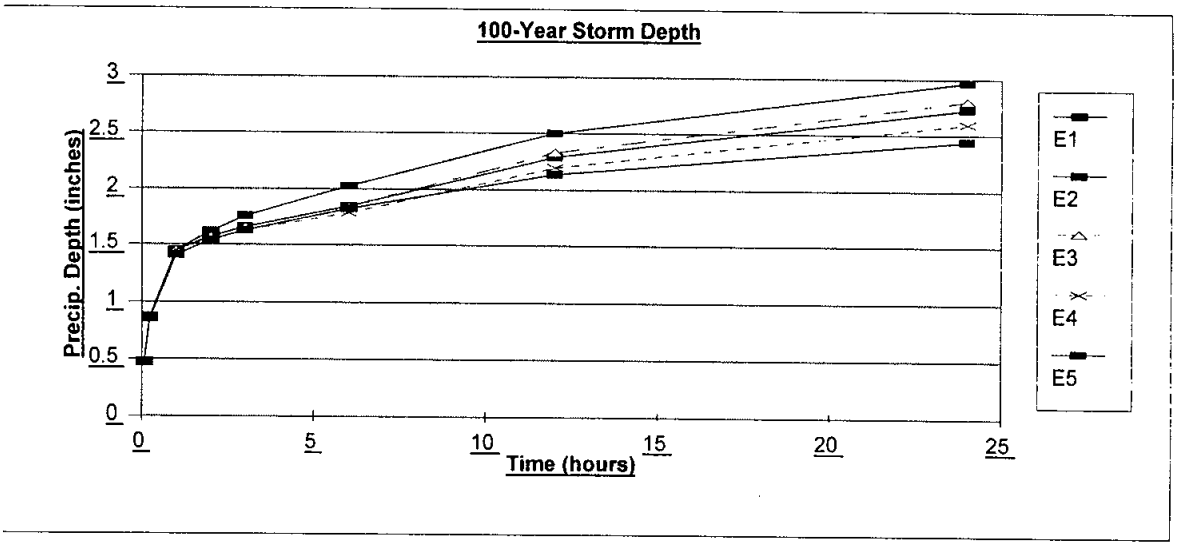
Sub-Basin	E1	E2	E3	E4	E5
D(2,1)	0.4	0.4	0.4	0.4	0.39
D(2,6)	0.9	0.82	0.82	0.79	0.81
D(2,24)	1.34	1.23	1.26	1.17	1.1

INPUT

	RGF		RATIO
(100,1 hour)	3.62	(100, 5 min)	0.33
(100,6 hour)	2.26	(100, 15 min)	0.60
(100,24 hour)	2.22		

OUTPUT

	Time (hrs)	E1	E2	E3	E4	E5
(100,5 min)	0.08	0.48	0.48	0.48	0.48	0.47
(100,15 min)	0.25	0.87	0.87	0.87	0.87	0.85
(100,1 hour)	1	1.45	1.45	1.45	1.45	1.41
(100,2 hour)	2	1.62	1.57	1.57	1.55	1.54
(100,3 hour)	3	1.76	1.66	1.66	1.63	1.63
(100,6 hour)	6	2.03	1.85	1.85	1.79	1.83
(100,12 hour)	12	2.50	2.29	2.33	2.2	2.14
(100,24 hour)	24	2.97	2.73	2.8	2.6	2.44



RAINFALL DISTRIBUTION CALCULATION FOR HEC-1 INPUT

Methodology per the Washoe County Criteria and Drainage Manual

1) Calculate average D(2,X) storm depth using isohyetal method

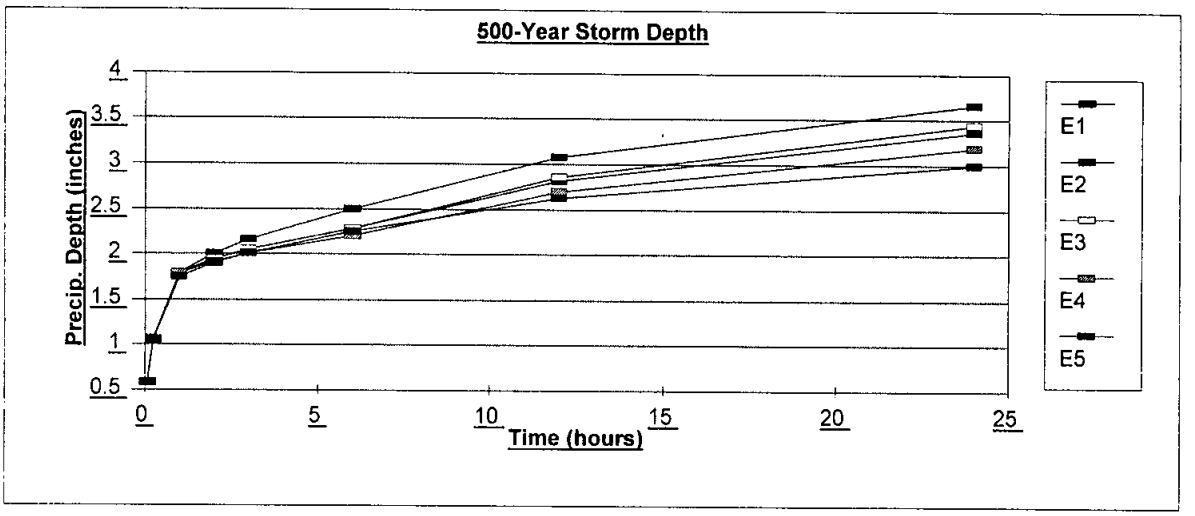
Sub-Basin	E1	E2	E3	E4	E5
D(2,1)	0.4	0.4	0.4	0.4	0.39
D(2,6)	0.9	0.82	0.82	0.79	0.81
D(2,24)	1.34	1.23	1.26	1.17	1.1

INPUT

	RGF		RATIO
(500,1 hour)	4.48	(500, 5 min)	0.33
(500,6 hour)	2.78	(500, 15 min)	0.60
(500,24 hour)	2.73		

OUTPUT

	Time (hrs)	E1	E2	E3	E4	E5
(500,5 min)	0.08	0.59	0.59	0.59	0.59	0.58
(500,15 min)	0.25	1.07	1.07	1.07	1.07	1.05
(500,1 hour)	1	1.79	1.79	1.79	1.79	1.75
(500,2 hour)	2	2.00	1.94	1.94	1.91	1.9
(500,3 hour)	3	2.16	2.05	2.05	2.01	2.01
(500,6 hour)	6	2.5	2.28	2.28	2.2	2.25
(500,12 hour)	12	3.08	2.82	2.86	2.7	2.63
(500,24 hour)	24	3.66	3.36	3.44	3.19	3



Appendix B

Worksheet 2: Runoff curve number

Project:	Evans Creek Block N Hydrology										By:	CA	Date:	06/11
Location:	Phase II Sub-Basin E1										Chk:		Date:	
Mark 1		Undeveloped	X	Developed										
1	Runoff curve number (CN)			**Note: Sage/Grass CN's per Draft Sparks Manual; Fig. 702**										

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 702	Fig. 702	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	N/A		N/A		0%	N/A
B	Sagebrush/grass with 40% vegetative cover density		56		7%	3.92
C	Sagebrush/grass with 40% vegetative cover density		68		14%	9.52
D	Sagebrush/grass with 40% vegetative cover density		76		79%	60.04
			Totals =		100%	73.48
	CN (weighted) = (total product) / (total area) = 73.48		Use CN =		73	
					Total Sub-basin Area = 0.772	sq. miles

Developed Land Use	Soil Name and hydrologic group	CN per Table 702	Area sq. miles	% of Total Area	Product of CN X area
RES 1/3 acre	D	86	0.078	10.10%	8.7
RES 1/3 acre	D	86	0.051	6.61%	5.7
COM	D	93	0.029	3.76%	3.5
Undeveloped	D	73	0.614	79.53%	58.1
				100.00%	
	Total Developed Land Use Weighted CN =				**76.0**

Worksheet 2: Runoff curve number

Project:	Evans Creek Block N Hydrology											By:	CA	Date:	06/11	
Location:	Phase II Sub-Basin E2											Chk:		Date:		
Mark 1		Undeveloped	X	Developed												
1	Runoff curve number (CN)			**Note: Sage/Grass CN's per Draft Sparks Manual; Fig. 702**												

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 702	Fig. 702	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	N/A		N/A		N/A	N/A
B	Sagebrush/grass with 40% vegetative cover density		56		17%	9.52
C	Sagebrush/grass with 40% vegetative cover density		68		6%	4.08
D	Sagebrush/grass with 40% vegetative cover density		76		77%	58.52
			Totals =		100%	72.12
	CN (weighted) = (total product) / (total area) = 72.12		Use CN =		72	
					Total Sub-basin Area = 1.200	sq. miles

Developed Land Use	Soil Name and hydrologic group	CN per Table 702	Area sq. miles	% of Total Area	Product of CN X area
RES 1/3 acre	D	86	0.256	21.33%	18.3
RES 1 acre	D	84	0.039	3.25%	2.7
IND	D	92	0.037	3.08%	2.8
COM	D	93	0.027	2.25%	2.1
COM	D	93	0.029	2.42%	2.2
Undeveloped	D	72	0.812	67.67%	48.7
				100.00%	
	Total Developed Land Use Weighted CN =				**77.0**

Worksheet 2: Runoff curve number

Project:	Evans Creek Block N Hydrology			By:	CA	Date: 06/11
Location:	Phase II Sub-Basin E3			Chk:		Date:
Mark 1		Undeveloped	X	Developed		
1	Runoff curve number (CN)			**Note: Sage/Grass CN's per Draft Sparks Manual; Fig. 702**		

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 702	Fig. 702	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	N/A		N/A		0%	N/A
B	Sagebrush/grass with 25% vegetative cover density		63.5		7%	4.45
C	Sagebrush/grass with 25% vegetative cover density		76		10%	7.6
D	Sagebrush/grass with 25% vegetative cover density		82		83%	68.06
			Totals =		100%	80.11
	CN (weighted) = (total product) / (total area) = 80.105		Use CN =		80	
				Total Sub-basin Area =	1.510	sq. miles

Developed Land Use	Soil Name and hydrologic group	CN per Table 702	Area sq. miles	% of Total Area	Product of CN X area
RES 1 acre	D	84	0.078	5.17%	4.3
RES 1/8 acre	D	92	0.051	3.38%	3.1
Undeveloped	D	80	1.381	91.46%	73.2
				100.00%	
	Total Developed Land Use Weighted CN =				**81.0**

Worksheet 2: Runoff curve number

Project:	Evans Creek Block N Hydrology									By:	CA	Date:	06/11
Location:	Phase II Sub-Basin E4									Chk:		Date:	
Mark 1		Undeveloped	X	Developed									
1	Runoff curve number (CN)			**Note: Sage/Grass CN's per Draft Sparks Manual; Fig. 702**									

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 702	Fig. 702	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	N/A		N/A		0%	N/A
B	Sagebrush/grass with 40% vegetative cover density		56		1%	0.56
C	Sagebrush/grass with 40% vegetative cover density		68		3%	2.04
D	Sagebrush/grass with 40% vegetative cover density		76		96%	72.96
			Totals =		100%	75.56
	CN (weighted) = (total product) / (total area) =	75.56	Use CN =		76	
					Total Sub-basin Area =	0.576 sq. miles

Developed Land Use	Soil Name and hydrologic group	CN per Table 702	Area sq. miles	% of Total Area	Product of CN X area
RES 1/3 acre	D	86	0.069	11.98%	10.3
Irr. Pasture (good)	D	80	0.05	8.68%	6.9
Undeveloped	D	76	0.457	79.34%	60.3
				100.00%	
	Total Developed Land Use Weighted CN =				**78.0**

Worksheet 2: Runoff curve number

Project:	Evans Creek Block N Hydrology								By:	CA	Date:	06/11
Location:	Phase II Sub-Basin E5								Chk:		Date:	
Mark 1		Undeveloped	X	Developed								
1	Runoff curve number (CN)			**Note: Sage/Grass CN's per Draft Sparks Manual; Fig. 702**								

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 702	Fig. 702	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	N/A		N/A		0%	N/A
B	Sagebrush/grass with 40% vegetative cover density		56		0%	0
C	Sagebrush/grass with 40% vegetative cover density		68		1%	0.68
D	Sagebrush/grass with 40% vegetative cover density		76		99%	75.24
			Totals =		100%	75.92
	CN (weighted) = (total product) / (total area) =	75.92	Use CN =		76	
					Total Sub-basin Area =	0.310 sq. miles

Developed Land Use	Soil Name and hydrologic group	CN per Table 702	Area sq. miles	% of Total Area	Product of CN X area
RES 1/3 acre	D	86	0.008	2.58%	2.2
RES 1/3 acre	D	86	0.031	10.00%	8.6
Irr. Pasture/Park	D	80	0.17	54.84%	43.9
Undeveloped	D	76	0.101	32.58%	24.8
				100.00%	
	Total Developed Land Use Weighted CN =				**80.0**

Appendix C

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JOB EVANS CREEK 07725-9912
SHEET NO. 1 OF 5
CALCULATED BY CA DATE 5/26/99
CHECKED BY RJJ DATE 5/27/99
SCALE

LAG TIME CALCULATIONS (PER DRAFT WASHOE COUNTY DRAINAGE MANUAL)

PHASE II

SUB-BASIN E1 ⇒ AREA = 0.772 MI² < 1 MI²; AVE. SLOPE = 15% > 10%

USE TLAG EQ. 710

$T_{LAG} = 22.1 K_N (L L_c / S^{1/2})^{1/3}$

1) DEVELOP K_N FOR PARTIALLY DEVELOPED BASIN

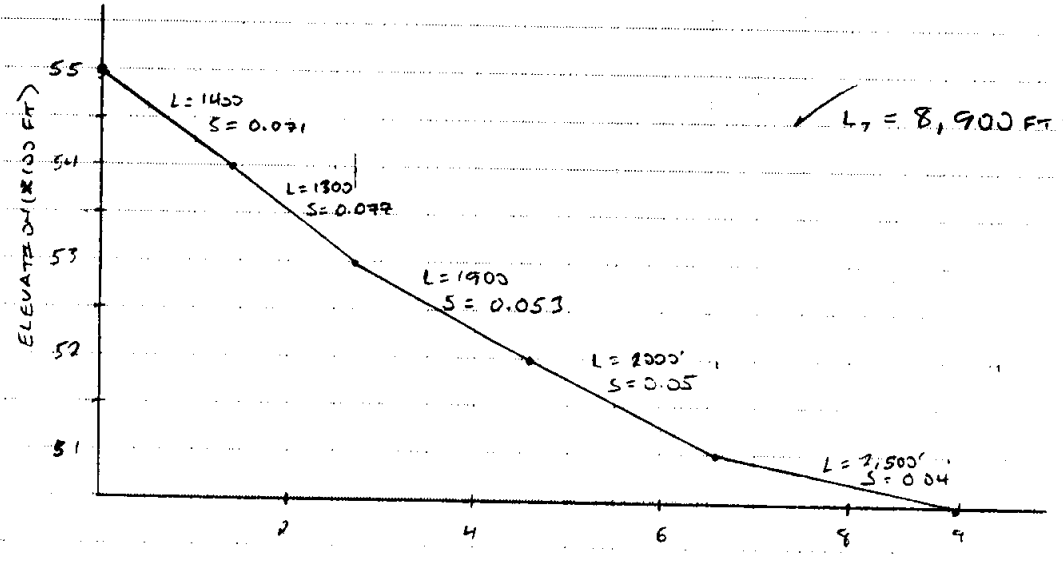
- COMMERCIAL $K_N = 0.05$; %A = 3.8% ✓
- RESIDENTIAL 1/3 ACRE LOTS; AVE. IMPERVIOUS 30%; $K_N = 0.05$; %A = 16.4% ✓ 16.7
- UNDEVELOPED RANGELAND; MIXED GRASS/SHRUB; $K_N = 0.09$; %A = 83.6% ✓ 79.5

0.157 0.795

$K_N = 0.05(0.038) + 0.05(0.164) + 0.09(0.836)$

$K_N = 0.085$ ← WEIGHTED K_N FOR SUB-BASIN

2) DEVELOP AVE. SLOPE (S) OF LONGEST WATERCOURSE



✓ $L_T = 8,900$ FT = 1.7 MI

- EQUIVALENT SLOPE; $S_E = \left[\frac{\text{LENGTH (X1000 FT)}}{\sum L_i / S_i^{1/2}}\right]^2 = \left(\frac{8,900'}{\frac{1400}{0.071^{1/2}} + \frac{1300}{0.077^{1/2}} + \frac{1900}{0.053^{1/2}} + \frac{2000}{0.05^{1/2}} + \frac{1500}{0.04^{1/2}}}\right)^2$

✓ $S_E = 0.05$ FT/FT = 265 FT/MI ← EQUIVALENT SLOPE OF LONGEST WATERCOURSE

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JOB EVANS CREEK 07775-9912
SHEET NO. 2 OF 5
CALCULATED BY CK DATE 5/26/99
CHECKED BY RDJ DATE 6-4-99
SCALE

LAG TIME CALCULATIONS (CONT'D)

PHASE II

SUB-BASIN E1

3) DEVELOP LENGTH OF WATERCOARSE TO POINT OPPOSITE BASIN CENTROID (SEE WORKING MAP DATED MAY 25, 1999)

4,000 = 0.76 mi

L_c = 3,400 FT = 0.65 MI ← WATERCOARSE CENTROID LENGTH

4) CALCULATE TLAG

$$TLAG = 22.1(0.085)\left(\frac{(1.7)(0.65)}{(265)^{1/2}}\right)^{1/3}$$

TLAG = 0.77 HOURS ← LAG TIME FOR BASIN E1

0.74 hr

SUB-BASIN E2 ⇒ AREA = 1.2 MI² > 1 MI²; AVG. SLOPE ≅ 10%

USE TLAG EQ. 710

1) DEVELOP K_N FOR PARTIALLY DEVELOPED BASIN

- COMMERCIAL K_N = 0.05; % A = 4.7% ✓
- INDUSTRIAL K_N = 0.05; % A = 3.1% ✓
- RESIDENTIAL: 1/3 ACRE LOTS; 30% AVE. IMPERVIOUS; K_N = 0.05, % A = 22% ✓
  1 ACRE LOTS; 20% AVE. IMPERVIOUS; K_N = 0.09, % A = 3.3% ✓
- UNDEVELOPED RANGELAND; MIXED GRASS/SHRUB; K_N = 0.09; % A = 66.9% 67.3% ✓

$K_N = 0.05(0.047) + 0.05(0.031) + 0.05(0.22) + 0.09(0.033) + 0.09(0.669)$

K_N = 0.078 ← WEIGHTED K_N FOR E2

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JOB EVANS CREEK 07775-9912
SHEET NO. 3 OF 5
CALCULATED BY CA DATE 5/26/99
CHECKED BY [illegible] DATE 6-9-99
SCALE

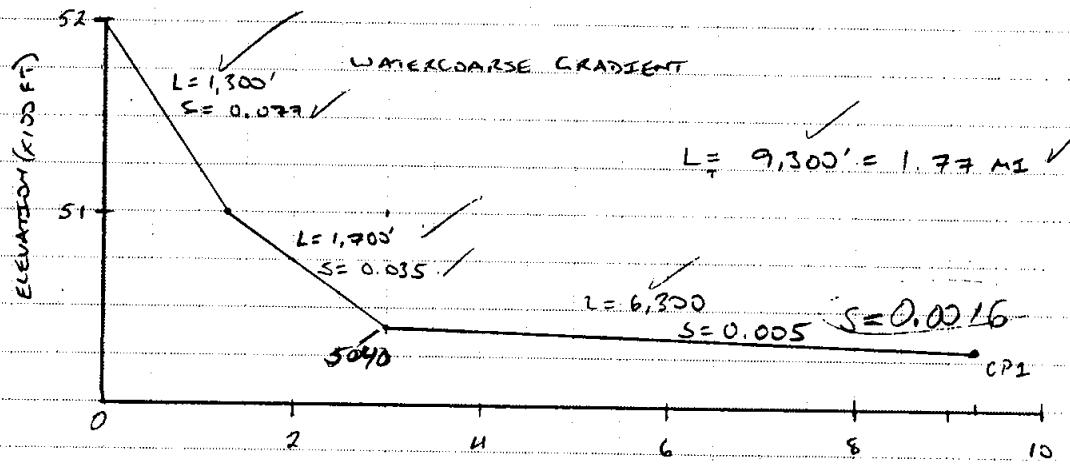
LAG TIME CALCULATIONS

PHASE II

SUB-BASIN E2 (CONT'D)

2) DEVELOP AVE. SLOPE

- LONGEST WATERCOARSE STARTS IN NE CORNER OF E2 AND RUNS TO CP1



$L_T = 9{,}300' = 1.77$ MI

$$S_E = \left(\frac{9300}{\frac{1300}{0.077^{1/2}} + \frac{1700}{0.035} + \frac{6300}{0.005^{1/2}}} \right)^2$$

$\bar{S} = 0.0182 = 96$ FT/MI

$S = 0.0016$

$S_E = 0.008$ FT/FT $= 43$ FT/MI ← EQUIVALENT SLOPE OF WATERCOARSE

$5500 = 1.04$ MI

3) DEVELOP L_c (SEE MAP); $L_c = 4{,}900' = 0.93$ MI

4) CALCULATE TLAG

$$TLAG = 22.1(0.078)\left(\frac{(1.77)(0.93)}{(43)^{1/2}}\right)^{1/3}$$

TLAG = 1.1 HOURS ← LAG TIME FOR E2

$t_{lag} = 0.99$ hrs

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JOB EVANS CREEK 07775-9912
SHEET NO. 4 OF 5
CALCULATED BY CA DATE 5/26/99
CHECKED BY RJJ DATE 6-4-99
SCALE

PHASE II (CONT'D)

SUB-BASIN E3 ⇒ AREA = 1.51 MI² > 1 MI²; USE TLAG EQ. 710

1) DEVELOP K_N FOR PARTIALLY DEVELOPED BASIN

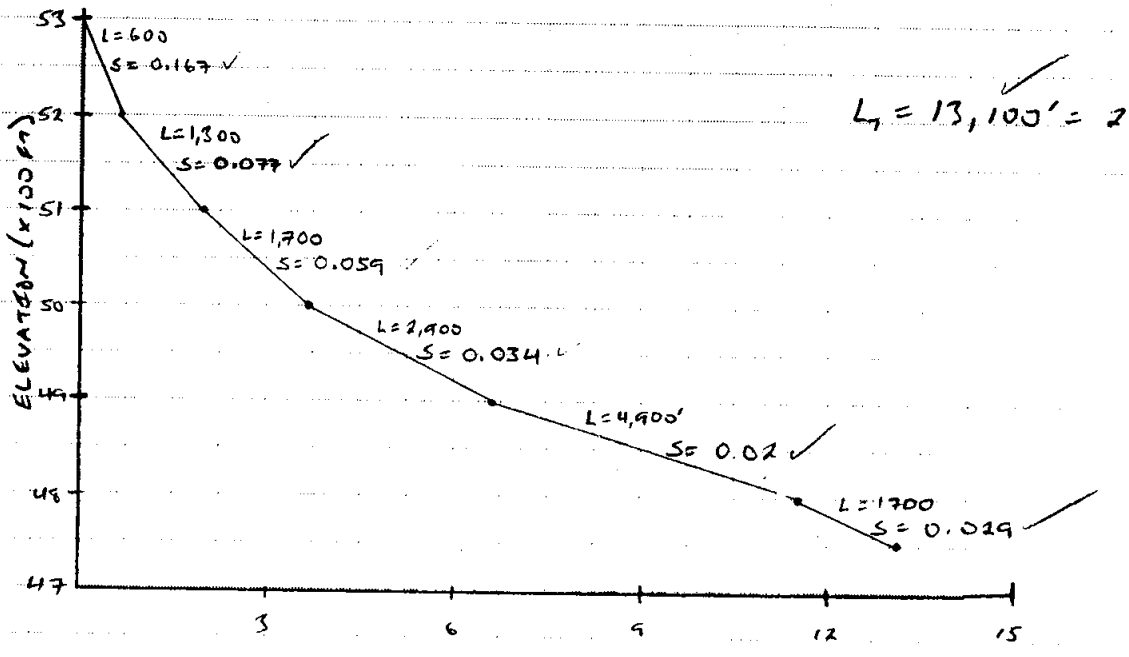
- RESIDENTIAL: ½ ACRE LOTS, 65% AVE. IMPERVIOUS, $K_N = 0.05$ ✓
  %A = 1.7% ✓
  1 ACRE LOTS; 20% AVE. IMPERVIOUS, $K_N = 0.07$, %A = 7.3% ✓
- UNDEVELOPED RANGELAND, MIXED SHRUB/GRASS; $K_N = 0.09$; %A = 91% ✓

$K_N = 0.05\,(0.017) + 0.07\,(0.073) + 0.09\,(0.91) =$

$K_N = 0.088$ ✓ ← WEIGHTED K_N FOR E3

2) DEVELOP S_E FOR LONGEST WATERCOURSE IN E3

- LONGEST WATERCOURSE STARTS IN NW CORNER OF E3 AND RUNS TO CP2



$L_T = 13{,}100' = 2.5$ MI ✓ ✓

$$S_E = \left(\frac{13{,}100}{\frac{600}{0.167^{1/2}} + \frac{1300}{0.077^{1/2}} + \frac{1700}{0.059^{1/2}} + \frac{2900}{0.034^{1/2}} + \frac{4900}{0.02^{1/2}} + \frac{1700}{0.029^{1/2}}} \right)^2$$

$S_E = 0.032$ FT/FT = 167 FT/MI ← EQUIVALENT SLOPE OF WATERCOURSE

$\bar{S} = 0.0417$ ft/ft (weighted) = 220 ft/mi

$\bar{S} = 0.0.0423$ (weighted)

PRODUCT 204-1 (Single Sheets) 205-1 (Padded)

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JOB EVANS CREEK 07775-9912
SHEET NO. 5 OF 5
CALCULATED BY cf DATE 5/26/99
CHECKED BY RJ DATE 6-4-99
SCALE

PHASE II

SUB-BASIN E3 (CONT'D)

3) DEVELOP LENGTH OF WATERCOARSE TO POINT OPPOSITE BASIN CENTROID (SEE MAP)

$L_c = 8,000' = 1.5$ MI ✓

4) CALCULATE TLAG

$$TLAG = 22.1\,(0.088)\left(\frac{(2.5)(1.5)}{(167)^{1/2}}\right)^{1/3}$$

TLAG = 1.3 HOURS $t_{lag} = 1.24$ hr

SUB-BASINS E4 AND E5

- SUB-BASINS E4 AND E5 ARE SAME AS PHASE I SUB-BASINS E3 AND E4, RESPECTIVELY.

TLAG E4 = 0.57 HOURS ← LAG TIME FOR E4

TLAG E5 = 0.5 HOURS ← LAG TIME FOR E5

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JOB EVANS CREEK 07775-9912
SHEET NO. 4 OF 6
CALCULATED BY CA DATE 5/25/99
CHECKED BY RJ DATE 6-1-99
SCALE

LAG TIME CALCULATIONS (CONT'D)

PHASE I

SUB-BASIN E3 => AREA = 0.576 MI² < 1 MI²; AVE. SLOPE > 10%

∴ USE TLAC EQ. 710

$$TLAC = 22.1\, K_N\, (L L_c / S^{1/2})^{1/3}$$

1) DEVELOP K_N FOR PARTIALLY DEVELOPED BASIN

- RESIDENTIAL 1/3 ACRE LOTS; 30% AVE. IMPERVIOUS; $K_N = 0.05$; %A = 12%
- AGRICULTURE (IRRIGATED); $K_N = 0.10$; %A = 8.6%
- UNDEVELOPED RANGELAND; MIXED GRASS/SHRUB; $K_N = 0.09$; %A = 79.4%

$$K_N = 0.05(0.12) + 0.10(0.086) + 0.09(0.794)$$

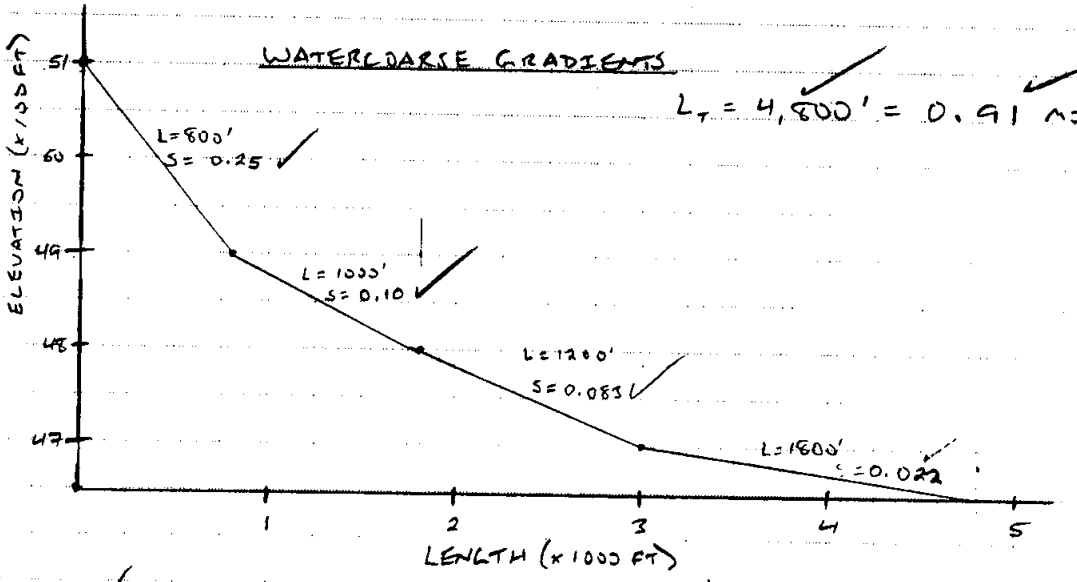
$K_N = 0.086$ ← WEIGHTED K_N FOR SUB-BASIN

2) DEVELOPE AVE. SLOPE (S) OF LONGEST WATERCOARSE (FEET/MILE)

- LONGEST WATERCOARSE IN E3 STARTS IN WEST PORTION & RUNS INTO EVANS CREEK (BELOW DITCH FLUME) THEN TO CP3.

WATERCOARSE GRADIENTS

$L_T = 4,800' = 0.91$ MI



$$S_E = \left(\frac{4,800}{\frac{800}{0.25^{1/2}} + \frac{1000}{0.10^{1/2}} + \frac{1200}{0.083^{1/2}} + \frac{1800}{0.022^{1/2}}} \right)^2$$

$S_E = 0.052$ FT/FT = 273 FT/MI ← EQUIVALENT SLOPE OF LONGEST WATERCOARSE

$S_{(weighted)} = 0.0445$ FT/FT = 483

$S_{(unweighted)} = 0.0917$ FT/FT = 484

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JOB EVANS CREEK 07775-9912
SHEET NO. 5 OF 6
CALCULATED BY CA DATE 5/25/99
CHECKED BY [illegible] DATE 6-4-99
SCALE

LAG TIME CALCULATIONS (CONT'D)

PHASE I

SUB-BASIN E3 (CONT'D)

3) DEVELOP LENGTH OF WATERCOARSE TO POINT OPPOSITE CENTROID (SEE WORKING MAP)

$L_c = 2,400' = 0.46$ MI ← WATERCOARSE LENGTH TO BASIN CENTROID

4) CALCULATE TLAG

$$TLAG = 22.1\,(0.086)\left(\frac{0.91\,(0.46)}{(273\ \text{FT/MI})^{1/2}}\right)^{1/3}$$

TLAG = 0.57 HOURS ← LAG TIME FOR SUB-BASIN E3

$t_{lag} = 0.51$ hr ✓

SUB-BASIN E4 ⇒ AREA = 0.31 MI² < 1 MI² ; AVE. SLOPE < 10%

∴ USE TLAG EQ. 709

$TLAG = 0.6\,t_c$ WHERE $t_c = t_i + t_t$

1) CALCULATE t_i ⇒ $t_i = \dfrac{1.8(1.1 - R)L^{1/2}}{S^{1/3}}$

- WHERE $R = 0.0132 * CN - 0.39$ (CN = 80)

$= 0.0132\,(78) - 0.39$

$R = 0.64$ ← FLOW RUNOFF COEFFICIENT

$R = .1 - .7$

- AVERAGE BASIN SLOPE (%): $S = 5.8\%$ ← AVE. BASIN SLOPE (%) (ESTIMATED)
- SAY $L_0 = 500'$

$$t_i = \frac{1.8(1.1 - 0.64)(500)^{1/2}}{(5.8)^{1/3}} = 10.4\ \text{MIN}$$ ← TIME FOR INITIAL OVERLAND FLOW

$t_i = 7.6$ min ✓

702.1

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JOB EVANS CREEK 07775-9912
SHEET NO. 6 OF 6
CALCULATED BY CA DATE 5/26/99
CHECKED BY RJJ DATE 6-7-99
SCALE

PHASE I

SUB-BASIN E4 (CONT'D)

2) CALCULATE TRAVEL TIME (t_t)

SAY THREE REACHES IN E4

• FROM WESTERLY PORTION E4 TO HIGHLAND DITCH

1. $S = 5.6\%$ AND ALLUVIAL FAN WESTERN MTN. REACHES; USING FIG. 7.01

$V = 2.5$ FPS & $L = 1{,}500$ FT ∴ $t_t = 600\,s = 10$ MIN

2. $S = 4.0\%$ AND SHORT GRASSED PASTURE

$V = 1.8$ FT/S AND $L = 1{,}500$ FT ∴ $t_t = 13.9$ MIN

3. $S = 2\%$ AND EVANS CREEK CHANNEL; SAY $R_H = 0.33$; $n = 0.045$; $L = 2000'$

$$V = \frac{1.49}{0.045}(0.33)^{2/3}(2000\,FT)^{1/2}$$

$V = 2.2$ FPS ∴ $t_t = \frac{2000'}{2.2\,FPS} \times \frac{1}{60} = 15.2$ MIN

OK

• t_t FOR SUB-BASIN E4

$t_t = 10 + 13.9 + 15.2 = 39$ MIN ≅ 40 MIN = 0.67 HR

3) CALCULATE TLAG

$TLAG = 0.6\,t_t = 0.6(t_i + t_t) = 0.6(10.4\,MIN + 40\,MIN)$

$TLAG = 0.5$ HOURS ← LAG TIME FOR SUB-BASIN E4

$t_{lag} = 0.53$ hr

OK

Appendix D

5-YEAR, 24 HOUR

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

          *DIAGRAM
    1     ID     PHASE II SUB-AREAS
    2     ID
    3     ID     EVANS CREEK BLOCK N HYDROLOGY                NIMBUS JOB # 9912
    4     ID     5 YEAR 24 HOUR EVENT                         DATE : MAY 1999
    5     ID     NIMBUS ENGINEERS, RENO, NEVADA               FILE NAME: 2EVNS5.DAT
    6     ID
    7     ID
    8     ID    THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB
    9     ID    ********************************************************************************
   10     ID     GONI CANYON                                  Nimbus Job #: 9606          *
   11     ID     Prepared by Nimbus Engineers                 Date:  August 1996          *
   12     ID                                                  File Name: GONI-5.DAT       *
   13     ID    ********************************************************************************
   14     ID
   15     ID    The  5-yr PH card rainfall depths were determined from the
   16     ID    Precipitation Frequency Study of the United States, NOAA Atlas 14,
   17     ID    Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation
   18     ID    events and the methodology per the Draft Washoe County Hydrologic
   19     ID    Criteria and Design Manual.
   20     ID
   21     ID    ************************************************************************
   22     ID    THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND          *
   23     ID    EXISTING CONDITIONS (PLAN 2)                                        *
   24     ID    ************************************************************************
          *
   25     IT       5 01MAY99     0005     288
   26     IO       4        0
   27     JP       2
          *   DEPTH AREA REDUCTION FACTOR FROM NOAA
   28     JR    PREC    0.99
          *


   29     KK      E1 SUBBASIN E1
   30     BA   0.772
   31     PH                    0.18    0.32    0.54    0.73    0.87    1.17    1.45    1.72
   32     LS              76
   33     UD    0.79
          * ZW A=5-YR C=FLOW F=E1FLOW
          *


   34     KK      E2 SUB-BASIN E2
   35     BA     1.2
   36     PH                    0.18    0.32    0.54    0.70    0.82    1.07    1.32    1.57
   37     LS              77
   38     UD    0.99
          * ZW A=5-YR C=FLOW F=E2FLOW
          *


   39     KK     CP1 COMBINE E1 AND E2 HYDROGRAPHS AT CP1
   40     HC       2
          * ZW A=5-YR C=FLOW F=E1+E2
          *
```

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

  41      KK    RCH1 ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
  42      RD   10800   0.026    0.07            TRAP       6       2
          *

  43      KK      E3 SUBBASIN E3
  44      BA    1.51
  45      PH                   0.18    0.32    0.54    0.70    0.82    1.07    1.34    1.61
  46      LS              81
  47      UD    1.24
          * ZW A=5-YR C=FLOW F=E3FLOW
          *

  48      KK     CP2 COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
  49      HC       2
          * ZW A=5-YR C=FLOW F=E1+E2+E3
          *

  50      KK    DAM1 PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
          * KO             2
          * KP     1
          * KM PROPOSED RESERVOIR; flow through principal and emergency spillways ONLY.
          * RS     1    STOR       0
          * SA .1354   .9137   1.954    3.63    3.71    3.79    3.87    3.95    5.12     6.
          * SA  7.97    8.92    9.93   10.18   10.45   10.94   11.55   12.67   14.15    15.
          * SE   765     775     785  795.89  796.33  796.76   797.2  797.64  803.16   808.
          * SE814.22  816.98  819.74  820.36  820.97  822.07  823.42  825.87  828.94    832
          * SQ     0       0       0       0   13.46   38.09   69.97  107.73  114.35   120.
          * SQ126.56  129.43  132.24  218.16  401.01  881.31  1708.7  3654.6  6920.1 11031
          * ZW A=5-YR C=FLOW F=DAMFLOW
          * ZW C=STOR F=DAMSTOR
          * ZW C=STAGE F=DAMSTAGE
          *
  51      KP       1
  52      KM   PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa
  53      RS       1    STOR       0
  54      SA    1.18    1.21    1.23    1.27    1.32    1.41    1.50    1.59    1.70    1.91
  55      SA    2.83    3.91    3.97    4.72    6.68    9.07   10.37   11.09   12.75   15.70
  56      SE   775.4   775.7   776.0   776.4   777.0   778.0   779.0   780.0   781.0   783.0
  57      SE     790     796   796.3   800.4  808.69  816.98  820.36  822.10  825.87   832.0
  58      SQ     5.4    12.6    21.4      35    40.8    49.9    57.5    64.3    70.4    81.3
  59      SQ    92.1   95.43   112.2     134     145   155.4   244.5   907.5  3680.8   11060
  60      ZW   A=5-YR C=FLOW F=30CMP
  61      ZW   C=STOR F=30CMP
  62      ZW   C=STAGE F=30CMP
          *
          * KO             2
  63      KP       2
  64      KM    EXISTING CONDITIONS (NO RESERVOIR)
  65      RN
  66      ZW   A=5-YR B=EXIST C=FLOW F=EXISTFLOW
          *
```

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

  67      KK    RCH3  ROUTE TO CP3
  68      KM   ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
  69      KM   HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES
  70      RD    4200   0.023    0.09            TRAP       6       2
          *

  71      KK      E4 SUBBASIN E4
  72      BA    0.58
  73      PH                   0.18    0.32    0.54    0.69    0.80    1.03    1.27     1.5
  74      LS              78
  75      UD    0.57
          * ZW A=5-YR C=FLOW F=E4FLOW
          *

  76      KK     CP3 COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
          * KO             2
  77      HC       2
  78      ZW   A=5-YR C=FLOW F=E4+CP2
          *

  79      KK    RCH3 ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
  80      RD    3400   0.019   0.045            TRAP       6       2
          *

  81      KK      E5 SUB-BASIN E5
  82      BA    0.31
  83      PH                   0.17    0.32    0.53    0.69    0.80    1.05    1.23    1.41
  84      LS              80
  85      UD     0.5
          * ZW A=5-YR C=FLOW F=E5FLOW
          *

  86      KK     CP4 COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
          * KO             2
  87      KM    FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET
  88      HC       2
          * ZW A=5-YR C=FLOW F=E5 SIERRA ST

  89      KK  SIERRA  STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
  90      KM   STORAGE ROUTING AT SIERRA STREET
  91      RS       1    STOR       0
  92      SA       0    0.51    0.76     1.2    1.88    2.59    3.13
  93      SE     587     594     596     598     600     602     604
  94      SQ       0     193     211     229     245     637    1000
  95      ZW   A=5-YR C=FLOW F=SIERRA STREET
          *
  96      ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
PUT
INE       (V) ROUTING           (--->) DIVERSION OR PUMP FLOW

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

 29           E1
                .
                .
 34             .           E2
                .            .
                .            .
 39          CP1.............
               V
               V
 41         RCH1
                .
                .
 43             .           E3
                .            .
                .            .
 48          CP2.............
               V
               V
 50         DAM1
               V
               V
 67         RCH3
                .
                .
 71             .           E4
                .            .
                .            .
 76          CP3.............
               V
               V
 79         RCH3
                .
                .
 81             .           E5
                .            .
                .            .
 86          CP4.............
               V
               V
 89       SIERRA
```

**) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
**********************************************
*                                            *
*    FLOOD HYDROGRAPH PACKAGE  (HEC-1)       *
*              SEPTEMBER 1990                *
*               VERSION 4.0                  *
*                                            *
*    RUN DATE  06/29/1999  TIME  16:41:32    *
*                                            *
**********************************************
```


```
**********************************************
*                                            *
*    U.S. ARMY CORPS OF ENGINEERS            *
*    HYDROLOGIC ENGINEERING CENTER           *
*          609 SECOND STREET                 *
*       DAVIS, CALIFORNIA 95616              *
*            (916) 756-1104                  *
*                                            *
**********************************************
```


PHASE II SUB-AREAS

EVANS CREEK BLOCK N HYDROLOGY — NIMBUS JOB # 9912
5 YEAR 24 HOUR EVENT — DATE : MAY 1999
NIMBUS ENGINEERS, RENO, NEVADA — FILE NAME: 2EVNS5.DAT

THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB

GONI CANYON — Nimbus Job #: 9606
Prepared by Nimbus Engineers — Date: August 1996
File Name: GONI-5.DAT

The 5-yr PH card rainfall depths were determined from the Precipitation Frequency Study of the United States, NOAA Atlas 14, Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation events and the methodology per the Draft Washoe County Hydrologic Criteria and Design Manual.

THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND EXISTING CONDITIONS (PLAN 2)

26 IO OUTPUT CONTROL VARIABLES

IPRNT	4	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	5	MINUTES IN COMPUTATION INTERVAL
IDATE	1MAY99	STARTING DATE
ITIME	0005	STARTING TIME
NQ	288	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	2MAY99	ENDING DATE
NDTIME	0000	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 23.92 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          2  NUMBER OF PLANS

   JR               MULTI-RATIO OPTION
                        RATIOS OF PRECIPITATION
                        .99

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

                    **************
                    *            *
29 KK               *        E1  *      SUBBASIN E1
                    *            *
                    **************

                  SUBBASIN RUNOFF DATA

30 BA               SUBBASIN CHARACTERISTICS
                          TAREA         .77  SUBBASIN AREA

                    PRECIPITATION DATA

31 PH                                    DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                    ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                    5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                      .18     .32     .54     .73     .87    1.17    1.45    1.72     .00     .00     .00     .00

                                                  STORM AREA =      .77

32 LS               SCS LOSS RATE
                          STRTL         .63  INITIAL ABSTRACTION
                         CRVNBR       76.00  CURVE NUMBER
                          RTIMP         .00  PERCENT IMPERVIOUS AREA

33 UD               SCS DIMENSIONLESS UNITGRAPH
                           TLAG         .79  LAG

                                                  ***

                                                UNIT HYDROGRAPH
                                              49 END-OF-PERIOD ORDINATES
                      14.     45.     86.    140.    212.    297.    368.    417.    444.    448.
                     443.    416.    385.    348.    303.    250.    205.    174.    147.    125.
                     108.     92.     79.     65.     56.     48.     41.     34.     29.     24.
                      21.     18.     15.     13.     11.      9.      8.      7.      6.      5.
                       4.      4.      3.      3.      2.      2.      1.      1.      0.

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

                  PLAN  2 INPUT DATA FOR STATION       E1 ARE SAME AS FOR PLAN  1

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

                    **************
                    *            *
 4 KK               *        E2  *      SUB-BASIN E2
                    *            *
                    **************

                  SUBBASIN RUNOFF DATA
```

35 BA SUBBASIN CHARACTERISTICS

TAREA 1.20 SUBBASIN AREA

PRECIPITATION DATA

36 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.18	.32	.54	.70	.82	1.07	1.32	1.57	.00	.00	.00	.00

STORM AREA = 1.20

37 LS SCS LOSS RATE

STRTL .60 INITIAL ABSTRACTION

CRVNBR 77.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

38 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .99 LAG

***

UNIT HYDROGRAPH

61 END-OF-PERIOD ORDINATES

14.	41.	78.	122.	178.	250.	334.	413.	478.	525.
553.	560.	559.	546.	518.	486.	450.	408.	359.	306.
261.	228.	200.	175.	153.	137.	120.	106.	92.	80.
71.	62.	55.	48.	42.	37.	32.	28.	25.	22.
19.	17.	15.	13.	11.	10.	8.	8.	7.	6.
5.	5.	4.	4.	3.	3.	2.	2.	1.	1.
0.									

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

PLAN 2 INPUT DATA FOR STATION E2 ARE SAME AS FOR PLAN 1

* ***

****
* *
39 KK * CP1 * COMBINE E1 AND E2 HYDROGRAPHS AT CP1
* *
****

40 HC HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

*** ***

****
* *
41 KK * RCH1 * ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
* *
****

HYDROGRAPH ROUTING DATA

42 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	10800.	CHANNEL LENGTH
S	.0260	SLOPE
N	.070	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	6.00	BOTTOM WIDTH OR DIAMETER
Z	2.00	SIDE SLOPE

***

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

PLAN 2 INPUT DATA FOR STATION RCH1 ARE SAME AS FOR PLAN 1

*** ***

****
* *
13 KK * E3 * SUBBASIN E3
* *
****

SUBBASIN RUNOFF DATA

44 BA SUBBASIN CHARACTERISTICS

TAREA	1.51	SUBBASIN AREA

PRECIPITATION DATA

'5 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.18	.32	.54	.70	.82	1.07	1.34	1.61	.00	.00	.00	.00

STORM AREA = 1.51

46 LS SCS LOSS RATE

STRTL	.47	INITIAL ABSTRACTION
CRVNBR	81.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

7 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	1.24	LAG

***

UNIT HYDROGRAPH
76 END-OF-PERIOD ORDINATES

11.	29.	55.	88.	125.	170.	227.	289.	360.	421.
476.	517.	545.	564.	568.	567.	562.	539.	515.	489.
460.	427.	390.	346.	304.	267.	240.	215.	193.	173.
156.	143.	129.	116.	105.	94.	83.	76.	68.	61.
55.	50.	44.	40.	36.	32.	29.	26.	23.	21.
19.	17.	15.	14.	12.	11.	10.	9.	8.	7.
7.	6.	6.	5.	5.	4.	4.	3.	3.	3.
2.	2.	1.	1.	1.	0.				

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

PLAN 2 INPUT DATA FOR STATION E3 ARE SAME AS FOR PLAN 1

*** ***

```
          **************
          *            *
48 KK     *       CP2  *      COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
          *            *
          **************

49 HC          HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
```

***

** ***

```
          **************
          *            *
50 KK     *      DAM1  *      PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
          *            *
          **************
```

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

```
51 KP          PLAN  1 FOR STATION     DAM1          PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                     PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa

               HYDROGRAPH ROUTING DATA

53 RS           STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        STOR  TYPE OF INITIAL CONDITION
                     RSVRIC        .00  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

54 SA                AREA        1.2       1.2       1.2       1.3       1.3       1.4       1.5       1.6       1.7       1.9
                                 2.8       3.9       4.0       4.7       6.7       9.1      10.4      11.1      12.8      15.7

56 SE           ELEVATION     775.40    775.70    776.00    776.40    777.00    778.00    779.00    780.00    781.00    783.00
                              790.00    796.00    796.30    800.40    808.69    816.98    820.36    822.10    825.87    832.00

58 SQ           DISCHARGE       5.        13.       21.       35.       41.       50.       58.       64.       70.       81.
                                92.       95.      112.      134.      145.      155.      245.      908.     3681.    11060.
```

***

COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	.36	.72	1.22	2.00	3.37	4.82	6.37	8.01	11.62
ELEVATION	775.40	775.70	776.00	776.40	777.00	778.00	779.00	780.00	781.00	783.00
STORAGE	28.10	48.24	49.42	67.21	114.23	179.26	212.09	230.76	275.66	362.70
ELEVATION	790.00	796.00	796.30	800.40	808.69	816.98	820.36	822.10	825.87	832.00

```
-----DSS---ZOPEN:  Version: 6-EA;  New File Opened
                   Unit:  71,  File: 2EVNS5.DSS
-----DSS---ZWRITE Unit  71; Vers.    1:  /5-YR/DAM1/FLOW/01MAY1999/5MIN/30CMP/
---DSS---ZWRITE Unit  71; Vers.    1:  /5-YR/DAM1/STOR/01MAY1999/5MIN/30CMP/
```

```
-----DSS---ZWRITE Unit  71; Vers.    1:  /5-YR/DAM1/STAGE/01MAY1999/5MIN/30CMP/

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

 63 KP         PLAN  2 FOR STATION     DAM1           PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                        EXISTING CONDITIONS (NO RESERVOIR)

               HYDROGRAPH ROUTING DATA

 65 RN          NO ROUTING

                                                                ***
---DSS---ZWRITE Unit  71; Vers.    1:  /5-YR/EXIST/FLOW/01MAY1999/5MIN/EXISTFLOW/
---DSS---ZWRITE Unit  71; Vers.    1:  /5-YR/EXIST/STOR/01MAY1999/5MIN/EXISTFLOW/
-----DSS---ZWRITE Unit  71; Vers.    1:  /5-YR/EXIST/STAGE/01MAY1999/5MIN/EXISTFLOW/

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


            **************
            *            *
 67 KK      *      RCH3  *       ROUTE TO CP3
            *            *
            **************
                          ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
                          HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES

               HYDROGRAPH ROUTING DATA

 70 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                          L       4200.  CHANNEL LENGTH
                          S       .0230  SLOPE
                          N        .090  CHANNEL ROUGHNESS COEFFICIENT
                         CA         .00  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD        6.00  BOTTOM WIDTH OR DIAMETER
                          Z        2.00  SIDE SLOPE

                                                          ***

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

               PLAN  2 INPUT DATA FOR STATION     RCH3 ARE SAME AS FOR PLAN  1


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


            **************
            *            *
 71 KK      *        E4  *      SUBBASIN E4
            *            *
            **************

               SUBBASIN RUNOFF DATA

 72 BA          SUBBASIN CHARACTERISTICS
                      TAREA          .58  SUBBASIN AREA

               PRECIPITATION DATA
```

73 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.18	.32	.54	.69	.80	1.03	1.27	1.50	.00	.00	.00	.00

STORM AREA = .58

74 LS SCS LOSS RATE

STRTL	.56	INITIAL ABSTRACTION
CRVNBR	78.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

75 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.57	LAG

***

UNIT HYDROGRAPH
36 END-OF-PERIOD ORDINATES

25.	76.	148.	254.	362.	431.	456.	454.	418.	371.
312.	240.	188.	149.	121.	98.	79.	63.	50.	40.
32.	25.	21.	17.	13.	11.	9.	7.	5.	5.
4.	3.	2.	2.	1.	0.				

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

PLAN 2 INPUT DATA FOR STATION E4 ARE SAME AS FOR PLAN 1

*** ***

```
              **************
              *            *
76 KK         *       CP3  *      COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
              *            *
              **************
```

77 HC HYDROGRAPH COMBINATION

ICOMP	2	NUMBER OF HYDROGRAPHS TO COMBINE

***

---DSS---ZWRITE Unit 71; Vers. 1: /5-YR/CP3/FLOW/01MAY1999/5MIN/E4+CP2/
-----DSS---ZWRITE Unit 71; Vers. 1: /5-YR/CP3/FLOW/01MAY1999/5MIN/EXISTFLOW/

*** ***

```
              **************
              *            *
79 KK         *      RCH3  *      ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
              *            *
              **************
```

HYDROGRAPH ROUTING DATA

80 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	3400.	CHANNEL LENGTH
S	.0190	SLOPE
N	.045	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE

```
                    WD        6.00  BOTTOM WIDTH OR DIAMETER
                     Z        2.00  SIDE SLOPE

                                                    ***

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

          PLAN  2 INPUT DATA FOR STATION     RCH3 ARE SAME AS FOR PLAN  1

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

          **************
          *            *
81 KK     *       E5   *      SUB-BASIN E5
          *            *
          **************

          SUBBASIN RUNOFF DATA

82 BA          SUBBASIN CHARACTERISTICS
                    TAREA         .31  SUBBASIN AREA

               PRECIPITATION DATA

83 PH                                  DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .17     .32     .53     .69     .80    1.05    1.23    1.41     .00     .00     .00     .00

                                                STORM AREA =      .31

84 LS          SCS LOSS RATE
                    STRTL         .50  INITIAL ABSTRACTION
                   CRVNBR       80.00  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

85 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .50  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            32 END-OF-PERIOD ORDINATES
                    19.       55.      113.      189.      248.      274.      274.      251.      219.      175.
                   129.      100.       77.       62.       48.       37.       29.       23.       18.       14.
                    11.        8.        6.        5.        4.        3.        3.        2.        2.        1.
                     1.        0.

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

          PLAN  2 INPUT DATA FOR STATION       E5 ARE SAME AS FOR PLAN  1

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

          **************
          *            *
86 KK     *       CP4  *      COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
          *            *
```

```
          **************
                        FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET

88 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                ***


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


          **************
          *            *
89 KK     *    SIERRA  *       STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
          *            *
          **************
                        STORAGE ROUTING AT SIERRA STREET

             HYDROGRAPH ROUTING DATA

91 RS          STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        STOR  TYPE OF INITIAL CONDITION
                     RSVRIC        .00  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

92 SA               AREA          .0        .5        .8       1.2       1.9       2.6       3.1

93 SE          ELEVATION       587.00    594.00    596.00    598.00    600.00    602.00    604.00

94 SQ          DISCHARGE           0.       193.      211.      229.      245.      637.     1000.

                                                                ***

                                        COMPUTED STORAGE-ELEVATION DATA

          STORAGE        .00      1.19      2.45      4.40      7.45     11.90     17.61
        ELEVATION     587.00    594.00    596.00    598.00    600.00    602.00    604.00
---DSS---ZWRITE Unit  71; Vers.    1:  /5-YR/SIERRA/FLOW/01MAY1999/5MIN/SIERRA STREET/


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


             PLAN  2 INPUT DATA FOR STATION   SIERRA ARE SAME AS FOR PLAN  1
-----DSS---ZWRITE Unit  71; Vers.    1:  /5-YR/SIERRA/FLOW/01MAY1999/5MIN/EXISTFLOW/
```

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

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1
					.99
HYDROGRAPH AT	E1	.77	1	FLOW	31.
				TIME	13.08
			2	FLOW	31.
				TIME	13.08
HYDROGRAPH AT	E2	1.20	1	FLOW	38.
				TIME	13.33
			2	FLOW	38.
				TIME	13.33
COMBINED AT	CP1	1.97	1	FLOW	67.
				TIME	13.17
			2	FLOW	67.
				TIME	13.17
ROUTED TO	RCH1	1.97	1	FLOW	68.
				TIME	13.75
			2	FLOW	68.
				TIME	13.75
HYDROGRAPH AT	E3	1.51	1	FLOW	77.
				TIME	13.50
			2	FLOW	77.
				TIME	13.50
COMBINED AT	CP2	3.48	1	FLOW	143.
				TIME	13.75
			2	FLOW	143.
				TIME	13.75
ROUTED TO	DAM1	3.48	1	FLOW	79.
				TIME	15.75
			2	FLOW	143.
				TIME	13.75
			** PEAK STAGES IN FEET **		
			1	STAGE	782.56
				TIME	15.75
			2	STAGE	.00
				TIME	.00
ROUTED TO	RCH3	3.48	1	FLOW	79.
				TIME	16.00
			2	FLOW	146.
				TIME	13.92
HYDROGRAPH AT	E4	.58	1	FLOW	25.
				TIME	12.75
			2	FLOW	25.
				TIME	12.75
COMBINED AT	CP3	4.06	1	FLOW	86.
				TIME	15.50
			2	FLOW	159.
				TIME	13.92

ROUTED TO	RCH3	4.06	1	FLOW	86.
				TIME	15.58
			2	FLOW	158.
				TIME	14.08
DROGRAPH AT	E5	.31	1	FLOW	17.
				TIME	12.58
			2	FLOW	17.
				TIME	12.58
COMBINED AT	CP4	4.37	1	FLOW	91.
				TIME	15.25
			2	FLOW	166.
				TIME	13.83
ROUTED TO	SIERRA	4.37	1	FLOW	91.
				TIME	15.33
			2	FLOW	163.
				TIME	14.08

** PEAK STAGES IN FEET **

1	STAGE	590.30
	TIME	15.33
2	STAGE	592.90
	TIME	14.08

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00									
	RCH1 MANE	4.75	69.94	812.25	.23	5.00	67.52	825.00	.23

NTINUITY SUMMARY (AC-FT) - INFLOW= .2495E+02 EXCESS= .0000E+00 OUTFLOW= .2398E+02 BASIN STORAGE= .1157E+01 PERCENT ERROR= -.7

FOR PLAN = 2 RATIO= .00									
	RCH1 MANE	4.75	69.94	812.25	.23	5.00	67.52	825.00	.23

NTINUITY SUMMARY (AC-FT) - INFLOW= .2495E+02 EXCESS= .0000E+00 OUTFLOW= .2398E+02 BASIN STORAGE= .1157E+01 PERCENT ERROR= -.7

FOR PLAN = 1 RATIO= .00									
	RCH3 MANE	5.00	78.88	960.00	.30	5.00	78.88	960.00	.30

NTINUITY SUMMARY (AC-FT) - INFLOW= .5647E+02 EXCESS= .0000E+00 OUTFLOW= .5587E+02 BASIN STORAGE= .6110E+00 PERCENT ERROR= .0

FOR PLAN = 2 RATIO= .00									
	RCH3 MANE	5.00	145.69	835.00	.27	5.00	145.69	835.00	.27

NTINUITY SUMMARY (AC-FT) - INFLOW= .5186E+02 EXCESS= .0000E+00 OUTFLOW= .5104E+02 BASIN STORAGE= .9430E+00 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .00									
	RCH3 MANE	5.00	86.18	935.00	.29	5.00	86.18	935.00	.29

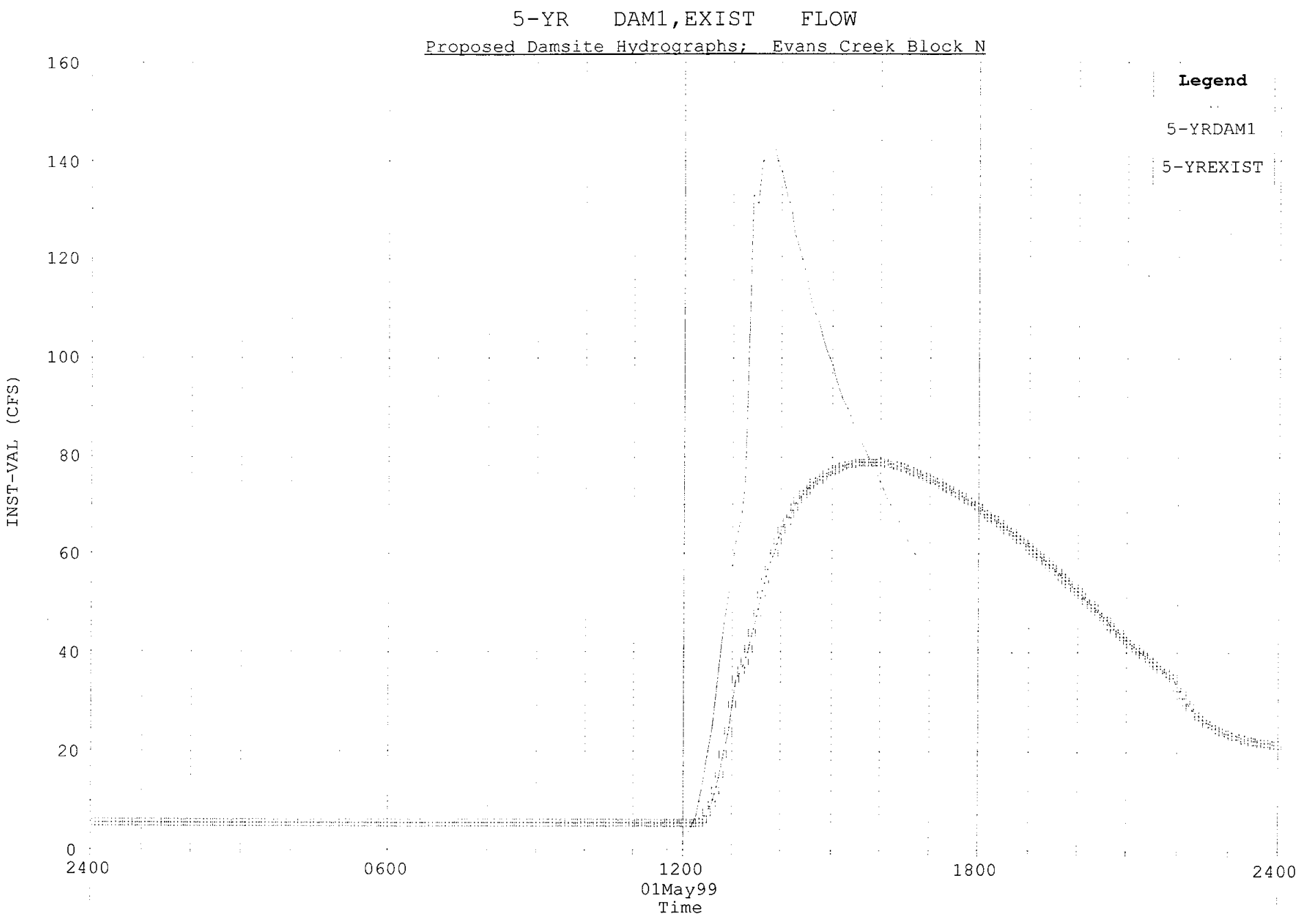
CONTINUITY SUMMARY (AC-FT) - INFLOW= .6270E+02 EXCESS= .0000E+00 OUTFLOW= .6233E+02 BASIN STORAGE= .3741E+00 PERCENT ERROR= .0

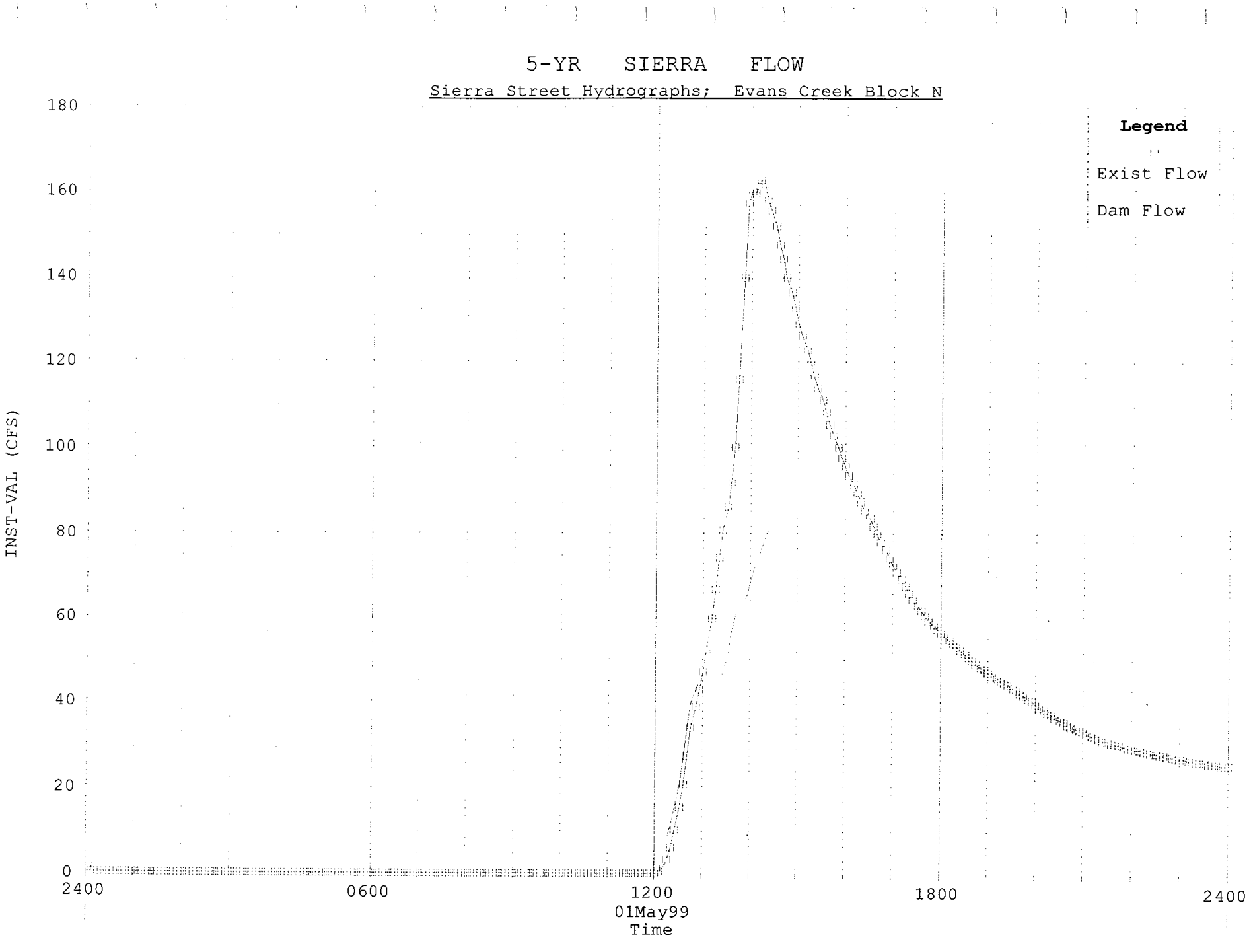
FOR PLAN = 2 RATIO= .00									
	RCH3 MANE	5.00	158.03	845.00	.26	5.00	158.03	845.00	.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5787E+02 EXCESS= .0000E+00 OUTFLOW= .5740E+02 BASIN STORAGE= .5472E+00 PERCENT ERROR= -.1

* NORMAL END OF HEC-1 ***

-----DSS---ZCLOSE Unit: 71, File: 2EVNS5.DSS
Pointer Utilization: .25
Number of Records: 10
File Size: 24.1 Kbytes
Percent Inactive: .00


5-YR DAM1,EXIST FLOW
Proposed Damsite Hydrographs; Evans Creek Block N
Legend
5-YRDAM1
5-YREXIST
INST-VAL (CFS)
160
140
120
100
80
60
40
20
0
2400
0600
1200
1800
2400
01May99
Time


5-YR SIERRA FLOW
Sierra Street Hydrographs; Evans Creek Block N
Legend
Exist Flow
Dam Flow
INST-VAL (CFS)
180
160
140
120
100
80
60
40
20
0
2400
0600
1200
01May99
Time
1800
2400

10-YEAR, 24 HOUR

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

          *DIAGRAM
    1     ID     PHASE II SUB-AREAS
    2     ID
    3     ID     EVANS CREEK BLOCK N HYDROLOGY                NIMBUS JOB # 9912
    4     ID     10 YEAR 24 HOUR EVENT                        DATE : MAY 1999
    5     ID     NIMBUS ENGINEERS, RENO, NEVADA               FILE NAME: 2EVN10.DAT
    6     ID
    7     ID
    8     ID    THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB
    9     ID    ********************************************************************************
   10     ID     GONI CANYON                                  Nimbus Job #: 9606          *
   11     ID     Prepared by Nimbus Engineers                 Date:  August 1996          *
   12     ID                                                  File Name: GONI-5.DAT       *
   13     ID    ********************************************************************************
   14     ID
   15     ID    The  10-yr PH card depths were determined from the
   16     ID    Precipitation Frequency Study of the United States, NOAA Atlas 14,
   17     ID    Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation
   18     ID    events and the methodology per the Draft Washoe County Hydrologic
   19     ID    Criteria and Design Manual.
   20     ID
   21     ID    ************************************************************************
   22     ID    THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND          *
   23     ID    EXISTING CONDITIONS (PLAN 2)                                        *
   24     ID    ************************************************************************
          *
   25     IT       5 01MAY99    0005     288
   26     IO       4       0
   27     JP       2
          *   DEPTH AREA REDUCTION FACTOR FROM NOAA
   28     JR    PREC    0.99
          *

   29     KK      E1 SUBBASIN E1
   30     BA   0.772
   31     PH                    0.23   0.41    0.69    0.89    1.05    1.37    1.69    2.01
   32     LS              76
   33     UD    0.79
          * ZW A=10-YR C=FLOW F=E1FLOW
          *

   34     KK      E2 SUBBASIN E2
   35     BA     1.2
   36     PH                    0.23    0.41    0.69    0.86    0.98    1.25    1.55    1.85
   37     LS              77
   38     UD    0.99
          * ZW A=10-YR C=FLOW F=E2FLOW
          *

   39     KK     CP1 COMBINE E1 AND E2 HYDROGRAPHS AT CP1
          * KO             2
   40     HC       2
   41     ZW   A=10-YR C=FLOW F=E1+E2
          *
```

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

  42      KK    RCH1 ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
  43      RD   10800   0.026    0.07            TRAP      15        2
          *

  44      KK      E3 SUB-BASIN E3
  45      BA    1.51
  46      PH                  0.23    0.41    0.69    0.86    0.98    1.25    1.57    1.89
  47      LS              81
  48      UD    1.24
          * ZW A=10-YR C=FLOW F=E3FLOW
          *

  49      KK     CP2 COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
  50      HC       2
          * ZW A=10-YR C=FLOW F=E1+E2+E3
          *

  51      KK    DAM1 PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
          * KO             2
          * KP     1
          * KM PROPOSED RESERVOIR; flow through principal and emergency spillways ONLY.
          * RS     1    STOR       0
          * SA .1354   .9137   1.954    3.63    3.71    3.79    3.87    3.95    5.12     6.
          * SA  7.97    8.92    9.93   10.18   10.45   10.94   11.55   12.67   14.15    15.
          * SE   765     775     785  795.89  796.33  796.76   797.2  797.64  803.16   808.
          * SE814.22  816.98  819.74  820.36  820.97  822.07  823.42  825.87  828.94    832
          * SQ     0       0       0       0   13.46   38.09   69.97  107.73  114.35   120.
          * SQ126.56  129.43  132.24  218.16  401.01  881.31  1708.7  3654.6  6920.1 11031
          * ZW A=10-YR C=FLOW F=DAMFLOW
          * ZW C=STOR F=DAMSTOR
          * ZW C=STAGE F=DAMSTAGE
          *
  52      KP       1
  53      KM   PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa
  54      RS       1    STOR       0
  55      SA    1.18    1.21    1.23    1.27    1.32    1.41    1.50    1.59    1.70    1.91
  56      SA    2.83    3.91    3.97    4.72    6.68    9.07   10.37   11.09   12.75   15.70
  57      SE   775.4   775.7   776.0   776.4   777.0   778.0   779.0   780.0   781.0   783.0
  58      SE     790     796   796.3   800.4  808.69  816.98  820.36  822.10  825.87   832.0
  59      SQ     5.4    12.6    21.4      35    40.8    49.9    57.5    64.3    70.4    81.3
  60      SQ    92.1   95.43   112.2     134     145   155.4   244.5   907.5  3680.8   11060
  61      ZW   A=10-YR C=FLOW F=30CMP
  62      ZW   C=STOR F=30CMP
  63      ZW   C=STAGE F=30CMP
          *
          * KO             2
  64      KP       2
  65      KM    EXISTING CONDITIONS (NO RESERVOIR)
  66      RN
  67      ZW   A=10-YR B=EXIST C=FLOW F=EXISTFLOW
          *
```

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

  68      KK    RCH3  ROUTE TO CP3
  69      KM   ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
  70      KM   HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES
  71      RD    4200   0.023    0.09            TRAP      20       2
          *

  72      KK      E4 SUBBASIN E4
  73      BA    0.58
  74      PH                   0.23    0.41    0.69    0.84    0.96    1.20    1.48    1.76
  75      LS             78
  76      UD    0.57
          * ZW A=10-YR C=FLOW F=E4FLOW
          *

  77      KK     CP3 COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
          * KO             2
  78      HC       2
  79      ZW   A=10-YR C=FLOW F=E4+CP2
          *

  80      KK    RCH3 ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
  81      RD    3400   0.019   0.045            TRAP      20       2
          *

  82      KK      E5 SUB-BASIN E5
  83      BA    0.31
  84      PH                   0.22    0.40    0.67    0.84    0.96    1.23    1.44    1.65
  85      LS             80
  86      UD     0.5
          * ZW A=10-YR C=FLOW F=E5FLOW
          *

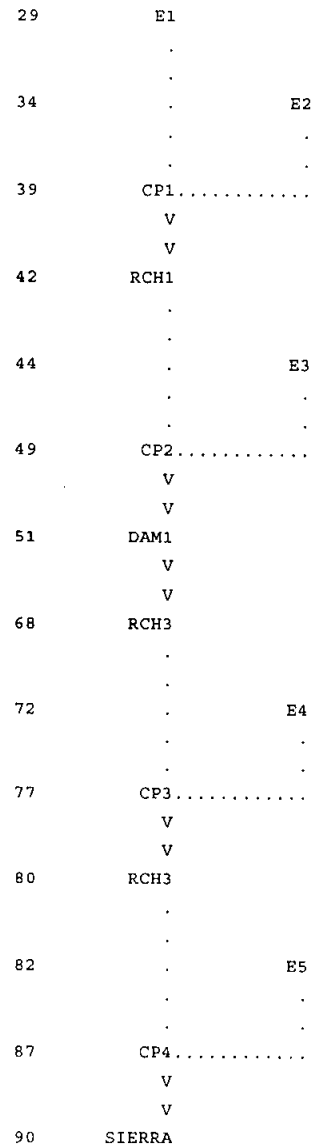
  87      KK     CP4 COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
          * KO             2
  88      KM    FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET
  89      HC       2
          * ZW A=10-YR C=FLOW F=SIERRA STREET
          *

  90      KK  SIERRA  STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
  91      KM   STORAGE ROUTING AT SIERRA STREET
  92      RS       1    STOR       0
  93      SA       0    0.51    0.76     1.2    1.88    2.59    3.13
  94      SE     587     594     596     598     600     602     604
  95      SQ       0     193     211     229     245     637    1000
  96      ZW   A=10-YR C=FLOW F=SIERRA STREET
          *
  97      ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

PUT
INE (V) ROUTING (---->) DIVERSION OR PUMP FLOW

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



**) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*    FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              SEPTEMBER 1990           *
*               VERSION 4.0             *
*                                       *
*   RUN DATE  06/29/1999  TIME  16:09:29 *
*                                       *
*****************************************
```


```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```


PHASE II SUB-AREAS

EVANS CREEK BLOCK N HYDROLOGY — NIMBUS JOB # 9912
10 YEAR 24 HOUR EVENT — DATE : MAY 1999
NIMBUS ENGINEERS, RENO, NEVADA — FILE NAME: 2EVN10.DAT

THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB

```
*************************************************************************
  GONI CANYON                                  Nimbus Job #: 9606        *
  Prepared by Nimbus Engineers                 Date:  August 1996        *
                                               File Name: GONI-5.DAT     *
*************************************************************************
```

The 10-yr PH card depths were determined from the Precipitation Frequency Study of the United States, NOAA Atlas 14, Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation events and the methodology per the Draft Washoe County Hydrologic Criteria and Design Manual.

```
*************************************************************************
THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND              *
EXISTING CONDITIONS (PLAN 2)                                            *
*************************************************************************
```

```
26 IO          OUTPUT CONTROL VARIABLES
                    IPRNT          4  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                    NMIN           5  MINUTES IN COMPUTATION INTERVAL
                   IDATE      1MAY99  STARTING DATE
                   ITIME        0005  STARTING TIME
                      NQ         288  NUMBER OF HYDROGRAPH ORDINATES
                  NDDATE      2MAY99  ENDING DATE
                  NDTIME        0000  ENDING TIME
                   ICENT          19  CENTURY MARK

               COMPUTATION INTERVAL      .08 HOURS
                   TOTAL TIME BASE   23.92 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 2 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
.99

*** ***

****
* *
29 KK * E1 * SUBBASIN E1
* *
****

SUBBASIN RUNOFF DATA

30 BA SUBBASIN CHARACTERISTICS
TAREA .77 SUBBASIN AREA

PRECIPITATION DATA

31 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.23	.41	.69	.89	1.05	1.37	1.69	2.01	.00	.00	.00	.00

STORM AREA = .77

32 LS SCS LOSS RATE
STRTL .63 INITIAL ABSTRACTION
CRVNBR 76.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

33 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .79 LAG

***

UNIT HYDROGRAPH
49 END-OF-PERIOD ORDINATES

14.	45.	86.	140.	212.	297.	368.	417.	444.	448.
443.	416.	385.	348.	303.	250.	205.	174.	147.	125.
108.	92.	79.	65.	56.	48.	41.	34.	29.	24.
21.	18.	15.	13.	11.	9.	8.	7.	6.	5.
4.	4.	3.	3.	2.	2.	1.	1.	0.	

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

PLAN 2 INPUT DATA FOR STATION E1 ARE SAME AS FOR PLAN 1

*** ***

****
* *
34 KK * E2 * SUBBASIN E2
* *
****

SUBBASIN RUNOFF DATA

35 BA SUBBASIN CHARACTERISTICS

TAREA 1.20 SUBBASIN AREA

PRECIPITATION DATA

36 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.23	.41	.69	.86	.98	1.25	1.55	1.85	.00	.00	.00	.00

STORM AREA = 1.20

37 LS SCS LOSS RATE

STRTL .60 INITIAL ABSTRACTION

CRVNBR 77.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

38 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .99 LAG

***

UNIT HYDROGRAPH

61 END-OF-PERIOD ORDINATES

14.	41.	78.	122.	178.	250.	334.	413.	478.	525.
553.	560.	559.	546.	518.	486.	450.	408.	359.	306.
261.	228.	200.	175.	153.	137.	120.	106.	92.	80.
71.	62.	55.	48.	42.	37.	32.	28.	25.	22.
19.	17.	15.	13.	11.	10.	8.	8.	7.	6.
5.	5.	4.	4.	3.	3.	2.	2.	1.	1.
0.									

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

PLAN 2 INPUT DATA FOR STATION E2 ARE SAME AS FOR PLAN 1

* ***

****
* *
39 KK * CP1 * COMBINE E1 AND E2 HYDROGRAPHS AT CP1
* *
****

40 HC HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

-----DSS---ZOPEN: Version: 6-EA; Existing File Opened
Unit: 71, File: 2EVN10.DSS
---DSS---ZWRITE Unit 71; Vers. 2: /10-YR/CP1/FLOW/01MAY1999/5MIN/E1+E2/
-----DSS---ZWRITE Unit 71; Vers. 2: /10-YR/CP1/FLOW/01MAY1999/5MIN//

*** ***

****
* *
2 KK * RCH1 * ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3

```
          *           *
          **************

             HYDROGRAPH ROUTING DATA

43 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                        L      10800.  CHANNEL LENGTH
                        S       .0260  SLOPE
                        N        .070  CHANNEL ROUGHNESS COEFFICIENT
                       CA         .00  CONTRIBUTING AREA
                    SHAPE        TRAP  CHANNEL SHAPE
                       WD       15.00  BOTTOM WIDTH OR DIAMETER
                        Z         .00  SIDE SLOPE

                                                  ***

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

             PLAN  2 INPUT DATA FOR STATION     RCH1 ARE SAME AS FOR PLAN  1

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

          **************
          *            *
44 KK     *        E3  *      SUB-BASIN E3
          *            *
          **************

             SUBBASIN RUNOFF DATA

45 BA          SUBBASIN CHARACTERISTICS
                    TAREA        1.51  SUBBASIN AREA

               PRECIPITATION DATA

46 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .23     .41     .69     .86     .98    1.25    1.57    1.89     .00     .00     .00     .00

                                                STORM AREA =    1.51

47 LS          SCS LOSS RATE
                    STRTL         .47  INITIAL ABSTRACTION
                   CRVNBR       81.00  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

48 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG        1.24  LAG

                                                  ***

                                                UNIT HYDROGRAPH
                                              76 END-OF-PERIOD ORDINATES
                 11.     29.     55.     88.    125.    170.    227.    289.    360.    421.
                476.    517.    545.    564.    568.    567.    562.    539.    515.    489.
                460.    427.    390.    346.    304.    267.    240.    215.    193.    173.
                156.    143.    129.    116.    105.     94.     83.     76.     68.     61.
                 55.     50.     44.     40.     36.     32.     29.     26.     23.     21.
                 19.     17.     15.     14.     12.     11.     10.      9.      8.      7.
                  7.      6.      6.      5.      5.      4.      4.      3.      3.      3.
                  2.      2.      1.      1.      1.      0.
```

```
*     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

               PLAN  2 INPUT DATA FOR STATION       E3 ARE SAME AS FOR PLAN  1

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

            **************
            *            *
 49 KK      *       CP2  *      COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
            *            *
            **************

 50 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                ***

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

            **************
            *            *
 51 KK      *      DAM1  *      PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
            *            *
            **************

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

 52 KP          PLAN  1 FOR STATION     DAM1           PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                     PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa

               HYDROGRAPH ROUTING DATA

 54 RS           STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        STOR  TYPE OF INITIAL CONDITION
                     RSVRIC         .00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

 55 SA           AREA          1.2     1.2     1.2     1.3     1.3     1.4     1.5     1.6     1.7     1.9
                               2.8     3.9     4.0     4.7     6.7     9.1    10.4    11.1    12.8    15.7

 57 SE           ELEVATION   775.40  775.70  776.00  776.40  777.00  778.00  779.00  780.00  781.00  783.00
                             790.00  796.00  796.30  800.40  808.69  816.98  820.36  822.10  825.87  832.00

 59 SQ           DISCHARGE     5.      13.     21.     35.     41.     50.     58.     64.     70.     81.
                              92.     95.    112.    134.    145.    155.    245.    908.   3681.  11060.

                                                ***

                                  COMPUTED STORAGE-ELEVATION DATA

          STORAGE       .00     .36     .72    1.22    2.00    3.37    4.82    6.37    8.01   11.62
        ELEVATION    775.40  775.70  776.00  776.40  777.00  778.00  779.00  780.00  781.00  783.00

          STORAGE     28.10   48.24   49.42   67.21  114.23  179.26  212.09  230.76  275.66  362.70
        ELEVATION    790.00  796.00  796.30  800.40  808.69  816.98  820.36  822.10  825.87  832.00
```

```
-----DSS---ZWRITE Unit  71; Vers.    2:  /10-YR/DAM1/FLOW/01MAY1999/5MIN/30CMP/
-----DSS---ZWRITE Unit  71; Vers.    2:  /10-YR/DAM1/STOR/01MAY1999/5MIN/30CMP/
 ---DSS---ZWRITE Unit  71; Vers.    2:  /10-YR/DAM1/STAGE/01MAY1999/5MIN/30CMP/


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

 64 KP         PLAN  2 FOR STATION     DAM1           PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                        EXISTING CONDITIONS (NO RESERVOIR)

               HYDROGRAPH ROUTING DATA

 66 RN          NO ROUTING

                                                                  ***
-----DSS---ZWRITE Unit  71; Vers.    2:  /10-YR/EXIST/FLOW/01MAY1999/5MIN/EXISTFLOW/
-----DSS---ZWRITE Unit  71; Vers.    2:  /10-YR/EXIST/STOR/01MAY1999/5MIN/EXISTFLOW/
 ---DSS---ZWRITE Unit  71; Vers.    2:  /10-YR/EXIST/STAGE/01MAY1999/5MIN/EXISTFLOW/


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


            **************
            *            *
 68 KK      *      RCH3  *       ROUTE TO CP3
            *            *
            **************
                        ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
                        HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES

               HYDROGRAPH ROUTING DATA

 71 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                          L       4200.  CHANNEL LENGTH
                          S       .0230  SLOPE
                          N        .090  CHANNEL ROUGHNESS COEFFICIENT
                         CA         .00  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD       20.00  BOTTOM WIDTH OR DIAMETER
                          Z        2.00  SIDE SLOPE

                                                  ***


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

               PLAN  2 INPUT DATA FOR STATION     RCH3 ARE SAME AS FOR PLAN  1


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


            **************
            *            *
 72 KK      *        E4  *      SUBBASIN E4
            *            *
            **************

               SUBBASIN RUNOFF DATA        *

 73 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .58  SUBBASIN AREA
```

PRECIPITATION DATA

74 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.23	.41	.69	.84	.96	1.20	1.48	1.76	.00	.00	.00	.00

STORM AREA = .58

75 LS SCS LOSS RATE

STRTL	.56	INITIAL ABSTRACTION
CRVNBR	78.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

76 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.57	LAG

***

UNIT HYDROGRAPH
36 END-OF-PERIOD ORDINATES

25.	76.	148.	254.	362.	431.	456.	454.	418.	371.
312.	240.	188.	149.	121.	98.	79.	63.	50.	40.
32.	25.	21.	17.	13.	11.	9.	7.	5.	5.
4.	3.	2.	2.	1.	0.				

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

PLAN 2 INPUT DATA FOR STATION E4 ARE SAME AS FOR PLAN 1

* ***

```
          **************
          *            *
77 KK     *       CP3  *      COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
          *            *
          **************
```

78 HC HYDROGRAPH COMBINATION

ICOMP	2	NUMBER OF HYDROGRAPHS TO COMBINE

***

-----DSS---ZWRITE Unit 71; Vers. 2: /10-YR/CP3/FLOW/01MAY1999/5MIN/E4+CP2/
---DSS---ZWRITE Unit 71; Vers. 2: /10-YR/CP3/FLOW/01MAY1999/5MIN/EXISTFLOW/

* ***

```
          **************
          *            *
80 KK     *       RCH3 *      ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
          *            *
          **************
```

HYDROGRAPH ROUTING DATA

:1 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	3400.	CHANNEL LENGTH
S	.0190	SLOPE
N	.045	CHANNEL ROUGHNESS COEFFICIENT

CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	20.00	BOTTOM WIDTH OR DIAMETER
Z	2.00	SIDE SLOPE

***

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

PLAN 2 INPUT DATA FOR STATION RCH3 ARE SAME AS FOR PLAN 1

* ***

```
**************
*            *
*        E5  *      SUB-BASIN E5
*            *
**************
```

82 KK

SUBBASIN RUNOFF DATA

83 BA SUBBASIN CHARACTERISTICS

TAREA	.31	SUBBASIN AREA

PRECIPITATION DATA

84 PH

DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.22	.40	.67	.84	.96	1.23	1.44	1.65	.00	.00	.00	.00

STORM AREA = .31

85 LS SCS LOSS RATE

STRTL	.50	INITIAL ABSTRACTION
CRVNBR	80.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

86 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.50	LAG

***

UNIT HYDROGRAPH
32 END-OF-PERIOD ORDINATES

19.	55.	113.	189.	248.	274.	274.	251.	219.	175.
129.	100.	77.	62.	48.	37.	29.	23.	18.	14.
11.	8.	6.	5.	4.	3.	3.	2.	2.	1.
1.	0.								

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

PLAN 2 INPUT DATA FOR STATION E5 ARE SAME AS FOR PLAN 1

*** ***

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**************
*            *
```

```
 87 KK      *       CP4   *      COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
            *             *
            ***************
                          FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET

 89 HC           HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                    ***

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


            ***************
            *             *
 90 KK      *    SIERRA   *       STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
            *             *
            ***************
                          STORAGE ROUTING AT SIERRA STREET

              HYDROGRAPH ROUTING DATA

 92 RS           STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        STOR  TYPE OF INITIAL CONDITION
                      RSVRIC        .00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

 93 SA               AREA          .0        .5        .8       1.2       1.9       2.6       3.1

 94 SE           ELEVATION      587.00    594.00    596.00    598.00    600.00    602.00    604.00

 95 SQ           DISCHARGE          0.       193.      211.      229.      245.      637.     1000.

                                                                    ***

                                                 COMPUTED STORAGE-ELEVATION DATA

           STORAGE        .00      1.19      2.45      4.40      7.45     11.90     17.61
         ELEVATION     587.00    594.00    596.00    598.00    600.00    602.00    604.00
-----DSS---ZWRITE Unit  71; Vers.    2:  /10-YR/SIERRA/FLOW/01MAY1999/5MIN/SIERRA STREET/

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

              PLAN  2 INPUT DATA FOR STATION   SIERRA ARE SAME AS FOR PLAN  1
---DSS---ZWRITE Unit  71; Vers.    2:  /10-YR/SIERRA/FLOW/01MAY1999/5MIN/EXISTFLOW/
```

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 PRECIPITATION
OPERATION	STATION	AREA	PLAN		RATIO 1
					.99
HYDROGRAPH AT	E1	.77	1	FLOW	57.
				TIME	12.92
			2	FLOW	57.
				TIME	12.92
HYDROGRAPH AT	E2	1.20	1	FLOW	71.
				TIME	13.17
			2	FLOW	71.
				TIME	13.17
2 COMBINED AT	CP1	1.97	1	FLOW	125.
				TIME	13.08
			2	FLOW	125.
				TIME	13.08
ROUTED TO	RCH1	1.97	1	FLOW	129.
				TIME	13.42
			2	FLOW	129.
				TIME	13.42
HYDROGRAPH AT	E3	1.51	1	FLOW	124.
				TIME	13.42
			2	FLOW	124.
				TIME	13.42
2 COMBINED AT	CP2	3.48	1	FLOW	254.
				TIME	13.42
			2	FLOW	254.
				TIME	13.42
ROUTED TO	DAM1	3.48	1	FLOW	89.
				TIME	16.17
			2	FLOW	254.
				TIME	13.42
			** PEAK STAGES IN FEET **		
			1	STAGE	788.30
				TIME	16.17
			2	STAGE	.00
				TIME	.00
ROUTED TO	RCH3	3.48	1	FLOW	89.
				TIME	16.50
			2	FLOW	259.
				TIME	13.58
HYDROGRAPH AT	E4	.58	1	FLOW	50.
				TIME	12.67
			2	FLOW	50.
				TIME	12.67
2 COMBINED AT	CP3	4.06	1	FLOW	100.
				TIME	14.08
			2	FLOW	281.
				TIME	13.58

ROUTED TO	RCH3	4.06	1	FLOW	100.
				TIME	14.17
			2	FLOW	283.
				TIME	13.50
DROGRAPH AT	E5	.31	1	FLOW	32.
				TIME	12.58
			2	FLOW	32.
				TIME	12.58
COMBINED AT	CP4	4.37	1	FLOW	109.
				TIME	14.17
			2	FLOW	296.
				TIME	13.50
ROUTED TO	SIERRA	4.37	1	FLOW	109.
				TIME	14.25
			2	FLOW	231.
				TIME	14.33

** PEAK STAGES IN FEET **

1	STAGE	590.95
	TIME	14.25
2	STAGE	598.27
	TIME	14.33

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00									
	RCH1 MANE	5.00	129.46	805.00	.35	5.00	129.46	805.00	.35

NTINUITY SUMMARY (AC-FT) - INFLOW= .3842E+02 EXCESS= .0000E+00 OUTFLOW= .3734E+02 BASIN STORAGE= .1713E+01 PERCENT ERROR= -1.7

FOR PLAN = 2 RATIO= .00									
	RCH1 MANE	5.00	129.46	805.00	.35	5.00	129.46	805.00	.35

NTINUITY SUMMARY (AC-FT) - INFLOW= .3842E+02 EXCESS= .0000E+00 OUTFLOW= .3734E+02 BASIN STORAGE= .1713E+01 PERCENT ERROR= -1.7

FOR PLAN = 1 RATIO= .00									
	RCH3 MANE	5.00	89.48	990.00	.42	5.00	89.48	990.00	.42

NTINUITY SUMMARY (AC-FT) - INFLOW= .7945E+02 EXCESS= .0000E+00 OUTFLOW= .7773E+02 BASIN STORAGE= .1742E+01 PERCENT ERROR= .0

FOR PLAN = 2 RATIO= .00									
	RCH3 MANE	5.00	259.29	815.00	.41	5.00	259.29	815.00	.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7760E+02 EXCESS= .0000E+00 OUTFLOW= .7641E+02 BASIN STORAGE= .1490E+01 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .00									
	RCH3 MANE	5.00	99.65	850.00	.40	5.00	99.65	850.00	.40

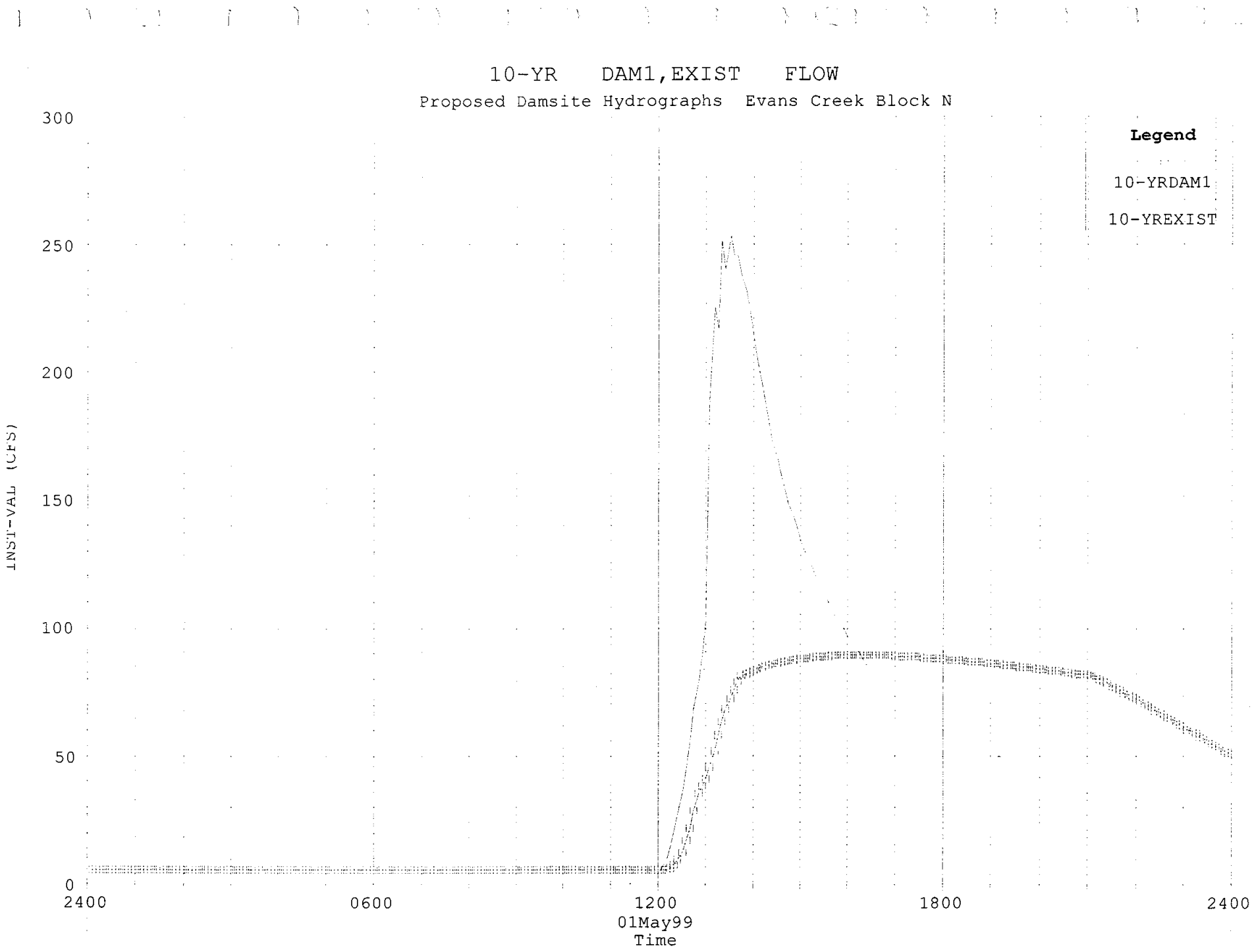
CONTINUITY SUMMARY (AC-FT) - INFLOW= .8822E+02 EXCESS= .0000E+00 OUTFLOW= .8720E+02 BASIN STORAGE= .1044E+01 PERCENT ERROR= .0

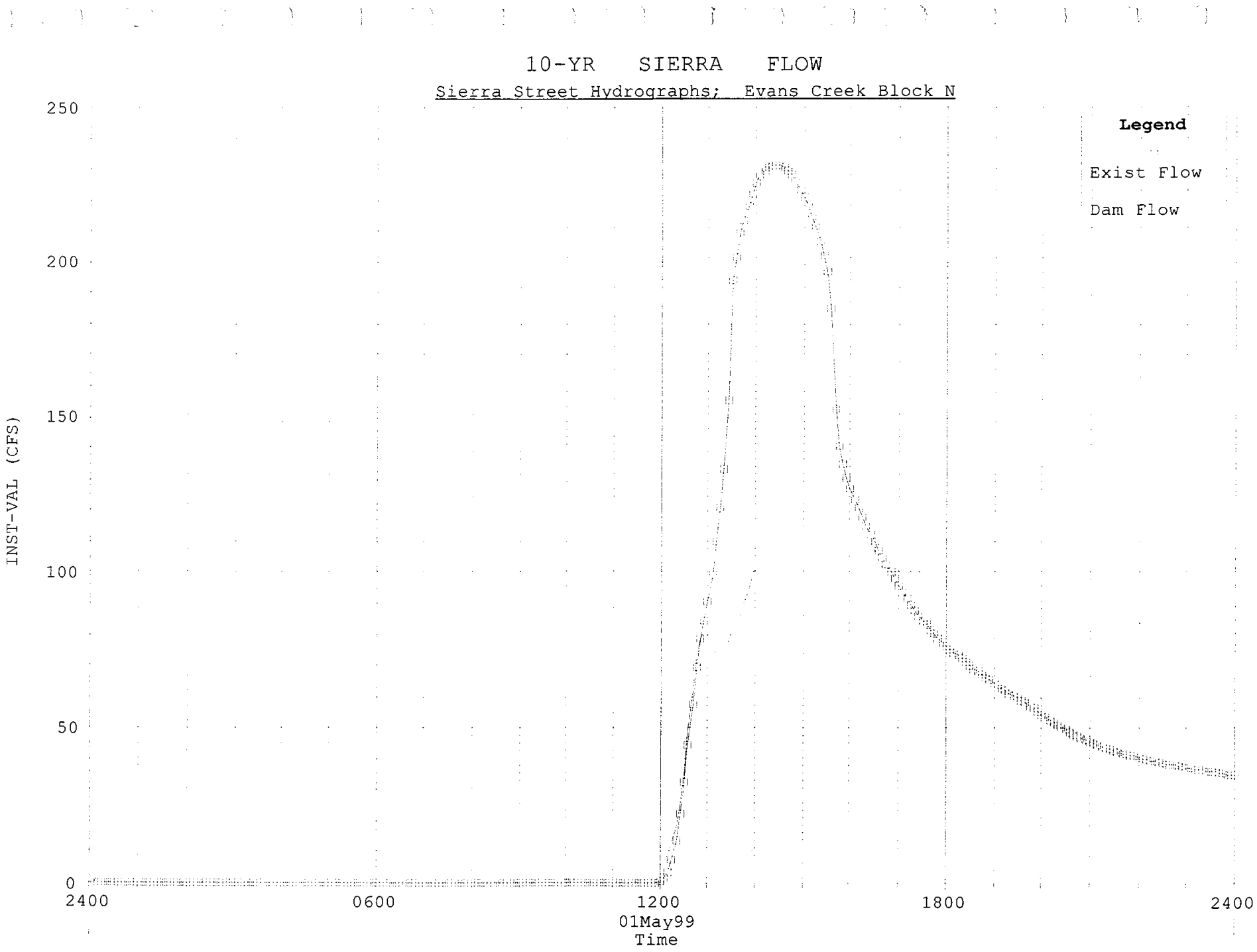
FOR PLAN = 2 RATIO= .00									
	RCH3 MANE	5.00	282.87	810.00	.40	5.00	282.87	810.00	.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8690E+02 EXCESS= .0000E+00 OUTFLOW= .8622E+02 BASIN STORAGE= .8883E+00 PERCENT ERROR= -.2

NORMAL END OF HEC-1 ***

-----DSS---ZCLOSE Unit: 71, File: 2EVN10.DSS
Pointer Utilization: .25
Number of Records: 12
File Size: 26.8 Kbytes
Percent Inactive: .00


10-YR DAM1,EXIST FLOW
Proposed Damsite Hydrographs Evans Creek Block N
Legend
10-YRDAM1
10-YREXIST
INST-VAL (CFS)
300
250
200
150
100
50
0
2400
0600
1200
1800
2400
01May99
Time


10-YR SIERRA FLOW
Sierra Street Hydrographs; Evans Creek Block N
Legend
Exist Flow
Dam Flow
INST-VAL (CFS)
250
200
150
100
50
0
2400
0600
1200
01May99
Time
1800
2400

25-YEAR, 24 HOUR

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

          *DIAGRAM
    1     ID     PHASE II SUB-AREAS
    2     ID
    3     ID     EVANS CREEK BLOCK N HYDROLOGY                NIMBUS JOB # 9912
    4     ID     25 YEAR 24 HOUR EVENT                        DATE : MAY 1999
    5     ID     NIMBUS ENGINEERS, RENO, NEVADA               FILE NAME: 2EVN25.DAT
    6     ID
    7     ID
    8     ID    THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB
    9     ID    ********************************************************************************
   10     ID     GONI CANYON                                  Nimbus Job #: 9606          *
   11     ID     Prepared by Nimbus Engineers                 Date:  August 1996          *
   12     ID                                                  File Name: GONI-5.DAT       *
   13     ID    ********************************************************************************
   14     ID
   15     ID    The  25-yr PH card rainfall depths were determined from the
   16     ID    Precipitation Frequency Study of the United States, NOAA Atlas 14,
   17     ID    Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation
   18     ID    events and the methodology per the Draft Washoe County Hydrologic
   19     ID    Criteria and Design Manual.
   20     ID
   21     ID    ************************************************************************
   22     ID    THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND          *
   23     ID    EXISTING CONDITIONS (PLAN 2)                                        *
   24     ID    ************************************************************************
          *
   25     IT       5 01MAY99     0005      288
   26     IO       4         0
   27     JP       2
          *   DEPTH AREA REDUCTION FACTOR FROM NOAA
   28     JR    PREC     0.99
          *

   29     KK       E1 SUBBASIN E1
   30     BA    0.772
   31     PH                     0.31     0.56     0.93     1.14     1.30     1.63     2.02     2.40
   32     LS               76
   33     UD    0.79
   34     ZW    A=25-YR C=FLOW F=E1FLOW
          *

   35     KK       E2 SUB-BASIN E2
   36     BA     1.2
   37     PH                     0.31     0.56     0.93     1.09     1.22     1.48     1.84     2.20
   38     LS               77
   39     UD    0.99
   40     ZW    A=25-YR C=FLOW F=E2FLOW
          *

   41     KK      CP1 COMBINE E1 AND E2 HYDROGRAPHS AT CP1
          * KO              2
   42     HC       2
   43     ZW    A=25-YR C=FLOW F=E1+E2
          *
```

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

  44      KK    RCH1 ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
  45      RD   10800   0.026    0.07            TRAP      15       2
          *

  46      KK      E3 SUBBASIN E3
  47      BA    1.51
  48      PH                  0.31    0.56    0.93    1.09    1.22    1.48    1.87    2.26
  49      LS              81
  50      UD    1.24
  51      ZW   A=25-YR C=FLOW F=E3FLOW
          *

  52      KK     CP2 COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
  53      HC       2
          * ZW A=25-YR C=FLOW F=E1+E2+E3
          *

  54      KK    DAM1 PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
          * KO             2
          * KP     1
          * KM PROPOSED RESERVOIR; flow through principal and emergency spillways ONLY.
          * RS     1    STOR        0
          * SA .1354    .9137   1.954    3.63    3.71    3.79    3.87    3.95    5.12    6.
          * SA  7.97    8.92    9.93   10.18   10.45   10.94   11.55   12.67   14.15   15.
          * SE   765     775     785  795.89  796.33  796.76   797.2  797.64  803.16  808.
          * SE814.22  816.98  819.74  820.36  820.97  822.07  823.42  825.87  828.94   832
          * SQ     0       0       0       0   13.46   38.09   69.97  107.73  114.35  120.
          * SQ126.56  129.43  132.24  218.16  401.01  881.31  1708.7  3654.6  6920.1 11031
          * ZW A=25-YR C=FLOW F=DAMFLOW
          * ZW C=STOR F=DAMSTOR
          * ZW C=STAGE F=DAMSTAGE
          *
  55      KP       1
  56      KM   PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa
  57      RS       1    STOR        0
  58      SA    1.18    1.21    1.23    1.27    1.32    1.41    1.50    1.59    1.70    1.91
  59      SA    2.83    3.91    3.97    4.72    6.68    9.07   10.37   11.09   12.75   15.70
  60      SE   775.4   775.7   776.0   776.4   777.0   778.0   779.0   780.0   781.0   783.0
  61      SE     790     796   796.3   800.4  808.69  816.98  820.36  822.10  825.87   832.0
  62      SQ     5.4    12.6    21.4      35    40.8    49.9    57.5    64.3    70.4    81.3
  63      SQ    92.1   95.43   112.2     134     145   155.4   244.5   907.5  3680.8   11060
  64      ZW   A=25-YR C=FLOW F=30CMP
  65      ZW   C=STOR F=30CMP
  66      ZW   C=STAGE F=30CMP
          *
          * KO             2
  67      KP       2
  68      KM    EXISTING CONDITIONS (NO RESERVOIR)
  69      RN
  70      ZW   A=25-YR B=EXIST C=FLOW F=EXISTFLOW
          *
```

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

  71      KK    RCH3  ROUTE TO CP3
  72      KM   ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
  73      KM   HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES
  74      RD    4200   0.023    0.09            TRAP      20       2
          *

  75      KK      E4 SUBBASIN E4
  76      BA    0.58
  77      PH                   0.31    0.56    0.93    1.08    1.19    1.43    1.76    2.09
  78      LS              78
  79      UD    0.57
  80      ZW   A=25-YR C=FLOW F=E4FLOW
          *

  81      KK     CP3 COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
          * KO             2
  82      HC       2
  83      ZW   A=25-YR C=FLOW F=E4+CP2
          *

  84      KK    RCH3 ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
  85      RD    3400   0.019   0.045            TRAP      20       2
          *

  86      KK      E5 SUB-BASIN E5
  87      BA    0.31
  88      PH                   0.30    0.54    0.90    1.07    1.20    1.47    1.72    1.97
  89      LS              80
  90      UD     0.5
  91      ZW   A=25-YR C=FLOW F=E5FLOW
          *

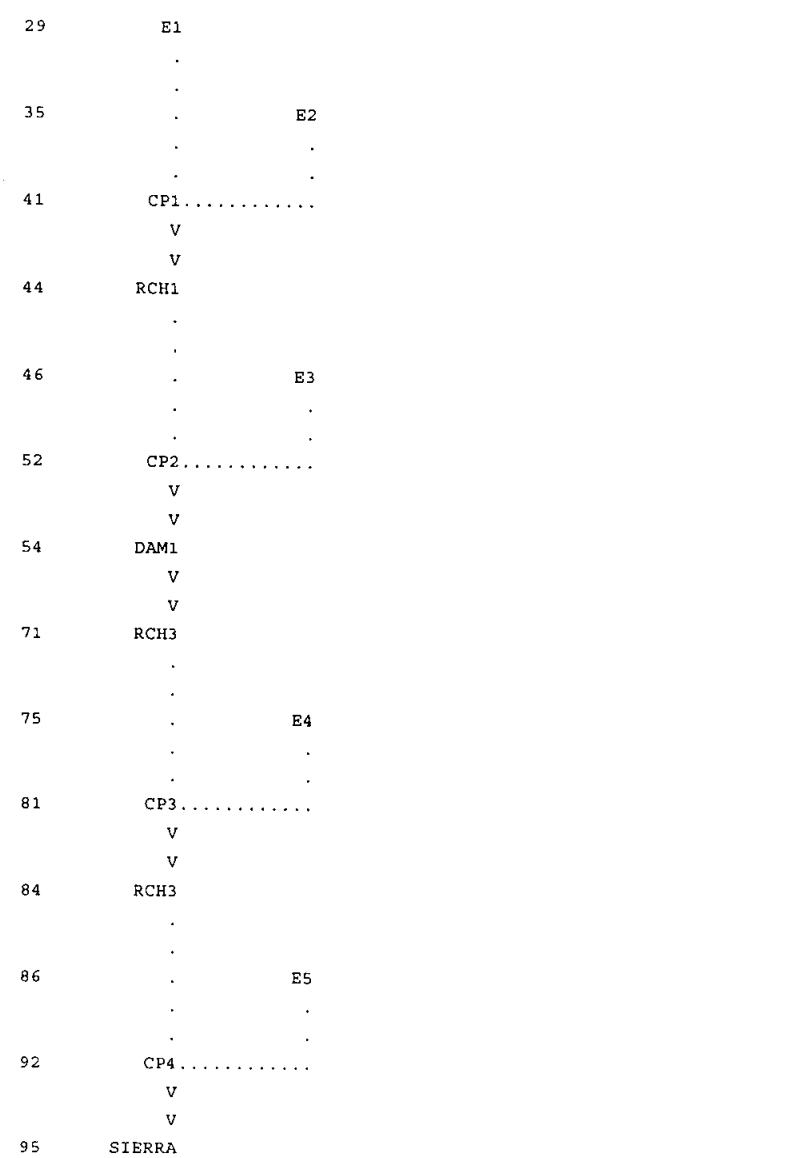
  92      KK     CP4 COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
          * KO             2
  93      KM    FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET
  94      HC       2
          * ZW A=25-YR C=FLOW F=SIERRA STREET
          *

  95      KK  SIERRA  STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
  96      KM   STORAGE ROUTING AT SIERRA STREET
  97      RS       1    STOR       0
  98      SA       0    0.51    0.76     1.2    1.88    2.59    3.13
  99      SE     587     594     596     598     600     602     604
 100      SQ       0     193     211     229     245     637    1000
 101      ZW   A=25-YR C=FLOW F=SIERRA STREET
          *
 102      ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT
LINE (V) ROUTING (---->) DIVERSION OR PUMP FLOW

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



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*    FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              SEPTEMBER 1990           *
*               VERSION 4.0             *
*                                       *
*    RUN DATE  07/06/1999  TIME  13:45:50 *
*                                       *
*****************************************
```


```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```


PHASE II SUB-AREAS

EVANS CREEK BLOCK N HYDROLOGY
25 YEAR 24 HOUR EVENT
NIMBUS ENGINEERS, RENO, NEVADA

NIMBUS JOB # 9912
DATE : MAY 1999
FILE NAME: 2EVN25.DAT

THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB

```
*****************************************************************************
 GONI CANYON                                  Nimbus Job #: 9606          *
 Prepared by Nimbus Engineers                 Date:  August 1996          *
                                              File Name: GONI-5.DAT       *
*****************************************************************************
```

The 25-yr PH card rainfall depths were determined from the Precipitation Frequency Study of the United States, NOAA Atlas 14, Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation events and the methodology per the Draft Washoe County Hydrologic Criteria and Design Manual.

```
*****************************************************************************
THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND          *
EXISTING CONDITIONS (PLAN 2)                                       *
*****************************************************************************
```

26 IO OUTPUT CONTROL VARIABLES

IPRNT	4	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	5	MINUTES IN COMPUTATION INTERVAL
IDATE	1MAY99	STARTING DATE
ITIME	0005	STARTING TIME
NQ	288	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	2MAY99	ENDING DATE
NDTIME	0000	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 23.92 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          2  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                    .99

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

          **************
          *            *
 29 KK    *        E1  *      SUBBASIN E1
          *            *
          **************

             SUBBASIN RUNOFF DATA

 30 BA       SUBBASIN CHARACTERISTICS
                   TAREA         .77  SUBBASIN AREA

             PRECIPITATION DATA

 31 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
             ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
             5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
               .31     .56     .93    1.14    1.30    1.63    2.02    2.40     .00     .00     .00     .00

                                                STORM AREA =      .77

 32 LS       SCS LOSS RATE
                   STRTL          .63  INITIAL ABSTRACTION
                  CRVNBR        76.00  CURVE NUMBER
                   RTIMP          .00  PERCENT IMPERVIOUS AREA

 33 UD       SCS DIMENSIONLESS UNITGRAPH
                   TLAG          .79  LAG

                                                ***

                                                UNIT HYDROGRAPH
                                              49 END-OF-PERIOD ORDINATES
                  14.       45.       86.      140.      212.      297.      368.      417.      444.      448.
                 443.      416.      385.      348.      303.      250.      205.      174.      147.      125.
                 108.       92.       79.       65.       56.       48.       41.       34.       29.       24.
                  21.       18.       15.       13.       11.        9.        8.        7.        6.        5.
                   4.        4.        3.        3.        2.        2.        1.        1.        0.
 -----DSS---ZOPEN:  Version: 6-EA;  Existing File Opened
                    Unit:  71,  File: 2EVN25.DSS
 ---DSS---ZWRITE Unit  71; Vers.    2:  /25-YR/E1/FLOW/01MAY1999/5MIN/E1FLOW/

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

             PLAN  2 INPUT DATA FOR STATION       E1 ARE SAME AS FOR PLAN  1

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

          **************
          *            *
 35 KK    *        E2  *      SUB-BASIN E2
          *            *
```

****

SUBBASIN RUNOFF DATA

36 BA SUBBASIN CHARACTERISTICS

TAREA 1.20 SUBBASIN AREA

PRECIPITATION DATA

37 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.31	.56	.93	1.09	1.22	1.48	1.84	2.20	.00	.00	.00	.00

STORM AREA = 1.20

38 LS SCS LOSS RATE

STRTL .60 INITIAL ABSTRACTION

CRVNBR 77.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

39 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .99 LAG

***

UNIT HYDROGRAPH

61 END-OF-PERIOD ORDINATES

14.	41.	78.	122.	178.	250.	334.	413.	478.	525.
553.	560.	559.	546.	518.	486.	450.	408.	359.	306.
261.	228.	200.	175.	153.	137.	120.	106.	92.	80.
71.	62.	55.	48.	42.	37.	32.	28.	25.	22.
19.	17.	15.	13.	11.	10.	8.	8.	7.	6.
5.	5.	4.	4.	3.	3.	2.	2.	1.	1.
0.									

---DSS---ZWRITE Unit 71; Vers. 2: /25-YR/E2/FLOW/01MAY1999/5MIN/E2FLOW/

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

PLAN 2 INPUT DATA FOR STATION E2 ARE SAME AS FOR PLAN 1

*** ***

****
* *
41 KK * CP1 * COMBINE E1 AND E2 HYDROGRAPHS AT CP1
* *
****

42 HC HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

----DSS---ZWRITE Unit 71; Vers. 2: /25-YR/CP1/FLOW/01MAY1999/5MIN/E1+E2/

---DSS---ZWRITE Unit 71; Vers. 2: /25-YR/CP1/FLOW/01MAY1999/5MIN//

*** ***

****

```
              *                   *
  44 KK       *      RCH1   *        ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
              *                   *
              **************


                 HYDROGRAPH ROUTING DATA


  45 RD             MUSKINGUM-CUNGE CHANNEL ROUTING
                              L       10800.  CHANNEL LENGTH
                              S        .0260  SLOPE
                              N         .070  CHANNEL ROUGHNESS COEFFICIENT
                             CA          .00  CONTRIBUTING AREA
                          SHAPE         TRAP  CHANNEL SHAPE
                             WD        15.00  BOTTOM WIDTH OR DIAMETER
                              Z         2.00  SIDE SLOPE

                                                                      ***


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

                PLAN  2 INPUT DATA FOR STATION     RCH1 ARE SAME AS FOR PLAN  1



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


             **************
             *                   *
  46 KK      *        E3    *        SUBBASIN E3
             *                   *
             **************


                SUBBASIN RUNOFF DATA


  47 BA            SUBBASIN CHARACTERISTICS
                         TAREA         1.51  SUBBASIN AREA

                   PRECIPITATION DATA

  48 PH                                      DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                   ..... HYDRO-35 ......    ............... TP-40 ...............    ........... TP-49 ...........
                   5-MIN  15-MIN  60-MIN     2-HR     3-HR     6-HR    12-HR    24-HR    2-DAY    4-DAY    7-DAY   10-DAY
                     .31     .56     .93     1.09     1.22     1.48     1.87     2.26      .00      .00      .00      .00

                                                        STORM AREA =     1.51

  49 LS            SCS LOSS RATE
                         STRTL          .47  INITIAL ABSTRACTION
                        CRVNBR        81.00  CURVE NUMBER
                         RTIMP          .00  PERCENT IMPERVIOUS AREA

  50 UD            SCS DIMENSIONLESS UNITGRAPH
                          TLAG         1.24  LAG

                                                                     ***

                                                              UNIT HYDROGRAPH
                                                         76 END-OF-PERIOD ORDINATES
                 11.        29.        55.        88.       125.       170.       227.       289.       360.       421.
                476.       517.       545.       564.       568.       567.       562.       539.       515.       489.
                460.       427.       390.       346.       304.       267.       240.       215.       193.       173.
                156.       143.       129.       116.       105.        94.        83.        76.        68.        61.
                 55.        50.        44.        40.        36.        32.        29.        26.        23.        21.
                 19.        17.        15.        14.        12.        11.        10.         9.         8.         7.
```

```
                7.        6.        6.        5.        5.        4.        4.        3.        3.        3.
                2.        2.        1.        1.        1.        0.
---DSS---ZWRITE Unit  71; Vers.    2:  /25-YR/E3/FLOW/01MAY1999/5MIN/E3FLOW/

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

            PLAN  2 INPUT DATA FOR STATION       E3 ARE SAME AS FOR PLAN  1

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

          **************
          *            *
52 KK     *       CP2  *      COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
          *            *
          **************

53 HC          HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                ***

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

          **************
          *            *
54 KK     *      DAM1  *      PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
          *            *
          **************

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

 5 KP       PLAN  1 FOR STATION     DAM1          PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                 PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa

           HYDROGRAPH ROUTING DATA

 7 RS        STORAGE ROUTING
                  NSTPS           1  NUMBER OF SUBREACHES
                   ITYP        STOR  TYPE OF INITIAL CONDITION
                 RSVRIC         .00  INITIAL CONDITION
                      X         .00 WORKING R AND D COEFFICIENT

 8 SA             AREA        1.2       1.2       1.2       1.3       1.3       1.4       1.5       1.6       1.7       1.9
                              2.8       3.9       4.0       4.7       6.7       9.1      10.4      11.1      12.8      15.7

60 SE             ELEVATION   775.40    775.70    776.00    776.40    777.00    778.00    779.00    780.00    781.00    783.00
                              790.00    796.00    796.30    800.40    808.69    816.98    820.36    822.10    825.87    832.00

62 SQ             DISCHARGE     5.        13.       21.       35.       41.       50.       58.       64.       70.       81.
                               92.       95.      112.      134.      145.      155.      245.      908.     3681.    11060.

                                                ***

                                        COMPUTED STORAGE-ELEVATION DATA

          STORAGE        .00       .36       .72      1.22      2.00      3.37      4.82      6.37      8.01     11.62
        ELEVATION     775.40    775.70    776.00    776.40    777.00    778.00    779.00    780.00    781.00    783.00
```

```
             STORAGE      28.10      48.24      49.42      67.21     114.23     179.26     212.09     230.76     275.66     362.70
           ELEVATION     790.00     796.00     796.30     800.40     808.69     816.98     820.36     822.10     825.87     832.00

   ----DSS---ZWRITE Unit  71; Vers.    3:  /25-YR/DAM1/FLOW/01MAY1999/5MIN/30CMP/
 -----DSS---ZWRITE Unit  71; Vers.    3:  /25-YR/DAM1/STOR/01MAY1999/5MIN/30CMP/
  ----DSS---ZWRITE Unit  71; Vers.    3:  /25-YR/DAM1/STAGE/01MAY1999/5MIN/30CMP/


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

  67 KP         PLAN  2 FOR STATION     DAM1          PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                              EXISTING CONDITIONS (NO RESERVOIR)

                HYDROGRAPH ROUTING DATA

  69 RN           NO ROUTING

                                                                   ***
   ---DSS---ZWRITE Unit  71; Vers.    3:  /25-YR/EXIST/FLOW/01MAY1999/5MIN/EXISTFLOW/
 -----DSS---ZWRITE Unit  71; Vers.    3:  /25-YR/EXIST/STOR/01MAY1999/5MIN/EXISTFLOW/
  ----DSS---ZWRITE Unit  71; Vers.    3:  /25-YR/EXIST/STAGE/01MAY1999/5MIN/EXISTFLOW/



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


             **************
             *            *
  71 KK      *    RCH3    *      ROUTE TO CP3
             *            *
             **************
                              ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
                              HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES

                HYDROGRAPH ROUTING DATA

  74 RD           MUSKINGUM-CUNGE CHANNEL ROUTING
                            L        4200.  CHANNEL LENGTH
                            S        .0230  SLOPE
                            N         .090  CHANNEL ROUGHNESS COEFFICIENT
                           CA          .00  CONTRIBUTING AREA
                        SHAPE         TRAP  CHANNEL SHAPE
                           WD        20.00  BOTTOM WIDTH OR DIAMETER
                            Z         2.00  SIDE SLOPE

                                                                  ***

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

                PLAN  2 INPUT DATA FOR STATION     RCH3 ARE SAME AS FOR PLAN  1


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


             **************
             *            *
  75 KK      *     E4     *      SUBBASIN E4
             *            *
             **************

               SUBBASIN RUNOFF DATA
```

```
 76 BA          SUBBASIN CHARACTERISTICS
                      TAREA          .58  SUBBASIN AREA

                PRECIPITATION DATA

 77 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .31     .56     .93    1.08    1.19    1.43    1.76    2.09     .00     .00     .00     .00

                                                STORM AREA =      .58

 78 LS          SCS LOSS RATE
                     STRTL          .56  INITIAL ABSTRACTION
                     CRVNBR       78.00  CURVE NUMBER
                     RTIMP          .00  PERCENT IMPERVIOUS AREA

 79 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG          .57  LAG

                                                ***

                                                UNIT HYDROGRAPH
                                              36 END-OF-PERIOD ORDINATES
                    25.     76.    148.    254.    362.    431.    456.    454.    418.    371.
                   312.    240.    188.    149.    121.     98.     79.     63.     50.     40.
                    32.     25.     21.     17.     13.     11.      9.      7.      5.      5.
                     4.      3.      2.      2.      1.      0.
---DSS---ZWRITE Unit  71; Vers.    2:  /25-YR/E4/FLOW/01MAY1999/5MIN/E4FLOW/

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

                PLAN  2 INPUT DATA FOR STATION       E4 ARE SAME AS FOR PLAN  1

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

                **************
                *              *
 81 KK          *       CP3    *      COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
                *              *
                **************

 92 HC          HYDROGRAPH COMBINATION
                      ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                ***
---DSS---ZWRITE Unit  71; Vers.    2:  /25-YR/CP3/FLOW/01MAY1999/5MIN/E4+CP2/
---DSS---ZWRITE Unit  71; Vers.    2:  /25-YR/CP3/FLOW/01MAY1999/5MIN/EXISTFLOW/

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

                **************
                *              *
 84 KK          *       RCH3   *      ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
                *              *
                **************

                   HYDROGRAPH ROUTING DATA
```

```
 85 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                          L       3400.  CHANNEL LENGTH
                          S       .0190  SLOPE
                          N        .045  CHANNEL ROUGHNESS COEFFICIENT
                         CA         .00  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD       20.00  BOTTOM WIDTH OR DIAMETER
                          Z        2.00  SIDE SLOPE

                                                  ***

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

               PLAN  2 INPUT DATA FOR STATION     RCH3 ARE SAME AS FOR PLAN  1

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

            **************
            *            *
 86 KK      *        E5  *      SUB-BASIN E5
            *            *
            **************

               SUBBASIN RUNOFF DATA

 87 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .31  SUBBASIN AREA

                PRECIPITATION DATA

 88 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .30     .54     .90    1.07    1.20    1.47    1.72    1.97     .00     .00     .00     .00

                                                 STORM AREA =      .31

 89 LS          SCS LOSS RATE
                     STRTL         .50  INITIAL ABSTRACTION
                    CRVNBR       80.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

 90 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .50  LAG

                                                  ***

                                                 UNIT HYDROGRAPH
                                               32 END-OF-PERIOD ORDINATES
                  19.     55.    113.    189.    248.    274.    274.    251.    219.    175.
                 129.    100.     77.     62.     48.     37.     29.     23.     18.     14.
                  11.      8.      6.      5.      4.      3.      3.      2.      2.      1.
                   1.      0.
---DSS---ZWRITE Unit  71; Vers.    2:  /25-YR/E5/FLOW/01MAY1999/5MIN/E5FLOW/

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

               PLAN  2 INPUT DATA FOR STATION      E5 ARE SAME AS FOR PLAN  1
```

** ***

```
          **************
          *            *
92 KK     *      CP4   *      COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
          *            *
          **************
```

FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET

```
94 HC          HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
```

***

* ***

```
          **************
          *            *
95 KK     *    SIERRA  *      STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
          *            *
          **************
```

STORAGE ROUTING AT SIERRA STREET

HYDROGRAPH ROUTING DATA

```
97 RS          STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
                     ITYP        STOR  TYPE OF INITIAL CONDITION
                    RSVRIC        .00  INITIAL CONDITION
                        X         .00 WORKING R AND D COEFFICIENT

98 SA               AREA          .0       .5       .8      1.2      1.9      2.6      3.1

99 SE          ELEVATION       587.00   594.00   596.00   598.00   600.00   602.00   604.00

00 SQ          DISCHARGE           0.      193.     211.     229.     245.     637.    1000.
```

***

COMPUTED STORAGE-ELEVATION DATA

```
          STORAGE        .00     1.19     2.45     4.40     7.45    11.90    17.61
        ELEVATION     587.00   594.00   596.00   598.00   600.00   602.00   604.00
---DSS---ZWRITE Unit  71; Vers.    3:  /25-YR/SIERRA/FLOW/01MAY1999/5MIN/SIERRA STREET/
```

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

PLAN 2 INPUT DATA FOR STATION SIERRA ARE SAME AS FOR PLAN 1

```
-----DSS---ZWRITE Unit  71; Vers.    3:  /25-YR/SIERRA/FLOW/01MAY1999/5MIN/EXISTFLOW/
```

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

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1
					.99
..DROGRAPH AT	E1	.77	1	FLOW	105.
				TIME	12.83
			2	FLOW	105.
				TIME	12.83
HYDROGRAPH AT	E2	1.20	1	FLOW	129.
				TIME	13.08
			2	FLOW	129.
				TIME	13.08
COMBINED AT	CP1	1.97	1	FLOW	231.
				TIME	13.00
			2	FLOW	231.
				TIME	13.00
.OUTED TO	RCH1	1.97	1	FLOW	236.
				TIME	13.42
			2	FLOW	236.
				TIME	13.42
HYDROGRAPH AT	E3	1.51	1	FLOW	204.
				TIME	13.33
			2	FLOW	204.
				TIME	13.33
COMBINED AT	CP2	3.48	1	FLOW	439.
				TIME	13.42
			2	FLOW	439.
				TIME	13.42
OUTED TO	DAM1	3.48	1	FLOW	98.
				TIME	16.83
			2	FLOW	439.
				TIME	13.42
			** PEAK STAGES IN FEET **		
			1	STAGE	796.05
				TIME	16.83
			2	STAGE	.00
				TIME	.00
.UTED TO	RCH3	3.48	1	FLOW	98.
				TIME	17.17
			2	FLOW	440.
				TIME	13.58
YDROGRAPH AT	E4	.58	1	FLOW	93.
				TIME	12.58
			2	FLOW	93.
				TIME	12.58
COMBINED AT	CP3	4.06	1	FLOW	113.
				TIME	13.58
			2	FLOW	471.
				TIME	13.50

ROUTED TO	RCH3	4.06	1	FLOW	114.
				TIME	13.75
			2	FLOW	480.
				TIME	13.67
'DROGRAPH AT	E5	.31	1	FLOW	58.
				TIME	12.58
			2	FLOW	58.
				TIME	12.58
2 COMBINED AT	CP4	4.37	1	FLOW	150.
				TIME	12.67
			2	FLOW	496.
				TIME	13.67
ROUTED TO	SIERRA	4.37	1	FLOW	147.
				TIME	12.75
			2	FLOW	448.
				TIME	13.92

** PEAK STAGES IN FEET **

1	STAGE	592.32
	TIME	12.75
2	STAGE	601.04
	TIME	13.92

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00									
	RCH1 MANE	5.00	236.14	805.00	.54	5.00	236.14	805.00	.54

NTINUITY SUMMARY (AC-FT) - INFLOW= .5852E+02 EXCESS= .0000E+00 OUTFLOW= .5692E+02 BASIN STORAGE= .2221E+01 PERCENT ERROR= -1.1

FOR PLAN = 2 RATIO= .00									
	RCH1 MANE	5.00	236.14	805.00	.54	5.00	236.14	805.00	.54

NTINUITY SUMMARY (AC-FT) - INFLOW= .5852E+02 EXCESS= .0000E+00 OUTFLOW= .5692E+02 BASIN STORAGE= .2221E+01 PERCENT ERROR= -1.1

FOR PLAN = 1 RATIO= .00									
	RCH3 MANE	5.00	98.30	1030.00	.48	5.00	98.30	1030.00	.48

NTINUITY SUMMARY (AC-FT) - INFLOW= .9262E+02 EXCESS= .0000E+00 OUTFLOW= .8988E+02 BASIN STORAGE= .2752E+01 PERCENT ERROR= .0

FOR PLAN = 2 RATIO= .00									
	RCH3 MANE	5.00	440.44	815.00	.61	5.00	440.44	815.00	.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1154E+03 EXCESS= .0000E+00 OUTFLOW= .1140E+03 BASIN STORAGE= .1835E+01 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .00									
	RCH3 MANE	5.00	113.83	825.00	.48	5.00	113.83	825.00	.48

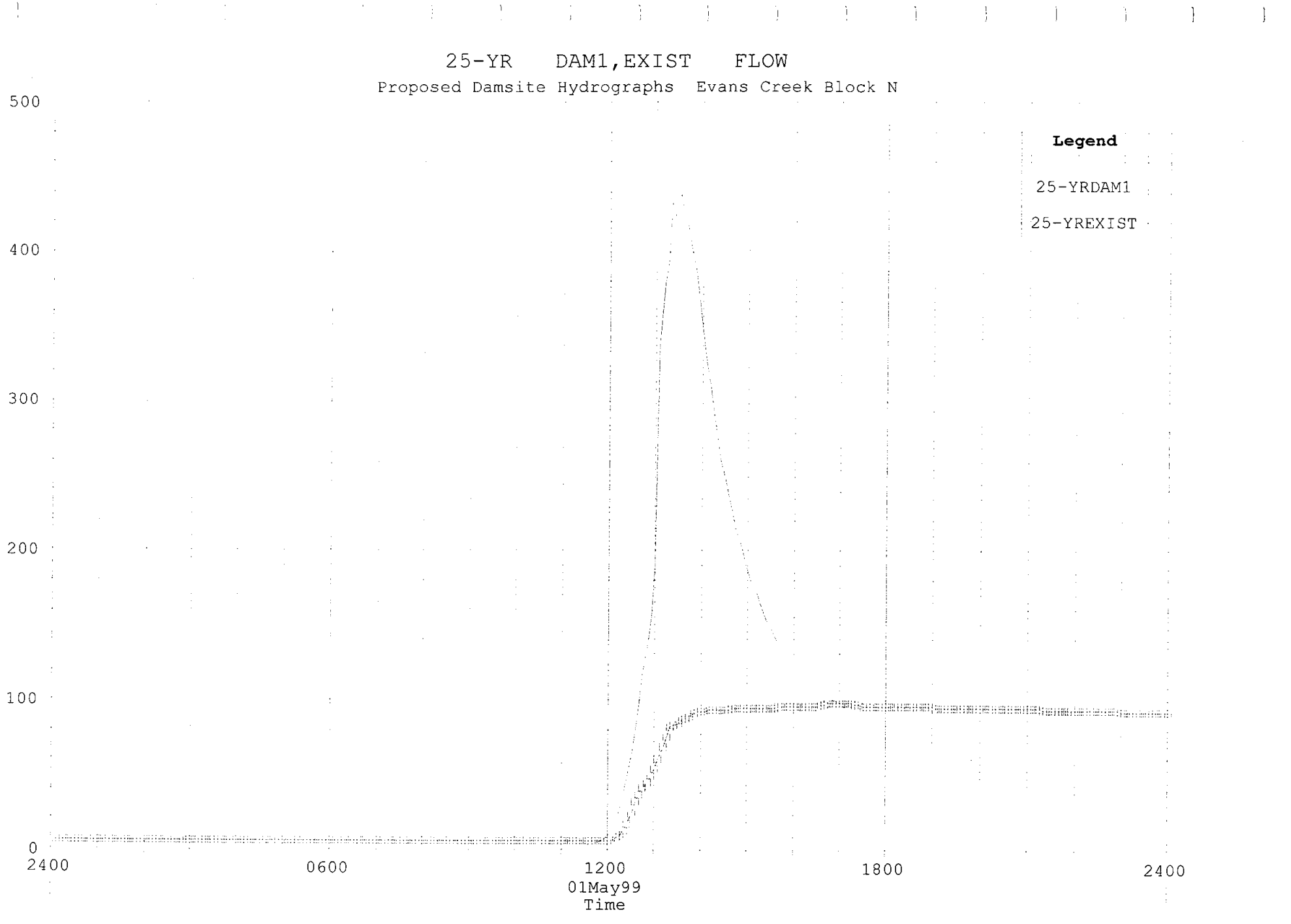
CONTINUITY SUMMARY (AC-FT) - INFLOW= .1057E+03 EXCESS= .0000E+00 OUTFLOW= .1042E+03 BASIN STORAGE= .1561E+01 PERCENT ERROR= .0

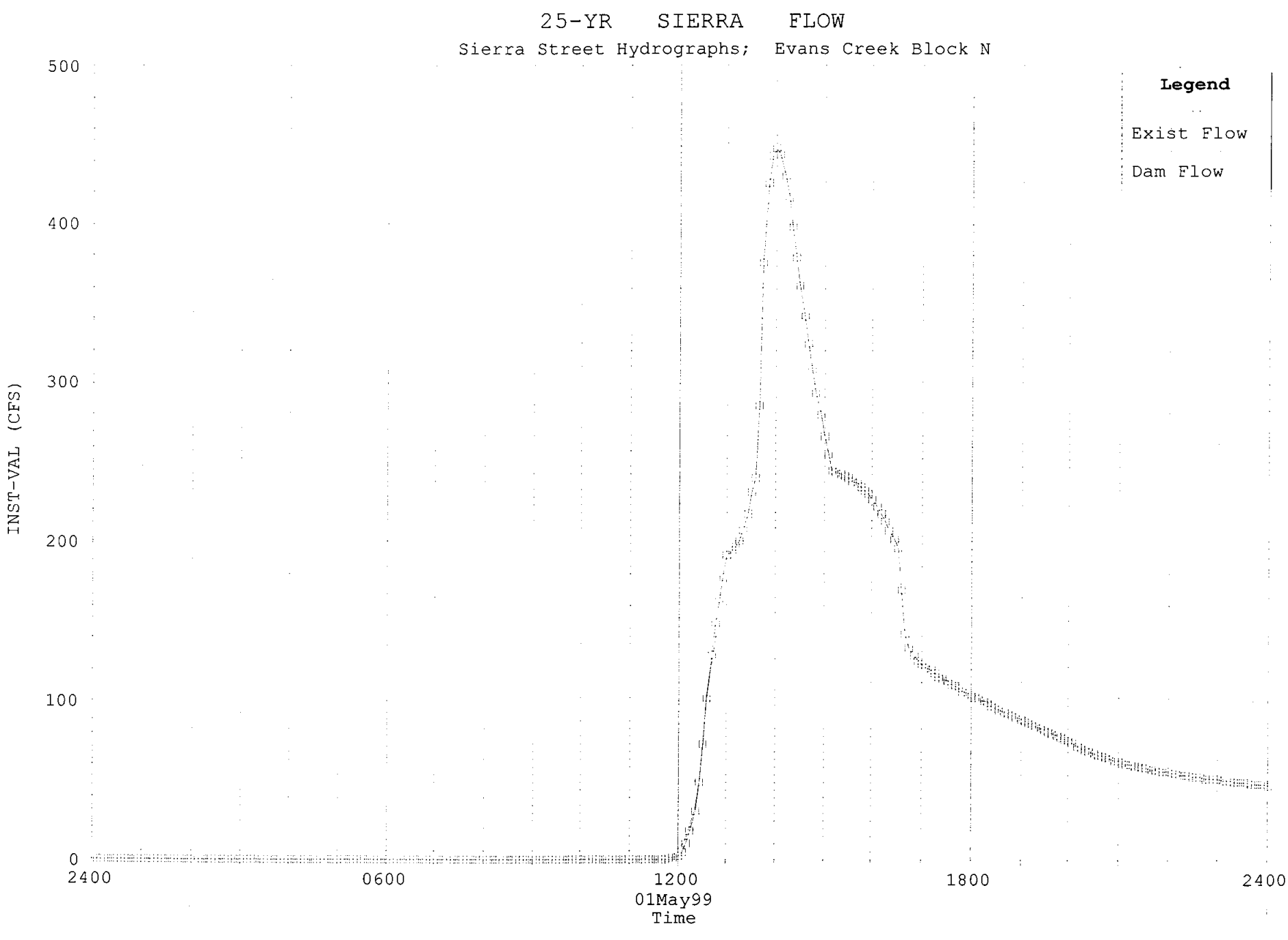
FOR PLAN = 2 RATIO= .00									
	RCH3 MANE	5.00	480.30	820.00	.59	5.00	480.30	820.00	.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1299E+03 EXCESS= .0000E+00 OUTFLOW= .1290E+03 BASIN STORAGE= .1092E+01 PERCENT ERROR= -.2

* NORMAL END OF HEC-1 ***

-----DSS---ZCLOSE Unit: 71, File: 2EVN25.DSS
Pointer Utilization: .25
Number of Records: 17
File Size: 42.3 Kbytes
Percent Inactive: .00


25-YR DAM1,EXIST FLOW
Proposed Damsite Hydrographs Evans Creek Block N
500
400
300
200
100
0
2400
0600
1200
01May99
Time
1800
2400
Legend
25-YRDAM1
25-YREXIST


25-YR SIERRA FLOW
Sierra Street Hydrographs; Evans Creek Block N
Legend
Exist Flow
Dam Flow
INST-VAL (CFS)
500
400
300
200
100
0
2400
0600
1200
1800
2400
01May99
Time

50-YEAR, 24 HOUR

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

          *DIAGRAM
    1     ID     PHASE II SUB-AREAS
    2     ID
    3     ID     EVANS CREEK BLOCK N HYDROLOGY                NIMBUS JOB # 9912
    4     ID     50 YEAR 24 HOUR EVENT                        DATE : MAY 1999
    5     ID     NIMBUS ENGINEERS, RENO, NEVADA               FILE NAME: 2EVN50.DAT
    6     ID
    7     ID
    8     ID    THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB
    9     ID    ***************************************************************************
   10     ID     GONI CANYON                                  Nimbus Job #: 9606          *
   11     ID     Prepared by Nimbus Engineers                 Date:  August 1996          *
   12     ID                                                  File Name: GONI-5.DAT       *
   13     ID    ***************************************************************************
   14     ID
   15     ID    The  50-yr PH card rainfall depths were determined from the
   16     ID    Precipitation Frequency Study of the United States, NOAA Atlas 14,
   17     ID    Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation
   18     ID    events and the methodology per the Draft Washoe County Hydrologic
   19     ID    Criteria and Design Manual.
   20     ID
   21     ID    ***************************************************************************
   22     ID    THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND          *
   23     ID    EXISTING CONDITIONS (PLAN 2)                                        *
   24     ID    ***************************************************************************
          *
   25     IT       5 01MAY99     0005      288
   26     IO       4         0
   27     JP       2
          *   DEPTH AREA REDUCTION FACTOR FROM NOAA
   28     JR    PREC     0.99
          *


   29     KK       E1 SUBBASIN E1
   30     BA    0.772
   31     PH                     0.38     0.70     1.16     1.36     1.52     1.84     2.27     2.69
   32     LS               76
   33     UD    0.79
          * ZW A=50-YR C=FLOW F=E1FLOW
          *

   34     KK       E2 SUB-BASIN E2
   35     BA     1.2
   36     PH                     0.38     0.70     1.16     1.31     1.43     1.67     2.07     2.47
   37     LS               77
   38     UD    0.99
          * ZW A=50-YR C=FLOW F=E2FLOW
          *

   39     KK      CP1 COMBINE E1 AND E2 HYDROGRAPHS AT CP1
          * KO              2
   40     HC       2
   41     ZW    A=50-YR C=FLOW F=E1+E2
          *
```

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

  42      KK    RCH1 ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
  43      RD   10800   0.026    0.07            TRAP      15       2
          *

  44      KK      E3 SUBBASIN E3
  45      BA    1.51
  46      PH                    0.38    0.70    1.16    1.31    1.43    1.67    2.10    2.53
  47      LS              81
  48      UD    1.24
          * ZW A=50-YR C=FLOW F=E3FLOW
          *

  49      KK     CP2 COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
  50      HC       2
          * ZW A=50-YR C=FLOW F=E1+E2+E3
          *

  51      KK    DAM1 PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
          * KO             2
          * KP     1
          * KM PROPOSED RESERVOIR; flow through principal and emergency spillways ONLY.
          * RS     1    STOR       0
          * SA .1354   .9137   1.954    3.63    3.71    3.79    3.87    3.95    5.12    6.
          * SA  7.97    8.92    9.93   10.18   10.45   10.94   11.55   12.67   14.15   15.
          * SE   765     775     785  795.89  796.33  796.76   797.2  797.64  803.16  808.
          * SE814.22  816.98  819.74  820.36  820.97  822.07  823.42  825.87  828.94   832
          * SQ     0       0       0       0   13.46   38.09   69.97  107.73  114.35  120.
          * SQ126.56  129.43  132.24  218.16  401.01  881.31  1708.7  3654.6  6920.1 11031
          * ZW A=50-YR C=FLOW F=DAMFLOW
          * ZW C=STOR F=DAMSTOR
          * ZW C=STAGE F=DAMSTAGE
          *
  52      KP       1
  53      KM   PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa
  54      RS       1    STOR       0
  55      SA    1.18    1.21    1.23    1.27    1.32    1.41    1.50    1.59    1.70    1.91
  56      SA    2.83    3.91    3.97    4.72    6.68    9.07   10.37   11.09   12.75   15.70
  57      SE   775.4   775.7   776.0   776.4   777.0   778.0   779.0   780.0   781.0   783.0
  58      SE     790     796   796.3   800.4  808.69  816.98  820.36  822.10  825.87   832.0
  59      SQ     5.4    12.6    21.4      35    40.8    49.9    57.5    64.3    70.4    81.3
  60      SQ    92.1   95.43   112.2     134     145   155.4   244.5   907.5  3680.8   11060
  61      ZW   A=50-YR C=FLOW F=30CMP
  62      ZW   C=STOR F=30CMP
  63      ZW   C=STAGE F=30CMP
          *
          * KO             2
  64      KP       2
  65      KM    EXISTING CONDITIONS (NO RESERVOIR)
  66      RN
  67      ZW   A=50-YR B=EXIST C=FLOW F=EXISTFLOW
          *
```

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

  68      KK    RCH3  ROUTE TO CP3
  69      KM   ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
  70      KM   HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES
  71      RD    4200   0.023    0.09            TRAP      20       2
          *

  72      KK      E4 SUBBASIN E4
  73      BA    0.58
  74      PH                   0.38    0.70    1.16    1.29    1.40    1.61    1.98    2.35
  75      LS              78
  76      UD    0.57
          * ZW A=50-YR C=FLOW F=E4FLOW
          *

  77      KK     CP3 COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
          * KO             2
  78      HC       2
  79      ZW   A=50-YR C=FLOW F=E4+CP2
          *

  80      KK    RCH3 ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
  81      RD    3400   0.019   0.045            TRAP      20       2
          *

  82      KK      E5 SUB-BASIN E5
  83      BA    0.31
  84      PH                   0.37    0.68    1.13    1.29    1.40    1.65    1.93    2.21
  85      LS             80
  86      UD     0.5
          * ZW A=50-YR C=FLOW F=E5FLOW
          *

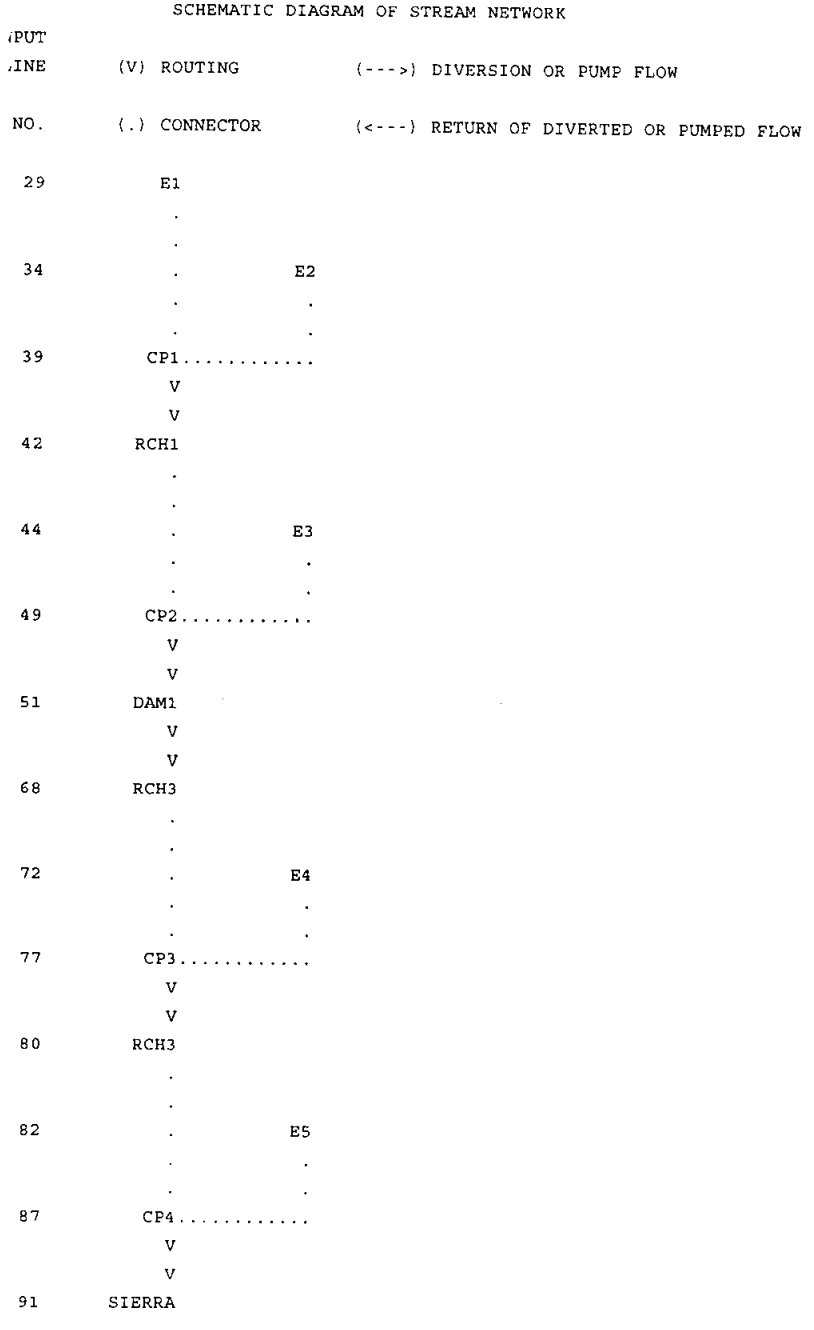
  87      KK     CP4 COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
          * KO             2
  88      KM    FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET
  89      HC       2
  90      ZW   A=50-YR C=FLOW F=SIERRA STREET
          *

  91      KK  SIERRA  STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
  92      KM   STORAGE ROUTING AT SIERRA STREET
  93      RS       1    STOR        0
  94      SA       0    0.51    0.76     1.2    1.88    2.59    3.13
  95      SE     587     594     596     598     600     602     604
  96      SQ       0     193     211     229     245     637    1000
  97      ZW   A=50-YR C=FLOW F=SIERRA STREET
          *
  98      ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

;PUT
;INE (V) ROUTING (---->) DIVERSION OR PUMP FLOW

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



**) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
**************************************
*                                    *
*   FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*            SEPTEMBER 1990          *
*             VERSION 4.0            *
*                                    *
*  RUN DATE 06/29/1999 TIME 16:21:13 *
*                                    *
**************************************
```


```
**************************************
*                                    *
*   U.S. ARMY CORPS OF ENGINEERS     *
*   HYDROLOGIC ENGINEERING CENTER    *
*         609 SECOND STREET          *
*       DAVIS, CALIFORNIA 95616      *
*           (916) 756-1104           *
*                                    *
**************************************
```


PHASE II SUB-AREAS

EVANS CREEK BLOCK N HYDROLOGY
50 YEAR 24 HOUR EVENT
NIMBUS ENGINEERS, RENO, NEVADA

NIMBUS JOB # 9912
DATE : MAY 1999
FILE NAME: 2EVN50.DAT

THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB

```
**************************************************************************
 GONI CANYON                                  Nimbus Job #: 9606         *
 Prepared by Nimbus Engineers                 Date:  August 1996         *
                                              File Name: GONI-5.DAT      *
**************************************************************************
```

The 50-yr PH card rainfall depths were determined from the Precipitation Frequency Study of the United States, NOAA Atlas 14, Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation events and the methodology per the Draft Washoe County Hydrologic Criteria and Design Manual.

```
**************************************************************************
THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND              *
EXISTING CONDITIONS (PLAN 2)                                            *
**************************************************************************
```

26 IO OUTPUT CONTROL VARIABLES

IPRNT	4	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	5	MINUTES IN COMPUTATION INTERVAL
IDATE	1MAY99	STARTING DATE
ITIME	0005	STARTING TIME
NQ	288	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	2MAY99	ENDING DATE
NDTIME	0000	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 23.92 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 2 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
.99

*** ***

****
* *
29 KK * E1 * SUBBASIN E1
* *
****

SUBBASIN RUNOFF DATA

30 BA SUBBASIN CHARACTERISTICS
TAREA .77 SUBBASIN AREA

PRECIPITATION DATA

31 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.38	.70	1.16	1.36	1.52	1.84	2.27	2.69	.00	.00	.00	.00

STORM AREA = .77

32 LS SCS LOSS RATE
STRTL .63 INITIAL ABSTRACTION
CRVNBR 76.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

33 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .79 LAG

***

UNIT HYDROGRAPH
49 END-OF-PERIOD ORDINATES

14.	45.	86.	140.	212.	297.	368.	417.	444.	448.
443.	416.	385.	348.	303.	250.	205.	174.	147.	125.
108.	92.	79.	65.	56.	48.	41.	34.	29.	24.
21.	18.	15.	13.	11.	9.	8.	7.	6.	5.
4.	4.	3.	3.	2.	2.	1.	1.	0.	

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

PLAN 2 INPUT DATA FOR STATION E1 ARE SAME AS FOR PLAN 1

** ***

****
* *
34 KK * E2 * SUB-BASIN E2
* *
****

SUBBASIN RUNOFF DATA

```
35 BA          SUBBASIN CHARACTERISTICS
                    TAREA        1.20  SUBBASIN AREA

               PRECIPITATION DATA

36 PH                                  DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .38     .70    1.16    1.31    1.43    1.67    2.07    2.47     .00     .00     .00     .00

                                                STORM AREA =    1.20

37 LS          SCS LOSS RATE
                    STRTL         .60  INITIAL ABSTRACTION
                   CRVNBR       77.00  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

38 UD          SCS DIMENSIONLESS UNITGRAPH
                    TLAG         .99  LAG

                                                ***

                                                UNIT HYDROGRAPH
                                                61 END-OF-PERIOD ORDINATES
                    14.     41.     78.    122.    178.    250.    334.    413.    478.    525.
                   553.    560.    559.    546.    518.    486.    450.    408.    359.    306.
                   261.    228.    200.    175.    153.    137.    120.    106.     92.     80.
                    71.     62.     55.     48.     42.     37.     32.     28.     25.     22.
                    19.     17.     15.     13.     11.     10.      8.      8.      7.      6.
                     5.      5.      4.      4.      3.      3.      2.      2.      1.      1.
                     0.

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

               PLAN  2 INPUT DATA FOR STATION       E2 ARE SAME AS FOR PLAN  1

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

                    **************
                    *            *
39 KK               *       CP1  *      COMBINE E1 AND E2 HYDROGRAPHS AT CP1
                    *            *
                    **************

40 HC          HYDROGRAPH COMBINATION
                    ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                ***
 -----DSS---ZOPEN:  Version: 6-EA;  Existing File Opened
                    Unit:  71,  File: 2EVN50.DSS
 --DSS---ZWRITE Unit  71; Vers.    4:  /50-YR/CP1/FLOW/01MAY1999/5MIN/E1+E2/
----DSS---ZWRITE Unit  71; Vers.    4:  /50-YR/CP1/FLOW/01MAY1999/5MIN//

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

                    **************
                    *            *
2 KK                *       RCH1 *      ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
```

```
*           *
*************

   HYDROGRAPH ROUTING DATA

43 RD      MUSKINGUM-CUNGE CHANNEL ROUTING
                 L      10800.  CHANNEL LENGTH
                 S       .0260  SLOPE
                 N        .070  CHANNEL ROUGHNESS COEFFICIENT
                CA         .00  CONTRIBUTING AREA
             SHAPE        TRAP  CHANNEL SHAPE
                WD       15.00  BOTTOM WIDTH OR DIAMETER
                 Z        2.00  SIDE SLOPE

                                                    ***

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

   PLAN  2 INPUT DATA FOR STATION     RCH1 ARE SAME AS FOR PLAN  1

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

           **************
           *            *
44 KK      *        E3  *      SUBBASIN E3
           *            *
           **************

   SUBBASIN RUNOFF DATA

45 BA      SUBBASIN CHARACTERISTICS
             TAREA        1.51  SUBBASIN AREA

   PRECIPITATION DATA

46 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
           ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
           5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
             .38     .70    1.16    1.31    1.43    1.67    2.10    2.53     .00     .00     .00     .00

                                              STORM AREA =     1.51

47 LS      SCS LOSS RATE
             STRTL         .47  INITIAL ABSTRACTION
            CRVNBR       81.00  CURVE NUMBER
             RTIMP         .00  PERCENT IMPERVIOUS AREA

48 UD      SCS DIMENSIONLESS UNITGRAPH
             TLAG        1.24  LAG

                                                    ***

                                          UNIT HYDROGRAPH
                                      76 END-OF-PERIOD ORDINATES
            11.     29.     55.     88.    125.    170.    227.    289.    360.    421.
           476.    517.    545.    564.    568.    567.    562.    539.    515.    489.
           460.    427.    390.    346.    304.    267.    240.    215.    193.    173.
           156.    143.    129.    116.    105.     94.     83.     76.     68.     61.
            55.     50.     44.     40.     36.     32.     29.     26.     23.     21.
            19.     17.     15.     14.     12.     11.     10.      9.      8.      7.
             7.      6.      6.      5.      5.      4.      4.      3.      3.      3.
             2.      2.      1.      1.      1.      0.
```

```
               PRECIPITATION DATA

    74 PH                             DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .38     .70    1.16    1.29    1.40    1.61    1.98    2.35     .00     .00     .00     .00

                                                   STORM AREA =      .58

    75 LS      SCS LOSS RATE
                    STRTL          .56  INITIAL ABSTRACTION
                   CRVNBR        78.00  CURVE NUMBER
                    RTIMP          .00  PERCENT IMPERVIOUS AREA

    76 UD      SCS DIMENSIONLESS UNITGRAPH
                     TLAG          .57  LAG

                                                               ***

                                                        UNIT HYDROGRAPH
                                                    36 END-OF-PERIOD ORDINATES
              25.        76.       148.       254.       362.       431.       456.       454.       418.       371.
             312.       240.       188.       149.       121.        98.        79.        63.        50.        40.
              32.        25.        21.        17.        13.        11.         9.         7.         5.         5.
               4.         3.         2.         2.         1.         0.

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

             PLAN  2 INPUT DATA FOR STATION       E4 ARE SAME AS FOR PLAN  1


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


            **************
            *            *
   77 KK    *     CP3    *      COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
            *            *
            **************

   78 HC          HYDROGRAPH COMBINATION
                       ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                              ***
-----DSS---ZWRITE Unit  71; Vers.    4:  /50-YR/CP3/FLOW/01MAY1999/5MIN/E4+CP2/
  ---DSS---ZWRITE Unit  71; Vers.    4:  /50-YR/CP3/FLOW/01MAY1999/5MIN/EXISTFLOW/



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


            **************
            *            *
   80 KK    *    RCH3    *      ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
            *            *
            **************

              HYDROGRAPH ROUTING DATA

   81 RD        MUSKINGUM-CUNGE CHANNEL ROUTING
                       L        3400.  CHANNEL LENGTH
                       S        .0190  SLOPE
                       N         .045  CHANNEL ROUGHNESS COEFFICIENT
```

```
87 KK      *       CP4   *      COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
           *             *
           ***************
                          FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET

89 HC           HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                    ***
---DSS---ZWRITE Unit  71; Vers.    4:  /50-YR/CP4/FLOW/01MAY1999/5MIN/SIERRA STREET/
---DSS---ZWRITE Unit  71; Vers.    4:  /50-YR/CP4/FLOW/01MAY1999/5MIN/EXISTFLOW/


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


           ***************
           *             *
91 KK      *    SIERRA   *       STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
           *             *
           ***************
                          STORAGE ROUTING AT SIERRA STREET

              HYDROGRAPH ROUTING DATA

93 RS           STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        STOR  TYPE OF INITIAL CONDITION
                    RSVRIC         .00  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

94 SA              AREA          .0        .5        .8       1.2       1.9       2.6       3.1

95 SE           ELEVATION     587.00    594.00    596.00    598.00    600.00    602.00    604.00

96 SQ           DISCHARGE         0.       193.      211.      229.      245.      637.     1000.

                                                    ***

                                        COMPUTED STORAGE-ELEVATION DATA

          STORAGE         .00      1.19      2.45      4.40      7.45     11.90     17.61
        ELEVATION      587.00    594.00    596.00    598.00    600.00    602.00    604.00
---DSS---ZWRITE Unit  71; Vers.    4:  /50-YR/SIERRA/FLOW/01MAY1999/5MIN/SIERRA STREET/


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


              PLAN  2 INPUT DATA FOR STATION   SIERRA ARE SAME AS FOR PLAN  1
---DSS---ZWRITE Unit  71; Vers.    4:  /50-YR/SIERRA/FLOW/01MAY1999/5MIN/EXISTFLOW/
```

CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	20.00	BOTTOM WIDTH OR DIAMETER
Z	2.00	SIDE SLOPE

***

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

PLAN 2 INPUT DATA FOR STATION RCH3 ARE SAME AS FOR PLAN 1

* ***

```
**************
*            *
*     E5     *
*            *
**************
```

82 KK SUB-BASIN E5

SUBBASIN RUNOFF DATA

83 BA SUBBASIN CHARACTERISTICS

TAREA	.31	SUBBASIN AREA

PRECIPITATION DATA

84 PH

DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.37	.68	1.13	1.29	1.40	1.65	1.93	2.21	.00	.00	.00	.00

STORM AREA = .31

95 LS SCS LOSS RATE

STRTL	.50	INITIAL ABSTRACTION
CRVNBR	80.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

86 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.50	LAG

***

UNIT HYDROGRAPH
32 END-OF-PERIOD ORDINATES

19.	55.	113.	189.	248.	274.	274.	251.	219.	175.
129.	100.	77.	62.	48.	37.	29.	23.	18.	14.
11.	8.	6.	5.	4.	3.	3.	2.	2.	1.
1.	0.								

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

PLAN 2 INPUT DATA FOR STATION E5 ARE SAME AS FOR PLAN 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

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1
					.99
...DROGRAPH AT	E1	.77	1	FLOW	154.
				TIME	12.83
			2	FLOW	154.
				TIME	12.83
HYDROGRAPH AT	E2	1.20	1	FLOW	190.
				TIME	13.08
			2	FLOW	190.
				TIME	13.08
COMBINED AT	CP1	1.97	1	FLOW	337.
				TIME	13.00
			2	FLOW	337.
				TIME	13.00
ROUTED TO	RCH1	1.97	1	FLOW	342.
				TIME	13.33
			2	FLOW	342.
				TIME	13.33
HYDROGRAPH AT	E3	1.51	1	FLOW	280.
				TIME	13.33
			2	FLOW	280.
				TIME	13.33
COMBINED AT	CP2	3.48	1	FLOW	622.
				TIME	13.33
			2	FLOW	622.
				TIME	13.33
ROUTED TO	DAM1	3.48	1	FLOW	132.
				TIME	16.00
			2	FLOW	622.
				TIME	13.33
			** PEAK STAGES IN FEET **		
			1	STAGE	799.99
				TIME	16.00
			2	STAGE	.00
				TIME	.00
...UTED TO	RCH3	3.48	1	FLOW	132.
				TIME	16.25
			2	FLOW	633.
				TIME	13.42
HYDROGRAPH AT	E4	.58	1	FLOW	139.
				TIME	12.58
			2	FLOW	139.
				TIME	12.58
COMBINED AT	CP3	4.06	1	FLOW	152.
				TIME	12.83
			2	FLOW	679.
				TIME	13.42

ROUTED TO	RCH3	4.06	1	FLOW	149.
				TIME	13.00
			2	FLOW	671.
				TIME	13.50
DROGRAPH AT	E5	.31	1	FLOW	85.
				TIME	12.50
			2	FLOW	85.
				TIME	12.50
COMBINED AT	CP4	4.37	1	FLOW	222.
				TIME	12.67
			2	FLOW	693.
				TIME	13.50
ROUTED TO	SIERRA	4.37	1	FLOW	200.
				TIME	12.92
			2	FLOW	652.
				TIME	13.75

** PEAK STAGES IN FEET **

1	STAGE	594.76
	TIME	12.92
2	STAGE	602.08
	TIME	13.75

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00									
RCH1	MANE	5.00	342.46	800.00	.70	5.00	342.46	800.00	.70

NTINUITY SUMMARY (AC-FT) - INFLOW= .7550E+02 EXCESS= .0000E+00 OUTFLOW= .7373E+02 BASIN STORAGE= .2507E+01 PERCENT ERROR= -1.0

FOR PLAN = 2 RATIO= .00									
RCH1	MANE	5.00	342.46	800.00	.70	5.00	342.46	800.00	.70

NTINUITY SUMMARY (AC-FT) - INFLOW= .7550E+02 EXCESS= .0000E+00 OUTFLOW= .7373E+02 BASIN STORAGE= .2507E+01 PERCENT ERROR= -1.0

FOR PLAN = 1 RATIO= .00									
RCH3	MANE	5.00	131.80	975.00	.59	5.00	131.80	975.00	.59

NTINUITY SUMMARY (AC-FT) - INFLOW= .1123E+03 EXCESS= .0000E+00 OUTFLOW= .1095E+03 BASIN STORAGE= .2796E+01 PERCENT ERROR= .0

FOR PLAN = 2 RATIO= .00									
RCH3	MANE	5.00	633.34	805.00	.78	5.00	633.34	805.00	.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1468E+03 EXCESS= .0000E+00 OUTFLOW= .1454E+03 BASIN STORAGE= .2048E+01 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .00									
RCH3	MANE	4.75	150.00	779.00	.59	5.00	149.19	780.00	.59

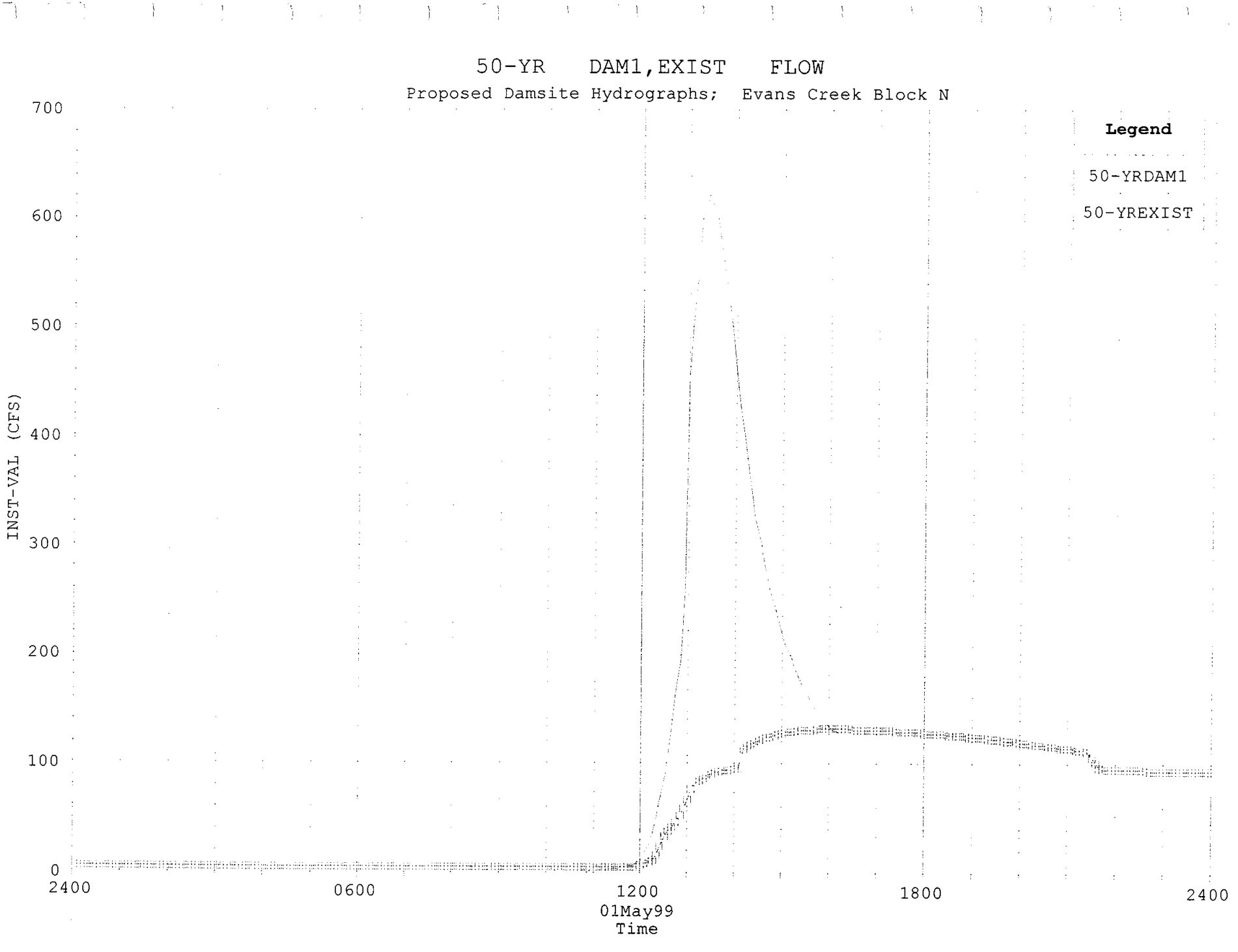
CONTINUITY SUMMARY (AC-FT) - INFLOW= .1300E+03 EXCESS= .0000E+00 OUTFLOW= .1284E+03 BASIN STORAGE= .1597E+01 PERCENT ERROR= .0

FOR PLAN = 2 RATIO= .00									
RCH3	MANE	5.00	671.42	810.00	.76	5.00	671.42	810.00	.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1659E+03 EXCESS= .0000E+00 OUTFLOW= .1651E+03 BASIN STORAGE= .1220E+01 PERCENT ERROR= -.3

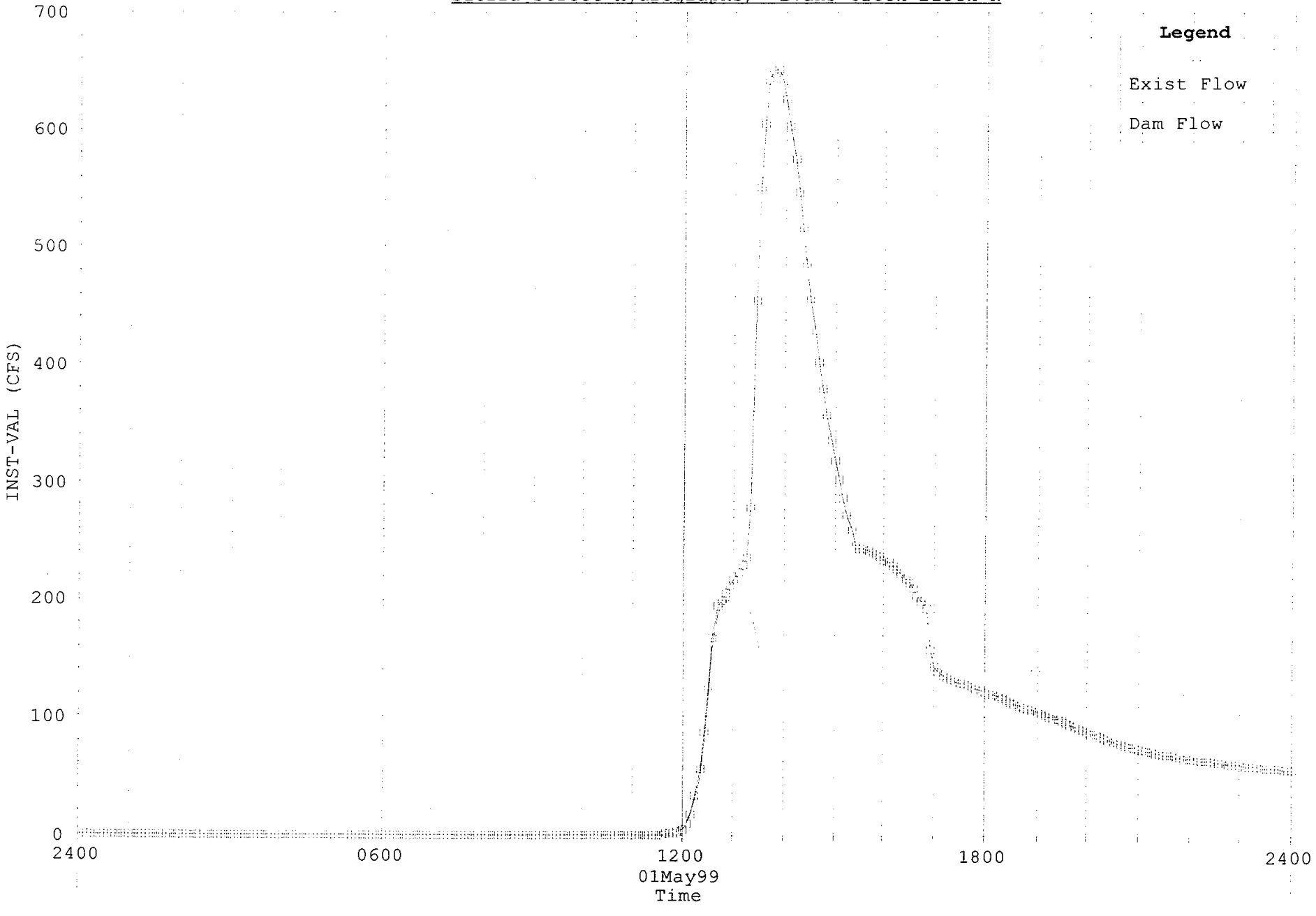
NORMAL END OF HEC-1 ***

-----DSS---ZCLOSE Unit: 71, File: 2EVN50.DSS
Pointer Utilization: .25
Number of Records: 14
File Size: 29.5 Kbytes
Percent Inactive: .00


50-YR DAM1,EXIST FLOW
Proposed Damsite Hydrographs; Evans Creek Block N
Legend
50-YRDAM1
50-YREXIST
INST-VAL (CFS)
700
600
500
400
300
200
100
0
2400
0600
1200
01May99
Time
1800
2400

50-YR SIERRA FLOW

Sierra Street Hydrographs; Evans Creek Block N



100-YEAR, 24 HOUR

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

          *DIAGRAM
    1     ID     PHASE II SUB-AREAS
    2     ID
    3     ID     EVANS CREEK BLOCK N HYDROLOGY                NIMBUS JOB # 9912
    4     ID     100-YEAR 24 HOUR EVENT                       DATE : MAY 1999
    5     ID     NIMBUS ENGINEERS, RENO, NEVADA               FILE NAME: 2EV100.DAT
    6     ID
    7     ID
    8     ID    THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB
    9     ID    ********************************************************************************
   10     ID     GONI CANYON                                  Nimbus Job #: 9606          *
   11     ID     Prepared by Nimbus Engineers                 Date:  August 1996          *
   12     ID                                                  File Name: GONI-5.DAT       *
   13     ID    ********************************************************************************
   14     ID
   15     ID    The  100-yr PH card rainfall depths were determined from the
   16     ID    Precipitation Frequency Study of the United States, NOAA Atlas 14,
   17     ID    Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation
   18     ID    events and the methodology per the Draft Washoe County Hydrologic
   19     ID    Criteria and Design Manual.
   20     ID
   21     ID    ********************************************************************************
   22     ID    THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND          *
   23     ID    EXISTING CONDITIONS (PLAN 2)                                        *
   24     ID    ********************************************************************************
          *
   25     IT       5 01MAY99    0005     288
   26     IO       4        0
   27     JP       2
          *   DEPTH AREA REDUCTION FACTOR FROM NOAA
   28     JR    PREC     0.99
          *


   29     KK      E1 SUBBASIN E1
   30     BA   0.772
   31     PH                    0.48    0.87    1.45    1.62    1.76    2.03    2.50    2.97
   32     LS              76
   33     UD    0.79
   34     ZW   A=100-YR C=FLOW F=E1FLOW
          *


   35     KK      E2 SUB-BASIN E2
   36     BA     1.2
   37     PH                    0.48    0.87    1.45    1.57    1.66    1.85    2.29    2.73
   38     LS              77
   39     UD    0.99
   40     ZW   A=100-YR C=FLOW F=E2FLOW
          *


   41     KK     CP1 COMBINE E1 AND E2 HYDROGRAPHS AT CP1
          * KO             2
   42     HC       2
   43     ZW   A=100-YR C=FLOW F=E1+E2
          *
```

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

  44      KK    RCH1 ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
  45      RD   10800   0.026    0.07            TRAP      15       2
          *

  46      KK      E3 SUBBASIN E3
  47      BA    1.51
  48      PH                    0.48    0.87    1.45    1.57    1.66    1.85    2.33    2.80
  49      LS              81
  50      UD    1.24
  51      ZW   A=100-YR C=FLOW F=E3FLOW
          *

  52      KK     CP2 COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
  53      HC       2
          * ZW A=100-YR C=FLOW F=E1+E2+E3
          *

  54      KK    DAM1 PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
          * KO             2
          * KP     1
          * KM PROPOSED RESERVOIR; flow through principal and emergency spillways ONLY.
          * RS     1    STOR       0
          * SA .1354   .9137   1.954    3.63    3.71    3.79    3.87    3.95    5.12     6.
          * SA  7.97    8.92    9.93   10.18   10.45   10.94   11.55   12.67   14.15    15.
          * SE   765     775     785  795.89  796.33  796.76   797.2  797.64  803.16   808.
          * SE814.22  816.98  819.74  820.36  820.97  822.07  823.42  825.87  828.94    832
          * SQ     0       0       0       0   13.46   38.09   69.97  107.73  114.35   120.
          * SQ126.56  129.43  132.24  218.16  401.01  881.31  1708.7  3654.6  6920.1 11031
          * ZW A=100-YR C=FLOW F=DAMFLOW
          * ZW C=STOR F=DAMSTOR
          * ZW C=STAGE F=DAMSTAGE
          *
  55      KP       1
  56      KM   PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa
  57      RS       1    STOR       0
  58      SA    1.18    1.21    1.23    1.27    1.32    1.41    1.50    1.59    1.70    1.91
  59      SA    2.83    3.91    3.97    4.72    6.68    9.07   10.37   11.09   12.75   15.70
  60      SE   775.4   775.7   776.0   776.4   777.0   778.0   779.0   780.0   781.0   783.0
  61      SE     790     796   796.3   800.4  808.69  816.98  820.36  822.10  825.87   832.0
  62      SQ     5.4    12.6    21.4      35    40.8    49.9    57.5    64.3    70.4    81.3
  63      SQ    92.1   95.43   112.2     134     145   155.4   244.5   907.5  3680.8   11060
  64      ZW   A=100-YR C=FLOW F=30CMP
  65      ZW   C=STOR F=30CMP
  66      ZW   C=STAGE F=30CMP
          *
          * KO             2
  67      KP       2
  68      KM    EXISTING CONDITIONS (NO RESERVOIR)
  69      RN
  70      ZW   A=100-YR B=EXIST C=FLOW F=EXISTFLOW
          *
```

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

  71      KK    RCH2 ROUTE TO CP3
  72      KM   ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
  73      KM    HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES
  74      RD    4200   0.023    0.09            TRAP      20       2
          *

  75      KK      E4 SUBBASIN E4
  76      BA    0.58
  77      PH                    0.48    0.87    1.45    1.55    1.63    1.79    2.20    2.60
  78      LS              78
  79      UD    0.57
  80      ZW   A=100-YR C=FLOW F=E4FLOW
          *

  81      KK     CP3 COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
          * KO             2
  82      HC       2
  83      ZW   A=100-YR C=FLOW F=E4+CP2
          *

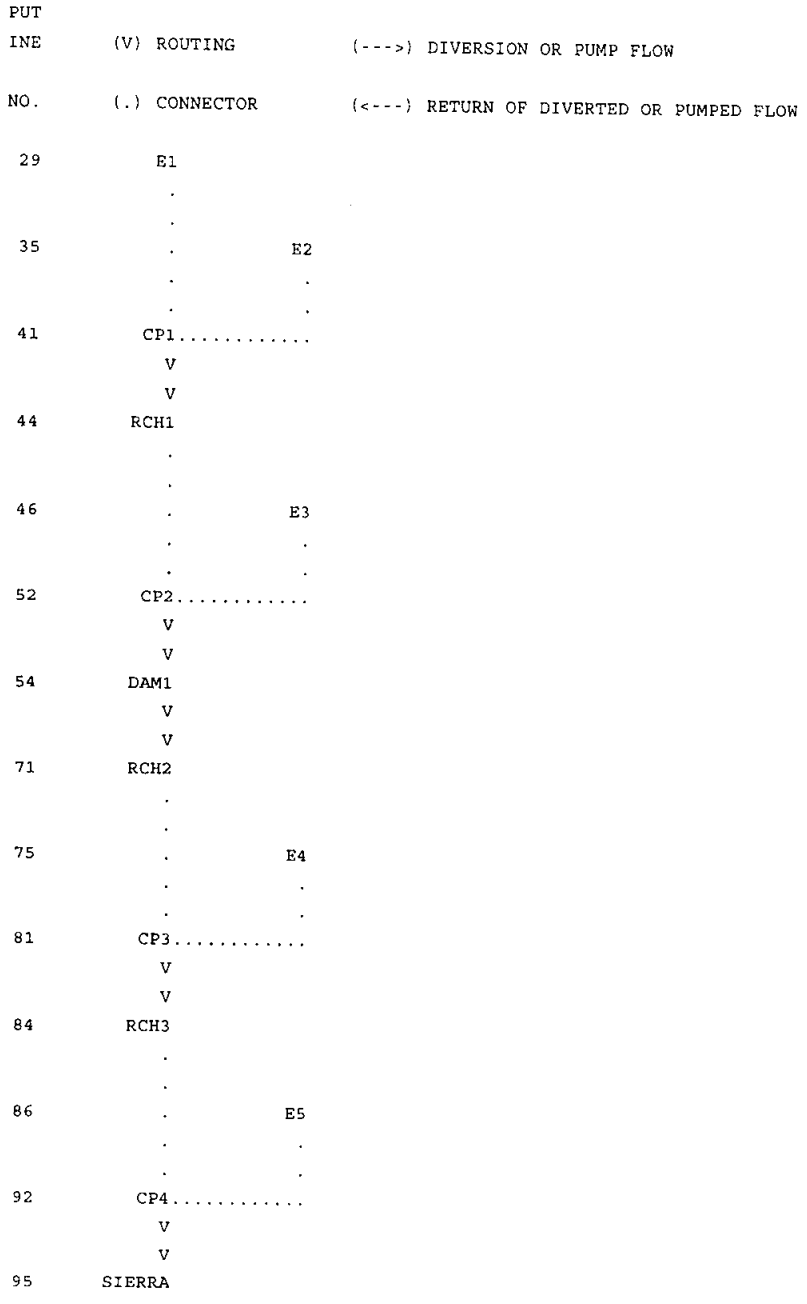
  84      KK    RCH3 ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
  85      RD    3400   0.019   0.045            TRAP      20       2
          *

  86      KK      E5 SUB-BASIN E5
  87      BA    0.31
  88      PH                    0.47    0.85    1.41    1.54    1.63    1.83    2.14    2.44
  89      LS              80
  90      UD     0.5
  91      ZW   A=100-YR C=FLOW F=E5FLOW
          *

  92      KK     CP4 COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
          * KO             2
  93      KM    FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET
  94      HC       2
          * ZW A=100-YR C=FLOW F=SIERRA STREET
          *

  95      KK  SIERRA  STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
  96      KM   STORAGE ROUTING AT SIERRA STREET
  97      RS       1    STOR        0
  98      SA       0    0.51    0.76     1.2    1.88    2.59    3.13
  99      SE     587     594     596     598     600     602     604
 100      SQ       0     193     211     229     245     637    1000
 101      ZW   A=100-YR C=FLOW F=SIERRA STREET
          *
 102      ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK



*) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*    FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              SEPTEMBER 1990           *
*              VERSION 4.0              *
*                                       *
*    RUN DATE  07/06/1999  TIME  13:54:38 *
*                                       *
*****************************************
```


```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*        DAVIS, CALIFORNIA 95616        *
*            (916) 756-1104             *
*                                       *
*****************************************
```


PHASE II SUB-AREAS

EVANS CREEK BLOCK N HYDROLOGY
100-YEAR 24 HOUR EVENT
NIMBUS ENGINEERS, RENO, NEVADA

NIMBUS JOB # 9912
DATE : MAY 1999
FILE NAME: 2EV100.DAT

THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB

```
*************************************************************************
 GONI CANYON                                  Nimbus Job #: 9606        *
 Prepared by Nimbus Engineers                 Date:  August 1996        *
                                              File Name: GONI-5.DAT     *
*************************************************************************
```

The 100-yr PH card rainfall depths were determined from the Precipitation Frequency Study of the United States, NOAA Atlas 14, Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation events and the methodology per the Draft Washoe County Hydrologic Criteria and Design Manual.

```
*************************************************************************
THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND              *
EXISTING CONDITIONS (PLAN 2)                                            *
*************************************************************************
```

26 IO OUTPUT CONTROL VARIABLES

IPRNT	4	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	5	MINUTES IN COMPUTATION INTERVAL
IDATE	1MAY99	STARTING DATE
ITIME	0005	STARTING TIME
NQ	288	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	2MAY99	ENDING DATE
NDTIME	0000	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 23.92 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          2  NUMBER OF PLANS

   JR          MULTI-RATIO OPTION
                   RATIOS OF PRECIPITATION
                   .99

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

          **************
          *            *
29 KK     *        E1  *      SUBBASIN E1
          *            *
          **************

             SUBBASIN RUNOFF DATA

30 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .77  SUBBASIN AREA

               PRECIPITATION DATA

31 PH                                  DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .48     .87    1.45    1.62    1.76    2.03    2.50    2.97     .00     .00     .00     .00

                                                STORM AREA =      .77

32 LS          SCS LOSS RATE
                     STRTL          .63  INITIAL ABSTRACTION
                     CRVNBR       76.00  CURVE NUMBER
                     RTIMP          .00  PERCENT IMPERVIOUS AREA

33 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG           .79  LAG

                                                ***

                                                UNIT HYDROGRAPH
                                              49 END-OF-PERIOD ORDINATES
                    14.      45.      86.     140.     212.     297.     368.     417.     444.     448.
                   443.     416.     385.     348.     303.     250.     205.     174.     147.     125.
                   108.      92.      79.      65.      56.      48.      41.      34.      29.      24.
                    21.      18.      15.      13.      11.       9.       8.       7.       6.       5.
                     4.       4.       3.       3.       2.       2.       1.       1.       0.
   -----DSS---ZOPEN:  Version: 6-EA;  Existing File Opened
                      Unit:  71,  File: 2EV100.DSS
   ---DSS---ZWRITE Unit  71; Vers.    4:  /100-YR/E1/FLOW/01MAY1999/5MIN/E1FLOW/

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

               PLAN  2 INPUT DATA FOR STATION       E1 ARE SAME AS FOR PLAN  1

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

          **************
          *            *
35 KK     *        E2  *      SUB-BASIN E2
          *            *
```

```
              **************

                 SUBBASIN RUNOFF DATA

  36 BA            SUBBASIN CHARACTERISTICS
                         TAREA         1.20  SUBBASIN AREA

                   PRECIPITATION DATA

  37 PH                                      DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                   ..... HYDRO-35 ......    ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR     3-HR     6-HR    12-HR    24-HR    2-DAY    4-DAY    7-DAY   10-DAY
                    .48     .87    1.45    1.57     1.66     1.85     2.29     2.73      .00      .00      .00      .00

                                                      STORM AREA =     1.20

  38 LS            SCS LOSS RATE
                         STRTL          .60  INITIAL ABSTRACTION
                        CRVNBR        77.00  CURVE NUMBER
                         RTIMP          .00  PERCENT IMPERVIOUS AREA

  39 UD            SCS DIMENSIONLESS UNITGRAPH
                          TLAG          .99  LAG

                                                                  ***

                                                           UNIT HYDROGRAPH
                                                      61 END-OF-PERIOD ORDINATES
                  14.       41.       78.      122.      178.      250.      334.      413.      478.      525.
                 553.      560.      559.      546.      518.      486.      450.      408.      359.      306.
                 261.      228.      200.      175.      153.      137.      120.      106.       92.       80.
                  71.       62.       55.       48.       42.       37.       32.       28.       25.       22.
                  19.       17.       15.       13.       11.       10.        8.        8.        7.        6.
                   5.        5.        4.        4.        3.        3.        2.        2.        1.        1.
                   0.
 ---DSS---ZWRITE Unit  71; Vers.    4:  /100-YR/E2/FLOW/01MAY1999/5MIN/E2FLOW/


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

                 PLAN  2 INPUT DATA FOR STATION       E2 ARE SAME AS FOR PLAN  1


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


              **************
              *            *
  41 KK       *      CP1   *      COMBINE E1 AND E2 HYDROGRAPHS AT CP1
              *            *
              **************

  42 HC            HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***
-----DSS---ZWRITE Unit  71; Vers.    5:  /100-YR/CP1/FLOW/01MAY1999/5MIN/E1+E2/
  ---DSS---ZWRITE Unit  71; Vers.    5:  /100-YR/CP1/FLOW/01MAY1999/5MIN//


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


              **************
```

```
          *            *
44 KK     *      RCH1  *      ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
          *            *
          **************

             HYDROGRAPH ROUTING DATA

45 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                        L      10800.  CHANNEL LENGTH
                        S       .0260  SLOPE
                        N        .070  CHANNEL ROUGHNESS COEFFICIENT
                       CA         .00  CONTRIBUTING AREA
                    SHAPE        TRAP  CHANNEL SHAPE
                       WD       15.00  BOTTOM WIDTH OR DIAMETER
                        Z        2.00  SIDE SLOPE

                                                    ***

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

             PLAN  2 INPUT DATA FOR STATION     RCH1 ARE SAME AS FOR PLAN  1


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


          **************
          *            *
46 KK     *        E3  *      SUBBASIN E3
          *            *
          **************

             SUBBASIN RUNOFF DATA

47 BA          SUBBASIN CHARACTERISTICS
                    TAREA        1.51  SUBBASIN AREA

               PRECIPITATION DATA

48 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .48     .87    1.45    1.57    1.66    1.85    2.33    2.80     .00     .00     .00     .00

                                                STORM AREA =     1.51

49 LS          SCS LOSS RATE
                    STRTL         .47  INITIAL ABSTRACTION
                   CRVNBR       81.00  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

50 UD          SCS DIMENSIONLESS UNITGRAPH
                    TLAG        1.24  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            76 END-OF-PERIOD ORDINATES
                 11.     29.     55.     88.    125.    170.    227.    289.    360.    421.
                476.    517.    545.    564.    568.    567.    562.    539.    515.    489.
                460.    427.    390.    346.    304.    267.    240.    215.    193.    173.
                156.    143.    129.    116.    105.     94.     83.     76.     68.     61.
                 55.     50.     44.     40.     36.     32.     29.     26.     23.     21.
                 19.     17.     15.     14.     12.     11.     10.      9.      8.      7.
```

```
                7.        6.        6.        5.        5.        4.        4.        3.        3.        3.
                2.        2.        1.        1.        1.        0.
 ---DSS---ZWRITE Unit  71; Vers.    4:  /100-YR/E3/FLOW/01MAY1999/5MIN/E3FLOW/

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

             PLAN  2 INPUT DATA FOR STATION       E3 ARE SAME AS FOR PLAN  1

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

          **************
          *            *
52 KK     *       CP2  *      COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
          *            *
          **************

53 HC          HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                  ***

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

          **************
          *            *
54 KK     *      DAM1  *      PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
          *            *
          **************

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

55 KP        PLAN  1 FOR STATION     DAM1           PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                   PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa

             HYDROGRAPH ROUTING DATA

57 RS          STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
                     ITYP        STOR  TYPE OF INITIAL CONDITION
                    RSVRIC        .00  INITIAL CONDITION
                        X         .00 WORKING R AND D COEFFICIENT

58 SA               AREA        1.2       1.2       1.2       1.3       1.3       1.4       1.5       1.6       1.7       1.9
                                2.8       3.9       4.0       4.7       6.7       9.1      10.4      11.1      12.8      15.7

60 SE          ELEVATION      775.40    775.70    776.00    776.40    777.00    778.00    779.00    780.00    781.00    783.00
                              790.00    796.00    796.30    800.40    808.69    816.98    820.36    822.10    825.87    832.00

62 SQ          DISCHARGE        5.       13.       21.       35.       41.       50.       58.       64.       70.       81.
                               92.       95.      112.      134.      145.      155.      245.      908.     3681.    11060.

                                                  ***

                                        COMPUTED STORAGE-ELEVATION DATA

          STORAGE        .00       .36       .72      1.22      2.00      3.37      4.82      6.37      8.01     11.62
        ELEVATION     775.40    775.70    776.00    776.40    777.00    778.00    779.00    780.00    781.00    783.00
```

STORAGE	28.10	48.24	49.42	67.21	114.23	179.26	212.09	230.76	275.66	362.70
ELEVATION	790.00	796.00	796.30	800.40	808.69	816.98	820.36	822.10	825.87	832.00

```
   ---DSS---ZWRITE Unit  71; Vers.    5:  /100-YR/DAM1/FLOW/01MAY1999/5MIN/30CMP/
  -----DSS---ZWRITE Unit  71; Vers.    5:  /100-YR/DAM1/STOR/01MAY1999/5MIN/30CMP/
  -----DSS---ZWRITE Unit  71; Vers.    5:  /100-YR/DAM1/STAGE/01MAY1999/5MIN/30CMP/


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

   67 KP        PLAN  2 FOR STATION     DAM1          PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                          EXISTING CONDITIONS (NO RESERVOIR)

                HYDROGRAPH ROUTING DATA

   69 RN         NO ROUTING

                                                          ***
   ---DSS---ZWRITE Unit  71; Vers.    5:  /100-YR/EXIST/FLOW/01MAY1999/5MIN/EXISTFLOW/
  -----DSS---ZWRITE Unit  71; Vers.    5:  /100-YR/EXIST/STOR/01MAY1999/5MIN/EXISTFLOW/
  -----DSS---ZWRITE Unit  71; Vers.    5:  /100-YR/EXIST/STAGE/01MAY1999/5MIN/EXISTFLOW/


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


              **************
              *            *
   71 KK      *      RCH2  *      ROUTE TO CP3
              *            *
              **************
                            ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
                             HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES

                HYDROGRAPH ROUTING DATA

   74 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                              L       4200.  CHANNEL LENGTH
                              S       .0230  SLOPE
                              N        .090  CHANNEL ROUGHNESS COEFFICIENT
                             CA         .00  CONTRIBUTING AREA
                          SHAPE        TRAP  CHANNEL SHAPE
                             WD       20.00  BOTTOM WIDTH OR DIAMETER
                              Z        2.00  SIDE SLOPE

                                                          ***


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

                PLAN  2 INPUT DATA FOR STATION     RCH2 ARE SAME AS FOR PLAN  1


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


              **************
              *            *
   75 KK      *        E4  *      SUBBASIN E4
              *            *
              **************

                SUBBASIN RUNOFF DATA
```

```
76 BA          SUBBASIN CHARACTERISTICS
                    TAREA          .58  SUBBASIN AREA

               PRECIPITATION DATA

77 PH                                  DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR    12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .48     .87    1.45    1.55    1.63    1.79     2.20    2.60     .00     .00     .00     .00

                                                STORM AREA =      .58

78 LS          SCS LOSS RATE
                    STRTL          .56  INITIAL ABSTRACTION
                   CRVNBR        78.00  CURVE NUMBER
                    RTIMP          .00  PERCENT IMPERVIOUS AREA

79 UD          SCS DIMENSIONLESS UNITGRAPH
                    TLAG          .57  LAG

                                                      ***

                                                   UNIT HYDROGRAPH
                                                36 END-OF-PERIOD ORDINATES
                    25.       76.      148.      254.      362.      431.      456.      454.      418.      371.
                   312.      240.      188.      149.      121.       98.       79.       63.       50.       40.
                    32.       25.       21.       17.       13.       11.        9.        7.        5.        5.
                     4.        3.        2.        2.        1.        0.
   ---DSS---ZWRITE Unit  71; Vers.    4:  /100-YR/E4/FLOW/01MAY1999/5MIN/E4FLOW/


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

               PLAN  2 INPUT DATA FOR STATION       E4 ARE SAME AS FOR PLAN  1


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


            **************
            *            *
81 KK       *       CP3  *      COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
            *            *
            **************

82 HC          HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                      ***
   ---DSS---ZWRITE Unit  71; Vers.    5:  /100-YR/CP3/FLOW/01MAY1999/5MIN/E4+CP2/
   ---DSS---ZWRITE Unit  71; Vers.    5:  /100-YR/CP3/FLOW/01MAY1999/5MIN/EXISTFLOW/


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


            **************
            *            *
84 KK       *      RCH3  *      ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
            *            *
            **************

               HYDROGRAPH ROUTING DATA
```

```
85 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                        L       3400.  CHANNEL LENGTH
                        S       .0190  SLOPE
                        N        .045  CHANNEL ROUGHNESS COEFFICIENT
                       CA         .00  CONTRIBUTING AREA
                    SHAPE        TRAP  CHANNEL SHAPE
                       WD       20.00  BOTTOM WIDTH OR DIAMETER
                        Z        2.00  SIDE SLOPE

                                                ***

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

               PLAN  2 INPUT DATA FOR STATION     RCH3 ARE SAME AS FOR PLAN  1

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

            **************
            *            *
86 KK       *        E5  *      SUB-BASIN E5
            *            *
            **************

               SUBBASIN RUNOFF DATA

87 BA            SUBBASIN CHARACTERISTICS
                       TAREA         .31  SUBBASIN AREA

                 PRECIPITATION DATA

88 PH                                  DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .47     .85    1.41    1.54    1.63    1.83    2.14    2.44     .00     .00     .00     .00

                                                STORM AREA =      .31

89 LS            SCS LOSS RATE
                       STRTL         .50  INITIAL ABSTRACTION
                      CRVNBR       80.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

90 UD            SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .50  LAG

                                                ***

                                                UNIT HYDROGRAPH
                                              32 END-OF-PERIOD ORDINATES
                  19.     55.    113.    189.    248.    274.    274.    251.    219.    175.
                 129.    100.     77.     62.     48.     37.     29.     23.     18.     14.
                  11.      8.      6.      5.      4.      3.      3.      2.      2.      1.
                   1.      0.
-----DSS---ZWRITE Unit  71; Vers.    4:  /100-YR/E5/FLOW/01MAY1999/5MIN/E5FLOW/

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

               PLAN  2 INPUT DATA FOR STATION       E5 ARE SAME AS FOR PLAN  1
```

```
 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 92 KK      *     CP4    *       COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
            *            *
            **************

                      FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET

 94 HC          HYDROGRAPH COMBINATION
                    ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                 ***



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


            **************
            *            *
 95 KK      *   SIERRA   *       STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
            *            *
            **************

                      STORAGE ROUTING AT SIERRA STREET

              HYDROGRAPH ROUTING DATA

 97 RS          STORAGE ROUTING
                    NSTPS            1  NUMBER OF SUBREACHES
                     ITYP         STOR  TYPE OF INITIAL CONDITION
                   RSVRIC          .00  INITIAL CONDITION
                        X          .00 WORKING R AND D COEFFICIENT

 98 SA                AREA          .0        .5        .8       1.2       1.9       2.6       3.1

 99 SE           ELEVATION      587.00    594.00    596.00    598.00    600.00    602.00    604.00

 00 SQ           DISCHARGE          0.      193.      211.      229.      245.      637.     1000.

                                                 ***

                                      COMPUTED STORAGE-ELEVATION DATA

           STORAGE        .00      1.19      2.45      4.40      7.45     11.90     17.61
         ELEVATION     587.00    594.00    596.00    598.00    600.00    602.00    604.00
 ---DSS---ZWRITE Unit   71; Vers.    5:  /100-YR/SIERRA/FLOW/01MAY1999/5MIN/SIERRA STREET/


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

              PLAN  2 INPUT DATA FOR STATION   SIERRA ARE SAME AS FOR PLAN  1
 -----DSS---ZWRITE Unit   71; Vers.    5:  /100-YR/SIERRA/FLOW/01MAY1999/5MIN/EXISTFLOW/
```

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

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1
					.99
HYDROGRAPH AT	E1	.77	1	FLOW	215.
				TIME	12.83
			2	FLOW	215.
				TIME	12.83
HYDROGRAPH AT	E2	1.20	1	FLOW	264.
				TIME	13.08
			2	FLOW	264.
				TIME	13.08
COMBINED AT	CP1	1.97	1	FLOW	469.
				TIME	12.92
			2	FLOW	469.
				TIME	12.92
ROUTED TO	RCH1	1.97	1	FLOW	475.
				TIME	13.25
			2	FLOW	475.
				TIME	13.25
HYDROGRAPH AT	E3	1.51	1	FLOW	372.
				TIME	13.33
			2	FLOW	372.
				TIME	13.33
COMBINED AT	CP2	3.48	1	FLOW	847.
				TIME	13.25
			2	FLOW	847.
				TIME	13.25
ROUTED TO	DAM1	3.48	1	FLOW	139.
				TIME	15.75
			2	FLOW	847.
				TIME	13.25
			** PEAK STAGES IN FEET **		
			1	STAGE	804.01
				TIME	15.83
			2	STAGE	.00
				TIME	.00
ROUTED TO	RCH2	3.48	1	FLOW	139.
				TIME	16.00
			2	FLOW	857.
				TIME	13.33
HYDROGRAPH AT	E4	.58	1	FLOW	196.
				TIME	12.58
			2	FLOW	196.
				TIME	12.58
COMBINED AT	CP3	4.06	1	FLOW	210.
				TIME	12.75
			2	FLOW	921.
				TIME	13.33

ROUTED TO	RCH3	4.06	1	FLOW	207.
				TIME	12.92
			2	FLOW	915.
				TIME	13.42
DROGRAPH AT	E5	.31	1	FLOW	119.
				TIME	12.50
			2	FLOW	119.
				TIME	12.50
COMBINED AT	CP4	4.37	1	FLOW	310.
				TIME	12.67
			2	FLOW	941.
				TIME	13.42
ROUTED TO	SIERRA	4.37	1	FLOW	231.
				TIME	13.08
			2	FLOW	880.
				TIME	13.67

** PEAK STAGES IN FEET **

1	STAGE	598.20
	TIME	13.08
2	STAGE	603.34
	TIME	13.67

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00									
	RCH1 MANE	5.00	475.31	795.00	.87	5.00	475.31	795.00	.87

NTINUITY SUMMARY (AC-FT) - INFLOW= .9298E+02 EXCESS= .0000E+00 OUTFLOW= .9108E+02 BASIN STORAGE= .2794E+01 PERCENT ERROR= -1.0

FOR PLAN = 2 RATIO= .00									
	RCH1 MANE	5.00	475.31	795.00	.87	5.00	475.31	795.00	.87

NTINUITY SUMMARY (AC-FT) - INFLOW= .9298E+02 EXCESS= .0000E+00 OUTFLOW= .9108E+02 BASIN STORAGE= .2794E+01 PERCENT ERROR= -1.0

FOR PLAN = 1 RATIO= .00									
	RCH2 MANE	5.00	138.78	965.00	.67	5.00	138.78	965.00	.67

NTINUITY SUMMARY (AC-FT) - INFLOW= .1288E+03 EXCESS= .0000E+00 OUTFLOW= .1255E+03 BASIN STORAGE= .3394E+01 PERCENT ERROR= .0

FOR PLAN = 2 RATIO= .00									
	RCH2 MANE	5.00	856.92	800.00	.96	5.00	856.92	800.00	.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1794E+03 EXCESS= .0000E+00 OUTFLOW= .1778E+03 BASIN STORAGE= .2258E+01 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .00									
	RCH3 MANE	4.25	208.55	773.50	.68	5.00	207.48	775.00	.69

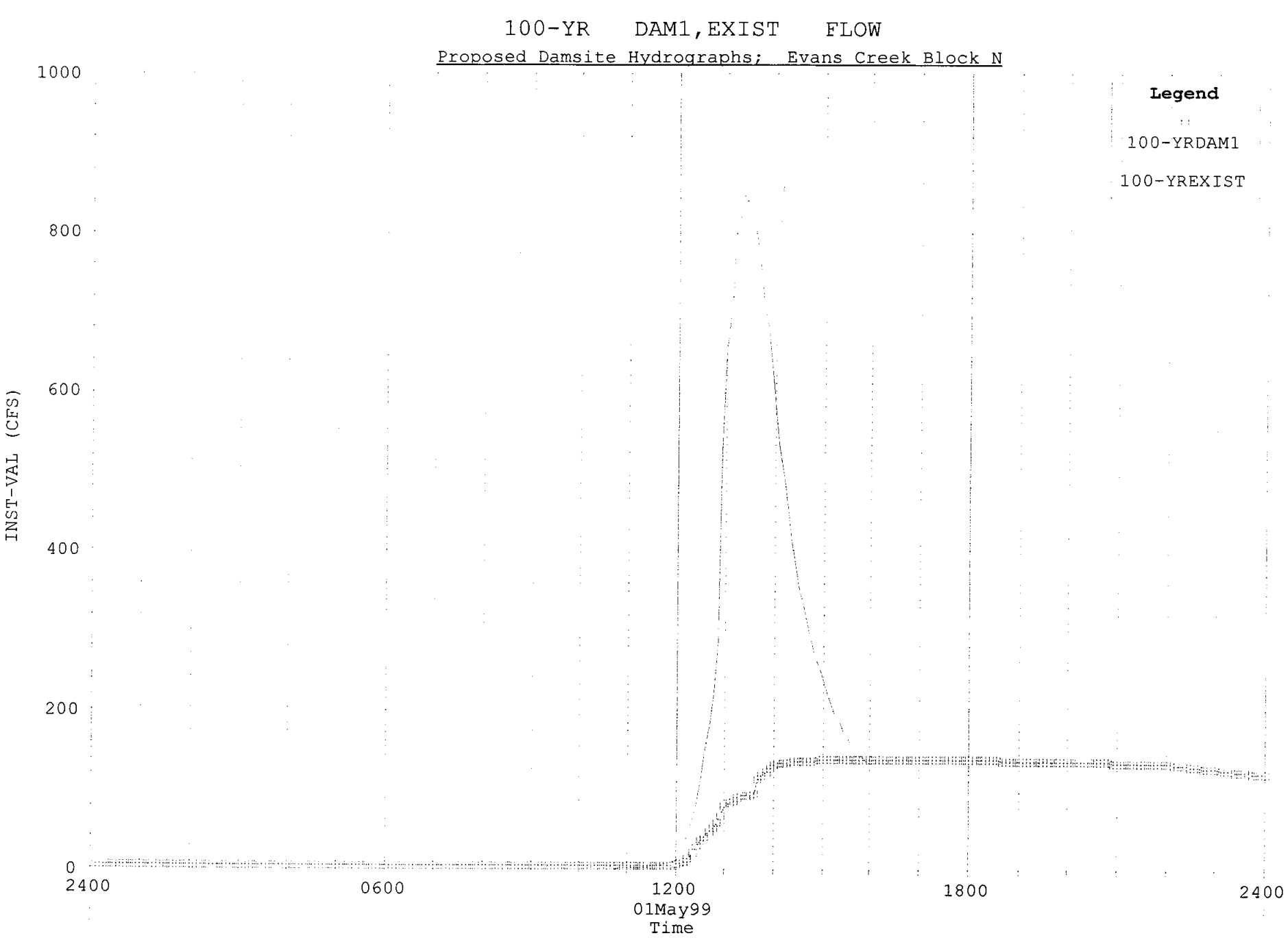
CONTINUITY SUMMARY (AC-FT) - INFLOW= .1503E+03 EXCESS= .0000E+00 OUTFLOW= .1484E+03 BASIN STORAGE= .1943E+01 PERCENT ERROR= .0

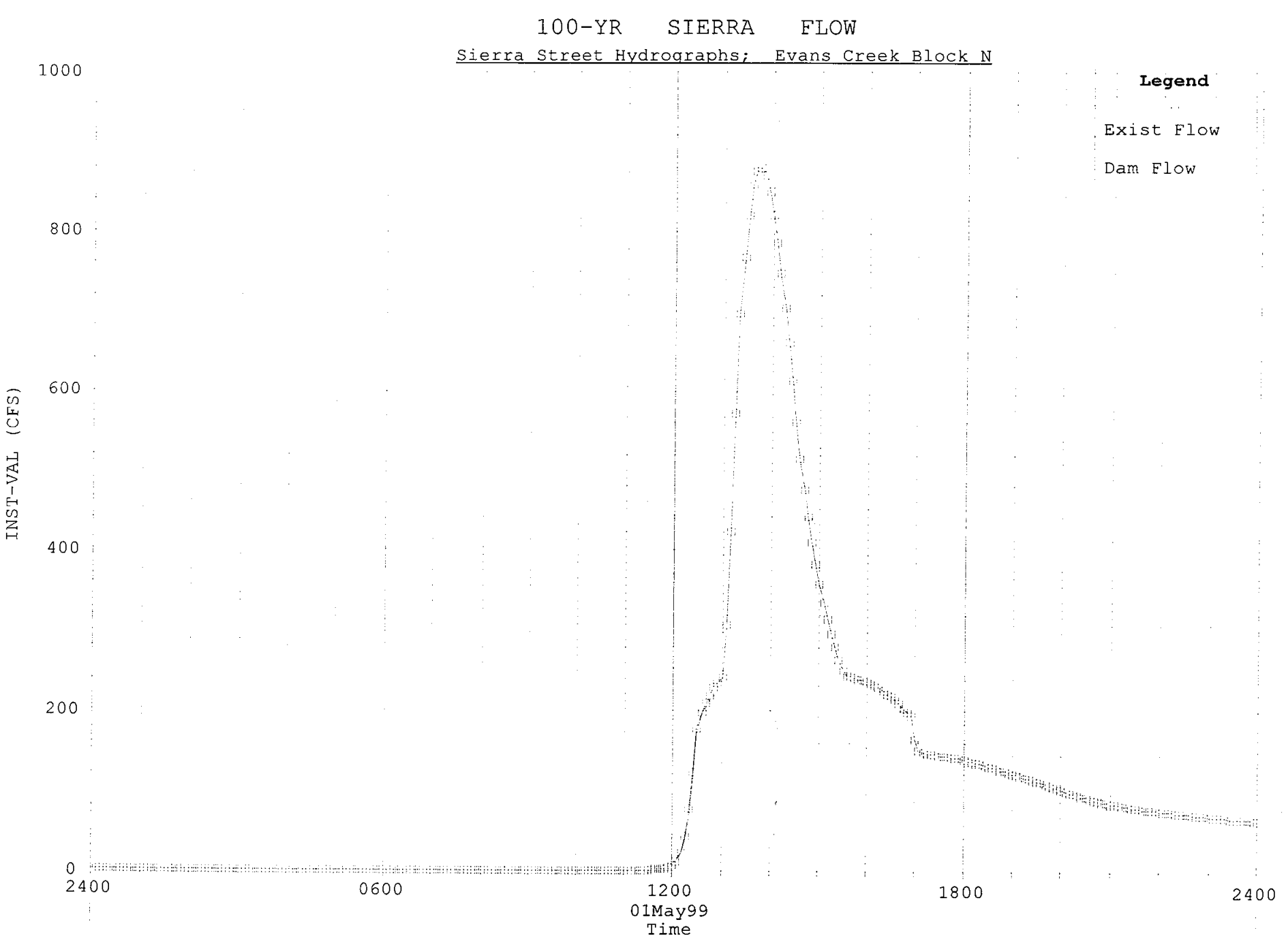
FOR PLAN = 2 RATIO= .00									
	RCH3 MANE	5.00	914.76	805.00	.93	5.00	914.76	805.00	.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2032E+03 EXCESS= .0000E+00 OUTFLOW= .2023E+03 BASIN STORAGE= .1344E+01 PERCENT ERROR= -.2

* NORMAL END OF HEC-1 ***

-----DSS---ZCLOSE Unit: 71, File: 2EV100.DSS
Pointer Utilization: .25
Number of Records: 17
File Size: 41.8 Kbytes
Percent Inactive: .00


100-YR DAM1,EXIST FLOW
Proposed Damsite Hydrographs; Evans Creek Block N
1000
800
600
400
200
0
INST-VAL (CFS)
2400
0600
1200
01May99
Time
1800
2400
Legend
100-YRDAM1
100-YREXIST


100-YR SIERRA FLOW
Sierra Street Hydrographs; Evans Creek Block N
Legend
Exist Flow
Dam Flow
INST-VAL (CFS)
1000
800
600
400
200
0
2400
0600
1200
1800
2400
01May99
Time

500-YEAR, 24 HOUR

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

          *DIAGRAM
    1     ID     PHASE II SUB-AREAS
    2     ID
    3     ID     EVANS CREEK BLOCK N HYDROLOGY                NIMBUS JOB # 9912
    4     ID     500 YEAR 24 HOUR EVENT                       DATE : MAY 1999
    5     ID     NIMBUS ENGINEERS, RENO, NEVADA               FILE NAME: 2EV500.DAT
    6     ID
    7     ID
    8     ID    THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB
    9     ID    ***************************************************************************
   10     ID     GONI CANYON                                  Nimbus Job #: 9606          *
   11     ID     Prepared by Nimbus Engineers                 Date:  August 1996          *
   12     ID                                                  File Name: GONI-5.DAT       *
   13     ID    ***************************************************************************
   14     ID
   15     ID    The  500-yr PH card rainfall depths were determined from the
   16     ID    Precipitation Frequency Study of the United States, NOAA Atlas 14,
   17     ID    Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation
   18     ID    events and the methodology per the Draft Washoe County Hydrologic
   19     ID    Criteria and Design Manual.
   20     ID
   21     ID    ***************************************************************************
   22     ID    THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND          *
   23     ID    EXISTING CONDITIONS (PLAN 2)                                        *
   24     ID    ***************************************************************************
          *
   25     IT       5 01MAY99    0005     288
   26     IO       4        0
   27     JP       2
          *   DEPTH AREA REDUCTION FACTOR FROM NOAA
   28     JR    PREC    0.99
          *

   29     KK      E1 SUBBASIN E1
   30     BA   0.772
   31     PH                    0.59    1.07    1.79    2.00    2.16    2.50    3.08    3.66
   32     LS              76
   33     UD    0.79
   34     ZW   A=500-YR C=FLOW F=E1FLOW
          *

   35     KK      E2 SUB-BASIN E2
   36     BA     1.2
   37     PH                    0.59    1.07    1.79    1.94    2.05    2.28    2.82    3.36
   38     LS              77
   39     UD    0.99
   40     ZW   A=500-YR C=FLOW F=E2FLOW
          *

   41     KK     CP1 COMBINE E1 AND E2 HYDROGRAPHS AT CP1
          * KO             2
   42     HC       2
   43     ZW   A=500-YR C=FLOW F=E1+E2
          *
```

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

  44      KK    RCH1 ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
  45      RD   10800   0.026    0.07            TRAP      15       2
          *

  46      KK      E3 SUBBASIN E3
  47      BA    1.51
  48      PH                    0.59    1.07    1.79    1.94    2.05    2.28    2.86    3.44
  49      LS              81
  50      UD    1.24
  51      ZW   A=500-YR C=FLOW F=E3FLOW
          *

  52      KK     CP2 COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
  53      HC       2
          * ZW A=500-YR C=FLOW F=E1+E2+E3
          *

  54      KK    DAM1 PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
          * KO             2
          * KP     1
          * KM PROPOSED RESERVOIR; flow through principal and emergency spillways ONLY.
          * RS      1     STOR        0
          * SA .1354    .9137   1.954    3.63    3.71    3.79    3.87    3.95    5.12     6.
          * SA  7.97    8.92    9.93   10.18   10.45   10.94   11.55   12.67   14.15    15.
          * SE   765     775     785  795.89  796.33  796.76   797.2  797.64  803.16   808.
          * SE814.22  816.98  819.74  820.36  820.97  822.07  823.42  825.87  828.94    832
          * SQ      0       0       0       0   13.46   38.09   69.97  107.73  114.35   120.
          * SQ126.56  129.43  132.24  218.16  401.01  881.31  1708.7  3654.6  6920.1 11031
          * ZW A=500-YR C=FLOW F=DAMFLOW
          * ZW C=STOR F=DAMSTOR
          * ZW C=STAGE F=DAMSTAGE
          *

  55      KP       1
  56      KM   PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa
  57      RS       1     STOR        0
  58      SA    1.18    1.21    1.23    1.27    1.32    1.41    1.50    1.59    1.70    1.91
  59      SA    2.83    3.91    3.97    4.72    6.68    9.07   10.37   11.09   12.75   15.70
  60      SE   775.4   775.7   776.0   776.4   777.0   778.0   779.0   780.0   781.0   783.0
  61      SE     790     796   796.3   800.4  808.69  816.98  820.36  822.10  825.87   832.0
  62      SQ     5.4    12.6    21.4      35    40.8    49.9    57.5    64.3    70.4    81.3
  63      SQ    92.1   95.43   112.2     134     145   155.4   244.5   907.5  3680.8   11060
  64      ZW   A=500-YR C=FLOW F=30CMP
  65      ZW   C=STOR F=30CMP
  66      ZW   C=STAGE F=30CMP
          *
          * KO             2
  67      KP       2
  68      KM    EXISTING CONDITIONS (NO RESERVOIR)
  69      RN
  70      ZW   A=500-YR B=EXIST C=FLOW F=EXISTFLOW
          *
```

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

  71      KK    RCH3  ROUTE TO CP3
  72      KM   ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
  73      KM   HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES
  74      RD    4200   0.023    0.09            TRAP      20       2
          *

  75      KK      E4 SUBBASIN E4
  76      BA    0.58
  77      PH                    0.59    1.07    1.79    1.91    2.01    2.20    2.70    3.19
  78      LS              78
  79      UD    0.57
  80      ZW   A=500-YR C=FLOW F=E4FLOW
          *

  81      KK     CP3 COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
          * KO             2
  82      HC       2
  83      ZW   A=500-YR C=FLOW F=E4+CP2
          *

  84      KK    RCH3 ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
  85      RD    3400   0.019   0.045            TRAP      20       2
          *

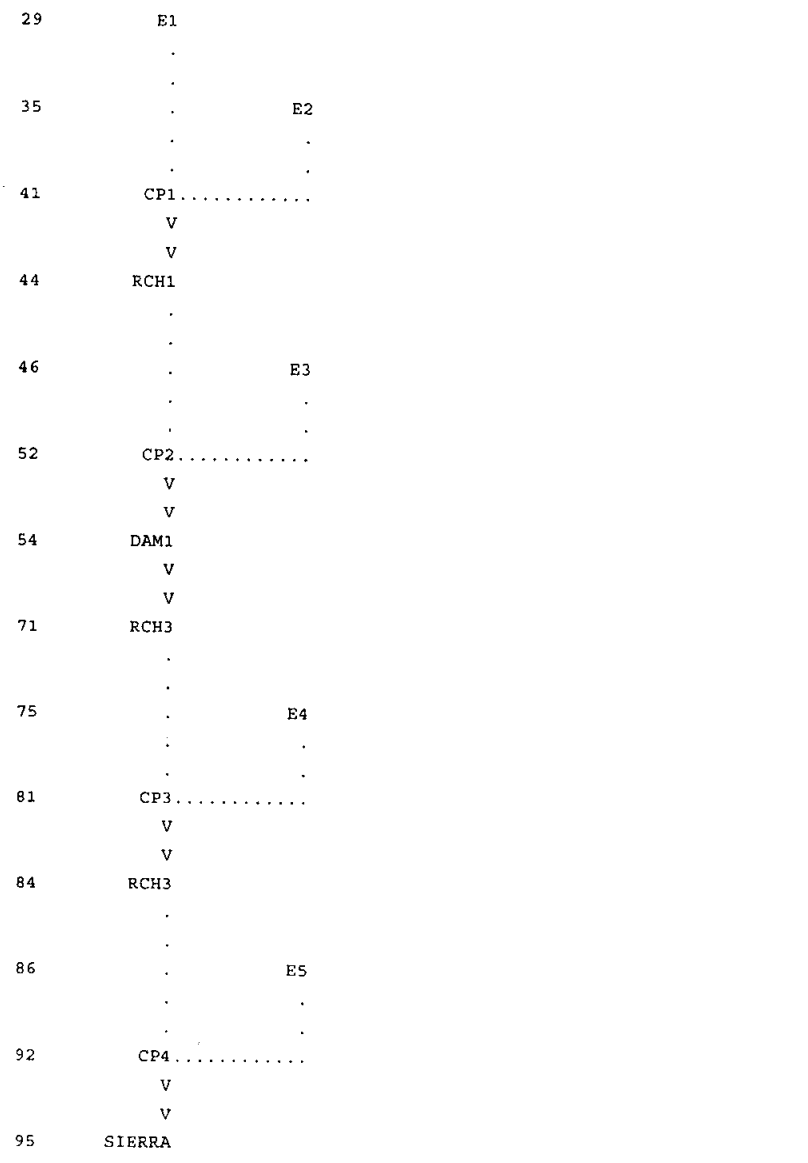
  86      KK      E5 SUB-BASIN E5
  87      BA    0.31
  88      PH                    0.58    1.05    1.75    1.90    2.01    2.25    2.63    3.00
  89      LS              80
  90      UD     0.5
  91      ZW   A=500-YR C=FLOW F=E5FLOW
          *

  92      KK     CP4 COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
          * KO             2
  93      KM    FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET
  94      HC       2
          * ZW A=500-YR C=FLOW F=SIERRA STREET

  95      KK  SIERRA  STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
  96      KM   STORAGE ROUTING AT SIERRA STREET
  97      RS       1    STOR       0
  98      SA       0    0.51    0.76     1.2    1.88    2.59    3.13
  99      SE     587     594     596     598     600     602     604
 100      SQ       0     193     211     229     245     637    2050
 101      ZW   A=500-YR C=FLOW F=SIERRA STREET
          *
 102      ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT
LINE (V) ROUTING (---->) DIVERSION OR PUMP FLOW
NO. (.) CONNECTOR (<----) RETURN OF DIVERTED OR PUMPED FLOW



(*) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*    FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              SEPTEMBER 1990           *
*               VERSION 4.0             *
*                                       *
*    RUN DATE  07/06/1999  TIME  14:03:11 *
*                                       *
*****************************************
```


```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```


PHASE II SUB-AREAS

EVANS CREEK BLOCK N HYDROLOGY — NIMBUS JOB # 9912
500 YEAR 24 HOUR EVENT — DATE : MAY 1999
NIMBUS ENGINEERS, RENO, NEVADA — FILE NAME: 2EV500.DAT

THIS HEC-1 MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB

```
*************************************************************************
 GONI CANYON                                  Nimbus Job #: 9606        *
 Prepared by Nimbus Engineers                 Date:  August 1996        *
                                              File Name: GONI-5.DAT     *
*************************************************************************
```

The 500-yr PH card rainfall depths were determined from the Precipitation Frequency Study of the United States, NOAA Atlas 14, Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation events and the methodology per the Draft Washoe County Hydrologic Criteria and Design Manual.

```
*************************************************************************
THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND              *
EXISTING CONDITIONS (PLAN 2)                                            *
*************************************************************************
```

```
26 IO          OUTPUT CONTROL VARIABLES
                    IPRNT          4  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                    NMIN           5  MINUTES IN COMPUTATION INTERVAL
                   IDATE      1MAY99  STARTING DATE
                   ITIME        0005  STARTING TIME
                      NQ         288  NUMBER OF HYDROGRAPH ORDINATES
                  NDDATE      2MAY99  ENDING DATE
                  NDTIME        0000  ENDING TIME
                   ICENT          19  CENTURY MARK

              COMPUTATION INTERVAL      .08 HOURS
                   TOTAL TIME BASE   23.92 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          2  NUMBER OF PLANS

   JR          MULTI-RATIO OPTION
                   RATIOS OF PRECIPITATION
                   .99


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


          **************
          *            *
29 KK     *        E1  *      SUBBASIN E1
          *            *
          **************

             SUBBASIN RUNOFF DATA

30 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .77  SUBBASIN AREA

               PRECIPITATION DATA

31 PH                                  DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .59    1.07    1.79    2.00    2.16    2.50    3.08    3.66     .00     .00     .00     .00

                                                STORM AREA =      .77

32 LS          SCS LOSS RATE
                     STRTL          .63  INITIAL ABSTRACTION
                     CRVNBR       76.00  CURVE NUMBER
                     RTIMP          .00  PERCENT IMPERVIOUS AREA

33 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG           .79  LAG

                                                ***

                                                UNIT HYDROGRAPH
                                              49 END-OF-PERIOD ORDINATES
                14.       45.       86.      140.      212.      297.      368.      417.      444.      448.
               443.      416.      385.      348.      303.      250.      205.      174.      147.      125.
               108.       92.       79.       65.       56.       48.       41.       34.       29.       24.
                21.       18.       15.       13.       11.        9.        8.        7.        6.        5.
                 4.        4.        3.        3.        2.        2.        1.        1.        0.
 -----DSS---ZOPEN:  Version: 6-EA;  Existing File Opened
                    Unit:  71,  File: 2EV500.DSS
 ---DSS---ZWRITE Unit  71; Vers.    3:  /500-YR/E1/FLOW/01MAY1999/5MIN/E1FLOW/


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

             PLAN  2 INPUT DATA FOR STATION       E1 ARE SAME AS FOR PLAN  1


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


          **************
          *            *
35 KK     *        E2  *      SUB-BASIN E2
          *            *
```

****

SUBBASIN RUNOFF DATA

36 BA SUBBASIN CHARACTERISTICS

TAREA 1.20 SUBBASIN AREA

PRECIPITATION DATA

37 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.59	1.07	1.79	1.94	2.05	2.28	2.82	3.36	.00	.00	.00	.00

STORM AREA = 1.20

38 LS SCS LOSS RATE

STRTL .60 INITIAL ABSTRACTION

CRVNBR 77.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

39 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .99 LAG

***

UNIT HYDROGRAPH

61 END-OF-PERIOD ORDINATES

14.	41.	78.	122.	178.	250.	334.	413.	478.	525.
553.	560.	559.	546.	518.	486.	450.	408.	359.	306.
261.	228.	200.	175.	153.	137.	120.	106.	92.	80.
71.	62.	55.	48.	42.	37.	32.	28.	25.	22.
19.	17.	15.	13.	11.	10.	8.	8.	7.	6.
5.	5.	4.	4.	3.	3.	2.	2.	1.	1.
0.									

---DSS---ZWRITE Unit 71; Vers. 3: /500-YR/E2/FLOW/01MAY1999/5MIN/E2FLOW/

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

PLAN 2 INPUT DATA FOR STATION E2 ARE SAME AS FOR PLAN 1

*** ***

****
* *
41 KK * CP1 * COMBINE E1 AND E2 HYDROGRAPHS AT CP1
* *
****

42 HC HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

-----DSS---ZWRITE Unit 71; Vers. 3: /500-YR/CP1/FLOW/01MAY1999/5MIN/E1+E2/

--DSS---ZWRITE Unit 71; Vers. 3: /500-YR/CP1/FLOW/01MAY1999/5MIN//

*** ***

****

```
          *            *
44 KK     *      RCH1  *      ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
          *            *
          **************

             HYDROGRAPH ROUTING DATA

45 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                        L      10800.  CHANNEL LENGTH
                        S       .0260  SLOPE
                        N        .070  CHANNEL ROUGHNESS COEFFICIENT
                       CA         .00  CONTRIBUTING AREA
                    SHAPE        TRAP  CHANNEL SHAPE
                       WD       15.00  BOTTOM WIDTH OR DIAMETER
                        Z        2.00  SIDE SLOPE

                                                  ***

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

             PLAN  2 INPUT DATA FOR STATION     RCH1 ARE SAME AS FOR PLAN  1


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


          **************
          *            *
46 KK     *        E3  *      SUBBASIN E3
          *            *
          **************

             SUBBASIN RUNOFF DATA

17 BA          SUBBASIN CHARACTERISTICS
                    TAREA        1.51  SUBBASIN AREA

               PRECIPITATION DATA

48 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .59    1.07    1.79    1.94    2.05    2.28    2.86    3.44     .00     .00     .00     .00

                                                STORM AREA =     1.51

 9 LS          SCS LOSS RATE
                   STRTL         .47  INITIAL ABSTRACTION
                  CRVNBR       81.00  CURVE NUMBER
                   RTIMP         .00  PERCENT IMPERVIOUS AREA

50 UD          SCS DIMENSIONLESS UNITGRAPH
                    TLAG        1.24  LAG

                                                  ***

                                                UNIT HYDROGRAPH
                                              76 END-OF-PERIOD ORDINATES
                 11.     29.     55.     88.    125.    170.    227.    289.    360.    421.
                476.    517.    545.    564.    568.    567.    562.    539.    515.    489.
                460.    427.    390.    346.    304.    267.    240.    215.    193.    173.
                156.    143.    129.    116.    105.     94.     83.     76.     68.     61.
                 55.     50.     44.     40.     36.     32.     29.     26.     23.     21.
                 19.     17.     15.     14.     12.     11.     10.      9.      8.      7.
```

```
                7.        6.        6.        5.        5.        4.        4.        3.        3.        3.
                2.        2.        1.        1.        1.        0.
   ---DSS---ZWRITE Unit  71; Vers.     3:  /500-YR/E3/FLOW/01MAY1999/5MIN/E3FLOW/

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

              PLAN  2 INPUT DATA FOR STATION       E3 ARE SAME AS FOR PLAN  1

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

            **************
            *            *
 52 KK      *       CP2  *      COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
            *            *
            **************

 53 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                ***

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

            **************
            *            *
 54 KK      *      DAM1  *      PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
            *            *
            **************

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

 55 KP         PLAN  1 FOR STATION     DAM1           PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                       PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa

               HYDROGRAPH ROUTING DATA

 57 RS           STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        STOR  TYPE OF INITIAL CONDITION
                     RSVRIC         .00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

 58 SA               AREA        1.2       1.2       1.2       1.3       1.3       1.4       1.5       1.6       1.7       1.9
                                 2.8       3.9       4.0       4.7       6.7       9.1      10.4      11.1      12.8      15.7

 60 SE           ELEVATION     775.40    775.70    776.00    776.40    777.00    778.00    779.00    780.00    781.00    783.00
                               790.00    796.00    796.30    800.40    808.69    816.98    820.36    822.10    825.87    832.00

 62 SQ           DISCHARGE       5.        13.       21.       35.       41.       50.       58.       64.       70.       81.
                                92.       95.       112.      134.      145.      155.      245.      908.      3681.     11060.

                                                ***

                                                COMPUTED STORAGE-ELEVATION DATA

                STORAGE        .00       .36       .72      1.22      2.00      3.37      4.82      6.37      8.01     11.62
              ELEVATION     775.40    775.70    776.00    776.40    777.00    778.00    779.00    780.00    781.00    783.00
```

```
          STORAGE      28.10     48.24     49.42     67.21    114.23    179.26    212.09    230.76    275.66    362.70
        ELEVATION     790.00    796.00    796.30    800.40    808.69    816.98    820.36    822.10    825.87    832.00

  ---DSS---ZWRITE Unit  71; Vers.    4:  /500-YR/DAM1/FLOW/01MAY1999/5MIN/30CMP/
 -----DSS---ZWRITE Unit  71; Vers.    4:  /500-YR/DAM1/STOR/01MAY1999/5MIN/30CMP/
 -----DSS---ZWRITE Unit  71; Vers.    4:  /500-YR/DAM1/STAGE/01MAY1999/5MIN/30CMP/

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

 67 KP        PLAN  2 FOR STATION     DAM1          PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                        EXISTING CONDITIONS (NO RESERVOIR)

             HYDROGRAPH ROUTING DATA

 69 RN         NO ROUTING

                                                          ***
  ---DSS---ZWRITE Unit  71; Vers.    4:  /500-YR/EXIST/FLOW/01MAY1999/5MIN/EXISTFLOW/
 -----DSS---ZWRITE Unit  71; Vers.    4:  /500-YR/EXIST/STOR/01MAY1999/5MIN/EXISTFLOW/
 -----DSS---ZWRITE Unit  71; Vers.    4:  /500-YR/EXIST/STAGE/01MAY1999/5MIN/EXISTFLOW/

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

           **************
           *            *
 71 KK     *      RCH3  *       ROUTE TO CP3
           *            *
           **************
                        ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
                        HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES

             HYDROGRAPH ROUTING DATA

 74 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                          L       4200.  CHANNEL LENGTH
                          S       .0230  SLOPE
                          N        .090  CHANNEL ROUGHNESS COEFFICIENT
                         CA         .00  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD       20.00  BOTTOM WIDTH OR DIAMETER
                          Z        2.00  SIDE SLOPE

                                                  ***

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

             PLAN  2 INPUT DATA FOR STATION     RCH3 ARE SAME AS FOR PLAN  1

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

           **************
           *            *
 75 KK     *        E4  *      SUBBASIN E4
           *            *
           **************

             SUBBASIN RUNOFF DATA
```

```
  76 BA         SUBBASIN CHARACTERISTICS
                      TAREA          .58  SUBBASIN AREA

                PRECIPITATION DATA

  77 PH                                    DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .59    1.07    1.79    1.91    2.01    2.20    2.70    3.19     .00     .00     .00     .00

                                                   STORM AREA =      .58

  78 LS         SCS LOSS RATE
                      STRTL          .56  INITIAL ABSTRACTION
                     CRVNBR        78.00  CURVE NUMBER
                      RTIMP          .00  PERCENT IMPERVIOUS AREA

  79 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG          .57  LAG

                                                            ***

                                                         UNIT HYDROGRAPH
                                                    36 END-OF-PERIOD ORDINATES
              25.       76.      148.      254.      362.      431.      456.      454.      418.      371.
             312.      240.      188.      149.      121.       98.       79.       63.       50.       40.
              32.       25.       21.       17.       13.       11.        9.        7.        5.        5.
               4.        3.        2.        2.        1.        0.
  ---DSS---ZWRITE Unit  71; Vers.    3:  /500-YR/E4/FLOW/01MAY1999/5MIN/E4FLOW/


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

             PLAN  2 INPUT DATA FOR STATION      E4 ARE SAME AS FOR PLAN  1


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


            **************
            *            *
  81 KK     *      CP3   *      COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
            *            *
            **************

  82 HC         HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                            ***
   --DSS---ZWRITE Unit  71; Vers.    3:  /500-YR/CP3/FLOW/01MAY1999/5MIN/E4+CP2/
   --DSS---ZWRITE Unit  71; Vers.    3:  /500-YR/CP3/FLOW/01MAY1999/5MIN/EXISTFLOW/


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


            **************
            *            *
  84 KK     *     RCH3   *      ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
            *            *
            **************

              HYDROGRAPH ROUTING DATA
```

```
85 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                        L       3400.  CHANNEL LENGTH
                        S       .0190  SLOPE
                        N        .045  CHANNEL ROUGHNESS COEFFICIENT
                       CA         .00  CONTRIBUTING AREA
                    SHAPE        TRAP  CHANNEL SHAPE
                       WD       20.00  BOTTOM WIDTH OR DIAMETER
                        Z        2.00  SIDE SLOPE

                                                    ***

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

              PLAN  2 INPUT DATA FOR STATION     RCH3 ARE SAME AS FOR PLAN  1


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


           ***************
           *             *
86 KK      *        E5   *      SUB-BASIN E5
           *             *
           ***************

              SUBBASIN RUNOFF DATA

87 BA           SUBBASIN CHARACTERISTICS
                      TAREA         .31  SUBBASIN AREA

                PRECIPITATION DATA

88 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .58    1.05    1.75    1.90    2.01    2.25    2.63    3.00     .00     .00     .00     .00

                                                 STORM AREA =      .31

89 LS           SCS LOSS RATE
                      STRTL         .50  INITIAL ABSTRACTION
                     CRVNBR       80.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

90 UD           SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .50  LAG

                                                    ***

                                                 UNIT HYDROGRAPH
                                               32 END-OF-PERIOD ORDINATES
                 19.       55.      113.      189.      248.      274.      274.      251.      219.      175.
                129.      100.       77.       62.       48.       37.       29.       23.       18.       14.
                 11.        8.        6.        5.        4.        3.        3.        2.        2.        1.
                  1.        0.
-----DSS---ZWRITE Unit  71; Vers.    3:  /500-YR/E5/FLOW/01MAY1999/5MIN/E5FLOW/

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

              PLAN  2 INPUT DATA FOR STATION       E5 ARE SAME AS FOR PLAN  1
```

```
* *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
92 KK     *       CP4  *      COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
          *            *
          **************
                        FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET

94 HC           HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


          **************
          *            *
95 KK     *    SIERRA  *       STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
          *            *
          **************
                        STORAGE ROUTING AT SIERRA STREET

             HYDROGRAPH ROUTING DATA

97 RS           STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        STOR  TYPE OF INITIAL CONDITION
                      RSVRIC        .00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

98 SA               AREA          .0        .5        .8       1.2       1.9       2.6       3.1

99 SE           ELEVATION      587.00    594.00    596.00    598.00    600.00    602.00    604.00

00 SQ           DISCHARGE          0.      193.      211.      229.      245.      637.     2050.

                                                          ***

                                          COMPUTED STORAGE-ELEVATION DATA

          STORAGE         .00      1.19      2.45      4.40      7.45     11.90     17.61
        ELEVATION      587.00    594.00    596.00    598.00    600.00    602.00    604.00
---DSS---ZWRITE Unit  71; Vers.    4:  /500-YR/SIERRA/FLOW/01MAY1999/5MIN/SIERRA STREET/


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


              PLAN  2 INPUT DATA FOR STATION   SIERRA ARE SAME AS FOR PLAN  1
-----DSS---ZWRITE Unit  71; Vers.    4:  /500-YR/SIERRA/FLOW/01MAY1999/5MIN/EXISTFLOW/
```

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 PRECIPITATION
OPERATION	STATION	AREA	PLAN		RATIO 1
					.99
...DROGRAPH AT	E1	.77	1	FLOW	334.
				TIME	12.83
			2	FLOW	334.
				TIME	12.83
HYDROGRAPH AT	E2	1.20	1	FLOW	413.
				TIME	13.00
			2	FLOW	413.
				TIME	13.00
COMBINED AT	CP1	1.97	1	FLOW	732.
				TIME	12.92
			2	FLOW	732.
				TIME	12.92
ROUTED TO	RCH1	1.97	1	FLOW	731.
				TIME	13.25
			2	FLOW	731.
				TIME	13.25
HYDROGRAPH AT	E3	1.51	1	FLOW	546.
				TIME	13.25
			2	FLOW	546.
				TIME	13.25
COMBINED AT	CP2	3.48	1	FLOW	1278.
				TIME	13.25
			2	FLOW	1278.
				TIME	13.25
ROUTED TO	DAM1	3.48	1	FLOW	151.
				TIME	17.92
			2	FLOW	1278.
				TIME	13.25
			** PEAK STAGES IN FEET **		
			1	STAGE	813.13
				TIME	18.00
			2	STAGE	.00
				TIME	.00
ROUTED TO	RCH3	3.48	1	FLOW	151.
				TIME	18.17
			2	FLOW	1281.
				TIME	13.33
HYDROGRAPH AT	E4	.58	1	FLOW	304.
				TIME	12.58
			2	FLOW	304.
				TIME	12.58
COMBINED AT	CP3	4.06	1	FLOW	340.
				TIME	12.67
			2	FLOW	1375.
				TIME	13.33

ROUTED TO	RCH3	4.06	1	FLOW	340.
				TIME	12.75
			2	FLOW	1371.
				TIME	13.33
DROGRAPH AT	E5	.31	1	FLOW	183.
				TIME	12.50
			2	FLOW	183.
				TIME	12.50
COMBINED AT	CP4	4.37	1	FLOW	500.
				TIME	12.67
			2	FLOW	1415.
				TIME	13.33
ROUTED TO	SIERRA	4.37	1	FLOW	418.
				TIME	12.92
			2	FLOW	1409.
				TIME	13.42

** PEAK STAGES IN FEET **

1	STAGE	600.88
	TIME	12.92
2	STAGE	603.09
	TIME	13.42

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00									
	RCH1 MANE	5.00	731.38	795.00	1.30	5.00	731.38	795.00	1.30

NTINUITY SUMMARY (AC-FT) - INFLOW= .1394E+03 EXCESS= .0000E+00 OUTFLOW= .1372E+03 BASIN STORAGE= .3437E+01 PERCENT ERROR= -.9

FOR PLAN = 2 RATIO= .00									
	RCH1 MANE	5.00	731.38	795.00	1.30	5.00	731.38	795.00	1.30

NTINUITY SUMMARY (AC-FT) - INFLOW= .1394E+03 EXCESS= .0000E+00 OUTFLOW= .1372E+03 BASIN STORAGE= .3437E+01 PERCENT ERROR= -.9

FOR PLAN = 1 RATIO= .00									
	RCH3 MANE	5.00	150.57	1095.00	.75	5.00	150.57	1095.00	.75

NTINUITY SUMMARY (AC-FT) - INFLOW= .1438E+03 EXCESS= .0000E+00 OUTFLOW= .1399E+03 BASIN STORAGE= .3926E+01 PERCENT ERROR= .0

FOR PLAN = 2 RATIO= .00									
	RCH3 MANE	5.00	1281.49	800.00	1.41	5.00	1281.49	800.00	1.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2639E+03 EXCESS= .0000E+00 OUTFLOW= .2622E+03 BASIN STORAGE= .2743E+01 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .00									
	RCH3 MANE	5.00	340.34	765.00	.81	5.00	340.34	765.00	.81

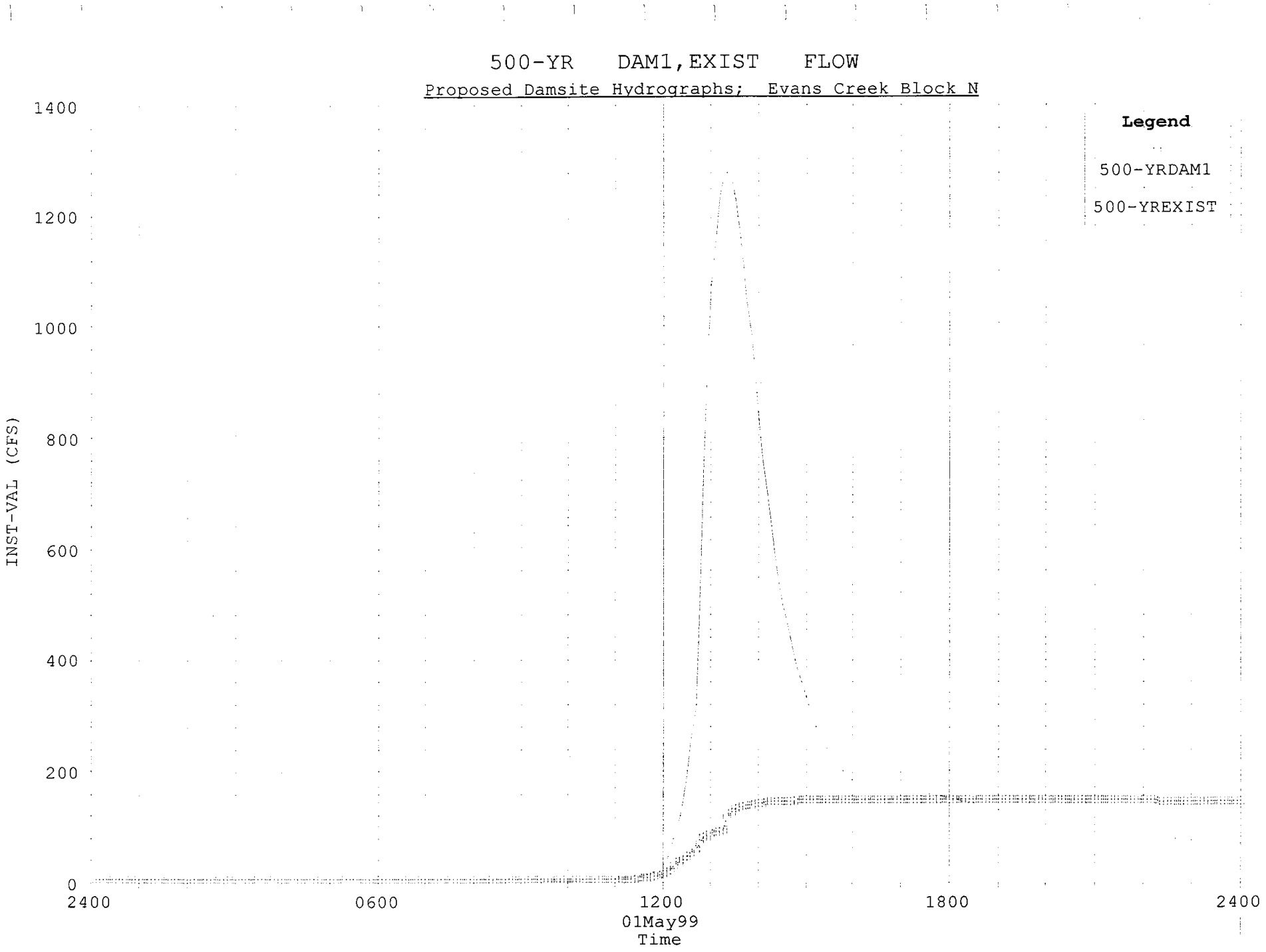
CONTINUITY SUMMARY (AC-FT) - INFLOW= .1777E+03 EXCESS= .0000E+00 OUTFLOW= .1755E+03 BASIN STORAGE= .2237E+01 PERCENT ERROR= .0

FOR PLAN = 2 RATIO= .00									
	RCH3 MANE	4.70	1371.34	799.79	1.38	5.00	1371.10	800.00	1.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3001E+03 EXCESS= .0000E+00 OUTFLOW= .2989E+03 BASIN STORAGE= .1631E+01 PERCENT ERROR= -.2

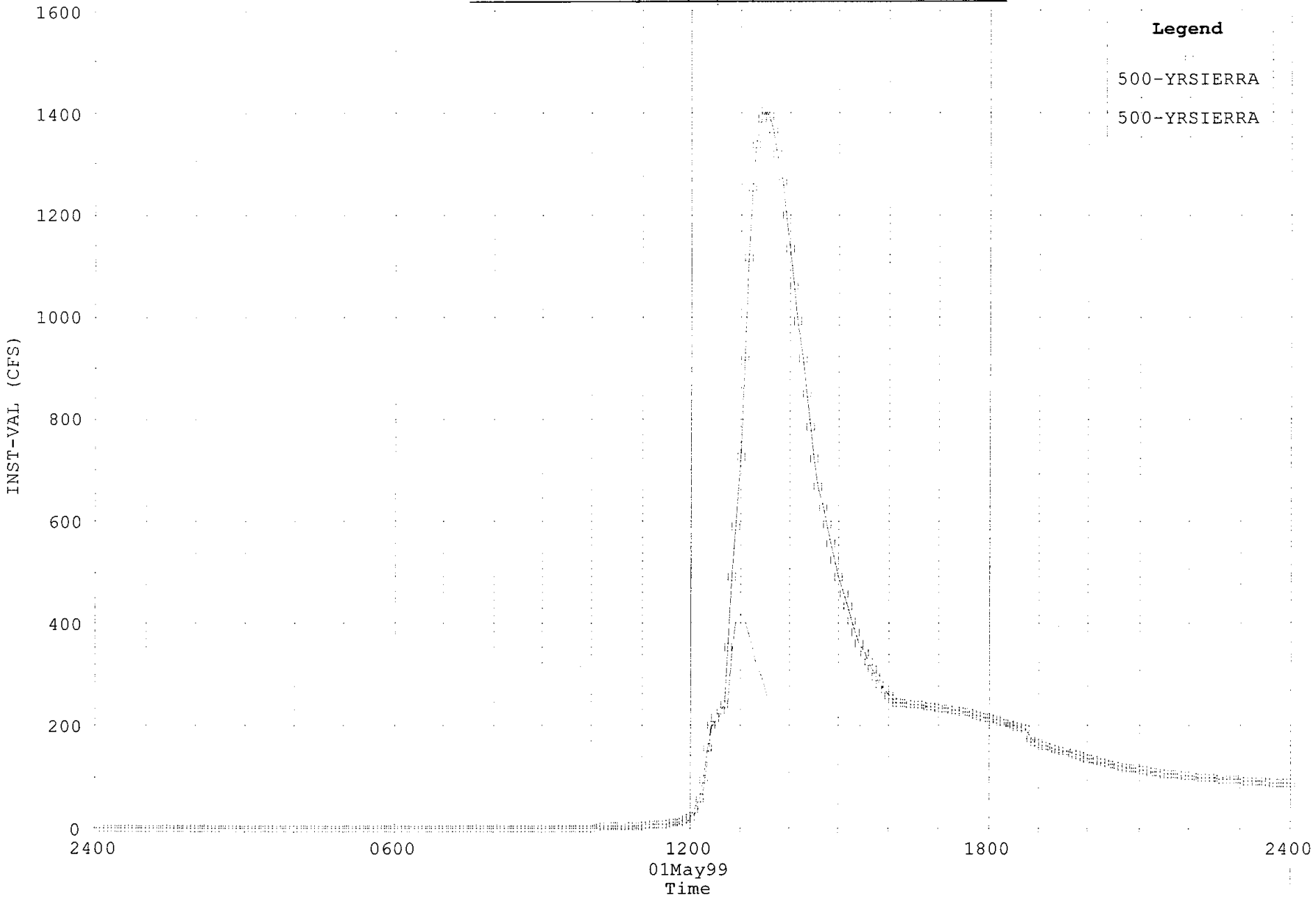
* NORMAL END OF HEC-1 ***

-----DSS---ZCLOSE Unit: 71, File: 2EV500.DSS
Pointer Utilization: .25
Number of Records: 17
File Size: 42.3 Kbytes
Percent Inactive: .00


500-YR DAM1,EXIST FLOW
Proposed Damsite Hydrographs; Evans Creek Block N
Legend
500-YRDAM1
500-YREXIST
INST-VAL (CFS)
1400
1200
1000
800
600
400
200
0
2400
0600
1200
1800
2400
01May99
Time

500-YR SIERRA FLOW

Siera Street Hydrographs; Evans Creek Block N



100-YEAR, 24 HOUR WITH NRCS DISCHARGE CURVE AT PROPOSED DAM

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

          *DIAGRAM
    1     ID     PHASE II SUB-AREAS
    2     ID
    3     ID     EVANS CREEK BLOCK N HYDROLOGY              NIMBUS JOB # 9912
    4     ID     100-YEAR 24 HOUR EVENT                     DATE : MAY 1999
    5     ID     NIMBUS ENGINEERS, RENO, NEVADA             FILE NAME: 2sc100.DAT
    6     ID
    7     ID
    8     ID    THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB
    9     ID    ********************************************************************************
   10     ID     GONI CANYON                                Nimbus Job #: 9606          *
   11     ID     Prepared by Nimbus Engineers               Date:  August 1996          *
   12     ID                                                File Name: GONI-5.DAT       *
   13     ID    ********************************************************************************
   14     ID
   15     ID    The  100-yr PH card rainfall depths were determined from the
   16     ID    Precipitation Frequency Study of the United States, NOAA Atlas 14,
   17     ID    Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation
   18     ID    events and the methodology per the Draft Washoe County Hydrologic
   19     ID    Criteria and Design Manual.
   20     ID
   21     ID    ********************************************************************************
   22     ID    THIS MODEL IS FOR PROPOSED (PLAN 1) WITHOUT THE 30" CMP RISER AND   *
   23     ID    EXISTING CONDITIONS (PLAN 2)                                        *
   24     ID    ********************************************************************************
          *
   25     IT       5 01MAY99    0005     288
   26     IO       4       0
   27     JP       2
          *   DEPTH AREA REDUCTION FACTOR FROM NOAA
   28     JR    PREC    0.99
          *

   29     KK      E1 SUBBASIN E1
   30     BA   0.772
   31     PH                    0.48    0.87    1.45    1.62    1.76    2.03    2.50    2.97
   32     LS              76
   33     UD    0.79
   34     ZW   A=100-YR C=FLOW F=E1FLOW
          *

   35     KK      E2 SUB-BASIN E2
   36     BA     1.2
   37     PH                    0.48    0.87    1.45    1.57    1.66    1.85    2.29    2.73
   38     LS              77
   39     UD    0.99
   40     ZW   A=100-YR C=FLOW F=E2FLOW
          *

   41     KK     CP1 COMBINE E1 AND E2 HYDROGRAPHS AT CP1
          * KO             2
   42     HC       2
   43     ZW   A=100-YR C=FLOW F=E1+E2
          *
```

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

  44      KK    RCH1 ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
  45      RD   10800   0.026    0.07            TRAP      15       2
          *

  46      KK      E3 SUBBASIN E3
  47      BA    1.51
  48      PH                    0.48    0.87    1.45    1.57    1.66    1.85    2.33    2.80
  49      LS              81
  50      UD    1.24
  51      ZW   A=100-YR C=FLOW F=E3FLOW
          *

  52      KK     CP2 COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
  53      HC       2
          * ZW A=100-YR C=FLOW F=E1+E2+E3
          *

  54      KK    DAM1 PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
          * KO             2
  55      KP       1
  56      KM   PROPOSED RESERVOIR; flow through principal and emergency spillways ONLY.
  57      RS       1    STOR       0
  58      SA    3.63    3.71    3.79    3.87    3.95    5.12    6.44    7.97    8.92    9.93
  59      SA   10.18   10.45   10.94   11.55   12.67   14.15   15.62
  60      SE  795.89  796.33  796.76   797.2  797.64  803.16  808.69  814.22  816.98  819.74
  61      SE  820.36  820.97  822.07  823.42  825.87  828.94   832.0
  62      SQ       0   13.46   38.09   69.97  107.73  114.35  120.61  126.56  129.43  132.24
  63      SQ  218.16  401.01  881.31  1708.7  3654.6  6920.1 11031.7
  64      ZW   A=100-YR C=FLOW F=DAMFLOW
  65      ZW   C=STOR F=DAMSTOR
  66      ZW   C=STAGE F=DAMSTAGE
          *
          * KP     1
          * KM PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spill
          * RS      1    STOR       0
          * SA  1.18    1.21    1.23    1.27    1.32    1.41    1.50    1.59    1.70    1.
          * SA  2.83    3.91    3.97    4.72    6.68    9.07   10.37   11.09   12.75   15.
          * SE 775.4   775.7   776.0   776.4   777.0   778.0   779.0   780.0   781.0   783
          * SE   790     796   796.3   800.4  808.69  816.98  820.36  822.10  825.87   832
          * SQ   5.4    12.6    21.4      35    40.8    49.9    57.5    64.3    70.4    81
          * SQ  92.1   95.43   112.2     134     145   155.4   244.5   907.5  3680.8   110
          * ZW A=100-YR C=FLOW F=30CMP
          * ZW C=STOR F=30CMP
          * ZW C=STAGE F=30CMP
          *
          * KO             2
  67      KP       2
  68      KM    EXISTING CONDITIONS (NO RESERVOIR)
  69      RN
  70      ZW   A=100-YR B=EXIST C=FLOW F=EXISTFLOW
          *
```

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

  71      KK    RCH2 ROUTE TO CP3
  72      KM   ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
  73      KM    HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES
  74      RD    4200   0.023    0.09            TRAP      20       2
          *

  75      KK      E4 SUBBASIN E4
  76      BA    0.58
  77      PH                   0.48    0.87    1.45    1.55    1.63    1.79    2.20    2.60
  78      LS             78
  79      UD    0.57
  80      ZW   A=100-YR C=FLOW F=E4FLOW
          *

  81      KK     CP3 COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
          * KO             2
  82      HC       2
  83      ZW   A=100-YR C=FLOW F=E4+CP2
          *

  84      KK    RCH3 ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
  85      RD    3400   0.019   0.045            TRAP      20       2
          *

  86      KK      E5 SUB-BASIN E5
  87      BA    0.31
  88      PH                   0.47    0.85    1.41    1.54    1.63    1.83    2.14    2.44
  89      LS             80
  90      UD     0.5
  91      ZW   A=100-YR C=FLOW F=E5FLOW
          *

  92      KK     CP4 COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
          * KO             2
  93      KM    FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET
  94      HC       2
          * ZW A=100-YR C=FLOW F=SIERRA STREET
          *

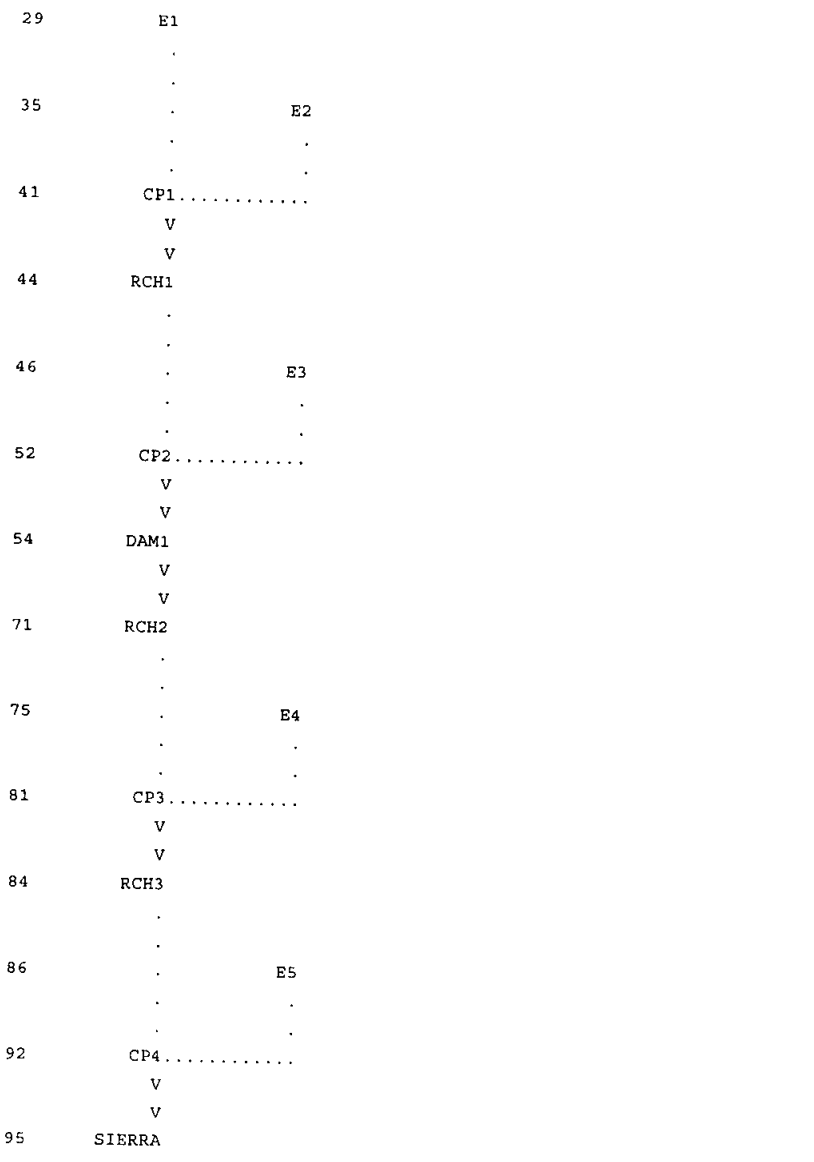
  95      KK  SIERRA  STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
  96      KM   STORAGE ROUTING AT SIERRA STREET
  97      RS       1    STOR       0
  98      SA       0    0.51    0.76     1.2    1.88    2.59    3.13
  99      SE     587     594     596     598     600     602     604
 100      SQ       0     193     211     229     245     637    1000
 101      ZW   A=100-YR C=FLOW F=SIERRA STREET
          *
 102      ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE NO.

(V) ROUTING (---->) DIVERSION OR PUMP FLOW

(.) CONNECTOR (<----) RETURN OF DIVERTED OR PUMPED FLOW



**) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
**************************************
*                                    *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)*
*          SEPTEMBER 1990            *
*           VERSION 4.0              *
*                                    *
*  RUN DATE  07/07/1999  TIME  15:55:37*
*                                    *
**************************************
```


```
**************************************
*                                    *
*   U.S. ARMY CORPS OF ENGINEERS     *
*   HYDROLOGIC ENGINEERING CENTER    *
*        609 SECOND STREET           *
*      DAVIS, CALIFORNIA 95616       *
*          (916) 756-1104            *
*                                    *
**************************************
```


PHASE II SUB-AREAS

EVANS CREEK BLOCK N HYDROLOGY — NIMBUS JOB # 9912
100-YEAR 24 HOUR EVENT — DATE : MAY 1999
NIMBUS ENGINEERS, RENO, NEVADA — FILE NAME: 2sc100.DAT

THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB

```
*************************************************************************
 GONI CANYON                                 Nimbus Job #: 9606         *
 Prepared by Nimbus Engineers                Date:  August 1996         *
                                             File Name: GONI-5.DAT      *
*************************************************************************
```

The 100-yr PH card rainfall depths were determined from the Precipitation Frequency Study of the United States, NOAA Atlas 14, Volume 1 - Semi-Arid Southwest United States; 2-year 24 hour precipitation events and the methodology per the Draft Washoe County Hydrologic Criteria and Design Manual.

```
*************************************************************************
THIS MODEL IS FOR PROPOSED (PLAN 1) WITHOUT THE 30" CMP RISER AND      *
EXISTING CONDITIONS (PLAN 2)                                           *
*************************************************************************
```

```
26 IO          OUTPUT CONTROL VARIABLES
                    IPRNT          4  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                    NMIN           5  MINUTES IN COMPUTATION INTERVAL
                   IDATE      1MAY99  STARTING DATE
                   ITIME        0005  STARTING TIME
                      NQ         288  NUMBER OF HYDROGRAPH ORDINATES
                  NDDATE      2MAY99  ENDING DATE
                  NDTIME        0000  ENDING TIME
                   ICENT          19  CENTURY MARK

               COMPUTATION INTERVAL      .08 HOURS
                   TOTAL TIME BASE   23.92 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 2 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
.99

*** ***

```
**************
*            *
29 KK  *   E1   *   SUBBASIN E1
*            *
**************
```

SUBBASIN RUNOFF DATA

30 BA SUBBASIN CHARACTERISTICS
TAREA .77 SUBBASIN AREA

PRECIPITATION DATA

31 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.48	.87	1.45	1.62	1.76	2.03	2.50	2.97	.00	.00	.00	.00

STORM AREA = .77

32 LS SCS LOSS RATE
STRTL .63 INITIAL ABSTRACTION
CRVNBR 76.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

33 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .79 LAG

***

UNIT HYDROGRAPH
49 END-OF-PERIOD ORDINATES

14.	45.	86.	140.	212.	297.	368.	417.	444.	448.
443.	416.	385.	348.	303.	250.	205.	174.	147.	125.
108.	92.	79.	65.	56.	48.	41.	34.	29.	24.
21.	18.	15.	13.	11.	9.	8.	7.	6.	5.
4.	4.	3.	3.	2.	2.	1.	1.	0.	

-----DSS---ZOPEN: Version: 6-EA; Existing File Opened
Unit: 71, File: 2SC100.DSS
---DSS---ZWRITE Unit 71; Vers. 3: /100-YR/E1/FLOW/01MAY1999/5MIN/E1FLOW/

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

PLAN 2 INPUT DATA FOR STATION E1 ARE SAME AS FOR PLAN 1

*** ***

```
**************
*            *
35 KK  *   E2   *   SUB-BASIN E2
*            *
```

```
          **************

              SUBBASIN RUNOFF DATA

    36 BA          SUBBASIN CHARACTERISTICS
                        TAREA         1.20  SUBBASIN AREA

                   PRECIPITATION DATA

    37 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                   ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                   5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                     .48     .87    1.45    1.57    1.66    1.85    2.29    2.73     .00     .00     .00     .00

                                                  STORM AREA =     1.20

    38 LS          SCS LOSS RATE
                        STRTL          .60  INITIAL ABSTRACTION
                       CRVNBR        77.00  CURVE NUMBER
                        RTIMP          .00  PERCENT IMPERVIOUS AREA

    39 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG          .99  LAG

                                                  ***

                                                UNIT HYDROGRAPH
                                              61 END-OF-PERIOD ORDINATES
                    14.     41.     78.    122.    178.    250.    334.    413.    478.    525.
                   553.    560.    559.    546.    518.    486.    450.    408.    359.    306.
                   261.    228.    200.    175.    153.    137.    120.    106.     92.     80.
                    71.     62.     55.     48.     42.     37.     32.     28.     25.     22.
                    19.     17.     15.     13.     11.     10.      8.      8.      7.      6.
                     5.      5.      4.      4.      3.      3.      2.      2.      1.      1.
                     0.
    -----DSS---ZWRITE Unit  71; Vers.    3:  /100-YR/E2/FLOW/01MAY1999/5MIN/E2FLOW/

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

              PLAN  2 INPUT DATA FOR STATION       E2 ARE SAME AS FOR PLAN  1

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

              **************
              *            *
    41 KK     *       CP1  *      COMBINE E1 AND E2 HYDROGRAPHS AT CP1
              *            *
              **************

    42 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                  ***
    -----DSS---ZWRITE Unit  71; Vers.    3:  /100-YR/CP1/FLOW/01MAY1999/5MIN/E1+E2/
      ---DSS---ZWRITE Unit  71; Vers.    3:  /100-YR/CP1/FLOW/01MAY1999/5MIN//

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

              **************
```

```
                *              *
  44 KK         *     RCH1     *      ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
                *              *
                ****************

                   HYDROGRAPH ROUTING DATA

  45 RD               MUSKINGUM-CUNGE CHANNEL ROUTING
                                    L       10800.  CHANNEL LENGTH
                                    S        .0260  SLOPE
                                    N         .070  CHANNEL ROUGHNESS COEFFICIENT
                                   CA          .00  CONTRIBUTING AREA
                                SHAPE         TRAP  CHANNEL SHAPE
                                   WD        15.00  BOTTOM WIDTH OR DIAMETER
                                    Z         2.00  SIDE SLOPE

                                                              ***

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

                 PLAN  2 INPUT DATA FOR STATION     RCH1 ARE SAME AS FOR PLAN  1


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

               ****************
               *              *
  46 KK        *      E3      *      SUBBASIN E3
               *              *
               ****************

                 SUBBASIN RUNOFF DATA

  47 BA             SUBBASIN CHARACTERISTICS
                           TAREA         1.51   SUBBASIN AREA

                    PRECIPITATION DATA

  48 PH                                    DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                    ..... HYDRO-35 ......    ............... TP-40 ...............    ........... TP-49 ...........
                    5-MIN  15-MIN  60-MIN     2-HR     3-HR     6-HR    12-HR    24-HR    2-DAY    4-DAY    7-DAY   10-DAY
                      .48     .87    1.45     1.57     1.66     1.85     2.33     2.80      .00      .00      .00      .00

                                                        STORM AREA =     1.51

  49 LS             SCS LOSS RATE
                          STRTL          .47   INITIAL ABSTRACTION
                         CRVNBR        81.00   CURVE NUMBER
                          RTIMP          .00   PERCENT IMPERVIOUS AREA

  50 UD             SCS DIMENSIONLESS UNITGRAPH
                           TLAG         1.24   LAG

                                                            ***

                                                   UNIT HYDROGRAPH
                                               76 END-OF-PERIOD ORDINATES
               11.       29.       55.       88.      125.      170.      227.      289.      360.      421.
              476.      517.      545.      564.      568.      567.      562.      539.      515.      489.
              460.      427.      390.      346.      304.      267.      240.      215.      193.      173.
              156.      143.      129.      116.      105.       94.       83.       76.       68.       61.
               55.       50.       44.       40.       36.       32.       29.       26.       23.       21.
               19.       17.       15.       14.       12.       11.       10.        9.        8.        7.
```

```
                7.        6.        6.        5.        5.        4.        4.        3.        3.        3.
                2.        2.        1.        1.        1.        0.
---DSS---ZWRITE Unit  71; Vers.    3:  /100-YR/E3/FLOW/01MAY1999/5MIN/E3FLOW/

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

              PLAN  2 INPUT DATA FOR STATION       E3 ARE SAME AS FOR PLAN  1

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

           **************
           *            *
52 KK      *       CP2  *      COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
           *            *
           **************

53 HC           HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***

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

           **************
           *            *
54 KK      *      DAM1  *      PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
           *            *
           **************

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

55 KP         PLAN  1 FOR STATION     DAM1           PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                        PROPOSED RESERVOIR; flow through principal and emergency spillways ONLY.

              HYDROGRAPH ROUTING DATA

57 RS           STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        STOR  TYPE OF INITIAL CONDITION
                     RSVRIC         .00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

58 SA               AREA         3.6       3.7       3.8       3.9       4.0       5.1       6.4       8.0       8.9       9.9
                                10.2      10.4      10.9      11.6      12.7      14.1      15.6

60 SE               ELEVATION  795.89    796.33    796.76    797.20    797.64    803.16    808.69    814.22    816.98    819.74
                               820.36    820.97    822.07    823.42    825.87    828.94    832.00

62 SQ               DISCHARGE      0.       13.       38.       70.      108.      114.      121.      127.      129.      132.
                               218.      401.      881.     1709.     3655.     6920.    11032.

                                                          ***

                                                COMPUTED STORAGE-ELEVATION DATA

          STORAGE        .00      1.61      3.23      4.91      6.63     31.60     63.49    103.26    126.55    152.55
        ELEVATION     795.89    796.33    796.76    797.20    797.64    803.16    808.69    814.22    816.98    819.74
```

```
          STORAGE     158.79    165.08    176.84    192.02    221.68    262.83    308.36
        ELEVATION     820.36    820.97    822.07    823.42    825.87    828.94    832.00
   ---DSS---ZWRITE Unit  71; Vers.    1:  /100-YR/DAM1/FLOW/01MAY1999/5MIN/DAMSTAGE/
   ---DSS---ZWRITE Unit  71; Vers.    1:  /100-YR/DAM1/STOR/01MAY1999/5MIN/DAMSTAGE/
  -----DSS---ZWRITE Unit  71; Vers.    1:  /100-YR/DAM1/STAGE/01MAY1999/5MIN/DAMSTAGE/

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

   67 KP         PLAN  2 FOR STATION     DAM1          PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                            EXISTING CONDITIONS (NO RESERVOIR)

                 HYDROGRAPH ROUTING DATA

   69 RN           NO ROUTING

                                                          ***
   ---DSS---ZWRITE Unit  71; Vers.    1:  /100-YR/EXIST/FLOW/01MAY1999/5MIN/EXISTFLOW/
   ---DSS---ZWRITE Unit  71; Vers.    1:  /100-YR/EXIST/STOR/01MAY1999/5MIN/EXISTFLOW/
  -----DSS---ZWRITE Unit  71; Vers.    1:  /100-YR/EXIST/STAGE/01MAY1999/5MIN/EXISTFLOW/

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

              **************
              *            *
   71 KK      *      RCH2  *      ROUTE TO CP3
              *            *
              **************
                            ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
                             HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES

                HYDROGRAPH ROUTING DATA

   74 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                              L       4200.  CHANNEL LENGTH
                              S       .0230  SLOPE
                              N        .090  CHANNEL ROUGHNESS COEFFICIENT
                             CA         .00  CONTRIBUTING AREA
                          SHAPE        TRAP  CHANNEL SHAPE
                             WD       20.00  BOTTOM WIDTH OR DIAMETER
                              Z        2.00  SIDE SLOPE

                                                          ***

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

                PLAN  2 INPUT DATA FOR STATION     RCH2 ARE SAME AS FOR PLAN  1

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

              **************
              *            *
    5 KK      *        E4  *      SUBBASIN E4
              *            *
              **************

                SUBBASIN RUNOFF DATA

    6 BA          SUBBASIN CHARACTERISTICS
```

TAREA .58 SUBBASIN AREA

PRECIPITATION DATA

77 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.48	.87	1.45	1.55	1.63	1.79	2.20	2.60	.00	.00	.00	.00

STORM AREA = .58

78 LS SCS LOSS RATE

STRTL .56 INITIAL ABSTRACTION
CRVNBR 78.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

79 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .57 LAG

***

UNIT HYDROGRAPH
36 END-OF-PERIOD ORDINATES

25.	76.	148.	254.	362.	431.	456.	454.	418.	371.
312.	240.	188.	149.	121.	98.	79.	63.	50.	40.
32.	25.	21.	17.	13.	11.	9.	7.	5.	5.
4.	3.	2.	2.	1.	0.				

-----DSS---ZWRITE Unit 71; Vers. 1: /100-YR/E4/FLOW/01MAY1999/5MIN/E4FLOW/

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

PLAN 2 INPUT DATA FOR STATION E4 ARE SAME AS FOR PLAN 1

* ***

****
* *
81 KK * CP3 * COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
* *
****

82 HC HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

-----DSS---ZWRITE Unit 71; Vers. 1: /100-YR/CP3/FLOW/01MAY1999/5MIN/E4+CP2/
---DSS---ZWRITE Unit 71; Vers. 1: /100-YR/CP3/FLOW/01MAY1999/5MIN/EXISTFLOW/

* ***

****
* *
84 KK * RCH3 * ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
* *
****

HYDROGRAPH ROUTING DATA

85 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	3400.	CHANNEL LENGTH
S	.0190	SLOPE
N	.045	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	20.00	BOTTOM WIDTH OR DIAMETER
Z	2.00	SIDE SLOPE

***

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

PLAN 2 INPUT DATA FOR STATION RCH3 ARE SAME AS FOR PLAN 1

*** ***

```
**************
*            *
86 KK  *   E5   *   SUB-BASIN E5
*            *
**************
```

SUBBASIN RUNOFF DATA

87 BA SUBBASIN CHARACTERISTICS

TAREA	.31	SUBBASIN AREA

PRECIPITATION DATA

88 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.47	.85	1.41	1.54	1.63	1.83	2.14	2.44	.00	.00	.00	.00

STORM AREA = .31

89 LS SCS LOSS RATE

STRTL	.50	INITIAL ABSTRACTION
CRVNBR	80.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

90 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.50	LAG

***

UNIT HYDROGRAPH

32 END-OF-PERIOD ORDINATES

19.	55.	113.	189.	248.	274.	274.	251.	219.	175.
129.	100.	77.	62.	48.	37.	29.	23.	18.	14.
11.	8.	6.	5.	4.	3.	3.	2.	2.	1.
1.	0.								

-----DSS---ZWRITE Unit 71; Vers. 1: /100-YR/E5/FLOW/01MAY1999/5MIN/E5FLOW/

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

PLAN 2 INPUT DATA FOR STATION E5 ARE SAME AS FOR PLAN 1

*** ***

```
          **************
          *            *
92 KK     *      CP4   *      COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
          *            *
          **************
                        FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET

94 HC          HYDROGRAPH COMBINATION
                    ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                        ***

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


          **************
          *            *
95 KK     *    SIERRA  *       STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
          *            *
          **************
                        STORAGE ROUTING AT SIERRA STREET

             HYDROGRAPH ROUTING DATA

97 RS          STORAGE ROUTING
                    NSTPS          1  NUMBER OF SUBREACHES
                     ITYP       STOR  TYPE OF INITIAL CONDITION
                   RSVRIC        .00  INITIAL CONDITION
                        X        .00 WORKING R AND D COEFFICIENT

98 SA               AREA         .0        .5        .8       1.2       1.9       2.6       3.1

99 SE          ELEVATION      587.00    594.00    596.00    598.00    600.00    602.00    604.00

100 SQ         DISCHARGE          0.       193.      211.      229.      245.      637.     1000.

                                                        ***

                                        COMPUTED STORAGE-ELEVATION DATA

          STORAGE        .00      1.19      2.45      4.40      7.45     11.90     17.61
        ELEVATION     587.00    594.00    596.00    598.00    600.00    602.00    604.00
-----DSS---ZWRITE Unit  71; Vers.    1:  /100-YR/SIERRA/FLOW/01MAY1999/5MIN/SIERRA STREET/

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

             PLAN  2 INPUT DATA FOR STATION   SIERRA ARE SAME AS FOR PLAN  1
-----DSS---ZWRITE Unit  71; Vers.    1:  /100-YR/SIERRA/FLOW/01MAY1999/5MIN/EXISTFLOW/
```

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

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1
					.99
HYDROGRAPH AT	E1	.77	1	FLOW	215.
				TIME	12.83
			2	FLOW	215.
				TIME	12.83
HYDROGRAPH AT	E2	1.20	1	FLOW	264.
				TIME	13.08
			2	FLOW	264.
				TIME	13.08
COMBINED AT	CP1	1.97	1	FLOW	469.
				TIME	12.92
			2	FLOW	469.
				TIME	12.92
ROUTED TO	RCH1	1.97	1	FLOW	475.
				TIME	13.25
			2	FLOW	475.
				TIME	13.25
HYDROGRAPH AT	E3	1.51	1	FLOW	372.
				TIME	13.33
			2	FLOW	372.
				TIME	13.33
COMBINED AT	CP2	3.48	1	FLOW	847.
				TIME	13.25
			2	FLOW	847.
				TIME	13.25
ROUTED TO	DAM1	3.48	1	FLOW	124.
				TIME	16.42
			2	FLOW	847.
				TIME	13.25
			** PEAK STAGES IN FEET **		
			1	STAGE	812.24
				TIME	16.42
			2	STAGE	.00
				TIME	.00
ROUTED TO	RCH2	3.48	1	FLOW	124.
				TIME	16.67
			2	FLOW	857.
				TIME	13.33
HYDROGRAPH AT	E4	.58	1	FLOW	196.
				TIME	12.58
			2	FLOW	196.
				TIME	12.58
COMBINED AT	CP3	4.06	1	FLOW	206.
				TIME	13.08
			2	FLOW	921.
				TIME	13.33

ROUTED TO	RCH3	4.06	1	FLOW	205.
				TIME	13.25
			2	FLOW	915.
				TIME	13.42
'DROGRAPH AT	E5	.31	1	FLOW	119.
				TIME	12.50
			2	FLOW	119.
				TIME	12.50
2 COMBINED AT	CP4	4.37	1	FLOW	307.
				TIME	12.67
			2	FLOW	941.
				TIME	13.42
ROUTED TO	SIERRA	4.37	1	FLOW	229.
				TIME	13.33
			2	FLOW	880.
				TIME	13.67

** PEAK STAGES IN FEET **

1	STAGE	598.06
	TIME	13.33
2	STAGE	603.34
	TIME	13.67

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00									
	RCH1 MANE	5.00	475.31	795.00	.87	5.00	475.31	795.00	.87

NTINUITY SUMMARY (AC-FT) - INFLOW= .9298E+02 EXCESS= .0000E+00 OUTFLOW= .9108E+02 BASIN STORAGE= .2794E+01 PERCENT ERROR= -1.0

FOR PLAN = 2 RATIO= .00									
	RCH1 MANE	5.00	475.31	795.00	.87	5.00	475.31	795.00	.87

NTINUITY SUMMARY (AC-FT) - INFLOW= .9298E+02 EXCESS= .0000E+00 OUTFLOW= .9108E+02 BASIN STORAGE= .2794E+01 PERCENT ERROR= -1.0

FOR PLAN = 1 RATIO= .00									
	RCH2 MANE	5.00	124.43	1000.00	.60	5.00	124.43	1000.00	.60

NTINUITY SUMMARY (AC-FT) - INFLOW= .1152E+03 EXCESS= .0000E+00 OUTFLOW= .1115E+03 BASIN STORAGE= .3883E+01 PERCENT ERROR= -.2

FOR PLAN = 2 RATIO= .00									
	RCH2 MANE	5.00	856.92	800.00	.96	5.00	856.92	800.00	.96

NTINUITY SUMMARY (AC-FT) - INFLOW= .1794E+03 EXCESS= .0000E+00 OUTFLOW= .1778E+03 BASIN STORAGE= .2258E+01 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .00									
	RCH3 MANE	5.00	205.41	795.00	.62	5.00	205.41	795.00	.62

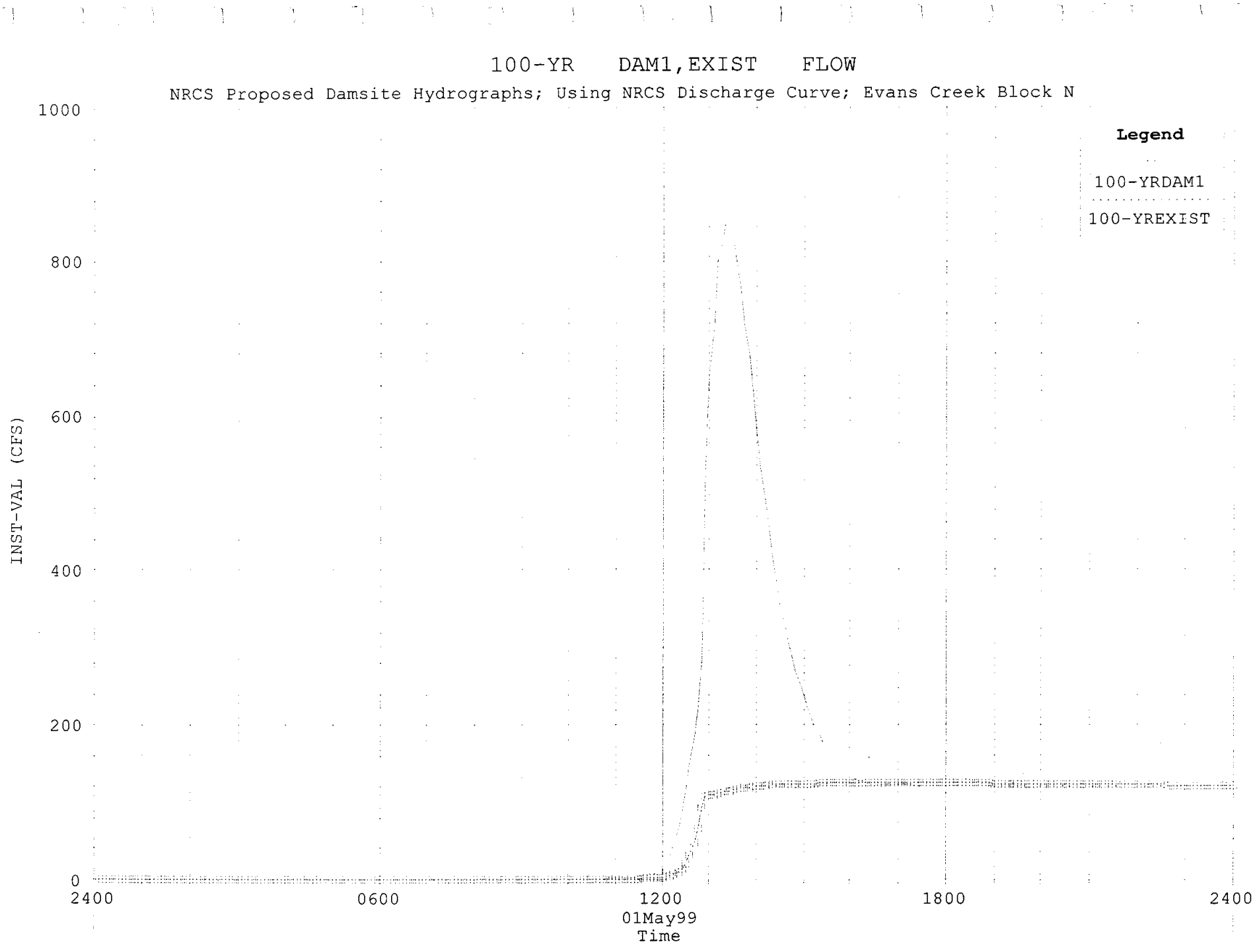
CONTINUITY SUMMARY (AC-FT) - INFLOW= .1369E+03 EXCESS= .0000E+00 OUTFLOW= .1349E+03 BASIN STORAGE= .2193E+01 PERCENT ERROR= -.1

FOR PLAN = 2 RATIO= .00									
	RCH3 MANE	5.00	914.76	805.00	.93	5.00	914.76	805.00	.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2032E+03 EXCESS= .0000E+00 OUTFLOW= .2023E+03 BASIN STORAGE= .1344E+01 PERCENT ERROR= -.2

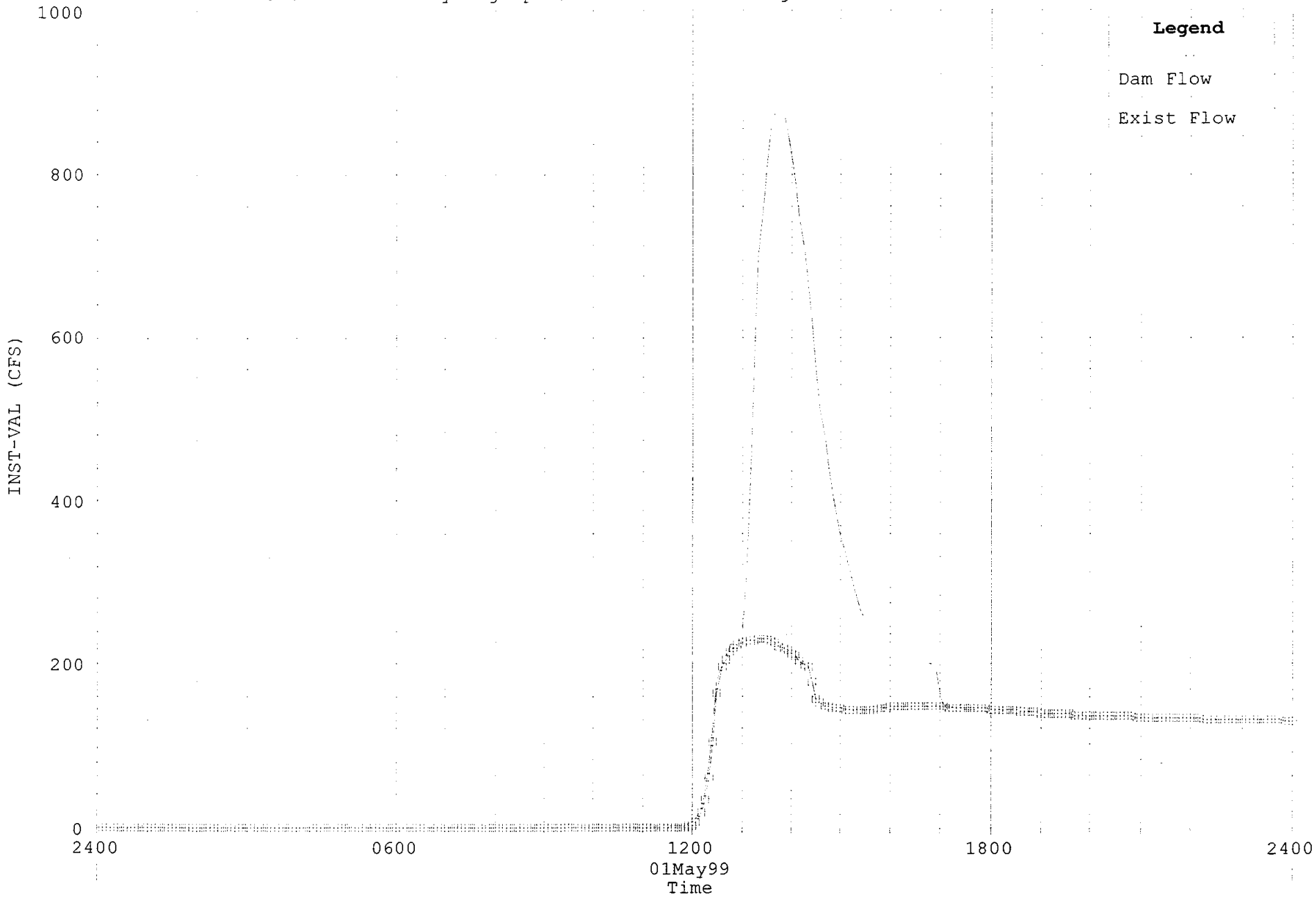
* NORMAL END OF HEC-1 ***

-----DSS---ZCLOSE Unit: 71, File: 2SC100.DSS
Pointer Utilization: .25
Number of Records: 17
File Size: 41.8 Kbytes
Percent Inactive: .00


100-YR DAM1,EXIST FLOW
NRCS Proposed Damsite Hydrographs; Using NRCS Discharge Curve; Evans Creek Block N
Legend
100-YRDAM1
100-YREXIST
INST-VAL (CFS)
1000
800
600
400
200
0
2400
0600
1200
1800
2400
01May99
Time

100-YR SIERRA FLOW

Sierra Street Hydrographs; With NRCS Discharge Curve; Evans Creek Block N



1986-AIRPORT DATA, 4-DAY

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

          *DIAGRAM
    1     ID     PHASE II SUB-AREAS
    2     ID
    3     ID     EVANS CREEK BLOCK N HYDROLOGY              NIMBUS JOB # 9912
    4     ID     1986 STORM EVENT; AIRPORT GAGE DATA        DATE : MAY 1999
    5     ID     NIMBUS ENGINEERS, RENO, NEVADA             FILE NAME: 2PIAIR.DAT
    6     ID
    7     ID
    8     ID    THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB
    9     ID    ********************************************************************************
   10     ID     GONI CANYON                                Nimbus Job #: 9606          *
   11     ID     Prepared by Nimbus Engineers               Date:  August 1996          *
   12     ID                                                File Name: GONI-5.DAT       *
   13     ID    ********************************************************************************
   14     ID
   15     ID    The airport PI card distribution is the raingage data
   16     ID    from the 1986 storm event.  Precipitation depths are from 0100
   17     ID    2/14/86 to 0300 on 2/20/86.
   18     ID
   19     ID    ********************************************************************
   20     ID    THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND          *
   21     ID    EXISTING CONDITIONS (PLAN 2)                                        *
   22     ID    ********************************************************************
   23     ID    CURVE NUMBERS WERE MODIFIED FROM AMC-II CONDITIONS TO AMC-III CONDITIONS
   24     ID    IN ORDER TO MODEL A SATURATED WATERSHED.  REFERENCE: McCUEN, R.H. (1982);
   25     ID    "A GUIDE TO HYDROLOGIC ANALYSIS USING SCS METHODS",PRENTICE-HALL, INC.
   26     ID
   27     ID
          *
   28     IT      15 14FEB86    0100         20FEB86    0300
   29     IO       4        0
   30     IN      60 14FEB86    0100
   31     PG     AIR        0
   32     PI    .001     .001      .01      .01     .001        0     .001     .001     .001     .001
   33     PI    .001        0        0     .001      .01      .05      .18      .16      .11     .001
   34     PI    .001     .001        0        0     .001      .02      .04      .16      .02      .05
   35     PI     .01     .001     .001      .01      .07      .01      .01     .001      .01      .01
   36     PI     .07      .05      .03      .02      .01      .02       .1      .03      .05      .07
   37     PI    .001        0        0        0        0        0        0        0        0     .001
   38     PI    .001        0     .001      .01      .01      .01      .01      .02      .01      .02
   39     PI    .001      .01      .08      .05      .05      .06      .02      .03      .03      .01
   40     PI    .001      .01      .05      .03      .02      .01      .06      .06      .04      .04
   41     PI     .13      .09      .03      .04      .01      .01     .001     .001     .001      .01
   42     PI    .001     .001      .01     .001      .01      .01      .02      .02     .001     .001
   43     PI     .01      .06      .02      .05      .07      .08      .09      .04      .12      .21
   44     PI     .13      .13      .12      .12      .03      .02      .02     .001     .001      .03
   45     PI    .001      .02      .01      .04      .04      .02      .02      .04      .09      .08
   46     PI     .02      .02      .03      .03      .02      .01     .001
   47     JP       2
          *   DEPTH AREA REDUCTION FACTOR FROM NOAA
   48     JR    PREC    0.99
          *
```

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

 49       KK      E1 SUBBASIN E1
 50       BA   0.772
 51       PR     AIR
 52       PW     1.0
          * LS            76
 53       LS              91
 54       UD    0.79
          * ZW A=1986 C=FLOW E=4HOUR F=E1FLOW
          *

 55       KK      E2 SUBBASIN E2
 56       BA     1.2
          * LS            77
 57       LS              92
 58       UD    0.99
          * ZW A=1986 C=FLOW E=4HOUR F=E2FLOW
          *

 59       KK     CP1 COMBINE E1 AND E2 HYDROGRAPHS AT CP1
 60       HC       2
 61       ZW   A=1986 C=FLOW E=4HOUR F=E1+E2
          *

 62       KK    RCH1 ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
 63       RD   10800   0.026    0.07            TRAP      15       2
          *

 64       KK      E3 SUB-BASIN E3
 65       BA    1.51
          * LS            81
 66       LS              95
 67       UD    1.24
          * ZW A=1986 C=FLOW E=4HOUR F=E3FLOW
          *

 68       KK     CP2 COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
 69       HC       2
          * ZW A=1986 C=FLOW E=4HOUR F=E1+E2+E3
          *

 70       KK    DAM1 PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
          * KP     1
          * KM PROPOSED RESERVOIR; flow through principal and emergency spillways ONLY.
          * RS     1    STOR       0
          * SA .1354   .9137   1.954    3.63    3.71    3.79    3.87    3.95    5.12    6.
          * SA  7.97    8.92    9.93   10.18   10.45   10.94   11.55   12.67   14.15   15.
          * SE   765     775     785  795.89  796.33  796.76   797.2  797.64  803.16  808.
          * SE814.22  816.98  819.74  820.36  820.97  822.07  823.42  825.87  828.94   832
          * SQ     0       0       0       0   13.46   38.09   69.97  107.73  114.35  120.
          * SQ126.56  129.43  132.24  218.16  401.01  881.31  1708.7  3654.6  6920.1 11031
          * ZW A=1986 C=FLOW E=4HOUR F=DAMFLOW
          * ZW C=STOR E=4HOUR F=DAMSTOR
          * ZW C=STAGE E=4HOUR F=DAMSTAGE
          *
```

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

  71      KP       1
  72      KM   PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa
  73      RS       1    STOR       0
  74      SA    1.18    1.21    1.23    1.27    1.32    1.41    1.50    1.59    1.70    1.91
  75      SA    2.83    3.91    3.97    4.72    6.68    9.07   10.37   11.09   12.75   15.70
  76      SE   775.4   775.7   776.0   776.4   777.0   778.0   779.0   780.0   781.0   783.0
  77      SE     790     796   796.3   800.4  808.69  816.98  820.36  822.10  825.87   832.0
  78      SQ     5.4    12.6    21.4      35    40.8    49.9    57.5    64.3    70.4    81.3
  79      SQ    92.1   95.43   112.2     134     145   155.4   244.5   907.5  3680.8   11060
  80      ZW   A=1986 C=FLOW E=4HOUR F=30CMP
  81      ZW   C=STOR E=4HOUR F=30CMP
  82      ZW   C=STAGE E=4HOUR F=30CMP
          *
  83      KP       2
  84      KM    EXISTING CONDITIONS (NO RESERVOIR)
  85      RN
  86      ZW   A=1986 B=EXIST C=FLOW E=4HOUR F=EXISTFLOW
          *

  87      KK    RCH3  ROUTE TO CP3
  88      KM   ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
  89      KM   HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES
  90      RD    4200   0.023    0.09            TRAP      20       2
          *

  91      KK      E4 SUBBASIN E4
  92      BA    0.58
          * LS             78
  93      LS               93
  94      UD    0.57
          * ZW A=1986 C=FLOW E=4HOUR F=E4FLOW
          *

  95      KK     CP3 COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
  96      HC       2
  97      ZW   A=1986 C=FLOW E=4HOUR F=E4+CP2
          *

  98      KK    RCH3 ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
  99      RD    3400   0.019   0.045            TRAP      20       2
          *

 100      KK      E5 SUB-BASIN E5
 101      BA    0.31
          * LS             80
 102      LS               94
 103      UD     0.5
          * ZW A=1986 C=FLOW E=4HOUR F=E5FLOW
          *
```

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

  104     KK     CP4 COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
  105     KM    FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET
  106     HC       2
  107     ZW   A=1986 C=FLOW E=4HOUR F=CP4
          *

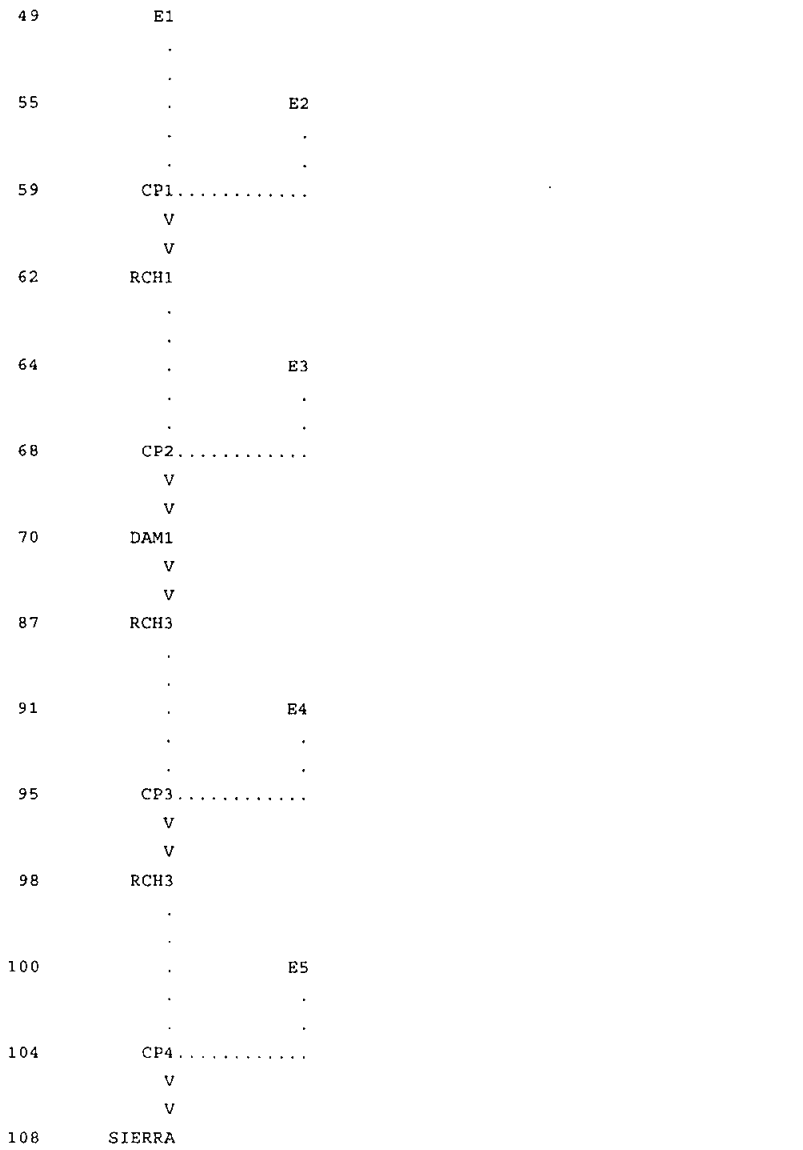
  108     KK  SIERRA  STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
  109     KM   STORAGE ROUTING AT SIERRA STREET
  110     RS       1    STOR       0
  111     SA       0    0.76     1.2    1.88    2.59    3.13
  112     SE     587     596     598     600     602     604
  113     SQ       0     211     229     245     637    1000
  114     ZW   A=1986 C=FLOW F=SIERRA STREET
          *
  115     ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE NO.

(V) ROUTING (---->) DIVERSION OR PUMP FLOW

(.) CONNECTOR (<----) RETURN OF DIVERTED OR PUMPED FLOW



**) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             MAY   1991                *
*          VERSION 4.0.1E               *
*                                       *
*   RUN DATE  06/30/99  TIME  09:21:56  *
*                                       *
*****************************************
```


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


PHASE II SUB-AREAS

EVANS CREEK BLOCK N HYDROLOGY — NIMBUS JOB # 9912
1986 STORM EVENT; AIRPORT GAGE DATA — DATE : MAY 1999
NIMBUS ENGINEERS, RENO, NEVADA — FILE NAME: 2PIAIR.DAT

THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB

```
*************************************************************************
 GONI CANYON                                  Nimbus Job #: 9606        *
 Prepared by Nimbus Engineers                 Date:  August 1996        *
                                              File Name: GONI-5.DAT     *
*************************************************************************
```

The airport PI card distribution is the raingage data
from the 1986 storm event. Precipitation depths are from 0100
2/14/86 to 0300 on 2/20/86.

```
*************************************************************************
THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND              *
EXISTING CONDITIONS (PLAN 2)                                            *
*************************************************************************
```

CURVE NUMBERS WERE MODIFIED FROM AMC-II CONDITIONS TO AMC-III CONDITIONS
IN ORDER TO MODEL A SATURATED WATERSHED. REFERENCE: McCUEN, R.H. (1982);
"A GUIDE TO HYDROLOGIC ANALYSIS USING SCS METHODS",PRENTICE-HALL, INC.

```
 29 IO          OUTPUT CONTROL VARIABLES
                     IPRNT          4  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

  0 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN         60  TIME INTERVAL IN MINUTES
                    JXDATE   14FEB86  STARTING DATE
                    JXTIME        100  STARTING TIME

    IT          HYDROGRAPH TIME DATA
                     NMIN         15  MINUTES IN COMPUTATION INTERVAL
                    IDATE   14FEB86  STARTING DATE
                    ITIME       0100  STARTING TIME
                       NQ        585  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE   20FEB86  ENDING DATE
                   NDTIME       0300  ENDING TIME
                    ICENT         19  CENTURY MARK

                COMPUTATION INTERVAL     0.25 HOURS
                     TOTAL TIME BASE  146.00 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 2 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
0.99

*** ***

****
* *
49 KK * E1 * SUBBASIN E1
* *
****

SUBBASIN RUNOFF DATA

50 BA SUBBASIN CHARACTERISTICS
TAREA 0.77 SUBBASIN AREA

PRECIPITATION DATA

51 PR RECORDING STATIONS AIR
52 PW WEIGHTS 1.00

53 LS SCS LOSS RATE
STRTL 0.20 INITIAL ABSTRACTION
CRVNBR 91.00 CURVE NUMBER
RTIMP 0.00 PERCENT IMPERVIOUS AREA

54 UD SCS DIMENSIONLESS UNITGRAPH
TLAG 0.79 LAG

***

PRECIPITATION STATION DATA

STATION	TOTAL	AVG. ANNUAL	WEIGHT
AIR	4.41	0.00	1.00

TEMPORAL DISTRIBUTIONS

STATION AIR, WEIGHT = 1.00

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.04	0.04	0.04
0.04	0.04	0.03	0.03	0.03	0.03	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.04	0.04
0.04	0.04	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.02	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.02	0.02	0.01
0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00
0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01	0.01	0.00
0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
0.01	0.01	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05
0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.03	0.03	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01
0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01
0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01
0.00	0.00	0.00	0.00						

UNIT HYDROGRAPH

18 END-OF-PERIOD ORDINATES

68.	227.	384.	404.	329.	212.	132.	86.	55.	36.
22.	15.	9.	6.	4.	3.	1.	0.		

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

PLAN 2 INPUT DATA FOR STATION E1 ARE SAME AS FOR PLAN 1

* ***

```
          **************
          *            *
55 KK     *     E2     *     SUBBASIN E2
          *            *
```

****

SUBBASIN RUNOFF DATA

56 BA SUBBASIN CHARACTERISTICS

TAREA 1.20 SUBBASIN AREA

PRECIPITATION DATA

0 PT TOTAL STORM STATIONS AIR

0 PW WEIGHTS 1.00

51 PR RECORDING STATIONS AIR

52 PW WEIGHTS 1.00

57 LS SCS LOSS RATE

STRTL 0.17 INITIAL ABSTRACTION

CRVNBR 92.00 CURVE NUMBER

RTIMP 0.00 PERCENT IMPERVIOUS AREA

58 UD SCS DIMENSIONLESS UNITGRAPH

TLAG 0.99 LAG

***

PRECIPITATION STATION DATA

STATION	TOTAL	AVG. ANNUAL	WEIGHT
AIR	4.41	0.00	1.00

TEMPORAL DISTRIBUTIONS

STATION AIR, WEIGHT = 1.00

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.04	0.04	0.04
0.04	0.04	0.03	0.03	0.03	0.03	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.04	0.04
0.04	0.04	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.02	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01

```
 0.01    0.01    0.01    0.01    0.01    0.01    0.00    0.00    0.00    0.00
 0.00    0.00    0.00    0.00    0.01    0.02    0.01    0.02    0.02    0.01
 0.02    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01
 0.03    0.03    0.03    0.03    0.02    0.02    0.02    0.02    0.01    0.01
 0.01    0.01    0.01    0.01    0.01    0.01    0.00    0.00    0.00    0.00
 0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 0.00    0.00    0.00    0.00    0.01    0.00    0.01    0.00    0.01    0.00
 0.01    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 0.00    0.00    0.00    0.00    0.02    0.01    0.02    0.01    0.01    0.00
 0.01    0.00    0.01    0.01    0.01    0.01    0.02    0.02    0.02    0.02
 0.02    0.02    0.02    0.02    0.02    0.02    0.02    0.02    0.01    0.01
 0.01    0.01    0.03    0.03    0.03    0.03    0.05    0.05    0.05    0.05
 0.03    0.03    0.03    0.03    0.03    0.03    0.03    0.03    0.03    0.03
 0.03    0.03    0.03    0.03    0.03    0.03    0.01    0.01    0.01    0.01
 0.01    0.00    0.01    0.00    0.01    0.00    0.01    0.00    0.00    0.00
 0.00    0.00    0.00    0.00    0.00    0.00    0.01    0.01    0.01    0.01
 0.00    0.00    0.00    0.00    0.01    0.00    0.01    0.00    0.00    0.00
 0.00    0.00    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01
 0.01    0.01    0.00    0.01    0.01    0.01    0.00    0.01    0.01    0.01
 0.01    0.01    0.02    0.02    0.02    0.02    0.02    0.02    0.02    0.02
 0.01    0.01    0.00    0.01    0.01    0.01    0.00    0.01    0.01    0.01
 0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.00    0.01
 0.00    0.00    0 00    0.00
```

UNIT HYDROGRAPH
22 END-OF-PERIOD ORDINATES

```
  63.     201.     403.     513.     508.     428.     310.     205.     142.     101.
  69.      49.      33.      23.      16.      11.       8.       5.       4.       3.
   2.       0.
```

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

PLAN 2 INPUT DATA FOR STATION E2 ARE SAME AS FOR PLAN 1

* ***

```
          **************
          *            *
59 KK     *       CP1  *      COMBINE E1 AND E2 HYDROGRAPHS AT CP1
          *            *
          **************

60 HC          HYDROGRAPH COMBINATION
                    ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                        ***
   -----DSS---ZOPEN:  Existing File Opened,  File: 2PIAIR.DSS
                      Unit:  71;  DSS Version: 6-FT
   --DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/14FEB1986/15MIN/E1+E2/
  -----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/15FEB1986/15MIN/E1+E2/
  -----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/16FEB1986/15MIN/E1+E2/
    --DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/17FEB1986/15MIN/E1+E2/
    --DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/18FEB1986/15MIN/E1+E2/
  -----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/19FEB1986/15MIN/E1+E2/
    --DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/20FEB1986/15MIN/E1+E2/
    --DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/14FEB1986/15MIN//
   ----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/15FEB1986/15MIN//
  -----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/16FEB1986/15MIN//
    --DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/17FEB1986/15MIN//
```

```
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/18FEB1986/15MIN//
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/19FEB1986/15MIN//
  ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP1/FLOW/20FEB1986/15MIN//

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

           **************
           *            *
 62 KK     *      RCH1  *      ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
           *            *
           **************

              HYDROGRAPH ROUTING DATA

 63 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                          L      10800.  CHANNEL LENGTH
                          S      0.0260  SLOPE
                          N       0.070  CHANNEL ROUGHNESS COEFFICIENT
                         CA        0.00  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD       15.00  BOTTOM WIDTH OR DIAMETER
                          Z        2.00  SIDE SLOPE

                                                                  ***

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

              PLAN  2 INPUT DATA FOR STATION     RCH1 ARE SAME AS FOR PLAN  1

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

           **************
           *            *
 64 KK     *        E3  *      SUB-BASIN E3
           *            *
           **************

              SUBBASIN RUNOFF DATA

 65 BA          SUBBASIN CHARACTERISTICS
                      TAREA        1.51  SUBBASIN AREA

                PRECIPITATION DATA

  0 PT           TOTAL STORM STATIONS       AIR
  0 PW                        WEIGHTS      1.00

  1 PR             RECORDING STATIONS       AIR
  2 PW                        WEIGHTS      1.00

 66 LS          SCS LOSS RATE
                     STRTL        0.11  INITIAL ABSTRACTION
                    CRVNBR       95.00  CURVE NUMBER
                     RTIMP        0.00  PERCENT IMPERVIOUS AREA

  7 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG        1.24  LAG

                                                                  ***
```

PRECIPITATION STATION DATA

STATION	TOTAL	AVG. ANNUAL	WEIGHT
AIR	4.41	0.00	1.00

TEMPORAL DISTRIBUTIONS

STATION AIR, WEIGHT = 1.00

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.04	0.04	0.04
0.04	0.04	0.03	0.03	0.03	0.03	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.04	0.04
0.04	0.04	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.02	0.02	0 02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.02	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.02	0.02	0.01
0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00
0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01	0.01	0.00
0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
0.01	0.01	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05
0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.03	0.03	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01
0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01
0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01

```
                0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.00      0.01
                0.00      0.00      0.00      0.00

                                                UNIT HYDROGRAPH
                                            27 END-OF-PERIOD ORDINATES
              47.       144.      301.      457.      530.      529.      466.      382.      273.      198.
             147.       111.       82.       61.       45.       33.       25.       19.       14.       10.
               8.         6.        5.        3.        2.        1.        0.

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

          PLAN  2 INPUT DATA FOR STATION       E3 ARE SAME AS FOR PLAN  1

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

          **************
          *            *
68 KK     *       CP2  *      COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
          *            *
          **************

69 HC          HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                ***

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

          **************
          *            *
70 KK     *      DAM1  *      PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
          *            *
          **************

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

71 KP          PLAN  1 FOR STATION     DAM1           PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                    PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa

          HYDROGRAPH ROUTING DATA

73 RS          STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
                     ITYP        STOR  TYPE OF INITIAL CONDITION
                    RSVRIC       0.00  INITIAL CONDITION
                        X        0.00 WORKING R AND D COEFFICIENT

74 SA               AREA         1.2       1.2       1.2       1.3       1.3       1.4       1.5       1.6       1.7       1.9
                                 2.8       3.9       4.0       4.7       6.7       9.1      10.4      11.1      12.8      15.7

76 SE          ELEVATION       775.40    775.70    776.00    776.40    777.00    778.00    779.00    780.00    781.00    783.00
                               790.00    796.00    796.30    800.40    808.69    816.98    820.36    822.10    825.87    832.00

78 SQ          DISCHARGE          5.        13.       21.       35.       41.       50.       58.       64.       70.       81.
                                 92.       95.      112.      134.      145.      155.      245.      908.     3681.    11060.

                                                ***
```

COMPUTED STORAGE-ELEVATION DATA

STORAGE	0.00	0.36	0.72	1.22	2.00	3.37	4.82	6.37	8.01	11.62
ELEVATION	775.40	775.70	776.00	776.40	777.00	778.00	779.00	780.00	781.00	783.00
STORAGE	28.10	48.24	49.42	67.21	114.23	179.26	212.09	230.76	275.66	362.70
ELEVATION	790.00	796.00	796.30	800.40	808.69	816.98	820.36	822.10	825.87	832.00

```
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/FLOW/14FEB1986/15MIN/30CMP/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/FLOW/15FEB1986/15MIN/30CMP/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/FLOW/16FEB1986/15MIN/30CMP/
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/FLOW/17FEB1986/15MIN/30CMP/
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/FLOW/18FEB1986/15MIN/30CMP/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/FLOW/19FEB1986/15MIN/30CMP/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/FLOW/20FEB1986/15MIN/30CMP/
-----DSS---ZWRITE Unit  71; Vers.    2:  /1986/DAM1/STOR/14FEB1986/15MIN/30CMP/
-----DSS---ZWRITE Unit  71; Vers.    2:  /1986/DAM1/STOR/15FEB1986/15MIN/30CMP/
   ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/DAM1/STOR/16FEB1986/15MIN/30CMP/
   ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/DAM1/STOR/17FEB1986/15MIN/30CMP/
-----DSS---ZWRITE Unit  71; Vers.    2:  /1986/DAM1/STOR/18FEB1986/15MIN/30CMP/
   ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/DAM1/STOR/19FEB1986/15MIN/30CMP/
   ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/DAM1/STOR/20FEB1986/15MIN/30CMP/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/STAGE/14FEB1986/15MIN/30CMP/
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/STAGE/15FEB1986/15MIN/30CMP/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/STAGE/16FEB1986/15MIN/30CMP/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/STAGE/17FEB1986/15MIN/30CMP/
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/STAGE/18FEB1986/15MIN/30CMP/
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/STAGE/19FEB1986/15MIN/30CMP/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/DAM1/STAGE/20FEB1986/15MIN/30CMP/
```

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

33 KP PLAN 2 FOR STATION DAM1 PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
EXISTING CONDITIONS (NO RESERVOIR)

HYDROGRAPH ROUTING DATA

85 RN NO ROUTING

***

```
----DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/FLOW/14FEB1986/15MIN/EXISTFLOW/
----DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/FLOW/15FEB1986/15MIN/EXISTFLOW/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/FLOW/16FEB1986/15MIN/EXISTFLOW/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/FLOW/17FEB1986/15MIN/EXISTFLOW/
----DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/FLOW/18FEB1986/15MIN/EXISTFLOW/
----DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/FLOW/19FEB1986/15MIN/EXISTFLOW/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/FLOW/20FEB1986/15MIN/EXISTFLOW/
   --DSS---ZWRITE Unit  71; Vers.    2:  /1986/EXIST/STOR/14FEB1986/15MIN/EXISTFLOW/
----DSS---ZWRITE Unit  71; Vers.    2:  /1986/EXIST/STOR/15FEB1986/15MIN/EXISTFLOW/
   --DSS---ZWRITE Unit  71; Vers.    2:  /1986/EXIST/STOR/16FEB1986/15MIN/EXISTFLOW/
   --DSS---ZWRITE Unit  71; Vers.    2:  /1986/EXIST/STOR/17FEB1986/15MIN/EXISTFLOW/
----DSS---ZWRITE Unit  71; Vers.    2:  /1986/EXIST/STOR/18FEB1986/15MIN/EXISTFLOW/
----DSS---ZWRITE Unit  71; Vers.    2:  /1986/EXIST/STOR/19FEB1986/15MIN/EXISTFLOW/
   --DSS---ZWRITE Unit  71; Vers.    2:  /1986/EXIST/STOR/20FEB1986/15MIN/EXISTFLOW/
   --DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/STAGE/14FEB1986/15MIN/EXISTFLOW/
----DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/STAGE/15FEB1986/15MIN/EXISTFLOW/
----DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/STAGE/16FEB1986/15MIN/EXISTFLOW/
   --DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/STAGE/17FEB1986/15MIN/EXISTFLOW/
   --DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/STAGE/18FEB1986/15MIN/EXISTFLOW/
----DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/STAGE/19FEB1986/15MIN/EXISTFLOW/
   --DSS---ZWRITE Unit  71; Vers.    7:  /1986/EXIST/STAGE/20FEB1986/15MIN/EXISTFLOW/
```

*** ***

```
            **************
            *            *
 87 KK      *      RCH3  *       ROUTE TO CP3
            *            *
            **************
                          ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
                          HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES

               HYDROGRAPH ROUTING DATA

 90 RD           MUSKINGUM-CUNGE CHANNEL ROUTING
                           L       4200.  CHANNEL LENGTH
                           S      0.0230  SLOPE
                           N       0.090  CHANNEL ROUGHNESS COEFFICIENT
                          CA        0.00  CONTRIBUTING AREA
                       SHAPE        TRAP  CHANNEL SHAPE
                          WD       20.00  BOTTOM WIDTH OR DIAMETER
                           Z        2.00  SIDE SLOPE

                                                    ***

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

               PLAN  2 INPUT DATA FOR STATION     RCH3 ARE SAME AS FOR PLAN  1

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

            **************
            *            *
 91 KK      *        E4  *      SUBBASIN E4
            *            *
            **************

               SUBBASIN RUNOFF DATA

 92 BA           SUBBASIN CHARACTERISTICS
                       TAREA        0.58  SUBBASIN AREA

                PRECIPITATION DATA

  0 PT            TOTAL STORM STATIONS       AIR
 '8 PW                         WEIGHTS      1.00

 51 PR              RECORDING STATIONS       AIR
 '2 PW                         WEIGHTS      1.00

 ,3 LS           SCS LOSS RATE
                      STRTL        0.15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP        0.00  PERCENT IMPERVIOUS AREA

 94 UD           SCS DIMENSIONLESS UNITGRAPH
                       TLAG        0.57  LAG

                                                    ***

               PRECIPITATION STATION DATA

                       STATION    TOTAL    AVG. ANNUAL    WEIGHT
                           AIR     4.41           0.00         1.00
```

TEMPORAL DISTRIBUTIONS

STATION AIR, WEIGHT = 1.00

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.04	0.04	0.04
0.04	0.04	0.03	0.03	0.03	0.03	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.04	0.04
0.04	0.04	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.02	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.02	0.02	0.01
0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00
0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01	0.01	0.00
0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
0.01	0.01	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05
0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.03	0.03	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01
0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01
0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01
0.00	0.00	0.00	0.00						

UNIT HYDROGRAPH

13 END-OF-PERIOD ORDINATES

```
              105.      338.      399.      298.      157.       89.       50.       28.       15.        8.
                5.        3.        1.

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

              PLAN  2 INPUT DATA FOR STATION       E4 ARE SAME AS FOR PLAN  1

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

            **************
            *            *
95 KK       *       CP3  *      COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
            *            *
            **************

96 HC           HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/14FEB1986/15MIN/E4+CP2/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/15FEB1986/15MIN/E4+CP2/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/16FEB1986/15MIN/E4+CP2/
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/17FEB1986/15MIN/E4+CP2/
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/18FEB1986/15MIN/E4+CP2/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/19FEB1986/15MIN/E4+CP2/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/20FEB1986/15MIN/E4+CP2/
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/14FEB1986/15MIN/EXISTFLOW/
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/15FEB1986/15MIN/EXISTFLOW/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/16FEB1986/15MIN/EXISTFLOW/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/17FEB1986/15MIN/EXISTFLOW/
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/18FEB1986/15MIN/EXISTFLOW/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/19FEB1986/15MIN/EXISTFLOW/
   ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP3/FLOW/20FEB1986/15MIN/EXISTFLOW/

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

            **************
            *            *
98 KK       *      RCH3  *      ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
            *            *
            **************

              HYDROGRAPH ROUTING DATA

99 RD           MUSKINGUM-CUNGE CHANNEL ROUTING
                          L       3400.  CHANNEL LENGTH
                          S     0.0190  SLOPE
                          N      0.045  CHANNEL ROUGHNESS COEFFICIENT
                         CA       0.00  CONTRIBUTING AREA
                      SHAPE       TRAP  CHANNEL SHAPE
                         WD      20.00  BOTTOM WIDTH OR DIAMETER
                          Z       2.00  SIDE SLOPE

                                                                  ***

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

              PLAN  2 INPUT DATA FOR STATION     RCH3 ARE SAME AS FOR PLAN  1
```

```
* *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
100 KK    *        E5  *      SUB-BASIN E5
          *            *
          **************

             SUBBASIN RUNOFF DATA

 01 BA          SUBBASIN CHARACTERISTICS
                      TAREA        0.31  SUBBASIN AREA

                PRECIPITATION DATA

  0 PT           TOTAL STORM STATIONS       AIR
 78 PW                        WEIGHTS      1.00

 51 PR             RECORDING STATIONS       AIR
 52 PW                        WEIGHTS      1.00

 02 LS          SCS LOSS RATE
                     STRTL        0.13  INITIAL ABSTRACTION
                    CRVNBR       94.00  CURVE NUMBER
                     RTIMP        0.00  PERCENT IMPERVIOUS AREA

103 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG        0.50  LAG

                                                    ***

             PRECIPITATION STATION DATA

                    STATION    TOTAL    AVG. ANNUAL    WEIGHT
                        AIR     4.41         0.00         1.00

             TEMPORAL DISTRIBUTIONS

             STATION      AIR,  WEIGHT =   1.00
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.01      0.01      0.01      0.01      0.05      0.05      0.05      0.04      0.04      0.04
                  0.04      0.04      0.03      0.03      0.03      0.03      0.00      0.00      0.00      0.00
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.00      0.00      0.00      0.00      0.01      0.01      0.01      0.01      0.04      0.04
                  0.04      0.04      0.00      0.00      0.00      0.00      0.01      0.01      0.01      0.01
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.00      0.00      0.00      0.00      0.00      0.00      0.02      0.02      0.02      0.02
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.02      0.02      0.02      0.02      0.01      0.01      0.01      0.01      0.01      0.01
                  0.01      0.01      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.00      0.00      0.00      0.00      0.02      0.03      0.02      0.02      0.01      0.01
                  0.01      0.01      0.01      0.01      0.01      0.01      0.02      0.02      0.02      0.02
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
                  0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
```

```
            0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.02      0.02
            0.02      0.02      0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.01
            0.01      0.01      0.01      0.01      0.00      0.00      0.00      0.00      0.01      0.01
            0.01      0.01      0.01      0.01      0.01      0.01      0.00      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.01      0.01
            0.01      0.01      0.01      0.01      0.01      0.01      0.00      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.01      0.02      0.01      0.02      0.02      0.01
            0.02      0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.01
            0.03      0.03      0.03      0.03      0.02      0.02      0.02      0.02      0.01      0.01
            0.01      0.01      0.01      0.01      0.01      0.01      0.00      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.01      0.00      0.01      0.00      0.01      0.00
            0.01      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.02      0.01      0.02      0.01      0.01      0.00
            0.01      0.00      0.01      0.01      0.01      0.01      0.02      0.02      0.02      0.02
            0.02      0.02      0.02      0.02      0.02      0.02      0.02      0.02      0.01      0.01
            0.01      0.01      0.03      0.03      0.03      0.03      0.05      0.05      0.05      0.05
            0.03      0.03      0.03      0.03      0.03      0.03      0.03      0.03      0.03      0.03
            0.03      0.03      0.03      0.03      0.03      0.03      0.01      0.01      0.01      0.01
            0.01      0.00      0.01      0.00      0.01      0.00      0.01      0.00      0.00      0.00
            0.00      0.00      0.00      0.00      0.00      0.00      0.01      0.01      0.01      0.01
            0.00      0.00      0.00      0.00      0.01      0.00      0.01      0.00      0.00      0.00
            0.00      0.00      0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.01
            0.01      0.01      0.00      0.01      0.01      0.01      0.00      0.01      0.01      0.01
            0.01      0.01      0.02      0.02      0.02      0.02      0.02      0.02      0.02      0.02
            0.01      0.01      0.00      0.01      0.01      0.01      0.00      0.01      0.01      0.01
            0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.01      0.00      0.01
            0.00      0.00      0.00      0.00

                                                     UNIT HYDROGRAPH
                                                12 END-OF-PERIOD ORDINATES
         75.       225.       225.       135.        68.        35.        19.        10.         5.         3.
          1.         0.


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

         PLAN  2 INPUT DATA FOR STATION       E5 ARE SAME AS FOR PLAN  1


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


             **************
             *            *
 4 KK        *     CP4    *     COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
             *            *
             **************

                                FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET

 6 HC            HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                        ***

  ----DSS---ZWRITE Unit  71; Vers.    2:  /1986/CP4/FLOW/14FEB1986/15MIN/CP4/
 -----DSS---ZWRITE Unit  71; Vers.    2:  /1986/CP4/FLOW/15FEB1986/15MIN/CP4/
    --DSS---ZWRITE Unit  71; Vers.    2:  /1986/CP4/FLOW/16FEB1986/15MIN/CP4/
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-----DSS---ZWRITE Unit  71; Vers.    2:  /1986/CP4/FLOW/17FEB1986/15MIN/CP4/
-----DSS---ZWRITE Unit  71; Vers.    2:  /1986/CP4/FLOW/18FEB1986/15MIN/CP4/
  ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/CP4/FLOW/19FEB1986/15MIN/CP4/
  ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/CP4/FLOW/20FEB1986/15MIN/CP4/
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP4/FLOW/14FEB1986/15MIN/EXISTFLOW/
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP4/FLOW/15FEB1986/15MIN/EXISTFLOW/
  ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP4/FLOW/16FEB1986/15MIN/EXISTFLOW/
  ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP4/FLOW/17FEB1986/15MIN/EXISTFLOW/
-----DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP4/FLOW/18FEB1986/15MIN/EXISTFLOW/
  ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP4/FLOW/19FEB1986/15MIN/EXISTFLOW/
  ---DSS---ZWRITE Unit  71; Vers.    7:  /1986/CP4/FLOW/20FEB1986/15MIN/EXISTFLOW/


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


          **************
          *            *
108 KK    *    SIERRA  *       STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
          *            *
          **************
                    STORAGE ROUTING AT SIERRA STREET

             HYDROGRAPH ROUTING DATA

110 RS          STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        STOR  TYPE OF INITIAL CONDITION
                     RSVRIC       0.00  INITIAL CONDITION
                         X        0.00 WORKING R AND D COEFFICIENT

 11 SA              AREA         0.0       0.8       1.2       1.9       2.6       3.1

112 SE          ELEVATION      587.00    596.00    598.00    600.00    602.00    604.00

 13 SQ          DISCHARGE          0.      211.      229.      245.      637.     1000.

                                                      ***

                                        COMPUTED STORAGE-ELEVATION DATA

           STORAGE       0.00      2.28      4.22      7.28     11.73     17.44
         ELEVATION     587.00    596.00    598.00    600.00    602.00    604.00
  ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/14FEB1986/15MIN/SIERRA STREET/
-----DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/15FEB1986/15MIN/SIERRA STREET/
  ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/16FEB1986/15MIN/SIERRA STREET/
  ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/17FEB1986/15MIN/SIERRA STREET/
  ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/18FEB1986/15MIN/SIERRA STREET/
-----DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/19FEB1986/15MIN/SIERRA STREET/
  ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/20FEB1986/15MIN/SIERRA STREET/


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

             PLAN  2 INPUT DATA FOR STATION   SIERRA ARE SAME AS FOR PLAN  1
-----DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/14FEB1986/15MIN/EXISTFLOW/
-----DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/15FEB1986/15MIN/EXISTFLOW/
  ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/16FEB1986/15MIN/EXISTFLOW/
  ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/17FEB1986/15MIN/EXISTFLOW/
-----DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/18FEB1986/15MIN/EXISTFLOW/
  ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/19FEB1986/15MIN/EXISTFLOW/
  ---DSS---ZWRITE Unit  71; Vers.    2:  /1986/SIERRA/FLOW/20FEB1986/15MIN/EXISTFLOW/
```

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

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1
					0.99
HYDROGRAPH AT	E1	0.77	1	FLOW	83.
				TIME	120.50
			2	FLOW	83.
				TIME	120.50
HYDROGRAPH AT	E2	1.20	1	FLOW	124.
				TIME	120.75
			2	FLOW	124.
				TIME	120.75
COMBINED AT	CP1	1.97	1	FLOW	206.
				TIME	120.50
			2	FLOW	206.
				TIME	120.50
ROUTED TO	RCH1	1.97	1	FLOW	207.
				TIME	121.00
			2	FLOW	207.
				TIME	121.00
HYDROGRAPH AT	E3	1.51	1	FLOW	152.
				TIME	121.00
			2	FLOW	152.
				TIME	121.00
COMBINED AT	CP2	3.48	1	FLOW	359.
				TIME	121.00
			2	FLOW	359.
				TIME	121.00
ROUTED TO	DAM1	3.48	1	FLOW	143.
				TIME	125.75
			2	FLOW	359.
				TIME	121.00
			** PEAK STAGES IN FEET **		
			1	STAGE	807.25
				TIME	125.75
			2	STAGE	0.00
				TIME	0.00
ROUTED TO	RCH3	3.48	1	FLOW	143.
				TIME	126.00
			2	FLOW	357.
				TIME	121.25
HYDROGRAPH AT	E4	0.58	1	FLOW	68.
				TIME	120.25
			2	FLOW	68.
				TIME	120.25
COMBINED AT	CP3	4.06	1	FLOW	183.
				TIME	124.00
			2	FLOW	408.
				TIME	121.00

ROUTED TO	RCH3	4.06	1	FLOW	183.
				TIME	124.00
			2	FLOW	408.
				TIME	121.25
DROGRAPH AT	E5	0.31	1	FLOW	37.
				TIME	120.25
			2	FLOW	37.
				TIME	120.25
2 COMBINED AT	CP4	4.37	1	FLOW	206.
				TIME	122.25
			2	FLOW	435.
				TIME	121.25
ROUTED TO	SIERRA	4.37	1	FLOW	206.
				TIME	122.50
			2	FLOW	431.
				TIME	121.25

** PEAK STAGES IN FEET **

1	STAGE	595.78
	TIME	122.50
2	STAGE	600.95
	TIME	121.25

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= 0.00									
	RCH1 MANE	15.00	206.72	7260.00	3.40	15.00	206.72	7260.00	3.40

NTINUITY SUMMARY (AC-FT) - INFLOW=0.3597E+03 EXCESS=0.0000E+00 OUTFLOW=0.3581E+03 BASIN STORAGE=0.2725E+01 PERCENT ERROR= -0.3

FOR PLAN = 2 RATIO= 0.00									
	RCH1 MANE	15.00	206.72	7260.00	3.40	15.00	206.72	7260.00	3.40

NTINUITY SUMMARY (AC-FT) - INFLOW=0.3597E+03 EXCESS=0.0000E+00 OUTFLOW=0.3581E+03 BASIN STORAGE=0.2725E+01 PERCENT ERROR= -0.3

FOR PLAN = 1 RATIO= 0.00									
	RCH3 MANE	15.00	143.10	7560.00	3.44	15.00	143.10	7560.00	3.44

NTINUITY SUMMARY (AC-FT) - INFLOW=0.6429E+03 EXCESS=0.0000E+00 OUTFLOW=0.6403E+03 BASIN STORAGE=0.2762E+01 PERCENT ERROR= 0.0

FOR PLAN = 2 RATIO= 0.00									
	RCH3 MANE	13.57	358.45	7273.33	3.55	15.00	357.33	7275.00	3.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6613E+03 EXCESS=0.0000E+00 OUTFLOW=0.6596E+03 BASIN STORAGE=0.2283E+01 PERCENT ERROR= -0.1

FOR PLAN = 1 RATIO= 0.00									
	RCH3 MANE	9.17	182.65	7445.77	3.45	15.00	182.53	7440.00	3.45

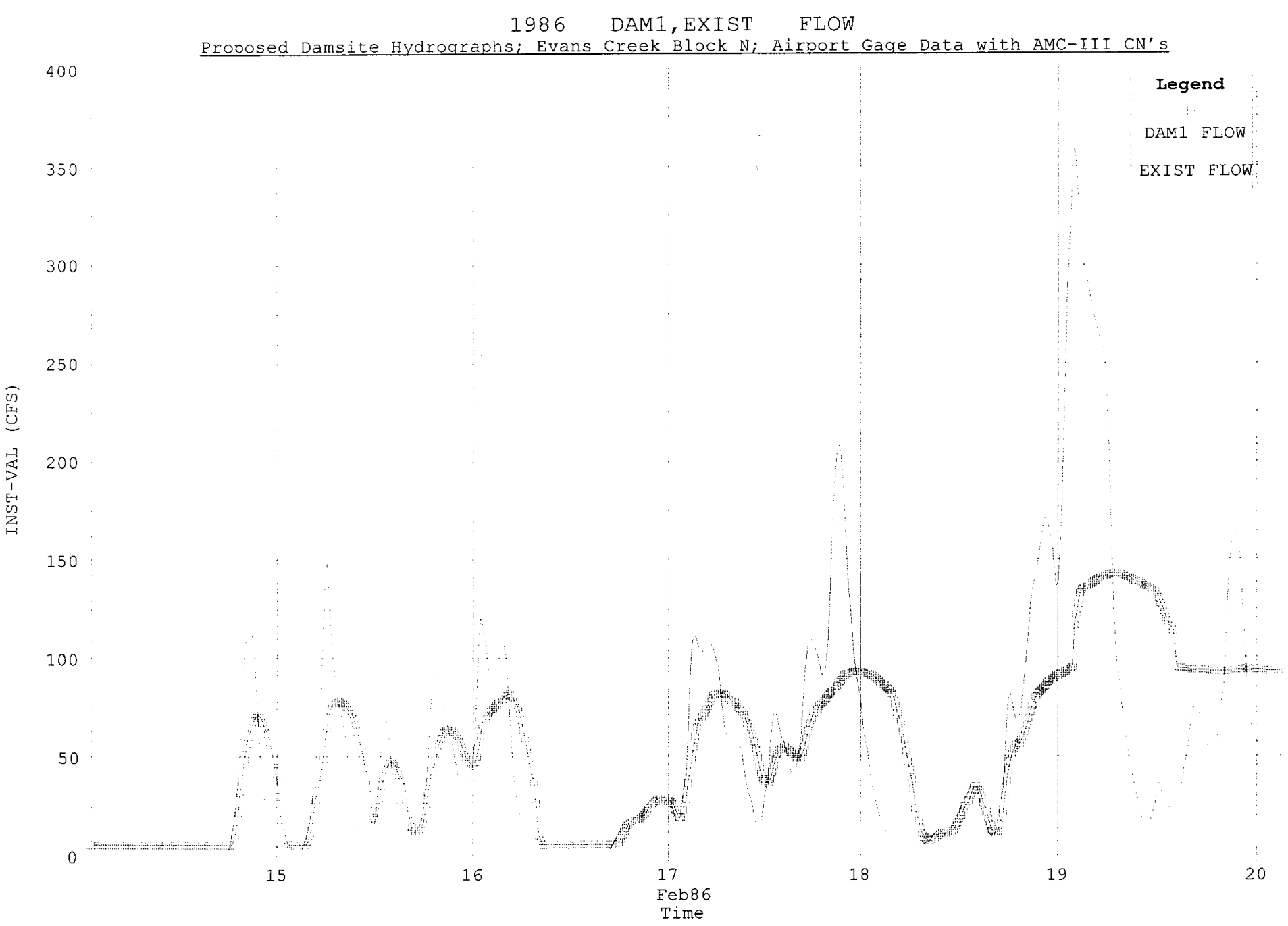
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7500E+03 EXCESS=0.0000E+00 OUTFLOW=0.7484E+03 BASIN STORAGE=0.1570E+01 PERCENT ERROR= 0.0

FOR PLAN = 2 RATIO= 0.00									
	RCH3 MANE	7.08	408.75	7273.76	3.55	15.00	408.16	7275.00	3.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7703E+03 EXCESS=0.0000E+00 OUTFLOW=0.7692E+03 BASIN STORAGE=0.1350E+01 PERCENT ERROR= 0.0

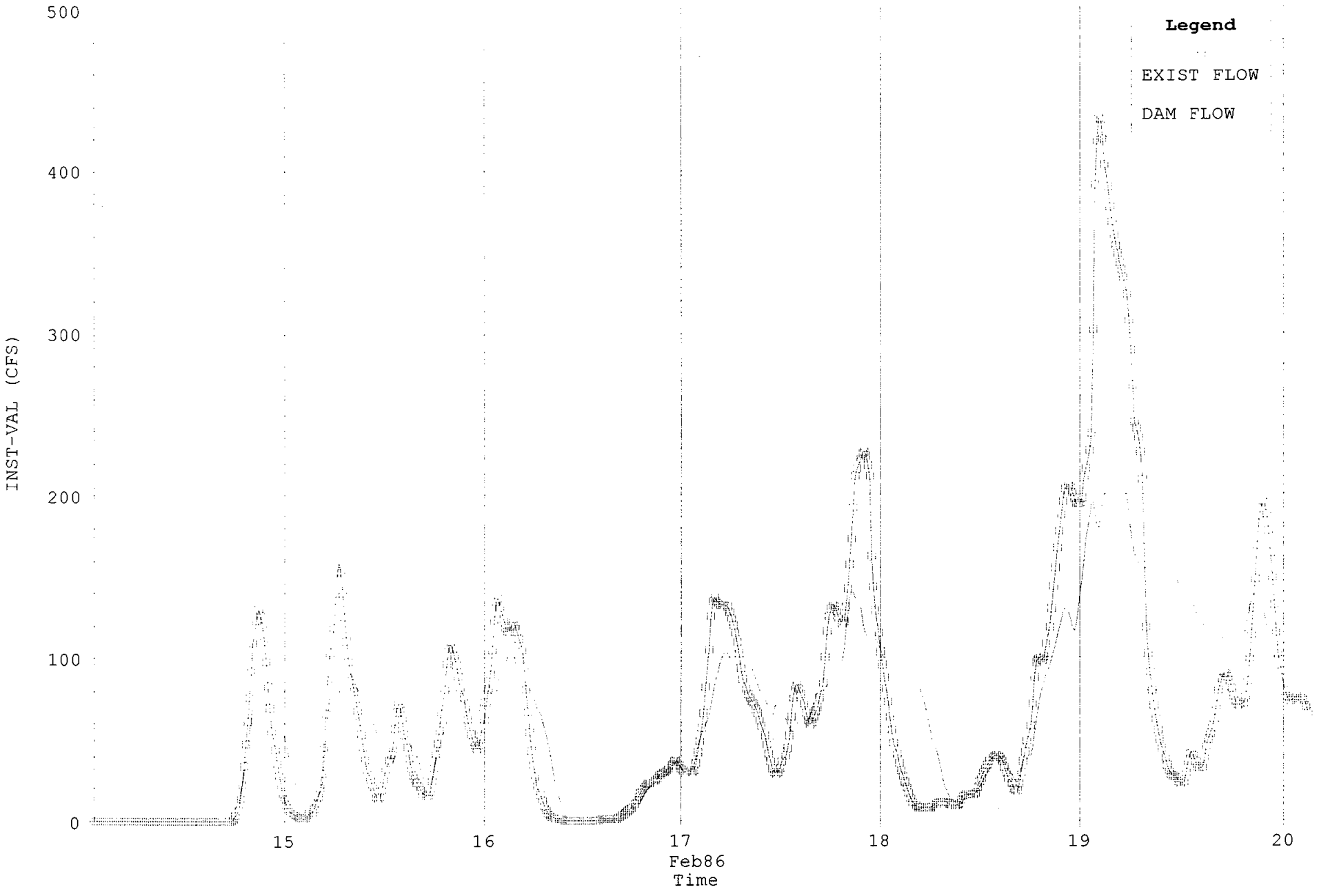
NORMAL END OF HEC-1 ***

-----DSS---ZCLOSE Unit: 71, File: 2PIAIR.DSS
Pointer Utilization: 0.29
Number of Records: 105
File Size: 112.0 Kbytes
Percent Inactive: 0.0


1986 DAM1,EXIST FLOW
Proposed Damsite Hydrographs; Evans Creek Block N; Airport Gage Data with AMC-III CN's
Legend
DAM1 FLOW
EXIST FLOW
INST-VAL (CFS)
400
350
300
250
200
150
100
50
0
15
16
17
18
19
20
Feb86
Time

1986 SIERRA FLOW

Sierra Street Hydrographs; Evans Creek Block N; Airport Gage Data with AMC-III CN's



1986-REGRESSION, 24 HOUR

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

          *DIAGRAM
    1     ID     PHASE II SUB-AREAS
    2     ID
    3     ID     EVANS CREEK BLOCK N HYDROLOGY                NIMBUS JOB # 9912
    4     ID     1986 EVENT-24 HOUR                           DATE : MAY 1999
    5     ID     NIMBUS ENGINEERS, RENO, NEVADA               FILE NAME: 2regPH.DAT
    6     ID
    7     ID
    8     ID    THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB
    9     ID    ********************************************************************************
   10     ID     GONI CANYON                                  Nimbus Job #: 9606          *
   11     ID     Prepared by Nimbus Engineers                 Date:  August 1996          *
   12     ID                                                  File Name: GONI-5.DAT       *
   13     ID    ********************************************************************************
   14     ID
   15     ID    The PH card was developed from a regression of the hourly airport data.
   16     ID
   17     ID    ************************************************************************
   18     ID    THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND           *
   19     ID    EXISTING CONDITIONS (PLAN 2)                                         *
   20     ID    ************************************************************************
   21     ID    CURVE NUMBERS WERE MODIFIED FROM AMC-II CONDITIONS TO AMC-III CONDITIONS
   22     ID    IN ORDER TO MODEL A SATURATED WATERSHED.  REFERENCE: McCUEN, R.H. (1982);
   23     ID    "A GUIDE TO HYDROLOGIC ANALYSIS USING SCS METHODS",PRENTICE-HALL, INC.
          *
   24     IT       5 01MAY99    0005     288
   25     IO       4       0
   26     JP       2
          *   DEPTH AREA REDUCTION FACTOR FROM NOAA
   27     JR    PREC    0.99
          *

   28     KK      E1 SUBBASIN E1
   29     BA   0.772
   30     PH                    0.01    0.04    0.15    0.25    0.39    0.92    2.33    3.67
   31     LS              91
   32     UD    0.79
          * ZW A=AIRPORT,24-HR C=FLOW F=E1FLOW
          *

   33     KK      E2 SUB-BASIN E2
   34     BA     1.2
   35     LS              92
   36     UD    0.99
          * ZW A=AIRPORT,24-HR C=FLOW F=E2FLOW
          *

   37     KK     CP1 COMBINE E1 AND E2 HYDROGRAPHS AT CP1
          * KO             2
   38     HC       2
          * ZW A=AIRPORT,24-HR C=FLOW F=E1+E2
          *
```

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

  39      KK    RCH1 ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
  40      RD   10800   0.026    0.07            TRAP      20       2
          *

  41      KK      E3 SUBBASIN E3
  42      BA    1.51
  43      LS              95
  44      UD    1.24
          * ZW A=AIRPORT,24-HR C=FLOW F=E3FLOW
          *

  45      KK     CP2 COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
  46      HC       2
          * ZW A=AIRPORT,24-HR C=FLOW F=E1+E2+E3
          *

  47      KK    DAM1 PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
          * KO             2
          * KP     1
          * KM PROPOSED RESERVOIR; flow through principal and emergency spillways ONLY.
          * RS     1    STOR       0
          * SA .1354   .9137   1.954    3.63    3.71    3.79    3.87    3.95    5.12     6.
          * SA  7.97    8.92    9.93   10.18   10.45   10.94   11.55   12.67   14.15   15.
          * SE   765     775     785  795.89  796.33  796.76   797.2  797.64  803.16  808.
          * SE814.22  816.98  819.74  820.36  820.97  822.07  823.42  825.87  828.94   832
          * SQ     0       0       0       0   13.46   38.09   69.97  107.73  114.35  120.
          * SQ126.56  129.43  132.24  218.16  401.01  881.31  1708.7  3654.6  6920.1 11031
          * ZW A=AIRPORT,24-HR C=FLOW F=DAMFLOW
          * ZW C=STOR F=DAMSTOR
          * ZW C=STAGE F=DAMSTAGE
          *
  48      KP       1
  49      KM   PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa
  50      RS       1    STOR       0
  51      SA    1.18    1.21    1.23    1.27    1.32    1.41    1.50    1.59    1.70    1.91
  52      SA    2.83    3.91    3.97    4.72    6.68    9.07   10.37   11.09   12.75   15.70
  53      SE   775.4   775.7   776.0   776.4   777.0   778.0   779.0   780.0   781.0   783.0
  54      SE     790     796   796.3   800.4  808.69  816.98  820.36  822.10  825.87   832.0
  55      SQ     5.4    12.6    21.4      35    40.8    49.9    57.5    64.3    70.4    81.3
  56      SQ    92.1   95.43   112.2     134     145   155.4   244.5   907.5  3680.8   11060
  57      ZW   A=AIRPORT,24-HR C=FLOW F=30CMP
  58      ZW   C=STOR F=30CMP
  59      ZW   C=STAGE F=30CMP
          *
          * KO             2
  60      KP       2
  61      KM    EXISTING CONDITIONS (NO RESERVOIR)
  62      RN
  63      ZW   A=AIRPORT,24-HR B=EXIST C=FLOW F=EXISTFLOW
          *
```

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

  64      KK    RCH3  ROUTE TO CP3
  65      KM   ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
  66      KM   HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES
  67      RD    4200   0.023    0.09            TRAP      20       2
          *

  68      KK      E4 SUBBASIN E4
  69      BA    0.58
  70      LS              93
  71      UD    0.57
          * ZW A=AIRPORT,24-HR C=FLOW F=E4FLOW
          *

  72      KK     CP3 COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3
          * KO             2
  73      HC       2
  74      ZW   A=AIRPORT,24-HR C=FLOW F=E4+CP2
          *

  75      KK    RCH3 ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S
  76      RD    3400   0.019   0.045            TRAP      20       2
          *

  77      KK      E5 SUB-BASIN E5
  78      BA    0.31
  79      LS              94
  80      UD     0.5
          * ZW A=AIRPORT,24-HR C=FLOW F=E5FLOW
          *

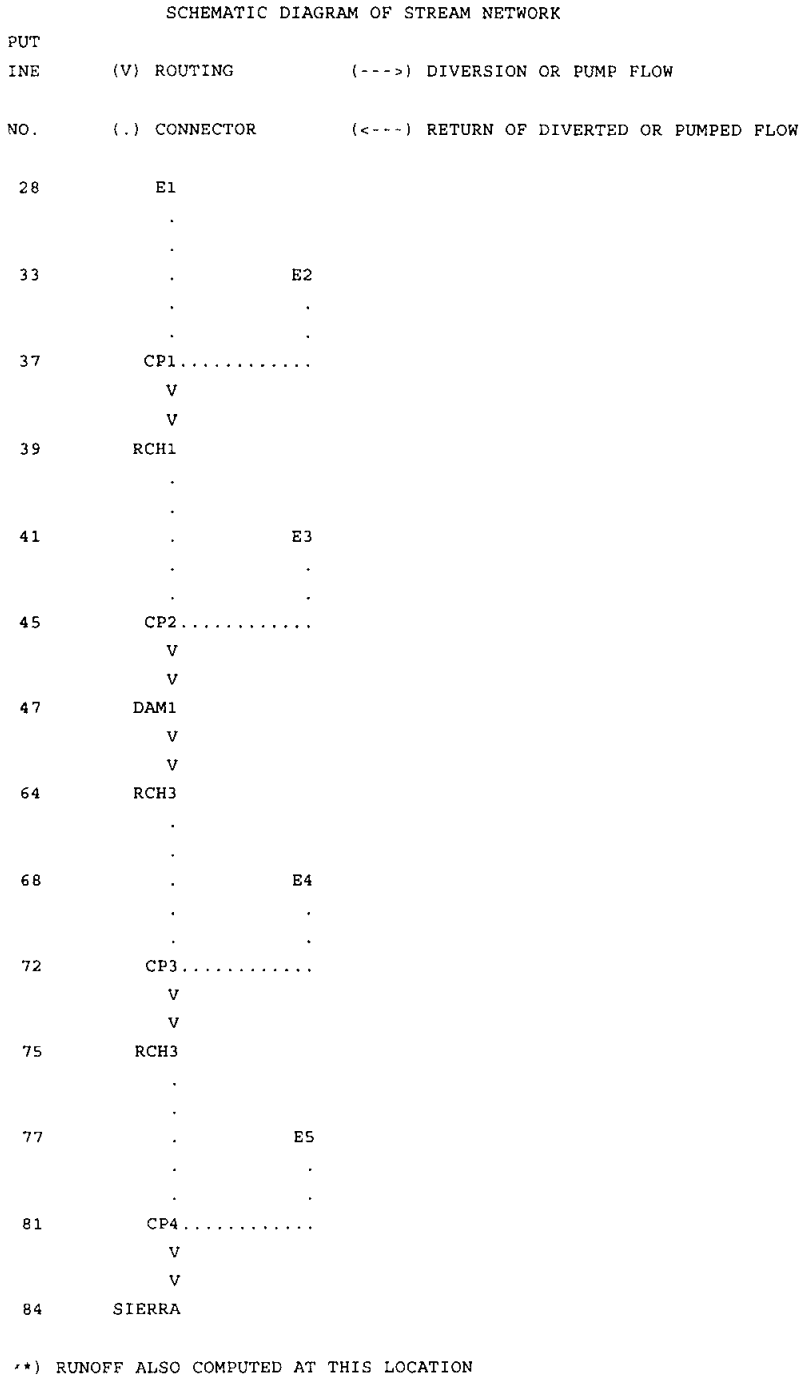
  81      KK     CP4 COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
          * KO             2
  82      KM    FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET
  83      HC       2
          * ZW A=AIRPORT,24-HR C=FLOW F=SIERRA STREET
          *

  84      KK  SIERRA  STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
  85      KM   STORAGE ROUTING AT SIERRA STREET
  86      RS       1    STOR       0
  87      SA       0    0.51    0.76     1.2    1.88    2.59    3.13
  88      SE     587     594     596     598     600     602     604
  89      SQ       0     193     211     229     245     637    1000
  90      ZW   A=AIRPORT,24-HR C=FLOW F=SIERRA STREET
          *
  91      ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

PUT
INE (V) ROUTING (---->) DIVERSION OR PUMP FLOW

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



(**) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*    FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*          SEPTEMBER 1990               *
*           VERSION 4.0                 *
*                                       *
*  RUN DATE  06/30/1999  TIME  11:03:26 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

PHASE II SUB-AREAS

EVANS CREEK BLOCK N HYDROLOGY — NIMBUS JOB # 9912
1986 EVENT-24 HOUR — DATE : MAY 1999
NIMBUS ENGINEERS, RENO, NEVADA — FILE NAME: 2regPH.DAT

THIS HEC-1 MODEL IS MODIFIED FROM THE FOLLOWING HEC-1 MODEL PREPARED BY NIMB

```
**************************************************************************
  GONI CANYON                                  Nimbus Job #: 9606        *
  Prepared by Nimbus Engineers                 Date:  August 1996        *
                                               File Name: GONI-5.DAT     *
**************************************************************************
```

The PH card was developed from a regression of the hourly airport data.

```
**********************************************************************
THIS MODEL IS FOR PROPOSED (PLAN 1) WITH 30" CMP RISER AND           *
EXISTING CONDITIONS (PLAN 2)                                         *
**********************************************************************
```

CURVE NUMBERS WERE MODIFIED FROM AMC-II CONDITIONS TO AMC-III CONDITIONS
IN ORDER TO MODEL A SATURATED WATERSHED. REFERENCE: McCUEN, R.H. (1982);
"A GUIDE TO HYDROLOGIC ANALYSIS USING SCS METHODS",PRENTICE-HALL, INC.

25 IO OUTPUT CONTROL VARIABLES

IPRNT	4	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	5	MINUTES IN COMPUTATION INTERVAL
IDATE	1MAY99	STARTING DATE
ITIME	0005	STARTING TIME
NQ	288	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	2MAY99	ENDING DATE
NDTIME	0000	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 23.92 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	2	NUMBER OF PLANS

```
   JR          MULTI-RATIO OPTION
                   RATIOS OF PRECIPITATION
                   .99

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


          **************
          *            *
28 KK     *        E1  *      SUBBASIN E1
          *            *
          **************

             SUBBASIN RUNOFF DATA

29 BA        SUBBASIN CHARACTERISTICS
                   TAREA         .77  SUBBASIN AREA

             PRECIPITATION DATA

30 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
             ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
             5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
               .01     .04     .15     .25     .39     .92    2.33    3.67     .00     .00     .00     .00

                                                 STORM AREA =      .77

31 LS        SCS LOSS RATE
                  STRTL         .20  INITIAL ABSTRACTION
                 CRVNBR       91.00  CURVE NUMBER
                  RTIMP         .00  PERCENT IMPERVIOUS AREA

32 UD        SCS DIMENSIONLESS UNITGRAPH
                   TLAG         .79  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                             49 END-OF-PERIOD ORDINATES
                14.       45.       86.      140.      212.      297.      368.      417.      444.      448.
               443.      416.      385.      348.      303.      250.      205.      174.      147.      125.
               108.       92.       79.       65.       56.       48.       41.       34.       29.       24.
                21.       18.       15.       13.       11.        9.        8.        7.        6.        5.
                 4.        4.        3.        3.        2.        2.        1.        1.        0.

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

             PLAN  2 INPUT DATA FOR STATION       E1 ARE SAME AS FOR PLAN  1

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


          **************
          *            *
33 KK     *        E2  *      SUB-BASIN E2
          *            *
          **************

             SUBBASIN RUNOFF DATA
```

34 BA SUBBASIN CHARACTERISTICS

TAREA 1.20 SUBBASIN AREA

PRECIPITATION DATA

30 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.01	.04	.15	.25	.39	.92	2.33	3.67	.00	.00	.00	.00

STORM AREA = 1.20

35 LS SCS LOSS RATE

STRTL .17 INITIAL ABSTRACTION

CRVNBR 92.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

36 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .99 LAG

***

UNIT HYDROGRAPH

61 END-OF-PERIOD ORDINATES

14.	41.	78.	122.	178.	250.	334.	413.	478.	525.
553.	560.	559.	546.	518.	486.	450.	408.	359.	306.
261.	228.	200.	175.	153.	137.	120.	106.	92.	80.
71.	62.	55.	48.	42.	37.	32.	28.	25.	22.
19.	17.	15.	13.	11.	10.	8.	8.	7.	6.
5.	5.	4.	4.	3.	3.	2.	2.	1.	1.
0.									

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

PLAN 2 INPUT DATA FOR STATION E2 ARE SAME AS FOR PLAN 1

*** ***

****
* *
7 KK * CP1 * COMBINE E1 AND E2 HYDROGRAPHS AT CP1
* *
****

8 HC HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

*** ***

****
* *
39 KK * RCH1 * ROUTE E1+E2 HYDROGRAPH TO CP2 AT END OF SUB-BASIN E3
* *
****

HYDROGRAPH ROUTING DATA

```
40 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                        L      10800.  CHANNEL LENGTH
                        S       .0260  SLOPE
                        N        .070  CHANNEL ROUGHNESS COEFFICIENT
                       CA         .00  CONTRIBUTING AREA
                    SHAPE        TRAP  CHANNEL SHAPE
                       WD       20.00  BOTTOM WIDTH OR DIAMETER
                        Z        2.00  SIDE SLOPE

                                                  ***

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

              PLAN  2 INPUT DATA FOR STATION     RCH1 ARE SAME AS FOR PLAN  1

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

           **************
           *            *
41 KK      *        E3  *      SUBBASIN E3
           *            *
           **************

              SUBBASIN RUNOFF DATA

42 BA           SUBBASIN CHARACTERISTICS
                      TAREA        1.51  SUBBASIN AREA

                PRECIPITATION DATA

30 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .01     .04     .15     .25     .39     .92    2.33    3.67     .00     .00     .00     .00

                                                 STORM AREA =     1.51

43 LS           SCS LOSS RATE
                     STRTL         .11  INITIAL ABSTRACTION
                    CRVNBR       95.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

44 UD           SCS DIMENSIONLESS UNITGRAPH
                      TLAG        1.24  LAG

                                                  ***

                                                 UNIT HYDROGRAPH
                                              76 END-OF-PERIOD ORDINATES
                 11.     29.     55.     88.    125.    170.    227.    289.    360.    421.
                476.    517.    545.    564.    568.    567.    562.    539.    515.    489.
                460.    427.    390.    346.    304.    267.    240.    215.    193.    173.
                156.    143.    129.    116.    105.     94.     83.     76.     68.     61.
                 55.     50.     44.     40.     36.     32.     29.     26.     23.     21.
                 19.     17.     15.     14.     12.     11.     10.      9.      8.      7.
                  7.      6.      6.      5.      5.      4.      4.      3.      3.      3.
                  2.      2.      1.      1.      1.      0.

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

              PLAN  2 INPUT DATA FOR STATION       E3 ARE SAME AS FOR PLAN  1
```

```
* *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
45 KK       *       CP2  *      COMBINE ROUTED E1+E2 HYDROGRAPH WITH HYDROGRAPH FROM E3
            *            *
            **************

46 HC           HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                      ***


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


            **************
            *            *
47 KK       *      DAM1  *      PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
            *            *
            **************

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

48 KP         PLAN  1 FOR STATION     DAM1           PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                      PROPOSED RESERVOIR; flow through 30"CM Riser, principal and emergency spillwa

              HYDROGRAPH ROUTING DATA

50 RS           STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        STOR  TYPE OF INITIAL CONDITION
                     RSVRIC         .00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

51 SA               AREA        1.2       1.2       1.2       1.3       1.3       1.4       1.5       1.6       1.7       1.9
                                2.8       3.9       4.0       4.7       6.7       9.1      10.4      11.1      12.8      15.7

53 SE           ELEVATION     775.40    775.70    776.00    776.40    777.00    778.00    779.00    780.00    781.00    783.00
                              790.00    796.00    796.30    800.40    808.69    816.98    820.36    822.10    825.87    832.00

55 SQ           DISCHARGE       5.        13.       21.       35.       41.       50.       58.       64.       70.       81.
                               92.       95.      112.      134.      145.      155.      245.      908.     3681.    11060.

                                                      ***

                                        COMPUTED STORAGE-ELEVATION DATA

          STORAGE       .00       .36       .72      1.22      2.00      3.37      4.82      6.37      8.01     11.62
        ELEVATION    775.40    775.70    776.00    776.40    777.00    778.00    779.00    780.00    781.00    783.00

          STORAGE     28.10     48.24     49.42     67.21    114.23    179.26    212.09    230.76    275.66    362.70
        ELEVATION    790.00    796.00    796.30    800.40    808.69    816.98    820.36    822.10    825.87    832.00

 -----DSS---ZOPEN:  Version: 6-EA;  Existing File Opened
                    Unit:  71,  File: 2REGPH.DSS
 ----DSS---ZWRITE Unit  71; Vers.    3:  /AIRPORT/DAM1/FLOW/01MAY1999/5MIN/30CMP/
 -----DSS---ZWRITE Unit  71; Vers.    3:  /AIRPORT/DAM1/STOR/01MAY1999/5MIN/30CMP/
  --DSS---ZWRITE Unit  71; Vers.    3:  /AIRPORT/DAM1/STAGE/01MAY1999/5MIN/30CMP/
```

```
*     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

60 KP         PLAN  2 FOR STATION     DAM1           PROPOSED RESERVOIR PER NRCS DESIGN AND EXISTING CONDITIONS
                        EXISTING CONDITIONS (NO RESERVOIR)

              HYDROGRAPH ROUTING DATA

62 RN           NO ROUTING

                                                                ***
-----DSS---ZWRITE Unit  71; Vers.    3:  /AIRPORT/EXIST/FLOW/01MAY1999/5MIN/EXISTFLOW/
   ---DSS---ZWRITE Unit  71; Vers.    3:  /AIRPORT/EXIST/STOR/01MAY1999/5MIN/EXISTFLOW/
   ---DSS---ZWRITE Unit  71; Vers.    3:  /AIRPORT/EXIST/STAGE/01MAY1999/5MIN/EXISTFLOW/


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


            **************
            *             *
64 KK       *       RCH3  *       ROUTE TO CP3
            *             *
            **************
                          ROUTE RESERVOIR/EXISTING DISCHARGE TO CP3
                          HEAVY RIPARIAN WITH WILLOWS, CATTAILS, WEEDS AND SEDGES

              HYDROGRAPH ROUTING DATA

67 RD           MUSKINGUM-CUNGE CHANNEL ROUTING
                           L       4200.  CHANNEL LENGTH
                           S       .0230  SLOPE
                           N        .090  CHANNEL ROUGHNESS COEFFICIENT
                          CA         .00  CONTRIBUTING AREA
                       SHAPE        TRAP  CHANNEL SHAPE
                          WD       20.00  BOTTOM WIDTH OR DIAMETER
                           Z        2.00  SIDE SLOPE

                                                                ***


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

              PLAN  2 INPUT DATA FOR STATION     RCH3 ARE SAME AS FOR PLAN  1


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


            **************
            *             *
58 KK       *         E4  *       SUBBASIN E4
            *             *
            **************

              SUBBASIN RUNOFF DATA

69 BA           SUBBASIN CHARACTERISTICS
                      TAREA         .58  SUBBASIN AREA

                PRECIPITATION DATA

 0 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
```

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.01	.04	.15	.25	.39	.92	2.33	3.67	.00	.00	.00	.00

STORM AREA = .58

70 LS SCS LOSS RATE

STRTL	.15	INITIAL ABSTRACTION
CRVNBR	93.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

71 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.57	LAG

***

UNIT HYDROGRAPH
36 END-OF-PERIOD ORDINATES

25.	76.	148.	254.	362.	431.	456.	454.	418.	371.
312.	240.	188.	149.	121.	98.	79.	63.	50.	40.
32.	25.	21.	17.	13.	11.	9.	7.	5.	5.
4.	3.	2.	2.	1.	0.				

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

PLAN 2 INPUT DATA FOR STATION E4 ARE SAME AS FOR PLAN 1

** ***

```
**************
*            *
*       CP3  *
*            *
**************
```

72 KK COMBINE ROUTED CP2 DISCHARGE WITH E4 HYDROGRAPH AT CP3

73 HC HYDROGRAPH COMBINATION

ICOMP	2	NUMBER OF HYDROGRAPHS TO COMBINE

***

---DSS---ZWRITE Unit 71; Vers. 3: /AIRPORT/CP3/FLOW/01MAY1999/5MIN/E4+CP2/
---DSS---ZWRITE Unit 71; Vers. 3: /AIRPORT/CP3/FLOW/01MAY1999/5MIN/EXISTFLOW/

* ***

```
**************
*            *
*       RCH3 *
*            *
**************
```

75 KK ROUTE CP3 HYDROGRAPH TO CP4 AT 43"X67" PAVED CMP AT RANCHO SAN RAFAEL/S

HYDROGRAPH ROUTING DATA

6 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	3400.	CHANNEL LENGTH
S	.0190	SLOPE
N	.045	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	20.00	BOTTOM WIDTH OR DIAMETER

```
                    Z        2.00  SIDE SLOPE

                                                                  ***

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

            PLAN  2 INPUT DATA FOR STATION     RCH3 ARE SAME AS FOR PLAN  1

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

         **************
         *            *
77 KK    *        E5  *      SUB-BASIN E5
         *            *
         **************

            SUBBASIN RUNOFF DATA

78 BA       SUBBASIN CHARACTERISTICS
                  TAREA         .31  SUBBASIN AREA

            PRECIPITATION DATA

30 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
            ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
            5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
              .01     .04     .15     .25     .39     .92    2.33    3.67     .00     .00     .00     .00

                                                STORM AREA =      .31

79 LS       SCS LOSS RATE
                  STRTL         .13  INITIAL ABSTRACTION
                 CRVNBR       94.00  CURVE NUMBER
                  RTIMP         .00  PERCENT IMPERVIOUS AREA

80 UD       SCS DIMENSIONLESS UNITGRAPH
                  TLAG         .50  LAG

                                                                  ***

                                                UNIT HYDROGRAPH
                                            32 END-OF-PERIOD ORDINATES
                19.       55.      113.      189.      248.      274.      274.      251.      219.      175.
               129.      100.       77.       62.       48.       37.       29.       23.       18.       14.
                11.        8.        6.        5.        4.        3.        3.        2.        2.        1.
                 1.        0.

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

            PLAN  2 INPUT DATA FOR STATION       E5 ARE SAME AS FOR PLAN  1

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

         **************
         *            *
81 KK    *       CP4  *      COMBINE ROUTED DISCHARGE FROM CP3 WITH E5 HYDROGRAPH
         *            *
         **************
```

FLOW AT CP4 AT 43"X67" PAVED CMP AT SIERRA STREET

83 HC HYDROGRAPH COMBINATION
ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

* ***

****
* *
84 KK * SIERRA * STORAGE AND DISCHARGE OF CULVERT AT SIERRA STREET
* *
****

STORAGE ROUTING AT SIERRA STREET

HYDROGRAPH ROUTING DATA

86 RS STORAGE ROUTING
NSTPS 1 NUMBER OF SUBREACHES
ITYP STOR TYPE OF INITIAL CONDITION
RSVRIC .00 INITIAL CONDITION
X .00 WORKING R AND D COEFFICIENT

87 SA	AREA	.0	.5	.8	1.2	1.9	2.6	3.1
88 SE	ELEVATION	587.00	594.00	596.00	598.00	600.00	602.00	604.00
89 SQ	DISCHARGE	0.	193.	211.	229.	245.	637.	1000.

***

COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	1.19	2.45	4.40	7.45	11.90	17.61
ELEVATION	587.00	594.00	596.00	598.00	600.00	602.00	604.00

---DSS---ZWRITE Unit 71; Vers. 3: /AIRPORT/SIERRA/FLOW/01MAY1999/5MIN/SIERRA STREET/

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

PLAN 2 INPUT DATA FOR STATION SIERRA ARE SAME AS FOR PLAN 1
-----DSS---ZWRITE Unit 71; Vers. 3: /AIRPORT/SIERRA/FLOW/01MAY1999/5MIN/EXISTFLOW/

ROUTED TO	RCH3	4.06	1	FLOW	485.
				TIME	19.33
			2	FLOW	577.
				TIME	18.33
/DROGRAPH AT	E5	.31	1	FLOW	48.
				TIME	18.00
			2	FLOW	48.
				TIME	18.00
2 COMBINED AT	CP4	4.37	1	FLOW	509.
				TIME	19.33
			2	FLOW	621.
				TIME	18.25
ROUTED TO	SIERRA	4.37	1	FLOW	504.
				TIME	19.58
			2	FLOW	619.
				TIME	18.33

** PEAK STAGES IN FEET **

1	STAGE	601.32
	TIME	19.58
2	STAGE	601.91
	TIME	18.33

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00									
	RCH1 MANE	5.00	283.07	1115.00	2.53	5.00	283.07	1115.00	2.53

NTINUITY SUMMARY (AC-FT) - INFLOW= .2737E+03 EXCESS= .0000E+00 OUTFLOW= .2660E+03 BASIN STORAGE= .8342E+01 PERCENT ERROR= -.2

FOR PLAN = 2 RATIO= .00									
	RCH1 MANE	5.00	283.07	1115.00	2.53	5.00	283.07	1115.00	2.53

NTINUITY SUMMARY (AC-FT) - INFLOW= .2737E+03 EXCESS= .0000E+00 OUTFLOW= .2660E+03 BASIN STORAGE= .8342E+01 PERCENT ERROR= -.2

FOR PLAN = 1 RATIO= .00									
	RCH3 MANE	5.00	439.31	1160.00	1.52	5.00	439.31	1160.00	1.52

NTINUITY SUMMARY (AC-FT) - INFLOW= .2894E+03 EXCESS= .0000E+00 OUTFLOW= .2839E+03 BASIN STORAGE= .5659E+01 PERCENT ERROR= -.1

FOR PLAN = 2 RATIO= .00									
	RCH3 MANE	5.00	501.94	1115.00	2.65	5.00	501.94	1115.00	2.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4993E+03 EXCESS= .0000E+00 OUTFLOW= .4938E+03 BASIN STORAGE= .5919E+01 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00									
	RCH3 MANE	5.00	484.98	1160.00	1.69	5.00	484.98	1160.00	1.69

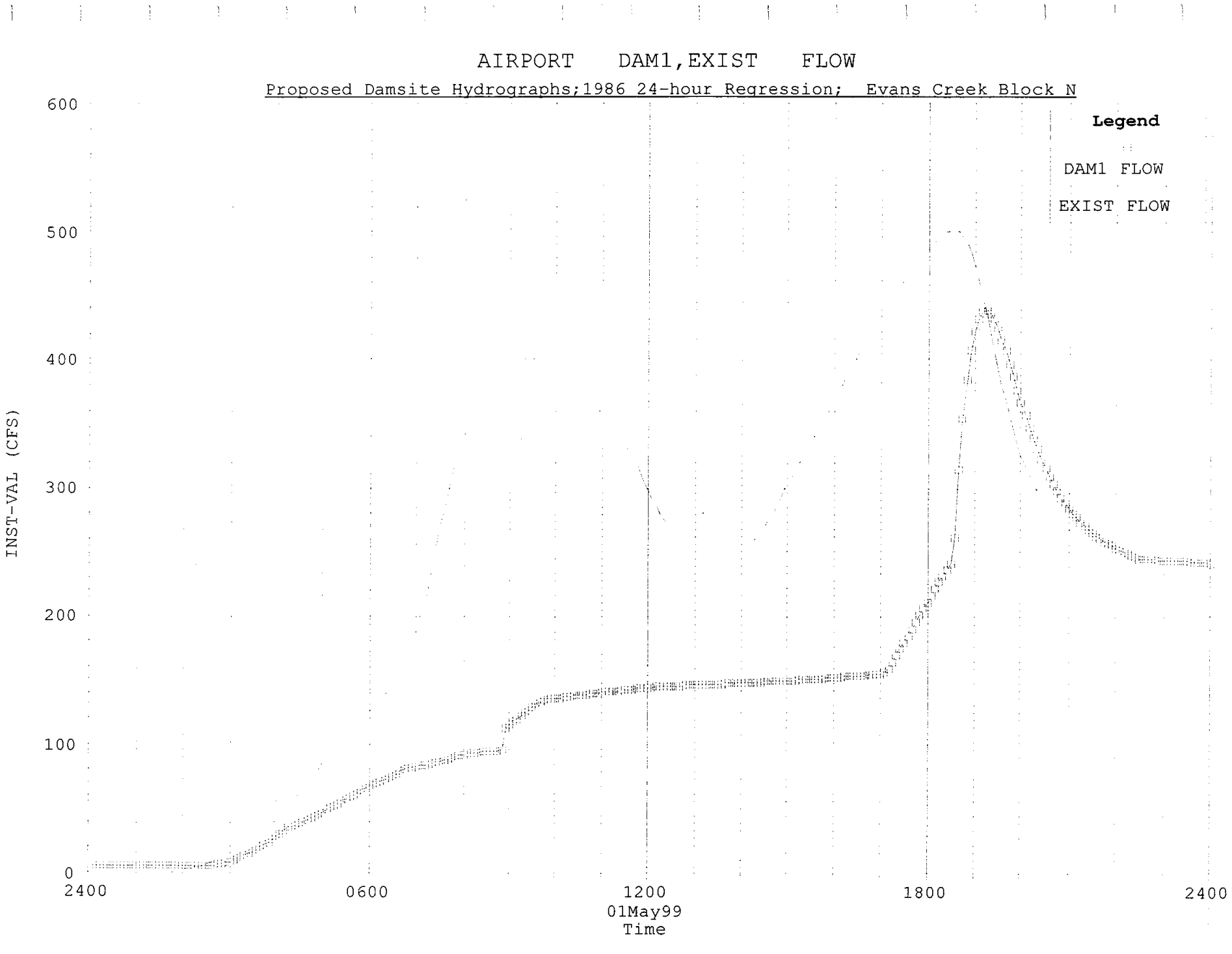
CONTINUITY SUMMARY (AC-FT) - INFLOW= .3700E+03 EXCESS= .0000E+00 OUTFLOW= .3666E+03 BASIN STORAGE= .3415E+01 PERCENT ERROR= .0

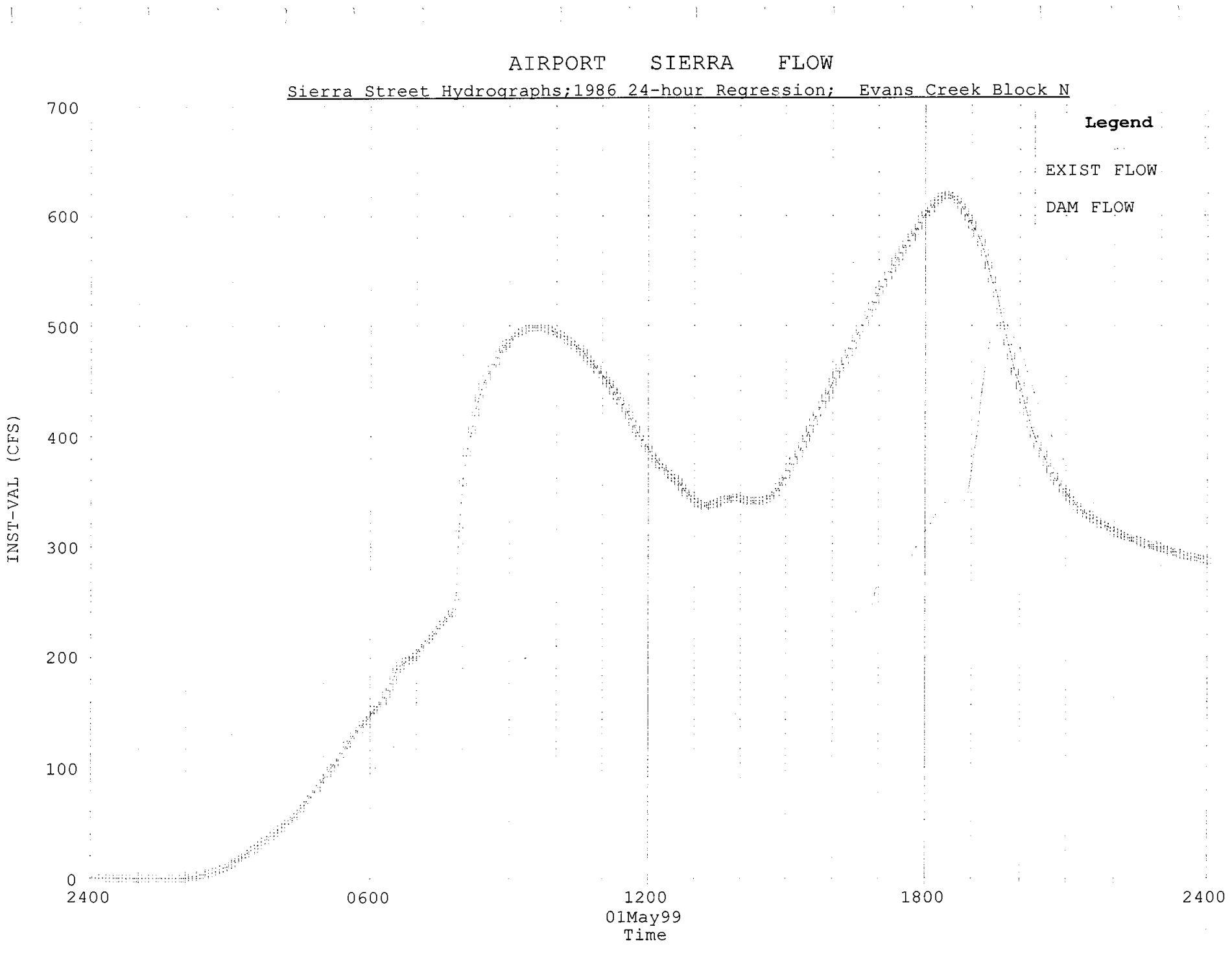
FOR PLAN = 2 RATIO= .00									
	RCH3 MANE	5.00	577.34	1100.00	2.66	5.00	577.34	1100.00	2.66

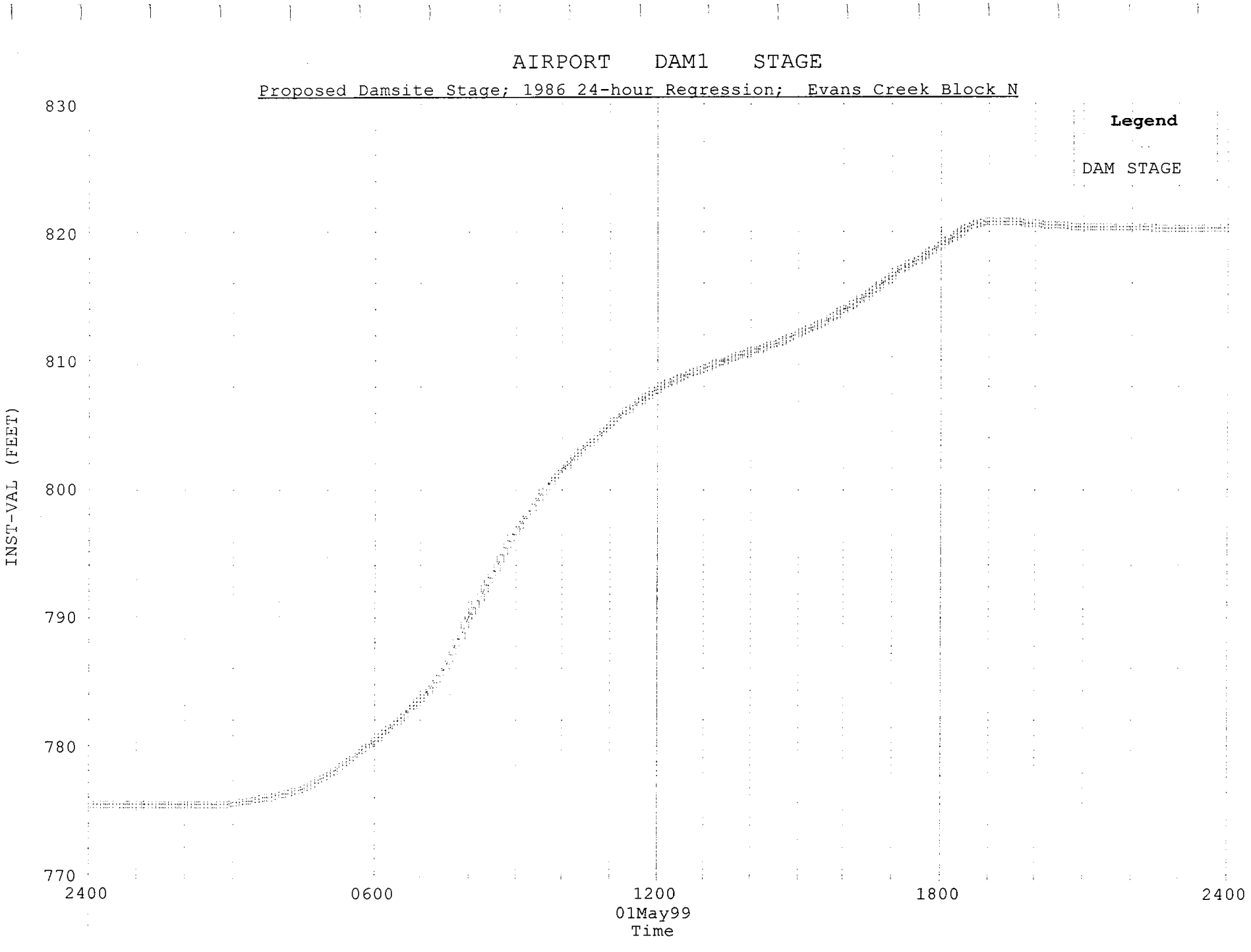
CONTINUITY SUMMARY (AC-FT) - INFLOW= .5799E+03 EXCESS= .0000E+00 OUTFLOW= .5768E+03 BASIN STORAGE= .3569E+01 PERCENT ERROR= -.1

NORMAL END OF HEC-1 ***

-----DSS---ZCLOSE Unit: 71, File: 2REGPH.DSS
Pointer Utilization: .25
Number of Records: 10
File Size: 25.1 Kbytes
Percent Inactive: .00


AIRPORT DAM1,EXIST FLOW
Proposed Damsite Hydrographs;1986 24-hour Regression; Evans Creek Block N
Legend
DAM1 FLOW
EXIST FLOW
INST-VAL (CFS)
600
500
400
300
200
100
0
2400
0600
1200
01May99
1800
2400
Time


AIRPORT SIERRA FLOW
Sierra Street Hydrographs;1986 24-hour Regression; Evans Creek Block N
Legend
EXIST FLOW
DAM FLOW
INST-VAL (CFS)
700
600
500
400
300
200
100
0
2400
0600
1200
1800
2400
01May99
Time


AIRPORT DAM1 STAGE
Proposed Damsite Stage; 1986 24-hour Regression; Evans Creek Block N
Legend
DAM STAGE
INST-VAL (FEET)
830
820
810
800
790
780
770
2400
0600
1200
1800
2400
01May99
Time