CITY OF SCOTTSDALE

DESERT GREENBELT PROJECT
PIMA ROAD CHANNEL

DESIGN HYDROLOGY MEMORANDUM

FINAL DRAFT

George V. Sabol Consulting Engineers, Inc.
Scottsdale, Arizona

January 1997

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INTRODUCTION

General

The hydrology for the final design of the Pima Road Channel is presented in this Design Hydrology Memorandum. The hydrology is for the three detention basin concept that is recommended and the preliminary sizing of those detention basins along with the design discharges for the channel are also presented herein.

Two methods were evaluated for the purpose of estimating design hydrology; 1) the method that is used for previous flood hydrology studies in the Scottsdale area north of the CAP Canal (herein referred to as the City of Scottsdale (COS) method), and 2) the method in the Drainage Design Manual for Maricopa County, Volume 1, Hydrology (herein referred to as the Maricopa County (MC) method). Based on the results of that evaluation, the COS method is used to estimate the design hydrology for the Pima Road Channel.

The hydrology is based on the best available topographic mapping of the watershed and the hydrologic modeling represents the most current information on land use and development within the watershed. The hydrologic modeling that was performed by others for the Grayhawk and DC Ranch developments are incorporated into the watershed models.

Background

The hydrology of the study area has been performed by others for various purposes, including FEMA flood hazard delineation, highway drainage studies, land development, and the Desert Greenbelt Project. Virtually all of that current hydrology (dating to the late 1980s) is based on the modeling by Mr. Robert L. Ward, PE. The previous modeling for the Pima Road Channel was performed by Greiner and PACE by modifying and updating previous models by Mr. Ward. In the process of reviewing the design concepts by Greiner and PACE for the Pima Road Channel, the reviewer for the City of Scottsdale, George V. Sabol Consulting Engineers, Inc. (GVSCE), noted deficiencies in the model (see Concept Review report, November 1996, by GVSCE). As a consequence, the City of Scottsdale requested that GVSCE revise the hydrology. Subsequently, the hydrology was revised and modified for the purpose of defining the design hydrology for the recommended Pima Road Channel concept (see Recommended Design Concept and Construction Cost Estimate report, December 1996, by GVSCE).

Purpose and Limitation

This report presents the design hydrology and preliminary sizing of the three detention basins for the Pima Road Channel. Two options are considered for the Deer Valley basin; 1) that basin receives the combined runoff from the Pima Road Channel that enters the basin from the north plus the runoff from the Deer Valley collector channel that is at the north boundary of DC Ranch, and 2) that basin receives only the runoff from the Pima Road Channel and the Deer Valley collector channel bypasses the Deer Valley basin and discharges directly to the Pima Road Channel south of the Deer Valley basin. Those two options are called Option 1 and 2.

The design hydrology is determined from the 100-year, 6-hour storm. The performance of the basins are evaluated for the 100-year, 24-hour storm. The basins are sized such that the spillways do not operate for the 100-year, 6-hour storm.

The design discharges for the Pima Road Channel are contingent upon the preliminary sizing of the Happy Valley and Deer Valley detention basins and the outlets of those basins. Refinement or modification of those detention basins and/or outlets will have some impact on the design discharges for the channel. The hydrology conceivably will be altered somewhat as the final design of the Pima Road Channel and the detention basins is performed. The hydrology, as presented herein, is intended to represent the ultimate, full build-out condition of the watershed. It is based on the most reliable data and assumptions in regard to land use and drainage design. The hydrologic model can be used by the City of Scottsdale for master drainage planning. The model incorporates the drainage modeling for the DC Ranch and Grayhawk developments as presently available. Changes in the drainage designs for those areas could impact the results of this hydrology and the design discharges for the Pima Road Channel.

MAPPING

Watershed Base Maps

Previous hydrologic modeling of the study area (those by Ward, Greiner, PACE, etc.) used USGS quadrangle maps for watershed delineation and estimation of hydraulic parameters. The USGS maps are at a scale of 1 inch = 2,000 feet with contour interval of 10- or 20-foot. The present study uses the topographic mapping that is available from the City of Scottsdale's GIS at 1-foot or 2-foot contour interval based on 1993 aerial photography.

The watershed base map is shown in Plate 1 at a scale of 1 inch = 500 feet with 5-foot or 10-foot contour intervals. That map shows the entire contributing watershed from north of Jomax Road to the Pima Freeway alignment. For hydrologic modeling purposes, two additional maps are used to account for the hydrologic modeling of DC Ranch and Grayhawk developments. The DC Ranch on-site development area is shown in Plate 2. The Grayhawk hydrologic modeling area is shown in Plate 3. Plates 2 and 3 are obtained from the drainage engineers for DC Ranch and Grayhawk and are shown without modification.

Watershed Delineation

The watershed delineation and concentration point identification is shown in Plates 1, 2 and 3. The watershed delineation that was used by Greiner is shown in Plate 4, and that map is provided for reference only. The numbering of concentration points that is shown in Plate 1 is the same as that used in previous hydrology studies (Plate 4). The numbering of concentration points used in the DC Ranch and Grayhawk models (Plates 2 and 3) are maintained in the present hydrologic model.

The use of the better mapping that is available from the City of Scottsdale coupled with field reconnaissance of the watershed resulted in the identification of two flow-split areas. Those are identified in Plate 1. The modeling of those flow-splits was by development of rating curves for the discharge capacity at each flow-split. The basins are sized according to the flow-split analyses and the design discharges assume that those flow-splits will continue to exist under future build-out conditions. Since those flow-splits are in presently developed areas, this is a reasonable assumption. For the purpose of checking the performance of the detention basins for the 100-year, 24-hour storm, it was assumed that the discharge at the flow-splits would be altered such that all the flow took one flowpath or the other. The most severe hydrologic condition was assumed to exist for checking the performance of each basin under the condition of the 100-year, 24-hour storm. For the Deer Valley basin, several combinations of flow-split assumptions were made since it is not possible to predict the most severe condition.

The redelineation of the watershed using the better topographic mapping resulted in some meaningful changes from the previous delineation (comparison of Plates 1 and 4). A comparison of the drainage area changes at key concentration points along the Pima Road Channel is provided in Table 1. The most significant change is for concentration point C34.1I which is at the inflow to the Happy Valley basin. That drainage area increased from 2.38 square miles to 2.90 square miles (increase of 0.52 square miles).

TABLE 1

Comparison of drainage areas at key concentration points along the Pima Road Channel as a result of redelineation of the watershed

Concentration Point	Drainage Area Original[a] sq. miles	Drainage Area Revised sq. miles	Comments
(1)	(2)	(3)	(4)
C30N	0.66	0.65	Jomax Road
C31.1	1.18	0.92	
C34.1I	2.38	2.90	Happy Valley Detention Basin
C36.1	2.61	3.04	
C36R1	4.76	4.64	Pinnacle Peak Road
C36R2	5.06	5.01	
C51.1I	6.28	6.14	Deer Valley Detention Basin
C52A	6.43	6.27	Thompson Peak Parkway
C52	8.01	7.92	Beardsley Road Alignment
C53	8.58	8.09	
C53A	------	8.42	Union Hills Road
C1I	11.23	11.05	Union Hills Detention Basin
C1A	11.31	11.27	CAP Basin outlet

[a] - as per Greiner and others

SELECTION OF WATERSHED MODELING METHOD

Description of Models

Two methods of watershed modeling were compared for the purpose of selecting the recommended hydrologic modeling method. Those methods are generally described as follows:

1. Hydrologic modeling as previously used by Ward, Greiner, PACE and others for the Pima Road Channel and other projects in the area. That modeling generally consists of use of the hypothetical rainfall distribution, CN method for rainfall losses, kinematic wave modeling of runoff from subbasins, and normal depth for channel routing. That is the general modeling methodology that is recommended in the City of Scottsdale Design Standards and Policies Manual, Chapter 2: Drainage. The modeling methodology is referred to herein as the City of Scottsdale (COS) method.

2. Hydrologic modeling as defined in the Drainage Design Manual for Maricopa County, Volume 1, Hydrology. That modeling consists of a 6-hour storm defined by Pattern Number or the SCS distribution for the 24-hour storm, Green and Ampt method for rainfall losses, Clark unit hydrograph, and normal depth for channel routing. The modeling methodology is referred to herein as the Maricopa County (MC) method.

Hydrologically, the two methods represent significantly different technologies and methodologies. Such differences could produce dramatically different results, depending upon assumptions and input parameter selection.

For the purpose of model method comparison and selection, the watershed area north of the Deer Valley basin was modeled by each method. The area south of the Deer Valley basin was not included in the methodology comparison because most of that area will be modeled by adoption of the drainage studies for DC Ranch and Grayhawk. Therefore, that southern watershed area will have little impact on the comparison of results.

Rainfall input is based on the rainfall depth-duration-frequency statistics from the Precipitation-Frequency Atlas for Arizona (NOAA Atlas). Rainfall depth-duration-frequency statistics from the NOAA Atlas, as developed by the PREFRE program, are shown in Table 2. Comparison of rainfall values from other hydrologic models shows that rainfall input often deviates slightly from the values shown in Table 2. Those deviations are not considered to be meaningful. The point rainfalls for the present modeling are adopted from the Greiner models.

A comparison of the 6-hour storm rainfall distributions by the COS method (hypothetical) and the MC method (Pattern Number) is shown in Figure 1. Those distributions are for the watershed area at the Deer Valley basin. Other than the timing of the maximum rainfall intensity portion of the storm, the distributions are very similar.

A comparison of the 24-hour storm rainfall distributions by the COS method (hypothetical) and the MC method (SCS 24-hour dimensionless) is shown in Figure 2. Those distributions are for the watershed area at the Deer Valley basin. The hypothetical distribution has significantly greater rainfall intensity than the SCS dimensionless distribution. For the 24-hour storm, the COS-type model will produce greater peak discharges than the MC-type model, all other input being equal.

Both the COS model and the MC model used the same watershed delineation as shown in Plate 1. The land use and percent impervious area (RTIMP) are the same in both models. A summary of the COS model input for each modeling subbasin and channel routings is shown in Table 3.

The rainfall loss parameters by the Green and Ampt equation for the MC method are summarized in Table 4. Those parameters are based on soils data contained in the SCS Soil Survey of Aguila-Carefree Area and Parts of Maricopa and Pinal Counties. The CN selection for the COS method are based on that same SCS soils data. A soils map of the watershed is shown in Plate 5. A land use map is shown in Plate 6 and that information was used to select the RTIMP for each subbasin as shown in Tables 3 and 4. Rainfall loss parameters by both methods are for future full build-out conditions.

TABLE 2

Rainfall depth-duration-frequency statistics for the Pima Road Channel watershed

(from PREFRE based on NOAA Atlas input)

1

*** O U T P U T   D A T A ***

REVISED JUNE 1988 TO UPDATE COMPUTATION OF SHORT-DURATION VALUES

PRECIPITATION FREQUENCY VALUES FOR Pima Channel Revised Hydrology

PRIMARY ZONE NUMBER= 7

SHORT-DURATION ZONE NUMBER= 8

POINT VALUES

RETURN PERIOD

DURATION	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR	500-YR	
5-MIN	.38	.46	.52	.61	.68	.74	.90	5-MIN
10-MIN	.56	.70	.79	.93	1.03	1.14	1.38	10-MIN
15-MIN	.68	.87	1.00	1.18	1.32	1.46	1.79	15-MIN
30-MIN	.91	1.16	1.34	1.59	1.79	1.98	2.43	30-MIN
1-HR	1.10	1.43	1.66	1.98	2.23	2.48	3.05	1-HR
2-HR	1.24	1.60	1.86	2.21	2.49	2.76	3.40	2-HR
3-HR	1.33	1.72	1.99	2.36	2.66	2.95	3.63	3-HR
6-HR	1.50	1.93	2.23	2.65	2.98	3.31	4.07	6-HR
12-HR	1.70	2.19	2.52	3.00	3.37	3.74	4.59	12-HR
24-HR	1.90	2.44	2.82	3.35	3.76	4.17	5.12	24-HR

* IF YOUR SITE IS IN ARIZONA OR NEW MEXICO, PLEASE CONSULT THE
FOLLOWING PAPER FOR REVISED DEPTH-AREA VALUES:
DEPTH-AREA RATIOS IN THE SEMI-ARID SOUTHWEST UNITED STATES
NOAA TECHNICAL MEMORANDUM NWS HYDRO-40
ZEHR AND MYERS
AUGUST 1984

INPUT DATA

PROJECT NAME=Pima Channel Revised Hydrology
ZONE= 7 SHORT-DURATION ZONE= 8
LATITUDE= .00 LONGITUDE= 100.00 ELEVATION= 0
2-YR, 6-HR PCPN= 1.50 100-YR, 6-HR PCPN= 3.31
2-YR, 24-HR PCPN= 1.90 100-YR, 24-HR PCPN= 4.17

* * * * E N D OF R U N * * * *

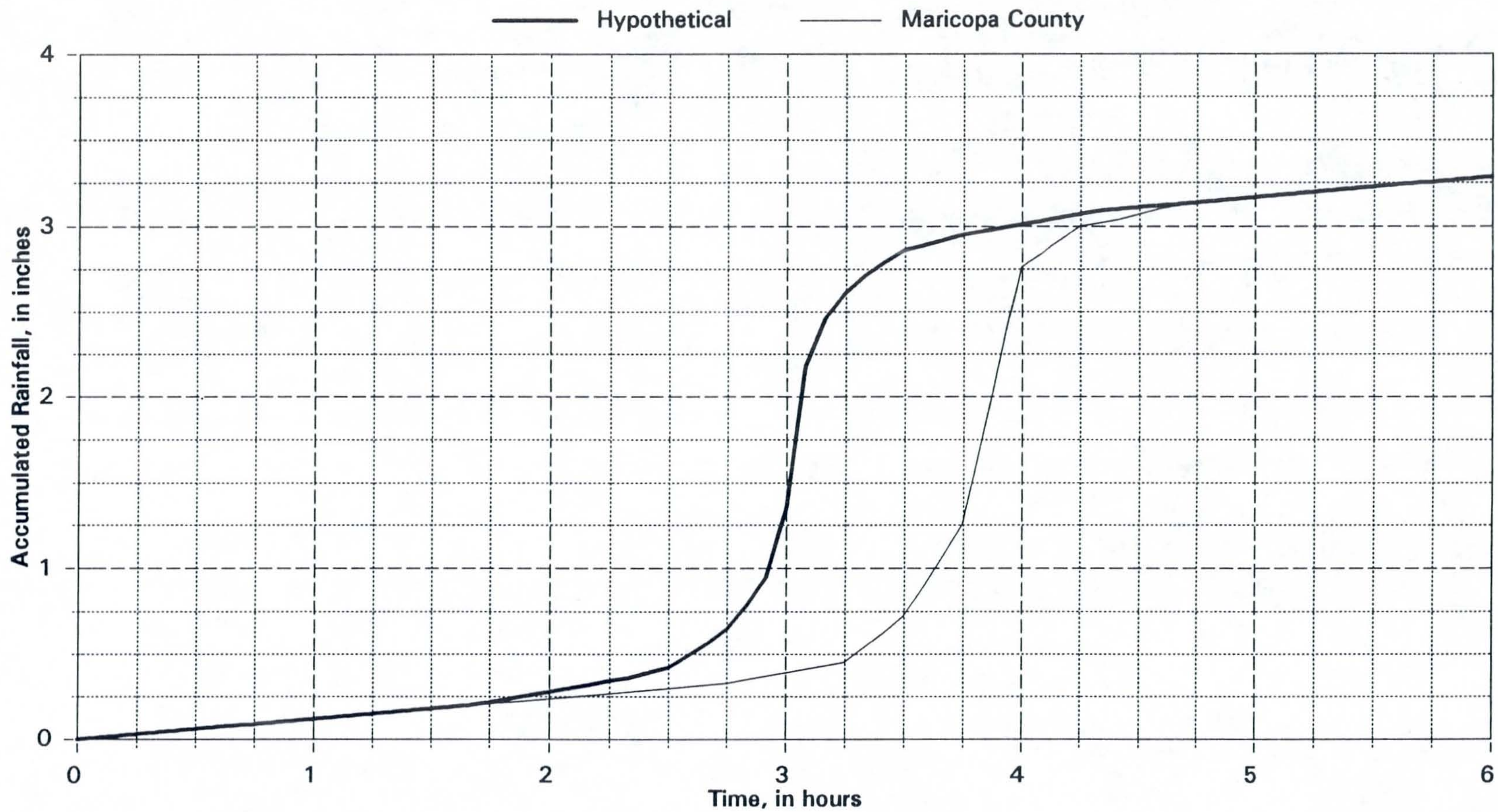

FIGURE 1
100-year, 6-hour rainfall comparison

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03-Dec-96

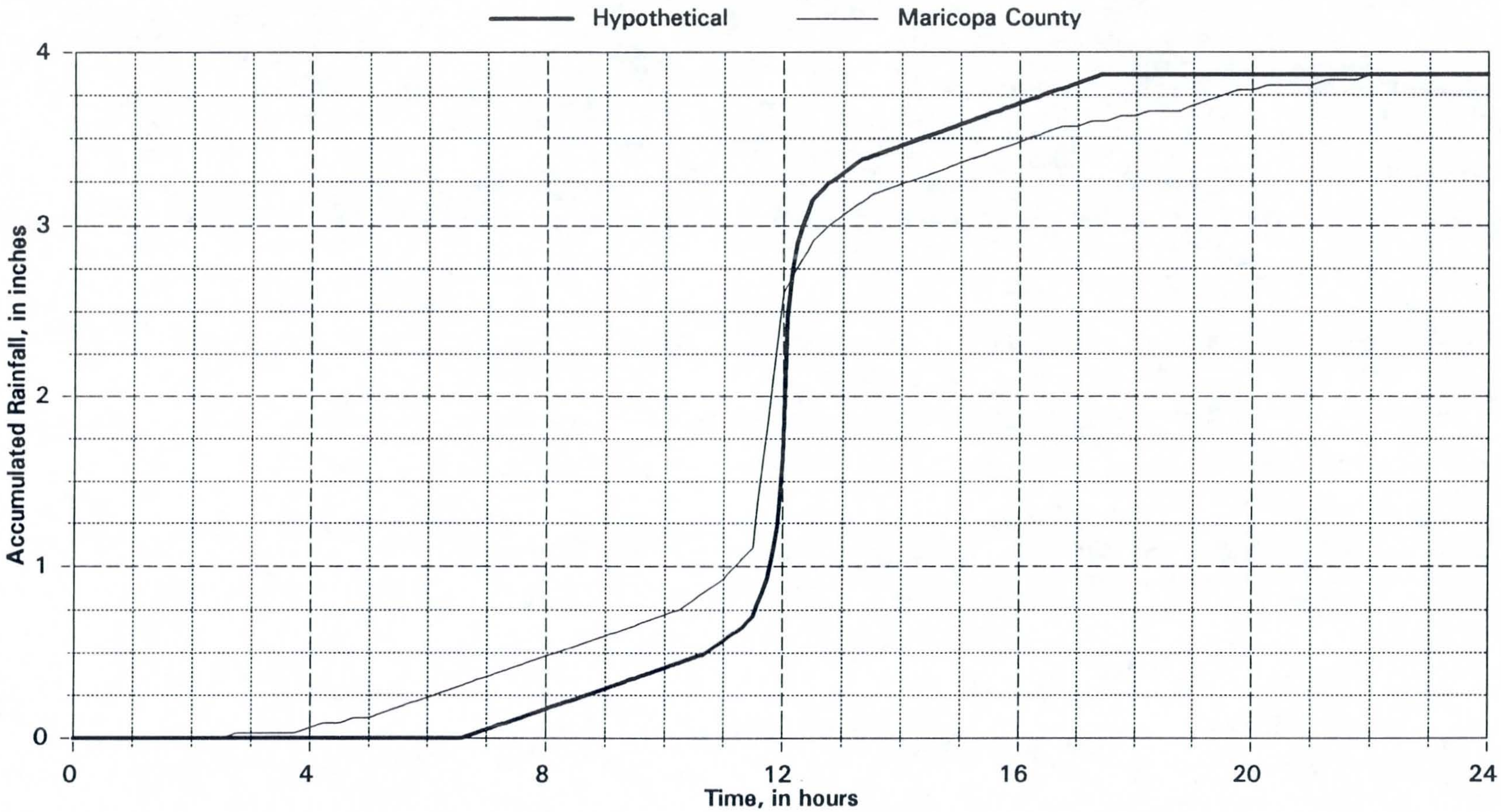


FIGURE 2
100-year, 24-hour rainfall comparison

TABLE 3

Rainfall loss and runoff hydraulic parameters for the COS method
For model comparison purposes

		Losses		Overland Flow				Collector Channel							Main Channel					
Subbasin ID	Area sq. mi.	CN	RTIMP %	Length feet	Slope ft/ft	n	% Contributing	Length feet	Slope ft/ft	n	Contrib. Area sm	Channel Shape	Bottom Width feet	Side Slope	Length feet	Slope %	n	Channel Shape	Bottom Width feet	Side Slope
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
S30N	0.6518	82.0	13	300	0.350	0.13	20	1550	0.069	0.045	0.0096	TRAP	0	12	10520	0.038	0.040	TRAP	15	15
		82.0	13	300	0.050	0.13	80													
S31.1	0.2663	76.6	13	300	0.567	0.13	10	1950	0.056	0.045	0.0147	TRAP	0	10	7600	0.035	0.040	TRAP	22	8
		76.6	13	300	0.050	0.13	90													
S35N	0.5482	82.0	13	300	0.491	0.13	15	2700	0.079	0.045	0.0242	TRAP	3	6	5050	0.028	0.040	TRAP	15	15
		82.0	13	300	0.113	0.13	85													
S36.2	0.2087	76.6	13	300	0.580	0.13	5	1800	0.036	0.045	0.0145	TRAP	10	10	3520	0.028	0.040	TRAP	20	6
		76.6	13	300	0.100	0.13	95													
S34.1	1.6076	77.3	12	300	0.590	0.13	25	2570	0.085	0.045	0.0214	TRAP	0	10	9200	0.042	0.040	TRAP	50	9
		77.3	12	300	0.040	0.13	75													
S36.1	0.1394	73.4	11	300	0.042	0.13	100	2330	0.032	0.045	0.0134	TRAP	10	30	3200	0.027	0.040	TRAP	20	30
S36R1	1.2173	74.3	10	300	0.020	0.20	100	1420	0.032	0.045	0.0061	TRAP	0	13	12600	0.033	0.040	TRAP	10	9
S36R2	0.3742	72.0	16	280	0.045	0.10	100	1900	0.032	0.017	0.0150	TRAP	15	7	7360	0.030	0.040	TRAP	30	10
S51.1	1.1300	73.9	12	300	0.037	0.13	100	1800	0.038	0.045	0.0161	TRAP	0	12	14400	0.032	0.040	TRAP	40	15

TABLE 4

Green and Ampt rainfall loss parameters for the MC method
For model comparison purposes

Sub-basin ID (1)	Area sq. mi. (2)	IA inches (3)	RTIMP % (4)	Vegetation Cover % (5)	XKSAT Bare Ground in/hr (6)	PSIF inches (7)	DTHETA normal (8)	XKSAT Corrected for Veg. in/hr (9)
S30N	0.6518	0.25	13	20	0.13	6.40	0.21	0.14
S31.1	0.2663	0.25	13	20	0.18	5.60	0.25	0.20
S35N	0.5482	0.25	13	20	0.16	5.80	0.25	0.18
S36.2	0.2087	0.25	13	20	0.23	5.00	0.25	0.26
S34.1	1.6076	0.25	12	20	0.26	4.70	0.25	0.29
S36.1	0.1394	0.25	11	20	0.33	4.35	0.25	0.37
S36R1	1.2173	0.25	10	20	0.17	5.70	0.25	0.19
S36R2	0.3742	0.25	16	20	0.35	4.25	0.25	0.39
S51.1	1.1300	0.25	12	20	0.20	5.30	0.25	0.22

The Clark unit hydrograph parameters for the MC method are summarized in Table 5. Those parameters are based on topographic data as shown in Plate 1 and land use as shown in Plate 6. The procedures for calculating the unit hydrograph parameters (Tc and R) are as presented in the Maricopa County manual.

Routing in the Pima Road Channel is by the normal depth method and is the same in both the COS and MC models.

Model Comparison Results and Selection of Model

The COS and MC methods, with input as previously described, were used to model the watershed that contributes to the Deer Valley basin. For comparison purposes, neither the Happy Valley nor the Deer Valley basins are incorporated into the models. Peak discharges at key concentration points in the Pima Road Channel are shown in Table 6. The peak discharges that were used by Greiner for its Concept 1 design are also shown for comparison. Results are shown for both the 100-year, 6-hour and 24-hour storms.

For the 6-hour storm, almost identical peak discharges are obtained by both the COS and MC methods. For the 24-hour storm, the MC model produces peak discharges that are 20 to 38 percent less than the COS model. This is because of the differences in rainfall distribution and the methods in estimating rainfall losses. Of most significance is that using the MC method, the peak discharges for the 24-hour storm are less than those for the 6-hour storm. The consequence of this is that the 6-hour storm dictates the design discharge. This is expected for a small drainage area such as that for the Pima Road Channel.

Runoff volumes at the Happy Valley (C34.1I) and Deer Valley (C51.1I) basin sites are shown in Table 7. For the 6-hour storm, the MC method gives about 10 percent more runoff volume than the COS method. For the 24-hour storm, the COS method gives about 25 percent more runoff volume than the MC method. Of significant consequence is that using the MC method, the runoff volumes for both the 6-hour and 24-hour storms are about equivalent.

TABLE 5

Clark unit hydrograph parameters for the MC method
For model comparison purposes

Subbasin ID (1)	Area sq. mi. (2)	Hydrograph Type (3)	Flow Path miles (4)	Slope ft/mile (5)	Adjusted Slope ft/mile (6)	Surface Roughness Type (7)	Kb (9)	Time-Area Relation (10)	Tc hrs (11)	R hrs (12)
S30N	0.6518	Clark	2.33	251.1	238.5	B	0.04	B	0.367	0.305
S31.1	0.2663	Clark	1.96	350.4	283.1	B	0.05	B	0.321	0.381
S35N	0.5482	Clark	1.20	388.5	296.9	B	0.05	B	0.163	0.080
S36.2	0.2087	Clark	0.91	569.9	315.9	B	0.05	B	0.179	0.124
S34.1	1.6076	Clark	2.17	426.3	298.0	B	0.04	B	0.350	0.164
S36.1	0.1394	Clark	1.10	168.5	168.5	B	0.05	B	0.200	0.205
S36R1	1.2173	Clark	2.68	174.2	174.2	B/C	0.06	B	0.317	0.203
S36R2	0.3742	Clark	1.39	158.8	158.8	A	0.03	A	0.217	0.155
S51.1	1.1300	Clark	2.78	169.0	169.0	B	0.04	B	0.329	0.228

TABLE 6

Comparison of 100-year, 6-hour and 100-year, 24-hour peak discharges at key concentration points along Pima Road Channel for COS and MC methods

Concentration Point (1)	Drainage Area Original sq. miles (2)	Drainage Area Revised sq. miles (3)	100-year, 6-hour Peak Discharges Original cfs (4)	100-year, 6-hour Peak Discharges Present Study COS cfs (5)	100-year, 6-hour Peak Discharges Present Study MC cfs (6)	100-year, 24-hour Peak Discharges Original cfs (7)	100-year, 24-hour Peak Discharges Present Study COS cfs (8)	100-year, 24-hour Peak Discharges Present Study MC cfs (9)
C30N	0.66	0.65	820	1,230	1,180	910	1,260	780
C31.1	1.18	0.92	1,410	1,470	1,460	1,610	1,650	1,020
C34.1I	2.38	2.90	2,880	3,670	3,490	3,450	4,280	3,280
C36.1	2.61	3.04	3,120	3,710	3,610	3,730	4,470	3,370
C36R1	4.76	4.64	5,070	4,940	4,940	6,080	6,020	4,750
C36R2	5.06	5.01	5,326	5,030	5,110	6,280	6,160	4,960
C51.1I	6.28	6.14	5,703	5,900	6,050	6,950	7,460	5,990

Note:

Original refers to the Greiner hydrology model - PIMA53R, dated March 96
Revised refers to the hydrology performed by GVSCE

TABLE 7

Comparison of 100-year, 6-hour and 100-year, 24-hour runoff volumes at the Happy Valley and Deer Valley detention basins for COS and MC methods

	Drainage Area		100-year, 6-hour Runoff Volumes			100-year, 24-hour Runoff Volumes		
				Present Study			Present Study	
Concentration Point	Original sq. miles	Revised sq. miles	Original acre-ft	COS acre-ft	MC acre-ft	Original acre-ft	COS acre-ft	MC acre-ft
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
C34.1I	2.38	2.90	198	249	272	282	354	261
C51.1I	6.28	6.14	493	480	529	717	700	536

Based on these comparisons, it is recommended that the COS method be used for design hydrology for the Pima Road Channel project. This recommendation is based on the following:

- The peak discharges for the 6-hour storm are about identical for both the COS and MC methods.
- The peak discharges for the 24-hour storm are larger for the COS method than the MC method.
- The runoff volumes for the 6-hour storm are about the same by both methods.
- The runoff volumes for the 24-hour storm are larger for the COS method.
- Overall, using the 100-year, 6-hour storm as the design event will result in nearly the same design regardless of which method is used.
- Using the 100-year, 24-hour storm and the COS method to check the design for performance during a general storm will result in a conservative analysis.
- The COS method is used for the DC Ranch and Grayhawk hydrology which is incorporated into this project hydrology.
- The COS method is used on other Desert Greenbelt, FEMA and other regional hydrologic studies, and use of that method for the Pima Road Channel will result in a consistent methodology.

WATERSHED MODEL

Subbasin model input by the COS method for the design hydrology is summarized in Table 8. Refer to Plates 1, 2 and 3 for location of subbasins and concentration points. A schematic diagram of the watershed and hydrologic model is shown in Figure 3 (provided in jacket of this report). Input for DC Ranch and Grayhawk are as per models provided by Wood/Patel Associates and DEI, respectively. Certain small subbasins south of DC Ranch and Grayhawk were added to "fill-in" the model. The model is used to size each of the three detention basins and to set design discharges for the channel. The design hydrology is for the 100-year, 6-hour storm. Two Options (1 and 2) are considered for the Deer Valley Basin and the design hydrology is provided for each Option. The HEC-1 output files for each Option are provided in Appendices A and B. A diskette is provided for those input and output files. Table 9 summarizes peak discharges from the subbasins. Table 10 summarizes peak discharges at key concentration points for both Options. The performance of the basins, including spillway discharge, is evaluated based on the 100-year, 24-hour storm. Various information is provided for the detention basins in Appendix C, and this includes area-capacity curves, outlet rating curves, stage hydrographs, and inflow and outflow hydrographs for both Options under different flow-split assumptions.

TABLE 8

Subbasin input parameters for the Pima Road Channel design hydrology
Future full build-out conditions

Subbasin	Drainage	Rainfall Losses		Overland Flow Element				Collector Channel Element							Main Channel Element					
											Contrib.		Bottom	Side					Bottom	Side
ID	Area	Curve No.	RTIMP	Length	Slope	n	% Contributing	Length	Slope	n	Area	Shape	Width	Slopes	Length	Slope	n	Shape	Width	Slopes
	sq. mi.		%	feet	ft/ft			feet	ft/ft		sm				feet	ft/ft				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
S30N	0.6518	82.0	13	300	0.350	0.13	20	1550	0.069	0.045	0.0096	TRAP	0	12	10520	0.038	0.040	TRAP	15	15
		82.0	13	300	0.050	0.13	80													
S31.1	0.2663	76.6	13	300	0.567	0.13	10	1950	0.056	0.045	0.0147	TRAP	0	10	7600	0.035	0.040	TRAP	22	8
		76.6	13	300	0.050	0.13	90													
S35N	0.5482	82.0	13	300	0.491	0.13	15	2700	0.079	0.045	0.0242	TRAP	3	6	5050	0.028	0.040	TRAP	15	15
		82.0	13	300	0.113	0.13	85													
S36.2	0.2087	76.6	13	300	0.580	0.13	5	1800	0.036	0.045	0.0145	TRAP	10	10	3520	0.028	0.040	TRAP	20	6
		76.6	13	300	0.100	0.13	95													
S34.1	1.6076	77.3	12	300	0.590	0.13	25	2570	0.085	0.045	0.0214	TRAP	0	10	9200	0.042	0.040	TRAP	50	9
		77.3	12	300	0.040	0.13	75													
S36.1	0.1394	73.4	11	300	0.042	0.13	100	2330	0.032	0.045	0.0134	TRAP	10	30	3200	0.027	0.040	TRAP	20	30
S36R1	1.2173	74.3	10	300	0.020	0.20	100	1420	0.032	0.045	0.0061	TRAP	0	13	12600	0.033	0.040	TRAP	10	9
S36R2	0.3742	72.0	16	280	0.045	0.10	100	1900	0.032	0.017	0.0150	TRAP	15	7	7360	0.030	0.040	TRAP	30	10
S51.1	1.1300	73.9	12	300	0.037	0.13	100	1800	0.038	0.045	0.0161	TRAP	0	12	14400	0.032	0.040	TRAP	40	15
								*** BEGIN DC RANCH WATERSHED ***												
52D4	0.0700	75	14.5	120	0.01	0.15	100	---	---	---	---	---	---	---	3100	0.035	0.045	TRAP	30	10
52D4B	0.0220	75	63	120	0.01	0.15	100	---	---	---	---	---	---	---	2200	0.033	0.045	TRAP	30	10
52D5A	0.0232	75	63	120	0.01	0.15	100	---	---	---	---	---	---	---	1300	0.032	0.045	TRAP	30	10
52C3	0.0060	75	65	100	0.02	0.1	100	---	---	---	---	---	---	---	800	0.033	0.045	TRAP	30	10
52C3B	0.0160	75	60	100	0.02	0.1	100	---	---	---	---	---	---	---	1400	0.034	0.045	TRAP	30	10
51C	0.0972	74	15	100	0.0213	0.1	100	---	---	---	---	---	---	---	3900	0.0375	0.045	TRAP	30	10
52C1	0.0290	75	20.5	100	0.02	0.1	100	---	---	---	---	---	---	---	1350	0.021	0.045	TRAP	30	10
52C2A	0.0190	75	2	100	0.02	0.1	100	---	---	---	---	---	---	---	1500	0.033	0.045	TRAP	30	10
52C2B	0.0275	75	11	100	0.02	0.1	100	---	---	---	---	---	---	---	2000	0.03	0.045	TRAP	30	10
52C2C	0.0140	75	62	100	0.02	0.1	100	---	---	---	---	---	---	---	1500	0.04	0.045	TRAP	30	10
52C4	0.0170	75	60	100	0.02	0.1	100	---	---	---	---	---	---	---	1550	0.03	0.045	TRAP	30	10
52C13	0.0230	75	31	100	0.02	0.1	100	---	---	---	---	---	---	---	950	0.04	0.045	TRAP	30	10
52C15	0.0460	75	64.4	100	0.02	0.1	100	---	---	---	---	---	---	---	2050	0.036	0.045	TRAP	30	10
52C14A	0.0410	75	67.7	100	0.02	0.1	100	---	---	---	---	---	---	---	2050	0.031	0.045	TRAP	30	10
52C5	0.0160	75	27	100	0.02	0.1	100	---	---	---	---	---	---	---	1200	0.03	0.045	TRAP	30	10
52C6	0.0360	75	31.4	100	0.02	0.1	100	---	---	---	---	---	---	---	3100	0.035	0.045	TRAP	30	10
51B	0.5711	71.9	13.1	100	0.0213	0.1	100	---	---	---	---	---	---	---	8900	0.03	0.045	TRAP	50	25
52C7	0.0060	75	27	100	0.02	0.1	100	---	---	---	---	---	---	---	550	0.04	0.045	TRAP	30	10
52C8	0.0080	75	27	100	0.02	0.1	100	---	---	---	---	---	---	---	750	0.034	0.045	TRAP	30	10
52C9	0.0690	75	31.85	100	0.02	0.1	100	---	---	---	---	---	---	---	3150	0.036	0.045	TRAP	30	10
52C10	0.0140	75	7.85	100	0.02	0.1	100	---	---	---	---	---	---	---	800	0.032	0.045	TRAP	30	10
52C11	0.0425	75	27	100	0.02	0.1	100	---	---	---	---	---	---	---	2800	0.031	0.045	TRAP	30	10
52C12	0.0230	75	85	100	0.02	0.1	100	---	---	---	---	---	---	---	900	0.03	0.045	TRAP	30	10

TABLE 8

Subbasin input parameters for the Pima Road Channel design hydrology
Future full build-out conditions

Subbasin	Drainage	Rainfall Losses		Overland Flow Element				Collector Channel Element							Main Channel Element					
											Contrib.		Bottom	Side					Bottom	Side
ID	Area	Curve No.	RTIMP	Length	Slope	n	% Contributing	Length	Slope	n	Area	Shape	Width	Slopes	Length	Slope	n	Shape	Width	Slopes
	sq. mi.		%	feet	ft/ft			feet	ft/ft		sm				feet	ft/ft				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
52C14B	0.0210	75	60	100	0.02	0.1	100	---	---	---	---	---	---	---	1250	0.029	0.045	TRAP	30	10
52B1	0.0030	75	27	100	0.02	0.1	100	---	---	---	---	---	---	---	600	0.039	0.045	TRAP	30	10
52B2	0.0320	75	17	100	0.02	0.1	100	---	---	---	---	---	---	---	2350	0.037	0.045	TRAP	30	10
52B3	0.0620	75	31.8	100	0.02	0.1	100	---	---	---	---	---	---	---	3450	0.03	0.045	TRAP	30	10
52B4	0.0260	75	62	100	0.02	0.1	100	---	---	---	---	---	---	---	1700	0.024	0.045	TRAP	30	10
52B5	0.0210	75	56.9	100	0.02	0.1	100	---	---	---	---	---	---	---	1400	0.03	0.045	TRAP	30	10
52B6	0.0960	75	13.55	100	0.02	0.1	100	---	---	---	---	---	---	---	3200	0.033	0.045	TRAP	30	10
52B7	0.0800	75	78.45	100	0.02	0.1	100	---	---	---	---	---	---	---	2750	0.028	0.045	TRAP	30	10
52A2	0.0650	75	88.8	100	0.02	0.1	100	---	---	---	---	---	---	---	2900	0.023	0.045	TRAP	30	10
52A1	0.1300	75	32.25	100	0.02	0.1	100	---	---	---	---	---	---	---	3400	0.033	0.045	TRAP	30	10
								*** END DC RANCH WATERSHED ***												
								*** BEGIN GRAYHAWK WATERSHED ***												
37A	0.6765	74	24.8	61	0.0213	0.1	100	---	---	---	---	---	---	---	4800	0.0237	0.045	TRAP	50	130
SUB5N	0.0290	77	18	100	0.013	0.15	100	1000	0.005	0.018	0.015	TRAP	50	20	500	0.015	0.025	TRAP	10	4
SUB6B	0.0320	81	0	200	0.025	0.15	100	---	---	---	---	---	---	---	1300	0.015	0.025	TRAP	10	4
SUB1N	0.0190	77	18	100	0.013	0.15	100	---	---	---	---	---	---	---	1470	0.0204	0.018	TRAP	50	20
SUB2NA	0.0150	81	0	150	0.013	0.15	100	---	---	---	---	---	---	---	1050	0.0215	0.025	TRAP	20	6
SUB2NB	0.0300	77	53	150	0.013	0.15	100	---	---	---	---	---	---	---	1200	0.015	0.025	TRAP	20	50
SUB6N	0.0490	81	0	200	0.025	0.15	100	---	---	---	---	---	---	---	1300	0.015	0.025	TRAP	10	4
SUB3N	0.0270	81	0	100	0.02	0.15	100	---	---	---	---	---	---	---	2800	0.0207	0.025	TRAP	10	4
SUB4N	0.0320	77	18	100	0.015	0.15	100	---	---	---	---	---	---	---	1200	0.007	0.018	TRAP	50	20
SUB6A	0.0130	83	68	100	0.015	0.12	100	---	---	---	---	---	---	---	800	0.01	0.025	TRAP	2	3
SUB3C	0.0104	77	68	100	0.025	0.02	100	---	---	---	---	---	---	---	600	0.015	0.035	TRAP	50	20
GC1018	0.0440	81	0	200	0.025	0.15	100	---	---	---	---	---	---	---	1800	0.0233	0.025	TRAP	10	4
GC1-9	0.0260	81	0	200	0.025	0.15	100	---	---	---	---	---	---	---	2110	0.022	0.025	TRAP	10	4
SUB3S	0.0102	77	53	100	0.01	0.15	100	---	---	---	---	---	---	---	930	0.016	0.025	TRAP	50	20
SUB4S	0.0273	77	53	100	0.01	0.15	100	---	---	---	---	---	---	---	1780	0.018	0.015	TRAP	50	20
GC2-8	0.0140	81	0	200	0.025	0.15	100	---	---	---	---	---	---	---	980	0.016	0.025	TRAP	10	4
SUB3D3	0.0140	81	0	50	0.015	0.1	100	---	---	---	---	---	---	---	2450	0.016	0.025	TRAP	5	4
GC7	0.0134	81	0	200	0.025	0.15	100	---	---	---	---	---	---	---	1380	0.02	0.025	TRAP	10	4
SUB3D1	0.0088	77	34	SCS dimensionless hydrograph with a lag time of 0.06 hrs.																
SUB3B1	0.0137	77	47	SCS dimensionless hydrograph with a lag time of 0.06 hrs.																
SUB3F	0.0344	77	68	100	0.025	0.15	100	---	---	---	---	---	---	---	1000	0.015	0.025	TRAP	100	20
SUB3B2	0.0246	77	40	SCS dimensionless hydrograph with a lag time of 0.10 hrs.																
SUB3E1	0.0246	77	40	SCS dimensionless hydrograph with a lag time of 0.10 hrs.																
SUB3D2	0.0220	77	35	SCS dimensionless hydrograph with a lag time of 0.08 hrs.																
SUB3E2	0.0120	77	35	SCS dimensionless hydrograph with a lag time of 0.06 hrs.																
PC3*	0.0434	77	10	100	0.015	0.15	100	---	---	---	---	---	---	---	2200	0.01	0.03	TRAP	30	4

TABLE 8

Subbasin input parameters for the Pima Road Channel design hydrology
Future full build-out conditions

								Collector Channel Element							Main Channel Element					
Subbasin	Drainage	Rainfall Losses		Overland Flow Element							Contrib.		Bottom	Side					Bottom	Side
ID	Area	Curve No.	RTIMP	Length	Slope	n	% Contributing	Length	Slope	n	Area	Shape	Width	Slopes	Length	Slope	n	Shape	Width	Slopes
	sq. mi.		%	feet	ft/ft			feet	ft/ft		sm				feet	ft/ft				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
SUB3E3	0.0200	77	32	SCS dimensionless hydrograph with a lag time of 0.06 hrs.																
PC4*	0.0217	77	0	100	0.015	0.15	100	---	---	---	---	---	---	---	1100	0.01	0.03	TRAP	30	4
SUB13N	0.0370	77	24	100	0.015	0.15	100	---	---	---	---	---	---	---	2400	0.007	0.018	TRAP	50	20
SUB14N	0.0490	81	0	300	0.025	0.15	100	---	---	---	---	---	---	---	2300	0.01	0.025	TRAP	10	4
SUB20N	0.0240	77	24	200	0.01	0.15	100	---	---	---	---	---	---	---	1400	0.02	0.018	TRAP	50	20
SUB19N	0.0380	77	31	150	0.01	0.15	100	---	---	---	---	---	---	---	1800	0.015	0.018	TRAP	50	20
UB18NC	0.0210	77	42	100	0.01	0.15	100	---	---	---	---	---	---	---	1550	0.02	0.018	TRAP	50	20
UB18NA	0.0220	77	42	100	0.01	0.15	100	---	---	---	---	---	---	---	1450	0.02	0.018	TRAP	50	20
UB18NB	0.0096	77	42	100	0.01	0.15	100	---	---	---	---	---	---	---	800	0.02	0.018	TRAP	50	20
PC1	0.0620	77	10	500	0.015	0.15	100	---	---	---	---	---	---	---	2700	0.01	0.03	TRAP	30	4
UB16NA	0.0139	77	42	100	0.015	0.15	100	---	---	---	---	---	---	---	1500	0.015	0.022	TRAP	50	20
UB16NB	0.0156	77	42	100	0.015	0.15	100	---	---	---	---	---	---	---	1500	0.015	0.022	TRAP	50	20
SUB7N	0.0310	77	18	100	0.015	0.15	100	---	---	---	---	---	---	---	1900	0.01	0.018	TRAP	50	20
SUB8NA	0.0046	81	0	100	0.03	0.15	100	---	---	---	---	---	---	---	450	0.03	0.025	TRAP	20	6
SUB8NB	0.0142	81	0	100	0.03	0.15	100	---	---	---	---	---	---	---	1150	0.025	0.025	TRAP	20	6
SUB8NC	0.0182	81	0	100	0.03	0.15	100	---	---	---	---	---	---	---	900	0.03	0.025	TRAP	20	6
SUB9N	0.0550	77	28	100	0.008	0.15	100	---	---	---	---	---	---	---	1700	0.01	0.018	TRAP	50	20
SUB10B	0.0280	77	42	100	0.015	0.15	100	350	0.008	0.018	0	TRAP	50	20	600	0.008	0.025	TRAP	10	4
UB11NA	0.0076	81	0	100	0.025	0.15	100	---	---	---	---	---	---	---	500	0.03	0.025	TRAP	30	6
UB11NB	0.0078	81	0	100	0.04	0.15	100	---	---	---	---	---	---	---	700	0.025	0.025	TRAP	30	6
UB11NC	0.0069	81	0	100	0.03	0.15	100	---	---	---	---	---	---	---	650	0.028	0.025	TRAP	20	5
SUB10A	0.0300	77	42	100	0.015	0.15	100	350	0.008	0.018	0	TRAP	50	20	800	0.008	0.025	TRAP	10	4
UB12NA	0.0153	81	0	150	0.025	0.15	100	---	---	---	---	---	---	---	650	0.017	0.025	TRAP	30	6
UB12NB	0.0157	81	0	150	0.025	0.15	100	---	---	---	---	---	---	---	650	0.017	0.025	TRAP	30	6
UB16NC	0.0337	77	42	100	0.015	0.15	100	---	---	---	---	---	---	---	1600	0.015	0.022	TRAP	50	20
PC2	0.0540	77	10	100	0.015	0.15	100	---	---	---	---	---	---	---	2700	0.01	0.03	TRAP	50	4
UB17NA	0.0098	81	0	150	0.025	0.05	100	---	---	---	---	---	---	---	960	0.0292	0.025	TRAP	30	50
UB17NB	0.0111	81	0	150	0.025	0.05	100	---	---	---	---	---	---	---	1200	0.0217	0.025	TRAP	30	50
SUB17A	0.0079	77	34	75	0.03	0.05	100	---	---	---	---	---	---	---	1500	0.02	0.025	TRAP	8	4
UB17NC	0.0056	77	12	75	0.03	0.05	100	---	---	---	---	---	---	---	910	0.0187	0.025	TRAP	8	4
SUB15N	0.0391	77	68	100	0.01	0.15	100	400	0.008	0.018	0	TRAP	50	20	1700	0.015	0.025	TRAP	10	4
SUB1-2	0.0558	77	68	200	0.01	0.15	100	---	---	---	---	---	---	---	1370	0.027	0.015	TRAP	50	20
SUB5S	0.0263	77	31	100	0.01	0.15	100	---	---	---	---	---	---	---	1280	0.007	0.015	TRAP	50	20
GC1216	0.0365	81	0	200	0.025	0.15	100	---	---	---	---	---	---	---	2200	0.024	0.025	TRAP	10	4
GC1415	0.0450	81	0	200	0.025	0.15	100	---	---	---	---	---	---	---	1300	0.022	0.025	TRAP	10	4
SUB6S	0.0210	77	42	100	0.01	0.15	100	---	---	---	---	---	---	---	2150	0.013	0.025	TRAP	50	20
SUB7S	0.0270	77	42	100	0.01	0.15	100	---	---	---	---	---	---	---	2080	0.023	0.025	TRAP	50	20
SUB8S	0.0256	77	42	100	0.01	0.15	100	---	---	---	---	---	---	---	1600	0.015	0.025	TRAP	50	20

TABLE 8

Subbasin input parameters for the Pima Road Channel design hydrology
Future full build-out conditions

		Rainfall Losses		Overland Flow Element				Collector Channel Element							Main Channel Element					
Subbasin ID	Drainage Area sq. mi.	Curve No.	RTIMP %	Length feet	Slope ft/ft	n	% Contributing	Length feet	Slope ft/ft	n	Contrib. Area sm	Shape	Bottom Width	Side Slopes	Length feet	Slope ft/ft	n	Shape	Bottom Width	Side Slopes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
GC36	0.0406	81	0	200	0.025	0.15	100	---	---	---	---	---	---	---	2350	0.015	0.035	TRAP	10	4
SUB9S	0.0210	77	53	100	0.01	0.15	100	---	---	---	---	---	---	---	1100	0.013	0.025	TRAP	50	20
SUB7A	0.0092	77	42	100	0.025	0.15	100	---	---	---	---	---	---	---	950	0.015	0.025	TRAP	50	20
SUB10S	0.0248	77	53	100	0.01	0.15	100	---	---	---	---	---	---	---	1150	0.02	0.025	TRAP	50	20
SUB11S	0.0234	77	68	100	0.015	0.018	100	---	---	---	---	---	---	---	1050	0.015	0.025	TRAP	100	20
GC45	0.0127	81	0	200	0.015	0.025	100	---	---	---	---	---	---	---	550	0.015	0.035	TRAP	10	4
PC5 *	0.0370	77	0	100	0.015	0.15	100	---	---	---	---	---	---	---	1900	0.01	0.03	TRAP	30	4
								*** END GRAYHAWK WATERSHED ***												
S53A	0.1692	74	11	300	0.022	0.13	100	1475	0.026	0.045	0.0111	TRAP	3	5	2700	0.021	0.040	TRAP	25	5
S53A1	0.3384	74	12	300	0.022	0.13	70	1250	0.023	0.045	0.0087	TRAP	4	5	5650	0.017	0.040	TRAP	35	5
		74	30	150	0.027	0.10	30													
SCN5C	0.2667	74	20	240	0.021	0.13	100	1200	0.018	0.045	0.0067	TRAP	0	45	5600	0.009	0.040	TRAP	15	3
SCN6	0.2597	74	85	180	0.019	0.13	100	1075	0.019	0.045	0.0066	TRAP	5	7	4430	0.013	0.040	TRAP	8	50
SCN6A	0.1335	74	20	300	0.017	0.13	100	1050	0.017	0.045	0.0057	TRAP	8	20	2250	0.012	0.040	TRAP	10	4
S54	0.0853	74	22	300	0.017	0.13	100	---	---	---	---	---	---	---	3460	0.012	0.040	TRAP	5	2

note *: Subbasins added by GVSCE in order to bring flow previously released to natural channels together, routing the hydrographs down to the Union Hills detention basin.

TABLE 9

Summary of peak discharges from subbasins for the Pima Road Channel design hydrology Future full build-out conditions

Subbasin ID (1)	Drainage Area sq. mi. (2)	100-year, 6-hour storm Peak Discharge cfs (3)
S30N	0.6518	1,227
S31.1	0.2663	395
S35N	0.5482	1,298
S36.2	0.2087	400
S34.1	1.6076	2,491
S36.1	0.1394	159
S36R1	1.2173	1,107
S36R2	0.3742	489/509[b]
S51.1	1.1300	1,058/998[b]
52D4	0.0700	116
52D4B	0.0220	70
52D5A	0.0232	79
52C3	0.0060	24
52C3B	0.0160	53
51C	0.0972	166
52C1	0.0290	69
52C2A	0.0190	35
52C2B	0.0275	56
52C2C	0.0140	46
52C4	0.0170	56
52C13	0.0230	69
52C15	0.0460	157
52C14A	0.0410	142
52C5	0.0160	40
52C6	0.0360	82
51B	0.5711	596
52C7	0.0060	18
52C8	0.0080	21
52C9	0.0690	174
52C10	0.0140	28
52C11	0.0425	96
52C12	0.0230	119

TABLE 9

Summary of peak discharges from subbasins for the Pima Road Channel design hydrology Future full build-out conditions

Subbasin ID (1)	Drainage Area sq. mi. (2)	100-year, 6-hour storm Peak Discharge cfs (3)
52C14B	0.0210	76
52B1	0.0030	8
52B2	0.0320	69
52B3	0.0620	141
52B4	0.0260	87
52B5	0.0210	69
52B6	0.0960	190
52B7	0.0800	303
52A2	0.0650	263
52A1	0.1300	340
37A	0.6765	1,164
SUB5N	0.0290	70
SUB6B	0.0320	74
SUB1N	0.0190	47
SUB2NA	0.0150	34
SUB2NB	0.0300	96
SUB6N	0.0490	114
SUB3N	0.0270	67
SUB4N	0.0320	80
SUB6A	0.0130	64
SUB3C	0.0104	55
GC1018	0.0440	101
GC1-9	0.0260	58
SUB3S	0.0102	33
SUB4S	0.0273	87
GC2-8	0.0140	32
SUB3D3	0.0140	35
GC7	0.0134	31
SUB3D1	0.0088	27
SUB3B1	0.0137	47
SUB3F	0.0344	141
SUB3B2	0.0246	67

TABLE 9

Summary of peak discharges from subbasins for the Pima Road Channel design hydrology Future full build-out conditions

Subbasin ID (1)	Drainage Area sq. mi. (2)	100-year, 6-hour storm Peak Discharge cfs (3)
SUB3E1	0.0246	67
SUB3D2	0.0220	58
SUB3E2	0.0120	37
PC3	0.0434	82
SUB3E3	0.0200	60
PC4	0.0217	43
SUB13N	0.0370	81
SUB14N	0.0490	88
SUB20N	0.0240	47
SUB19N	0.0380	94
UB18NC	0.0210	62
UB18NA	0.0220	65
UB18NB	0.0096	27
PC1	0.0620	66
UB16NA	0.0139	42
UB16NB	0.0156	48
SUB7N	0.0310	74
SUB8NA	0.0046	13
SUB8NB	0.0142	34
SUB8NC	0.0182	51
SUB9N	0.0550	143
SUB10B	0.0280	87
UB11NA	0.0076	21
UB11NB	0.0078	22
UB11NC	0.0069	19
SUB10A	0.0300	88
UB12NA	0.0153	36
UB12NB	0.0157	37
UB16NC	0.0337	102
PC2	0.0540	93
UB17NA	0.0098	28
UB17NB	0.0111	27

TABLE 9

Summary of peak discharges from subbasins for the Pima Road Channel design hydrology Future full build-out conditions

Subbasin ID (1)	Drainage Area sq. mi. (2)	100-year, 6-hour storm Peak Discharge cfs (3)
SUB17A	0.0079	30
UB17NC	0.0056	19
SUB15N	0.0391	142
SUB1-2	0.0558	181
GCRB18	0.0120	27
SUB5S	0.0263	72
GC1216	0.0365	83
GC1415	0.0450	104
SUB6S	0.0210	53
SUB7S	0.0270	79
SUB8S	0.0256	76
GC36	0.0406	77
SUB9S	0.0210	68
SUB7A	0.0092	27
SUB10S	0.0248	78
SUB11S	0.0234	118
GC45	0.0127	45
PC5	0.0375	60
SCN5C	0.2667	351
SCN6	0.2597	730
S53A	0.1692	226
S53A1	0.3384	445
S54	0.0853	136
SCN6A	0.1335	198

Note: a. All discharge the same for both Options 1 and 2 except as noted

b. Option 1/Option 2

TABLE 10

Summary of peak discharges at key concentration points for the Pima Road Channel design hydrology Future full build-out conditions

Concentration Point (1)	Drainage Area sq. mi. (2)	100-year, 6-hour storm Peak Discharge: Option 1 cfs (3)	100-year, 6-hour storm Peak Discharge: Option 2 cfs (4)
30N	0.65	1,227	1,227
C31.1	0.92	1,465	1,465
35N	0.55	1,298	1,298
C36.2	0.54	947	947
C34.1I	2.90	3,668	3,668
C34.1O	2.90	219	219
C36.1	3.04	311	311
C36R1	4.64	1,832	1,832
C36R2	5.01	1,922	1,964
C51.1I	6.14	2,849	1,964
C51.1O	6.14	360	282
C51.1A	6.14	-----	1,156
C52A	6.27	385	1,242
C52	7.92	2,201	2,365
CPC5	2.10	1,266	1,266
CN5C	0.27	351	351
CN6	0.26	790	730
C53	8.09	2,321	2,464
C53A	8.42	2,660	2,824
C1I	11.05	4,456	4,639
C1O	11.05	636	704
54	0.09	136	136
C1A	11.27	690	717

PRELIMINARY SIZING AND DESIGN OF BASINS

The hydrology for the Pima Road Channel is contingent upon the routing of the inflows through the basins. Preliminary sizing of the three detention basins and the outlets, as represented in the hydrology models, are presented in the Recommended Concept Design and Construction Cost Estimate report. Refer to that report for layouts of the basins.

The basins and outlets are sized to evacuate the floodwaters within 36 hours after the end of the design storm. Drain time of the basins is enhanced by excavating a sump area at the headworks of the outlet conduits. The sump enables the outlet to operate under a higher head for the duration of the basin operation. The sump also provides for quicker draining of the majority of the basin floor with only a relatively small area of delayed drainage due to low head on the outlet. All three basins will be effectively drained within 20 hours after the end of the 6-hour design storm.

In the following, the performance of each basin during the 100-year, 6-hour design storm is presented. The basins are all sized such that the spillways do not operate for the 6-hour storm. The basins are checked for performance during a longer duration general storm, and the 100-year, 24-hour storm is used for that check. In checking the performance of the basins, it is assumed that flow-splits that maximize runoff to the respective basins will occur. This checking presents the most severe reasonable conditions for the basins.

Happy Valley Detention Basin

The Happy Valley basin has an inflow design hydrograph (100-year, 6-hour storm) with a peak discharge of 3,670 cfs. The area-capacity curves and outlet rating curve for the preliminary basin sizing are shown in Figures C-1 and C-2, respectively. (Note: All figures denoted with a "C" in the figure number are provided in Appendix C.) Routing the inflow hydrograph through the basin and the 48 inch outlet conduit results in an outlet peak discharge of 220 cfs and a maximum detention volume of 182 acre-feet. The inflow and outflow hydrographs are shown in Figure 4. (The hydrographs for the basins in this report are all shown at the same scale for comparison purposes.) The basin is effectively evacuated within 20 hours after the start of the storm, and within 14 hours after the end of the 6-hour storm. The requirement to evacuate the basin in less than 36 hours after the end of the storm is satisfied.

The performance of the Happy Valley basin is checked for the general storm (100-year, 24-hour). That check also includes taking all the runoff to the Happy Valley basin from the upstream flow-splits (100 percent flow-split to the basin). Under that condition, which is the most severe reasonable assumption for the basin, the spillway has a maximum discharge of 1,275 cfs and spillway operation for about 3.5 hours. The hydrographs for the outlet conduit and the spillway are shown in Figure C-3. The maximum combined release from the spillway and the outlet is 1,475 cfs. The stage hydrographs for the 6-hour and 24-hour storms are shown in Figure C-4. The 24-hour storm results in about a 1.2 feet higher stage than the 6-hour storm.

Deer Valley Detention Basin

Option 1

The detention basin at Deer Valley for Option 1 provides for receiving all inflow from the Pima Road Channel entering from the north plus the Deer Valley collector channel along the northern boundary of DC Ranch entering from the east. The total inflow to the basin (100-year, 6-hour) has a peak discharge of 2,850 cfs. The area-capacity curves and outlet rating curve for the preliminary basin sizing are shown in Figures C-5 and C-6, respectively. Routing the inflow hydrograph through the basin and the 60 inch outlet conduit results in an outlet peak discharge of 360 cfs and a maximum detention volume of 177 acre-feet. The inflow and outflow hydrographs are shown in Figure 5. The basin is effectively evacuated within 17 hours after the end of the storm.

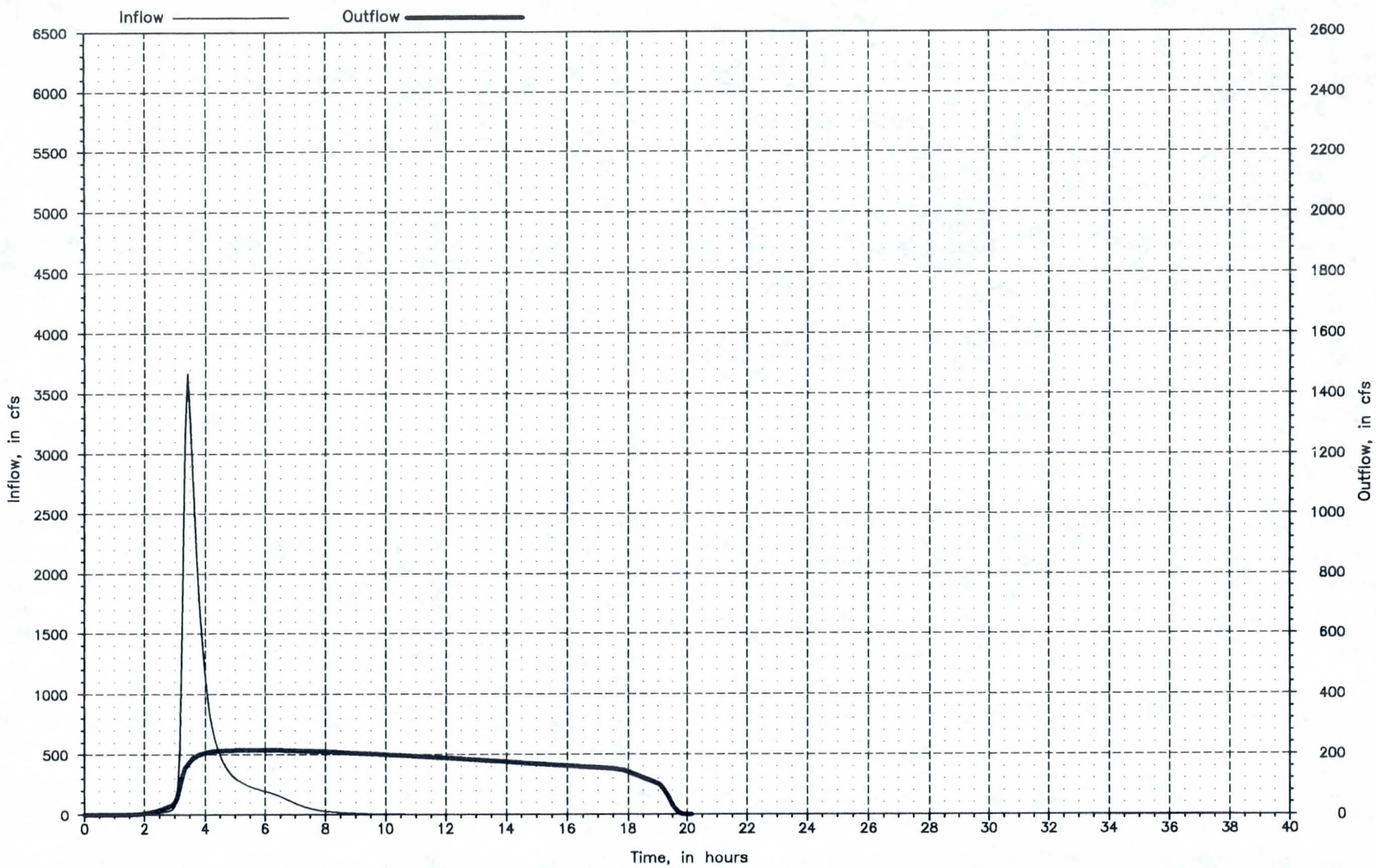


FIGURE 4
Happy Valley Detention Basin hydrographs for the 100-year, 6-hour storm

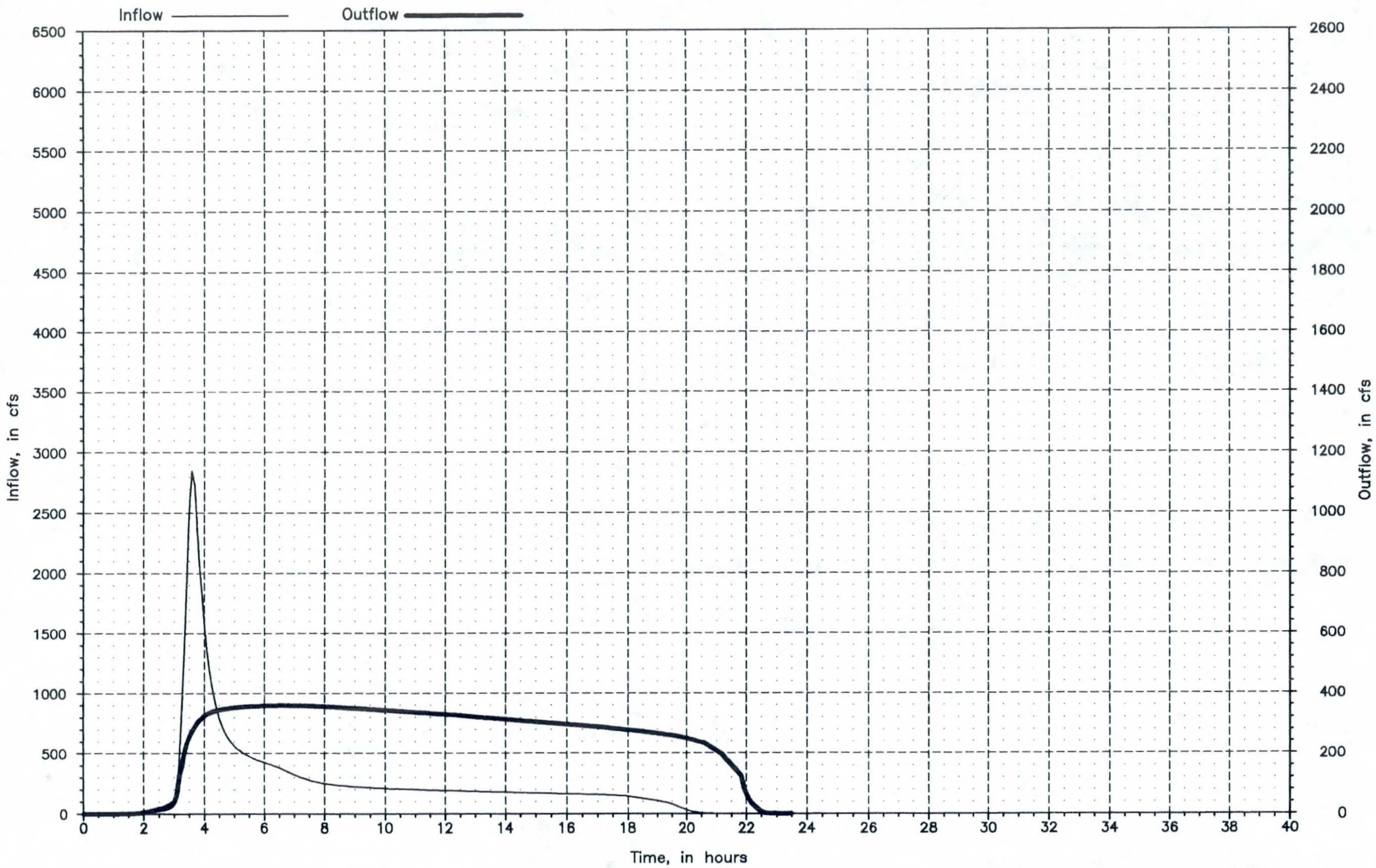


FIGURE 5
Deer Valley Detention Basin - Option 1
hydrographs for the 100-year, 6-hour storm

The performance of the Deer Valley basin under Option 1 is checked for the general storm (100-year, 24-hour). That check includes two cases for the flow-split that exists upstream of the Happy Valley basin. Case 1 assumes that 100 percent of the flow-split discharge goes to the Happy Valley basin. Case 2 assumes that 100 percent of the flow-split goes to the Deer Valley basin. Both cases are considered because it cannot be determined beforehand which causes the most severe condition at the Deer Valley basin.

The check of the Option 1 basin under flow-split assumption for Case 1 results in spillway operation with a maximum discharge of 550 cfs and a spillway operation of 4 hours. The hydrographs for the outlet conduit and spillway are shown in Figure C-7. The maximum combined release from the spillway and outlet is 925 cfs. The stage hydrographs for the design storm (100-year, 6-hour) and the Case 1 check condition are shown in Figure C-8. The Case 1 check condition results in about 2.2 feet higher stage than the design storm.

The check of the Option 1 basin under flow-split assumption for Case 2 results in spillway operation with a maximum discharge of 575 cfs and a spillway operation of 4.5 hours. The hydrographs for the outlet conduit and spillway are shown in Figure C-9. The maximum combined release from the spillway and outlet is 950 cfs. The stage hydrographs for the design storm and the Case 2 check condition are shown in Figure C-10. The Case 2 check condition results in about 2.2 feet higher stage than the design storm.

Option 2

The detention basin at Deer Valley under Option 2 provides for receiving only inflow from the Pima Road Channel entering from the north. Discharge in the Deer Valley collector channel along the northern boundary of DC Ranch bypasses the basin and flows directly to the Pima Road Channel that continues to the south of the Deer Valley basin.

The inflow to the basin from the Pima Road Channel has a peak discharge of 1,960 cfs. The bypass channel has a peak discharge of 1,000 cfs entering the Pima Road Channel directly. The area-capacity curves and outlet rating curve for the preliminary basin sizing are shown in Figures C-11 and C-12, respectively. Routing the inflow hydrograph through the basin and the 54 inch outlet conduit results in an outlet peak discharge of 280 cfs and a maximum detention volume of 130 acre-feet. The inflow and outflow hydrographs are shown in Figure 6. The basin is effectively evacuated within 18 hours after the end of the storm.

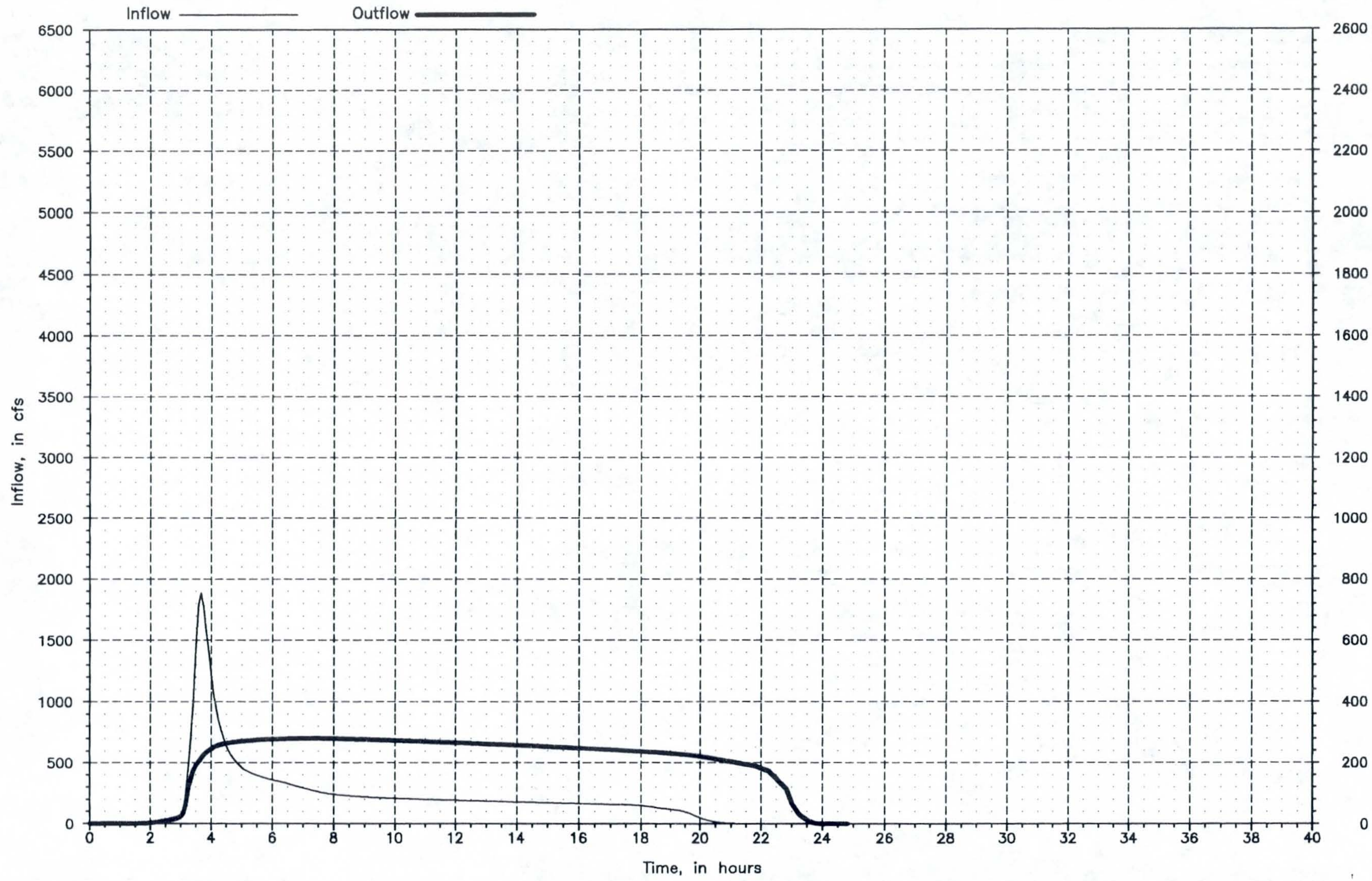


FIGURE 6
Deer Valley Detention Basin - Option 2
hydrographs for the 100-year, 6-hour storm

The performance of the Deer Valley basin under Option 2 is checked in the same manner as Option 1. For the Option 2 basin under the Case 1 flow-split assumption, the spillway has a maximum discharge of 480 cfs and a spillway operation of 4.5 hours. The hydrographs for the outlet conduit and spillway are shown in Figure C-13. The maximum combined release from the spillway and outlet is 770 cfs. The stage hydrographs for the design storm (100-year, 6-hour) and for the Case 1 check condition are shown in Figure C-14. The Case 1 check condition results in about 2 feet higher stage than the design storm.

For the Option 2 basin under the Case 2 flow-split assumption, the spillway has a maximum discharge of 500 cfs and a spillway operation of 6.5 hours. The hydrographs for the outlet conduit and spillway are shown in Figure C-15. The maximum combined release from the spillway and outlet is 790 cfs. The stage hydrographs for the design storm and for the Case 2 check condition are shown in Figure C-16. The Case 2 check condition results in about 2.3 feet higher stage than the design storm.

Union Hills Detention Basin

Option 1

The detention basin at Union Hills for Option 1 corresponds to the Option 1 conditions at the Deer Valley basin. Under Option 1 conditions, the total inflow to the basin (100-year, 6-hour) has a peak discharge of 4,460 cfs. The area-capacity curves and outlet rating curve for the preliminary basin sizing are shown in Figures C-17 and C-18, respectively. Routing the inflow hydrograph through the basin and the 78 inch outlet conduit results in an outlet peak discharge of 640 cfs and a maximum detention volume of 312 acre-feet. The inflow and outflow hydrographs are shown in Figure 7. The basin is effectively evacuated within 19 hours after the end of the storm.

The performance of the Union Hills basin under Option 1 is checked in the same manner as the Deer Valley basin. For the Option 1 basin and the Case 1 flow-split assumption, the spillway has a maximum discharge of 635 cfs and a spillway operation of 5 hours. The hydrographs for the outlet conduit and spillway are shown in Figure C-19. The maximum combined release from the spillway and outlet is 1,300 cfs. The stage hydrographs for the design storm (100-year, 6-hour) and for the Case 1 check condition are shown in Figure C-20. The Case 1 check condition results in about 2.3 feet higher stage than the design storm.

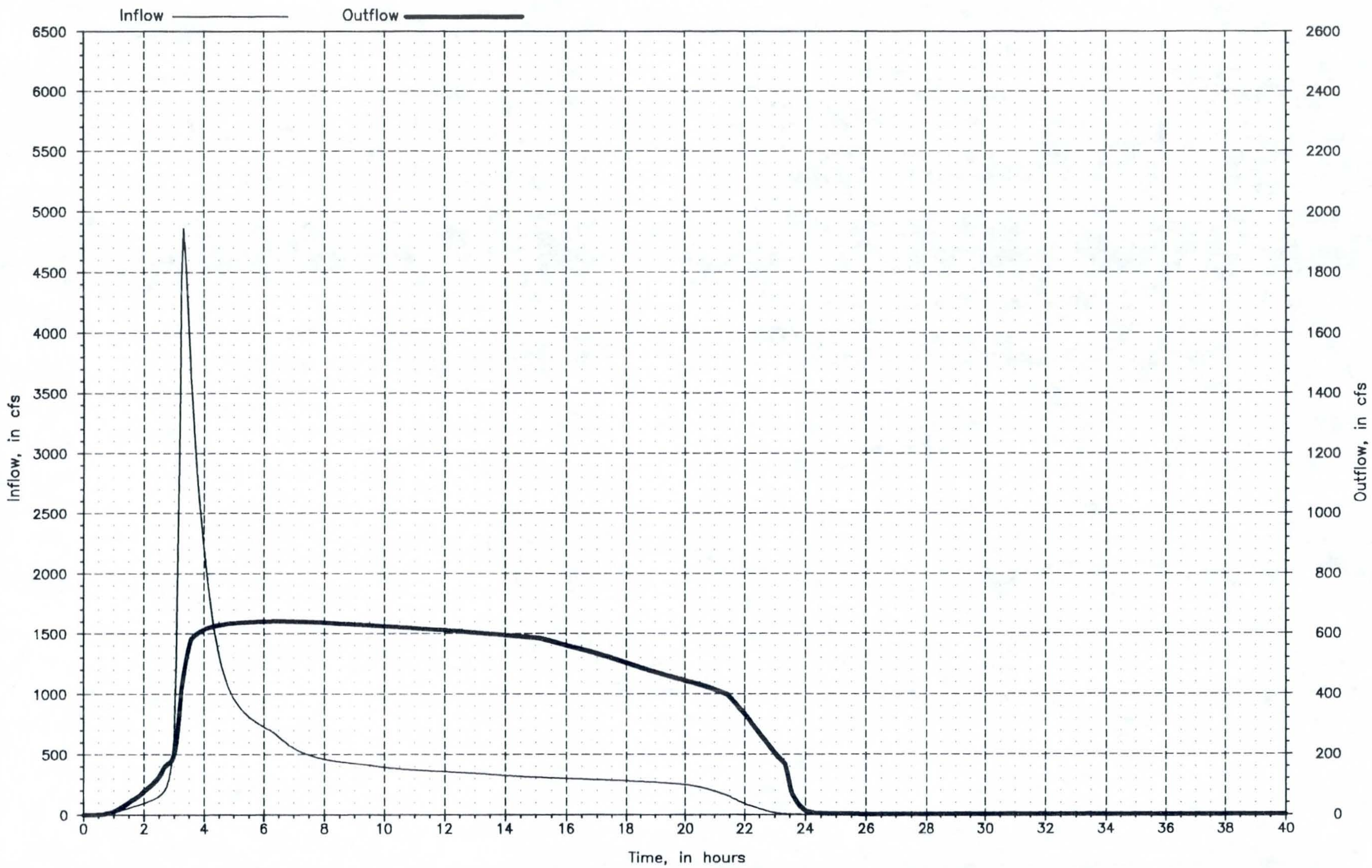


FIGURE 7
Union Hills Detention Basin - Option 1
hydrographs for the 100-year, 6-hour storm

For the Option 1 basin and the Case 2 flow-split assumption, the spillway has a maximum discharge of 670 cfs and a spillway operation of 5.5 hours. The hydrographs for the outlet conduit and spillway are shown in Figure C-21. The maximum combined release from the spillway and outlet is 1,330 cfs. The stage hydrographs for the design storm and for the Case 2 check condition are shown in Figure C-22. The Case 2 check condition results in about 2.3 feet higher stage than the design storm.

Option 2

The detention basin at Union Hills for Option 2 corresponds to the Option 2 conditions at the Deer Valley basin. Under Option 2 conditions, the inflow to the basin (100-year, 6-hour) has a total peak discharge of 4,640 cfs. The area-capacity curves and outlet rating curve for the preliminary basin sizing are shown in Figures C-23 and C-24, respectively. Routing the inflow hydrograph through the basin and the 84 inch outlet conduit results in an outlet peak discharge of 770 cfs and a maximum detention volume of 330 acre-feet. The inflow and outflow hydrographs are shown in Figure 8. The basin is effectively evacuated within 19 hours after the end of the storm.

The performance of the Union Hills basin under Option 2 is checked in the same manner as the Deer Valley basin. For the Option 2 basin and the Case 1 flow-split assumption, the spillway has a maximum discharge of 520 cfs and a spillway operation of 3.5 hours. The hydrographs for the outlet conduit and spillway are shown in Figure C-25. The maximum combined release from the spillway and outlet is 1,310 cfs. The stage hydrographs for the design storm (100-year, 6-hour) and for the Case 1 check condition are shown in Figure C-26. The Case 1 check condition results in about 2.4 feet higher stage than the design storm.

For the Option 2 basin and the Case 2 flow-split assumption, the spillway has a maximum discharge of 630 cfs and a spillway operation of 4 hours. The hydrographs for the outlet conduit and spillway are shown in Figure C-27. The maximum combined release from the spillway and outlet is 1,425 cfs. The stage hydrographs for the design storm and the Case 2 check condition are shown in Figure C-28. The Case 2 check condition results in about 2.5 feet higher stage than the design storm.

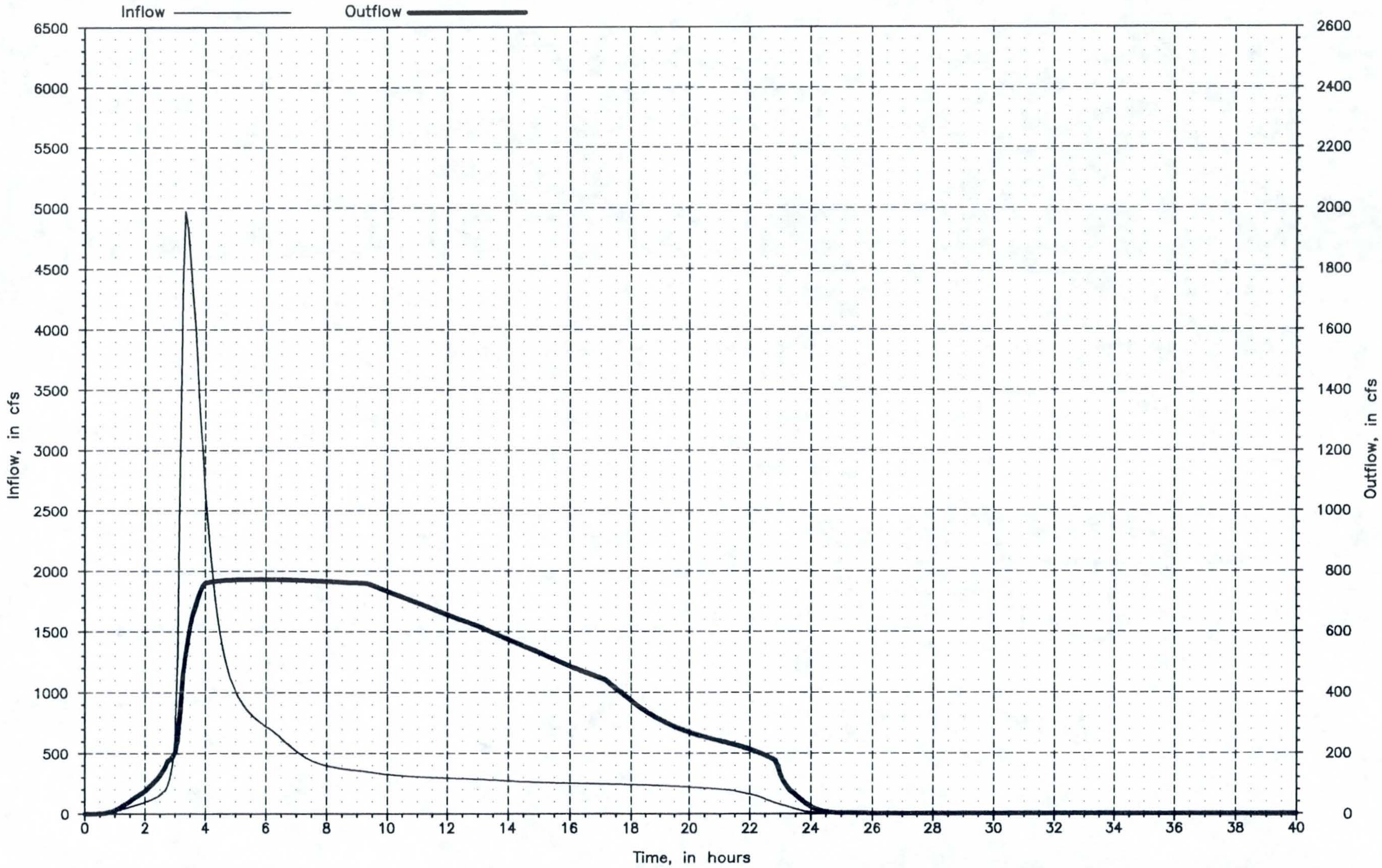


FIGURE 8
Union Hills Detention Basin - Option 2
hydrographs for the 100-year, 6-hour storm

CHANNEL DESIGN DISCHARGES

The design discharges for the Pima Road Channel, Options 1 and 2, are listed in Table 11 and illustrated in Figure 9. As shown, the design discharges for the channel north of the Deer Valley basin (above C51.1l in Table 11) are the same under both options. At C36R2 there is a slight difference because of minor deviations in the drainage areas under the two options.

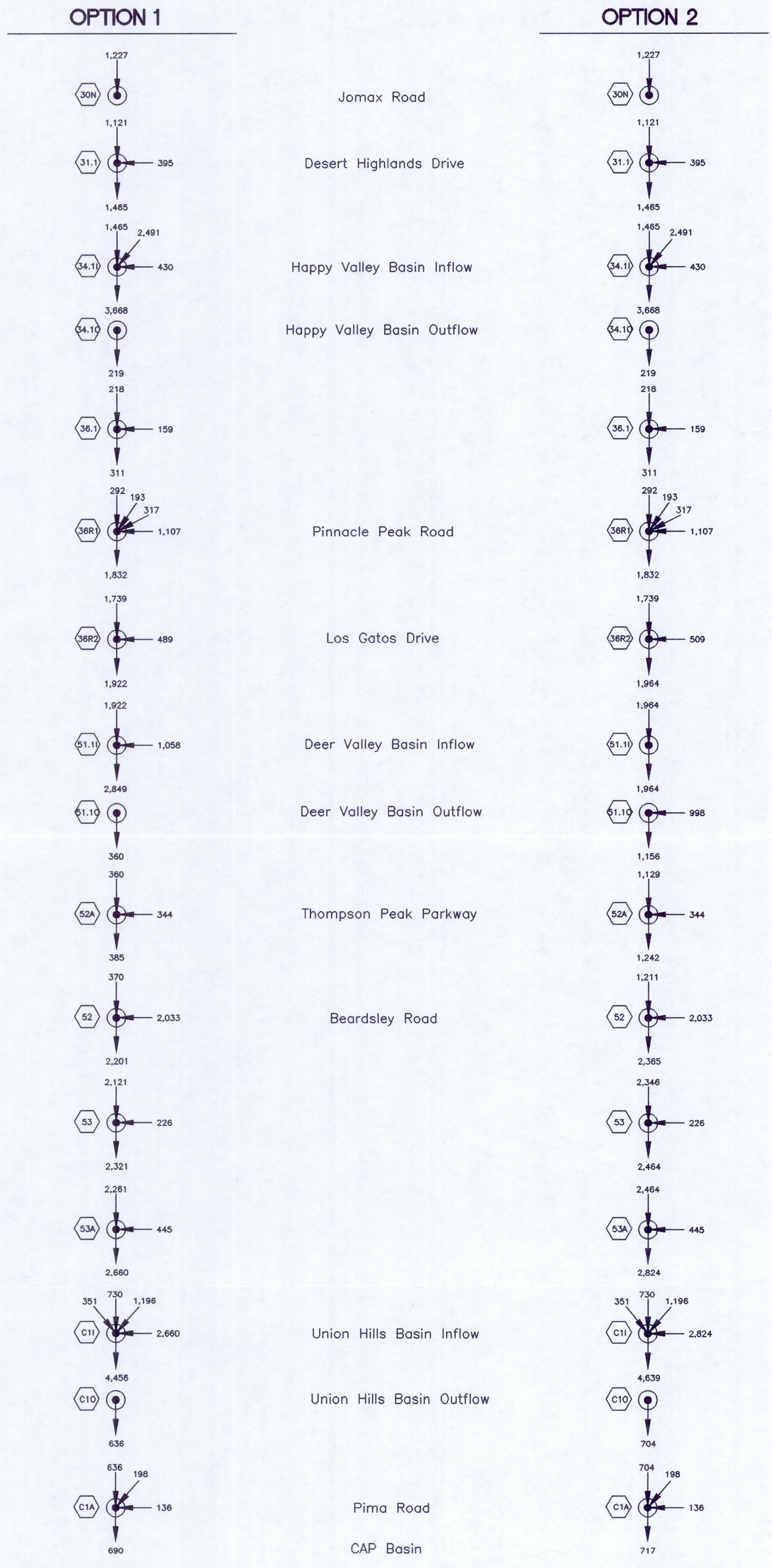
At the Deer Valley basin, the total peak inflow is reduced from 2,849 cfs under Option 1 to 1,964 cfs under Option 2. This allows the Deer Valley basin to be considerably smaller under Option 2 than Option 1, as previously discussed. However, Option 2 results in higher discharges in the Pima Road Channel from the Deer Valley basin south to Beardsley Road. Therefore, the Pima Road Channel for the reach from the Deer Valley basin to Beardsley Road will be larger under Option 2 than under Option 1. Because of the timing of inflows to the channel and routing effects, the design discharges for the channel south of Beardsley Road will be approximately the same under both Options 1 and 2.

The Recommended Design Concept and Construction Cost Estimate report should be used to compare the Deer Valley basins and cost estimates for the two options. As stated in that report, the cost differential between the two options is not meaningful in regard to selecting one option over the other. Environmental, aesthetic and recreational factors should be used to select either Option 1 or Option 2 for the Deer Valley basin.

Table 11

Summary of 100-year, 6-hour design discharges at key concentration points along the Pima Road Channel for Options 1 and 2

Concentration Point	Design Discharge, in cfs	
	Option 1	Option 2
(1)	(2)	(3)
C30N	1,227	1,227
C31.1	1,465	1,465
C34.1I	3,668	3,668
C314.1O	219	219
C36.1	311	311
C36R1	1,832	1,832
C36R2	1,922	1,964
C51.1I	2,849	1,964
C51.1O	360	282
C51.1A	---	1,156
C52A	385	1,242
C52	2,201	2,365
C53	2,321	2,464
C53A	2,660	2,824
C1I	4,456	4,639
C1O	636	704
C1A	690	717



LEGEND

31.1 — Pima Channel Concentration Point

1,227 — 100-year, 6-hour Peak Discharge In cfs

George V. Sabol Consulting Engineers, Inc.
8 January 1997

Pima Road Channel

FIGURE 9
Peak Discharges for Option 1 and Option 2

The Desert Greenbelt
SCOTTSDALE, ARIZONA

SUMMARY

The following is a summary of the design hydrology for the Pima Road Channel:

1. The hydrology is based on the best available topographic maps (1993) and current projections of future land use and drainage plans from City land use planners.

2. The hydrology is for the future, fully built-out condition in the watershed.

3, The hydrology includes two existing flow-split locations upstream of the Happy Valley basin.

4. The HEC-1 model includes the drainage design models for DC Ranch and Grayhawk. Those models were prepared by Wood/Patel Associates and DEI, respectively. Those models were reviewed by the City of Scottsdale and GVSCE prior to incorporation into the design hydrology model. Any changes to those drainage design plans by DC Ranch or Grayhawk could impact the hydrology for the Pima Road Channel.

5. Two methods are compared for performing the flood hydrology; 1) the current City of Scottsdale (COS) method which was used for FEMA mapping, other regional drainage projects and the previous Pima Road Channel of the Desert Greenbelt Project, and 2) the Maricopa County (MC) method. That comparison shows the following:

    a.) The peak discharges are about the same by both methods for the 100-year, 6-hour storm.

    b.) The peak discharge for the 100-year, 24-hour storm by the COS method is larger than by the MC method.

    c.) For the MC method, the peak discharges for the 100-year, 6-hour storm are larger than for the 100-year, 24-hour storm.

    d.) The runoff volumes are about the same by both methods for the 100-year, 6-hour storm.

    e.) For the MC method, the runoff volume for the 100-year, 6-hour storm is about the same as for the 100-year, 24-hour storm.

6. Based on the results and comparison of the COS and MC hydrology methods, it is recommended that the COS method be used for design hydrology for the Pima Road Channel. The COS method is used for other regional studies including FEMA flood hazard delineation, highway drainage, local land development, and other aspects of the Desert Greenbelt Project, therefore, use of that method for the Pima Road Channel will result in a consistent regional hydrologic modeling methodology. Also, the COS method is used for the drainage design for the DC Ranch and Grayhawk land developments and it is logical to use those hydrological models for the Pima Road Channel design hydrology.

7. It is recommended that the Pima Road Channel be designed for the 100-year, 6-hour storm. The performance of the basins is to be checked for a longer duration general storm.

8. The Happy Valley basin is preliminarily sized with a 48 inch outlet conduit and 182 acre-feet storage capacity. The inflow and outlet hydrographs are shown in Figure 4. The basin is effectively evacuated within 14 hours after the end of the storm.

9. The Deer Valley basin is preliminarily sized for two options. For Option 1 with the Deer Valley collector channel draining to the basin, a 60 inch outlet conduit and 177 acre-feet storage capacity are determined. The inflow and outlet hydrographs are shown in Figure 5. The basin is effectively evacuated within 17 hours after the end of the storm. For Option 2 with the Deer Valley collector channel bypassing the basin, a 54 inch outlet conduit and 130 acre-feet storage capacity are determined. The inflow and outlet hydrographs are shown in Figure 6. The basin is effectively evacuated within 18 hours after the end of the storm.

10. The Union Hills basin is preliminarily sized for the two Deer Valley basin options. For Option 1, a 78 inch outlet conduit and a 312 acre-feet storage volume are determined. The inflow and outlet hydrographs are shown in Figure 7. The basin is effectively evacuated within 19 hours after the end of the storm. For Option 2, an 84 inch outlet conduit and a storage volume of 330 acre-feet is determined. The inflow and outlet hydrographs are shown in Figure 8. The basin is effectively evacuated within 19 hours after the end of the storm.

11. The spillways at the three detention basins will not operate for the 100-year, 6-hour design storm.

12. The hydraulic performances of the three detention basins are checked for the 100-year, 24-hour storm and the most severe assumptions regarding flow-splits. Under those conditions, the Happy Valley basin has a spillway peak discharge of about 1,275 cfs and operation for about 3.5 hours (see Figure C-3).

    The Deer Valley basin for Option 1, Case 1 has a spillway peak discharge of about 550 cfs and operation for about 4 hours (see Figure C-7), and for Option 1, Case 2, the spillway peak discharge is about 575 cfs and operation for about 4.5 hours (see Figure C-9). For Option 2, Case 1, the spillway peak discharge is about 480 cfs and operation for about 4.5 hours (see Figure C-13), and for Option 2, Case 2, the spillway peak discharge is about 500 cfs and operation for about 6.5 hours (see Figure C-15).

    The Union Hills basin for Option 1, Case 1 has a spillway peak discharge of about 635 cfs and operation for about 5 hours (see Figure C-19), and for Option 1, Case 2, the spillway peak discharge is about 670 cfs and operation for about 5.5 hours (see Figure C-21). For Option 2, Case 1, the spillway peak discharge is about 520 cfs and operation for about 3.5 hours (see Figure C-25), and for Option 2, Case 2, the spillway peak discharge is about 630 cfs and operation for about 4 hours (see Figure C-27).

13. The design discharges for the Pima Road Channel are shown in Table 11. The maximum channel discharge is about 2,824 cfs at its inflow to the Union Hills basin (Option 2). The channel design discharges are greater under Option 2 for the reach of channel from the Deer Valley basin to Beardsley Road.

14. The selection of Option 1 or Option 2 for the Deer Valley basin will not be based on cost (see the separate Recommended Design Concept and Construction Cost Estimate report). That decision should be based on environmental, aesthetic and recreational factors, and factors related to spillway operation at the Deer Valley basin.

APPENDIX A

HEC-1 Option 1 output file (100-year, 6-hour storm)

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*          VERSION 4.0.1E               *                *        609 SECOND STREET
*    Lahey F77L-EM/32 version 5.01      *                *     DAVIS, CALIFORNIA 9561
*      Dodson & Associates, Inc.        *                *         (916) 551-1748
* RUN DATE  12/30/96  TIME  16:29:28    *                *
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Not the same as the diskette run.

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

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

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

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ID     by  GVSCE for the City of Scottsdale              Original:09-13-96      mcg
ID         Project:  95
ID
ID         100-YEAR  6-HR HYPOTHETICAL RAINFALL DISTRIBUTION
ID         RAINFALL LOSSES:  SCS CURVE NUMBERS
ID         UNIT HYDROGRAPH:  KINEMATIC WAVE
ID         ROUTING:  MODIFIED PULS - USING NORMAL DEPTH
ID
ID         COLLECTOR CHANNEL LENGTHS ARE AS FOLLOWS:
ID             HAPPY VALLEY ROAD ............ 1.0 MILE
ID             PINNACLE PEAK ROAD ........... 0.5 MILE
ID             DEER VALLEY ROAD ............. 0.25 MILE
ID             BEARDLSEY ROAD ............... 1.0 MILE
ID
ID         DETENTION BASINS AT HAPPY VALLEY, DEER VALLEY AND UNION HILLS ROADS.
ID
*DIAGRAM
IT       5                     720
IO       5
JD               .01
JD                .1
JD                .5
JD                 1
JD                 5
JD                25
*

KK     S30N
KM       RUNOFF FROM SUBBASIN 30N
BA  0.6518
PH                        .84    1.53    2.46    2.75    2.94    3.31
LS                82       13              82      13
UK     300   0.350     0.13      20
UK     300   0.050     0.13      80
RK    1550   0.069    0.045  0.0096    TRAP       0      12
RK   10520   0.038    0.040            TRAP      15      15
*

KK     R30N
KM       NORMAL DEPTH CHANNEL ROUTE FROM C30N TO C31.1 THROUGH PIMA CHANNEL
RS       1    FLOW       -1
RC   0.035   0.025    0.035    2685    0.01
RX    1000    1020     1022    1033    1068    1079    1081    1101
RY   110.6   105.6    105.5     100     100   105.5   105.6   110.6
*

KK   S31.1
KM       RUNOFF FROM SUBBASIN 31.1
BA  0.2663
LS              76.6       13            76.6      13
UK     300   0.567     0.13      10
UK     300   0.050     0.13      90
RK    1950   0.056    0.045  0.0147    TRAP       0      10
RK    7600   0.035    0.040            TRAP      22       8
```

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

 49           KK   C31.1
 50           KM      COMBINE ROUTED HYDROGRAPH FROM S30N WITH RUNOFF FROM SUBBASIN 31.1
 51           HC        2
              *

 52           KK   R31.1
 53           KM      NORMAL DEPTH CHANNEL ROUTE FROM C31.1 TO C34.1 THROUGH PIMA CHANNEL
 54           RS        1    FLOW      -1
 55           RC   0.035   0.025   0.035    2200    0.01
 56           RX    1000    1020    1022    1033    1068    1079    1081    1101
 57           RY   110.6   105.6   105.5     100     100   105.5   105.6   110.6
              *

 58           KK     S35N
 59           KM      RUNOFF FROM SUBBASIN 35N
 60           BA  0.5482
 61           LS                82      13              82      13
 62           UK     300   0.491    0.13      15
 63           UK     300   0.113    0.13      85
 64           RK    2700   0.079   0.045  0.0242    TRAP       3       6
 65           RK    5050   0.028   0.040            TRAP      15      15
              *

 66           KK   D35NR
 67           KM      DIVERT 60% OF FLOW INTO S36.2 - THE REMAINDER ENTERS S36R1
 68           DT   D35NL
 69           DI        0    2000
 70           DQ        0     800
              *

 71           KK   R35NR
 72           KM      NORMAL DEPTH CHANNEL ROUTE FROM S35N TO C36.2
 73           KM         SOURCE: 1993 MAPPING (2' CI) PROVIDED BY COS
 74           RS        1    FLOW      -1
 75           RC    0.06    0.04    0.06    3500  0.0343
 76           RX    1000    1006    1026    1027    1057    1058    1078    1084
 77           RY     105     103     101     100     100     101     103     105
              *

 78           KK   S36.2
 79           KM      RUNOFF FROM SUBBASIN 36.2
 80           BA  0.2087
 81           LS              76.6      13            76.6      13
 82           UK     300   0.580    0.13       5
 83           UK     300   0.100    0.13      95
 84           RK    1800   0.036   0.045  0.0145    TRAP      10      10
 85           RK    3520   0.028   0.040            TRAP      20       6
              *
```

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

 128          KK   R34.1
 129          KM      NORMAL DEPTH CHANNEL ROUTE FROM C34.1 TO C36.1 THROUGH PIMA CHANNEL
 130          RS        1    FLOW      -1
 131          RC   0.035   0.025   0.035    2300    0.01
 132          RX    1000    1020    1022    1034    1079    1091    1093    1113
 133          RY     111     106   105.9     100     100   105.9     106     111
              *

 134          KK   S36.1
 135          KM      RUNOFF FROM SUBBASIN 36.1
 136          BA  0.1394
 137          LS            73.4      11
 138          UK     300  0.0420   0.130     100
 139          RK    2330  0.0320   0.045  0.0134    TRAP      10      30
 140          RK    3200  0.0270   0.040            TRAP      20      30
              *

 141          KK   C36.1
 142          KM      COMBINE ROUTED HYDROGRAPH FROM C34.1 WITH RUNOFF FROM SUBBASIN 36.1
 143          HC        2
              *

 144          KK   R36.1
 145          KM      NORMAL DEPTH CHANNEL ROUTE FROM C36.1 TO C36R1 THROUGH PIMA CHANNEL
 146          RS        1    FLOW      -1
 147          RC   0.035   0.025   0.035    2980    0.01
 148          RX    1000    1020    1022    1034    1079    1091    1093    1113
 149          RY     111     106   105.9     100     100   105.9     106     111
              *

 150          KK   B35NL
 151          KM      BRING BACK DIVERTED HYDROGRAPH FROM C35N
 152          DR   D35NL
              *

 153          KK   R35NL
 154          KM      NORMAL DEPTH CHANNEL ROUTE FROM S35N TO C36R1
 155          KM         SOURCE: 1993 MAPPING (2' CI) PROVIDED BY COS
 156          RS        5    FLOW      -1
 157          RC    0.06    0.04    0.06   14480  0.0318
 158          RX    1000    1040    1080    1086    1091    1097    1137    1174
 159          RY     105     104     103     100     100     103     104     105
              *

 160          KK   B36.2L
 161          KM      BRING BACK DIVERTED HYDROGRAPH FROM C36.2
 162          DR   D36.2L
              *
```

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

  86          KK   C36.2
  87          KM     COMBINE ROUTED HYDROGRAPH FROM S35N WITH RUNOFF FROM SUBBASIN 36.2
  88          KM       AREA IS AREA OF S36.2 + 60% OF AREA FROM S35N
  89          HC       2  0.5411
              *

  90          KK  D36.2R
  91          KM     DIVERT 70% OF FLOW INTO S34.1 - THE REMAINDER ENTERS S36R1
  92          DT  D36.2L
  93          DI       0    2000
  94          DQ       0     600
              *

  95          KK  R36.2R
  96          KM     NORMAL DEPTH CHANNEL ROUTE FROM C36.2 TO C34.1
  97          KM        SOURCE: 1993 MAPPING (2' CI) PROVIDED BY COS
  98          RS       4    FLOW      -1
  99          RC    0.06    0.04    0.06    7800  0.0321
 100          RX    1000    1043    1053    1068    1093    1098    1133    1218
 101          RY   102.6   100.6   100.5     100     100   100.5   100.6   102.6
              *

 102          KK   S34.1
 103          KM     RUNOFF FROM SUBBASIN 34.1
 104          KM        RAINFALL LOSSES FOR GREINER SUBBASINS 31.2 AND 34.1 ARE WEIGHTED BY AREA
 105          BA  1.6076
 106          LS            77.3      12            77.3      12
 107          UK     300   0.590    0.13      25
 108          UK     300   0.040    0.13      75
 109          RK    2570   0.085   0.045  0.0214    TRAP       0      10
 110          RK    9200   0.042   0.040            TRAP      50       9
              *

 111          KK  C34.1I
 112          KM     COMBINE ROUTED HYDROGRAPH FROM C31.1 & C36.2 W/RUNOFF FROM SUBBASIN 34.1
 113          KM       AREA IS AREA FROM C31.1 + S34.1 + 70% OF AREA FROM C36.2
 114          HC       3  2.9029
              *

 115          KK  C34.1O
 116          KM     DETENTION BASIN AT HAPPY VALLEY ROAD - NONREGULATORY STRUCTURE
 117          KM        OUTLET RATING CURVE - USING HY8 FOR A 48" RCP WITH A SLOPE OF 0.5%
 118          KM        13 ACRE-FEET OF STORAGE FOR SEDIMENTAION
 119          RS       1    STOR
 120          SV       0     0.1     0.2     0.5     1.2     2.2    20.5    65.1   116.9   182.1
 121          SV     195
 122          SE    2065    2066    2067    2068    2069    2070    2075    2080    2085    2090
 123          SE    2091
 124          SQ       0      21      42      63      84     105     110     147     168     189
 125          SQ     210     216     244     549     665     811     996    1300    1511
 126          SE  2065.0 2066.82 2067.83 2068.64 2069.47 2070.44 2070.70 2073.43 2078.36 2083.14
 127          SE  2088.3 2090.00 2090.10 2090.50 2090.60 2090.70 2090.80 2090.90 2091.00
              *
```

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

 128          KK   R34.1
 129          KM      NORMAL DEPTH CHANNEL ROUTE FROM C34.1 TO C36.1 THROUGH PIMA CHANNEL
 130          RS        1    FLOW      -1
 131          RC   0.035   0.025   0.035    2300    0.01
 132          RX    1000    1020    1022    1034    1079    1091    1093    1113
 133          RY     111     106   105.9     100     100   105.9     106     111
              *

 134          KK   S36.1
 135          KM      RUNOFF FROM SUBBASIN 36.1
 136          BA   0.1394
 137          LS            73.4      11
 138          UK     300  0.0420   0.130     100
 139          RK    2330  0.0320   0.045  0.0134    TRAP      10      30
 140          RK    3200  0.0270   0.040            TRAP      20      30
              *

 141          KK   C36.1
 142          KM      COMBINE ROUTED HYDROGRAPH FROM C34.1 WITH RUNOFF FROM SUBBASIN 36.1
 143          HC        2
              *

 144          KK   R36.1
 145          KM      NORMAL DEPTH CHANNEL ROUTE FROM C36.1 TO C36R1 THROUGH PIMA CHANNEL
 146          RS        1    FLOW      -1
 147          RC   0.035   0.025   0.035    2980    0.01
 148          RX    1000    1020    1022    1034    1079    1091    1093    1113
 149          RY     111     106   105.9     100     100   105.9     106     111
              *

 150          KK   B35NL
 151          KM      BRING BACK DIVERTED HYDROGRAPH FROM C35N
 152          DR   D35NL
              *

 153          KK   R35NL
 154          KM      NORMAL DEPTH CHANNEL ROUTE FROM S35N TO C36R1
 155          KM          SOURCE: 1993 MAPPING (2' CI) PROVIDED BY COS
 156          RS        5    FLOW      -1
 157          RC    0.06    0.04    0.06   14480  0.0318
 158          RX    1000    1040    1080    1086    1091    1097    1137    1174
 159          RY     105     104     103     100     100     103     104     105
              *

 160          KK   B36.2L
 161          KM      BRING BACK DIVERTED HYDROGRAPH FROM C36.2
 162          DR   D36.2L
              *
1                                       HEC-1 INPUT                                         PAGE  5

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

 163          KK   R36.2L
 164          KM      NORMAL DEPTH CHANNEL ROUTE FROM C36.2 TO C36R1
 165          KM          SOURCE: 1993 MAPPING (2' CI) PROVIDED BY COS
 166          RS        3    FLOW      -1
 167          RC    0.06    0.04    0.06   10160  0.0342
 168          RX    1000    1030    1060    1066    1076    1082    1112    1142
 169          RY     103   102.5     102     100     100     102   102.5     103
              *

 170          KK   S36R1
 171          KM      RUNOFF FROM SUBBASIN 36R1
 172          KM          RAINFALL LOSSES FOR GREINER SUBBASINS 36.3, 36R1 AND 35R ARE AREA WEIGHT
 173          BA   1.2173
 174          LS            74.3      10
 175          UK     300   0.020   0.200     100
 176          RK    1420   0.032   0.045  0.0061    TRAP       0      13
 177          RK   12600   0.033   0.040            TRAP      10       9
              *

 178          KK   C36R1
 179          KM      COMBINE ROUTED HYDROGRAPH FROM C36.1, D35NL & D36.2L W/RUNOFF FROM S36R1
 180          KM          AREA IS AREA FROM C36.1 + S36R1 + 40% OF AREA FROM S35N + 30% OF AREA
 181          KM          FROM C36.2
 182          HC        4  4.6393
              *

 183          KK   R36R1
 184          KM      NORMAL DEPTH CHANNEL ROUTE FROM C36R1 TO C36R2 THROUGH PIMA CHANNEL
 185          RS        1    FLOW      -1
 186          RC   0.035   0.025   0.035    4000    0.01
 187          RX    1000    1020    1022    1034    1084    1096    1098    1118
 188          RY   111.4   106.4   106.3     100     100   106.3   106.4   111.4
              *

 189          KK   S36R2
 190          KM      RUNOFF FROM SUBBASIN 36R2
 191          BA   0.3742
 192          LS              72      16
 193          UK     280   0.045   0.100     100
 194          RK    1900   0.032   0.017   0.015    TRAP      15       7
 195          RK    7360   0.030   0.040            TRAP      30      10
              *

 196          KK   C36R2
 197          KM      COMBINE ROUTED HYDROGRAPH FROM C36R1 W/RUNOFF FROM SUBBASIN 36R2
 198          HC        2
              *

 199          KK   S51.1
 200          KM      RUNOFF FROM SUBBASIN 51.1
 201          KM          RAINFALL LOSSES FOR GREINER SUBBASINS 51.1 AND 49.1 ARE AREA WEIGHTED
 202          BA   1.130
```

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

 163          KK  R36.2L
 164          KM     NORMAL DEPTH CHANNEL ROUTE FROM C36.2 TO C36R1
 165          KM        SOURCE: 1993 MAPPING (2' CI) PROVIDED BY COS
 166          RS       3    FLOW      -1
 167          RC    0.06    0.04    0.06   10160  0.0342
 168          RX    1000    1030    1060    1066    1076    1082    1112    1142
 169          RY     103   102.5     102     100     100     102   102.5     103
              *

 170          KK   S36R1
 171          KM     RUNOFF FROM SUBBASIN 36R1
 172          KM        RAINFALL LOSSES FOR GREINER SUBBASINS 36.3, 36R1 AND 35R ARE AREA WEIGHT
 173          BA  1.2173
 174          LS            74.3      10
 175          UK     300   0.020   0.200     100
 176          RK    1420   0.032   0.045  0.0061    TRAP       0      13
 177          RK   12600   0.033   0.040            TRAP      10       9
              *

 178          KK   C36R1
 179          KM     COMBINE ROUTED HYDROGRAPH FROM C36.1, D35NL & D36.2L W/RUNOFF FROM S36R1
 180          KM        AREA IS AREA FROM C36.1 + S36R1 + 40% OF AREA FROM S35N + 30% OF AREA
 181          KM        FROM C36.2
 182          HC       4  4.6393
              *

 183          KK   R36R1
 184          KM     NORMAL DEPTH CHANNEL ROUTE FROM C36R1 TO C36R2 THROUGH PIMA CHANNEL
 185          RS       1    FLOW      -1
 186          RC   0.035   0.025   0.035    4000    0.01
 187          RX    1000    1020    1022    1034    1084    1096    1098    1118
 188          RY   111.4   106.4   106.3     100     100   106.3   106.4   111.4
              *

 189          KK   S36R2
 190          KM     RUNOFF FROM SUBBASIN 36R2
 191          BA  0.3742
 192          LS              72      16
 193          UK     280   0.045   0.100     100
 194          RK    1900   0.032   0.017   0.015    TRAP      15       7
 195          RK    7360   0.030   0.040            TRAP      30      10
              *

 196          KK   C36R2
 197          KM     COMBINE ROUTED HYDROGRAPH FROM C36R1 W/RUNOFF FROM SUBBASIN 36R2
 198          HC       2
              *

 199          KK   S51.1
 200          KM     RUNOFF FROM SUBBASIN 51.1
 201          KM        RAINFALL LOSSES FOR GREINER SUBBASINS 51.1 AND 49.1 ARE AREA WEIGHTED
 202          BA   1.130
 203          LS            73.9      12
 204          UK     300   0.037   0.130     100
```

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

 205          RK    1800   0.038   0.045  0.0161    TRAP       0      12
 206          RK   14400   0.032   0.040            TRAP      40      15
              *

 207          KK  C51.1I
 208          KM     COMBINE HYDROGRAPH FROM C36R2 W/RUNOFF FROM SUBBASIN 51.1
 209          HC       2
              *

 210          KK  C51.10
 211          KM     DETENTION BASIN AT DEER VALLEY ROAD - NONREGULATORY STRUCTURE
 212          KM        OUTLET RATING CURVE - USING HY8 FOR A 60" RCP WITH A SLOPE OF 0.5%
 213          KM        13 ACRE-FEET OF STORAGE FOR SEDIMENTATION
 214          RS       1    STOR
 215          SV       0   0.187   0.521   1.104   1.988   2.568  21.589  67.900 123.513 189.362
 216          SV  203.58 218.272
 217          SE    1855    1856    1857    1858    1859    1860    1865    1870    1875    1880
 218          SE    1881    1882
 219          SQ       0      37      73     110     147     184     200     257     294     330
 220          SQ     367     367     472     708     944    1062    1180
 221          SE  1855.0 1857.29 1858.54 1859.56 1860.59 1861.81 1862.44 1866.70 1870.88 1875.22
 222          SE  1879.9 1880.00 1880.47 1881.04 1881.34 1881.43 1881.50
              *

 223          KK   R51.1
 224          KM     NORMAL DEPTH CHANNEL ROUTE FROM C51.1 TO C52A THROUGH PIMA CHANNEL
 225          RS       1    FLOW      -1
 226          RC   0.035   0.025   0.035    2580    0.01
 227          RX    1000    1020    1022    1034    1084    1096    1098    1118
 228          RY   111.4   106.4   106.3     100     100   106.3   106.4   111.4
              *

 229          KK  D51.1T
 230          KM     DIVERT 100% OF FLOW TO RETRIEVE AT THOMPSON PEAK PARKWAY
 231          DT  B51.1T
 232          DI       0   10000
 233          DQ       0   10000
              *
              *
              *     ******************  BEGIN DC RANCH WATERSHED  *******************
              *
              *       THE DC RANCH HEC-1 MODEL WAS DEVELOPED BY WOOD/PATEL ASSOCIATES
              *           WOOD/PATEL FILE NAME:  DC0721C.DAT
              *           MODEL DATE:            4 JANUARY 96
              *

 234          KK    52D4
 235          KM   RUNOFF FROM SUBBASIN 52D4
 236          BA    .070
 237          LS              75    14.5
 238          UK     120    .010     .15     100
 239          RK    3100    .035    .045            TRAP      30      10
              *
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK   52D4R
KM   ROUTE 52D4C THROUGH 52D5 TO CP 52D5C
RK    1350    .033    .045            TRAP      10      10
*

KK   52D4B
KM   RUNOFF FROM SUBBASIN 52D4B
BA    .022
LS              75      63
UK     120    .010     .15     100
RK    2200    .033    .045            TRAP      30      10
*

KK 52D5C1
KM   COMBINE 52D4R AND 52D4B
HC       2
*

KK   52D5A
KM   RUNOFF FROM 52D5A
BA   .0232
LS              75      63
UK     120    .010     .15     100
RK    1300    .032    .045            TRAP      30      10
*

KK  52D5AR
KM   ROUTE 52D5A THROUGH BEARDSLEY CHANNEL TO CP 52D5C2
RK     400   .0143    .035            TRAP      50       4
*

KK  52D5C2
KM   COMBINE 25D5C1 AND 52D5AR
HC       2
*

KK   52D5R
KM   ROUTE 52D5C IN BEARDSLEY CHANNEL TO CP 52C3BC2
RK     240   .0143    .035            TRAP      50       4
*

KK    52C3
KM   RUNOFF FROM SUBBASIN 52C3
BA    .006
LS              75      65
UK     100     .02     .10     100
RK     800    .033    .045            TRAP      30      10
*
```

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

               KK    52C3R
               KM    ROUTE 52C3 THROUGH SUBBASIN 52C4 TO CP 52C4C1
               RK     1350    .034    .045            TRAP      10      10
               *

               KK    52C3B
               KM    RUNOFF FROM SUBBASIN 52C3B
               BA     .016
               LS               75      60
               UK      100     .02     .10     100
               RK     1400    .034    .045            TRAP      30      10
               *

               KK   2C3BC1
               KM    COMBINE 52C3B AND 52C3R
               HC        2
               *

               KK   2C3BC2
               KM    COMBINE 52C3BC1 AND 52C5R
               HC        2
               *

               KK   52C3BR
               KM    ROUTE 52C3BC2 IN BEARDSLEY CHANNEL TO CP 52C4C2
               RK      430   .0143    .035            TRAP      50       4
               *
               *

               KK      51C     SUB
               KM          RUNOFF FROM SUB 51C
               BA    .0972
               LS               74      15
               UK      100   .0213     .10     100
               RK     3900   .0375    .045            TRAP      30      10
               *

               KK    51C1D
               KM    DIVERT 67 PERCENT OF 51C TO WEST (33 PERCENT TO SOUTH)
               DT   51C1DV
               DI        0   10000
               DQ        0    6700
               *

               KK    51C1R
               KM    ROUTE 51C1D THROUGH SUBBASIN 52C1
               RK     1350   .0364    .045            TRAP      10      10
               *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 305           KK    52C1
 306           KM   RUNOFF FROM SUBBASIN 52C1
 307           BA    .029
 308           LS               75    20.5
 309           UK     100     .02     .10     100
 310           RK    1350    .021    .045             TRAP      30      10
               *

 311           KK   52C1C
 312           KM   COMBINE 51C1R AND 52C1
 313           HC       2   .0611
               *

 314           KK   52C1R
 315           KM   ROUTE 52C1C THROUGH BASIN 52C2A TO CP 52C2BC
 316           RK    1500    .033    .045             TRAP      10      10
               *

 317           KK   52C2A
 318           KM   RUNOFF FROM SUBBASIN 52C2A
 319           BA    .019
 320           LS               75       2
 321           UK     100     .02     .10     100
 322           RK    1500    .033    .045             TRAP      30      10
               *

 323           KK  52C2AC
 324           KM   COMBINE 52C2A AND 52C1R
 325           HC       2
               *

 326           KK   52C2B
 327           KM   RUNOFF FROM SUBBASIN 52C2B
 328           BA   .0275
 329           LS               75      11
 330           UK     100     .02     .10     100
 331           RK    2000    .030    .045             TRAP      30      10
               *

 332           KK  52C2BC
 333           KM   COMBINE 52C2B AND 52C2AC
 334           HC       2
               *

 335           KK  52C2BR
 336           KM   ROUTE 52C2BC THROUGH 52C2C TO CP 52C2CC
 337           RK    1500    .040    .045             TRAP      10      10
               *
```

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

KK    52C2C
KM    RUNOFF FROM SUBBASIN 52C2C
BA     .014
LS                 75      62
UK     100        .02     .10      100
RK    1500        .04    .045              TRAP      30      10
*

KK   52C2CC
KM    COMBINE 52C2C AND 52C2BR
HC       2
*

KK    52C2R
KM    ROUTE 52C2CC THROUGH SUBBASIN 52C4 TO CP 52C4C1
RK    1550       .030    .045              TRAP      10      10
*

KK     52C4
KM    RUNOFF FROM SUBBASIN 52C4
BA     .017
LS                 75      60
UK     100        .02     .10      100
RK    1550       .030    .045              TRAP      30      10
*

KK   52C4C1
KM    COMBINE 52C4 AND 52C2R
HC       2
*

KK   52C4C2
KM    COMBINE 52C4C1 AND 52C3BR
HC       2
*

KK    52C4R
KM    ROUTE 52C4C2 WEST IN BEARDSLEY CHANNEL TO CP 52C15C2
RK     850      .0143    .035              TRAP      50       4
*

KK    52C13
KM    RUNOFF FROM SUBBASIN 52C13
BA     .023
LS                 75      31
UK     100        .02     .10      100
RK     950       .040    .045              TRAP      30      10
*
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 371          KK  2C13DV
 372          KM   DIVERT FIRST 40 CFS INTO STORM DRAIN; REMAINDER FLOWS OVER ROAD
 373          DT   STORM
 374          DI        0      40    1000
 375          DQ        0      40      40
              *
              * KK52C13R
              * KM ROUTE 52C13 THROUGH SUBBASIN 52C15 TO CP 52C15C1
              * RK  1800    .035    .045            TRAP      10      10
              *

 376          KK   52C15
 377          KM   RUNOFF FROM SUBBASIN 52C15
 378          BA    .046
 379          LS              75    64.4
 380          UK     100     .02     .10     100
 381          RK    2050    .036    .045            TRAP      30      10
              *

 382          KK  2C15C1
 383          KM   COMBINE 52C15 AND 52C13DV
 384          HC        2    .046
              *

 385          KK  2C15C2
 386          KM   COMBINE 52C15C1 AND 52C4R
 387          HC        2
              *

 388          KK  52C15R
 389          KM   ROUTE 52C15C2 IN BEARDSLEY CHANNEL TO CP 52C14C3
 390          RK     750   .0143    .035            TRAP      50       4
              *

 391          KK  52C14A
 392          KM   RUNOFF FROM SUBBASIN 52C14A
 393          BA    .041
 394          LS              75    67.7
 395          UK     100     .02     .10     100
 396          RK    2050    .031    .045            TRAP      30      10
              *

 397          KK  2C14AC
 398          KM   COMBINE 52C14A AND 52C15R
 399          HC        2
              *

 400          KK  2C14AR
 401          KM   ROUTE 52C14AC IN BEARDSLEY CHANNEL TO CP 52C14BC2
 402          RK     380   .0143    .035            TRAP      50       4
              *
              *
```

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

KK  51C1DV
KM   RETRIEVE DIVERTED FLOW
DR  51C1DV
*

KK   51C2D
KM   DIVERT 27 PERCENT OF 51C1DV TO WEST (73 PERCENT TO SOUTH)
DT  51C2DV
DI        0   10000
DQ        0    2700
*

KK   51C2R
KM   ROUTE 51C2D THROUGH SUBBASIN 52C5 TO CP 52C5C
RK     700    .030    .045            TRAP      10       10
*

KK    52C5
KM   RUNOFF FROM SUBBASIN 52C5
BA    .016
LS               75      27
UK     100     .02     .10     100
RK    1200     .03    .045            TRAP      30       10
*

KK   52C5C
KM   COMBINE 51C2R AND 52C5
HC       2   .0635
*

KK   52C5R
KM   ROUTE 52C5C THROUGH SUBBASIN 52C6 TO CP 52C6C
RK    3100    .035    .045            TRAP      10       10
*

KK    52C6
KM   RUNOFF FROM SUBBASIN 52C6
BA    .036
LS               75    31.4
UK     100     .02     .10     100
RK    3100    .035    .045            TRAP      30       10
*

KK   52C6C
KM   COMBINE 52C5R AND 52C6
HC       2
*

KK   52C6R
KM   ROUTE 52C6C THROUGH SUBBASIN 52C10 TO CP 52C10C2
RK     450    .032    .045            TRAP      10       10
*
```

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

 438        KK  51C2DV
 439        KM   RETRIEVE 52C2DV
 440        DR  51C2DV
            *

 441        KK   51C3R
 442        KM   ROUTE 52C2DV THROUGH SUBBASIN 52C7 TO CP 52C7C
 443        RK     700    .040    .045            TRAP      10      10
            *

 444        KK     51B     SUB
 445        KM        RUNOFF FROM SUB 51B
 446        BA   .5711
 447        LS       0    71.9    13.1
 448        UK     100   .0213     .10     100
 449        RK    8900   .0300    .045            TRAP      50      25
            *

 450        KK   51B1D
 451        KM   DIVERT 92 PERCENT OF SUBBASIN 51B TO WEST (8 PERCENT TO SOUTH)
 452        DT  51B1DV
 453        DI       0   10000
 454        DQ       0    9200
            *

 455        KK   51B1R
 456        KM    ROUTE 51B1D THROUGH SUBBASIN 52C7 TO CP 52C7C
 457        RK     450     .04    .045            TRAP      10      10
            *

 458        KK    52C7
 459        KM   RUNOFF FROM SUBBASIN 52C7
 460        BA    .006
 461        LS              75      27
 462        UK     100     .02     .10     100
 463        RK     550     .04    .045            TRAP      30      10
            *

 464        KK   52C7C
 465        KM   COMBINE 51B1R, 51C3R, AND 52C7
 466        HC       3   .0693
            *

 467        KK   52C7R
 468        KM   ROUTE 52C7C THROUGH SUBBASIN 52C9 TO CP 52C9C1
 469        RK    1550    .036    .045            TRAP      10      10
            *

 470        KK  51B1DV
 471        KM   RETRIEVE DIVERTED FLOW 51B1DV
 472        DR  51B1DV
            *
```

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

 473          KK   51B2D
 474          KM   DIVERT 84 PERCENT OF 51B1DV TO WEST (16 PERCENT TO SOUTH)
 475          DT  51B2DV
 476          DI       0   10000
 477          DQ       0    8400
              *

 478          KK   51B2R
 479          KM   ROUTE 51B2D THROUGH SUBBASIN 52C8 TO CP 52C8C
 480          RK     750    .034    .045            TRAP      10      10
              *

 481          KK    52C8
 482          KM   RUNOFF FROM SUBBASIN 52C8
 483          BA    .008
 484          LS              75      27
 485          UK     100     .02     .10     100
 486          RK     750    .034    .045            TRAP      30      10
              *

 487          KK   52C8C
 488          KM   COMBINE 51B2R AND 52C8
 489          HC       2   .4493
              *

 490          KK   52C8R
 491          KM   ROUTE 52C8C THROUGH SUBBASIN 52C9 TO CP 52C9C1
 492          RK    1100    .036    .045            TRAP      10      10
              *

 493          KK  52C9C1
 494          KM   COMBINE 52C7R AND 52C8R
 495          HC       2
              *

 496          KK  52C9R1
 497          KM   ROUTE 52C9C1 THROUGH SUBBASIN 52C9 TO CP 52C9C2
 498          RK    1050    .036    .045            TRAP      10      10
              *

 499          KK    52C9
 500          KM   RUNOFF FROM SUBBASIN 52C9
 501          BA    .069
 502          LS              75   31.85
 503          UK     100     .02     .10     100
 504          RK    3150    .036    .045            TRAP      30      10
              *

 505          KK  52C9C2
 506          KM   COMBINE 52C9R1 AND 52C9
 507          HC       2
              *
```

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

 508          KK  52C9R2
 509          KM   ROUTE 52C9C2 THROUGH SUBBASIN 52C10 TO CP 52C10C1
 510          RK     500    .032    .045              TRAP      10      10
              *

 511          KK  2C10C1
 512          KM   COMBINE 52C9R2 AND 52C6R
 513          HC       2
              *

 514          KK  2C10R1
 515          KM   ROUTE 52C10C1 THROUGH SUBBASIN 52C10 TO CP 52C10C2
 516          RK     300    .032    .045              TRAP      10      10
              *

 517          KK   52C10
 518          KM   RUNOFF FROM SUBBASIN 52C10
 519          BA    .014
 520          LS              75    7.85
 521          UK     100     .02     .10     100
 522          RK     800    .032    .045              TRAP      30      10
              *

 523          KK  2C10C2
 524          KM   COMBINE 52C10R1 AND 52C10
 525          HC       2
              *

 526          KK   52C11
 527          KM   RUNOFF FROM SUBBASIN 52C11
 528          BA   .0425
 529          LS              75      27
 530          UK     100     .02     .10     100
 531          RK    2800    .031    .045              TRAP      30      10
              *

 532          KK  2C11R1
 533          KM   PIPE ROUTE 52C11 TO CP 52C11C
 534          RK     650     .02    .045              CIRC       3
              *

 535          KK  52C13D
 536          KM   RETRIEVE DIVERTED FLOW
 537          DR   STORM
              *

 538          KK  52C11C
 539          KM   COMBINE 52C13D AND 52C11R1
 540          HC       2   .0655
              *
```

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

 541         KK  2C11CR
 542         KM   PIPE ROUTE 52C11C TO CP 52C11C2
 543         RK     750     .02    .045              CIRC       3
             *

 544         KK  2C11C2
 545         KM   COMBINE 52C11CR AND 52C10C2
 546         HC       2
             *

 547         KK  2C11R2
 548         KM   ROUTE 52C11C2 THROUGH SUBBASIN 52C12 TO CP 52C12C
 549         RK     700     .03    .045              TRAP      10      10
             *

 550         KK   52C12
 551         KM   RUNOFF FROM SUBBASIN 52C12
 552         BA    .023
 553         LS              75      85
 554         UK     100     .02     .10     100
 555         RK     900     .03    .045              TRAP      30      10
             *

 556         KK  52C12C
 557         KM   COMBINE 52C11R2 AND 52C12
 558         HC       2
             *

 559         KK  52C12R
 560         KM   ROUTE 52C12C THROUGH SUBBASIN 52C14 TO CP 52C14C1
 561         RK    1150    .029    .045              TRAP      10      10
             *

 562         KK  52C14B
 563         KM   RUNOFF FROM SUBBASIN 52C14B
 564         BA    .021
 565         LS              75      60
 566         UK     100     .02     .10     100
 567         RK    1250    .029    .045              TRAP      30      10
             *

 568         KK  C14BC1
 569         KM   COMBINE 52C14B AND 52C12R
 570         HC       2
             *

 571         KK  C14BC2
 572         KM   COMBINE 52C14BC1 AND 52C14AR
 573         HC       2
             *
```

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

 574      KK  52C14R
 575      KM   ROUTE 52C14C3 WEST IN BEARDSLEY CHANNEL TO CP 52B5C2
 576      RK     600   .0143    .035            TRAP      50       4
          *

 577      KK  51B2DV
 578      KM   RETRIEVE DIVERTED FLOW
 579      DR  51B2DV
          *

 580      KK   51B3D
 581      KM   DIVERT 84 PERCENT OF 51B2DV TO WEST (16 PERCENT TO SOUTH)
 582      DT  51B3DV
 583      DI       0   10000
 584      DQ       0    8400
          *

 585      KK   51B3R
 586      KM   ROUTE 51B3D THROUGH SUBBASIN 52B1 TO CP 52B1C
 587      RK     600    .039    .045            TRAP      10      10
          *

 588      KK    52B1
 589      KM   RUNOFF FROM SUBBASIN 52B1
 590      BA    .003
 591      LS              75      27
 592      UK     100     .02     .10     100
 593      RK     600    .039    .045            TRAP      30      10
          *

 594      KK   52B1C
 595      KM   COMBINE 51B3R AND 52B1
 596      HC       2   .0736
          *

 597      KK   52B1R
 598      KM   ROUTE 52B1C THROUGH SUBBASIN 52B2 TO CP 52B2C1
 599      RK     930    .037    .045            TRAP      10      10
          *

 600      KK  51B3DV
 601      KM   RETRIEVE DIVERTED FLOW 51B3DV
 602      DR  51B3DV
          *

 603      KK   51B4D
 604      KM   DIVERT 82 PERCENT OF 51B3DV TO WEST (18 PERCENT TO SOUTH)
 605      DT  51B4DV
 606      DI       0   10000
 607      DQ       0    8200
          *
```

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

 608           KK  51B4R1
 609           KM   ROUTE 51B4D THROUGH SUBBASIN 52B2 TO CP 52B2C1
 610           RK    1350    .037    .045            TRAP      10      10
               *

 611           KK  52B2C1
 612           KM   COMBINE 51B4R1 AND 52B1R
 613           HC       2   .1403
               *

 614           KK  52B2R1
 615           KM   ROUTE 52B2R1 THROUGH SUBBASIN 52B2 TO CP 52B2C2
 616           RK    1000    .037    .045            TRAP      10      10
               *

 617           KK    52B2
 618           KM   RUNOFF FROM SUBBASIN 52B2
 619           BA    .032
 620           LS              75      17
 621           UK     100     .02     .10     100
 622           RK    2350    .037    .045            TRAP      30      10
               *

 623           KK  52B2C2
 624           KM   COMBINE 52B2 AND 52B2R1
 625           HC       2
               *

 626           KK  52B2R2
 627           KM   ROUTE 52B2C2 THROUGH SUBBASIN 52B3 TO CP 52B3C2
 628           RK     850    .026    .045            TRAP      10      10
               *

 629           KK  52B3R1
 630           KM   ROUTE 52B3C1 THROUGH SUBBASIN 52B3 TO CP 52B3C2
 631           RK     500    .024    .045            TRAP      10      10
               *

 632           KK    52B3
 633           KM   RUNOFF FROM SUBBASIN 52B3
 634           BA    .062
 635           LS              75    31.8
 636           UK     100     .02     .10     100
 637           RK    3450    .030    .045            TRAP      30      10
               *

 638           KK  52B3C2
 639           KM   COMBINE 52B3 AND 52B3R1
 640           HC       2
               *
```

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

641           KK  52B3R2
642           KM   ROUTE 52B3C2 THROUGH 52B4 TO CP 52B4C
643           RK    1700    .024    .045            TRAP      10      10
              *

644           KK    52B4
645           KM   RUNOFF FROM SUBBASIN 52B4
646           BA    .026
647           LS              75      62
648           UK     100     .02     .10     100
649           RK    1700    .024    .045            TRAP      30      10
              *

650           KK   52B4C
651           KM   COMBINE 52B4 AND 52B3R2
652           HC       2
              *

653           KK   52B4R
654           KM   ROUTE 52B4C THROUGH SUBBASIN 52B5 TO CP 52B5C1
655           RK     550    .027    .045            TRAP      10      10
              *

656           KK    52B5
657           KM   RUNOFF FROM SUBBASIN 52B5
658           BA    .021
659           LS              75    56.9
660           UK     100     .02     .10     100
661           RK    1400     .03    .045            TRAP      30      10
              *

662           KK  52B5C1
663           KM   COMBINE 52B5 AND 52B4R
664           HC       2
              *

665           KK  52B5C2
666           KM   COMBINE 52B5C1 AND 52C14R
667           HC       2
              *

668           KK   52B5R
669           KM   ROUTE 52B5C2 IN BEARDSLEY CHANNEL TO CP 52B7C2
670           RK    1100   .0143    .035            TRAP      50       4
              *

671           KK  51B4DV
672           KM   RETRIEVE DIVERTED FLOW 51B4DV
673           DR  51B4DV
              *
```

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

 674          KK   51B5D
 675          KM   DIVERT 68 PERCENT OF 51B4DV TO WEST (32 PERCENT TO SOUTH)
 676          DT  51B5DV
 677          DI       0   10000
 678          DQ       0    6800
              *

 679          KK   51B5R
 680          KM   ROUTE 51B5D THROUGH SUBBASIN 52B6 TO CP 51B7C
 681          RK    1250    .035    .045            TRAP      10      10
              *

 682          KK  51B5DV
 683          KM   RETRIEVE DIVERTED FLOW
 684          DR  51B5DV
              *

 685          KK   51B6D
 686          KM   DIVERT 53 PERCENT OF 51B5DV TO WEST (47 PERCENT TO SOUTH)
 687          DT  51B6DV
 688          DI       0   10000
 689          DQ       0    5300
              *

 690          KK   51B6R
 691          KM   ROUTE 51B6D THROUGH SUBBASIN 52B6 TO CP 51B7C
 692          RK     925    .033    .045            TRAP      10      10
              *

 693          KK  51B6DV
 694          KM   RETRIEVE DIVERTED FLOW 51B6DV
 695          DR  51B6DV
              *

 696          KK   51B7D
 697          KM   DIVERT 58 PERCENT OF 51B6DV TO WEST (42 PERCENT TO SOUTH)
 698          DT  51B7DV
 699          DI       0   10000
 700          DQ       0    5800
              *

 701          KK  51B7R1
 702          KM   ROUTE 51B7D THROUGH SUBBASIN 52B6 TO CP 51B7C
 703          RK     530    .033    .045            TRAP      10      10
              *

 704          KK   51B7C
 705          KM   COMBINE 51B7R1, 51B5R, AND 51B6R
 706          HC       3   .2404
              *
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK  51B7R2
KM   ROUTE 51B7C THROUGH SUBBASIN 52B6 TO CP 52B6C
RK    2300    .033    .045            TRAP      10      10
*

KK    52B6
KM   RUNOFF FROM SUBBASIN 52B6
BA    .096
LS              75   13.55
UK     100     .02     .10     100
RK    3200    .033    .045            TRAP      30      10
*

KK   52B6C
KM   COMBINE 51B7R2 AND 52B6
HC       2
*

KK   52B6R
KM   ROUTE 52B6C THROUGH SUBBASIN 52B7 TO CP 52B7C1
RK    2750    .028    .045            TRAP      10      10
*

KK    52B7
KM   RUNOFF FROM SUBBASIN 52B7
BA    .080
LS              75   78.45
UK     100     .02     .10     100
RK    2750    .028    .045            TRAP      30      10
*

KK  52B7C1
KM   COMBINE 52B7 AND 52B6R
HC       2
*

KK  52B7C2
KM   COMBINE 52B7C1 AND 52B5R
HC       2
*

KK    52A2
KM   RUNOFF FROM SUBBASIN 52A2
BA    .065
LS              75    88.8
UK     100     .02     .10     100
RK    2900    .023    .045            TRAP      30      10
*
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 740          KK  52A2C2
 741          KM   COMBINE 52B7C2 AND 52A2
 742          HC        2    1.62
              *

 743          KK  51B7DV
 744          KM   RETRIEVE DIVERTED FLOW 51B7DV
 745          DR  51B7DV
              *

 746          KK   51B8R
 747          KM   ROUTE 51B7DV THROUGH SUBBASIN 52A1 TO CP 52A1C
 748          RK    3400    .033    .045            TRAP      10      10
              *

 749          KK    52A1
 750          KM   RUNOFF FROM SUBBASIN 52A1
 751          BA    .130
 752          LS              75   32.25
 753          UK     100     .02     .10     100
 754          RK    3400    .033    .045            TRAP      30      10
              *

 755          KK   52A1C
 756          KM   COMBINE 52A1 AND 51B8R
 757          HC        2
              *
              *
              *     *******************  END DC RANCH WATERSHED  ********************
              *
              *
              *     ******************  BEGIN GVSCE MODIFICATIONS  ******************
              *

 758          KK   D51.1
 759          KM   RETRIEVE DIVERTED FLOW
 760          DR  B51.1T
              *

 761          KK    C52A
 762          KM     COMBINE ROUTED HYDROGRAPH FROM C51.1 WITH HYDROGRAPH FROM C52A1C AT
 763          KM     THOMPSON PEAK PARKWAY
 764          HC        2  6.2735
              *

 765          KK    R52A
 766          KM     NORMAL DEPTH CHANNEL ROUTE FROM C52A TO C52 THROUGH PIMA CHANNEL
 767          RS        1    FLOW      -1
 768          RC   0.035   0.025   0.035    2700    0.01
 769          RX    1000    1020    1022    1034    1084    1096    1098    1118
 770          RY   111.4   106.4   106.3     100     100   106.3   106.4   111.4
              *
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 771           KK     C52
 772           KM     COMBINE ROUTED HYDROGRAPH FROM C52A WITH HYDROGRAPH FROM C52A2C AT
 773           KM     BEARDSLEY ROAD
 774           HC       2  7.9160
               *

 775           KK     R52
 776           KM     NORMAL DEPTH CHANNEL ROUTE FROM C52 TO C53 THROUGH PIMA CHANNEL
 777           RS       1     FLOW      -1
 778           RC   0.035   0.025   0.035    3600    0.01
 779           RX    1000    1020    1022    1034    1084    1096    1098    1118
 780           RY   111.4   106.4   106.3     100     100   106.3   106.4   111.4
               *

 781           KK    D52T
 782           KM     DIVERT 100% OF FLOW TO RETRIEVE JUST U/S OF UNION HILLS DETENTION BASIN
 783           DT    B52T
 784           DI       0   10000
 785           DQ       0   10000
               *

 786           KK   CLEAR
 787           KM     CLEAR HYDROGRAPHS FROM STACK
 788           HC       2
               *
               *     ******************  BEGIN GREYHAWK WATERSHED  ******************
               *
               *       THE GREYHAWK HEC-1 MODEL (VILLAGES II AND III) WAS DEVELOPED BY DEI
               *           DEI FILE NAME:  GH23FAB.H1I
               *           MODEL DATE:       21 MAY 96
               *

 789           KK     37A      SUB
 790           KM        RUNOFF FROM SUB-BASIN 37A
 791           BA    .6765
 792           LS               74    24.8
 793           UK      61   .0213     .10     100
 794           RK    4800   .0237    .045            TRAP      50     130
               *

 795           KK    37AE      DIV
 796           KM        SPLIT FLOWS AT SOUTH BOUNDARY OF SUB 37A FOR ROUTING TO DETENTION
 797           KM        BASIN 53R & 38R-1.  THIS DIVERT OPERATION REFLECTS THE BREAK IN THE
 798           KM        DEER VALLEY ROAD CHANNEL BETWEEN HAYDEN & PIMA ROADS.  THIS SPLIT IS
 799           KM        BASED ON NEW CORE NORTH PLAN DEVELOPED BY G.W. LARSON & ASSC., INC.
 800           KM        DATED 6/16/92.  DIVERT RATIO IS BASED ON APPROXIMATE D.A. FROM SUB 37A
 801           KM        THAT IS INTERCEPTED BY EACH CHANNEL SEGMENT ALONG DEER VALLEY ROAD.
 802           KM
 803           KM        (THIS SPLIT HAS BEEN UPDATED FROM THE OLP.6 MODEL TO REFLECT A 30% SPLIT
 804           KM        TO THE SOUTH AND A 70% SPLIT TO THE WEST FOR THIS STUDY AND IS BASED ON
 805           KM        UPSTREAM CONTRIBUTING WATERSHED AREA TO THIS CONCENTRATION POINT)
 806           DT    37AW
 807           DI       0     100     500    1000    1500
 808           DQ       0      70     350     700    1050
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LINE       ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 809       KK   37AE1      CP
 810       KM        ROUTE NON-DIVERTED FLOW FROM DIV 37AE THROUGH SUB 5N.  THIS IS A
 811       KM        PRELIMINARY CHANNEL CONFIGURATION FOR THE GOLF COURSE CHANNEL.
 812       RS        1    FLOW
 813       RC     .055    .045    .055     800    .025
 814       RX        0      16      26      30      40      44      54      70
 815       RY        6       2       2       0       0       2       2       6
           *

 816       KK   SUB5N
 817       KM        RUNOFF FROM SUBBASIN 5 IN NORTH 18 MODEL.
 818       BA   0.029
 819       LS               77      18
 820       UK      100    .013     .15     100
 821       RK     1000   0.005    .018    .015    TRAP      50      20
 822       RK      500    .015    .025            TRAP      10       4
           *

 823       KK    CP5N
 824       KM        ADD HYDROGRAPHS AT CP5N
 825       HC        2   0.232
           *

 826       KK   RET5N
 827       KM        ROUTE FLOW THROUGH RETENTION BASIN NO. 5.  18" PIPE OUTFLOW WILL
 828       KM        BLEED FLOWS TO DRAIN THE BASIN AFTER THE STORM HAS PASSED.
 829       RS        1    STOR       0       0
 830       SV        0     .04     .33     .93     1.8    2.35    3.16     4.2     6.1
 831       SQ        0       8      10      12      15      17     102     191     668
 832       SE     1797    1798    1800    1802    1804    1805    1806    1807    1808
           *

 833       KK   R6N.1
 834       KM        ROUTE FLOW FROM CP5 TO CP6 IN NORTH 18 MODEL
 835       KM        ASSUME CHANNEL IS SAME CONFIGURATION AS ABOVE FOR PROPOSED GOLF COURSE
 836       KM        CHANNEL.
 837       RS        1    FLOW
 838       RC     .055    .045    .055    2200    .025
 839       RX        0      16      26      30      40      44      54      70
 840       RY        6       2       2       0       0       2       2       6
           *

 841       KK   SUB6B
 842       KM        RUNOFF FROM WEST PORTION OF EXISTING SUB6N ADJACENT TO CHANNEL
 843       BA     .032
 844       LS               81       0
 845       UK      200    .025     .15     100
 846       RK     1300    .015    .025            TRAP      10       4
           *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 847          KK   SR6B
 848          KM        ROUTE FLOW THROUGH RETENTION BASIN IN DRIVING RANGE CHANNEL
 849          RS      1    STOR       0       0
 850          SV      0     .17     .57    1.12    1.78
 851          SQ      0       8      10     120     380
 852          SE   1772    1773    1774    1775    1776
              *

 853          KK  CP6.1
 854          KM        ADD HYDROGRAPHS AT CP6.1
 855          HC      2
              *

 856          KK  SUB1N
 857          KM        RUNOFF FROM SUBBASIN 1N
 858          BA   .019
 859          LS             77      18
 860          UK    100    .013     .15     100
 861          RK   1470   .0204    .018            TRAP      50      20
              *

 862          KK   R2NA
 863          KM        ROUTE FLOW FROM CP1 TO CP2NA
 864          RS      1    FLOW
 865          RC    .03     .03     .03     400    .025
 866          RX      0       8      13      17      22      26      31      39
 867          RY      4       2       2       0       0       2       2       4
              *

 868          KK SUB2NA
 869          KM        RUNOFF FROM SUBBASIN 2NA
 870          BA   .015
 871          LS             81       0
 872          UK    150    .013     .15     100
 873          RK   1050   .0215    .025            TRAP      20       6
              *

 874          KK  CP2NA
 875          KM        ADD HYDROGRAPHS AT CP2NA
 876          HC      2
              *

 877          KK  SR2NA
 878          KM        ROUTE FLOW THROUGH DETENTION BASIN IN SUB2NA
 879          RS      1    STOR       0       0
 880          SV      0    .076    .291    .708     1.2
 881          SQ      0       0       0       0     160
 882          SE   1772    1773    1774    1775    1776
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 883          KK   R2NB
 884          KM        ROUTE FLOW FROM CP2NA TO CP2NB
 885          RS      1    FLOW
 886          RC    .03     .03     .03    1050    .015
 887          RX      0       8      13      17      22      26      31      39
 888          RY      4       2       2       0       0       2       2       4
              *

 889          KK  SUB2NB
 890          KM        RUNOFF FROM SUBBASIN 2NB
 891          BA    .03
 892          LS             77      53
 893          UK    150    .013     .15     100
 894          RK   1200    .015    .025            TRAP      20      50
              *

 895          KK  CP2NB
 896          KM        ADD HYDROGRAPHS AT CP2NB
 897          HC      2
              *

 898          KK  SR2NB
 899          KM        STORAGE ROUTE FLOW THROUGH DETENTION BASIN IN SUB2NB
 900          RS      1    STOR       0       0
 901          SV      0     .19     .69    1.66    3.23     4.5
 902          SQ      0       2       8      12      17     170
 903          SE   1796    1798    1800    1802    1804    1805
              *

 904          KK  RCP4N
 905          KM        ROUTE FLOW FROM CP2NB TO CP4N
 906          RS      1    FLOW
 907          RC    .03     .03     .03     740    .018
 908          RX      0       8      13      17      22      26      31      39
 909          RY      4       2       2       0       0       2       2       4
              *

 910          KK  SUB6N
 911          KM        RUNOFF FROM SUBBASIN 6 IN NORTH 18 MODEL.  TO LAKE NORTH OF CLUBHOUSE.
 912          BA   .049
 913          LS             81       0
 914          UK    200    .025     .15     100
 915          RK   1300    .015    .025            TRAP      10       4
              *

 916          KK  RET6N
 917          KM        RETENTION ROUTING THROUGH LAKE AT HOLE 18, NORTH COURSE.
 918          RS      1    STOR
 919          SV      0    3.01    6.64   10.75   13.09   15.90
 920          SQ      0       0       0      10      26     100
 921          SE   1782    1784    1786    1788    1789    1790
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 922          KK  RCP4N1
 923          KM        ROUTE FLOW FROM CP6N TO CP4N
 924          RS       1    FLOW
 925          RC     .03     .03     .03     550    .018
 926          RX       0       8      13      17      22      26      31      39
 927          RY       4       2       2       0       0       2       2       4
              *

 928          KK  CP4N.1
 929          KM        ADD HYDROGRAPHS AT CP4N.1
 930          HC       2
              *

 931          KK   SUB3N
 932          KM        RUNOFF FROM SUBBASIN 3N, NORTH 18 MODEL
 933          BA    .027
 934          LS              81       0
 935          UK     100     .02     .15     100
 936          RK    2800  0.0207    .025            TRAP      10       4
              *

 937          KK   RET3N
 938          KM        ROUTE FLOW THROUGH RETENTION BASIN NO. 3.  18" PIPE OUTFLOW WILL
 939          KM        BLEED FLOWS TO DRAIN THE BASIN AFTER THE STORM HAS PASSED.
 940          RS       1    STOR       0       0
 941          SV       0    1.73    8.97   13.32   15.74
 942          SQ       0       4       7       9      11
 943          SE    1793    1795    1800    1803    1804
              *

 944          KK     R4N
 945          KM        ROUTE FLOW FROM CP3N TO CP4N IN NORTH MODEL
 946          RS       1    FLOW
 947          RC    .035    .035    .035     950    .018
 948          RX       0       8      13      17      22      26      31      39
 949          RY       4       2       2       0       0       2       2       4
              *

 950          KK  CP4N.2
 951          KM        ADD HYDROGRAPHS AT CPN.2
 952          HC       2
              *

 953          KK   SUB4N
 954          KM        RUNOFF FROM SUBBASIN 4N.
 955          BA    .032
 956          LS              77      18
 957          UK     100    .015     .15     100
 958          RK    1200   0.007    .018            TRAP      50      20
              *
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 959        KK    CP4N
 960        KM        ADD HYDROGRAPHS AT CP4N
 961        HC       2
            *

 962        KK     R6N
 963        KM        ROUTE FLOW FROM CP4N TO CP6N ALONG THOMPSON PEAK PKWY AT CLUBHOUSE
 964        RS       1    FLOW
 965        RC    .045    .035    .045     750    .025
 966        RX       0       8      13      17      22      26      31      39
 967        RY       4       2       2       0       0       2       2       4
            *

 968        KK   SUB6A
 969        KM        RUNOFF FROM SUBBASIN 6A (CLUBHOUSE AREA NORTH OF THOMPSON PEAK PKWY).
 970        BA    .013
 971        LS              83      68
 972        UK     100    .015     .12     100
 973        RK     800     .01    .025            TRAP       2       3
            *

 974        KK   CP6.2
 975        KM        ADD HYDROGRAPHS AT CP6.2
 976        HC       2
            *

 977        KK    CP6N
 978        KM        ADD HYDROGRAPHS AT CP6N
 979        HC       2
            *
            *      ABOVE DISCHARGE FROM NORTH 18 THROUGH BRIDGE AT TPP STATION 103+45
            *

 980        KK   RCP6N
 981        KM        ROUTE FLOW FROM CP6N TO CP3C
 982        RS       1    FLOW
 983        RC    .045    .035    .045     300    .015
 984        RX       0       8      13      17      37      45      51      59
 985        RY       4       2       2       0       0       2       2       4
            *

 986        KK   SUB3C
 987        KM        RUNOFF FROM SUBBASIN 3C, SOUTH COURSE AT MAINTENANCE FACILITY.
 988        BA   .0104
 989        LS              77      68
 990        UK     100    .025     .02     100
 991        RK     600    .015    .035            TRAP      50      20
            *
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 992           KK    CP3C
 993           KM         COMBINE NORTH COURSE HYDROGRAPH WITH FIRST SOUTH COURSE HYDROGRAPH
 994           HC       2
               *

 995           KK     R3C
 996           KM         ROUTE FLOW FROM SUB3C TO CP3 THROUGH GC1018
 997           KM         ASSUME CHANNEL IS SAME CONFIGURATION AS ABOVE FOR PROPOSED GOLF COURSE
 998           KM         CHANNEL.
 999           RS       1    FLOW
1000           RC    .055    .045    .055    2050    .025
1001           RX       0      20      30      40      60      70      80     100
1002           RY    1650    1746    1744    1742    1742    1744    1746    1750
               *

1003           KK  GC1018
1004           KM         RUNOFF FROM HOLES NO. 10, 18 AND DRIVING RANGE THAT CONTRIBUTE TO WASH
1005           BA    .044
1006           LS              81       0
1007           UK     200    .025     .15     100
1008           RK    1800   .0233    .025            TRAP      10       4
               *

1009           KK   GC1-9
1010           KM         RUNOFF FROM GOLF COURSE HOLES 1 & 9 CONTRIBUTING TO WASH
1011           BA    .026
1012           LS              81       0
1013           UK     200    .025     .15     100
1014           RK    2110    .022    .025            TRAP      10       4
               *

1015           KK   SUB3S
1016           KM         RUNOFF FROM SUB BASIN 3 SOUTH COURSE
1017           BA   .0102
1018           LS              77      53
1019           UK     100    .010     .15     100
1020           RK     930    .016    .025            TRAP      50      20
               *

1021           KK    CP3S
1022           KM         COMBINE HYDROGRAPHS AT CP3 SOUTH COURSE
1023           HC       4
               *

1024           KK    RT3S
1025           KM         ROUTE FLOW FROM CP3S TO CPGC28
1026           RS       1    FLOW       0       0
1027           RC    .055    .045    .055     900    .023
1028           RX       0      20      30      40      60      70      80     100
1029           RY    1750    1746    1744    1742    1742    1744    1746    1750
               *
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LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1030      KK   SUB4S
1031      KM        RUNOFF FROM SUB BASIN 4 SOUTH COURSE
1032      BA   .0273
1033      LS              77      53
1034      UK     100    .010     .15     100
1035      RK    1780    .018    .015            TRAP      50      20
          *

1036      KK    RT4S
1037      KM        ROUTE FLOW FROM CP4S TO CPGC28
1038      RS       1    FLOW       0       0
1039      RC    .035    .035    .035     650    .015
1040      RX       0      20      30      40      45      55      65      75
1041      RY    1750    1746    1744    1742    1742    1744    1746    1750
          *

1042      KK   GC2-8
1043      KM        RUNOFF FROM SOUTH GOLF COURSE HOLES NO. 2 AND 8
1044      BA    .014
1045      LS              81       0
1046      UK     200    .025     .15     100
1047      RK     980    .016    .025            TRAP      10       4
          *

1048      KK  1PGC28
1049      KM        ADD HYDROGRAPHS AT CPGC28 AT PROPOSED LOOP ROAD, SOUTH COURSE
1050      HC       3
          *

1051      KK  SUB3D3
1052      KM        RUNOFF FROM GRAYHAWK ROAD SOUTH OF THOMPOSON PEAK
1053      BA    .014
1054      LS              81       0
1055      UK      50    .015      .1     100
1056      RK    2450    .016    .025            TRAP       5       4
          *

1057      KK  CPGC28
1058      KM        ADD HYDROGRAPHS AT CPGC28 AT PROPOSED LOOP ROAD, SOUTH COURSE
1059      HC       2
          *

1060      KK  SRGC28
1061      KM        STORAGE THRU DETENTION BASIN ON HOLES 2 AND 8.
1062      RS       1    STOR       0       0
1063      SV       0    .018    .085     .22      .5     1.0     1.7    2.68     3.9
1064      SE    1706    1707    1708    1709    1710    1711    1712    1713    1714
1065      SQ       0      10      18      20      30     108     324     651    1070
          *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1066          KK    RT7S
1067          KM          ROUTE FLOW FROM SRGC28 TO CP7S
1068          RS       1    STOR       0       0
1069          RC    .055    .045    .055    1700   .0187
1070          RX       0      20      30      40      60      70      80     100
1071          RY    1750    1746    1744    1742    1742    1744    1746    1750
              *

1072          KK     GC7
1073          KM          RUNOFF FROM SOUTH GOLF COURSE HOLE NO. 7
1074          BA   .0134
1075          LS              81       0
1076          UK     200    .025     .15     100
1077          RK    1380    .020    .025            TRAP      10       4
              *

1078          KK    CP7S
1079          KM          ADD HYDROGRAPHS AT CP7S ON SOUTH COURSE
1080          HC       2  0.6083
              *

1081          KK    D7ST
1082          KM          D7ST IS A DIVERSION ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
1083          KM          UNION HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
1084          KM
1085          KM          DIVERT 100% OF FLOW
1086          DT    B7ST
1087          DI       0   10000
1088          DQ       0   10000
              *

1089          KK   CLEAR
1090          KM          CLEAR HYDROGRAPHS FROM THE STACK.
1091          HC       2
              *
              *
              * THIS PORTION OF MODEL TAKEN FROM,"DRAINAGE REPORT FOR VILLAGE 3 - PHASE 1",
              * APPROVED BY THE CITY OF SCOTTSDALE 7-19-95.  MODIFIED TO ACCOUNT FOR ASBUILT
              * CONDITION
              *
              *
              *
              *

1092          KK  SUB3D1
1093          KM          RUNOFF FROM SUBBASIN 3D1, PARCEL 3D.
1094          BA   .0088
1095          LS              77      34
1096          UD     .06
              *
```

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

1097          KK   RD1B1
1098          KM        FOUTE FLOW FROM 3D1 TO 3B1
1099          RS         1    FLOW      -1
1100          RC      0.03    0.03    0.03    1250    .015
1101          RX         0     0.5       1       7      12      19    19.5      20
1102          RY       3.2     3.1     3.0     1.0     1.0     3.0     3.1     3.2
              *

1103          KK  SUB3B1
1104          KM        RUNOFF FROM SUBBASIN 3B1, PARCEL 3B.
1105          BA     .0137
1106          LS                77      47
1107          UD       .06
              *

1108          KK   CP3B1
1109          KM        ADD HYDROGRAGHS AT CP3B1
1110          HC         2
              *

1111          KK   RB13F
1112          KM        ROUTE FLOW FROM 3B1 TO SUB3F
1113          RS         1    FLOW      -1
1114          RC      0.03    0.03    0.03    2150    .015
1115          RX         0     0.5       1       7      17      24    24.5      25
1116          RY       3.2     3.1     3.0     1.0     1.0     3.0     3.1     3.2
              *

1117          KK   SUB3F
1118          KM        RUNOFF FROM SUBBASIN 3F, PARCEL 3F, SOUTH COURSE MODEL.
1119          BA     .0344
1120          LS                77      68
1121          UK       100    .025     .15     100
1122          RK      1000    .015    .025            TRAP     100      20
              *

1123          KK    CP3F
1124          KM        ESTIMATED PEAK DISCHARGE RATE AT POINT CP3F ALONG THE POWER CORRIDOR
1125          HC         2
              *

1126          KK  SUB3B2
1127          KM        RUNOFF FROM SUBBASIN 3B2, PARCEL 3B.
1128          BA     .0246
1129          LS                77      40
1130          UD       .10
              *

1131          KK   RB2E1
1132          KM        1/2 OF ENTIRE ROUTING REACH FROM 3B2 TO CP3E1
1133          RS         1    FLOW      -1
1134          RC      0.03    0.03    0.03     800    0.02
1135          RX         0     0.5       1       7      17      24    24.5      25
1136          RY       3.2     3.1     3.0     1.0     1.0     3.0     3.1     3.2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1137          KK   RB2E2
1138          KM        SECOND 1/2 OF ENTIRE ROUTING REACH FROM 3B2 TO CP3E1
1139          RS        1    FLOW      -1
1140          RC     0.03    0.03    0.03     600    .015
1141          RX        0     0.5       1       7      17      24    24.5      25
1142          RY      3.2     3.1     3.0     1.0     1.0     3.0     3.1     3.2
              *

1143          KK  SUB3E1
1144          KM         RUNOFF FROM SUBBASIN 3E1, PARCEL 3E.
1145          BA    .0246
1146          LS                 77      40
1147          UD      .10
              *

1148          KK  1CPE31
1149          KM         ESTIMATED PEAK DISCHARGE RATE AT POINT CP3E1 ALONG THE POWER CORRIDOR
1150          HC        2
              *

1151          KK  SUB3D2
1152          KM         RUNOFF FROM SUBBASIN 3D2, PARCEL 3D.
1153          BA     .022
1154          LS                 77      35
1155          UD      .08
              *

1156          KK   RD2E2
1157          KM         ROUTE EXCESS FROM 3D2 TO CP3E2
1158          RS        1    FLOW      -1
1159          RC     0.03    0.03    0.03    1200   .0216
1160          RX        0     0.5       1       7      17      24    24.5      25
1161          RY      3.2     3.1     3.0     1.0     1.0     3.0     3.1     3.2
              *

1162          KK  SUB3E2
1163          KM         RUNOFF FROM SUBBASIN 3E2, PARCEL 3E.
1164          BA     .012
1165          LS                 77      35
1166          UD      .06
              *

1167          KK   CP3E2
1168          KM         ESTIMATED PEAK DISCHARGE RATE AT POINT CP3E2 ALONG THE POWER CORRIDOR
1169          HC        2
              *

1170          KK     PC3
1171          KM         PC3 IS A SUBBASIN ADDED BY GVSCE TO ESTIMATE THE SURFACE RUNOFF FROM
1172          KM         THE POWER LINE CORRIDOR WHICH ENTERS THE POWER LINE CHANNEL
1173          KM
1174          KM         RUNOFF FROM SUBBASIN PC3.
1175          BA  0.0434
1176          LS                 77      10
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1177          UK     100    .015     .15     100
1178          RK    2200     .01     .03             TRAP      30       4
              *

1179          KK    CPC3
1180          KM         CPC3 IS A CONCENTRATION POINT ADDED BY GVSCE TO ESTIMATE THE INFLOW TO
1181          KM         THE POWER LINE CHANNEL AT THE HAYDEN ROAD CROSSING.
1182          KM
1183          KM         COMBINE ROUTED HYDROGRAPH FROM SRPC2 W/HYDROGRAPHS FROM CP3E1, CP3E2 AND
1184          KM         CP3F AND RUNOFF FROM PC3.
1185          HC       4  0.1835
              *

1186          KK   DPC3T
1187          KM         DPC3T IS A DIVERSION ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
1188          KM         UNION HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
1189          KM
1190          KM         DIVERT 100% OF FLOW
1191          DT   BPC3T
1192          DI       0   10000
1193          DQ       0   10000
              *

1194          KK  SUB3E3
1195          KM         RUNOFF FROM SUBBASIN 3E3, PARCEL 3E.
1196          BA    .020
1197          LS              77      32
1198          UD     .06
              *

1199          KK     PC4
1200          KM         PC4 IS A SUBBASIN ADDED BY GVSCE TO ESTIMATE THE SURFACE RUNOFF FROM
1201          KM         THE POWER LINE CORRIDOR WHICH ENTERS THE POWER LINE CHANNEL
1202          KM
1203          KM         RUNOFF FROM SUBBASIN PC4.
1204          BA  0.0217
1205          LS              77       0
1206          UK     100    .015     .15     100
1207          RK    1100     .01     .03             TRAP      30       4
              *

1208          KK     D7S
1209          KM         THIS OPERATION IS ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
1210          KM         HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
1211          KM
1212          KM         RETRIEVE DIVERTED FLOW
1213          DR    B7ST
              *

1214          KK    CPC4
1215          KM         THE HEC1 OPREATION TEMPAD IS CHANGED BY GVSCE TO ESTIMATE THE INFLOW TO
1216          KM         THE POWER LINE CHANNEL WHERE THE FLOW FROM CP7S ENTERS THE CHANNEL.
1217          KM
1218          KM         COMBINE HYDROGRAPH FROM CP3E3 W/RUNOFF FROM PC4.
1219          HC       3   0.650
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LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1220      KK   DPC4T
1221      KM        DPC3T IS A DIVERSION ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
1222      KM        UNION HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
1223      KM
1224      KM        DIVERT 100% OF FLOW
1225      DT   BPC4T
1226      DI        0   10000
1227      DQ        0   10000
          *

1228      KK   CLEAR
1229      KM        CLEAR HYDROGRAPHS FROM THE STACK.
1230      HC        3
          *
          *
          *       THIS ENDS THE PORTION OF THE MODEL TAKEN FROM DRAINAGE REPORT
          *       FOR VILLAGE 3 - PHASE I HEC-1 MODEL BY GILBERTSON ASSOC. INC.
          *       DATED 7-19-95
          *
          *
          *
          * RETURN TO NORTH 18\VILLAGE 2\TPP3 MODEL.
          * THE REMAINDER OF THE SUBBASINS IN THIS  MODEL  WILL CONTRIBUTE TO THE
          * PROPOSED CHANNNEL IN THE POWER EASEMENT AS IDENTIFIED IN THE
          * "COMMUNITY DRAINAGE STUDY - CORE NORTH AND WILL DISCHARGE TO REGIONAL
          * RETENTION BASIN 38R1.
          *
          *

1231      KK    37AW     RET
1232      KM        RETRIEVE DIVERTED FLOW FROM SOUTH BOUNDARY OF SUB 37A TO REFLECT
1233      KM        BREAK IN DEER VALLEY ROAD CHANNEL BETWEEN HAYDEN & PIMA ROADS
1234      DR    37AW
          *

1235      KK    R14R
1236      KM        ROUTE FLOW FROM DIVERT AT DEER VALLEY ROAD (UPSTREAM OF SUBBAIN 5) TO
1237      KM        RET14.1
1238      RS        1    FLOW
1239      RC     .055    .045    .055    2900     .01
1240      RX        0      16      26      30      50      54      64      80
1241      RY        6       2       2       0       0       2       2       6
          * RET 141 HAS BEEN REVISED FOLLOWING REFINEMENT OF GRADING PLANS 11-16-94
          *

1242      KK  RET141
1243      KM        ROUTE FLOW THROUGH RETENTION BASIN NO. 14.1.  18" PIPE OUTFLOW WILL
1244      KM        BLEED FLOWS TO DRAIN THE BASIN AFTER THE STORM HAS PASSED.
1245      RS        1    STOR       0       0
1246      SV        0     .46    2.79    4.56    5.71    6.92    8.24
1247      SQ        0      11      15      22     147     463     968
1248      SE     1778    1785    1790    1792    1793    1794    1795
          *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1249          KK   R14.1
1250          KM        ROUTE FLOW FROM RET14.1 TO CP14
1251          KM        RET14.1
1252          RS       1    FLOW
1253          RC    .055    .045    .055    1900     .01
1254          RX       0      16      26      30      50      54      64      80
1255          RY       6       2       2       0       0       2       2       6
              *

1256          KK  SUB13N
1257          KM        RUNOFF FROM SUBBASIN 13 NORTH 18 MODEL.
1258          BA    .037
1259          LS              77      24
1260          UK     100    .015     .15     100
1261          RK    2400    .007    .018            TRAP      50      20
              *

1262          KK   R14.1
1263          KM        ROUTE FLOW FROM CP13 TO RET14 NORTH 18 MODEL.
1264          RS       1    FLOW
1265          RC    .055    .045    .055     950    .025
1266          RX       0       8      13      17      22      26      31      39
1267          RY       4       2       2       0       0       2       2       4
              *

1268          KK  SUB14N
1269          KM        RUNOFF FROM SUBBASIN 14 NORTH 18 MODEL.
1270          BA    .049
1271          LS              81       0
1272          UK     300    .025     .15     100
1273          RK    2300     .01    .025            TRAP      10       4
              *

1274          KK    CP14
1275          KM        ADD HYDROGRAPHS AT CP14
1276          HC       3  0.5595
              *

1277          KK   RET14
1278          KM        ROUTE FLOW THROUGH RETENTION BASIN NO. 14.  18" PIPE OUTFLOW WILL
1279          KM        BLEED FLOWS TO DRAIN THE BASIN AFTER THE STORM HAS PASSED.
1280          RS       1    STOR       0       0
1281          SV       0     .08     .31    1.01    2.16    3.20    4.19    5.69     7.8
1282          SQ       0      14      16      18      20      22     155     464     750
1283          SE    1744    1746    1748    1750    1752    1753    1754    1755    1756
              *

1284          KK   R18.1
1285          KM        ROUTE FLOW FROM RET14 TO CP18
1286          RS       1    FLOW
1287          RC    .055    .045    .055     500    .016
1288          RX       0      16      26      34      54      68      78      96
1289          RY       6       2       2       0       0       2       2       6
              *
```

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

1290          KK  SUB20N
1291          KM       RUNOFF FROM SUBBASIN 20.
1292          BA    .024
1293          LS              77      24
1294          UK     200     .01     .15     100
1295          RK    1400     .02    .018              TRAP      50      20
              *

1296          KK     R19
1297          KM       ROUTE FLOW FROM CP20 TO CP19
1298          RS       1    FLOW
1299          RC    .035    .035    .035     700     .02
1300          RX       0       8      13      17      22      26      31      39
1301          RY       4       2       2       0       0       2       2       4
              *

1302          KK  SUB19N
1303          KM       RUNOFF FROM SUBBASIN 19.
1304          BA    .038
1305          LS              77      31
1306          UK     150     .01     .15     100
1307          RK    1800    .015    .018              TRAP      50      20
              *

1308          KK   CP19N
1309          KM       ADD HYDROGRAPHS  AT CP19N
1310          HC       2
              *

1311          KK   R18NC
1312          KM       ROUTE FLOW FROM  CP19N TO CP18NC
1313          RS       1    FLOW
1314          RC    .035    .035    .035     700    .013
1315          RX       0       8      13      17      27      31      36      44
1316          RY       4       2       2       0       0       2       2       4
              *

1317          KK  UB18NC
1318          KM       RUNOFF FROM SUBBASIN 18NC.
1319          BA    .021
1320          LS              77      42
1321          UK     100     .01     .15     100
1322          RK    1550     .02    .018              TRAP      50      20
              *

1323          KK  CP18NC
1324          KM       ADD HYDROGRAPHS  AT CP18NC (INCLUDES R18.1, R18, AND SUB18)
1325          HC       3
              *
```

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

1326     KK   RPC1
1327     KM        ROUTE FLOW FROM CP18N TO CPC1.
1328     RS       1    FLOW
1329     RC    .035    .035    .035     510    .013
1330     RX       0      16      26      34      64      78      88     106
1331     RY       6       2       2       0       0       2       2       6
         *

1332     KK  UB18NA
1333     KM        RUNOFF FROM SUBBASIN 18NA.
1334     BA    .022
1335     LS              77      42
1336     UK     100     .01     .15     100
1337     RK    1450     .02    .018            TRAP      50      20
         *

1338     KK   1RPC1
1339     KM        ROUTE FLOW FROM CP18NA TO CPC1.
1340     RS       1    FLOW
1341     RC    .035    .035    .035    2550     .01
1342     RX       0      16      26      34      64      78      88     106
1343     RY       8       4       2       0       0       2       4       8
         *

1344     KK  UB18NB
1345     KM        RUNOFF FROM SUBBASIN 18NB.
1346     BA   .0096
1347     LS              77      42
1348     UK     100     .01     .15     100
1349     RK     800     .02    .018            TRAP      50      20
         *

1350     KK   2RPC1
1351     KM        ROUTE FLOW FROM CP18NB TO CPC1.
1352     RS       1    FLOW
1353     RC    .035    .035    .035    2000     .01
1354     RX       0      16      26      34      64      78      88     106
1355     RY       8       4       2       0       0       2       4       8
         *

1356     KK     PC1
1357     KM        RUNOFF FROM SUBBASIN PC1.
1358     BA    .062
1359     LS              77      10
1360     UK     500    .015     .15     100
1361     RK    2700     .01     .03            TRAP      30       4
         *

1362     KK   1CPC1
1363     KM        ADD HYDROGRAPHS  AT CPC1.
1364     HC       3
         *
```

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


1365          KK   SRPC1
1366          KM        STOAGE ROUTE THROUGH DET BASIN IN POWER CORRIDOR.
1367          RS       1    STOR       0       0
1368          SV       0     .29     .73
1369          SQ       0       0     350
1370          SE    1747    1748    1749
              *

1371          KK    CPC1
1372          KM        ADD HYDROGRAPHS  AT CPC1.
1373          HC       2
              *

1374          KK  R16NA1
1375          KM        ROUTE FLOW FROM CPC1 TO C16NA1.
1376          RS       1    FLOW
1377          RC    .035    .035    .035     700    .013
1378          RX       0      16      26      34      74      88      98     116
1379          RY       8       4       2       0       0       2       4       8
              *

1380          KK  UB16NA
1381          KM        RUNOFF FROM SUBBASIN 16NA.
1382          BA   .0139
1383          LS              77      42
1384          UK     100    .015     .15     100
1385          RK    1500    .015    .022            TRAP      50      20
              *

1386          KK  R16NA1
1387          KM        ROUTE FLOW FROM CP16NA TO CP16NA1.
1388          RS       1    FLOW
1389          RC    .035    .035    .035     550    .013
1390          RX       0      16      26      34      44      58      68      86
1391          RY       6       2       2       0       0       2       2       6
              *

1392          KK  C16NA1
1393          KM        ADD HYDROGRAPHS  AT CP16NA1.
1394          HC       2
              *

1395          KK  R16NB1
1396          KM        ROUTE FLOW FROM CP16NA1 TO CP16NB1.
1397          RS       1    FLOW
1398          RC    .035    .035    .035     650    .013
1399          RX       0      16      26      34      74      88      98     116
1400          RY       8       4       2       0       0       2       4       8
              *
```

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

1401       KK  UB16NB
1402       KM        RUNOFF FROM SUBBASIN 16NB.
1403       BA   .0156
1404       LS              77      42
1405       UK     100    .015     .15     100
1406       RK    1500    .015    .022            TRAP      50      20
           *

1407       KK  R16NB1
1408       KM        ROUTE FLOW FROM CP16NB TO CP16NB1.
1409       RS       1    FLOW
1410       RC    .035    .035    .035     550    .013
1411       RX       0      16      26      34      44      58      68      86
1412       RY       6       2       2       0       0       2       2       6
           *

1413       KK  C16NB1
1414       KM        ADD HYDROGRAPHS  AT CP16NB1.
1415       HC       2
           *

1416       KK  R16NC1
1417       KM        ROUTE FLOW FROM CP16NB1 TO CP16NC1.
1418       RS       1    FLOW
1419       RC    .035    .035    .035     650    .013
1420       RX       0      16      26      34      54      68      78      96
1421       RY       6       2       2       0       0       2       2       6
           *

1422       KK   SUB7N
1423       KM        RUNOFF FROM SUBBASIN 7N.
1424       BA    .031
1425       LS              77      18
1426       UK     100    .015     .15     100
1427       RK    1900     .01    .018            TRAP      50      20
           *

1428       KK    R8NC
1429       KM        ROUTE FLOW FROM CP7N TO CP8NC.
1430       RS       1    FLOW
1431       RC    .055    .045    .055     700    .025
1432       RX       0       8      13      17      22      26      31      39
1433       RY       4       2       2       0       0       2       2       4
           *

1434       KK  SUB8NA
1435       KM        RUNOFF FROM SUBBASIN 8NA.
1436       BA   .0046
1437       LS              81       0
1438       UK     100     .03     .15     100
1439       RK     450     .03    .025            TRAP      20       6
           *
```

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

1440          KK   SR8NA
1441          KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB8NA.
1442          RS       1    STOR       0       0
1443          SV       0     .51    .816
1444          SQ       0       1      43
1445          SE    1791    1795    1796
              *

1446          KK    R8NB
1447          KM        ROUTE FLOW FROM CP8NA TO CP8NB.
1448          RS       1    FLOW
1449          RC    .025    .025    .025     300     .03
1450          RX       0      12      24      36      56      68      80      92
1451          RY       6       4       2       0       0       2       4       6
              *

1452          KK  SUB8NB
1453          KM        RUNOFF FROM SUBBASIN 8NB.
1454          BA   .0142
1455          LS              81       0
1456          UK     100     .03     .15     100
1457          RK    1150    .025    .025            TRAP      20       6
              *

1458          KK   CP8NB
1459          KM        ADD HYDROGRAPHS AT CP8NB.
1460          HC       2
              *

1461          KK   SR8NB
1462          KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB8NB.
1463          RS       1    STOR       0       0
1464          SV       0   .0124   1.754    2.45
1465          SQ       0       2       2      72
1466          SE    1784    1785    1790    1791
              *

1467          KK    R8NC
1468          KM        ROUTE FLOW FROM CP8NB TO CP8NC.
1469          RS       1    FLOW
1470          RC    .025    .025    .025     500     .03
1471          RX       0      12      24      36      56      68      80      92
1472          RY       6       4       2       0       0       2       4       6
              *

1473          KK  SUB8NC
1474          KM        RUNOFF FROM SUBBASIN 8NC.
1475          BA   .0182
1476          LS              81       0
1477          UK     100     .03     .15     100
1478          RK     900     .03    .025            TRAP      20       6
              *
```

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


1479          KK   CP8NC
1480          KM        ADD HYDROGRAPHS AT CP8NC.
1481          HC        3
              *

1482          KK   SR8NC
1483          KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB8NC.
1484          RS        1    STOR       0       0
1485          SV        0    .404   2.444    3.13   3.979
1486          SQ        0      10      14     151    1004
1487          SE     1771    1775    1780    1781    1782
              *

1488          KK     R9N
1489          KM        ROUTE FLOW FROM CP8N TO CP9N.
1490          RS        1    FLOW
1491          RC     .025    .025    .025    1150    .025
1492          RX        0       8      13      17      22      26      31      39
1493          RY        4       2       2       0       0       2       2       4
              *

1494          KK   SUB9N
1495          KM        RUNOFF FROM SUBBASIN 9N.
1496          BA     .055
1497          LS               77      28
1498          UK      100    .008     .15     100
1499          RK     1700     .01    .018            TRAP      50      20
              *

1500          KK    CP9N
1501          KM        ADD HYDROGRAPHS AT CP9N
1502          HC        2
              *

1503          KK    R10B
1504          KM        ROUTE FLOW FROM CP9N TO CP10B.
1505          RS        1    FLOW
1506          RC      .03     .03     .03     400     .02
1507          RX        0       8      16      24      29      37      45      53
1508          RY        6       4       2       0       0       2       4       6
              *

1509          KK  SUB10B
1510          KM        RUNOFF FROM SUBBASIN 10B.
1511          BA     .028
1512          LS               77      42
1513          UK      100    .015     .15     100
1514          RK      350    .008    .018            TRAP      50      20
1515          RK      600    .008    .025            TRAP      10       4
              *
```

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

1516          KK   CP10B
1517          KM        ADD HYDROGRAPHS AT CP10B
1518          HC        2
              *

1519          KK   R11NA
1520          KM        ROUTE FLOW FROM CP10B TO CP11NA.
1521          RS        1    FLOW
1522          RC      .03     .03     .03     200     .04
1523          RX        0       8      16      24      29      37      45      53
1524          RY        6       4       2       0       0       2       4       6
              *

1525          KK  UB11NA
1526          KM        RUNOFF FROM SUBBASIN 11NA.
1527          BA   .0076
1528          LS               81       0
1529          UK      100    .025     .15     100
1530          RK      500     .03    .025            TRAP      30       6
              *

1531          KK  CP11NA
1532          KM        ADD HYDROGRAPHS AT CP11NA
1533          HC        2
              *

1534          KK  SR11NA
1535          KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB11NA.
1536          RS        1    STOR       0       0
1537          SV        0   .0462   1.425   2.480   3.109   3.856
1538          SQ        0      10      27      27      27     237
1539          SE     1734    1735    1740    1742    1743    1744
              *

1540          KK   R11NB
1541          KM        ROUTE FLOW FROM CP11NA TO CP11NB.
1542          RS        1    FLOW
1543          RC     .025    .025    .025     250     .03
1544          RX        0      12      24      36      56      68      80      92
1545          RY        6       4       2       0       0       2       4       6
              *

1546          KK  UB11NB
1547          KM        RUNOFF FROM SUBBASIN 11NB.
1548          BA   .0078
1549          LS               81       0
1550          UK      100     .04     .15     100
1551          RK      700    .025    .025            TRAP      30       6
              *
```

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


1552          KK  CP11NB
1553          KM        ADD HYDROGRAPHS AT CP11NB
1554          HC       2
              *

1555          KK  SR11NB
1556          KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB11NB.
1557          RS       1    STOR       0       0
1558          SV       0    1.56   2.586
1559          SQ       0      27     111
1560          SE    1732    1737    1738
              *

1561          KK   R11NC
1562          KM        ROUTE FLOW FROM CP11NB TO CP11NC.
1563          RS       1    FLOW
1564          RC    .025    .025    .025     300     .03
1565          RX       0      12      24      36      56      68      80      92
1566          RY       6       4       2       0       0       2       4       6
              *

1567          KK  UB11NC
1568          KM        RUNOFF FROM SUBBASIN 11NC.
1569          BA   .0069
1570          LS              81       0
1571          UK     100     .03     .15     100
1572          RK     650    .028    .025            TRAP      20       5
              *

1573          KK  C11NC1
1574          KM        ADD HYDROGRAPHS AT CP11NC.1
1575          HC       2
              *

1576          KK  SUB10A
1577          KM        RUNOFF FROM SUBBASIN 10A.
1578          BA    .030
1579          LS              77      42
1580          UK     100    .015     .15     100
1581          RK     350    .008    .018            TRAP      50      20
1582          RK     800    .008    .025            TRAP      10       4
              *

1583          KK   R12NB
1584          KM        ROUTE FLOW FROM CP10A TO CP12NB.
1585          RS       1    FLOW
1586          RC    .025    .025    .025     400     .03
1587          RX       0      12      24      36      46      58      70      82
1588          RY       6       4       2       0       0       2       4       6
              *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1589         KK  UB12NA
1590         KM        RUNOFF FROM SUBBASIN 12NA.
1591         BA   .0153
1592         LS              81       0
1593         UK     150    .025     .15     100
1594         RK     650    .017    .025             TRAP      30       6
             *

1595         KK  SR12NA
1596         KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB1NA.
1597         RS       1    STOR       0       0
1598         SV       0    2.16   3.426   5.071
1599         SQ       0       1       2     142
1600         SE    1741    1745    1746    1747
             *

1601         KK   R12NA
1602         KM        ROUTE FLOW FROM CP12NA TO CP12NB.
1603         RS       1    FLOW
1604         RC    .025    .025    .025     550    .025
1605         RX       0      12      24      36      46      58      70      82
1606         RY       6       4       2       0       0       2       4       6
             *

1607         KK  UB12NB
1608         KM        RUNOFF FROM SUBBASIN 12NB.
1609         BA   .0157
1610         LS              81       0
1611         UK     150    .025     .15     100
1612         RK     650    .017    .025             TRAP      30       6
             *

1613         KK  CP12NB
1614         KM        ADD 3 HYDROGRAPHS AT CP12NB
1615         HC       3
             *

1616         KK  SR12NB
1617         KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB12NB.
1618         RS       1    STOR       0       0
1619         SV       0    .922    4.24    7.53
1620         SQ       0       2       2     142
1621         SE    1741    1745    1746    1747
             *

1622         KK  R11NC2
1623         KM        ROUTE FLOW FROM CP12NA TO CP11NC.
1624         RS       1    FLOW
1625         RC    .025    .025    .025     550     .01
1626         RX       0      12      24      36      46      58      70      82
1627         RY       6       4       2       0       0       2       4       6
             *
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1628           KK  CP11NC
1629           KM        ADD HYDROGRAPHS  AT CP11NC
1630           HC       2
               *
1631           KK  SR11NC
1632           KM        ROUTE FLOW THROUGH RETENTION BASIN RT11NC.  18" PIPE OUTFLOW WILL
1633           KM        BLEED FLOWS TO DRAIN THE BASIN AFTER THE STORM HAS PASSED.
1634           RS       1    STOR       0       0
1635           SV       0   1.665   2.303   3.062
1636           SQ       0      27     111     344
1637           SE    1730    1735    1736    1737
               *
1638           KK   R16NC
1639           KM        ROUTE FLOW FROM CP11NC TO CP16NC.
1640           RS       1    FLOW
1641           RC    .035    .035   0.035     950    .025
1642           RX       0       8      13      17      22      26      31      39
1643           RY       4       2       2       0       0       2       2       4
               *
1644           KK  UB16NC
1645           KM        RUNOFF FROM SUBBASIN 16NC.
1646           BA   .0337
1647           LS              77      42
1648           UK     100    .015     .15     100
1649           RK    1600    .015    .022            TRAP      50      20
               *
1650           KK  CP16NC
1651           KM        ADD HYDROGRAPHS  AT CP16NC
1652           HC       2
               *
1653           KK  R16NC1
1654           KM        ROUTE FLOW FROM CP16NC TO CP16NC1.
1655           RS       1    FLOW
1656           RC     .03     .03     .03     550    .013
1657           RX       0      16      26      34      44      58      68      86
1658           RY       6       2       2       0       0       2       2       6
               *
1659           KK  C16NC1
1660           KM        ADD HYDROGRAPHS  AT CP16NC1.
1661           HC       2
               *
1662           KK   R15N1
1663           KM        ROUTE FLOW FROM CP16NC1 TO CP15N1.
1664           RS       1    FLOW
1665           RC    .035    .035    .035     600    .013
1666           RX       0      16      26      34      54      68      78      96
1667           RY       6       2       2       0       0       2       2       6
```

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

1668        KK     PC2
1669        KM          RUNOFF FROM SUBBASIN PC2.
1670        BA    .054
1671        LS              77      10
1672        UK     100    .015     .15     100
1673        RK    2700     .01     .03             TRAP      50       4
            *

1674        KK  CP15N1
1675        KM          ADD HYDROGRAPHS  AT CP15N1
1676        HC       2
            *

1677        KK    SRPC2
1678        KM          STORAGE ROUTE THRU DETENTION BASINS IN POWER CORRIDOR THIS IS THE TOTAL
1679        KM          FLOW REACHING THE UPSTREAM SIDE OF THE THOMPSON PEAK PARKWAY BRIDGE
1680        RS       1    STOR       0       0
1681        SV       0    1.02    2.70    4.48     5.8     6.9
1682        SQ       0       0     150     350     550     850
1683        SE    1730    1731    1732    1733    1734    1735
            *

1684        KK  UB17NA
1685        KM          RUNOFF FROM SUBBASIN SUB17NA.
1686        BA  .00979
1687        LS              81       0
1688        UK     150    .025     .05     100
1689        RK     960   .0292    .025             TRAP      30      50
            *

1690        KK  SR17NA
1691        KM          STORAGE ROUTE THROUGH DETENTION BASIN SR17NA.
1692        RS       1    STOR       0       0
1693        SV       0   .0078    .241    .523    1.00   1.735
1694        SQ       0       1       1       1    17.4     251
1695        SE  1755.2    1756    1758    1759    1760    1761
            *

1696        KK   R17NB
1697        KM          ROUTE FLOW FROM SR17NA TO CP17NB.
1698        RS       1    FLOW
1699        RC    0.03    0.03    0.03     280  0.0286
1700        RX       0      10      20      35      70      85      90     100
1701        RY    1757  1756.8  1756.6    1756    1756    1757    1758    1759
            *

1702        KK  UB17NB
1703        KM          RUNOFF FROM SUBBASIN SUB17NB.
1704        BA   .0111
1705        LS              81       0
1706        UK     150    .025     .05     100
1707        RK    1200   .0217    .025             TRAP      30      50
            *
```

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

1708        KK  CP17NB
1709        KM       ADD HYDROGRAPHS AT SUB17NB.
1710        HC       2
            *

1711        KK  SR17NB
1712        KM       STORAGE ROUTE THROUGH DETENTION BASIN SR17NB.
1713        RS       1    STOR       0       0
1714        SV       0   .0113   .1469    .635   .9795   1.509   2.254   3.243
1715        SQ       0       1       1       1       1       1    38.2     189
1716        SE  1751.5    1752    1753    1755    1756    1757    1758    1759
            *

1717        KK    R17A
1718        KM       ROUTE FLOW FROM SR17NB TO CP17A.
1719        RS       1    FLOW
1720        RC    0.03    0.03    0.03     280   0.033
1721        RX       0      15      18      20      24      27      30      35
1722        RY    1755    1754    1753    1752    1752    1753    1754    1755
            *

1723        KK  SUB17A
1724        KM       RUNOFF FROM SUBBASIN SUB17A.
1725        BA  .00792
1726        LS              77      34
1727        UK      75     .03     .05     100
1728        RK    1500     .02    .025            TRAP       8       4
            *

1729        KK  CP17A1
1730        KM       ADD HYDROGRAPHS AT CP17A1.
1731        HC       2
            *

1732        KK  UB17NC
1733        KM       RUNOFF FROM SUBBASIN SUB17NC.
1734        BA  .00559
1735        LS              77      12
1736        UK      75     .03     .05     100
1737        RK     910   .0187    .025            TRAP       8       4
            *

1738        KK   CP17A
1739        KM       ADD ALL HYDROGRAPHS AT CP17A.
1740        HC       2
            *

1741        KK    R15N
1742        KM       ROUTE FLOW FROM CP17A TO CP15N.
1743        RS       1    FLOW
1744        RC    .035    .035    .035    1950    .025
1745        RX       0       8      13      17      22      26      31      39
1746        RY       4       2       2       0       0       2       2       4
            *
```

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

1747          KK  SUB15N
1748          KM        RUNOFF FROM SUBBASIN 15N.
1749          BA   .0391
1750          LS               77      68
1751          UK     100      .01     .15     100
1752          RK     400     .008    .018            TRAP      50      20
1753          RK    1700     .015    .025            TRAP      10       4
              *

1754          KK   CP15N
1755          KM        ADD HYDROGRAPHS  AT CP15N
1756          HC       2
              *

1757          KK   R15N2
1758          KM        ROUTE FLOW FROM CP15N TO CP15N1.
1759          RS       1    FLOW
1760          RC     .02      .02     .02     700    .013
1761          RX       0        8      13      17      22      26      31      39
1762          RY       6        2       2       0       0       2       2       6
              *

1763          KK  CP15N2
1764          KM        ADD HYDROGRAPHS  AT CP15N1
1765          KM        THIS IS THE INTERIM OUTFLOW DISCHARGE TO NATURAL WASH.
1766          HC       2  1.1611
              *

1767          KK   R15N2
1768          KM        ROUTE 15N2 IS ADDED BY GVSCE TO ROUTE THE HYDROGRAPH FROM CP15N2 TO THE
1769          KM        POWER LINE CHANNEL CROSSING AT HAYDEN RD.
1770          KM
1771          KM        ROUTE FLOW FROM CP15N2 TO CPC3A.
1772          RS       1    FLOW
1773          RC    .035     .035    .035    2200    .013
1774          RX       0       16      26      34      64      78      88     106
1775          RY       6        2       2       0       0       2       2       6
              *

1776          KK    DPC3
1777          KM        THIS OPERATION IS ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
1778          KM        UNION HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
1779          KM
1780          KM        RETRIEVE DIVERTED FLOW
1781          DR   BPC3T
              *

1782          KK   CPC3A
1783          KM        COMBINE CPC3A IS ADDED BY GVSCE TO ESTIMATE THE TOTAL DISCHARGE AT THE
1784          KM        POWER LINE CHANNEL CROSSING AT HAYDEN RD.
1785          KM
1786          KM        COMBINE ROUTED HYDROGRAPH FROM CP15N2 WITH HYDROGRAPH FROM CPC3
1787          HC       2  1.3446
              *
```

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

1788          KK   RPC3A
1789          KM        ROUTE PC3A IS ADDED BY GVSCE TO ROUTE THE HYDROGRAPH FROM CPC3A VIA
1790          KM        THE POWER LINE CHANNEL.
1791          KM
1792          KM        ROUTE FLOW FROM CP15N2 TO CPC3A.
1793          RS        1    FLOW
1794          RC     .035    .035    .035    1100    .013
1795          RX        0      16      26      34      64      78      88     106
1796          RY        6       2       2       0       0       2       2       6
              *

1797          KK    DPC4
1798          KM        THIS OPERATION IS ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
1799          KM        UNION HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
1800          KM
1801          KM        RETRIEVE DIVERTED FLOW
1802          DR   BPC4T
              *

1803          KK   CPC4A
1804          KM        COMBINE CPC4A IS ADDED BY GVSCE TO ESTIMATE THE TOTAL DISCHARGE IN THE
1805          KM        POWER LINE CHANNEL
1806          KM
1807          KM        COMBINE ROUTED HYDROGRAPH FROM CPC3A WITH HYDROGRAPH FROM CPC4
1808          HC        2  1.9946
              *

1809          KK   RPC4A
1810          KM        ROUTE PC4A IS ADDED BY GVSCE TO ROUTE THE HYDROGRAPH FROM CPC4A TO THE
1811          KM        POWER LINE CHANNEL CROSSING AT HUALAPAI RD.
1812          KM
1813          KM        ROUTE FLOW FROM CPC4A TO CPC5.
1814          RS        1    FLOW
1815          RC     .035    .035    .035    1900    .013
1816          RX        0      16      26      34      64      78      88     106
1817          RY        6       2       2       0       0       2       2       6
              *

1818          KK  DPC4AT
1819          KM        DIVERT PC4A IS ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE UNION
1820          KM        HILLS DETENTION BASIN VIAL THE POWER LINE CHANNEL.
1821          KM
1822          KM        DIVERT 100% OF FLOW
1823          DT  BPC4AT
1824          DI        0   10000
1825          DQ        0   10000
              *

1826          KK  SUB1-2
1827          KM        RUNOFF FROM SUB 1 AND 2, SOUTH COURSE MODEL
1828          BA   .0558
1829          LS               77      68
1830          UK      200    .010     .15     100
1831          RK     1370    .027    .015            TRAP      50      20
```

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

1832          KK  GCRB18
1833          KM       RUNOFF FROM GOLF COURSE CONTRIBUTING TO RETENTION BASIN AT HOLE NO. 18
1834          KM       AND HOLE NO. 10, SOUTH COURSE
1835          BA    .012
1836          LS              81       0
1837          UK     200    .025     .15     100
1838          RK     300    .016    .025             TRAP      10       4
              *

1839          KK  CPRET1
1840          KM       COMBINE HYDROGRAPHS AT RETENTION BASINS ON HOLE 18 & 10
1841          HC       2
              *

1842          KK   SR18S
1843          KM       STORAGE ROUTE THRU RETENTION BASIN AT HOLE 18, SOUTH COURSE
1844          RS       1    STOR       0       0
1845          SV       0  1.7635  5.7722  12.174  21.337  28.849  30.151      32
1846          SE    1725    1730    1735    1740    1745    1748    1749    1750
1847          SQ       0       0       0       0       0      42     386     900
              *

1848          KK   SUB5S
1849          KM       RUNOFF FROM SUB 5S
1850          BA   .0263
1851          LS              77      31
1852          UK     100    .010     .15     100
1853          RK    1280    .007    .015             TRAP      50      20
              *

1854          KK  GC1216
1855          KM       RUNOFF FROM SOUTH GOLF COURSE HOLES 12, 16, AND 17
1856          BA   .0365
1857          LS              81       0
1858          UK     200    .025     .15     100
1859          RK    2200    .024    .025             TRAP      10       4
              *

1860          KK  GC1415
1861          KM       RUNOFF FROM SOUTH GOLF COURSE HOLES 13, 14, 15 AND RETENTION
1862          BA    .045
1863          LS              81       0
1864          UK     200    .025     .15     100
1865          RK    1300    .022    .025             TRAP      10       4
              *

1866          KK   SUB6S
1867          KM       RUNOFF FROM SUB BASIN 6, SOUTH COURSE
1868          BA    .021
1869          LS              77      42
1870          UK     100    .010     .15     100
1871          RK    2150    .013    .025             TRAP      50      20
              *
```

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

1872          KK   SUB7S
1873          KM        RUNOFF FROM SUB BASIN 7, SOUTH COURSE
1874          BA    .027
1875          LS              77      42
1876          UK     100    .010     .15     100
1877          RK    2080    .023    .025            TRAP      50      20
              *

1878          KK  CPRET2
1879          KM        COMBINE HYDROGRAPHS AT RETENTION BASIN 2, SOUTH COURSE
1880          HC       5
              *

1881          KK  SRRET2
1882          KM        STORAGE THRU RETENTION BASIN NO. 2, SOUTH COURSE
1883          RS       1    STOR       0       0
1884          SV       0    .617   3.474   9.858  20.063  35.353  52.685  57.749      62
1885          SE    1670    1675    1680    1685    1690    1695    1699    1700    1701
1886          SQ       0       0       0       0       0       0      32     386     594
              *
              *      NO FLOW RELEASED FROM RETENTION BASIN
              *

1887          KK   CLEAR
1888          KM        THIS OPERATION IS ADDED BY GVSCE
1889          KM
1890          KM        CLEAR HYDROGRAPHS FROM THE STACK
1891          HC       4
              *

1892          KK   SUB8S
1893          KM        RUNOFF FROM SUB BASIN 8, SOUTH COURSE
1894          BA   .0256
1895          LS              77      42
1896          UK     100    .010     .15     100
1897          RK    1600    .015    .025            TRAP      50      20
              *

1898          KK   RGC36
1899          KM        ROUTE SUB8S TO CPGC36
1900          RS       1    FLOW
1901          RC    .055    .045    .055     850     .02
1902          RX       0      16      26      30      40      44      54      70
1903          RY       6       2       2       0       0       2       2       6
              *

1904          KK    GC36
1905          KM        RUNOFF FROM SOUTH COURSE HOLES 3, 6, AND NORTH HALF OF HOLE 4.
1906          BA   .0406
1907          LS              81       0
1908          UK     200    .025     .15     100
1909          RK    2350    .015    .035            TRAP      10       4
              *
```

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


1910            KK  C1GC36
1911            KM       COMBINE SUBS 8 AND GC36
1912            HC       2
                *

1913            KK   SUB9S
1914            KM       RUNOFF FROM SUB BASIN 9, SOUTH COURSE
1915            BA    .021
1916            LS              77      53
1917            UK     100    .010     .15     100
1918            RK    1100    .013    .025            TRAP      50      20
                *

1919            KK     R9S
1920            KM       ROUTE SUB9S TO CPGC36
1921            RS       1    FLOW
1922            RC    .035    .035    .035     500     .02
1923            RX       0       8      12      16      18      22      26      30
1924            RY       6       4       3       2       2       3       4       6
                *

1925            KK  CPGC36
1926            KM       COMBINE SUBS 8 AND 9 SOUTH AND GC36
1927            HC       2
                *

1928            KK  SRGC36
1929            KM       STORAGE THRU DETENTION BASIN ON GC36
1930            RS       1    STOR       0       0
1931            SV       0    0.85     1.0
1932            SE    1664    1668    1669
1933            SQ       0      20     150
                *

1934            KK   SUB7A
1935            KM       RUNOFF FROM SUB7A, SOUTH COURSE EAST SIDE ADJACENT TO PIMA ROAD
1936            BA   .0092
1937            LS              77      42
1938            UK     100    .025     .15     100
1939            RK     950    .015    .025            TRAP      50      20
                *

1940            KK    SR7A
1941            KM       STORAGE THRU DETENTION BASIN ON SUB7A
1942            RS       1    STOR       0       0
1943            SV       0     .68      .8
1944            SE    1700    1703    1704
1945            SQ       0      10     150
                *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1946          KK    R10S
1947          KM         ROUTE FLOW FROM CP7A TO CP10S
1948          RS      1    FLOW
1949          RC   .035    .035    .035    1400    .015
1950          RX      0       8      12      16      18      22      26      30
1951          RY      6       4       3       2       2       3       4       6
              *

1952          KK  SUB10S
1953          KM         RUNOFF FROM SUB BASIN 10, SOUTH COURSE
1954          BA  .0248
1955          LS             77      53
1956          UK    100    .010     .15     100
1957          RK   1150    .020    .025            TRAP      50      20
              *

1958          KK   CP10S
1959          KM         COMBINE HYDROGRAPHS AT CP10 SOUTH COURSE
1960          HC      2
              *

1961          KK  SUB11S
1962          KM         RUNOFF FROM SUB11, SOUTH COURSE
1963          BA  .0234
1964          LS             77      68
1965          UK    100    .015    .018     100
1966          RK   1050    .015    .025            TRAP     100      20
              *

1967          KK    R11S
1968          KM         ROUTE 11S IS ADDED BY GVSCE TO ROUTE THE RUNOFF FROM SUB11S TO THE
1969          KM         POWER LINE CHANNEL CROSSING AT HUALAPAI DR ALONG HUALAPAI DR.
1970          KM
1971          KM         ROUTE FLOW FROM SUB11S TO CPC5.
1972          RS      1    FLOW
1973          RC   .035    .035    .035     900    .015
1974          RX      0       8      12      16      18      22      26      30
1975          RY      6       4       3       2       2       3       4       6
              *

1976          KK   C10SA
1977          KM         COMBINE 10SA IS ADDED BY GVSCE
1978          KM
1979          KM         COMBINE ROUTED HYDROGRAPH FROM 11S WITH HYDROGRAPH FROM CP10S
1980          HC      2
              *

1981          KK   R10SA
1982          KM         ROUTE 10SA IS ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE UNION
1983          KM         HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
1984          KM
1985          KM         ROUTE FLOW FROM C10SAS TO CPC5.
1986          RS      1    FLOW
1987          RC   .035    .035    .035     900    .015
```

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

1988         RX       0       8      12      16      18      22      26      30
1989         RY       6       4       3       2       2       3       4       6
             *

1990         KK    GC45
1991         KM         RUNOFF FROM SOUTH COURSE HOLES 4 AND 5
1992         BA   .0127
1993         LS              81       0
1994         UK     200    .015    .025     100
1995         RK     550    .015    .035            TRAP      10       4
             *

1996         KK     PC5
1997         KM         PC5 IS A SUBBASIN ADDED BY GVSCE TO ESTIMATE THE SURFACE RUNOFF FROM
1998         KM         THE POWER LINE CORRIDOR WHICH ENTERS THE POWER LINE CHANNEL
1999         KM
2000         KM         RUNOFF FROM SUBBASIN PC5.
2001         BA  0.0375
2002         LS              77       0
2003         UK     100    .015     .15     100
2004         RK    1900     .01     .03            TRAP      30       4
             *

2005         KK   DPC4A
2006         KM         THIS OPERATION IS ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
2007         KM         UNION HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
2008         KM
2009         KM         RETRIEVE DIVERTED FLOW
2010         DR  BPC4AT
             *

2011         KK    CPC5
2012         KM         COMBINE PC5 IS ADDED BY GVSCE TO ESTIMATE THE TOTAL FLOW IN THE POWER
2013         KM         LINE CHANNEL AT THE HUALAPAI CROSSING
2014         KM
2015         KM         COMBINE ROUTED HYDROGRAPH FROM C10SA AND CPC4A WITH HYDROGRAPHS FROM
2016         KM         CGC45, SRGC36 AND PC5
2017         HC       5  2.1022
             *

2018         KK    RPC5
2019         KM         ROUTE PC5 IS ADDED BY GVSCE TO ROUTE THE HYDROGRAPH FROM PC5 TO THE
2020         KM         UNION HILLS DETENTION BASIN.
2021         KM
2022         KM         ROUTE FLOW FROM CPC5 TO C1I.
2023         RS       1    FLOW
2024         RC    .035    .035    .035    3300    .013
2025         RX       0      16      26      34      64      78      88     106
2026         RY       6       2       2       0       0       2       2       6
             *
             *     *******************  END GREYHAWK WATERSHED  ********************
             *
```

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


2027      KK   SCN5C
2028      KM     RUNOFF FROM SUBBASIN CN5C
2029      BA  0.2667
2030      LS              74      20
2031      UK     240   0.021    0.13     100
2032      RK    1200   0.018   0.045  0.0067    TRAP       0      45
2033      RK    5600   0.009   0.040            TRAP      15       3
          *

2034      KK    SCN6
2035      KM     RUNOFF FROM SUBBASIN CN6A
2036      BA  0.2597
2037      LS              74      85
2038      UK     180   0.019    0.13     100
2039      RK    1075   0.019   0.045  0.0066    TRAP       5       7
2040      RK    4430   0.013   0.040            TRAP       8      50
          *

2041      KK     D52
2042      KM     BRING BACK DIVERTED HYDROGRAPH FROM R52
2043      DR    B52T
          *

2044      KK    S53A
2045      KM     RUNOFF FROM SUBBASIN 53A
2046      BA  0.1692
2047      LS              74      11
2048      UK     300   0.022    0.13     100
2049      RK    1475   0.026   0.045  0.0111    TRAP       3       5
2050      RK    2700   0.021    0.04            TRAP      25       5
          *

2051      KK     C53
2052      KM     COMBINE ROUTED HYDROGRAPH FROM
2053      HC       2  8.0852
          *

2054      KK     R53
2055      KM     NORMAL DEPTH CHANNEL ROUTE FROM C53 TO C53A THROUGH PIMA CHANNEL
2056      RS       1    FLOW      -1
2057      RC   0.035   0.025   0.035    2360    0.01
2058      RX    1000    1020    1022    1034    1084    1096    1098    1118
2059      RY   111.4   106.4   106.3     100     100   106.3   106.4   111.4
          *

2060      KK   S53A1
2061      KM     RUNOFF FROM SUBBASIN 53A1
2062      BA  0.3384
2063      LS              74      12              74      30
2064      UK     300   0.022    0.13      70
2065      UK     150   0.027    0.13      30
2066      RK    1250   0.023   0.045  0.0087    TRAP       4       5
2067      RK    5650   0.017    0.04            TRAP      35       5
          *
```

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

KK    C53A
KM     COMBINE ROUTED HYDROGRAPH FROM
HC       2  8.4236
*

KK     C1I
KM     COMBINE ROUTED HYDROGRAPH FROM
HC       4
*

KK     C1O
KM     DETENTION BASIN AT UNION HILLS ROAD - NONREGULATORY STRUCTURE
KM        OUTLET RATING CURVE - USING HY8 FOR A 78" RCP WITH A SLOPE OF 0.9%
KM        7-ACRE-FEET OF STORAGE FOR SEDIMENTATION
RS       1    STOR
SV       0    0.36    0.82    1.42    2.23    3.01   37.59  123.30  222.97  337.88
SV  362.56  387.54
SE    1590    1591    1592    1593    1594    1595    1600    1605    1610    1615
SE    1616    1617
SQ       0      65     130     195     260     325     390     420     520     585
SQ     650     690     828     966    1104    1242    1382
SE  1590.0 1592.80 1594.36 1595.60 1596.80 1598.16 1599.79 1600.64 1604.03 1606.65
SE  1615.0 1615.28 1615.72 1616.04 1616.26 1616.40 1616.50
*

KK     RC1
KM     NORMAL DEPTH CHANNEL ROUTE FROM C1I TO CIA
RS       1    FLOW      -1
RC   0.025   0.025   0.025    2300   0.013
RX    1000    1008    1012    1016    1026    1030    1034    1042
RY     104     102     101     100     100     101     102     104
*

KK     S54
KM     RUNOFF FROM SUBBASIN 54
BA  0.0853
LS              74      22
UK     300   0.017    0.13     100
RK    3460   0.012   0.040            TRAP       5       2
*

KK   SCN6A
KM     RUNOFF FROM SUBBASIN CN6A
BA  0.1335
LS              74      20
UK     300   0.017    0.13     100
RK    1050   0.017   0.045  0.0057    TRAP       8      20
RK    2250   0.012   0.040            TRAP      10       4
*
```

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

2106            KK      C1A
2107            KM      COMBINE ROUTED HYDROGRAPH FROM  C10 WITH RUNOFF FROM SCN6A
2108            HC        3
                *
2109            ZZ
```

```
                SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

   26       S30N
               V
               V
   35       R30N
               .
               .
   41          .       S31.1
               .           .
               .           .
   49      C31.1............
               V
               V
   52      R31.1
               .
               .
   58          .        S35N
               .           .
               .           .
   68          .           .------->  D35NL
   66          .       D35NR
               .           V
               .           V
   71          .       R35NR
               .           .
               .           .
   78          .           .       S36.2
               .           .           .
               .           .           .
   86          .       C36.2............
               .           .
               .           .
   92          .           .------->  D36.2L
   90          .      D36.2R
               .           V
               .           V
   95          .      R36.2R
               .           .
               .           .
  102          .           .       S34.1
               .           .           .
               .           .           .
  111     C34.1I........................
               V
               V
  115     C34.1O
               V
               V
  128      R34.1
               .
               .
  134          .       S36.1
               .           .
```

```
            .   .
141     C36.1...........
            V
            V
144     R36.1
            .
            .
152         .         .<-------  D35NL
150         .     B35NL
            .         V
            .         V
153         .     R35NL
            .         .
            .         .
162         .         .         .<-------  D36.2L
160         .         .    B36.2L
            .         .         V
            .         .         V
163         .         .    R36.2L
            .         .         .
            .         .         .
170         .         .         .      S36R1
            .         .         .          .
            .         .         .          .
178     C36R1....................................
            V
            V
183     R36R1
            .
            .
189         .     S36R2
            .         .
            .         .
196     C36R2...........
            .
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199         .     S51.1
            .         .
            .         .
207     C51.1I...........
            V
            V
210     C51.1O
            V
            V
223     R51.1
            .
            .
231         .------->  B51.1T
229     D51.1T
            .
            .
234         .      52D4
            .         V
            .         V
240         .     52D4R
            .         .
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243         .         .         52D4B
            .         .         .
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               .         .         .
249            .    52D5C1..........
               .         .
               .         .
252            .         .    52D5A
               .         .        V
               .         .        V
258            .         .   52D5AR
               .         .        .
               .         .        .
261            .    52D5C2..........
               .         V
               .         V
264            .     52D5R
               .         .
               .         .
267            .         .     52C3
               .         .        V
               .         .        V
273            .         .    52C3R
               .         .        .
               .         .        .
276            .         .        .       52C3B
               .         .        .           .
               .         .        .           .
282            .         .   2C3BC1............
               .         .        .
               .         .        .
285            .    2C3BC2..........
               .         V
               .         V
288            .    52C3BR
               .         .
               .         .
291            .         .      51C
               .         .        .
               .         .        .
299            .         .        .------->  51C1DV
297            .         .    51C1D
               .         .        V
               .         .        V
302            .         .    51C1R
               .         .        .
               .         .        .
305            .         .        .        52C1
               .         .        .           .
               .         .        .           .
311            .         .    52C1C...........
               .         .        V
               .         .        V
314            .         .    52C1R
               .         .        .
               .         .        .
317            .         .        .       52C2A
               .         .        .           .
               .         .        .           .
323            .         .   52C2AC...........
               .         .        .
               .         .        .
326            .         .        .       52C2B
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                .           .           .           .
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332             .           .      52C2BC............
                .           .           V
                .           .           V
335             .           .      52C2BR
                .           .           .
                .           .           .
338             .           .           .     52C2C
                .           .           .           .
                .           .           .           .
344             .           .      52C2CC............
                .           .           V
                .           .           V
347             .           .       52C2R
                .           .           .
                .           .           .
350             .           .           .      52C4
                .           .           .           .
                .           .           .           .
356             .           .      52C4C1............
                .           .           .
                .           .           .
359             .     52C4C2............
                .           V
                .           V
362             .      52C4R
                .           .
                .           .
365             .           .       52C13
                .           .           .
                .           .           .
373             .           .           .------->   STORM
371             .           .      2C13DV
                .           .           .
                .           .           .
376             .           .           .     52C15
                .           .           .           .
                .           .           .           .
382             .           .      2C15C1............
                .           .           .
                .           .           .
385             .     2C15C2............
                .           V
                .           V
388             .     52C15R
                .           .
                .           .
391             .           .      52C14A
                .           .           .
                .           .           .
397             .     2C14AC............
                .           V
                .           V
400             .     2C14AR
                .           .
                .           .
405             .           .           .<-------  51C1DV
403             .           .      51C1DV
                .           .           .
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              .         .         .
408           .         .         .------->  51C2DV
406           .         .     51C2D
              .         .         V
              .         .         V
411           .         .     51C2R
              .         .         .
              .         .         .
414           .         .         .      52C5
              .         .         .         .
              .         .         .         .
420           .         .     52C5C..........
              .         .         V
              .         .         V
423           .         .     52C5R
              .         .         .
              .         .         .
426           .         .         .      52C6
              .         .         .         .
              .         .         .         .
432           .         .     52C6C..........
              .         .         V
              .         .         V
435           .         .     52C6R
              .         .         .
              .         .         .
440           .         .         .         .<-------  51C2DV
438           .         .         .    51C2DV
              .         .         .         V
              .         .         .         V
441           .         .         .     51C3R
              .         .         .         .
              .         .         .         .
444           .         .         .         .       51B
              .         .         .         .         .
              .         .         .         .         .
452           .         .         .         .         .------->  51B1DV
450           .         .         .         .     51B1D
              .         .         .         .         V
              .         .         .         .         V
455           .         .         .         .     51B1R
              .         .         .         .         .
              .         .         .         .         .
458           .         .         .         .         .      52C7
              .         .         .         .         .         .
              .         .         .         .         .         .
464           .         .         .     52C7C....................
              .         .         .         V
              .         .         .         V
467           .         .         .     52C7R
              .         .         .         .
              .         .         .         .
472           .         .         .         .         .<-------  51B1DV
470           .         .         .         .    51B1DV
              .         .         .         .         .
              .         .         .         .         .
475           .         .         .         .         .------->  51B2DV
473           .         .         .         .     51B2D
              .         .         .         .         V
              .         .         .         .         V
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478            .           .           .           .       51B2R
               .           .           .           .           .
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481            .           .           .           .           .        52C8
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               .           .           .           .           .           .
487            .           .           .           .       52C8C............
               .           .           .           .           V
               .           .           .           .           V
490            .           .           .           .       52C8R
               .           .           .           .           .
               .           .           .           .           .
493            .           .           .      52C9C1............
               .           .           .           V
               .           .           .           V
496            .           .           .      52C9R1
               .           .           .           .
               .           .           .           .
499            .           .           .           .        52C9
               .           .           .           .           .
               .           .           .           .           .
505            .           .           .      52C9C2............
               .           .           .           V
               .           .           .           V
508            .           .           .      52C9R2
               .           .           .           .
               .           .           .           .
511            .           .      2C10C1............
               .           .           V
               .           .           V
514            .           .      2C10R1
               .           .           .
               .           .           .
517            .           .           .       52C10
               .           .           .           .
               .           .           .           .
523            .           .      2C10C2............
               .           .           .
               .           .           .
526            .           .           .       52C11
               .           .           .           V
               .           .           .           V
532            .           .           .      2C11R1
               .           .           .           .
               .           .           .           .
537            .           .           .           .           .<-------   STORM
535            .           .           .           .      52C13D
               .           .           .           .           .
               .           .           .           .           .
538            .           .           .      52C11C............
               .           .           .           V
               .           .           .           V
541            .           .           .      2C11CR
               .           .           .           .
               .           .           .           .
544            .           .      2C11C2............
               .           .           V
               .           .           V
547            .           .      2C11R2
               .           .           .
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550           .            .           .       52C12
              .            .           .           .
              .            .           .           .
556           .            .      52C12C............
              .            .           V
              .            .           V
559           .            .      52C12R
              .            .           .
              .            .           .
562           .            .           .      52C14B
              .            .           .           .
              .            .           .           .
568           .            .      C14BC1............
              .            .           .
              .            .           .
571           .       C14BC2............
              .            V
              .            V
574           .       52C14R
              .            .
              .            .
579           .            .           .<-------   51B2DV
577           .            .      51B2DV
              .            .           .
              .            .           .
582           .            .           .------->   51B3DV
580           .            .       51B3D
              .            .           V
              .            .           V
585           .            .       51B3R
              .            .           .
              .            .           .
588           .            .           .        52B1
              .            .           .           .
              .            .           .           .
594           .            .       52B1C............
              .            .           V
              .            .           V
597           .            .       52B1R
              .            .           .
              .            .           .
602           .            .           .           .<-------   51B3DV
600           .            .           .      51B3DV
              .            .           .           .
              .            .           .           .
605           .            .           .           .------->   51B4DV
603           .            .           .       51B4D
              .            .           .           V
              .            .           .           V
608           .            .           .      51B4R1
              .            .           .           .
              .            .           .           .
611           .            .      52B2C1............
              .            .           V
              .            .           V
614           .            .      52B2R1
              .            .           .
              .            .           .
617           .            .           .        52B2
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              .           .           .           .
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623           .           .        52B2C2............
              .           .           V
              .           .           V
626           .           .        52B2R2
              .           .           V
              .           .           V
629           .           .        52B3R1
              .           .           .
              .           .           .
632           .           .           .        52B3
              .           .           .           .
              .           .           .           .
638           .           .        52B3C2............
              .           .           V
              .           .           V
641           .           .        52B3R2
              .           .           .
              .           .           .
644           .           .           .        52B4
              .           .           .           .
              .           .           .           .
650           .           .         52B4C............
              .           .           V
              .           .           V
653           .           .         52B4R
              .           .           .
              .           .           .
656           .           .           .        52B5
              .           .           .           .
              .           .           .           .
662           .           .        52B5C1............
              .           .           .
              .           .           .
665           .      52B5C2............
              .           V
              .           V
668           .       52B5R
              .           .
              .           .
673           .           .           .<-------  51B4DV
671           .           .        51B4DV
              .           .           .
              .           .           .
676           .           .           .------->  51B5DV
674           .           .         51B5D
              .           .           V
              .           .           V
679           .           .         51B5R
              .           .           .
              .           .           .
684           .           .           .           .<-------  51B5DV
682           .           .           .       51B5DV
              .           .           .           .
              .           .           .           .
687           .           .           .           .------->  51B6DV
685           .           .           .        51B6D
              .           .           .           V
              .           .           .           V
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690        .          .          .          51B6R
           .          .          .              .
           .          .          .              .
695        .          .          .              .          .<-------  51B6DV
693        .          .          .              .     51B6DV
           .          .          .              .          .
           .          .          .              .          .
698        .          .          .              .          .------->  51B7DV
696        .          .          .              .      51B7D
           .          .          .              .          V
           .          .          .              .          V
701        .          .          .              .     51B7R1
           .          .          .              .          .
           .          .          .              .          .
704        .          .      51B7C.......................
           .          .          V
           .          .          V
707        .          .     51B7R2
           .          .          .
           .          .          .
710        .          .          .           52B6
           .          .          .              .
           .          .          .              .
716        .          .      52B6C............
           .          .          V
           .          .          V
719        .          .      52B6R
           .          .          .
           .          .          .
722        .          .          .           52B7
           .          .          .              .
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728        .          .     52B7C1............
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731        .     52B7C2............
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734        .          .       52A2
           .          .          .
           .          .          .
740        .     52A2C2............
           .          .
           .          .
745        .          .          .<-------  51B7DV
743        .          .     51B7DV
           .          .          V
           .          .          V
746        .          .      51B8R
           .          .          .
           .          .          .
749        .          .          .           52A1
           .          .          .              .
           .          .          .              .
755        .          .      52A1C............
           .          .          .
           .          .          .
760        .          .          .              .<-------  B51.1T
758        .          .          .          D51.1
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761          .          .        C52A...........
             .          .          V
             .          .          V
765          .          .        R52A
             .          .          .
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771          .        C52...........
             .          V
             .          V
775          .        R52
             .          .
             .          .
783          .          .------->    B52T
781          .       D52T
             .          .
             .          .
786      CLEAR............
             .
             .
789          .        37A
             .          .
             .          .
806          .          .------->    37AW
795          .       37AE
             .          V
             .          V
809          .      37AE1
             .          .
             .          .
816          .          .       SUB5N
             .          .          .
             .          .          .
823          .       CP5N...........
             .          V
             .          V
826          .      RET5N
             .          V
             .          V
833          .      R6N.1
             .          .
             .          .
841          .          .       SUB6B
             .          .          V
             .          .          V
847          .          .        SR6B
             .          .          .
             .          .          .
853          .      CP6.1...........
             .          .
             .          .
856          .          .       SUB1N
             .          .          V
             .          .          V
862          .          .        R2NA
             .          .          .
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868          .          .          .        SUB2NA
             .          .          .          .
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874      .     .     CP2NA...........
         .     .         V
         .     .         V
877      .     .     SR2NA
         .     .         V
         .     .         V
883      .     .      R2NB
         .     .         .
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889      .     .         .      SUB2NB
         .     .         .           .
         .     .         .           .
895      .     .     CP2NB...........
         .     .         V
         .     .         V
898      .     .     SR2NB
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         .     .         V
904      .     .     RCP4N
         .     .         .
         .     .         .
910      .     .         .       SUB6N
         .     .         .           V
         .     .         .           V
916      .     .         .       RET6N
         .     .         .           V
         .     .         .           V
922      .     .         .     RCP4N1
         .     .         .           .
         .     .         .           .
928      .     .    CP4N.1...........
         .     .         .
         .     .         .
931      .     .         .       SUB3N
         .     .         .           V
         .     .         .           V
937      .     .         .       RET3N
         .     .         .           V
         .     .         .           V
944      .     .         .         R4N
         .     .         .           .
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950      .     .    CP4N.2...........
         .     .         .
         .     .         .
953      .     .         .       SUB4N
         .     .         .           .
         .     .         .           .
959      .     .      CP4N...........
         .     .         V
         .     .         V
962      .     .       R6N
         .     .         .
         .     .         .
968      .     .         .       SUB6A
         .     .         .           .
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974      .     .     CP6.2...........
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 977           .        CP6N............
               .           V
               .           V
 980           .       RCP6N
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 986           .           .       SUB3C
               .           .           .
               .           .           .
 992           .        CP3C............
               .           V
               .           V
 995           .         R3C
               .           .
               .           .
1003           .           .      GC1018
               .           .           .
               .           .           .
1009           .           .           .       GC1-9
               .           .           .           .
               .           .           .           .
1015           .           .           .           .       SUB3S
               .           .           .           .           .
               .           .           .           .           .
1021           .        CP3S....................................
               .           V
               .           V
1024           .        RT3S
               .           .
               .           .
1030           .           .       SUB4S
               .           .           V
               .           .           V
1036           .           .        RT4S
               .           .           .
               .           .           .
1042           .           .           .       GC2-8
               .           .           .           .
               .           .           .           .
1048           .      1PGC28........................
               .           .
               .           .
1051           .           .      SUB3D3
               .           .           .
               .           .           .
1057           .      CPGC28............
               .           V
               .           V
1060           .      SRGC28
               .           V
               .           V
1066           .        RT7S
               .           .
               .           .
1072           .           .         GC7
               .           .           .
               .           .           .
1078           .        CP7S............
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1086        .           .------->   B7ST
1081        .       D7ST
            .           .
            .           .
1089    CLEAR............
            .
            .
1092        .     SUB3D1
            .           V
            .           V
1097        .       RD1B1
            .           .
            .           .
1103        .           .     SUB3B1
            .           .           .
            .           .           .
1108        .       CP3B1............
            .           V
            .           V
1111        .       RB13F
            .           .
            .           .
1117        .           .       SUB3F
            .           .           .
            .           .           .
1123        .        CP3F............
            .           .
            .           .
1126        .           .     SUB3B2
            .           .           V
            .           .           V
1131        .           .       RB2E1
            .           .           V
            .           .           V
1137        .           .       RB2E2
            .           .           .
            .           .           .
1143        .           .           .     SUB3E1
            .           .           .           .
            .           .           .           .
1148        .           .     1CPE31............
            .           .           .
            .           .           .
1151        .           .           .     SUB3D2
            .           .           .           V
            .           .           .           V
1156        .           .           .       RD2E2
            .           .           .           .
            .           .           .           .
1162        .           .           .           .     SUB3E2
            .           .           .           .           .
            .           .           .           .           .
1167        .           .           .       CP3E2............
            .           .           .           .
            .           .           .           .
1170        .           .           .           .         PC3
            .           .           .           .           .
            .           .           .           .           .
1179        .        CPC3..................................
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               .           .
1191           .           .------->   BPC3T
1186           .       DPC3T
               .           .
               .           .
1194           .           .      SUB3E3
               .           .           .
               .           .           .
1199           .           .           .         PC4
               .           .           .           .
               .           .           .           .
1213           .           .           .           .           .<-------   B7ST
1208           .           .           .           .         D7S
               .           .           .           .           .
               .           .           .           .           .
1214           .           .        CPC4........................
               .           .           .
               .           .           .
1225           .           .           .-------> BPC4T
1220           .           .       DPC4T
               .           .           .
               .           .           .
1228       CLEAR........................
               .
               .
1234           .           .<-------   37AW
1231           .        37AW
               .           V
               .           V
1235           .        R14R
               .           V
               .           V
1242           .      RET141
               .           V
               .           V
1249           .       R14.1
               .           .
               .           .
1256           .           .      SUB13N
               .           .           V
               .           .           V
1262           .           .       R14.1
               .           .           .
               .           .           .
1268           .           .           .      SUB14N
               .           .           .           .
               .           .           .           .
1274           .        CP14........................
               .           V
               .           V
1277           .       RET14
               .           V
               .           V
1284           .       R18.1
               .           .
               .           .
1290           .           .      SUB20N
               .           .           V
               .           .           V
1296           .           .         R19
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               .           .           .
1302           .           .           .          SUB19N
               .           .           .               .
               .           .           .               .
1308           .           .       CP19N................
               .           .           V
               .           .           V
1311           .           .      R18NC
               .           .           .
               .           .           .
1317           .           .           .          UB18NC
               .           .           .               .
               .           .           .               .
1323           .     CP18NC.............................
               .           V
               .           V
1326           .       RPC1
               .           .
               .           .
1332           .           .     UB18NA
               .           .           V
               .           .           V
1338           .           .      1RPC1
               .           .           .
               .           .           .
1344           .           .           .          UB18NB
               .           .           .               V
               .           .           .               V
1350           .           .           .           2RPC1
               .           .           .               .
               .           .           .               .
1356           .           .           .               .          PC1
               .           .           .               .            .
               .           .           .               .            .
1362           .           .      1CPC1..............................
               .           .           V
               .           .           V
1365           .           .      SRPC1
               .           .           .
               .           .           .
1371           .       CPC1............
               .           V
               .           V
1374           .     R16NA1
               .           .
               .           .
1380           .           .     UB16NA
               .           .           V
               .           .           V
1386           .           .     R16NA1
               .           .           .
               .           .           .
1392           .     C16NA1............
               .           V
               .           V
1395           .     R16NB1
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               .           .
1401           .           .     UB16NB
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               .           .           V
               .           .           V
1407           .           .      R16NB1
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               .           .           .
1413           .      C16NB1............
               .           V
               .           V
1416           .      R16NC1
               .           .
               .           .
1422           .           .       SUB7N
               .           .           V
               .           .           V
1428           .           .        R8NC
               .           .           .
               .           .           .
1434           .           .           .      SUB8NA
               .           .           .           V
               .           .           .           V
1440           .           .           .       SR8NA
               .           .           .           V
               .           .           .           V
1446           .           .           .        R8NB
               .           .           .           .
               .           .           .           .
1452           .           .           .           .      SUB8NB
               .           .           .           .           .
               .           .           .           .           .
1458           .           .           .       CP8NB............
               .           .           .           V
               .           .           .           V
1461           .           .           .       SR8NB
               .           .           .           V
               .           .           .           V
1467           .           .           .        R8NC
               .           .           .           .
               .           .           .           .
1473           .           .           .           .      SUB8NC
               .           .           .           .           .
               .           .           .           .           .
1479           .           .       CP8NC........................
               .           .           V
               .           .           V
1482           .           .       SR8NC
               .           .           V
               .           .           V
1488           .           .         R9N
               .           .           .
               .           .           .
1494           .           .           .       SUB9N
               .           .           .           .
               .           .           .           .
1500           .           .        CP9N............
               .           .           V
               .           .           V
1503           .           .        R10B
               .           .           .
               .           .           .
1509           .           .           .      SUB10B
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               .           .          .           .
               .           .          .           .
1516           .           .      CP10B............
               .           .          V
               .           .          V
1519           .           .      R11NA
               .           .          .
               .           .          .
1525           .           .          .      UB11NA
               .           .          .           .
               .           .          .           .
1531           .           .     CP11NA............
               .           .          V
               .           .          V
1534           .           .     SR11NA
               .           .          V
               .           .          V
1540           .           .      R11NB
               .           .          .
               .           .          .
1546           .           .          .      UB11NB
               .           .          .           .
               .           .          .           .
1552           .           .     CP11NB............
               .           .          V
               .           .          V
1555           .           .     SR11NB
               .           .          V
               .           .          V
1561           .           .      R11NC
               .           .          .
               .           .          .
1567           .           .          .      UB11NC
               .           .          .           .
               .           .          .           .
1573           .           .     C11NC1............
               .           .          .
               .           .          .
1576           .           .          .      SUB10A
               .           .          .           V
               .           .          .           V
1583           .           .          .       R12NB
               .           .          .           .
               .           .          .           .
1589           .           .          .           .     UB12NA
               .           .          .           .          V
               .           .          .           .          V
1595           .           .          .           .     SR12NA
               .           .          .           .          V
               .           .          .           .          V
1601           .           .          .           .      R12NA
               .           .          .           .          .
               .           .          .           .          .
1607           .           .          .           .          .      UB12NB
               .           .          .           .          .           .
               .           .          .           .          .           .
1613           .           .          .      CP12NB.......................
               .           .          .           V
               .           .          .           V
1616           .           .          .      SR12NB
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                .       .       .       V
                .       .       .       V
1622            .       .       .   R11NC2
                .       .       .       .
                .       .       .       .
1628            .       .   CP11NC............
                .       .       V
                .       .       V
1631            .       .   SR11NC
                .       .       V
                .       .       V
1638            .       .    R16NC
                .       .       .
                .       .       .
1644            .       .       .   UB16NC
                .       .       .       .
                .       .       .       .
1650            .       .   CP16NC............
                .       .       V
                .       .       V
1653            .       .   R16NC1
                .       .       .
                .       .       .
1659            .   C16NC1............
                .       V
                .       V
1662            .    R15N1
                .       .
                .       .
1668            .       .      PC2
                .       .       .
                .       .       .
1674            .   CP15N1............
                .       V
                .       V
1677            .    SRPC2
                .       .
                .       .
1684            .       .   UB17NA
                .       .       V
                .       .       V
1690            .       .   SR17NA
                .       .       V
                .       .       V
1696            .       .    R17NB
                .       .       .
                .       .       .
1702            .       .       .   UB17NB
                .       .       .       .
                .       .       .       .
1708            .       .   CP17NB............
                .       .       V
                .       .       V
1711            .       .   SR17NB
                .       .       V
                .       .       V
1717            .       .     R17A
                .       .       .
                .       .       .
1723            .       .       .   SUB17A
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                .           .           .           .
                .           .           .           .
1729            .           .        CP17A1............
                .           .           .
                .           .           .
1732            .           .           .        UB17NC
                .           .           .           .
                .           .           .           .
1738            .           .         CP17A............
                .           .           V
                .           .           V
1741            .           .          R15N
                .           .           .
                .           .           .
1747            .           .           .        SUB15N
                .           .           .           .
                .           .           .           .
1754            .           .         CP15N............
                .           .           V
                .           .           V
1757            .           .         R15N2
                .           .           .
                .           .           .
1763            .        CP15N2............
                .           V
                .           V
1767            .         R15N2
                .           .
                .           .
1781            .           .           .<-------    BPC3T
1776            .           .          DPC3
                .           .           .
                .           .           .
1782            .         CPC3A............
                .           V
                .           V
1788            .         RPC3A
                .           .
                .           .
1802            .           .           .<-------    BPC4T
1797            .           .          DPC4
                .           .           .
                .           .           .
1803            .         CPC4A............
                .           V
                .           V
1809            .         RPC4A
                .           .
                .           .
1823            .           .-------> BPC4AT
1818            .        DPC4AT
                .           .
                .           .
1826            .           .        SUB1-2
                .           .           .
                .           .           .
1832            .           .           .        GCRB18
                .           .           .           .
                .           .           .           .
1839            .           .        CPRET1............
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               .           .           V
               .           .           V
1842           .           .       SR18S
               .           .           .
               .           .           .
1848           .           .           .       SUB5S
               .           .           .           .
               .           .           .           .
1854           .           .           .           .      GC1216
               .           .           .           .           .
               .           .           .           .           .
1860           .           .           .           .           .      GC1415
               .           .           .           .           .           .
               .           .           .           .           .           .
1866           .           .           .           .           .           .       SUB6S
               .           .           .           .           .           .           .
               .           .           .           .           .           .           .
1872           .           .           .           .           .           .           .       SUB7S
               .           .           .           .           .           .           .           .
               .           .           .           .           .           .           .           .
1878           .           .           .      CPRET2................................................
               .           .           .           V
               .           .           .           V
1881           .           .           .      SRRET2
               .           .           .           .
               .           .           .           .
1887       CLEAR....................................
               .
               .
1892           .       SUB8S
               .           V
               .           V
1898           .       RGC36
               .           .
               .           .
1904           .           .        GC36
               .           .           .
               .           .           .
1910           .      C1GC36............
               .           .
               .           .
1913           .           .       SUB9S
               .           .           V
               .           .           V
1919           .           .         R9S
               .           .           .
               .           .           .
1925           .      CPGC36............
               .           V
               .           V
1928           .      SRGC36
               .           .
               .           .
1934           .           .       SUB7A
               .           .           V
               .           .           V
1940           .           .        SR7A
               .           .           V
               .           .           V
1946           .           .        R10S
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            .         .         .
1952        .         .         .    SUB10S
            .         .         .         .
            .         .         .         .
1958        .         .     CP10S..........
            .         .         .
            .         .         .
1961        .         .         .    SUB11S
            .         .         .         V
            .         .         .         V
1967        .         .         .      R11S
            .         .         .         .
            .         .         .         .
1976        .         .     C10SA..........
            .         .         V
            .         .         V
1981        .         .     R10SA
            .         .         .
            .         .         .
1990        .         .         .      GC45
            .         .         .         .
            .         .         .         .
1996        .         .         .         .       PC5
            .         .         .         .         .
            .         .         .         .         .
2010        .         .         .         .         .         .<-------  BPC4AT
2005        .         .         .         .         .     DPC4A
            .         .         .         .         .         .
            .         .         .         .         .         .
2011        .      CPC5........................................
            .         V
            .         V
2018        .      RPC5
            .         .
            .         .
2027        .         .     SCN5C
            .         .         .
            .         .         .
2034        .         .         .      SCN6
            .         .         .         .
            .         .         .         .
2043        .         .         .         .         .<-------  B52T
2041        .         .         .         .       D52
            .         .         .         .         .
            .         .         .         .         .
2044        .         .         .         .         .      S53A
            .         .         .         .         .         .
            .         .         .         .         .         .
2051        .         .         .         .       C53..........
            .         .         .         .         V
            .         .         .         .         V
2054        .         .         .         .       R53
            .         .         .         .         .
            .         .         .         .         .
2060        .         .         .         .         .     S53A1
            .         .         .         .         .         .
            .         .         .         .         .         .
2068        .         .         .         .      C53A..........
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2071                .          C1I...................................
                    .          V
                    .          V
2074                .          C1O
                    .          V
                    .          V
2087                .          RC1
                    .          .
                    .          .
2093                .          .          S54
                    .          .          .
                    .          .          .
2099                .          .          .          SCN6A
                    .          .          .          .
                    .          .          .          .
2106                .          C1A........................
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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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*****************************************                                *******************************
*                                       *                                *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                *   U.S. ARMY CORPS OF ENGINE
*              MAY  1991                *                                *   HYDROLOGIC ENGINEERING CE
*            VERSION 4.0.1E             *                                *          609 SECOND STREET
*     Lahey F77L-EM/32 version 5.01     *                                *      DAVIS, CALIFORNIA 9561
*       Dodson & Associates, Inc.       *                                *          (916) 551-1748
*  RUN DATE  12/30/96  TIME  16:29:28   *                                *
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                        PIMA ROAD CHANNEL                                      File: OPT1-6.IH1
                        by  GVSCE for the City of Scottsdale                   Original:09-13-96        mcg
                            Project:  95

                            100-YEAR  6-HR HYPOTHETICAL RAINFALL DISTRIBUTION
                            RAINFALL LOSSES:  SCS CURVE NUMBERS
                            UNIT HYDROGRAPH:  KINEMATIC WAVE
                            ROUTING:  MODIFIED PULS - USING NORMAL DEPTH

                            COLLECTOR CHANNEL LENGTHS ARE AS FOLLOWS:
                                HAPPY VALLEY ROAD ............ 1.0 MILE
                                PINNACLE PEAK ROAD ........... 0.5 MILE
                                DEER VALLEY ROAD ............. 0.25 MILE
                                BEARDLSEY ROAD ............... 1.0 MILE

                            DETENTION BASINS AT HAPPY VALLEY, DEER VALLEY AND UNION HILLS ROADS.


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

     IT           HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1   0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        720  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      3   0  ENDING DATE
                       NDTIME       1155  ENDING TIME
                        ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL    0.08 HOURS
                       TOTAL TIME BASE   59.92 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

  20 JD           INDEX STORM NO. 1
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                         STRM        0.00  PRECIPITATION DEPTH
                         TRDA        0.01  TRANSPOSITION DRAINAGE AREA

    0 PI             PRECIPITATION PATTERN


   21 JD          INDEX STORM NO. 2
                         STRM        0.00  PRECIPITATION DEPTH
                         TRDA        0.10  TRANSPOSITION DRAINAGE AREA

    0 PI             PRECIPITATION PATTERN


   22 JD          INDEX STORM NO. 3
                         STRM        0.00  PRECIPITATION DEPTH
                         TRDA        0.50  TRANSPOSITION DRAINAGE AREA

    0 PI             PRECIPITATION PATTERN


   23 JD          INDEX STORM NO. 4
                         STRM        0.00  PRECIPITATION DEPTH
                         TRDA        1.00  TRANSPOSITION DRAINAGE AREA

    0 PI             PRECIPITATION PATTERN


   24 JD          INDEX STORM NO. 5
                         STRM        0.00  PRECIPITATION DEPTH
                         TRDA        5.00  TRANSPOSITION DRAINAGE AREA

    0 PI             PRECIPITATION PATTERN


   25 JD          INDEX STORM NO. 6
                         STRM        0.00  PRECIPITATION DEPTH
                         TRDA       25.00  TRANSPOSITION DRAINAGE AREA

    0 PI             PRECIPITATION PATTERN


        *** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION=  1


        *** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION=  1


        *** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION=  1


        *** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION=  1
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RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME O MAX STA
HYDROGRAPH AT	S30N	1227.	3.33	128.	32.	13.	0.65		
ROUTED TO	R30N	1121.	3.42	128.	32.	13.	0.65		
HYDROGRAPH AT	S31.1	395.	3.33	43.	11.	4.	0.27		
2 COMBINED AT	C31.1	1465.	3.42	171.	43.	17.	0.92	1592	
ROUTED TO	R31.1	1476.	3.42	170.	43.	17.	0.92		
HYDROGRAPH AT	S35N	1298.	3.25	108.	27.	11.	0.55	2360	
DIVERSION TO	D35NL	519.	3.25	43.	11.	4.	0.55		
HYDROGRAPH AT	D35NR	779.	3.25	65.	16.	7.	0.55		
ROUTED TO	R35NR	630.	3.33	64.	16.	7.	0.55		
HYDROGRAPH AT	S36.2	400.	3.25	34.	9.	3.	0.21		
2 COMBINED AT	C36.2	947.	3.25	98.	25.	10.	0.54		
DIVERSION TO	D36.2L	284.	3.25	30.	7.	3.	0.54		
HYDROGRAPH AT	D36.2R	663.	3.25	69.	17.	7.	0.54		
ROUTED TO	R36.2R	430.	3.67	69.	17.	7.	0.54		
HYDROGRAPH AT	S34.1	2491.	3.33	262.	66.	27.	1.61		
3 COMBINED AT	C34.1I	3668.	3.33	497.	126.	50.	2.90	1265	
ROUTED TO	C34.1O	219.	5.50	211.	126.	50.	2.90		
ROUTED TO	R34.1	218.	5.58	211.	126.	50.	2.90		
HYDROGRAPH AT	S36.1	159.	3.42	19.	5.	2.	0.14		
2 COMBINED AT	C36.1	311.	3.42	226.	130.	52.	3.04		
ROUTED TO	R36.1	292.	3.58	225.	130.	52.	3.04		
HYDROGRAPH AT	B35NL	519.	3.25	43.	11.	4.	0.55		
ROUTED TO	R35NL	317.	3.58	43.	11.	4.	0.55		
HYDROGRAPH AT	B36.2L	284.	3.25	30.	7.	3.	0.54		
ROUTED TO	R36.2L	193.	3.58	29.	7.	3.	0.54		
HYDROGRAPH AT	S36R1	1107.	3.50	171.	43.	17.	1.22		

4 COMBINED AT	C36R1	1832.	3.58	459.	190.	76.	4.64
ROUTED TO	R36R1	1739.	3.67	456.	190.	76.	4.64
HYDROGRAPH AT	S36R2	489.	3.33	54.	14.	5.	0.37
2 COMBINED AT	C36R2	1922.	3.67	503.	204.	82.	5.01
HYDROGRAPH AT	S51.1	1058.	3.50	162.	41.	16.	1.13
2 COMBINED AT	C51.1I	2849.	3.58	657.	242.	97.	6.14
ROUTED TO	C51.1O	360.	6.67	354.	242.	97.	6.14
ROUTED TO	R51.1	360.	6.75	354.	242.	97.	6.14
DIVERSION TO	B51.1T	360.	6.75	354.	242.	97.	6.14
HYDROGRAPH AT	D51.1T	0.	0.08	0.	0.	0.	6.14
HYDROGRAPH AT	52D4	116.	3.25	11.	3.	1.	0.07
ROUTED TO	52D4R	106.	3.25	11.	3.	1.	0.07
HYDROGRAPH AT	52D4B	70.	3.17	6.	1.	1.	0.02
2 COMBINED AT	52D5C1	161.	3.25	17.	4.	2.	0.09
HYDROGRAPH AT	52D5A	79.	3.17	6.	2.	1.	0.02
ROUTED TO	52D5AR	75.	3.17	6.	2.	1.	0.02
2 COMBINED AT	52D5C2	217.	3.25	23.	6.	2.	0.12
ROUTED TO	52D5R	216.	3.25	23.	6.	2.	0.12
HYDROGRAPH AT	52C3	24.	3.08	2.	0.	0.	0.01
ROUTED TO	52C3R	23.	3.17	2.	0.	0.	0.01
HYDROGRAPH AT	52C3B	53.	3.08	4.	1.	0.	0.02
2 COMBINED AT	2C3BC1	74.	3.17	6.	1.	1.	0.02
2 COMBINED AT	2C3BC2	270.	3.17	29.	7.	3.	0.14
ROUTED TO	52C3BR	261.	3.25	29.	7.	3.	0.14
HYDROGRAPH AT	51C	166.	3.17	15.	4.	1.	0.10
DIVERSION TO	51C1DV	111.	3.17	10.	3.	1.	0.10
HYDROGRAPH AT	51C1D	55.	3.17	5.	1.	0.	0.10
ROUTED TO	51C1R	53.	3.25	5.	1.	0.	0.10
HYDROGRAPH AT	52C1	69.	3.17	5.	1.	0.	0.03
2 COMBINED AT	52C1C	106.	3.17	10.	2.	1.	0.06

ROUTED TO	52C1R	101.	3.25	10.	2.	1.	0.06
HYDROGRAPH AT	52C2A	35.	3.17	2.	1.	0.	0.02
2 COMBINED AT	52C2AC	125.	3.25	12.	3.	1.	0.08
HYDROGRAPH AT	52C2B	56.	3.17	4.	1.	0.	0.03
2 COMBINED AT	52C2BC	170.	3.17	16.	4.	2.	0.11
ROUTED TO	52C2BR	168.	3.25	16.	4.	2.	0.11
HYDROGRAPH AT	52C2C	46.	3.08	4.	1.	0.	0.01
2 COMBINED AT	52C2CC	194.	3.25	20.	5.	2.	0.12
ROUTED TO	52C2R	180.	3.25	20.	5.	2.	0.12
HYDROGRAPH AT	52C4	56.	3.17	4.	1.	0.	0.02
2 COMBINED AT	52C4C1	211.	3.25	24.	6.	2.	0.14
2 COMBINED AT	52C4C2	472.	3.25	53.	13.	5.	0.28
ROUTED TO	52C4R	462.	3.25	53.	14.	5.	0.28
HYDROGRAPH AT	52C13	69.	3.08	5.	1.	0.	0.02
DIVERSION TO	STORM	40.	3.08	4.	1.	0.	0.02
HYDROGRAPH AT	2C13DV	29.	3.08	1.	0.	0.	0.02
HYDROGRAPH AT	52C15	157.	3.08	13.	3.	1.	0.05
2 COMBINED AT	2C15C1	186.	3.08	13.	3.	1.	0.05
2 COMBINED AT	2C15C2	546.	3.17	66.	17.	7.	0.32
ROUTED TO	52C15R	544.	3.25	66.	17.	7.	0.32
HYDROGRAPH AT	52C14A	142.	3.17	11.	3.	1.	0.04
2 COMBINED AT	2C14AC	655.	3.17	78.	20.	8.	0.36
ROUTED TO	2C14AR	637.	3.17	78.	20.	8.	0.36
HYDROGRAPH AT	51C1DV	111.	3.17	10.	3.	1.	0.10
DIVERSION TO	51C2DV	30.	3.17	3.	1.	0.	0.10
HYDROGRAPH AT	51C2D	81.	3.17	7.	2.	1.	0.10
ROUTED TO	51C2R	78.	3.25	7.	2.	1.	0.10
HYDROGRAPH AT	52C5	40.	3.17	3.	1.	0.	0.02
2 COMBINED AT	52C5C	109.	3.17	10.	3.	1.	0.06
ROUTED TO	52C5R	104.	3.25	10.	3.	1.	0.06

HYDROGRAPH AT	52C6	82.	3.17	7.	2.	1.	0.04
2 COMBINED AT	52C6C	173.	3.25	17.	4.	2.	0.10
ROUTED TO	52C6R	165.	3.25	17.	4.	2.	0.10
HYDROGRAPH AT	51C2DV	30.	3.17	3.	1.	0.	0.10
ROUTED TO	51C3R	29.	3.25	3.	1.	0.	0.10
HYDROGRAPH AT	51B	596.	3.42	79.	20.	8.	0.57
DIVERSION TO	51B1DV	549.	3.42	72.	18.	7.	0.57
HYDROGRAPH AT	51B1D	48.	3.42	6.	2.	1.	0.57
ROUTED TO	51B1R	48.	3.42	6.	2.	1.	0.57
HYDROGRAPH AT	52C7	18.	3.08	1.	0.	0.	0.01
3 COMBINED AT	52C7C	76.	3.25	10.	3.	1.	0.07
ROUTED TO	52C7R	75.	3.33	10.	3.	1.	0.07
HYDROGRAPH AT	51B1DV	549.	3.42	72.	18.	7.	0.57
DIVERSION TO	51B2DV	461.	3.42	61.	15.	6.	0.57
HYDROGRAPH AT	51B2D	88.	3.42	12.	3.	1.	0.57
ROUTED TO	51B2R	88.	3.42	12.	3.	1.	0.57
HYDROGRAPH AT	52C8	21.	3.08	1.	0.	0.	0.01
2 COMBINED AT	52C8C	93.	3.42	13.	3.	1.	0.45
ROUTED TO	52C8R	92.	3.42	13.	3.	1.	0.45
2 COMBINED AT	52C9C1	163.	3.42	23.	6.	2.	0.52
ROUTED TO	52C9R1	162.	3.42	23.	6.	2.	0.52
HYDROGRAPH AT	52C9	174.	3.17	14.	3.	1.	0.07
2 COMBINED AT	52C9C2	255.	3.25	37.	9.	4.	0.59
ROUTED TO	52C9R2	254.	3.25	37.	9.	4.	0.59
2 COMBINED AT	2C10C1	418.	3.25	54.	14.	5.	0.69
ROUTED TO	2C10R1	412.	3.25	54.	14.	5.	0.69
HYDROGRAPH AT	52C10	28.	3.17	2.	1.	0.	0.01
2 COMBINED AT	2C10C2	428.	3.25	56.	14.	6.	0.70
HYDROGRAPH AT	52C11	96.	3.17	8.	2.	1.	0.04
ROUTED TO	2C11R1	88.	3.17	8.	2.	1.	0.04

HYDROGRAPH AT	52C13D	40.	3.08	4.	1.	0.	0.02
2 COMBINED AT	52C11C	128.	3.17	12.	3.	1.	0.07
ROUTED TO	2C11CR	120.	3.17	12.	3.	1.	0.07
2 COMBINED AT	2C11C2	541.	3.25	68.	17.	7.	0.77
ROUTED TO	2C11R2	530.	3.25	68.	17.	7.	0.77
HYDROGRAPH AT	52C12	119.	3.08	7.	2.	1.	0.02
2 COMBINED AT	52C12C	567.	3.25	75.	19.	8.	0.79
ROUTED TO	52C12R	549.	3.25	75.	19.	8.	0.79
HYDROGRAPH AT	52C14B	76.	3.08	6.	1.	1.	0.02
2 COMBINED AT	C14BC1	584.	3.25	81.	20.	8.	0.81
2 COMBINED AT	C14BC2	1200.	3.25	158.	40.	16.	1.17
ROUTED TO	52C14R	1194.	3.25	158.	40.	16.	1.17
HYDROGRAPH AT	51B2DV	461.	3.42	61.	15.	6.	0.57
DIVERSION TO	51B3DV	387.	3.42	51.	13.	5.	0.57
HYDROGRAPH AT	51B3D	74.	3.42	10.	2.	1.	0.57
ROUTED TO	51B3R	74.	3.42	10.	2.	1.	0.57
HYDROGRAPH AT	52B1	8.	3.08	1.	0.	0.	0.00
2 COMBINED AT	52B1C	76.	3.42	10.	3.	1.	0.07
ROUTED TO	52B1R	75.	3.42	10.	3.	1.	0.07
HYDROGRAPH AT	51B3DV	387.	3.42	51.	13.	5.	0.57
DIVERSION TO	51B4DV	317.	3.42	42.	11.	4.	0.57
HYDROGRAPH AT	51B4D	70.	3.42	9.	2.	1.	0.57
ROUTED TO	51B4R1	70.	3.42	9.	2.	1.	0.57
2 COMBINED AT	52B2C1	145.	3.42	20.	5.	2.	0.14
ROUTED TO	52B2R1	142.	3.42	20.	5.	2.	0.14
HYDROGRAPH AT	52B2	69.	3.17	5.	1.	1.	0.03
2 COMBINED AT	52B2C2	166.	3.42	25.	6.	3.	0.17
ROUTED TO	52B2R2	164.	3.42	25.	6.	3.	0.17
ROUTED TO	52B3R1	163.	3.42	25.	6.	3.	0.17
HYDROGRAPH AT	52B3	141.	3.17	12.	3.	1.	0.06

2 COMBINED AT	52B3C2	249.	3.25	37.	9.	4.	0.23	
ROUTED TO	52B3R2	241.	3.33	37.	9.	4.	0.23	
HYDROGRAPH AT	52B4	87.	3.17	7.	2.	1.	0.03	
2 COMBINED AT	52B4C	284.	3.25	44.	11.	4.	0.26	
ROUTED TO	52B4R	277.	3.25	44.	11.	4.	0.26	
HYDROGRAPH AT	52B5	69.	3.08	5.	1.	1.	0.02	
2 COMBINED AT	52B5C1	313.	3.25	49.	12.	5.	0.28	
2 COMBINED AT	52B5C2	1496.	3.25	207.	52.	21.	1.45	1032.
ROUTED TO	52B5R	1474.	3.25	207.	53.	21.	1.45	
HYDROGRAPH AT	51B4DV	317.	3.42	42.	11.	4.	0.57	
DIVERSION TO	51B5DV	216.	3.42	28.	7.	3.	0.57	
HYDROGRAPH AT	51B5D	102.	3.42	13.	3.	1.	0.57	
ROUTED TO	51B5R	102.	3.42	13.	3.	1.	0.57	
HYDROGRAPH AT	51B5DV	216.	3.42	28.	7.	3.	0.57	
DIVERSION TO	51B6DV	114.	3.42	15.	4.	2.	0.57	
HYDROGRAPH AT	51B6D	101.	3.42	13.	3.	1.	0.57	
ROUTED TO	51B6R	101.	3.42	13.	3.	1.	0.57	
HYDROGRAPH AT	51B6DV	114.	3.42	15.	4.	2.	0.57	
DIVERSION TO	51B7DV	66.	3.42	9.	2.	1.	0.57	
HYDROGRAPH AT	51B7D	48.	3.42	6.	2.	1.	0.57	
ROUTED TO	51B7R1	48.	3.42	6.	2.	1.	0.57	
3 COMBINED AT	51B7C	252.	3.42	33.	8.	3.	0.24	
ROUTED TO	51B7R2	244.	3.42	33.	8.	3.	0.24	
HYDROGRAPH AT	52B6	190.	3.17	15.	4.	2.	0.10	
2 COMBINED AT	52B6C	313.	3.42	48.	12.	5.	0.34	
ROUTED TO	52B6R	311.	3.42	48.	12.	5.	0.34	
HYDROGRAPH AT	52B7	303.	3.17	24.	6.	2.	0.08	
2 COMBINED AT	52B7C1	411.	3.25	72.	18.	7.	0.42	
2 COMBINED AT	52B7C2	1871.	3.25	278.	71.	28.	1.87	
HYDROGRAPH AT	52A2	263.	3.17	21.	5.	2.	0.06	

2 COMBINED AT	52A2C2	2033.	3.25	299.	76.	30.	1.62	
HYDROGRAPH AT	51B7DV	66.	3.42	9.	2.	1.	0.57	
ROUTED TO	51B8R	66.	3.50	9.	2.	1.	0.57	
HYDROGRAPH AT	52A1	340.	3.17	26.	6.	3.	0.13	
2 COMBINED AT	52A1C	344.	3.17	34.	9.	3.	0.13	
HYDROGRAPH AT	D51.1	360.	6.75	354.	242.	97.	6.14	
2 COMBINED AT	C52A	385.	3.17	362.	250.	100.	6.27	
ROUTED TO	R52A	370.	6.00	362.	250.	100.	6.27	
2 COMBINED AT	C52	2201.	3.25	622.	322.	129.	7.92	277.90
ROUTED TO	R52	2121.	3.33	621.	322.	129.	7.92	
DIVERSION TO	B52T	2121.	3.33	621.	322.	129.	7.92	
HYDROGRAPH AT	D52T	0.	0.08	0.	0.	0.	7.92	
2 COMBINED AT	CLEAR	0.	0.08	0.	0.	0.	14.06	
HYDROGRAPH AT	37A	1164.	3.25	119.	30.	12.	0.68	
DIVERSION TO	37AW	815.	3.25	83.	21.	8.	0.68	
HYDROGRAPH AT	37AE	349.	3.25	36.	9.	4.	0.68	
ROUTED TO	37AE1	342.	3.25	36.	9.	4.	0.68	
HYDROGRAPH AT	SUB5N	70.	3.17	5.	1.	1.	0.03	
2 COMBINED AT	CP5N	394.	3.25	41.	10.	4.	0.23	
ROUTED TO	RET5N	357.	3.33	40.	10.	4.	0.23	
ROUTED TO	R6N.1	294.	3.42	40.	10.	4.	0.23	
HYDROGRAPH AT	SUB6B	74.	3.17	5.	1.	1.	0.03	
ROUTED TO	SR6B	43.	3.25	5.	1.	1.	0.03	
2 COMBINED AT	CP6.1	326.	3.42	45.	12.	5.	0.26	
HYDROGRAPH AT	SUB1N	47.	3.17	3.	1.	0.	0.02	
ROUTED TO	R2NA	46.	3.17	3.	1.	0.	0.02	
HYDROGRAPH AT	SUB2NA	34.	3.17	2.	1.	0.	0.01	
2 COMBINED AT	CP2NA	80.	3.17	6.	1.	1.	0.03	2667
ROUTED TO	SR2NA	70.	3.25	4.	1.	0.	0.03	
ROUTED TO	R2NB	59.	3.33	4.	1.	0.	0.03	

HYDROGRAPH AT	SUB2NB	96.	3.17	8.	2.	1.	0.03
2 COMBINED AT	CP2NB	99.	3.33	12.	3.	1.	0.06
ROUTED TO	SR2NB	25.	3.75	11.	3.	1.	0.06
ROUTED TO	RCP4N	24.	3.75	11.	3.	1.	0.06
HYDROGRAPH AT	SUB6N	114.	3.17	8.	2.	1.	0.05
ROUTED TO	RET6N	0.	0.08	0.	0.	0.	0.05
ROUTED TO	RCP4N1	0.	0.08	0.	0.	0.	0.05
2 COMBINED AT	CP4N.1	24.	3.75	11.	3.	1.	0.11
HYDROGRAPH AT	SUB3N	67.	3.17	4.	1.	0.	0.03
ROUTED TO	RET3N	4.	4.17	3.	1.	0.	0.03
ROUTED TO	R4N	4.	4.25	3.	1.	0.	0.03
2 COMBINED AT	CP4N.2	27.	3.75	14.	4.	2.	0.14
HYDROGRAPH AT	SUB4N	80.	3.17	6.	1.	1.	0.03
2 COMBINED AT	CP4N	89.	3.17	19.	6.	2.	0.17
ROUTED TO	R6N	82.	3.17	19.	6.	2.	0.17
HYDROGRAPH AT	SUB6A	64.	3.08	4.	1.	0.	0.01
2 COMBINED AT	CP6.2	121.	3.17	23.	7.	3.	0.18
2 COMBINED AT	CP6N	376.	3.42	68.	18.	7.	0.45
ROUTED TO	RCP6N	373.	3.42	68.	18.	7.	0.45
HYDROGRAPH AT	SUB3C	55.	3.08	3.	1.	0.	0.01
2 COMBINED AT	CP3C	380.	3.42	70.	19.	8.	0.46
ROUTED TO	R3C	361.	3.50	70.	19.	8.	0.46
HYDROGRAPH AT	GC1018	101.	3.17	7.	2.	1.	0.04
HYDROGRAPH AT	GC1-9	58.	3.17	4.	1.	0.	0.03
HYDROGRAPH AT	SUB3S	33.	3.17	3.	1.	0.	0.01
4 COMBINED AT	CP3S	411.	3.50	84.	22.	9.	0.54
ROUTED TO	RT3S	409.	3.50	84.	22.	9.	0.54
HYDROGRAPH AT	SUB4S	87.	3.17	7.	2.	1.	0.03
ROUTED TO	RT4S	87.	3.17	7.	2.	1.	0.03
HYDROGRAPH AT	GC2-8	32.	3.17	2.	1.	0.	0.01

3 COMBINED AT	1PGC28	437.	3.50	93.	25.	10.	0.58
HYDROGRAPH AT	SUB3D3	35.	3.17	2.	1.	0.	0.01
2 COMBINED AT	CPGC28	444.	3.50	95.	25.	10.	0.59
ROUTED TO	SRGC28	443.	3.25	95.	25.	10.	0.59
ROUTED TO	RT7S	431.	3.58	95.	25.	10.	0.59
HYDROGRAPH AT	GC7	31.	3.17	2.	1.	0.	0.01
2 COMBINED AT	CP7S	437.	3.58	97.	26.	10.	0.61
DIVERSION TO	B7ST	437.	3.58	97.	26.	10.	0.61
HYDROGRAPH AT	D7ST	0.	0.08	0.	0.	0.	0.61
2 COMBINED AT	CLEAR	0.	0.08	0.	0.	0.	14.67
HYDROGRAPH AT	SUB3D1	27.	3.08	2.	0.	0.	0.01
ROUTED TO	RD1B1	22.	3.17	2.	0.	0.	0.01
HYDROGRAPH AT	SUB3B1	47.	3.08	3.	1.	0.	0.01
2 COMBINED AT	CP3B1	61.	3.08	5.	1.	1.	0.02
ROUTED TO	RB13F	48.	3.25	5.	1.	1.	0.02
HYDROGRAPH AT	SUB3F	141.	3.08	10.	2.	1.	0.03
2 COMBINED AT	CP3F	169.	3.08	15.	4.	2.	0.06
HYDROGRAPH AT	SUB3B2	67.	3.17	6.	1.	1.	0.02
ROUTED TO	RB2E1	64.	3.17	6.	1.	1.	0.02
ROUTED TO	RB2E2	61.	3.25	6.	1.	1.	0.02
HYDROGRAPH AT	SUB3E1	67.	3.17	6.	1.	1.	0.02
2 COMBINED AT	1CPE31	125.	3.17	11.	3.	1.	0.05
HYDROGRAPH AT	SUB3D2	58.	3.17	5.	1.	0.	0.02
ROUTED TO	RD2E2	56.	3.17	5.	1.	0.	0.02
HYDROGRAPH AT	SUB3E2	37.	3.08	3.	1.	0.	0.01
2 COMBINED AT	CP3E2	86.	3.17	7.	2.	1.	0.03
HYDROGRAPH AT	PC3	82.	3.17	7.	2.	1.	0.04
4 COMBINED AT	CPC3	449.	3.17	40.	10.	4.	0.18
DIVERSION TO	BPC3T	449.	3.17	40.	10.	4.	0.18
HYDROGRAPH AT	DPC3T	0.	0.08	0.	0.	0.	0.18

HYDROGRAPH AT	SUB3E3	60.	3.08	4.	1.	0.	0.02
HYDROGRAPH AT	PC4	43.	3.17	3.	1.	0.	0.02
HYDROGRAPH AT	D7S	437.	3.58	97.	26.	10.	0.61
3 COMBINED AT	CPC4	471.	3.33	104.	28.	11.	0.65
DIVERSION TO	BPC4T	471.	3.33	104.	28.	11.	0.65
HYDROGRAPH AT	DPC4T	0.	0.08	0.	0.	0.	0.65
3 COMBINED AT	CLEAR	0.	0.08	0.	0.	0.	15.50
HYDROGRAPH AT	37AW	815.	3.25	83.	21.	8.	0.68
ROUTED TO	R14R	659.	3.33	83.	21.	8.	0.68
ROUTED TO	RET141	631.	3.42	78.	21.	8.	0.68
ROUTED TO	R14.1	558.	3.50	78.	21.	8.	0.68
HYDROGRAPH AT	SUB13N	81.	3.17	7.	2.	1.	0.04
ROUTED TO	R14.1	78.	3.25	7.	2.	1.	0.04
HYDROGRAPH AT	SUB14N	88.	3.25	8.	2.	1.	0.05
3 COMBINED AT	CP14	625.	3.50	92.	25.	10.	0.56
ROUTED TO	RET14	574.	3.58	88.	25.	10.	0.56
ROUTED TO	R18.1	570.	3.58	88.	25.	10.	0.56
HYDROGRAPH AT	SUB20N	47.	3.17	4.	1.	0.	0.02
ROUTED TO	R19	48.	3.25	4.	1.	0.	0.02
HYDROGRAPH AT	SUB19N	94.	3.17	8.	2.	1.	0.04
2 COMBINED AT	CP19N	133.	3.17	12.	3.	1.	0.06
ROUTED TO	R18NC	132.	3.25	12.	3.	1.	0.06
HYDROGRAPH AT	UB18NC	62.	3.17	5.	1.	0.	0.02
3 COMBINED AT	CP18NC	619.	3.58	103.	29.	12.	0.64
ROUTED TO	RPC1	628.	3.58	103.	29.	12.	0.64
HYDROGRAPH AT	UB18NA	65.	3.17	5.	1.	1.	0.02
ROUTED TO	1RPC1	31.	3.33	5.	1.	1.	0.02
HYDROGRAPH AT	UB18NB	27.	3.17	2.	1.	0.	0.01
ROUTED TO	2RPC1	16.	3.25	2.	1.	0.	0.01
HYDROGRAPH AT	PC1	66.	3.42	10.	2.	1.	0.06

3 COMBINED AT	1CPC1	107.	3.42	17.	4.	2.	0.09
ROUTED TO	SRPC1	108.	3.42	16.	4.	2.	0.09
2 COMBINED AT	CPC1	712.	3.58	120.	33.	13.	0.74
ROUTED TO	R16NA1	720.	3.58	119.	33.	13.	0.74
HYDROGRAPH AT	UB16NA	42.	3.17	3.	1.	0.	0.01
ROUTED TO	R16NA1	37.	3.17	3.	1.	0.	0.01
2 COMBINED AT	C16NA1	728.	3.58	122.	34.	14.	0.75
ROUTED TO	R16NB1	717.	3.58	122.	34.	14.	0.75
HYDROGRAPH AT	UB16NB	48.	3.17	4.	1.	0.	0.02
ROUTED TO	R16NB1	43.	3.17	4.	1.	0.	0.02
2 COMBINED AT	C16NB1	725.	3.58	126.	35.	14.	0.77
ROUTED TO	R16NC1	727.	3.67	126.	35.	14.	0.77
HYDROGRAPH AT	SUB7N	74.	3.17	5.	1.	1.	0.03
ROUTED TO	R8NC	64.	3.25	5.	1.	1.	0.03
HYDROGRAPH AT	SUB8NA	13.	3.08	1.	0.	0.	0.00
ROUTED TO	SR8NA	1.	4.17	0.	0.	0.	0.00
ROUTED TO	R8NB	1.	4.17	0.	0.	0.	0.00
HYDROGRAPH AT	SUB8NB	34.	3.08	2.	1.	0.	0.01
2 COMBINED AT	CP8NB	34.	3.08	3.	1.	0.	0.02
ROUTED TO	SR8NB	2.	3.08	2.	1.	0.	0.02
ROUTED TO	R8NC	2.	3.08	2.	1.	0.	0.02
HYDROGRAPH AT	SUB8NC	51.	3.08	3.	1.	0.	0.02
3 COMBINED AT	CP8NC	103.	3.17	10.	3.	1.	0.07
ROUTED TO	SR8NC	18.	3.75	10.	3.	1.	0.07
ROUTED TO	R9N	17.	3.75	10.	3.	1.	0.07
HYDROGRAPH AT	SUB9N	143.	3.17	11.	3.	1.	0.05
2 COMBINED AT	CP9N	153.	3.17	21.	6.	2.	0.12
ROUTED TO	R10B	148.	3.17	21.	6.	2.	0.12
HYDROGRAPH AT	SUB10B	87.	3.08	6.	2.	1.	0.03
2 COMBINED AT	CP10B	226.	3.17	27.	7.	3.	0.15

ROUTED TO	R11NA	229.	3.17	27.	7.	3.	0.15
HYDROGRAPH AT	UB11NA	21.	3.08	1.	0.	0.	0.01
2 COMBINED AT	CP11NA	245.	3.17	28.	8.	3.	0.16
ROUTED TO	SR11NA	145.	3.33	28.	8.	3.	0.16
ROUTED TO	R11NB	140.	3.33	28.	8.	3.	0.16
HYDROGRAPH AT	UB11NB	22.	3.08	1.	0.	0.	0.01
2 COMBINED AT	CP11NB	146.	3.33	29.	8.	3.	0.17
ROUTED TO	SR11NB	84.	3.50	28.	8.	3.	0.17
ROUTED TO	R11NC	87.	3.50	28.	8.	3.	0.17
HYDROGRAPH AT	UB11NC	19.	3.08	1.	0.	0.	0.01
2 COMBINED AT	C11NC1	90.	3.50	30.	8.	3.	0.17
HYDROGRAPH AT	SUB10A	88.	3.08	7.	2.	1.	0.03
ROUTED TO	R12NB	95.	3.17	7.	2.	1.	0.03
HYDROGRAPH AT	UB12NA	36.	3.17	3.	1.	0.	0.02
ROUTED TO	SR12NA	1.	6.17	0.	0.	0.	0.02
ROUTED TO	R12NA	1.	6.17	0.	0.	0.	0.02
HYDROGRAPH AT	UB12NB	37.	3.17	3.	1.	0.	0.02
3 COMBINED AT	CP12NB	132.	3.17	10.	3.	1.	0.06
ROUTED TO	SR12NB	2.	3.17	2.	2.	1.	0.06
ROUTED TO	R11NC2	2.	3.50	2.	2.	1.	0.06
2 COMBINED AT	CP11NC	92.	3.50	32.	10.	4.	0.23
ROUTED TO	SR11NC	71.	3.75	30.	10.	4.	0.23
ROUTED TO	R16NC	71.	3.75	30.	10.	4.	0.23
HYDROGRAPH AT	UB16NC	102.	3.17	8.	2.	1.	0.03
2 COMBINED AT	CP16NC	107.	3.17	36.	12.	5.	0.27
ROUTED TO	R16NC1	106.	3.17	36.	12.	5.	0.27
2 COMBINED AT	C16NC1	788.	3.67	162.	47.	19.	1.03
ROUTED TO	R15N1	793.	3.67	162.	47.	19.	1.03
HYDROGRAPH AT	PC2	93.	3.25	8.	2.	1.	0.05
2 COMBINED AT	CP15N1	815.	3.67	170.	49.	20.	1.09

ROUTED TO	SRPC2	786.	3.75	169.	48.	20.	1.09	
HYDROGRAPH AT	UB17NA	28.	3.08	2.	0.	0.	0.01	
ROUTED TO	SR17NA	2.	3.75	1.	0.	0.	0.01	
ROUTED TO	R17NB	2.	3.75	1.	0.	0.	0.01	
HYDROGRAPH AT	UB17NB	27.	3.17	2.	0.	0.	0.01	
2 COMBINED AT	CP17NB	28.	3.17	3.	1.	0.	0.02	
ROUTED TO	SR17NB	1.	3.00	1.	1.	0.	0.02	
ROUTED TO	R17A	1.	3.08	1.	1.	0.	0.02	
HYDROGRAPH AT	SUB17A	30.	3.08	2.	0.	0.	0.01	
2 COMBINED AT	CP17A1	31.	3.08	3.	1.	1.	0.03	
HYDROGRAPH AT	UB17NC	19.	3.08	1.	0.	0.	0.01	
2 COMBINED AT	CP17A	50.	3.08	3.	2.	1.	0.03	
ROUTED TO	R15N	34.	3.17	3.	2.	1.	0.03	
HYDROGRAPH AT	SUB15N	142.	3.17	11.	3.	1.	0.04	
2 COMBINED AT	CP15N	175.	3.17	14.	4.	2.	0.07	
ROUTED TO	R15N2	179.	3.17	14.	4.	2.	0.07	
2 COMBINED AT	CP15N2	804.	3.75	182.	53.	22.	1.16	
ROUTED TO	R15N2	768.	3.83	182.	53.	22.	1.16	
HYDROGRAPH AT	DPC3	449.	3.17	40.	10.	4.	0.18	
2 COMBINED AT	CPC3A	812.	3.75	217.	62.	25.	1.34	606.0
ROUTED TO	RPC3A	815.	3.83	217.	62.	25.	1.34	
HYDROGRAPH AT	DPC4	471.	3.33	104.	28.	11.	0.65	
2 COMBINED AT	CPC4A	1132.	3.75	319.	90.	36.	1.99	569
ROUTED TO	RPC4A	1123.	3.83	319.	90.	36.	1.99	
DIVERSION TO	BPC4AT	1123.	3.83	319.	90.	36.	1.99	
HYDROGRAPH AT	DPC4AT	0.	0.08	0.	0.	0.	1.99	
HYDROGRAPH AT	SUB1-2	181.	3.17	16.	4.	2.	0.06	
HYDROGRAPH AT	GCRB18	27.	3.17	2.	1.	0.	0.01	
2 COMBINED AT	CPRET1	208.	3.17	18.	4.	2.	0.07	
ROUTED TO	SR18S	0.	0.08	0.	0.	0.	0.07	

HYDROGRAPH AT	SUB5S	72.	3.17	5.	1.	1.	0.03
HYDROGRAPH AT	GC1216	83.	3.17	6.	2.	1.	0.04
HYDROGRAPH AT	GC1415	104.	3.17	7.	2.	1.	0.05
HYDROGRAPH AT	SUB6S	53.	3.17	5.	1.	0.	0.02
HYDROGRAPH AT	SUB7S	79.	3.17	6.	2.	1.	0.03
5 COMBINED AT	CPRET2	391.	3.17	30.	7.	3.	0.16
ROUTED TO	SRRET2	0.	0.08	0.	0.	0.	0.16
4 COMBINED AT	CLEAR	0.	0.08	0.	0.	0.	17.72
HYDROGRAPH AT	SUB8S	76.	3.17	6.	1.	1.	0.03
ROUTED TO	RGC36	64.	3.25	6.	1.	1.	0.03
HYDROGRAPH AT	GC36	77.	3.17	7.	2.	1.	0.04
2 COMBINED AT	C1GC36	141.	3.17	13.	3.	1.	0.07
HYDROGRAPH AT	SUB9S	68.	3.17	5.	1.	1.	0.02
ROUTED TO	R9S	69.	3.17	5.	1.	1.	0.02
2 COMBINED AT	CPGC36	210.	3.17	18.	4.	2.	0.09
ROUTED TO	SRGC36	208.	3.25	18.	4.	2.	0.09
HYDROGRAPH AT	SUB7A	27.	3.17	2.	1.	0.	0.01
ROUTED TO	SR7A	7.	3.42	2.	1.	0.	0.01
ROUTED TO	R10S	7.	3.58	2.	1.	0.	0.01
HYDROGRAPH AT	SUB10S	78.	3.17	6.	2.	1.	0.02
2 COMBINED AT	CP10S	81.	3.17	8.	2.	1.	0.03
HYDROGRAPH AT	SUB11S	118.	3.08	7.	2.	1.	0.02
ROUTED TO	R11S	88.	3.17	7.	2.	1.	0.02
2 COMBINED AT	C10SA	169.	3.17	15.	4.	2.	0.06
ROUTED TO	R10SA	173.	3.17	15.	4.	2.	0.06
HYDROGRAPH AT	GC45	45.	3.08	2.	1.	0.	0.01
HYDROGRAPH AT	PC5	60.	3.17	5.	1.	1.	0.04
HYDROGRAPH AT	DPC4A	1123.	3.83	319.	90.	36.	1.99
5 COMBINED AT	CPC5	1266.	3.33	356.	100.	40.	2.10
ROUTED TO	RPC5	1196.	3.42	356.	100.	40.	2.10

HYDROGRAPH AT	SCN5C	351.	3.42	44.	11.	4.	0.27	
HYDROGRAPH AT	SCN6	730.	3.25	82.	21.	8.	0.26	
HYDROGRAPH AT	D52	2121.	3.33	621.	322.	129.	7.92	
HYDROGRAPH AT	S53A	226.	3.33	24.	6.	2.	0.17	
2 COMBINED AT	C53	2321.	3.33	643.	328.	131.	8.09	
ROUTED TO	R53	2261.	3.33	642.	328.	131.	8.09	
HYDROGRAPH AT	S53A1	445.	3.33	53.	13.	5.	0.34	
2 COMBINED AT	C53A	2660.	3.33	691.	340.	136.	8.42	316
4 COMBINED AT	C1I	4455.	3.33	1136.	462.	186.	11.05	403
ROUTED TO	C1O	636.	6.58	630.	462.	186.	11.05	
ROUTED TO	RC1	636.	6.58	630.	462.	186.	11.05	
HYDROGRAPH AT	S54	136.	3.25	14.	4.	1.	0.09	
HYDROGRAPH AT	SCN6A	198.	3.33	22.	6.	2.	0.13	
3 COMBINED AT	C1A	690.	3.42	646.	471.	189.	11.27	

*** NORMAL END OF HEC-1 ***

APPENDIX B

HEC-1 Option 2 output file (100-year, 6-hour storm)

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY   1991               *
*            VERSION 4.0.1E             *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*  RUN DATE  01/03/97  TIME  14:36:06   *
*****************************************
```

```
******************************
*
*    U.S. ARMY CORPS OF ENGINE
*    HYDROLOGIC ENGINEERING CE
*          609 SECOND STREET
*       DAVIS, CALIFORNIA 9561
*            (916) 551-1748
*
******************************
```

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

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

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

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

  1       ID    PIMA ROAD CHANNEL                                      File: OPT2-6.IH1
  2       ID    by  GVSCE for the City of Scottsdale             Original:09-13-96      mcg
  3       ID        Project:  95
  4       ID
  5       ID        100-YEAR  6-HR HYPOTHETICAL RAINFALL DISTRIBUTION
  6       ID        RAINFALL LOSSES:  SCS CURVE NUMBERS
  7       ID        UNIT HYDROGRAPH:  KINEMATIC WAVE
  8       ID        ROUTING:  MODIFIED PULS - USING NORMAL DEPTH
  9       ID
 10       ID        COLLECTOR CHANNEL LENGTHS ARE AS FOLLOWS:
 11       ID            HAPPY VALLEY ROAD ............ 1.0 MILE
 12       ID            PINNACLE PEAK ROAD ........... 0.5 MILE
 13       ID            DEER VALLEY ROAD ............. 0.25 MILE
 14       ID            BEARDLSEY ROAD ............... 1.0 MILE
 15       ID
 16       ID        DETENTION BASINS AT HAPPY VALLEY, DEER VALLEY AND UNION HILLS ROADS.
 17       ID
          *DIAGRAM
 18       IT       5                      720
 19       IO       5
 20       JD              .01
 21       JD               .1
 22       JD               .5
 23       JD                1
 24       JD                5
 25       JD               25
          *

 26       KK    S30N
 27       KM     RUNOFF FROM SUBBASIN 30N
 28       BA  0.6518
 29       PH                       .84    1.53    2.46    2.75    2.94    3.31
 30       LS               82       13             82      13
 31       UK     300   0.350     0.13      20
 32       UK     300   0.050     0.13      80
 33       RK    1550   0.069    0.045  0.0096    TRAP       0      12
 34       RK   10520   0.038    0.040            TRAP      15      15
          *

 35       KK    R30N
 36       KM     NORMAL DEPTH CHANNEL ROUTE FROM C30N TO C31.1 THROUGH PIMA CHANNEL
 37       RS       1    FLOW       -1
 38       RC   0.035   0.025    0.035    2685    0.01
 39       RX    1000    1020     1022    1033    1068    1079    1081    1101
 40       RY   110.6   105.6    105.5     100     100   105.5   105.6   110.6
          *

 41       KK   S31.1
 42       KM     RUNOFF FROM SUBBASIN 31.1
 43       BA  0.2663
 44       LS             76.6       13           76.6      13
 45       UK     300   0.567     0.13      10
 46       UK     300   0.050     0.13      90
 47       RK    1950   0.056    0.045  0.0147    TRAP       0      10
 48       RK    7600   0.035    0.040            TRAP      22       8
```

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

         KK   C31.1
         KM     COMBINE ROUTED HYDROGRAPH FROM S30N WITH RUNOFF FROM SUBBASIN 31.1
         HC       2
         *

         KK   R31.1
         KM     NORMAL DEPTH CHANNEL ROUTE FROM C31.1 TO C34.1 THROUGH PIMA CHANNEL
         RS       1    FLOW      -1
         RC   0.035   0.025   0.035    2200    0.01
         RX    1000    1020    1022    1033    1068    1079    1081    1101
         RY   110.6   105.6   105.5     100     100   105.5   105.6   110.6
         *

         KK    S35N
         KM     RUNOFF FROM SUBBASIN 35N
         BA  0.5482
         LS              82      13              82      13
         UK     300   0.491    0.13      15
         UK     300   0.113    0.13      85
         RK    2700   0.079   0.045  0.0242    TRAP       3       6
         RK    5050   0.028   0.040            TRAP      15      15
         *

         KK   D35NR
         KM     DIVERT 60% OF FLOW INTO S36.2 - THE REMAINDER ENTERS S36R1
         DT   D35NL
         DI       0    2000
         DQ       0     800
         *

         KK   R35NR
         KM     NORMAL DEPTH CHANNEL ROUTE FROM S35N TO C36.2
         KM         SOURCE: 1993 MAPPING (2' CI) PROVIDED BY COS
         RS       1    FLOW      -1
         RC    0.06    0.04    0.06    3500  0.0343
         RX    1000    1006    1026    1027    1057    1058    1078    1084
         RY     105     103     101     100     100     101     103     105
         *

         KK   S36.2
         KM     RUNOFF FROM SUBBASIN 36.2
         BA  0.2087
         LS            76.6      13            76.6      13
         UK     300   0.580    0.13       5
         UK     300   0.100    0.13      95
         RK    1800   0.036   0.045  0.0145    TRAP      10      10
         RK    3520   0.028   0.040            TRAP      20       6
         *
```

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

 86       KK   C36.2
 87       KM     COMBINE ROUTED HYDROGRAPH FROM S35N WITH RUNOFF FROM SUBBASIN 36.2
 88       KM       AREA IS AREA OF S36.2 + 60% OF AREA FROM S35N
 89       HC       2  0.5411
          *

 90       KK  D36.2R
 91       KM     DIVERT 70% OF FLOW INTO S34.1 - THE REMAINDER ENTERS S36R1
 92       DT  D36.2L
 93       DI       0    2000
 94       DQ       0     600
          *

 95       KK  R36.2R
 96       KM     NORMAL DEPTH CHANNEL ROUTE FROM C36.2 TO C34.1
 97       KM        SOURCE: 1993 MAPPING (2' CI) PROVIDED BY COS
 98       RS       4    FLOW      -1
 99       RC    0.06    0.04    0.06    7800  0.0321
100       RX    1000    1043    1053    1068    1093    1098    1133    1218
101       RY   102.6   100.6   100.5     100     100   100.5   100.6   102.6
          *

102       KK   S34.1
103       KM     RUNOFF FROM SUBBASIN 34.1
104       KM        RAINFALL LOSSES FOR GREINER SUBBASINS 31.2 AND 34.1 ARE WEIGHTED BY AREA
105       BA  1.6076
106       LS            77.3      12            77.3      12
107       UK     300   0.590    0.13      25
108       UK     300   0.040    0.13      75
109       RK    2570   0.085   0.045  0.0214    TRAP       0      10
110       RK    9200   0.042   0.040            TRAP      50       9
          *

111       KK  C34.1I
112       KM     COMBINE ROUTED HYDROGRAPH FROM C31.1 & C36.2 W/RUNOFF FROM SUBBASIN 34.1
113       KM       AREA IS AREA FROM C31.1 + S34.1 + 70% OF AREA FROM C36.2
114       HC       3  2.9029
          *

115       KK  C34.10
116       KM     DETENTION BASIN AT HAPPY VALLEY ROAD - NONREGULATORY STRUCTURE
117       KM        OUTLET RATING CURVE - USING HY8 FOR A 48" RCP WITH A SLOPE OF 0.5%
118       KM        13 ACRE-FEET OF STORAGE FOR SEDIMENTAION
119       RS       1    STOR
120       SV       0     0.1     0.2     0.5     1.2     2.2    20.5    65.1   116.9   182.1
121       SV     195
122       SE    2065    2066    2067    2068    2069    2070    2075    2080    2085    2090
123       SE    2091
124       SQ       0      21      42      63      84     105     110     147     168     189
125       SQ     210     216     244     549     665     811     996    1300    1511
126       SE  2065.0 2066.82 2067.83 2068.64 2069.47 2070.44 2070.70 2073.43 2078.36 2083.14
127       SE  2088.3 2090.00 2090.10 2090.50 2090.60 2090.70 2090.80 2090.90 2091.00
          *
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LINE     ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

128      KK   R34.1
129      KM     NORMAL DEPTH CHANNEL ROUTE FROM C34.1 TO C36.1 THROUGH PIMA CHANNEL
130      RS       1    FLOW      -1
131      RC   0.035   0.025   0.035    2300    0.01
132      RX    1000    1020    1022    1034    1079    1091    1093    1113
133      RY     111     106   105.9     100     100   105.9     106     111
         *

134      KK   S36.1
135      KM     RUNOFF FROM SUBBASIN 36.1
136      BA  0.1394
137      LS            73.4      11
138      UK     300  0.0420   0.130     100
139      RK    2330  0.0320   0.045  0.0134    TRAP      10      30
140      RK    3200  0.0270   0.040            TRAP      20      30
         *

141      KK   C36.1
142      KM     COMBINE ROUTED HYDROGRAPH FROM C34.1 WITH RUNOFF FROM SUBBASIN 36.1
143      HC       2
         *

144      KK   R36.1
145      KM     NORMAL DEPTH CHANNEL ROUTE FROM C36.1 TO C36R1 THROUGH PIMA CHANNEL
146      RS       1    FLOW      -1
147      RC   0.035   0.025   0.035    2980    0.01
148      RX    1000    1020    1022    1034    1079    1091    1093    1113
149      RY     111     106   105.9     100     100   105.9     106     111
         *

150      KK   B35NL
151      KM     BRING BACK DIVERTED HYDROGRAPH FROM C35N
152      DR   D35NL
         *

153      KK   R35NL
154      KM     NORMAL DEPTH CHANNEL ROUTE FROM S35N TO C36R1
155      KM        SOURCE: 1993 MAPPING (2' CI) PROVIDED BY COS
156      RS       5    FLOW      -1
157      RC    0.06    0.04    0.06   14480  0.0318
158      RX    1000    1040    1080    1086    1091    1097    1137    1174
159      RY     105     104     103     100     100     103     104     105
         *

160      KK  B36.2L
161      KM     BRING BACK DIVERTED HYDROGRAPH FROM C36.2
162      DR  D36.2L
         *
```

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

 163          KK  R36.2L
 164          KM     NORMAL DEPTH CHANNEL ROUTE FROM C36.2 TO C36R1
 165          KM        SOURCE: 1993 MAPPING (2' CI) PROVIDED BY COS
 166          RS       3    FLOW      -1
 167          RC    0.06    0.04    0.06   10160  0.0342
 168          RX    1000    1030    1060    1066    1076    1082    1112    1142
 169          RY     103   102.5     102     100     100     102   102.5     103
              *

 170          KK   S36R1
 171          KM     RUNOFF FROM SUBBASIN 36R1
 172          KM        RAINFALL LOSSES FOR GREINER SUBBASINS 36.3, 36R1 AND 35R ARE AREA WEIGHT
 173          BA  1.2173
 174          LS            74.3      10
 175          UK     300   0.020   0.200     100
 176          RK    1420   0.032   0.045  0.0061    TRAP       0      13
 177          RK   12600   0.033   0.040            TRAP      10       9
              *

 178          KK   C36R1
 179          KM     COMBINE ROUTED HYDROGRAPH FROM C36.1, D35NL & D36.2L W/RUNOFF FROM S36R1
 180          KM        AREA IS AREA FROM C36.1 + S36R1 + 40% OF AREA FROM S35N + 30% OF AREA
 181          KM        FROM C36.2
 182          HC       4  4.6393
              *

 183          KK   R36R1
 184          KM     NORMAL DEPTH CHANNEL ROUTE FROM C36R1 TO C36R2 THROUGH PIMA CHANNEL
 185          RS       1    FLOW      -1
 186          RC   0.035   0.025   0.035    4000    0.01
 187          RX    1000    1020    1022    1034    1084    1096    1098    1118
 188          RY   111.4   106.4   106.3     100     100   106.3   106.4   111.4
              *

 189          KK   S36R2
 190          KM     RUNOFF FROM SUBBASIN 36R2
 191          BA  0.4258
 192          LS              72      16
 193          UK     280   0.045   0.100     100
 194          RK    1900   0.032   0.017   0.015    TRAP      15       7
 195          RK    8860   0.030   0.040            TRAP      30      10
              *

 196          KK   C36R2
 197          KM     COMBINE ROUTED HYDROGRAPH FROM C36R1 W/RUNOFF FROM SUBBASIN 36R2
 198          HC       2    5.07
              *

 199          KK   S51.1
 200          KM     RUNOFF FROM SUBBASIN 51.1
 201          KM        RAINFALL LOSSES FOR GREINER SUBBASINS 51.1 AND 49.1 ARE AREA WEIGHTED
 202          BA  1.0784
 203          LS            73.9      12
 204          UK     300   0.037   0.130     100
```

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

RK   1800   0.038   0.045  0.0161    TRAP       0      12
RK  14400   0.032   0.040            TRAP      40      15
*

KK  D51.1
KM     DIVERT 100% OF RUNOFF FROM S51.1 DIRECTLY INTO PIMA ROAD CHANNEL
DT  D51.1L
DI       0    2000
DQ       0    2000
*

KK  C51.1I
KM     COMBINE HYDROGRAPH FROM C36R2 W/RUNOFF FROM SUBBASIN 51.1
HC       2    6.14
*

KK  C51.1O
KM     DETENTION BASIN AT DEER VALLEY ROAD - NONREGULATORY STRUCTURE
KM        OUTLET RATING CURVE - USING HY8 FOR A 54" RCP WITH A SLOPE OF 0.5%
KM        13 ACRE-FEET OF STORAGE FOR SEDIMENTAION (ELEV 1855-1860)
RS       1    STOR
SV       0   0.187   0.521   1.104   1.988   2.568  16.072  48.000  87.839  136.60
SV  147.16 157.979
SE    1855    1856    1857    1858    1859    1860    1865    1870    1875    1880
SE    1881    1882
SQ       0      29      57      86     114     143     172     200     229     257
SQ     286     286     326     543     760     868    1085
SE  1855.0 1857.08 1858.22 1859.14 1860.09 1861.21 1862.59 1866.56 1870.71 1875.12
SE  1879.9 1880.00 1880.24 1880.87 1881.24 1881.34 1881.50
*

KK  B51.1L
KM     BRING BACK DIVERTED HYDROGRAPH FROM S51.1
DR  D51.1L
*

KK  C51.1A
KM     COMBINE DIVERTED HYDROGRAPH WITH OUTFLOW FROM THE DEER VALLEY DB
HC       2    6.14
*

KK  R51.1
KM     NORMAL DEPTH CHANNEL ROUTE FROM C51.1 TO C52A THROUGH PIMA CHANNEL
RS       1    FLOW      -1
RC   0.035   0.025   0.035    2580    0.01
RX    1000    1020    1022    1034    1084    1096    1098    1118
RY   111.4   106.4   106.3     100     100   106.3   106.4   111.4
*

KK  D51.1T
KM     DIVERT 100% OF FLOW TO RETRIEVE AT THOMPSON PEAK PARKWAY
DT  B51.1T
DI       0   10000
DQ       0   10000
*
```

```
*
*     ******************  BEGIN DC RANCH WATERSHED  *******************
*
*       THE DC RANCH HEC-1 MODEL WAS DEVELOPED BY WOOD/PATEL ASSOCIATES
*           WOOD/PATEL FILE NAME:  DC0721C.DAT
*           MODEL DATE:            4 JANUARY 96
*
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 245          KK    52D4
 246          KM    RUNOFF FROM SUBBASIN 52D4
 247          BA     .070
 248          LS                  75    14.5
 249          UK      120    .010     .15     100
 250          RK     3100    .035    .045              TRAP      30      10
              *

 251          KK    52D4R
 252          KM    ROUTE 52D4C THROUGH 52D5 TO CP 52D5C
 253          RK     1350    .033    .045              TRAP      10      10
              *

 254          KK    52D4B
 255          KM    RUNOFF FROM SUBBASIN 52D4B
 256          BA     .022
 257          LS                  75      63
 258          UK      120    .010     .15     100
 259          RK     2200    .033    .045              TRAP      30      10
              *

 260          KK   52D5C1
 261          KM    COMBINE 52D4R AND 52D4B
 262          HC        2
              *

 263          KK    52D5A
 264          KM    RUNOFF FROM 52D5A
 265          BA    .0232
 266          LS                  75      63
 267          UK      120    .010     .15     100
 268          RK     1300    .032    .045              TRAP      30      10
              *

 269          KK   52D5AR
 270          KM    ROUTE 52D5A THROUGH BEARDSLEY CHANNEL TO CP 52D5C2
 271          RK      400   .0143    .035              TRAP      50       4
              *

 272          KK   52D5C2
 273          KM    COMBINE 25D5C1 AND 52D5AR
 274          HC        2
              *

 275          KK    52D5R
 276          KM    ROUTE 52D5C IN BEARDSLEY CHANNEL TO CP 52C3BC2
 277          RK      240   .0143    .035              TRAP      50       4
              *
```

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


 278           KK    52C3
 279           KM   RUNOFF FROM SUBBASIN 52C3
 280           BA    .006
 281           LS              75      65
 282           UK     100     .02     .10     100
 283           RK     800    .033    .045            TRAP      30      10
               *

 284           KK   52C3R
 285           KM   ROUTE 52C3 THROUGH SUBBASIN 52C4 TO CP 52C4C1
 286           RK    1350    .034    .045            TRAP      10      10
               *

 287           KK   52C3B
 288           KM   RUNOFF FROM SUBBASIN 52C3B
 289           BA    .016
 290           LS              75      60
 291           UK     100     .02     .10     100
 292           RK    1400    .034    .045            TRAP      30      10
               *

 293           KK  2C3BC1
 294           KM   COMBINE 52C3B AND 52C3R
 295           HC       2
               *

 296           KK  2C3BC2
 297           KM   COMBINE 52C3BC1 AND 52C5R
 298           HC       2
               *

 299           KK  52C3BR
 300           KM   ROUTE 52C3BC2 IN BEARDSLEY CHANNEL TO CP 52C4C2
 301           RK     430   .0143    .035            TRAP      50       4
               *
               *

 302           KK     51C     SUB
 303           KM        RUNOFF FROM SUB 51C
 304           BA   .0972
 305           LS              74      15
 306           UK     100   .0213     .10     100
 307           RK    3900   .0375    .045            TRAP      30      10
               *

 308           KK   51C1D
 309           KM   DIVERT 67 PERCENT OF 51C TO WEST (33 PERCENT TO SOUTH)
 310           DT  51C1DV
 311           DI       0   10000
 312           DQ       0    6700
               *
```

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

 313      KK   51C1R
 314      KM   ROUTE 51C1D THROUGH SUBBASIN 52C1
 315      RK    1350   .0364    .045            TRAP      10      10
          *

 316      KK    52C1
 317      KM   RUNOFF FROM SUBBASIN 52C1
 318      BA    .029
 319      LS                75    20.5
 320      UK     100     .02     .10     100
 321      RK    1350    .021    .045            TRAP      30      10
          *

 322      KK   52C1C
 323      KM   COMBINE 51C1R AND 52C1
 324      HC       2   .0611
          *

 325      KK   52C1R
 326      KM   ROUTE 52C1C THROUGH BASIN 52C2A TO CP 52C2BC
 327      RK    1500    .033    .045            TRAP      10      10
          *

 328      KK   52C2A
 329      KM   RUNOFF FROM SUBBASIN 52C2A
 330      BA    .019
 331      LS                75       2
 332      UK     100     .02     .10     100
 333      RK    1500    .033    .045            TRAP      30      10
          *

 334      KK  52C2AC
 335      KM   COMBINE 52C2A AND 52C1R
 336      HC       2
          *

 337      KK   52C2B
 338      KM   RUNOFF FROM SUBBASIN 52C2B
 339      BA   .0275
 340      LS                75      11
 341      UK     100     .02     .10     100
 342      RK    2000    .030    .045            TRAP      30      10
          *

 343      KK  52C2BC
 344      KM   COMBINE 52C2B AND 52C2AC
 345      HC       2
          *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 346          KK  52C2BR
 347          KM   ROUTE 52C2BC THROUGH 52C2C TO CP 52C2CC
 348          RK    1500    .040    .045            TRAP      10      10
              *

 349          KK   52C2C
 350          KM   RUNOFF FROM SUBBASIN 52C2C
 351          BA    .014
 352          LS              75      62
 353          UK     100     .02     .10     100
 354          RK    1500     .04    .045            TRAP      30      10
              *

 355          KK  52C2CC
 356          KM   COMBINE 52C2C AND 52C2BR
 357          HC       2
              *

 358          KK   52C2R
 359          KM   ROUTE 52C2CC THROUGH SUBBASIN 52C4 TO CP 52C4C1
 360          RK    1550    .030    .045            TRAP      10      10
              *

 361          KK    52C4
 362          KM   RUNOFF FROM SUBBASIN 52C4
 363          BA    .017
 364          LS              75      60
 365          UK     100     .02     .10     100
 366          RK    1550    .030    .045            TRAP      30      10
              *

 367          KK  52C4C1
 368          KM   COMBINE 52C4 AND 52C2R
 369          HC       2
              *

 370          KK  52C4C2
 371          KM   COMBINE 52C4C1 AND 52C3BR
 372          HC       2
              *

 373          KK   52C4R
 374          KM   ROUTE 52C4C2 WEST IN BEARDSLEY CHANNEL TO CP 52C15C2
 375          RK     850   .0143    .035            TRAP      50       4
              *

 376          KK   52C13
 377          KM   RUNOFF FROM SUBBASIN 52C13
 378          BA    .023
 379          LS              75      31
 380          UK     100     .02     .10     100
 381          RK     950    .040    .045            TRAP      30      10
              *
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 382           KK  2C13DV
 383           KM   DIVERT FIRST 40 CFS INTO STORM DRAIN; REMAINDER FLOWS OVER ROAD
 384           DT   STORM
 385           DI        0       40     1000
 386           DQ        0       40       40
               *
               * KK52C13R
               * KM ROUTE 52C13 THROUGH SUBBASIN 52C15 TO CP 52C15C1
               * RK  1800    .035    .045            TRAP      10      10
               *

 387           KK   52C15
 388           KM   RUNOFF FROM SUBBASIN 52C15
 389           BA    .046
 390           LS                75    64.4
 391           UK     100     .02     .10     100
 392           RK    2050    .036    .045            TRAP      30      10
               *

 393           KK  2C15C1
 394           KM   COMBINE 52C15 AND 52C13DV
 395           HC        2    .046
               *

 396           KK  2C15C2
 397           KM   COMBINE 52C15C1 AND 52C4R
 398           HC        2
               *

 399           KK  52C15R
 400           KM   ROUTE 52C15C2 IN BEARDSLEY CHANNEL TO CP 52C14C3
 401           RK     750   .0143    .035            TRAP      50       4
               *

 402           KK  52C14A
 403           KM   RUNOFF FROM SUBBASIN 52C14A
 404           BA    .041
 405           LS                75    67.7
 406           UK     100     .02     .10     100
 407           RK    2050    .031    .045            TRAP      30      10
               *

 408           KK  2C14AC
 409           KM   COMBINE 52C14A AND 52C15R
 410           HC        2
               *

 411           KK  2C14AR
 412           KM   ROUTE 52C14AC IN BEARDSLEY CHANNEL TO CP 52C14BC2
 413           RK     380   .0143    .035            TRAP      50       4
               *
               *
```

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

              KK  51C1DV
              KM   RETRIEVE DIVERTED FLOW
              DR  51C1DV
              *

              KK   51C2D
              KM   DIVERT 27 PERCENT OF 51C1DV TO WEST (73 PERCENT TO SOUTH)
              DT  51C2DV
              DI        0   10000
              DQ        0    2700
              *

              KK   51C2R
              KM   ROUTE 51C2D THROUGH SUBBASIN 52C5 TO CP 52C5C
              RK     700    .030    .045            TRAP      10      10
              *

              KK    52C5
              KM   RUNOFF FROM SUBBASIN 52C5
              BA    .016
              LS              75      27
              UK     100     .02     .10     100
              RK    1200     .03    .045            TRAP      30      10
              *

              KK   52C5C
              KM   COMBINE 51C2R AND 52C5
              HC       2   .0635
              *

              KK   52C5R
              KM   ROUTE 52C5C THROUGH SUBBASIN 52C6 TO CP 52C6C
              RK    3100    .035    .045            TRAP      10      10
              *

              KK    52C6
              KM   RUNOFF FROM SUBBASIN 52C6
              BA    .036
              LS              75    31.4
              UK     100     .02     .10     100
              RK    3100    .035    .045            TRAP      30      10
              *

              KK   52C6C
              KM   COMBINE 52C5R AND 52C6
              HC       2
              *

              KK   52C6R
              KM   ROUTE 52C6C THROUGH SUBBASIN 52C10 TO CP 52C10C2
              RK     450    .032    .045            TRAP      10      10
              *
```

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

 449     KK  51C2DV
 450     KM   RETRIEVE 52C2DV
 451     DR  51C2DV
         *

 452     KK   51C3R
 453     KM   ROUTE 52C2DV THROUGH SUBBASIN 52C7 TO CP 52C7C
 454     RK     700    .040    .045            TRAP      10      10
         *

 455     KK     51B     SUB
 456     KM         RUNOFF FROM SUB 51B
 457     BA   .5711
 458     LS       0    71.9    13.1
 459     UK     100   .0213     .10     100
 460     RK    8900   .0300    .045            TRAP      50      25
         *

 461     KK   51B1D
 462     KM   DIVERT 92 PERCENT OF SUBBASIN 51B TO WEST (8 PERCENT TO SOUTH)
 463     DT  51B1DV
 464     DI       0   10000
 465     DQ       0    9200
         *

 466     KK   51B1R
 467     KM    ROUTE 51B1D THROUGH SUBBASIN 52C7 TO CP 52C7C
 468     RK     450     .04    .045            TRAP      10      10
         *

 469     KK    52C7
 470     KM   RUNOFF FROM SUBBASIN 52C7
 471     BA    .006
 472     LS              75      27
 473     UK     100     .02     .10     100
 474     RK     550     .04    .045            TRAP      30      10
         *

 475     KK   52C7C
 476     KM   COMBINE 51B1R, 51C3R, AND 52C7
 477     HC       3   .0693
         *

 478     KK   52C7R
 479     KM   ROUTE 52C7C THROUGH SUBBASIN 52C9 TO CP 52C9C1
 480     RK    1550    .036    .045            TRAP      10      10
         *

 481     KK  51B1DV
 482     KM   RETRIEVE DIVERTED FLOW 51B1DV
 483     DR  51B1DV
         *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 484          KK   51B2D
 485          KM   DIVERT 84 PERCENT OF 51B1DV TO WEST (16 PERCENT TO SOUTH)
 486          DT   51B2DV
 487          DI        0   10000
 488          DQ        0    8400
              *

 489          KK   51B2R
 490          KM   ROUTE 51B2D THROUGH SUBBASIN 52C8 TO CP 52C8C
 491          RK      750    .034    .045            TRAP      10      10
              *

 492          KK    52C8
 493          KM   RUNOFF FROM SUBBASIN 52C8
 494          BA     .008
 495          LS                 75      27
 496          UK      100     .02     .10     100
 497          RK      750    .034    .045            TRAP      30      10
              *

 498          KK   52C8C
 499          KM   COMBINE 51B2R AND 52C8
 500          HC        2   .4493
              *

 501          KK   52C8R
 502          KM   ROUTE 52C8C THROUGH SUBBASIN 52C9 TO CP 52C9C1
 503          RK     1100    .036    .045            TRAP      10      10
              *

 504          KK  52C9C1
 505          KM   COMBINE 52C7R AND 52C8R
 506          HC        2
              *

 507          KK  52C9R1
 508          KM   ROUTE 52C9C1 THROUGH SUBBASIN 52C9 TO CP 52C9C2
 509          RK     1050    .036    .045            TRAP      10      10
              *

 510          KK    52C9
 511          KM   RUNOFF FROM SUBBASIN 52C9
 512          BA     .069
 513          LS                 75   31.85
 514          UK      100     .02     .10     100
 515          RK     3150    .036    .045            TRAP      30      10
              *

 516          KK  52C9C2
 517          KM   COMBINE 52C9R1 AND 52C9
 518          HC        2
              *
```

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

 519           KK  52C9R2
 520           KM   ROUTE 52C9C2 THROUGH SUBBASIN 52C10 TO CP 52C10C1
 521           RK     500    .032    .045            TRAP      10      10
               *

 522           KK  2C10C1
 523           KM   COMBINE 52C9R2 AND 52C6R
 524           HC       2
               *

 525           KK  2C10R1
 526           KM   ROUTE 52C10C1 THROUGH SUBBASIN 52C10 TO CP 52C10C2
 527           RK     300    .032    .045            TRAP      10      10
               *

 528           KK   52C10
 529           KM   RUNOFF FROM SUBBASIN 52C10
 530           BA    .014
 531           LS              75    7.85
 532           UK     100     .02     .10     100
 533           RK     800    .032    .045            TRAP      30      10
               *

 534           KK  2C10C2
 535           KM   COMBINE 52C10R1 AND 52C10
 536           HC       2
               *

 537           KK   52C11
 538           KM   RUNOFF FROM SUBBASIN 52C11
 539           BA   .0425
 540           LS              75      27
 541           UK     100     .02     .10     100
 542           RK    2800    .031    .045            TRAP      30      10
               *

 543           KK  2C11R1
 544           KM   PIPE ROUTE 52C11 TO CP 52C11C
 545           RK     650     .02    .045            CIRC       3
               *

 546           KK  52C13D
 547           KM   RETRIEVE DIVERTED FLOW
 548           DR   STORM
               *

 549           KK  52C11C
 550           KM   COMBINE 52C13D AND 52C11R1
 551           HC       2   .0655
               *
```

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

 552          KK  2C11CR
 553          KM   PIPE ROUTE 52C11C TO CP 52C11C2
 554          RK     750     .02    .045            CIRC       3
              *

 555          KK  2C11C2
 556          KM   COMBINE 52C11CR AND 52C10C2
 557          HC       2
              *

 558          KK  2C11R2
 559          KM   ROUTE 52C11C2 THROUGH SUBBASIN 52C12 TO CP 52C12C
 560          RK     700     .03    .045            TRAP      10      10
              *

 561          KK   52C12
 562          KM   RUNOFF FROM SUBBASIN 52C12
 563          BA    .023
 564          LS              75      85
 565          UK     100     .02     .10     100
 566          RK     900     .03    .045            TRAP      30      10
              *

 567          KK  52C12C
 568          KM   COMBINE 52C11R2 AND 52C12
 569          HC       2
              *

 570          KK  52C12R
 571          KM   ROUTE 52C12C THROUGH SUBBASIN 52C14 TO CP 52C14C1
 572          RK    1150    .029    .045            TRAP      10      10
              *

 573          KK  52C14B
 574          KM   RUNOFF FROM SUBBASIN 52C14B
 575          BA    .021
 576          LS              75      60
 577          UK     100     .02     .10     100
 578          RK    1250    .029    .045            TRAP      30      10
              *

 579          KK  C14BC1
 580          KM   COMBINE 52C14B AND 52C12R
 581          HC       2
              *

 582          KK  C14BC2
 583          KM   COMBINE 52C14BC1 AND 52C14AR
 584          HC       2
              *
```

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

 585          KK  52C14R
 586          KM   ROUTE 52C14C3 WEST IN BEARDSLEY CHANNEL TO CP 52B5C2
 587          RK     600   .0143    .035            TRAP      50       4
              *

 588          KK  51B2DV
 589          KM   RETRIEVE DIVERTED FLOW
 590          DR  51B2DV
              *

 591          KK   51B3D
 592          KM   DIVERT 84 PERCENT OF 51B2DV TO WEST (16 PERCENT TO SOUTH)
 593          DT  51B3DV
 594          DI       0   10000
 595          DQ       0    8400
              *

 596          KK   51B3R
 597          KM   ROUTE 51B3D THROUGH SUBBASIN 52B1 TO CP 52B1C
 598          RK     600    .039    .045            TRAP      10      10
              *

 599          KK    52B1
 600          KM   RUNOFF FROM SUBBASIN 52B1
 601          BA    .003
 602          LS              75      27
 603          UK     100     .02     .10     100
 604          RK     600    .039    .045            TRAP      30      10
              *

 605          KK   52B1C
 606          KM   COMBINE 51B3R AND 52B1
 607          HC       2   .0736
              *

 608          KK   52B1R
 609          KM   ROUTE 52B1C THROUGH SUBBASIN 52B2 TO CP 52B2C1
 610          RK     930    .037    .045            TRAP      10      10
              *

 611          KK  51B3DV
 612          KM   RETRIEVE DIVERTED FLOW 51B3DV
 613          DR  51B3DV
              *

 614          KK   51B4D
 615          KM   DIVERT 82 PERCENT OF 51B3DV TO WEST (18 PERCENT TO SOUTH)
 616          DT  51B4DV
 617          DI       0   10000
 618          DQ       0    8200
              *
```

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

 619          KK  51B4R1
 620          KM   ROUTE 51B4D THROUGH SUBBASIN 52B2 TO CP 52B2C1
 621          RK    1350    .037    .045            TRAP      10      10
              *

 622          KK  52B2C1
 623          KM   COMBINE 51B4R1 AND 52B1R
 624          HC       2   .1403
              *

 625          KK  52B2R1
 626          KM   ROUTE 52B2R1 THROUGH SUBBASIN 52B2 TO CP 52B2C2
 627          RK    1000    .037    .045            TRAP      10      10
              *

 628          KK    52B2
 629          KM   RUNOFF FROM SUBBASIN 52B2
 630          BA    .032
 631          LS              75      17
 632          UK     100     .02     .10     100
 633          RK    2350    .037    .045            TRAP      30      10
              *

 634          KK  52B2C2
 635          KM   COMBINE 52B2 AND 52B2R1
 636          HC       2
              *

 637          KK  52B2R2
 638          KM   ROUTE 52B2C2 THROUGH SUBBASIN 52B3 TO CP 52B3C2
 639          RK     850    .026    .045            TRAP      10      10
              *

 640          KK  52B3R1
 641          KM   ROUTE 52B3C1 THROUGH SUBBASIN 52B3 TO CP 52B3C2
 642          RK     500    .024    .045            TRAP      10      10
              *

 643          KK    52B3
 644          KM   RUNOFF FROM SUBBASIN 52B3
 645          BA    .062
 646          LS              75    31.8
 647          UK     100     .02     .10     100
 648          RK    3450    .030    .045            TRAP      30      10
              *

 649          KK  52B3C2
 650          KM   COMBINE 52B3 AND 52B3R1
 651          HC       2
              *
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LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 652      KK  52B3R2
 653      KM   ROUTE 52B3C2 THROUGH 52B4 TO CP 52B4C
 654      RK    1700    .024    .045            TRAP      10      10
          *

 655      KK    52B4
 656      KM   RUNOFF FROM SUBBASIN 52B4
 657      BA    .026
 658      LS               75      62
 659      UK     100     .02     .10     100
 660      RK    1700    .024    .045            TRAP      30      10
          *

 661      KK   52B4C
 662      KM   COMBINE 52B4 AND 52B3R2
 663      HC       2
          *

 664      KK   52B4R
 665      KM   ROUTE 52B4C THROUGH SUBBASIN 52B5 TO CP 52B5C1
 666      RK     550    .027    .045            TRAP      10      10
          *

 667      KK    52B5
 668      KM   RUNOFF FROM SUBBASIN 52B5
 669      BA    .021
 670      LS               75    56.9
 671      UK     100     .02     .10     100
 672      RK    1400     .03    .045            TRAP      30      10
          *

 673      KK  52B5C1
 674      KM   COMBINE 52B5 AND 52B4R
 675      HC       2
          *

 676      KK  52B5C2
 677      KM   COMBINE 52B5C1 AND 52C14R
 678      HC       2
          *

 679      KK   52B5R
 680      KM   ROUTE 52B5C2 IN BEARDSLEY CHANNEL TO CP 52B7C2
 681      RK    1100   .0143    .035            TRAP      50       4
          *

 682      KK  51B4DV
 683      KM   RETRIEVE DIVERTED FLOW 51B4DV
 684      DR  51B4DV
          *
```

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

 685           KK   51B5D
 686           KM   DIVERT 68 PERCENT OF 51B4DV TO WEST (32 PERCENT TO SOUTH)
 687           DT  51B5DV
 688           DI        0   10000
 689           DQ        0    6800
               *

 690           KK   51B5R
 691           KM   ROUTE 51B5D THROUGH SUBBASIN 52B6 TO CP 51B7C
 692           RK    1250     .035    .045             TRAP       10       10
               *

 693           KK  51B5DV
 694           KM   RETRIEVE DIVERTED FLOW
 695           DR  51B5DV
               *

 696           KK   51B6D
 697           KM   DIVERT 53 PERCENT OF 51B5DV TO WEST (47 PERCENT TO SOUTH)
 698           DT  51B6DV
 699           DI        0   10000
 700           DQ        0    5300
               *

 701           KK   51B6R
 702           KM   ROUTE 51B6D THROUGH SUBBASIN 52B6 TO CP 51B7C
 703           RK     925     .033    .045             TRAP       10       10
               *

 704           KK  51B6DV
 705           KM   RETRIEVE DIVERTED FLOW 51B6DV
 706           DR  51B6DV
               *

 707           KK   51B7D
 708           KM   DIVERT 58 PERCENT OF 51B6DV TO WEST (42 PERCENT TO SOUTH)
 709           DT  51B7DV
 710           DI        0   10000
 711           DQ        0    5800
               *

 712           KK  51B7R1
 713           KM   ROUTE 51B7D THROUGH SUBBASIN 52B6 TO CP 51B7C
 714           RK     530     .033    .045             TRAP       10       10
               *

 715           KK   51B7C
 716           KM   COMBINE 51B7R1, 51B5R, AND 51B6R
 717           HC        3   .2404
               *
```

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


 718           KK  51B7R2
 719           KM   ROUTE 51B7C THROUGH SUBBASIN 52B6 TO CP 52B6C
 720           RK    2300    .033    .045              TRAP      10      10
               *

 721           KK    52B6
 722           KM   RUNOFF FROM SUBBASIN 52B6
 723           BA    .096
 724           LS              75   13.55
 725           UK     100     .02     .10     100
 726           RK    3200    .033    .045              TRAP      30      10
               *

 727           KK   52B6C
 728           KM   COMBINE 51B7R2 AND 52B6
 729           HC       2
               *

 730           KK   52B6R
 731           KM   ROUTE 52B6C THROUGH SUBBASIN 52B7 TO CP 52B7C1
 732           RK    2750    .028    .045              TRAP      10      10
               *

 733           KK    52B7
 734           KM   RUNOFF FROM SUBBASIN 52B7
 735           BA    .080
 736           LS              75   78.45
 737           UK     100     .02     .10     100
 738           RK    2750    .028    .045              TRAP      30      10
               *

 739           KK  52B7C1
 740           KM   COMBINE 52B7 AND 52B6R
 741           HC       2
               *

 742           KK  52B7C2
 743           KM   COMBINE 52B7C1 AND 52B5R
 744           HC       2
               *

 745           KK    52A2
 746           KM   RUNOFF FROM SUBBASIN 52A2
 747           BA    .065
 748           LS              75    88.8
 749           UK     100     .02     .10     100
 750           RK    2900    .023    .045              TRAP      30      10
               *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 751          KK  52A2C2
 752          KM   COMBINE 52B7C2 AND 52A2
 753          HC       2    1.62
              *

 754          KK  51B7DV
 755          KM   RETRIEVE DIVERTED FLOW 51B7DV
 756          DR  51B7DV
              *

 757          KK    51B8R
 758          KM   ROUTE 51B7DV THROUGH SUBBASIN 52A1 TO CP 52A1C
 759          RK    3400    .033    .045            TRAP      10      10
              *

 760          KK    52A1
 761          KM   RUNOFF FROM SUBBASIN 52A1
 762          BA    .130
 763          LS              75   32.25
 764          UK     100     .02     .10     100
 765          RK    3400    .033    .045            TRAP      30      10
              *

 766          KK   52A1C
 767          KM   COMBINE 52A1 AND 51B8R
 768          HC       2
              *
              *
              *     ********************  END DC RANCH WATERSHED  ********************
              *
              *
              *     ******************  BEGIN GVSCE MODIFICATIONS  ******************
              *

 769          KK   D51.1
 770          KM   RETRIEVE DIVERTED FLOW
 771          DR  B51.1T
              *

 772          KK    C52A
 773          KM     COMBINE ROUTED HYDROGRAPH FROM C51.1 WITH HYDROGRAPH FROM C52A1C AT
 774          KM     THOMPSON PEAK PARKWAY
 775          HC       2  6.2735
              *

 776          KK    R52A
 777          KM     NORMAL DEPTH CHANNEL ROUTE FROM C52A TO C52 THROUGH PIMA CHANNEL
 778          RS       1    FLOW      -1
 779          RC   0.035   0.025   0.035    2700    0.01
 780          RX    1000    1020    1022    1034    1084    1096    1098    1118
 781          RY   111.4   106.4   106.3     100     100   106.3   106.4   111.4
              *
```

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

 782          KK     C52
 783          KM     COMBINE ROUTED HYDROGRAPH FROM C52A WITH HYDROGRAPH FROM C52A2C AT
 784          KM     BEARDSLEY ROAD
 785          HC       2  7.9160
              *

 786          KK     R52
 787          KM     NORMAL DEPTH CHANNEL ROUTE FROM C52 TO C53 THROUGH PIMA CHANNEL
 788          RS       1    FLOW      -1
 789          RC   0.035   0.025   0.035    3600    0.01
 790          RX    1000    1020    1022    1034    1084    1096    1098    1118
 791          RY   111.4   106.4   106.3     100     100   106.3   106.4   111.4
              *

 792          KK    D52T
 793          KM     DIVERT 100% OF FLOW TO RETRIEVE JUST U/S OF UNION HILLS DETENTION BASIN
 794          DT    B52T
 795          DI       0   10000
 796          DQ       0   10000
              *

 797          KK   CLEAR
 798          KM     CLEAR HYDROGRAPHS FROM STACK
 799          HC       2
              *
              *     ******************  BEGIN GREYHAWK WATERSHED  *******************
              *
              *       THE GREYHAWK HEC-1 MODEL (VILLAGES II AND III) WAS DEVELOPED BY DEI
              *           DEI FILE NAME:  GH23FAB.H1I
              *           MODEL DATE:     21 MAY 96
              *

 800          KK     37A     SUB
 801          KM        RUNOFF FROM SUB-BASIN 37A
 802          BA   .6765
 803          LS              74    24.8
 804          UK      61   .0213     .10     100
 805          RK    4800   .0237    .045            TRAP      50     130
              *

 806          KK    37AE     DIV
 807          KM        SPLIT FLOWS AT SOUTH BOUNDARY OF SUB 37A FOR ROUTING TO DETENTION
 808          KM        BASIN 53R & 38R-1.  THIS DIVERT OPERATION REFLECTS THE BREAK IN THE
 809          KM        DEER VALLEY ROAD CHANNEL BETWEEN HAYDEN & PIMA ROADS.  THIS SPLIT IS
 810          KM        BASED ON NEW CORE NORTH PLAN DEVELOPED BY G.W. LARSON & ASSC., INC.
 811          KM        DATED 6/16/92.  DIVERT RATIO IS BASED ON APPROXIMATE D.A. FROM SUB 37A
 812          KM        THAT IS INTERCEPTED BY EACH CHANNEL SEGMENT ALONG DEER VALLEY ROAD.
 813          KM
 814          KM        (THIS SPLIT HAS BEEN UPDATED FROM THE OLP.6 MODEL TO REFLECT A 30% SPLIT
 815          KM        TO THE SOUTH AND A 70% SPLIT TO THE WEST FOR THIS STUDY AND IS BASED ON
 816          KM        UPSTREAM CONTRIBUTING WATERSHED AREA TO THIS CONCENTRATION POINT)
 817          DT    37AW
 818          DI       0     100     500    1000    1500
 819          DQ       0      70     350     700    1050
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 820          KK   37AE1      CP
 821          KM        ROUTE NON-DIVERTED FLOW FROM DIV 37AE THROUGH SUB 5N.  THIS IS A
 822          KM        PRELIMINARY CHANNEL CONFIGURATION FOR THE GOLF COURSE CHANNEL.
 823          RS        1    FLOW
 824          RC     .055    .045    .055     800    .025
 825          RX        0      16      26      30      40      44      54      70
 826          RY        6       2       2       0       0       2       2       6
              *

 827          KK   SUB5N
 828          KM        RUNOFF FROM SUBBASIN 5 IN NORTH 18 MODEL.
 829          BA   0.029
 830          LS               77      18
 831          UK      100    .013     .15     100
 832          RK     1000   0.005    .018    .015    TRAP      50      20
 833          RK      500    .015    .025            TRAP      10       4
              *

 834          KK    CP5N
 835          KM        ADD HYDROGRAPHS AT CP5N
 836          HC        2   0.232
              *

 837          KK   RET5N
 838          KM        ROUTE FLOW THROUGH RETENTION BASIN NO. 5.  18" PIPE OUTFLOW WILL
 839          KM        BLEED FLOWS TO DRAIN THE BASIN AFTER THE STORM HAS PASSED.
 840          RS        1    STOR       0       0
 841          SV        0     .04     .33     .93     1.8    2.35    3.16     4.2     6.1
 842          SQ        0       8      10      12      15      17     102     191     668
 843          SE     1797    1798    1800    1802    1804    1805    1806    1807    1808
              *

 844          KK   R6N.1
 845          KM        ROUTE FLOW FROM CP5 TO CP6 IN NORTH 18 MODEL
 846          KM        ASSUME CHANNEL IS SAME CONFIGURATION AS ABOVE FOR PROPOSED GOLF COURSE
 847          KM        CHANNEL.
 848          RS        1    FLOW
 849          RC     .055    .045    .055    2200    .025
 850          RX        0      16      26      30      40      44      54      70
 851          RY        6       2       2       0       0       2       2       6
              *

 852          KK   SUB6B
 853          KM        RUNOFF FROM WEST PORTION OF EXISTING SUB6N ADJACENT TO CHANNEL
 854          BA     .032
 855          LS               81       0
 856          UK      200    .025     .15     100
 857          RK     1300    .015    .025            TRAP      10       4
              *
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LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 858      KK   SR6B
 859      KM       ROUTE FLOW THROUGH RETENTION BASIN IN DRIVING RANGE CHANNEL
 860      RS       1    STOR       0       0
 861      SV       0     .17     .57    1.12    1.78
 862      SQ       0       8      10     120     380
 863      SE    1772    1773    1774    1775    1776
          *

 864      KK  CP6.1
 865      KM       ADD HYDROGRAPHS AT CP6.1
 866      HC       2
          *

 867      KK  SUB1N
 868      KM       RUNOFF FROM SUBBASIN 1N
 869      BA    .019
 870      LS              77      18
 871      UK     100    .013     .15     100
 872      RK    1470   .0204    .018            TRAP      50      20
          *

 873      KK   R2NA
 874      KM       ROUTE FLOW FROM CP1 TO CP2NA
 875      RS       1    FLOW
 876      RC     .03     .03     .03     400    .025
 877      RX       0       8      13      17      22      26      31      39
 878      RY       4       2       2       0       0       2       2       4
          *

 879      KK SUB2NA
 880      KM       RUNOFF FROM SUBBASIN 2NA
 881      BA    .015
 882      LS              81       0
 883      UK     150    .013     .15     100
 884      RK    1050   .0215    .025            TRAP      20       6
          *

 885      KK  CP2NA
 886      KM       ADD HYDROGRAPHS AT CP2NA
 887      HC       2
          *

 888      KK  SR2NA
 889      KM       ROUTE FLOW THROUGH DETENTION BASIN IN SUB2NA
 890      RS       1    STOR       0       0
 891      SV       0    .076    .291    .708     1.2
 892      SQ       0       0       0       0     160
 893      SE    1772    1773    1774    1775    1776
          *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 894          KK   R2NB
 895          KM       ROUTE FLOW FROM CP2NA TO CP2NB
 896          RS      1    FLOW
 897          RC    .03     .03     .03    1050    .015
 898          RX      0       8      13      17      22      26      31      39
 899          RY      4       2       2       0       0       2       2       4
              *

 900          KK SUB2NB
 901          KM       RUNOFF FROM SUBBASIN 2NB
 902          BA    .03
 903          LS             77      53
 904          UK    150    .013     .15     100
 905          RK   1200    .015    .025            TRAP      20      50
              *

 906          KK   CP2NB
 907          KM       ADD HYDROGRAPHS AT CP2NB
 908          HC      2
              *

 909          KK   SR2NB
 910          KM       STORAGE ROUTE FLOW THROUGH DETENTION BASIN IN SUB2NB
 911          RS      1    STOR       0       0
 912          SV      0     .19     .69    1.66    3.23     4.5
 913          SQ      0       2       8      12      17     170
 914          SE   1796    1798    1800    1802    1804    1805
              *

 915          KK   RCP4N
 916          KM       ROUTE FLOW FROM CP2NB TO CP4N
 917          RS      1    FLOW
 918          RC    .03     .03     .03     740    .018
 919          RX      0       8      13      17      22      26      31      39
 920          RY      4       2       2       0       0       2       2       4
              *

 921          KK   SUB6N
 922          KM       RUNOFF FROM SUBBASIN 6 IN NORTH 18 MODEL.  TO LAKE NORTH OF CLUBHOUSE.
 923          BA   .049
 924          LS             81       0
 925          UK    200    .025     .15     100
 926          RK   1300    .015    .025            TRAP      10       4
              *

 927          KK   RET6N
 928          KM       RETENTION ROUTING THROUGH LAKE AT HOLE 18, NORTH COURSE.
 929          RS      1    STOR
 930          SV      0    3.01    6.64   10.75   13.09   15.90
 931          SQ      0       0       0      10      26     100
 932          SE   1782    1784    1786    1788    1789    1790
              *
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LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          KK  RCP4N1
          KM       ROUTE FLOW FROM CP6N TO CP4N
          RS       1    FLOW
          RC     .03     .03     .03     550    .018
          RX       0       8      13      17      22      26      31      39
          RY       4       2       2       0       0       2       2       4
          *

          KK  CP4N.1
          KM       ADD HYDROGRAPHS AT CP4N.1
          HC       2
          *

          KK   SUB3N
          KM       RUNOFF FROM SUBBASIN 3N, NORTH 18 MODEL
          BA    .027
          LS              81       0
          UK     100     .02     .15     100
          RK    2800  0.0207    .025            TRAP      10       4
          *

          KK   RET3N
          KM       ROUTE FLOW THROUGH RETENTION BASIN NO. 3.  18" PIPE OUTFLOW WILL
          KM       BLEED FLOWS TO DRAIN THE BASIN AFTER THE STORM HAS PASSED.
          RS       1    STOR       0       0
          SV       0    1.73    8.97   13.32   15.74
          SQ       0       4       7       9      11
          SE    1793    1795    1800    1803    1804
          *

          KK     R4N
          KM       ROUTE FLOW FROM CP3N TO CP4N IN NORTH MODEL
          RS       1    FLOW
          RC    .035    .035    .035     950    .018
          RX       0       8      13      17      22      26      31      39
          RY       4       2       2       0       0       2       2       4
          *

          KK  CP4N.2
          KM       ADD HYDROGRAPHS AT CPN.2
          HC       2
          *

          KK   SUB4N
          KM       RUNOFF FROM SUBBASIN 4N.
          BA    .032
          LS              77      18
          UK     100    .015     .15     100
          RK    1200   0.007    .018            TRAP      50      20
          *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 970          KK    CP4N
 971          KM        ADD HYDROGRAPHS AT CP4N
 972          HC       2
              *

 973          KK     R6N
 974          KM        ROUTE FLOW FROM CP4N TO CP6N ALONG THOMPSON PEAK PKWY AT CLUBHOUSE
 975          RS       1    FLOW
 976          RC    .045    .035    .045     750    .025
 977          RX       0       8      13      17      22      26      31      39
 978          RY       4       2       2       0       0       2       2       4
              *

 979          KK   SUB6A
 980          KM        RUNOFF FROM SUBBASIN 6A (CLUBHOUSE AREA NORTH OF THOMPSON PEAK PKWY).
 981          BA    .013
 982          LS              83      68
 983          UK     100    .015     .12     100
 984          RK     800     .01    .025            TRAP       2       3
              *

 985          KK   CP6.2
 986          KM        ADD HYDROGRAPHS AT CP6.2
 987          HC       2
              *

 988          KK    CP6N
 989          KM        ADD HYDROGRAPHS AT CP6N
 990          HC       2
              *
              *       ABOVE DISCHARGE FROM NORTH 18 THROUGH BRIDGE AT TPP STATION 103+45
              *

 991          KK   RCP6N
 992          KM        ROUTE FLOW FROM CP6N TO CP3C
 993          RS       1    FLOW
 994          RC    .045    .035    .045     300    .015
 995          RX       0       8      13      17      37      45      51      59
 996          RY       4       2       2       0       0       2       2       4
              *

 997          KK   SUB3C
 998          KM        RUNOFF FROM SUBBASIN 3C, SOUTH COURSE AT MAINTENANCE FACILITY.
 999          BA   .0104
1000          LS              77      68
1001          UK     100    .025     .02     100
1002          RK     600    .015    .035            TRAP      50      20
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1003          KK    CP3C
1004          KM        COMBINE NORTH COURSE HYDROGRAPH WITH FIRST SOUTH COURSE HYDROGRAPH
1005          HC       2
              *

1006          KK     R3C
1007          KM        ROUTE FLOW FROM SUB3C TO CP3 THROUGH GC1018
1008          KM        ASSUME CHANNEL IS SAME CONFIGURATION AS ABOVE FOR PROPOSED GOLF COURSE
1009          KM        CHANNEL.
1010          RS       1    FLOW
1011          RC    .055    .045    .055    2050    .025
1012          RX       0      20      30      40      60      70      80     100
1013          RY    1650    1746    1744    1742    1742    1744    1746    1750
              *

1014          KK  GC1018
1015          KM        RUNOFF FROM HOLES NO. 10, 18 AND DRIVING RANGE THAT CONTRIBUTE TO WASH
1016          BA    .044
1017          LS              81       0
1018          UK     200    .025     .15     100
1019          RK    1800   .0233    .025            TRAP      10       4
              *

1020          KK   GC1-9
1021          KM        RUNOFF FROM GOLF COURSE HOLES 1 & 9 CONTRIBUTING TO WASH
1022          BA    .026
1023          LS              81       0
1024          UK     200    .025     .15     100
1025          RK    2110    .022    .025            TRAP      10       4
              *

1026          KK   SUB3S
1027          KM        RUNOFF FROM SUB BASIN 3 SOUTH COURSE
1028          BA   .0102
1029          LS              77      53
1030          UK     100    .010     .15     100
1031          RK     930    .016    .025            TRAP      50      20
              *

1032          KK    CP3S
1033          KM        COMBINE HYDROGRAPHS AT CP3 SOUTH COURSE
1034          HC       4
              *

1035          KK     RT3S
1036          KM        ROUTE FLOW FROM CP3S TO CPGC28
1037          RS       1    FLOW       0       0
1038          RC    .055    .045    .055     900    .023
1039          RX       0      20      30      40      60      70      80     100
1040          RY    1750    1746    1744    1742    1742    1744    1746    1750
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1041          KK   SUB4S
1042          KM        RUNOFF FROM SUB BASIN 4 SOUTH COURSE
1043          BA   .0273
1044          LS               77      53
1045          UK     100    .010     .15     100
1046          RK    1780    .018    .015            TRAP      50      20
              *

1047          KK    RT4S
1048          KM        ROUTE FLOW FROM CP4S TO CPGC28
1049          RS       1    FLOW       0       0
1050          RC    .035    .035    .035     650    .015
1051          RX       0      20      30      40      45      55      65      75
1052          RY    1750    1746    1744    1742    1742    1744    1746    1750
              *

1053          KK   GC2-8
1054          KM        RUNOFF FROM SOUTH GOLF COURSE HOLES NO. 2 AND 8
1055          BA    .014
1056          LS               81       0
1057          UK     200    .025     .15     100
1058          RK     980    .016    .025            TRAP      10       4
              *

1059          KK  1PGC28
1060          KM        ADD HYDROGRAPHS AT CPGC28 AT PROPOSED LOOP ROAD, SOUTH COURSE
1061          HC       3
              *

1062          KK  SUB3D3
1063          KM        RUNOFF FROM GRAYHAWK ROAD SOUTH OF THOMPOSON PEAK
1064          BA    .014
1065          LS               81       0
1066          UK      50    .015      .1     100
1067          RK    2450    .016    .025            TRAP       5       4
              *

1068          KK  CPGC28
1069          KM        ADD HYDROGRAPHS AT CPGC28 AT PROPOSED LOOP ROAD, SOUTH COURSE
1070          HC       2
              *

1071          KK  SRGC28
1072          KM        STORAGE THRU DETENTION BASIN ON HOLES 2 AND 8.
1073          RS       1    STOR       0       0
1074          SV       0    .018    .085     .22      .5     1.0     1.7    2.68     3.9
1075          SE    1706    1707    1708    1709    1710    1711    1712    1713    1714
1076          SQ       0      10      18      20      30     108     324     651    1070
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1077          KK    RT7S
1078          KM         ROUTE FLOW FROM SRGC28 TO CP7S
1079          RS       1    STOR       0       0
1080          RC    .055    .045    .055    1700   .0187
1081          RX       0      20      30      40      60      70      80     100
1082          RY    1750    1746    1744    1742    1742    1744    1746    1750
              *

1083          KK     GC7
1084          KM         RUNOFF FROM SOUTH GOLF COURSE HOLE NO. 7
1085          BA   .0134
1086          LS              81       0
1087          UK     200    .025     .15     100
1088          RK    1380    .020    .025            TRAP      10       4
              *

1089          KK    CP7S
1090          KM         ADD HYDROGRAPHS AT CP7S ON SOUTH COURSE
1091          HC       2  0.6083
              *

1092          KK    D7ST
1093          KM         D7ST IS A DIVERSION ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
1094          KM         UNION HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
1095          KM
1096          KM         DIVERT 100% OF FLOW
1097          DT    B7ST
1098          DI       0   10000
1099          DQ       0   10000
              *

1100          KK   CLEAR
1101          KM         CLEAR HYDROGRAPHS FROM THE STACK.
1102          HC       2
              *
              *
              * THIS PORTION OF MODEL TAKEN FROM,"DRAINAGE REPORT FOR VILLAGE 3 - PHASE 1",
              * APPROVED BY THE CITY OF SCOTTSDALE 7-19-95.  MODIFIED TO ACCOUNT FOR ASBUILT
              * CONDITION
              *
              *
              *
              *

1103          KK  SUB3D1
1104          KM         RUNOFF FROM SUBBASIN 3D1, PARCEL 3D.
1105          BA   .0088
1106          LS              77      34
1107          UD     .06
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1108          KK   RD1B1
1109          KM        FOUTE FLOW FROM 3D1 TO 3B1
1110          RS       1    FLOW      -1
1111          RC    0.03    0.03    0.03    1250    .015
1112          RX       0     0.5       1       7      12      19    19.5      20
1113          RY     3.2     3.1     3.0     1.0     1.0     3.0     3.1     3.2
              *

1114          KK  SUB3B1
1115          KM        RUNOFF FROM SUBBASIN 3B1, PARCEL 3B.
1116          BA   .0137
1117          LS              77      47
1118          UD     .06
              *

1119          KK   CP3B1
1120          KM        ADD HYDROGRAGHS AT CP3B1
1121          HC       2
              *

1122          KK   RB13F
1123          KM        ROUTE FLOW FROM 3B1 TO SUB3F
1124          RS       1    FLOW      -1
1125          RC    0.03    0.03    0.03    2150    .015
1126          RX       0     0.5       1       7      17      24    24.5      25
1127          RY     3.2     3.1     3.0     1.0     1.0     3.0     3.1     3.2
              *

1128          KK   SUB3F
1129          KM        RUNOFF FROM SUBBASIN 3F, PARCEL 3F, SOUTH COURSE MODEL.
1130          BA   .0344
1131          LS              77      68
1132          UK     100    .025     .15     100
1133          RK    1000    .015    .025            TRAP     100      20
              *

1134          KK    CP3F
1135          KM        ESTIMATED PEAK DISCHARGE RATE AT POINT CP3F ALONG THE POWER CORRIDOR
1136          HC       2
              *

1137          KK  SUB3B2
1138          KM        RUNOFF FROM SUBBASIN 3B2, PARCEL 3B.
1139          BA   .0246
1140          LS              77      40
1141          UD     .10
              *

1142          KK   RB2E1
1143          KM        1/2 OF ENTIRE ROUTING REACH FROM 3B2 TO CP3E1
1144          RS       1    FLOW      -1
1145          RC    0.03    0.03    0.03     800    0.02
1146          RX       0     0.5       1       7      17      24    24.5      25
1147          RY     3.2     3.1     3.0     1.0     1.0     3.0     3.1     3.2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1148          KK   RB2E2
1149          KM       SECOND 1/2 OF ENTIRE ROUTING REACH FROM 3B2 TO CP3E1
1150          RS       1    FLOW      -1
1151          RC    0.03    0.03    0.03     600    .015
1152          RX       0     0.5       1       7      17      24    24.5      25
1153          RY     3.2     3.1     3.0     1.0     1.0     3.0     3.1     3.2
              *

1154          KK  SUB3E1
1155          KM        RUNOFF FROM SUBBASIN 3E1, PARCEL 3E.
1156          BA   .0246
1157          LS              77      40
1158          UD     .10
              *

1159          KK  1CPE31
1160          KM        ESTIMATED PEAK DISCHARGE RATE AT POINT CP3E1 ALONG THE POWER CORRIDOR
1161          HC       2
              *

1162          KK  SUB3D2
1163          KM        RUNOFF FROM SUBBASIN 3D2, PARCEL 3D.
1164          BA    .022
1165          LS              77      35
1166          UD     .08
              *

1167          KK   RD2E2
1168          KM        ROUTE EXCESS FROM 3D2 TO CP3E2
1169          RS       1    FLOW      -1
1170          RC    0.03    0.03    0.03    1200   .0216
1171          RX       0     0.5       1       7      17      24    24.5      25
1172          RY     3.2     3.1     3.0     1.0     1.0     3.0     3.1     3.2
              *

1173          KK  SUB3E2
1174          KM        RUNOFF FROM SUBBASIN 3E2, PARCEL 3E.
1175          BA    .012
1176          LS              77      35
1177          UD     .06
              *

1178          KK   CP3E2
1179          KM        ESTIMATED PEAK DISCHARGE RATE AT POINT CP3E2 ALONG THE POWER CORRIDOR
1180          HC       2
              *

1181          KK     PC3
1182          KM        PC3 IS A SUBBASIN ADDED BY GVSCE TO ESTIMATE THE SURFACE RUNOFF FROM
1183          KM        THE POWER LINE CORRIDOR WHICH ENTERS THE POWER LINE CHANNEL
1184          KM
1185          KM        RUNOFF FROM SUBBASIN PC3.
1186          BA  0.0434
1187          LS              77      10
```

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

              UK     100    .015     .15     100
              RK    2200     .01     .03             TRAP      30       4
              *

              KK     CPC3
              KM          CPC3 IS A CONCENTRATION POINT ADDED BY GVSCE TO ESTIMATE THE INFLOW TO
              KM          THE POWER LINE CHANNEL AT THE HAYDEN ROAD CROSSING.
              KM
              KM          COMBINE ROUTED HYDROGRAPH FROM SRPC2 W/HYDROGRAPHS FROM CP3E1, CP3E2 AND
              KM          CP3F AND RUNOFF FROM PC3.
              HC        4  0.1835
              *

              KK    DPC3T
              KM          DPC3T IS A DIVERSION ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
              KM          UNION HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
              KM
              KM          DIVERT 100% OF FLOW
              DT    BPC3T
              DI        0   10000
              DQ        0   10000
              *

              KK   SUB3E3
              KM          RUNOFF FROM SUBBASIN 3E3, PARCEL 3E.
              BA     .020
              LS               77      32
              UD      .06
              *

              KK      PC4
              KM          PC4 IS A SUBBASIN ADDED BY GVSCE TO ESTIMATE THE SURFACE RUNOFF FROM
              KM          THE POWER LINE CORRIDOR WHICH ENTERS THE POWER LINE CHANNEL
              KM
              KM          RUNOFF FROM SUBBASIN PC4.
              BA   0.0217
              LS               77       0
              UK     100    .015     .15     100
              RK    1100     .01     .03             TRAP      30       4
              *

              KK      D7S
              KM          THIS OPERATION IS ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
              KM          HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
              KM
              KM          RETRIEVE DIVERTED FLOW
              DR     B7ST
              *

              KK     CPC4
              KM          THE HEC1 OPREATION TEMPAD IS CHANGED BY GVSCE TO ESTIMATE THE INFLOW TO
              KM          THE POWER LINE CHANNEL WHERE THE FLOW FROM CP7S ENTERS THE CHANNEL.
              KM
              KM          COMBINE HYDROGRAPH FROM CP3E3 W/RUNOFF FROM PC4.
              HC        3   0.650
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1231          KK   DPC4T
1232          KM        DPC3T IS A DIVERSION ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
1233          KM        UNION HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
1234          KM
1235          KM        DIVERT 100% OF FLOW
1236          DT   BPC4T
1237          DI        0   10000
1238          DQ        0   10000
              *

1239          KK   CLEAR
1240          KM        CLEAR HYDROGRAPHS FROM THE STACK.
1241          HC        3
              *
              *
              *       THIS ENDS THE PORTION OF THE MODEL TAKEN FROM DRAINAGE REPORT
              *       FOR VILLAGE 3 - PHASE I HEC-1 MODEL BY GILBERTSON ASSOC. INC.
              *       DATED 7-19-95
              *
              *
              *
              * RETURN TO NORTH 18\VILLAGE 2\TPP3 MODEL.
              * THE REMAINDER OF THE SUBBASINS IN THIS  MODEL  WILL CONTRIBUTE TO THE
              * PROPOSED CHANNNEL IN THE POWER EASEMENT AS IDENTIFIED IN THE
              * "COMMUNITY DRAINAGE STUDY - CORE NORTH AND WILL DISCHARGE TO REGIONAL
              * RETENTION BASIN 38R1.
              *
              *

1242          KK    37AW     RET
1243          KM        RETRIEVE DIVERTED FLOW FROM SOUTH BOUNDARY OF SUB 37A TO REFLECT
1244          KM        BREAK IN DEER VALLEY ROAD CHANNEL BETWEEN HAYDEN & PIMA ROADS
1245          DR    37AW
              *

1246          KK    R14R
1247          KM        ROUTE FLOW FROM DIVERT AT DEER VALLEY ROAD (UPSTREAM OF SUBBAIN 5) TO
1248          KM        RET14.1
1249          RS        1    FLOW
1250          RC     .055    .045    .055    2900     .01
1251          RX        0      16      26      30      50      54      64      80
1252          RY        6       2       2       0       0       2       2       6
              * RET 141 HAS BEEN REVISED FOLLOWING REFINEMENT OF GRADING PLANS 11-16-94
              *

1253          KK  RET141
1254          KM        ROUTE FLOW THROUGH RETENTION BASIN NO. 14.1.  18" PIPE OUTFLOW WILL
1255          KM        BLEED FLOWS TO DRAIN THE BASIN AFTER THE STORM HAS PASSED.
1256          RS        1    STOR       0       0
1257          SV        0     .46    2.79    4.56    5.71    6.92    8.24
1258          SQ        0      11      15      22     147     463     968
1259          SE     1778    1785    1790    1792    1793    1794    1795
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              KK   R14.1
              KM        ROUTE FLOW FROM RET14.1 TO CP14
              KM        RET14.1
              RS       1    FLOW
              RC    .055    .045    .055    1900     .01
              RX       0      16      26      30      50      54      64      80
              RY       6       2       2       0       0       2       2       6
              *

              KK  SUB13N
              KM        RUNOFF FROM SUBBASIN 13 NORTH 18 MODEL.
              BA    .037
              LS              77      24
              UK     100    .015     .15     100
              RK    2400    .007    .018            TRAP      50      20
              *

              KK   R14.1
              KM        ROUTE FLOW FROM CP13 TO RET14 NORTH 18 MODEL.
              RS       1    FLOW
              RC    .055    .045    .055     950    .025
              RX       0       8      13      17      22      26      31      39
              RY       4       2       2       0       0       2       2       4
              *

              KK  SUB14N
              KM        RUNOFF FROM SUBBASIN 14 NORTH 18 MODEL.
              BA    .049
              LS              81       0
              UK     300    .025     .15     100
              RK    2300     .01    .025            TRAP      10       4
              *

              KK    CP14
              KM        ADD HYDROGRAPHS AT CP14
              HC       3  0.5595
              *

              KK   RET14
              KM        ROUTE FLOW THROUGH RETENTION BASIN NO. 14.  18" PIPE OUTFLOW WILL
              KM        BLEED FLOWS TO DRAIN THE BASIN AFTER THE STORM HAS PASSED.
              RS       1    STOR       0       0
              SV       0     .08     .31    1.01    2.16    3.20    4.19    5.69     7.8
              SQ       0      14      16      18      20      22     155     464     750
              SE    1744    1746    1748    1750    1752    1753    1754    1755    1756
              *

              KK   R18.1
              KM        ROUTE FLOW FROM RET14 TO CP18
              RS       1    FLOW
              RC    .055    .045    .055     500    .016
              RX       0      16      26      34      54      68      78      96
              RY       6       2       2       0       0       2       2       6
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1301          KK  SUB20N
1302          KM       RUNOFF FROM SUBBASIN 20.
1303          BA    .024
1304          LS              77      24
1305          UK     200     .01     .15     100
1306          RK    1400     .02    .018             TRAP      50      20
              *

1307          KK     R19
1308          KM       ROUTE FLOW FROM CP20 TO CP19
1309          RS       1    FLOW
1310          RC    .035    .035    .035     700     .02
1311          RX       0       8      13      17      22      26      31      39
1312          RY       4       2       2       0       0       2       2       4
              *

1313          KK  SUB19N
1314          KM       RUNOFF FROM SUBBASIN 19.
1315          BA    .038
1316          LS              77      31
1317          UK     150     .01     .15     100
1318          RK    1800    .015    .018             TRAP      50      20
              *

1319          KK   CP19N
1320          KM       ADD HYDROGRAPHS  AT CP19N
1321          HC       2
              *

1322          KK   R18NC
1323          KM       ROUTE FLOW FROM  CP19N TO CP18NC
1324          RS       1    FLOW
1325          RC    .035    .035    .035     700    .013
1326          RX       0       8      13      17      27      31      36      44
1327          RY       4       2       2       0       0       2       2       4
              *

1328          KK  UB18NC
1329          KM       RUNOFF FROM SUBBASIN 18NC.
1330          BA    .021
1331          LS              77      42
1332          UK     100     .01     .15     100
1333          RK    1550     .02    .018             TRAP      50      20
              *

1334          KK  CP18NC
1335          KM       ADD HYDROGRAPHS  AT CP18NC (INCLUDES R18.1, R18, AND SUB18)
1336          HC       3
              *
```

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

1337          KK    RPC1
1338          KM         ROUTE FLOW FROM CP18N TO CPC1.
1339          RS       1    FLOW
1340          RC    .035    .035    .035     510    .013
1341          RX       0      16      26      34      64      78      88     106
1342          RY       6       2       2       0       0       2       2       6
              *

1343          KK  UB18NA
1344          KM         RUNOFF FROM SUBBASIN 18NA.
1345          BA    .022
1346          LS              77      42
1347          UK     100     .01     .15     100
1348          RK    1450     .02    .018            TRAP      50      20
              *

1349          KK   1RPC1
1350          KM         ROUTE FLOW FROM CP18NA TO CPC1.
1351          RS       1    FLOW
1352          RC    .035    .035    .035    2550     .01
1353          RX       0      16      26      34      64      78      88     106
1354          RY       8       4       2       0       0       2       4       8
              *

1355          KK  UB18NB
1356          KM         RUNOFF FROM SUBBASIN 18NB.
1357          BA   .0096
1358          LS              77      42
1359          UK     100     .01     .15     100
1360          RK     800     .02    .018            TRAP      50      20
              *

1361          KK   2RPC1
1362          KM         ROUTE FLOW FROM CP18NB TO CPC1.
1363          RS       1    FLOW
1364          RC    .035    .035    .035    2000     .01
1365          RX       0      16      26      34      64      78      88     106
1366          RY       8       4       2       0       0       2       4       8
              *

1367          KK     PC1
1368          KM         RUNOFF FROM SUBBASIN PC1.
1369          BA    .062
1370          LS              77      10
1371          UK     500    .015     .15     100
1372          RK    2700     .01     .03            TRAP      30       4
              *

1373          KK   1CPC1
1374          KM         ADD HYDROGRAPHS  AT CPC1.
1375          HC       3
              *
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```
LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1376           KK   SRPC1
1377           KM        STOAGE ROUTE THROUGH DET BASIN IN POWER CORRIDOR.
1378           RS       1    STOR       0       0
1379           SV       0     .29     .73
1380           SQ       0       0     350
1381           SE    1747    1748    1749
               *

1382           KK    CPC1
1383           KM        ADD HYDROGRAPHS  AT CPC1.
1384           HC       2
               *

1385           KK  R16NA1
1386           KM        ROUTE FLOW FROM CPC1 TO C16NA1.
1387           RS       1    FLOW
1388           RC    .035    .035    .035     700    .013
1389           RX       0      16      26      34      74      88      98     116
1390           RY       8       4       2       0       0       2       4       8
               *

1391           KK  UB16NA
1392           KM        RUNOFF FROM SUBBASIN 16NA.
1393           BA   .0139
1394           LS              77      42
1395           UK     100    .015     .15     100
1396           RK    1500    .015    .022            TRAP      50      20
               *

1397           KK  R16NA1
1398           KM        ROUTE FLOW FROM CP16NA TO CP16NA1.
1399           RS       1    FLOW
1400           RC    .035    .035    .035     550    .013
1401           RX       0      16      26      34      44      58      68      86
1402           RY       6       2       2       0       0       2       2       6
               *

1403           KK  C16NA1
1404           KM        ADD HYDROGRAPHS  AT CP16NA1.
1405           HC       2
               *

1406           KK  R16NB1
1407           KM        ROUTE FLOW FROM CP16NA1 TO CP16NB1.
1408           RS       1    FLOW
1409           RC    .035    .035    .035     650    .013
1410           RX       0      16      26      34      74      88      98     116
1411           RY       8       4       2       0       0       2       4       8
               *
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1412            KK  UB16NB
1413            KM        RUNOFF FROM SUBBASIN 16NB.
1414            BA   .0156
1415            LS              77      42
1416            UK     100    .015     .15     100
1417            RK    1500    .015    .022            TRAP      50      20
                *

1418            KK  R16NB1
1419            KM        ROUTE FLOW FROM CP16NB TO CP16NB1.
1420            RS       1    FLOW
1421            RC    .035    .035    .035     550    .013
1422            RX       0      16      26      34      44      58      68      86
1423            RY       6       2       2       0       0       2       2       6
                *

1424            KK  C16NB1
1425            KM        ADD HYDROGRAPHS  AT CP16NB1.
1426            HC       2
                *

1427            KK  R16NC1
1428            KM        ROUTE FLOW FROM CP16NB1 TO CP16NC1.
1429            RS       1    FLOW
1430            RC    .035    .035    .035     650    .013
1431            RX       0      16      26      34      54      68      78      96
1432            RY       6       2       2       0       0       2       2       6
                *

1433            KK   SUB7N
1434            KM        RUNOFF FROM SUBBASIN 7N.
1435            BA    .031
1436            LS              77      18
1437            UK     100    .015     .15     100
1438            RK    1900     .01    .018            TRAP      50      20
                *

1439            KK    R8NC
1440            KM        ROUTE FLOW FROM CP7N TO CP8NC.
1441            RS       1    FLOW
1442            RC    .055    .045    .055     700    .025
1443            RX       0       8      13      17      22      26      31      39
1444            RY       4       2       2       0       0       2       2       4
                *

1445            KK  SUB8NA
1446            KM        RUNOFF FROM SUBBASIN 8NA.
1447            BA   .0046
1448            LS              81       0
1449            UK     100     .03     .15     100
1450            RK     450     .03    .025            TRAP      20       6
                *
```

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

1451          KK   SR8NA
1452          KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB8NA.
1453          RS       1    STOR       0       0
1454          SV       0     .51    .816
1455          SQ       0       1      43
1456          SE    1791    1795    1796
              *

1457          KK    R8NB
1458          KM        ROUTE FLOW FROM CP8NA TO CP8NB.
1459          RS       1    FLOW
1460          RC    .025    .025    .025     300     .03
1461          RX       0      12      24      36      56      68      80      92
1462          RY       6       4       2       0       0       2       4       6
              *

1463          KK  SUB8NB
1464          KM        RUNOFF FROM SUBBASIN 8NB.
1465          BA   .0142
1466          LS              81       0
1467          UK     100     .03     .15     100
1468          RK    1150    .025    .025            TRAP      20       6
              *

1469          KK   CP8NB
1470          KM        ADD HYDROGRAPHS AT CP8NB.
1471          HC       2
              *

1472          KK   SR8NB
1473          KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB8NB.
1474          RS       1    STOR       0       0
1475          SV       0   .0124   1.754    2.45
1476          SQ       0       2       2      72
1477          SE    1784    1785    1790    1791
              *

1478          KK    R8NC
1479          KM        ROUTE FLOW FROM CP8NB TO CP8NC.
1480          RS       1    FLOW
1481          RC    .025    .025    .025     500     .03
1482          RX       0      12      24      36      56      68      80      92
1483          RY       6       4       2       0       0       2       4       6
              *

1484          KK  SUB8NC
1485          KM        RUNOFF FROM SUBBASIN 8NC.
1486          BA   .0182
1487          LS              81       0
1488          UK     100     .03     .15     100
1489          RK     900     .03    .025            TRAP      20       6
              *
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ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK   CP8NC
KM        ADD HYDROGRAPHS AT CP8NC.
HC        3
*

KK   SR8NC
KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB8NC.
RS        1    STOR       0       0
SV        0    .404   2.444    3.13   3.979
SQ        0      10      14     151    1004
SE     1771    1775    1780    1781    1782
*

KK      R9N
KM        ROUTE FLOW FROM CP8N TO CP9N.
RS        1    FLOW
RC     .025    .025    .025    1150    .025
RX        0       8      13      17      22      26      31      39
RY        4       2       2       0       0       2       2       4
*

KK    SUB9N
KM        RUNOFF FROM SUBBASIN 9N.
BA     .055
LS               77      28
UK      100    .008     .15     100
RK     1700     .01    .018            TRAP      50      20
*

KK     CP9N
KM        ADD HYDROGRAPHS AT CP9N
HC        2
*

KK     R10B
KM        ROUTE FLOW FROM CP9N TO CP10B.
RS        1    FLOW
RC      .03     .03     .03     400     .02
RX        0       8      16      24      29      37      45      53
RY        6       4       2       0       0       2       4       6
*

KK   SUB10B
KM        RUNOFF FROM SUBBASIN 10B.
BA     .028
LS               77      42
UK      100    .015     .15     100
RK      350    .008    .018            TRAP      50      20
RK      600    .008    .025            TRAP      10       4
*
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1527           KK   CP10B
1528           KM        ADD HYDROGRAPHS AT CP10B
1529           HC       2
               *

1530           KK   R11NA
1531           KM        ROUTE FLOW FROM CP10B TO CP11NA.
1532           RS       1    FLOW
1533           RC     .03     .03     .03     200     .04
1534           RX       0       8      16      24      29      37      45      53
1535           RY       6       4       2       0       0       2       4       6
               *

1536           KK  UB11NA
1537           KM        RUNOFF FROM SUBBASIN 11NA.
1538           BA   .0076
1539           LS              81       0
1540           UK     100    .025     .15     100
1541           RK     500     .03    .025            TRAP      30       6
               *

1542           KK  CP11NA
1543           KM        ADD HYDROGRAPHS AT CP11NA
1544           HC       2
               *

1545           KK  SR11NA
1546           KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB11NA.
1547           RS       1    STOR       0       0
1548           SV       0   .0462   1.425   2.480   3.109   3.856
1549           SQ       0      10      27      27      27     237
1550           SE    1734    1735    1740    1742    1743    1744
               *

1551           KK   R11NB
1552           KM        ROUTE FLOW FROM CP11NA TO CP11NB.
1553           RS       1    FLOW
1554           RC    .025    .025    .025     250     .03
1555           RX       0      12      24      36      56      68      80      92
1556           RY       6       4       2       0       0       2       4       6
               *

1557           KK  UB11NB
1558           KM        RUNOFF FROM SUBBASIN 11NB.
1559           BA   .0078
1560           LS              81       0
1561           UK     100     .04     .15     100
1562           RK     700    .025    .025            TRAP      30       6
               *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1563          KK  CP11NB
1564          KM        ADD HYDROGRAPHS AT CP11NB
1565          HC       2
              *

1566          KK  SR11NB
1567          KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB11NB.
1568          RS       1    STOR       0       0
1569          SV       0    1.56   2.586
1570          SQ       0      27     111
1571          SE    1732    1737    1738
              *

1572          KK   R11NC
1573          KM        ROUTE FLOW FROM CP11NB TO CP11NC.
1574          RS       1    FLOW
1575          RC    .025    .025    .025     300     .03
1576          RX       0      12      24      36      56      68      80      92
1577          RY       6       4       2       0       0       2       4       6
              *

1578          KK  UB11NC
1579          KM        RUNOFF FROM SUBBASIN 11NC.
1580          BA   .0069
1581          LS              81       0
1582          UK     100     .03     .15     100
1583          RK     650    .028    .025            TRAP      20       5
              *

1584          KK  C11NC1
1585          KM        ADD HYDROGRAPHS AT CP11NC.1
1586          HC       2
              *

1587          KK  SUB10A
1588          KM        RUNOFF FROM SUBBASIN 10A.
1589          BA    .030
1590          LS              77      42
1591          UK     100    .015     .15     100
1592          RK     350    .008    .018            TRAP      50      20
1593          RK     800    .008    .025            TRAP      10       4
              *

1594          KK   R12NB
1595          KM        ROUTE FLOW FROM CP10A TO CP12NB.
1596          RS       1    FLOW
1597          RC    .025    .025    .025     400     .03
1598          RX       0      12      24      36      46      58      70      82
1599          RY       6       4       2       0       0       2       4       6
              *
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1600           KK  UB12NA
1601           KM        RUNOFF FROM SUBBASIN 12NA.
1602           BA   .0153
1603           LS              81       0
1604           UK     150    .025     .15     100
1605           RK     650    .017    .025             TRAP      30       6
               *

1606           KK  SR12NA
1607           KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB1NA.
1608           RS       1    STOR       0       0
1609           SV       0    2.16   3.426   5.071
1610           SQ       0       1       2     142
1611           SE    1741    1745    1746    1747
               *

1612           KK   R12NA
1613           KM        ROUTE FLOW FROM CP12NA TO CP12NB.
1614           RS       1    FLOW
1615           RC    .025    .025    .025     550    .025
1616           RX       0      12      24      36      46      58      70      82
1617           RY       6       4       2       0       0       2       4       6
               *

1618           KK  UB12NB
1619           KM        RUNOFF FROM SUBBASIN 12NB.
1620           BA   .0157
1621           LS              81       0
1622           UK     150    .025     .15     100
1623           RK     650    .017    .025             TRAP      30       6
               *

1624           KK  CP12NB
1625           KM        ADD 3 HYDROGRAPHS AT CP12NB
1626           HC       3
               *

1627           KK  SR12NB
1628           KM        STOAGE ROUTE THROUGH FAIRWAY DETENTION AREA IN SUB12NB.
1629           RS       1    STOR       0       0
1630           SV       0    .922    4.24    7.53
1631           SQ       0       2       2     142
1632           SE    1741    1745    1746    1747
               *

1633           KK  R11NC2
1634           KM        ROUTE FLOW FROM CP12NA TO CP11NC.
1635           RS       1    FLOW
1636           RC    .025    .025    .025     550     .01
1637           RX       0      12      24      36      46      58      70      82
1638           RY       6       4       2       0       0       2       4       6
               *
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1639        KK  CP11NC
1640        KM        ADD HYDROGRAPHS  AT CP11NC
1641        HC       2
            *

1642        KK  SR11NC
1643        KM        ROUTE FLOW THROUGH RETENTION BASIN RT11NC.  18" PIPE OUTFLOW WILL
1644        KM        BLEED FLOWS TO DRAIN THE BASIN AFTER THE STORM HAS PASSED.
1645        RS       1    STOR       0       0
1646        SV       0   1.665   2.303   3.062
1647        SQ       0      27     111     344
1648        SE    1730    1735    1736    1737
            *

1649        KK   R16NC
1650        KM        ROUTE FLOW FROM CP11NC TO CP16NC.
1651        RS       1    FLOW
1652        RC    .035    .035   0.035     950    .025
1653        RX       0       8      13      17      22      26      31      39
1654        RY       4       2       2       0       0       2       2       4
            *

1655        KK  UB16NC
1656        KM        RUNOFF FROM SUBBASIN 16NC.
1657        BA   .0337
1658        LS              77      42
1659        UK     100    .015     .15     100
1660        RK    1600    .015    .022            TRAP      50      20
            *

1661        KK  CP16NC
1662        KM        ADD HYDROGRAPHS  AT CP16NC
1663        HC       2
            *

1664        KK  R16NC1
1665        KM        ROUTE FLOW FROM CP16NC TO CP16NC1.
1666        RS       1    FLOW
1667        RC     .03     .03     .03     550    .013
1668        RX       0      16      26      34      44      58      68      86
1669        RY       6       2       2       0       0       2       2       6
            *

1670        KK  C16NC1
1671        KM        ADD HYDROGRAPHS  AT CP16NC1.
1672        HC       2
            *

1673        KK   R15N1
1674        KM        ROUTE FLOW FROM CP16NC1 TO CP15N1.
1675        RS       1    FLOW
1676        RC    .035    .035    .035     600    .013
1677        RX       0      16      26      34      54      68      78      96
1678        RY       6       2       2       0       0       2       2       6
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1679          KK    PC2
1680          KM       RUNOFF FROM SUBBASIN PC2.
1681          BA   .054
1682          LS             77      10
1683          UK    100    .015     .15     100
1684          RK   2700     .01     .03             TRAP      50       4
              *

1685          KK  CP15N1
1686          KM       ADD HYDROGRAPHS  AT CP15N1
1687          HC      2
              *

1688          KK   SRPC2
1689          KM       STORAGE ROUTE THRU DETENTION BASINS IN POWER CORRIDOR THIS IS THE TOTAL
1690          KM       FLOW REACHING THE UPSTREAM SIDE OF THE THOMPSON PEAK PARKWAY BRIDGE
1691          RS      1    STOR       0       0
1692          SV      0    1.02    2.70    4.48     5.8     6.9
1693          SQ      0       0     150     350     550     850
1694          SE   1730    1731    1732    1733    1734    1735
              *

1695          KK  UB17NA
1696          KM       RUNOFF FROM SUBBASIN SUB17NA.
1697          BA  .00979
1698          LS             81       0
1699          UK    150    .025     .05     100
1700          RK    960   .0292    .025             TRAP      30      50
              *

1701          KK  SR17NA
1702          KM       STORAGE ROUTE THROUGH DETENTION BASIN SR17NA.
1703          RS      1    STOR       0       0
1704          SV      0   .0078    .241    .523    1.00   1.735
1705          SQ      0       1       1       1    17.4     251
1706          SE 1755.2    1756    1758    1759    1760    1761
              *

1707          KK   R17NB
1708          KM       ROUTE FLOW FROM SR17NA TO CP17NB.
1709          RS      1    FLOW
1710          RC   0.03    0.03    0.03     280  0.0286
1711          RX      0      10      20      35      70      85      90     100
1712          RY   1757  1756.8  1756.6    1756    1756    1757    1758    1759
              *

1713          KK  UB17NB
1714          KM       RUNOFF FROM SUBBASIN SUB17NB.
1715          BA  .0111
1716          LS             81       0
1717          UK    150    .025     .05     100
1718          RK   1200   .0217    .025             TRAP      30      50
              *
```

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

1719          KK  CP17NB
1720          KM        ADD HYDROGRAPHS AT SUB17NB.
1721          HC       2
              *

1722          KK  SR17NB
1723          KM        STORAGE ROUTE THROUGH DETENTION BASIN SR17NB.
1724          RS       1    STOR       0       0
1725          SV       0   .0113   .1469    .635   .9795   1.509   2.254   3.243
1726          SQ       0       1       1       1       1       1    38.2     189
1727          SE  1751.5    1752    1753    1755    1756    1757    1758    1759
              *

1728          KK    R17A
1729          KM        ROUTE FLOW FROM SR17NB TO CP17A.
1730          RS       1    FLOW
1731          RC    0.03    0.03    0.03     280   0.033
1732          RX       0      15      18      20      24      27      30      35
1733          RY    1755    1754    1753    1752    1752    1753    1754    1755
              *

1734          KK  SUB17A
1735          KM        RUNOFF FROM SUBBASIN SUB17A.
1736          BA  .00792
1737          LS              77      34
1738          UK      75     .03     .05     100
1739          RK    1500     .02    .025            TRAP       8       4
              *

1740          KK  CP17A1
1741          KM        ADD HYDROGRAPHS AT CP17A1.
1742          HC       2
              *

1743          KK  UB17NC
1744          KM        RUNOFF FROM SUBBASIN SUB17NC.
1745          BA  .00559
1746          LS              77      12
1747          UK      75     .03     .05     100
1748          RK     910   .0187    .025            TRAP       8       4
              *

1749          KK   CP17A
1750          KM        ADD ALL HYDROGRAPHS AT CP17A.
1751          HC       2
              *

1752          KK    R15N
1753          KM        ROUTE FLOW FROM CP17A TO CP15N.
1754          RS       1    FLOW
1755          RC    .035    .035    .035    1950    .025
1756          RX       0       8      13      17      22      26      31      39
1757          RY       4       2       2       0       0       2       2       4
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1758          KK  SUB15N
1759          KM       RUNOFF FROM SUBBASIN 15N.
1760          BA  .0391
1761          LS              77      68
1762          UK     100     .01     .15     100
1763          RK     400    .008    .018            TRAP      50      20
1764          RK    1700    .015    .025            TRAP      10       4
              *

1765          KK   CP15N
1766          KM       ADD HYDROGRAPHS  AT CP15N
1767          HC       2
              *

1768          KK   R15N2
1769          KM       ROUTE FLOW FROM CP15N TO CP15N1.
1770          RS       1    FLOW
1771          RC     .02     .02     .02     700    .013
1772          RX       0       8      13      17      22      26      31      39
1773          RY       6       2       2       0       0       2       2       6
              *

1774          KK  CP15N2
1775          KM       ADD HYDROGRAPHS  AT CP15N1
1776          KM       THIS IS THE INTERIM OUTFLOW DISCHARGE TO NATURAL WASH.
1777          HC       2  1.1611
              *

1778          KK   R15N2
1779          KM       ROUTE 15N2 IS ADDED BY GVSCE TO ROUTE THE HYDROGRAPH FROM CP15N2 TO THE
1780          KM       POWER LINE CHANNEL CROSSING AT HAYDEN RD.
1781          KM
1782          KM       ROUTE FLOW FROM CP15N2 TO CPC3A.
1783          RS       1    FLOW
1784          RC    .035    .035    .035    2200    .013
1785          RX       0      16      26      34      64      78      88     106
1786          RY       6       2       2       0       0       2       2       6
              *

1787          KK    DPC3
1788          KM       THIS OPERATION IS ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
1789          KM       UNION HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
1790          KM
1791          KM       RETRIEVE DIVERTED FLOW
1792          DR   BPC3T
              *

1793          KK   CPC3A
1794          KM       COMBINE CPC3A IS ADDED BY GVSCE TO ESTIMATE THE TOTAL DISCHARGE AT THE
1795          KM       POWER LINE CHANNEL CROSSING AT HAYDEN RD.
1796          KM
1797          KM       COMBINE ROUTED HYDROGRAPH FROM CP15N2 WITH HYDROGRAPH FROM CPC3
1798          HC       2  1.3446
              *
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LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1799           KK   RPC3A
1800           KM        ROUTE PC3A IS ADDED BY GVSCE TO ROUTE THE HYDROGRAPH FROM CPC3A VIA
1801           KM        THE POWER LINE CHANNEL.
1802           KM
1803           KM        ROUTE FLOW FROM CP15N2 TO CPC3A.
1804           RS        1    FLOW
1805           RC     .035    .035    .035    1100    .013
1806           RX        0      16      26      34      64      78      88     106
1807           RY        6       2       2       0       0       2       2       6
               *

1808           KK    DPC4
1809           KM        THIS OPERATION IS ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
1810           KM        UNION HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
1811           KM
1812           KM        RETRIEVE DIVERTED FLOW
1813           DR   BPC4T
               *

1814           KK   CPC4A
1815           KM        COMBINE CPC4A IS ADDED BY GVSCE TO ESTIMATE THE TOTAL DISCHARGE IN THE
1816           KM        POWER LINE CHANNEL
1817           KM
1818           KM        COMBINE ROUTED HYDROGRAPH FROM CPC3A WITH HYDROGRAPH FROM CPC4
1819           HC        2  1.9946
               *

1820           KK   RPC4A
1821           KM        ROUTE PC4A IS ADDED BY GVSCE TO ROUTE THE HYDROGRAPH FROM CPC4A TO THE
1822           KM        POWER LINE CHANNEL CROSSING AT HUALAPAI RD.
1823           KM
1824           KM        ROUTE FLOW FROM CPC4A TO CPC5.
1825           RS        1    FLOW
1826           RC     .035    .035    .035    1900    .013
1827           RX        0      16      26      34      64      78      88     106
1828           RY        6       2       2       0       0       2       2       6
               *

1829           KK  DPC4AT
1830           KM        DIVERT PC4A IS ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE UNION
1831           KM        HILLS DETENTION BASIN VIAL THE POWER LINE CHANNEL.
1832           KM
1833           KM        DIVERT 100% OF FLOW
1834           DT  BPC4AT
1835           DI        0   10000
1836           DQ        0   10000
               *

1837           KK  SUB1-2
1838           KM        RUNOFF FROM SUB 1 AND 2, SOUTH COURSE MODEL
1839           BA   .0558
1840           LS               77      68
1841           UK      200    .010     .15     100
1842           RK     1370    .027    .015            TRAP      50      20
```

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

1843           KK  GCRB18
1844           KM        RUNOFF FROM GOLF COURSE CONTRIBUTING TO RETENTION BASIN AT HOLE NO. 18
1845           KM        AND HOLE NO. 10, SOUTH COURSE
1846           BA    .012
1847           LS              81       0
1848           UK     200    .025     .15     100
1849           RK     300    .016    .025            TRAP      10       4
               *

1850           KK  CPRET1
1851           KM        COMBINE HYDROGRAPHS AT RETENTION BASINS ON HOLE 18 & 10
1852           HC       2
               *

1853           KK   SR18S
1854           KM        STORAGE ROUTE THRU RETENTION BASIN AT HOLE 18, SOUTH COURSE
1855           RS       1    STOR       0       0
1856           SV       0  1.7635  5.7722  12.174  21.337  28.849  30.151      32
1857           SE    1725    1730    1735    1740    1745    1748    1749    1750
1858           SQ       0       0       0       0       0      42     386     900
               *

1859           KK   SUB5S
1860           KM        RUNOFF FROM SUB 5S
1861           BA   .0263
1862           LS              77      31
1863           UK     100    .010     .15     100
1864           RK    1280    .007    .015            TRAP      50      20
               *

1865           KK  GC1216
1866           KM        RUNOFF FROM SOUTH GOLF COURSE HOLES 12, 16, AND 17
1867           BA   .0365
1868           LS              81       0
1869           UK     200    .025     .15     100
1870           RK    2200    .024    .025            TRAP      10       4
               *

1871           KK  GC1415
1872           KM        RUNOFF FROM SOUTH GOLF COURSE HOLES 13, 14, 15 AND RETENTION
1873           BA    .045
1874           LS              81       0
1875           UK     200    .025     .15     100
1876           RK    1300    .022    .025            TRAP      10       4
               *

1877           KK   SUB6S
1878           KM        RUNOFF FROM SUB BASIN 6, SOUTH COURSE
1879           BA    .021
1880           LS              77      42
1881           UK     100    .010     .15     100
1882           RK    2150    .013    .025            TRAP      50      20
               *
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1883            KK   SUB7S
1884            KM        RUNOFF FROM SUB BASIN 7, SOUTH COURSE
1885            BA    .027
1886            LS               77      42
1887            UK     100    .010     .15     100
1888            RK    2080    .023    .025            TRAP      50      20
                *

1889            KK  CPRET2
1890            KM        COMBINE HYDROGRAPHS AT RETENTION BASIN 2, SOUTH COURSE
1891            HC       5
                *

1892            KK  SRRET2
1893            KM        STORAGE THRU RETENTION BASIN NO. 2, SOUTH COURSE
1894            RS       1    STOR       0       0
1895            SV       0    .617   3.474   9.858  20.063  35.353  52.685  57.749      62
1896            SE    1670    1675    1680    1685    1690    1695    1699    1700    1701
1897            SQ       0       0       0       0       0       0      32     386     594
                *
                *       NO FLOW RELEASED FROM RETENTION BASIN
                *

1898            KK   CLEAR
1899            KM        THIS OPERATION IS ADDED BY GVSCE
1900            KM
1901            KM        CLEAR HYDROGRAPHS FROM THE STACK
1902            HC       4
                *

1903            KK   SUB8S
1904            KM        RUNOFF FROM SUB BASIN 8, SOUTH COURSE
1905            BA   .0256
1906            LS               77      42
1907            UK     100    .010     .15     100
1908            RK    1600    .015    .025            TRAP      50      20
                *

1909            KK   RGC36
1910            KM        ROUTE SUB8S TO CPGC36
1911            RS       1    FLOW
1912            RC    .055    .045    .055     850     .02
1913            RX       0      16      26      30      40      44      54      70
1914            RY       6       2       2       0       0       2       2       6
                *

1915            KK    GC36
1916            KM        RUNOFF FROM SOUTH COURSE HOLES 3, 6, AND NORTH HALF OF HOLE 4.
1917            BA   .0406
1918            LS               81       0
1919            UK     200    .025     .15     100
1920            RK    2350    .015    .035            TRAP      10       4
                *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1921          KK  C1GC36
1922          KM        COMBINE SUBS 8 AND GC36
1923          HC       2
              *
1924          KK   SUB9S
1925          KM        RUNOFF FROM SUB BASIN 9, SOUTH COURSE
1926          BA    .021
1927          LS              77      53
1928          UK     100    .010     .15     100
1929          RK    1100    .013    .025            TRAP      50      20
              *
1930          KK     R9S
1931          KM        ROUTE SUB9S TO CPGC36
1932          RS       1    FLOW
1933          RC    .035    .035    .035     500     .02
1934          RX       0       8      12      16      18      22      26      30
1935          RY       6       4       3       2       2       3       4       6
              *
1936          KK  CPGC36
1937          KM        COMBINE SUBS 8 AND 9 SOUTH AND GC36
1938          HC       2
              *
1939          KK  SRGC36
1940          KM        STORAGE THRU DETENTION BASIN ON GC36
1941          RS       1    STOR       0       0
1942          SV       0    0.85     1.0
1943          SE    1664    1668    1669
1944          SQ       0      20     205
              *
1945          KK   SUB7A
1946          KM        RUNOFF FROM SUB7A, SOUTH COURSE EAST SIDE ADJACENT TO PIMA ROAD
1947          BA   .0092
1948          LS              77      42
1949          UK     100    .025     .15     100
1950          RK     950    .015    .025            TRAP      50      20
              *
1951          KK    SR7A
1952          KM        STORAGE THRU DETENTION BASIN ON SUB7A
1953          RS       1    STOR       0       0
1954          SV       0     .68      .8
1955          SE    1700    1703    1704
1956          SQ       0      10     150
              *
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1957            KK    R10S
1958            KM        ROUTE FLOW FROM CP7A TO CP10S
1959            RS       1    FLOW
1960            RC    .035    .035    .035    1400    .015
1961            RX       0       8      12      16      18      22      26      30
1962            RY       6       4       3       2       2       3       4       6
                *

1963            KK  SUB10S
1964            KM        RUNOFF FROM SUB BASIN 10, SOUTH COURSE
1965            BA   .0248
1966            LS              77      53
1967            UK     100    .010     .15     100
1968            RK    1150    .020    .025            TRAP      50      20
                *

1969            KK   CP10S
1970            KM        COMBINE HYDROGRAPHS AT CP10 SOUTH COURSE
1971            HC       2
                *

1972            KK  SUB11S
1973            KM        RUNOFF FROM SUB11, SOUTH COURSE
1974            BA   .0234
1975            LS              77      68
1976            UK     100    .015    .018     100
1977            RK    1050    .015    .025            TRAP     100      20
                *

1978            KK    R11S
1979            KM        ROUTE 11S IS ADDED BY GVSCE TO ROUTE THE RUNOFF FROM SUB11S TO THE
1980            KM        POWER LINE CHANNEL CROSSING AT HUALAPAI DR ALONG HUALAPAI DR.
1981            KM
1982            KM        ROUTE FLOW FROM SUB11S TO CPC5.
1983            RS       1    FLOW
1984            RC    .035    .035    .035     900    .015
1985            RX       0       8      12      16      18      22      26      30
1986            RY       6       4       3       2       2       3       4       6
                *

1987            KK   C10SA
1988            KM        COMBINE 10SA IS ADDED BY GVSCE
1989            KM
1990            KM        COMBINE ROUTED HYDROGRAPH FROM 11S WITH HYDROGRAPH FROM CP10S
1991            HC       2
                *

1992            KK   R10SA
1993            KM        ROUTE 10SA IS ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE UNION
1994            KM        HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
1995            KM
1996            KM        ROUTE FLOW FROM C10SAS TO CPC5.
1997            RS       1    FLOW
1998            RC    .035    .035    .035     900    .015
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

                RX       0       8      12      16      18      22      26      30
                RY       6       4       3       2       2       3       4       6
                *

                KK   GC45
                KM       RUNOFF FROM SOUTH COURSE HOLES 4 AND 5
                BA   .0127
                LS              81       0
                UK     200    .015    .025     100
                RK     550    .015    .035            TRAP      10       4
                *

                KK     PC5
                KM        PC5 IS A SUBBASIN ADDED BY GVSCE TO ESTIMATE THE SURFACE RUNOFF FROM
                KM        THE POWER LINE CORRIDOR WHICH ENTERS THE POWER LINE CHANNEL
                KM
                KM        RUNOFF FROM SUBBASIN PC5.
                BA  0.0375
                LS              77       0
                UK     100    .015     .15     100
                RK    1900     .01     .03            TRAP      30       4
                *

                KK   DPC4A
                KM        THIS OPERATION IS ADDED BY GVSCE IN ORDER TO ROUTE RUNOFF TO THE
                KM        UNION HILLS DETENTION BASIN VIA THE POWER LINE CHANNEL.
                KM
                KM        RETRIEVE DIVERTED FLOW
                DR  BPC4AT
                *

                KK    CPC5
                KM        COMBINE PC5 IS ADDED BY GVSCE TO ESTIMATE THE TOTAL FLOW IN THE POWER
                KM        LINE CHANNEL AT THE HUALAPAI CROSSING
                KM
                KM        COMBINE ROUTED HYDROGRAPH FROM C10SA AND CPC4A WITH HYDROGRAPHS FROM
                KM        CGC45, SRGC36 AND PC5
                HC       5  2.1022
                *

                KK    RPC5
                KM        ROUTE PC5 IS ADDED BY GVSCE TO ROUTE THE HYDROGRAPH FROM PC5 TO THE
                KM        UNION HILLS DETENTION BASIN.
                KM
                KM        ROUTE FLOW FROM CPC5 TO C1I.
                RS       1    FLOW
                RC    .035    .035    .035    3300    .013
                RX       0      16      26      34      64      78      88     106
                RY       6       2       2       0       0       2       2       6
                *
                *    *******************  END GREYHAWK WATERSHED  ********************
                *
```

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


2038           KK   SCN5C
2039           KM     RUNOFF FROM SUBBASIN CN5C
2040           BA  0.2667
2041           LS             74      20
2042           UK     240  0.021    0.13     100
2043           RK    1200  0.018   0.045  0.0067    TRAP       0      45
2044           RK    5600  0.009   0.040            TRAP      15       3
               *

2045           KK    SCN6
2046           KM     RUNOFF FROM SUBBASIN CN6A
2047           BA  0.2597
2048           LS             74      85
2049           UK     180  0.019    0.13     100
2050           RK    1075  0.019   0.045  0.0066    TRAP       5       7
2051           RK    4430  0.013   0.040            TRAP       8      50
               *

2052           KK     D52
2053           KM     BRING BACK DIVERTED HYDROGRAPH FROM R52
2054           DR    B52T
               *

2055           KK    S53A
2056           KM     RUNOFF FROM SUBBASIN 53A
2057           BA  0.1692
2058           LS             74      11
2059           UK     300  0.022    0.13     100
2060           RK    1475  0.026   0.045  0.0111    TRAP       3       5
2061           RK    2700  0.021    0.04            TRAP      25       5
               *

2062           KK     C53
2063           KM     COMBINE ROUTED HYDROGRAPH FROM
2064           HC       2 8.0852
               *

2065           KK     R53
2066           KM     NORMAL DEPTH CHANNEL ROUTE FROM C53 TO C53A THROUGH PIMA CHANNEL
2067           RS       1   FLOW      -1
2068           RC   0.035  0.025   0.035    2360    0.01
2069           RX    1000   1020    1022    1034    1084    1096    1098    1118
2070           RY   111.4  106.4   106.3     100     100   106.3   106.4   111.4
               *

2071           KK   S53A1
2072           KM     RUNOFF FROM SUBBASIN 53A1
2073           BA  0.3384
2074           LS             74      12              74      30
2075           UK     300  0.022    0.13      70
2076           UK     150  0.027    0.13      30
2077           RK    1250  0.023   0.045  0.0087    TRAP       4       5
2078           RK    5650  0.017    0.04            TRAP      35       5
               *
```

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

2079           KK    C53A
2080           KM     COMBINE ROUTED HYDROGRAPH FROM
2081           HC       2  8.4236
               *

2082           KK     C1I
2083           KM     COMBINE ROUTED HYDROGRAPH FROM
2084           HC       4
               *

2085           KK     C1O
2086           KM     DETENTION BASIN AT UNION HILLS ROAD - NONREGULATORY STRUCTURE
2087           KM        OUTLET RATING CURVE - USING HY8 FOR A 78" RCP WITH A SLOPE OF 0.9%
2088           KM        7-ACRE-FEET OF STORAGE FOR SEDIMENTATION
2089           RS       1    STOR
2090           SV       0    0.36    0.82    1.42    2.23    3.01   37.59  123.30  222.97  337.88
2091           SV  362.56  387.54
2092           SE    1590    1591    1592    1593    1594    1595    1600    1605    1610    1615
2093           SE    1616    1617
2094           SQ       0      65     130     195     260     325     390     420     520     585
2095           SQ     650     690     828     966    1104    1242    1382
2096           SE  1590.0 1592.80 1594.36 1595.60 1596.80 1598.16 1599.79 1600.64 1604.03 1606.65
2097           SE  1615.0 1615.28 1615.72 1616.04 1616.26 1616.40 1616.50
               *
               *

2098           KK     RC1
2099           KM     NORMAL DEPTH CHANNEL ROUTE FROM C1I TO CIA
2100           RS       1    FLOW      -1
2101           RC   0.025   0.025   0.025    2300   0.013
2102           RX    1000    1008    1012    1016    1026    1030    1034    1042
2103           RY     104     102     101     100     100     101     102     104
               *

2104           KK     S54
2105           KM     RUNOFF FROM SUBBASIN 54
2106           BA  0.0853
2107           LS              74      22
2108           UK     300   0.017    0.13     100
2109           RK    3460   0.012   0.040            TRAP       5       2
               *

2110           KK   SCN6A
2111           KM     RUNOFF FROM SUBBASIN CN6A
2112           BA  0.1335
2113           LS              74      20
2114           UK     300   0.017    0.13     100
2115           RK    1050   0.017   0.045  0.0057    TRAP       8      20
2116           RK    2250   0.012   0.040            TRAP      10       4
```

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

2117          KK    C1A
2118          KM    COMBINE ROUTED HYDROGRAPH FROM  C10 WITH RUNOFF FROM SCN6A
2119          HC      3
              *
2120          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

  26        S30N
               V
               V
  35        R30N
               .
               .
  41           .           S31.1
               .               .
               .               .
  49       C31.1............
               V
               V
  52       R31.1
               .
               .
  58           .            S35N
               .               .
               .               .
  68           .               .------->   D35NL
  66           .           D35NR
               .               V
               .               V
  71           .           R35NR
               .               .
               .               .
  78           .               .           S36.2
               .               .               .
               .               .               .
  86           .           C36.2............
               .               .
               .               .
  92           .               .------->  D36.2L
  90           .          D36.2R
               .               V
               .               V
  95           .          R36.2R
               .               .
               .               .
 102           .               .           S34.1
               .               .               .
               .               .               .
 111      C34.1I.......................
               V
               V
 115      C34.1O
               V
               V
 128       R34.1
               .
               .
 134           .           S36.1
               .               .
```

```
                .                 .
141        C36.1............
                V
                V
144        R36.1
                .
                .
152             .                 .<-------   D35NL
150             .          B35NL
                .              V
                .              V
153             .          R35NL
                .              .
                .              .
162             .              .             .<-------   D36.2L
160             .              .        B36.2L
                .              .             V
                .              .             V
163             .              .        R36.2L
                .              .             .
                .              .             .
170             .              .             .          S36R1
                .              .             .              .
                .              .             .              .
178        C36R1.................................
                V
                V
183        R36R1
                .
                .
189             .          S36R2
                .              .
                .              .
196        C36R2............
                .
                .
199             .          S51.1
                .              .
                .              .
209             .              .------->   D51.1L
207             .          D51.1
                .              .
                .              .
212        C51.1I............
                V
                V
215        C51.1O
                .
                .
230             .              .<-------   D51.1L
228             .          B51.1L
                .              .
                .              .
231        C51.1A............
                V
                V
234        R51.1
                .
                .
242             .------->   B51.1T
```

```
240      D51.1T
              .
              .
245           .        52D4
              .           V
              .           V
251           .       52D4R
              .           .
              .           .
254           .           .       52D4B
              .           .           .
              .           .           .
260           .      52D5C1............
              .           .
              .           .
263           .           .       52D5A
              .           .           V
              .           .           V
269           .           .      52D5AR
              .           .           .
              .           .           .
272           .      52D5C2............
              .           V
              .           V
275           .       52D5R
              .           .
              .           .
278           .           .        52C3
              .           .           V
              .           .           V
284           .           .       52C3R
              .           .           .
              .           .           .
287           .           .           .       52C3B
              .           .           .           .
              .           .           .           .
293           .           .      2C3BC1............
              .           .           .
              .           .           .
296           .      2C3BC2............
              .           V
              .           V
299           .      52C3BR
              .           .
              .           .
302           .           .         51C
              .           .           .
              .           .           .
310           .           .           .------->  51C1DV
308           .           .       51C1D
              .           .           V
              .           .           V
313           .           .       51C1R
              .           .           .
              .           .           .
316           .           .           .        52C1
              .           .           .           .
              .           .           .           .
322           .           .       52C1C............
              .           .           V
```

```
                 .          .        V
325              .          .     52C1R
                 .          .        .
                 .          .        .
328              .          .        .         52C2A
                 .          .        .             .
                 .          .        .             .
334              .          .    52C2AC............
                 .          .        .
                 .          .        .
337              .          .        .         52C2B
                 .          .        .             .
                 .          .        .             .
343              .          .    52C2BC............
                 .          .        V
                 .          .        V
346              .          .    52C2BR
                 .          .        .
                 .          .        .
349              .          .        .         52C2C
                 .          .        .             .
                 .          .        .             .
355              .          .    52C2CC............
                 .          .        V
                 .          .        V
358              .          .     52C2R
                 .          .        .
                 .          .        .
361              .          .        .          52C4
                 .          .        .             .
                 .          .        .             .
367              .          .    52C4C1............
                 .          .        .
                 .          .        .
370              .     52C4C2............
                 .          V
                 .          V
373              .      52C4R
                 .          .
                 .          .
376              .          .     52C13
                 .          .        .
                 .          .        .
384              .          .        .------->    STORM
382              .          .    2C13DV
                 .          .        .
                 .          .        .
387              .          .        .         52C15
                 .          .        .             .
                 .          .        .             .
393              .          .    2C15C1............
                 .          .        .
                 .          .        .
396              .     2C15C2............
                 .          V
                 .          V
399              .     52C15R
                 .          .
                 .          .
402              .          .    52C14A
```

```
              .         .         .
              .         .         .
408           .      2C14AC..........
              .         V
              .         V
411           .      2C14AR
              .         .
              .         .
416           .         .         .<-------  51C1DV
414           .         .      51C1DV
              .         .         .
              .         .         .
419           .         .         .------->  51C2DV
417           .         .       51C2D
              .         .         V
              .         .         V
422           .         .       51C2R
              .         .         .
              .         .         .
425           .         .         .       52C5
              .         .         .         .
              .         .         .         .
431           .         .       52C5C..........
              .         .         V
              .         .         V
434           .         .       52C5R
              .         .         .
              .         .         .
437           .         .         .       52C6
              .         .         .         .
              .         .         .         .
443           .         .       52C6C..........
              .         .         V
              .         .         V
446           .         .       52C6R
              .         .         .
              .         .         .
451           .         .         .         .<-------  51C2DV
449           .         .         .      51C2DV
              .         .         .         V
              .         .         .         V
452           .         .         .       51C3R
              .         .         .         .
              .         .         .         .
455           .         .         .         .        51B
              .         .         .         .         .
              .         .         .         .         .
463           .         .         .         .         .------->  51B1DV
461           .         .         .         .       51B1D
              .         .         .         .         V
              .         .         .         .         V
466           .         .         .         .       51B1R
              .         .         .         .         .
              .         .         .         .         .
469           .         .         .         .         .        52C7
              .         .         .         .         .         .
              .         .         .         .         .         .
475           .         .         .       52C7C.....................
              .         .         .         V
              .         .         .         V
```

```
478           .           .           .       52C7R
              .           .           .           .
              .           .           .           .
483           .           .           .           .           .<-------  51B1DV
481           .           .           .           .      51B1DV
              .           .           .           .           .
              .           .           .           .           .
486           .           .           .           .           .------->  51B2DV
484           .           .           .           .       51B2D
              .           .           .           .           V
              .           .           .           .           V
489           .           .           .           .       51B2R
              .           .           .           .           .
              .           .           .           .           .
492           .           .           .           .           .        52C8
              .           .           .           .           .           .
              .           .           .           .           .           .
498           .           .           .           .       52C8C............
              .           .           .           .           V
              .           .           .           .           V
501           .           .           .           .       52C8R
              .           .           .           .           .
              .           .           .           .           .
504           .           .           .      52C9C1............
              .           .           .           V
              .           .           .           V
507           .           .           .      52C9R1
              .           .           .           .
              .           .           .           .
510           .           .           .           .        52C9
              .           .           .           .           .
              .           .           .           .           .
516           .           .           .      52C9C2............
              .           .           .           V
              .           .           .           V
519           .           .           .      52C9R2
              .           .           .           .
              .           .           .           .
522           .           .      2C10C1............
              .           .           V
              .           .           V
525           .           .      2C10R1
              .           .           .
              .           .           .
528           .           .           .       52C10
              .           .           .           .
              .           .           .           .
534           .           .      2C10C2............
              .           .           .
              .           .           .
537           .           .           .       52C11
              .           .           .           V
              .           .           .           V
543           .           .           .      2C11R1
              .           .           .           .
              .           .           .           .
548           .           .           .           .           .<-------  STORM
546           .           .           .           .      52C13D
              .           .           .           .           .
              .           .           .           .           .
```

```
549      .       .       .     52C11C............
         .       .       .           V
         .       .       .           V
552      .       .       .     2C11CR
         .       .       .           .
         .       .       .           .
555      .       .    2C11C2............
         .       .       V
         .       .       V
558      .       .    2C11R2
         .       .       .
         .       .       .
561      .       .       .      52C12
         .       .       .           .
         .       .       .           .
567      .       .    52C12C............
         .       .       V
         .       .       V
570      .       .    52C12R
         .       .       .
         .       .       .
573      .       .       .     52C14B
         .       .       .           .
         .       .       .           .
579      .       .    C14BC1............
         .       .       .
         .       .       .
582      .    C14BC2............
         .       V
         .       V
585      .    52C14R
         .       .
         .       .
590      .       .       .<-------  51B2DV
588      .       .    51B2DV
         .       .       .
         .       .       .
593      .       .       .------->  51B3DV
591      .       .     51B3D
         .       .       V
         .       .       V
596      .       .     51B3R
         .       .       .
         .       .       .
599      .       .       .       52B1
         .       .       .           .
         .       .       .           .
605      .       .     52B1C............
         .       .       V
         .       .       V
608      .       .     52B1R
         .       .       .
         .       .       .
613      .       .       .           .<-------  51B3DV
611      .       .       .     51B3DV
         .       .       .           .
         .       .       .           .
616      .       .       .           .------->  51B4DV
614      .       .       .      51B4D
         .       .       .           V
```

```
              .           .            .           V
619           .           .            .      51B4R1
              .           .            .           .
              .           .            .           .
622           .           .      52B2C1............
              .           .            V
              .           .            V
625           .           .      52B2R1
              .           .            .
              .           .            .
628           .           .            .        52B2
              .           .            .           .
              .           .            .           .
634           .           .      52B2C2............
              .           .            V
              .           .            V
637           .           .      52B2R2
              .           .            V
              .           .            V
640           .           .      52B3R1
              .           .            .
              .           .            .
643           .           .            .        52B3
              .           .            .           .
              .           .            .           .
649           .           .      52B3C2............
              .           .            V
              .           .            V
652           .           .      52B3R2
              .           .            .
              .           .            .
655           .           .            .        52B4
              .           .            .           .
              .           .            .           .
661           .           .       52B4C............
              .           .            V
              .           .            V
664           .           .       52B4R
              .           .            .
              .           .            .
667           .           .            .        52B5
              .           .            .           .
              .           .            .           .
673           .           .      52B5C1............
              .           .            .
              .           .            .
676           .      52B5C2............
              .           V
              .           V
679           .       52B5R
              .           .
              .           .
684           .           .            .<-------  51B4DV
682           .           .      51B4DV
              .           .            .
              .           .            .
687           .           .            .------->  51B5DV
685           .           .       51B5D
              .           .            V
              .           .            V
```

```
690       .      .      51B5R
          .      .         .
          .      .         .
695       .      .         .          .<-------  51B5DV
693       .      .         .    51B5DV
          .      .         .          .
          .      .         .          .
698       .      .         .          .------->  51B6DV
696       .      .         .     51B6D
          .      .         .          V
          .      .         .          V
701       .      .         .     51B6R
          .      .         .          .
          .      .         .          .
706       .      .         .          .          .<-------  51B6DV
704       .      .         .          .    51B6DV
          .      .         .          .          .
          .      .         .          .          .
709       .      .         .          .          .------->  51B7DV
707       .      .         .          .     51B7D
          .      .         .          .          V
          .      .         .          .          V
712       .      .         .          .    51B7R1
          .      .         .          .          .
          .      .         .          .          .
715       .      .     51B7C.......................
          .      .         V
          .      .         V
718       .      .    51B7R2
          .      .         .
          .      .         .
721       .      .         .      52B6
          .      .         .          .
          .      .         .          .
727       .      .     52B6C............
          .      .         V
          .      .         V
730       .      .     52B6R
          .      .         .
          .      .         .
733       .      .         .      52B7
          .      .         .          .
          .      .         .          .
739       .      .    52B7C1............
          .      .         .
          .      .         .
742       .  52B7C2............
          .      .
          .      .
745       .      .      52A2
          .      .         .
          .      .         .
751       .  52A2C2............
          .      .
          .      .
756       .      .         .<-------  51B7DV
754       .      .    51B7DV
          .      .         V
          .      .         V
757       .      .     51B8R
```

```
                  .          .          .
                  .          .          .
760               .          .          .        52A1
                  .          .          .          .
                  .          .          .          .
766               .          .     52A1C............
                  .          .          .
                  .          .          .
771               .          .          .          .<-------  B51.1T
769               .          .          .      D51.1
                  .          .          .          .
                  .          .          .          .
772               .          .       C52A............
                  .          .          V
                  .          .          V
776               .          .       R52A
                  .          .          .
                  .          .          .
782               .        C52............
                  .          V
                  .          V
786               .        R52
                  .          .
                  .          .
794               .          .------->   B52T
792               .       D52T
                  .          .
                  .          .
797          CLEAR............
                  .
                  .
800               .        37A
                  .          .
                  .          .
817               .          .------->   37AW
806               .       37AE
                  .          V
                  .          V
820               .      37AE1
                  .          .
                  .          .
827               .          .      SUB5N
                  .          .          .
                  .          .          .
834               .       CP5N............
                  .          V
                  .          V
837               .      RET5N
                  .          V
                  .          V
844               .      R6N.1
                  .          .
                  .          .
852               .          .      SUB6B
                  .          .          V
                  .          .          V
858               .          .       SR6B
                  .          .          .
                  .          .          .
864               .      CP6.1............
```

```
              .       .
              .       .
 867          .       .      SUB1N
              .       .          V
              .       .          V
 873          .       .       R2NA
              .       .          .
              .       .          .
 879          .       .          .      SUB2NA
              .       .          .           .
              .       .          .           .
 885          .       .      CP2NA............
              .       .          V
              .       .          V
 888          .       .      SR2NA
              .       .          V
              .       .          V
 894          .       .       R2NB
              .       .          .
              .       .          .
 900          .       .          .      SUB2NB
              .       .          .           .
              .       .          .           .
 906          .       .      CP2NB............
              .       .          V
              .       .          V
 909          .       .      SR2NB
              .       .          V
              .       .          V
 915          .       .      RCP4N
              .       .          .
              .       .          .
 921          .       .          .       SUB6N
              .       .          .           V
              .       .          .           V
 927          .       .          .       RET6N
              .       .          .           V
              .       .          .           V
 933          .       .          .     RCP4N1
              .       .          .           .
              .       .          .           .
 939          .       .     CP4N.1............
              .       .          .
              .       .          .
 942          .       .          .       SUB3N
              .       .          .           V
              .       .          .           V
 948          .       .          .       RET3N
              .       .          .           V
              .       .          .           V
 955          .       .          .         R4N
              .       .          .           .
              .       .          .           .
 961          .       .     CP4N.2............
              .       .          .
              .       .          .
 964          .       .          .       SUB4N
              .       .          .           .
              .       .          .           .
 970          .       .       CP4N............
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               .           .           V
               .           .           V
 973           .           .         R6N
               .           .           .
               .           .           .
 979           .           .           .         SUB6A
               .           .           .           .
               .           .           .           .
 985           .           .       CP6.2............
               .           .           .
               .           .           .
 988           .        CP6N............
               .           V
               .           V
 991           .       RCP6N
               .           .
               .           .
 997           .           .       SUB3C
               .           .           .
               .           .           .
1003           .        CP3C............
               .           V
               .           V
1006           .         R3C
               .           .
               .           .
1014           .           .      GC1018
               .           .           .
               .           .           .
1020           .           .           .         GC1-9
               .           .           .           .
               .           .           .           .
1026           .           .           .           .         SUB3S
               .           .           .           .           .
               .           .           .           .           .
1032           .        CP3S....................................
               .           V
               .           V
1035           .        RT3S
               .           .
               .           .
1041           .           .       SUB4S
               .           .           V
               .           .           V
1047           .           .        RT4S
               .           .           .
               .           .           .
1053           .           .           .         GC2-8
               .           .           .           .
               .           .           .           .
1059           .      1PGC28........................
               .           .
               .           .
1062           .           .      SUB3D3
               .           .           .
               .           .           .
1068           .      CPGC28............
               .           V
               .           V
1071           .      SRGC28
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                     .          V
                     .          V
1077                 .       RT7S
                     .          .
                     .          .
1083                 .          .          GC7
                     .          .            .
                     .          .            .
1089                 .       CP7S............
                     .          .
                     .          .
1097                 .          .------->    B7ST
1092                 .       D7ST
                     .          .
                     .          .
1100              CLEAR............
                     .
                     .
1103                 .     SUB3D1
                     .          V
                     .          V
1108                 .      RD1B1
                     .          .
                     .          .
1114                 .          .       SUB3B1
                     .          .            .
                     .          .            .
1119                 .      CP3B1............
                     .          V
                     .          V
1122                 .      RB13F
                     .          .
                     .          .
1128                 .          .        SUB3F
                     .          .            .
                     .          .            .
1134                 .       CP3F............
                     .          .
                     .          .
1137                 .          .       SUB3B2
                     .          .            V
                     .          .            V
1142                 .          .        RB2E1
                     .          .            V
                     .          .            V
1148                 .          .        RB2E2
                     .          .            .
                     .          .            .
1154                 .          .            .      SUB3E1
                     .          .            .           .
                     .          .            .           .
1159                 .          .       1CPE31............
                     .          .            .
                     .          .            .
1162                 .          .            .      SUB3D2
                     .          .            .           V
                     .          .            .           V
1167                 .          .            .       RD2E2
                     .          .            .           .
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1173     .     .     .     .     SUB3E2
         .     .     .     .          .
         .     .     .     .          .
1178     .     .     .   CP3E2...........
         .     .     .     .
         .     .     .     .
1181     .     .     .     .       PC3
         .     .     .     .          .
         .     .     .     .          .
1190     .   CPC3................................
         .     .
         .     .
1202     .     .------->  BPC3T
1197     .   DPC3T
         .     .
         .     .
1205     .     .    SUB3E3
         .     .          .
         .     .          .
1210     .     .          .       PC4
         .     .          .          .
         .     .          .          .
1224     .     .          .          .         .<-------     B7ST
1219     .     .          .          .        D7S
         .     .          .          .          .
         .     .          .          .          .
1225     .     .     CPC4.......................
         .     .          .
         .     .          .
1236     .     .          .------->  BPC4T
1231     .     .     DPC4T
         .     .          .
         .     .          .
1239   CLEAR.......................
         .
         .
1245     .     .<-------   37AW
1242     .   37AW
         .     V
         .     V
1246     .   R14R
         .     V
         .     V
1253     .  RET141
         .     V
         .     V
1260     .   R14.1
         .     .
         .     .
1267     .     .    SUB13N
         .     .          V
         .     .          V
1273     .     .     R14.1
         .     .          .
         .     .          .
1279     .     .          .     SUB14N
         .     .          .          .
         .     .          .          .
1285     .   CP14.......................
         .     V
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                .           V
1288            .       RET14
                .           V
                .           V
1295            .       R18.1
                .           .
                .           .
1301            .           .      SUB20N
                .           .           V
                .           .           V
1307            .           .         R19
                .           .           .
                .           .           .
1313            .           .           .      SUB19N
                .           .           .           .
                .           .           .           .
1319            .           .       CP19N............
                .           .           V
                .           .           V
1322            .           .       R18NC
                .           .           .
                .           .           .
1328            .           .           .      UB18NC
                .           .           .           .
                .           .           .           .
1334            .      CP18NC........................
                .           V
                .           V
1337            .        RPC1
                .           .
                .           .
1343            .           .      UB18NA
                .           .           V
                .           .           V
1349            .           .       1RPC1
                .           .           .
                .           .           .
1355            .           .           .      UB18NB
                .           .           .           V
                .           .           .           V
1361            .           .           .       2RPC1
                .           .           .           .
                .           .           .           .
1367            .           .           .           .         PC1
                .           .           .           .           .
                .           .           .           .           .
1373            .           .       1CPC1........................
                .           .           V
                .           .           V
1376            .           .       SRPC1
                .           .           .
                .           .           .
1382            .        CPC1............
                .           V
                .           V
1385            .      R16NA1
                .           .
                .           .
1391            .           .      UB16NA
                .           .           V
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               .           .           V
1397           .           .      R16NA1
               .           .           .
               .           .           .
1403           .      C16NA1............
               .           V
               .           V
1406           .      R16NB1
               .           .
               .           .
1412           .           .      UB16NB
               .           .           V
               .           .           V
1418           .           .      R16NB1
               .           .           .
               .           .           .
1424           .      C16NB1............
               .           V
               .           V
1427           .      R16NC1
               .           .
               .           .
1433           .           .       SUB7N
               .           .           V
               .           .           V
1439           .           .        R8NC
               .           .           .
               .           .           .
1445           .           .           .      SUB8NA
               .           .           .           V
               .           .           .           V
1451           .           .           .       SR8NA
               .           .           .           V
               .           .           .           V
1457           .           .           .        R8NB
               .           .           .           .
               .           .           .           .
1463           .           .           .           .      SUB8NB
               .           .           .           .           .
               .           .           .           .           .
1469           .           .           .       CP8NB............
               .           .           .           V
               .           .           .           V
1472           .           .           .       SR8NB
               .           .           .           V
               .           .           .           V
1478           .           .           .        R8NC
               .           .           .           .
               .           .           .           .
1484           .           .           .           .      SUB8NC
               .           .           .           .           .
               .           .           .           .           .
1490           .           .       CP8NC........................
               .           .           V
               .           .           V
1493           .           .       SR8NC
               .           .           V
               .           .           V
1499           .           .         R9N
               .           .           .
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            .       .       .
1505        .       .       .   SUB9N
            .       .       .       .
            .       .       .       .
1511        .       .    CP9N........
            .       .       V
            .       .       V
1514        .       .    R10B
            .       .       .
            .       .       .
1520        .       .       .  SUB10B
            .       .       .       .
            .       .       .       .
1527        .       .   CP10B........
            .       .       V
            .       .       V
1530        .       .   R11NA
            .       .       .
            .       .       .
1536        .       .       .  UB11NA
            .       .       .       .
            .       .       .       .
1542        .       .  CP11NA........
            .       .       V
            .       .       V
1545        .       .  SR11NA
            .       .       V
            .       .       V
1551        .       .   R11NB
            .       .       .
            .       .       .
1557        .       .       .  UB11NB
            .       .       .       .
            .       .       .       .
1563        .       .  CP11NB........
            .       .       V
            .       .       V
1566        .       .  SR11NB
            .       .       V
            .       .       V
1572        .       .   R11NC
            .       .       .
            .       .       .
1578        .       .       .  UB11NC
            .       .       .       .
            .       .       .       .
1584        .       .  C11NC1........
            .       .       .
            .       .       .
1587        .       .       .  SUB10A
            .       .       .       V
            .       .       .       V
1594        .       .       .   R12NB
            .       .       .       .
            .       .       .       .
1600        .       .       .       .  UB12NA
            .       .       .       .       V
            .       .       .       .       V
1606        .       .       .       .  SR12NA
            .       .       .       .       V
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             .         .         .         .         V
1612         .         .         .         .     R12NA
             .         .         .         .         .
             .         .         .         .         .
1618         .         .         .         .         .    UB12NB
             .         .         .         .         .         .
             .         .         .         .         .         .
1624         .         .         .    CP12NB....................
             .         .         .         V
             .         .         .         V
1627         .         .         .    SR12NB
             .         .         .         V
             .         .         .         V
1633         .         .         .    R11NC2
             .         .         .         .
             .         .         .         .
1639         .         .    CP11NC..........
             .         .         V
             .         .         V
1642         .         .    SR11NC
             .         .         V
             .         .         V
1649         .         .     R16NC
             .         .         .
             .         .         .
1655         .         .         .    UB16NC
             .         .         .         .
             .         .         .         .
1661         .         .    CP16NC..........
             .         .         V
             .         .         V
1664         .         .    R16NC1
             .         .         .
             .         .         .
1670         .    C16NC1..........
             .         V
             .         V
1673         .     R15N1
             .         .
             .         .
1679         .         .       PC2
             .         .         .
             .         .         .
1685         .    CP15N1..........
             .         V
             .         V
1688         .     SRPC2
             .         .
             .         .
1695         .         .    UB17NA
             .         .         V
             .         .         V
1701         .         .    SR17NA
             .         .         V
             .         .         V
1707         .         .     R17NB
             .         .         .
             .         .         .
1713         .         .         .    UB17NB
             .         .         .         .
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                .           .           .           .
1719            .           .     CP17NB............
                .           .           V
                .           .           V
1722            .           .     SR17NB
                .           .           V
                .           .           V
1728            .           .       R17A
                .           .           .
                .           .           .
1734            .           .           .     SUB17A
                .           .           .           .
                .           .           .           .
1740            .           .     CP17A1............
                .           .           .
                .           .           .
1743            .           .           .     UB17NC
                .           .           .           .
                .           .           .           .
1749            .           .      CP17A............
                .           .           V
                .           .           V
1752            .           .       R15N
                .           .           .
                .           .           .
1758            .           .           .     SUB15N
                .           .           .           .
                .           .           .           .
1765            .           .      CP15N............
                .           .           V
                .           .           V
1768            .           .      R15N2
                .           .           .
                .           .           .
1774            .     CP15N2............
                .           V
                .           V
1778            .       R15N2
                .           .
                .           .
1792            .           .           .<-------    BPC3T
1787            .           .       DPC3
                .           .           .
                .           .           .
1793            .      CPC3A............
                .           V
                .           V
1799            .      RPC3A
                .           .
                .           .
1813            .           .           .<-------    BPC4T
1808            .           .       DPC4
                .           .           .
                .           .           .
1814            .      CPC4A............
                .           V
                .           V
1820            .      RPC4A
                .           .
                .           .
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1834         .         .-------> BPC4AT
1829         .    DPC4AT
             .         .
             .         .
1837         .         .    SUB1-2
             .         .         .
             .         .         .
1843         .         .         .    GCRB18
             .         .         .         .
             .         .         .         .
1850         .         .    CPRET1..........
             .         .         V
             .         .         V
1853         .         .     SR18S
             .         .         .
             .         .         .
1859         .         .         .     SUB5S
             .         .         .         .
             .         .         .         .
1865         .         .         .         .    GC1216
             .         .         .         .         .
             .         .         .         .         .
1871         .         .         .         .         .    GC1415
             .         .         .         .         .         .
             .         .         .         .         .         .
1877         .         .         .         .         .         .     SUB6S
             .         .         .         .         .         .         .
             .         .         .         .         .         .         .
1883         .         .         .         .         .         .         .     SUB7S
             .         .         .         .         .         .         .         .
             .         .         .         .         .         .         .         .
1889         .         .         .    CPRET2........................................
             .         .         .         V
             .         .         .         V
1892         .         .         .    SRRET2
             .         .         .         .
             .         .         .         .
1898     CLEAR..............................
             .
             .
1903         .     SUB8S
             .         V
             .         V
1909         .     RGC36
             .         .
             .         .
1915         .         .      GC36
             .         .         .
             .         .         .
1921         .    C1GC36..........
             .         .
             .         .
1924         .         .     SUB9S
             .         .         V
             .         .         V
1930         .         .       R9S
             .         .         .
             .         .         .
1936         .    CPGC36..........
             .         V
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               .           V
1939           .      SRGC36
               .           .
               .           .
1945           .           .       SUB7A
               .           .           V
               .           .           V
1951           .           .        SR7A
               .           .           V
               .           .           V
1957           .           .        R10S
               .           .           .
               .           .           .
1963           .           .           .      SUB10S
               .           .           .           .
               .           .           .           .
1969           .           .       CP10S............
               .           .           .
               .           .           .
1972           .           .           .      SUB11S
               .           .           .           V
               .           .           .           V
1978           .           .           .        R11S
               .           .           .           .
               .           .           .           .
1987           .           .       C10SA............
               .           .           V
               .           .           V
1992           .           .       R10SA
               .           .           .
               .           .           .
2001           .           .           .        GC45
               .           .           .           .
               .           .           .           .
2007           .           .           .           .         PC5
               .           .           .           .           .
               .           .           .           .           .
2021           .           .           .           .           .           .<-------   BPC4AT
2016           .           .           .           .           .       DPC4A
               .           .           .           .           .           .
               .           .           .           .           .           .
2022           .        CPC5................................................
               .           V
               .           V
2029           .        RPC5
               .           .
               .           .
2038           .           .       SCN5C
               .           .           .
               .           .           .
2045           .           .           .        SCN6
               .           .           .           .
               .           .           .           .
2054           .           .           .           .           .<-------   B52T
2052           .           .           .           .         D52
               .           .           .           .           .
               .           .           .           .           .
2055           .           .           .           .           .        S53A
               .           .           .           .           .           .
               .           .           .           .           .           .
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 2062           .           .           .           .        C53............
                .           .           .           .         V
                .           .           .           .         V
 2065           .           .           .           .        R53
                .           .           .           .         .
                .           .           .           .         .
 2071           .           .           .           .         .          S53A1
                .           .           .           .         .              .
                .           .           .           .         .              .
 2079           .           .           .           .        C53A...........
                .           .           .           .         .
                .           .           .           .         .
 2082           .          C1I...................................
                .           V
                .           V
 2085           .          C1O
                .           V
                .           V
 2098           .          RC1
                .           .
                .           .
 2104           .           .          S54
                .           .           .
                .           .           .
 2110           .           .           .          SCN6A
                .           .           .           .
                .           .           .           .
 2117           .          C1A.......................
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************                    ******************************
*                                       *                    *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                    *   U.S. ARMY CORPS OF ENGINE
*              MAY   1991               *                    *   HYDROLOGIC ENGINEERING CE
*            VERSION 4.0.1E             *                    *         609 SECOND STREET
*     Lahey F77L-EM/32 version 5.01     *                    *      DAVIS, CALIFORNIA 9561
*       Dodson & Associates, Inc.       *                    *          (916) 551-1748
*  RUN DATE  01/03/97  TIME  14:36:06   *                    *
*****************************************                    ******************************
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                    PIMA ROAD CHANNEL                                File: OPT2-6.IH1
                    by  GVSCE for the City of Scottsdale             Original:09-13-96      mcg
                        Project:  95

                        100-YEAR  6-HR HYPOTHETICAL RAINFALL DISTRIBUTION
                        RAINFALL LOSSES:  SCS CURVE NUMBERS
                        UNIT HYDROGRAPH:  KINEMATIC WAVE
                        ROUTING:  MODIFIED PULS - USING NORMAL DEPTH

                        COLLECTOR CHANNEL LENGTHS ARE AS FOLLOWS:
                            HAPPY VALLEY ROAD ............ 1.0 MILE
                            PINNACLE PEAK ROAD ........... 0.5 MILE
                            DEER VALLEY ROAD ............. 0.25 MILE
                            BEARDLSEY ROAD ............... 1.0 MILE

                        DETENTION BASINS AT HAPPY VALLEY, DEER VALLEY AND UNION HILLS ROADS.


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

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE      1   0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        720  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      3   0  ENDING DATE
                       NDTIME       1155  ENDING TIME
                        ICENT         19  CENTURY MARK

                    COMPUTATION INTERVAL    0.08 HOURS
                         TOTAL TIME BASE   59.92 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

   20 JD           INDEX STORM NO. 1
```

```
                  STRM        0.00  PRECIPITATION DEPTH
                  TRDA        0.01  TRANSPOSITION DRAINAGE AREA

  0 PI              PRECIPITATION PATTERN


 21 JD            INDEX STORM NO. 2
                  STRM        0.00  PRECIPITATION DEPTH
                  TRDA        0.10  TRANSPOSITION DRAINAGE AREA

  0 PI              PRECIPITATION PATTERN


 22 JD            INDEX STORM NO. 3
                  STRM        0.00  PRECIPITATION DEPTH
                  TRDA        0.50  TRANSPOSITION DRAINAGE AREA

  0 PI              PRECIPITATION PATTERN


 23 JD            INDEX STORM NO. 4
                  STRM        0.00  PRECIPITATION DEPTH
                  TRDA        1.00  TRANSPOSITION DRAINAGE AREA

  0 PI              PRECIPITATION PATTERN


 24 JD            INDEX STORM NO. 5
                  STRM        0.00  PRECIPITATION DEPTH
                  TRDA        5.00  TRANSPOSITION DRAINAGE AREA

  0 PI              PRECIPITATION PATTERN


 25 JD            INDEX STORM NO. 6
                  STRM        0.00  PRECIPITATION DEPTH
                  TRDA       25.00  TRANSPOSITION DRAINAGE AREA

  0 PI              PRECIPITATION PATTERN
```

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME O MAX STA
HYDROGRAPH AT	S30N	1227.	3.33	128.	32.	13.	0.65		
ROUTED TO	R30N	1121.	3.42	128.	32.	13.	0.65		
HYDROGRAPH AT	S31.1	395.	3.33	43.	11.	4.	0.27		
2 COMBINED AT	C31.1	1465.	3.42	171.	43.	17.	0.92		
ROUTED TO	R31.1	1476.	3.42	170.	43.	17.	0.92		
HYDROGRAPH AT	S35N	1298.	3.25	108.	27.	11.	0.55		
DIVERSION TO	D35NL	519.	3.25	43.	11.	4.	0.55		
HYDROGRAPH AT	D35NR	779.	3.25	65.	16.	7.	0.55		
ROUTED TO	R35NR	630.	3.33	64.	16.	7.	0.55		
HYDROGRAPH AT	S36.2	400.	3.25	34.	9.	3.	0.21		
2 COMBINED AT	C36.2	947.	3.25	98.	25.	10.	0.54		
DIVERSION TO	D36.2L	284.	3.25	30.	7.	3.	0.54		
HYDROGRAPH AT	D36.2R	663.	3.25	69.	17.	7.	0.54		
ROUTED TO	R36.2R	430.	3.67	69.	17.	7.	0.54		
HYDROGRAPH AT	S34.1	2491.	3.33	262.	66.	27.	1.61		
3 COMBINED AT	C34.1I	3668.	3.33	497.	126.	50.	2.90		
ROUTED TO	C34.1O	219.	5.50	211.	126.	50.	2.90		
ROUTED TO	R34.1	218.	5.58	211.	126.	50.	2.90		
HYDROGRAPH AT	S36.1	159.	3.42	19.	5.	2.	0.14		
2 COMBINED AT	C36.1	311.	3.42	226.	130.	52.	3.04		
ROUTED TO	R36.1	292.	3.58	225.	130.	52.	3.04		
HYDROGRAPH AT	B35NL	519.	3.25	43.	11.	4.	0.55		
ROUTED TO	R35NL	317.	3.58	43.	11.	4.	0.55		
HYDROGRAPH AT	B36.2L	284.	3.25	30.	7.	3.	0.54		
ROUTED TO	R36.2L	193.	3.58	29.	7.	3.	0.54		
HYDROGRAPH AT	S36R1	1107.	3.50	171.	43.	17.	1.22		

4 COMBINED AT	C36R1	1832.	3.58	459.	190.	76.	4.64
ROUTED TO	R36R1	1739.	3.67	456.	190.	76.	4.64
HYDROGRAPH AT	S36R2	509.	3.33	62.	16.	6.	0.43
2 COMBINED AT	C36R2	1964.	3.67	510.	206.	82.	5.07
HYDROGRAPH AT	S51.1	998.	3.58	155.	39.	16.	1.08
DIVERSION TO	D51.1L	998.	3.58	155.	39.	16.	1.08
HYDROGRAPH AT	D51.1	0.	0.08	0.	0.	0.	1.08
2 COMBINED AT	C51.1I	1964.	3.67	510.	206.	82.	6.14
ROUTED TO	C51.1O	282.	7.17	278.	204.	82.	6.14
HYDROGRAPH AT	B51.1L	998.	3.58	155.	39.	16.	1.08
2 COMBINED AT	C51.1A	1156.	3.58	414.	242.	97.	6.14
ROUTED TO	R51.1	1129.	3.58	412.	242.	97.	6.14
DIVERSION TO	B51.1T	1129.	3.58	412.	242.	97.	6.14
HYDROGRAPH AT	D51.1T	0.	0.08	0.	0.	0.	6.14
HYDROGRAPH AT	52D4	116.	3.25	11.	3.	1.	0.07
ROUTED TO	52D4R	106.	3.25	11.	3.	1.	0.07
HYDROGRAPH AT	52D4B	70.	3.17	6.	1.	1.	0.02
2 COMBINED AT	52D5C1	161.	3.25	17.	4.	2.	0.09
HYDROGRAPH AT	52D5A	79.	3.17	6.	2.	1.	0.02
ROUTED TO	52D5AR	75.	3.17	6.	2.	1.	0.02
2 COMBINED AT	52D5C2	217.	3.25	23.	6.	2.	0.12
ROUTED TO	52D5R	216.	3.25	23.	6.	2.	0.12
HYDROGRAPH AT	52C3	24.	3.08	2.	0.	0.	0.01
ROUTED TO	52C3R	23.	3.17	2.	0.	0.	0.01
HYDROGRAPH AT	52C3B	53.	3.08	4.	1.	0.	0.02
2 COMBINED AT	2C3BC1	74.	3.17	6.	1.	1.	0.02
2 COMBINED AT	2C3BC2	270.	3.17	29.	7.	3.	0.14
ROUTED TO	52C3BR	261.	3.25	29.	7.	3.	0.14
HYDROGRAPH AT	51C	166.	3.17	15.	4.	1.	0.10
DIVERSION TO	51C1DV	111.	3.17	10.	3.	1.	0.10

HYDROGRAPH AT	51C1D	55.	3.17	5.	1.	0.	0.10
ROUTED TO	51C1R	53.	3.25	5.	1.	0.	0.10
HYDROGRAPH AT	52C1	69.	3.17	5.	1.	0.	0.03
2 COMBINED AT	52C1C	106.	3.17	10.	2.	1.	0.06
ROUTED TO	52C1R	101.	3.25	10.	2.	1.	0.06
HYDROGRAPH AT	52C2A	35.	3.17	2.	1.	0.	0.02
2 COMBINED AT	52C2AC	125.	3.25	12.	3.	1.	0.08
HYDROGRAPH AT	52C2B	56.	3.17	4.	1.	0.	0.03
2 COMBINED AT	52C2BC	170.	3.17	16.	4.	2.	0.11
ROUTED TO	52C2BR	168.	3.25	16.	4.	2.	0.11
HYDROGRAPH AT	52C2C	46.	3.08	4.	1.	0.	0.01
2 COMBINED AT	52C2CC	194.	3.25	20.	5.	2.	0.12
ROUTED TO	52C2R	180.	3.25	20.	5.	2.	0.12
HYDROGRAPH AT	52C4	56.	3.17	4.	1.	0.	0.02
2 COMBINED AT	52C4C1	211.	3.25	24.	6.	2.	0.14
2 COMBINED AT	52C4C2	472.	3.25	53.	13.	5.	0.28
ROUTED TO	52C4R	462.	3.25	53.	14.	5.	0.28
HYDROGRAPH AT	52C13	69.	3.08	5.	1.	0.	0.02
DIVERSION TO	STORM	40.	3.08	4.	1.	0.	0.02
HYDROGRAPH AT	2C13DV	29.	3.08	1.	0.	0.	0.02
HYDROGRAPH AT	52C15	157.	3.08	13.	3.	1.	0.05
2 COMBINED AT	2C15C1	186.	3.08	13.	3.	1.	0.05
2 COMBINED AT	2C15C2	546.	3.17	66.	17.	7.	0.32
ROUTED TO	52C15R	544.	3.25	66.	17.	7.	0.32
HYDROGRAPH AT	52C14A	142.	3.17	11.	3.	1.	0.04
2 COMBINED AT	2C14AC	655.	3.17	78.	20.	8.	0.36
ROUTED TO	2C14AR	637.	3.17	78.	20.	8.	0.36
HYDROGRAPH AT	51C1DV	111.	3.17	10.	3.	1.	0.10
DIVERSION TO	51C2DV	30.	3.17	3.	1.	0.	0.10
HYDROGRAPH AT	51C2D	81.	3.17	7.	2.	1.	0.10

ROUTED TO	51C2R	78.	3.25	7.	2.	1.	0.10
HYDROGRAPH AT	52C5	40.	3.17	3.	1.	0.	0.02
2 COMBINED AT	52C5C	109.	3.17	10.	3.	1.	0.06
ROUTED TO	52C5R	104.	3.25	10.	3.	1.	0.06
HYDROGRAPH AT	52C6	82.	3.17	7.	2.	1.	0.04
2 COMBINED AT	52C6C	173.	3.25	17.	4.	2.	0.10
ROUTED TO	52C6R	165.	3.25	17.	4.	2.	0.10
HYDROGRAPH AT	51C2DV	30.	3.17	3.	1.	0.	0.10
ROUTED TO	51C3R	29.	3.25	3.	1.	0.	0.10
HYDROGRAPH AT	51B	596.	3.42	79.	20.	8.	0.57
DIVERSION TO	51B1DV	549.	3.42	72.	18.	7.	0.57
HYDROGRAPH AT	51B1D	48.	3.42	6.	2.	1.	0.57
ROUTED TO	51B1R	48.	3.42	6.	2.	1.	0.57
HYDROGRAPH AT	52C7	18.	3.08	1.	0.	0.	0.01
3 COMBINED AT	52C7C	76.	3.25	10.	3.	1.	0.07
ROUTED TO	52C7R	75.	3.33	10.	3.	1.	0.07
HYDROGRAPH AT	51B1DV	549.	3.42	72.	18.	7.	0.57
DIVERSION TO	51B2DV	461.	3.42	61.	15.	6.	0.57
HYDROGRAPH AT	51B2D	88.	3.42	12.	3.	1.	0.57
ROUTED TO	51B2R	88.	3.42	12.	3.	1.	0.57
HYDROGRAPH AT	52C8	21.	3.08	1.	0.	0.	0.01
2 COMBINED AT	52C8C	93.	3.42	13.	3.	1.	0.45
ROUTED TO	52C8R	92.	3.42	13.	3.	1.	0.45
2 COMBINED AT	52C9C1	163.	3.42	23.	6.	2.	0.52
ROUTED TO	52C9R1	162.	3.42	23.	6.	2.	0.52
HYDROGRAPH AT	52C9	174.	3.17	14.	3.	1.	0.07
2 COMBINED AT	52C9C2	255.	3.25	37.	9.	4.	0.59
ROUTED TO	52C9R2	254.	3.25	37.	9.	4.	0.59
2 COMBINED AT	2C10C1	418.	3.25	54.	14.	5.	0.69
ROUTED TO	2C10R1	412.	3.25	54.	14.	5.	0.69

HYDROGRAPH AT	52C10	28.	3.17	2.	1.	0.	0.01
2 COMBINED AT	2C10C2	428.	3.25	56.	14.	6.	0.70
HYDROGRAPH AT	52C11	96.	3.17	8.	2.	1.	0.04
ROUTED TO	2C11R1	88.	3.17	8.	2.	1.	0.04
HYDROGRAPH AT	52C13D	40.	3.08	4.	1.	0.	0.02
2 COMBINED AT	52C11C	128.	3.17	12.	3.	1.	0.07
ROUTED TO	2C11CR	120.	3.17	12.	3.	1.	0.07
2 COMBINED AT	2C11C2	541.	3.25	68.	17.	7.	0.77
ROUTED TO	2C11R2	530.	3.25	68.	17.	7.	0.77
HYDROGRAPH AT	52C12	119.	3.08	7.	2.	1.	0.02
2 COMBINED AT	52C12C	567.	3.25	75.	19.	8.	0.79
ROUTED TO	52C12R	549.	3.25	75.	19.	8.	0.79
HYDROGRAPH AT	52C14B	76.	3.08	6.	1.	1.	0.02
2 COMBINED AT	C14BC1	584.	3.25	81.	20.	8.	0.81
2 COMBINED AT	C14BC2	1200.	3.25	158.	40.	16.	1.17
ROUTED TO	52C14R	1194.	3.25	158.	40.	16.	1.17
HYDROGRAPH AT	51B2DV	461.	3.42	61.	15.	6.	0.57
DIVERSION TO	51B3DV	387.	3.42	51.	13.	5.	0.57
HYDROGRAPH AT	51B3D	74.	3.42	10.	2.	1.	0.57
ROUTED TO	51B3R	74.	3.42	10.	2.	1.	0.57
HYDROGRAPH AT	52B1	8.	3.08	1.	0.	0.	0.00
2 COMBINED AT	52B1C	76.	3.42	10.	3.	1.	0.07
ROUTED TO	52B1R	75.	3.42	10.	3.	1.	0.07
HYDROGRAPH AT	51B3DV	387.	3.42	51.	13.	5.	0.57
DIVERSION TO	51B4DV	317.	3.42	42.	11.	4.	0.57
HYDROGRAPH AT	51B4D	70.	3.42	9.	2.	1.	0.57
ROUTED TO	51B4R1	70.	3.42	9.	2.	1.	0.57
2 COMBINED AT	52B2C1	145.	3.42	20.	5.	2.	0.14
ROUTED TO	52B2R1	142.	3.42	20.	5.	2.	0.14
HYDROGRAPH AT	52B2	69.	3.17	5.	1.	1.	0.03

2 COMBINED AT	52B2C2	166.	3.42	25.	6.	3.	0.17
ROUTED TO	52B2R2	164.	3.42	25.	6.	3.	0.17
ROUTED TO	52B3R1	163.	3.42	25.	6.	3.	0.17
HYDROGRAPH AT	52B3	141.	3.17	12.	3.	1.	0.06
2 COMBINED AT	52B3C2	249.	3.25	37.	9.	4.	0.23
ROUTED TO	52B3R2	241.	3.33	37.	9.	4.	0.23
HYDROGRAPH AT	52B4	87.	3.17	7.	2.	1.	0.03
2 COMBINED AT	52B4C	284.	3.25	44.	11.	4.	0.26
ROUTED TO	52B4R	277.	3.25	44.	11.	4.	0.26
HYDROGRAPH AT	52B5	69.	3.08	5.	1.	1.	0.02
2 COMBINED AT	52B5C1	313.	3.25	49.	12.	5.	0.28
2 COMBINED AT	52B5C2	1496.	3.25	207.	52.	21.	1.45
ROUTED TO	52B5R	1474.	3.25	207.	53.	21.	1.45
HYDROGRAPH AT	51B4DV	317.	3.42	42.	11.	4.	0.57
DIVERSION TO	51B5DV	216.	3.42	28.	7.	3.	0.57
HYDROGRAPH AT	51B5D	102.	3.42	13.	3.	1.	0.57
ROUTED TO	51B5R	102.	3.42	13.	3.	1.	0.57
HYDROGRAPH AT	51B5DV	216.	3.42	28.	7.	3.	0.57
DIVERSION TO	51B6DV	114.	3.42	15.	4.	2.	0.57
HYDROGRAPH AT	51B6D	101.	3.42	13.	3.	1.	0.57
ROUTED TO	51B6R	101.	3.42	13.	3.	1.	0.57
HYDROGRAPH AT	51B6DV	114.	3.42	15.	4.	2.	0.57
DIVERSION TO	51B7DV	66.	3.42	9.	2.	1.	0.57
HYDROGRAPH AT	51B7D	48.	3.42	6.	2.	1.	0.57
ROUTED TO	51B7R1	48.	3.42	6.	2.	1.	0.57
3 COMBINED AT	51B7C	252.	3.42	33.	8.	3.	0.24
ROUTED TO	51B7R2	244.	3.42	33.	8.	3.	0.24
HYDROGRAPH AT	52B6	190.	3.17	15.	4.	2.	0.10
2 COMBINED AT	52B6C	313.	3.42	48.	12.	5.	0.34
ROUTED TO	52B6R	311.	3.42	48.	12.	5.	0.34

HYDROGRAPH AT	52B7	303.	3.17	24.	6.	2.	0.08
2 COMBINED AT	52B7C1	411.	3.25	72.	18.	7.	0.42
2 COMBINED AT	52B7C2	1871.	3.25	278.	71.	28.	1.87
HYDROGRAPH AT	52A2	263.	3.17	21.	5.	2.	0.06
2 COMBINED AT	52A2C2	2033.	3.25	299.	76.	30.	1.62
HYDROGRAPH AT	51B7DV	66.	3.42	9.	2.	1.	0.57
ROUTED TO	51B8R	66.	3.50	9.	2.	1.	0.57
HYDROGRAPH AT	52A1	340.	3.17	26.	6.	3.	0.13
2 COMBINED AT	52A1C	344.	3.17	34.	9.	3.	0.13
HYDROGRAPH AT	D51.1	1129.	3.58	412.	242.	97.	6.14
2 COMBINED AT	C52A	1242.	3.58	437.	250.	100.	6.27
ROUTED TO	R52A	1211.	3.67	435.	250.	100.	6.27
2 COMBINED AT	C52	2365.	3.50	700.	322.	129.	7.92
ROUTED TO	R52	2346.	3.58	699.	322.	129.	7.92
DIVERSION TO	B52T	2346.	3.58	699.	322.	129.	7.92
HYDROGRAPH AT	D52T	0.	0.08	0.	0.	0.	7.92
2 COMBINED AT	CLEAR	0.	0.08	0.	0.	0.	14.06
HYDROGRAPH AT	37A	1164.	3.25	119.	30.	12.	0.68
DIVERSION TO	37AW	815.	3.25	83.	21.	8.	0.68
HYDROGRAPH AT	37AE	349.	3.25	36.	9.	4.	0.68
ROUTED TO	37AE1	342.	3.25	36.	9.	4.	0.68
HYDROGRAPH AT	SUB5N	70.	3.17	5.	1.	1.	0.03
2 COMBINED AT	CP5N	394.	3.25	41.	10.	4.	0.23
ROUTED TO	RET5N	357.	3.33	40.	10.	4.	0.23
ROUTED TO	R6N.1	294.	3.42	40.	10.	4.	0.23
HYDROGRAPH AT	SUB6B	74.	3.17	5.	1.	1.	0.03
ROUTED TO	SR6B	43.	3.25	5.	1.	1.	0.03
2 COMBINED AT	CP6.1	326.	3.42	45.	12.	5.	0.26
HYDROGRAPH AT	SUB1N	47.	3.17	3.	1.	0.	0.02
ROUTED TO	R2NA	46.	3.17	3.	1.	0.	0.02

HYDROGRAPH AT	SUB2NA	34.	3.17	2.	1.	0.	0.01
2 COMBINED AT	CP2NA	80.	3.17	6.	1.	1.	0.03
ROUTED TO	SR2NA	70.	3.25	4.	1.	0.	0.03
ROUTED TO	R2NB	59.	3.33	4.	1.	0.	0.03
HYDROGRAPH AT	SUB2NB	96.	3.17	8.	2.	1.	0.03
2 COMBINED AT	CP2NB	99.	3.33	12.	3.	1.	0.06
ROUTED TO	SR2NB	25.	3.75	11.	3.	1.	0.06
ROUTED TO	RCP4N	24.	3.75	11.	3.	1.	0.06
HYDROGRAPH AT	SUB6N	114.	3.17	8.	2.	1.	0.05
ROUTED TO	RET6N	0.	0.08	0.	0.	0.	0.05
ROUTED TO	RCP4N1	0.	0.08	0.	0.	0.	0.05
2 COMBINED AT	CP4N.1	24.	3.75	11.	3.	1.	0.11
HYDROGRAPH AT	SUB3N	67.	3.17	4.	1.	0.	0.03
ROUTED TO	RET3N	4.	4.17	3.	1.	0.	0.03
ROUTED TO	R4N	4.	4.25	3.	1.	0.	0.03
2 COMBINED AT	CP4N.2	27.	3.75	14.	4.	2.	0.14
HYDROGRAPH AT	SUB4N	80.	3.17	6.	1.	1.	0.03
2 COMBINED AT	CP4N	89.	3.17	19.	6.	2.	0.17
ROUTED TO	R6N	82.	3.17	19.	6.	2.	0.17
HYDROGRAPH AT	SUB6A	64.	3.08	4.	1.	0.	0.01
2 COMBINED AT	CP6.2	121.	3.17	23.	7.	3.	0.18
2 COMBINED AT	CP6N	376.	3.42	68.	18.	7.	0.45
ROUTED TO	RCP6N	373.	3.42	68.	18.	7.	0.45
HYDROGRAPH AT	SUB3C	55.	3.08	3.	1.	0.	0.01
2 COMBINED AT	CP3C	380.	3.42	70.	19.	8.	0.46
ROUTED TO	R3C	361.	3.50	70.	19.	8.	0.46
HYDROGRAPH AT	GC1018	101.	3.17	7.	2.	1.	0.04
HYDROGRAPH AT	GC1-9	58.	3.17	4.	1.	0.	0.03
HYDROGRAPH AT	SUB3S	33.	3.17	3.	1.	0.	0.01
4 COMBINED AT	CP3S	411.	3.50	84.	22.	9.	0.54

ROUTED TO	RT3S	409.	3.50	84.	22.	9.	0.54
HYDROGRAPH AT	SUB4S	87.	3.17	7.	2.	1.	0.03
ROUTED TO	RT4S	87.	3.17	7.	2.	1.	0.03
HYDROGRAPH AT	GC2-8	32.	3.17	2.	1.	0.	0.01
3 COMBINED AT	1PGC28	437.	3.50	93.	25.	10.	0.58
HYDROGRAPH AT	SUB3D3	35.	3.17	2.	1.	0.	0.01
2 COMBINED AT	CPGC28	444.	3.50	95.	25.	10.	0.59
ROUTED TO	SRGC28	443.	3.25	95.	25.	10.	0.59
ROUTED TO	RT7S	431.	3.58	95.	25.	10.	0.59
HYDROGRAPH AT	GC7	31.	3.17	2.	1.	0.	0.01
2 COMBINED AT	CP7S	437.	3.58	97.	26.	10.	0.61
DIVERSION TO	B7ST	437.	3.58	97.	26.	10.	0.61
HYDROGRAPH AT	D7ST	0.	0.08	0.	0.	0.	0.61
2 COMBINED AT	CLEAR	0.	0.08	0.	0.	0.	14.66
HYDROGRAPH AT	SUB3D1	27.	3.08	2.	0.	0.	0.01
ROUTED TO	RD1B1	22.	3.17	2.	0.	0.	0.01
HYDROGRAPH AT	SUB3B1	47.	3.08	3.	1.	0.	0.01
2 COMBINED AT	CP3B1	61.	3.08	5.	1.	1.	0.02
ROUTED TO	RB13F	48.	3.25	5.	1.	1.	0.02
HYDROGRAPH AT	SUB3F	141.	3.08	10.	2.	1.	0.03
2 COMBINED AT	CP3F	169.	3.08	15.	4.	2.	0.06
HYDROGRAPH AT	SUB3B2	67.	3.17	6.	1.	1.	0.02
ROUTED TO	RB2E1	64.	3.17	6.	1.	1.	0.02
ROUTED TO	RB2E2	61.	3.25	6.	1.	1.	0.02
HYDROGRAPH AT	SUB3E1	67.	3.17	6.	1.	1.	0.02
2 COMBINED AT	1CPE31	125.	3.17	11.	3.	1.	0.05
HYDROGRAPH AT	SUB3D2	58.	3.17	5.	1.	0.	0.02
ROUTED TO	RD2E2	56.	3.17	5.	1.	0.	0.02
HYDROGRAPH AT	SUB3E2	37.	3.08	3.	1.	0.	0.01
2 COMBINED AT	CP3E2	86.	3.17	7.	2.	1.	0.03

HYDROGRAPH AT	PC3	82.	3.17	7.	2.	1.	0.04
4 COMBINED AT	CPC3	449.	3.17	40.	10.	4.	0.18
DIVERSION TO	BPC3T	449.	3.17	40.	10.	4.	0.18
HYDROGRAPH AT	DPC3T	0.	0.08	0.	0.	0.	0.18
HYDROGRAPH AT	SUB3E3	60.	3.08	4.	1.	0.	0.02
HYDROGRAPH AT	PC4	43.	3.17	3.	1.	0.	0.02
HYDROGRAPH AT	D7S	437.	3.58	97.	26.	10.	0.61
3 COMBINED AT	CPC4	471.	3.33	104.	28.	11.	0.65
DIVERSION TO	BPC4T	471.	3.33	104.	28.	11.	0.65
HYDROGRAPH AT	DPC4T	0.	0.08	0.	0.	0.	0.65
3 COMBINED AT	CLEAR	0.	0.08	0.	0.	0.	15.50
HYDROGRAPH AT	37AW	815.	3.25	83.	21.	8.	0.68
ROUTED TO	R14R	659.	3.33	83.	21.	8.	0.68
ROUTED TO	RET141	631.	3.42	78.	21.	8.	0.68
ROUTED TO	R14.1	558.	3.50	78.	21.	8.	0.68
HYDROGRAPH AT	SUB13N	81.	3.17	7.	2.	1.	0.04
ROUTED TO	R14.1	78.	3.25	7.	2.	1.	0.04
HYDROGRAPH AT	SUB14N	88.	3.25	8.	2.	1.	0.05
3 COMBINED AT	CP14	625.	3.50	92.	25.	10.	0.56
ROUTED TO	RET14	574.	3.58	88.	25.	10.	0.56
ROUTED TO	R18.1	570.	3.58	88.	25.	10.	0.56
HYDROGRAPH AT	SUB20N	47.	3.17	4.	1.	0.	0.02
ROUTED TO	R19	48.	3.25	4.	1.	0.	0.02
HYDROGRAPH AT	SUB19N	94.	3.17	8.	2.	1.	0.04
2 COMBINED AT	CP19N	133.	3.17	12.	3.	1.	0.06
ROUTED TO	R18NC	132.	3.25	12.	3.	1.	0.06
HYDROGRAPH AT	UB18NC	62.	3.17	5.	1.	0.	0.02
3 COMBINED AT	CP18NC	619.	3.58	103.	29.	12.	0.64
ROUTED TO	RPC1	628.	3.58	103.	29.	12.	0.64
HYDROGRAPH AT	UB18NA	65.	3.17	5.	1.	1.	0.02

ROUTED TO	1RPC1	31.	3.33	5.	1.	1.	0.02
HYDROGRAPH AT	UB18NB	27.	3.17	2.	1.	0.	0.01
ROUTED TO	2RPC1	16.	3.25	2.	1.	0.	0.01
HYDROGRAPH AT	PC1	66.	3.42	10.	2.	1.	0.06
3 COMBINED AT	1CPC1	107.	3.42	17.	4.	2.	0.09
ROUTED TO	SRPC1	108.	3.42	16.	4.	2.	0.09
2 COMBINED AT	CPC1	712.	3.58	120.	33.	13.	0.74
ROUTED TO	R16NA1	720.	3.58	119.	33.	13.	0.74
HYDROGRAPH AT	UB16NA	42.	3.17	3.	1.	0.	0.01
ROUTED TO	R16NA1	37.	3.17	3.	1.	0.	0.01
2 COMBINED AT	C16NA1	728.	3.58	122.	34.	14.	0.75
ROUTED TO	R16NB1	717.	3.58	122.	34.	14.	0.75
HYDROGRAPH AT	UB16NB	48.	3.17	4.	1.	0.	0.02
ROUTED TO	R16NB1	43.	3.17	4.	1.	0.	0.02
2 COMBINED AT	C16NB1	725.	3.58	126.	35.	14.	0.77
ROUTED TO	R16NC1	727.	3.67	126.	35.	14.	0.77
HYDROGRAPH AT	SUB7N	74.	3.17	5.	1.	1.	0.03
ROUTED TO	R8NC	64.	3.25	5.	1.	1.	0.03
HYDROGRAPH AT	SUB8NA	13.	3.08	1.	0.	0.	0.00
ROUTED TO	SR8NA	1.	4.17	0.	0.	0.	0.00
ROUTED TO	R8NB	1.	4.17	0.	0.	0.	0.00
HYDROGRAPH AT	SUB8NB	34.	3.08	2.	1.	0.	0.01
2 COMBINED AT	CP8NB	34.	3.08	3.	1.	0.	0.02
ROUTED TO	SR8NB	2.	3.08	2.	1.	0.	0.02
ROUTED TO	R8NC	2.	3.08	2.	1.	0.	0.02
HYDROGRAPH AT	SUB8NC	51.	3.08	3.	1.	0.	0.02
3 COMBINED AT	CP8NC	103.	3.17	10.	3.	1.	0.07
ROUTED TO	SR8NC	18.	3.75	10.	3.	1.	0.07
ROUTED TO	R9N	17.	3.75	10.	3.	1.	0.07
HYDROGRAPH AT	SUB9N	143.	3.17	11.	3.	1.	0.05

2 COMBINED AT	CP9N	153.	3.17	21.	6.	2.	0.12
ROUTED TO	R10B	148.	3.17	21.	6.	2.	0.12
HYDROGRAPH AT	SUB10B	87.	3.08	6.	2.	1.	0.03
2 COMBINED AT	CP10B	226.	3.17	27.	7.	3.	0.15
ROUTED TO	R11NA	229.	3.17	27.	7.	3.	0.15
HYDROGRAPH AT	UB11NA	21.	3.08	1.	0.	0.	0.01
2 COMBINED AT	CP11NA	245.	3.17	28.	8.	3.	0.16
ROUTED TO	SR11NA	145.	3.33	28.	8.	3.	0.16
ROUTED TO	R11NB	140.	3.33	28.	8.	3.	0.16
HYDROGRAPH AT	UB11NB	22.	3.08	1.	0.	0.	0.01
2 COMBINED AT	CP11NB	146.	3.33	29.	8.	3.	0.17
ROUTED TO	SR11NB	84.	3.50	28.	8.	3.	0.17
ROUTED TO	R11NC	87.	3.50	28.	8.	3.	0.17
HYDROGRAPH AT	UB11NC	19.	3.08	1.	0.	0.	0.01
2 COMBINED AT	C11NC1	90.	3.50	30.	8.	3.	0.17
HYDROGRAPH AT	SUB10A	88.	3.08	7.	2.	1.	0.03
ROUTED TO	R12NB	95.	3.17	7.	2.	1.	0.03
HYDROGRAPH AT	UB12NA	36.	3.17	3.	1.	0.	0.02
ROUTED TO	SR12NA	1.	6.17	0.	0.	0.	0.02
ROUTED TO	R12NA	1.	6.17	0.	0.	0.	0.02
HYDROGRAPH AT	UB12NB	37.	3.17	3.	1.	0.	0.02
3 COMBINED AT	CP12NB	132.	3.17	10.	3.	1.	0.06
ROUTED TO	SR12NB	2.	3.17	2.	2.	1.	0.06
ROUTED TO	R11NC2	2.	3.50	2.	2.	1.	0.06
2 COMBINED AT	CP11NC	92.	3.50	32.	10.	4.	0.23
ROUTED TO	SR11NC	71.	3.75	30.	10.	4.	0.23
ROUTED TO	R16NC	71.	3.75	30.	10.	4.	0.23
HYDROGRAPH AT	UB16NC	102.	3.17	8.	2.	1.	0.03
2 COMBINED AT	CP16NC	107.	3.17	36.	12.	5.	0.27
ROUTED TO	R16NC1	106.	3.17	36.	12.	5.	0.27

2 COMBINED AT	C16NC1	788.	3.67	162.	47.	19.	1.03
ROUTED TO	R15N1	793.	3.67	162.	47.	19.	1.03
HYDROGRAPH AT	PC2	93.	3.25	8.	2.	1.	0.05
2 COMBINED AT	CP15N1	815.	3.67	170.	49.	20.	1.09
ROUTED TO	SRPC2	786.	3.75	169.	48.	20.	1.09
HYDROGRAPH AT	UB17NA	28.	3.08	2.	0.	0.	0.01
ROUTED TO	SR17NA	2.	3.75	1.	0.	0.	0.01
ROUTED TO	R17NB	2.	3.75	1.	0.	0.	0.01
HYDROGRAPH AT	UB17NB	27.	3.17	2.	0.	0.	0.01
2 COMBINED AT	CP17NB	28.	3.17	3.	1.	0.	0.02
ROUTED TO	SR17NB	1.	3.00	1.	1.	0.	0.02
ROUTED TO	R17A	1.	3.08	1.	1.	0.	0.02
HYDROGRAPH AT	SUB17A	30.	3.08	2.	0.	0.	0.01
2 COMBINED AT	CP17A1	31.	3.08	3.	1.	1.	0.03
HYDROGRAPH AT	UB17NC	19.	3.08	1.	0.	0.	0.01
2 COMBINED AT	CP17A	50.	3.08	3.	2.	1.	0.03
ROUTED TO	R15N	34.	3.17	3.	2.	1.	0.03
HYDROGRAPH AT	SUB15N	142.	3.17	11.	3.	1.	0.04
2 COMBINED AT	CP15N	175.	3.17	14.	4.	2.	0.07
ROUTED TO	R15N2	179.	3.17	14.	4.	2.	0.07
2 COMBINED AT	CP15N2	804.	3.75	182.	53.	22.	1.16
ROUTED TO	R15N2	768.	3.83	182.	53.	22.	1.16
HYDROGRAPH AT	DPC3	449.	3.17	40.	10.	4.	0.18
2 COMBINED AT	CPC3A	812.	3.75	217.	62.	25.	1.34
ROUTED TO	RPC3A	815.	3.83	217.	62.	25.	1.34
HYDROGRAPH AT	DPC4	471.	3.33	104.	28.	11.	0.65
2 COMBINED AT	CPC4A	1132.	3.75	319.	90.	36.	1.99
ROUTED TO	RPC4A	1123.	3.83	319.	90.	36.	1.99
DIVERSION TO	BPC4AT	1123.	3.83	319.	90.	36.	1.99
HYDROGRAPH AT	DPC4AT	0.	0.08	0.	0.	0.	1.99

HYDROGRAPH AT	SUB1-2	181.	3.17	16.	4.	2.	0.06
HYDROGRAPH AT	GCRB18	27.	3.17	2.	1.	0.	0.01
2 COMBINED AT	CPRET1	208.	3.17	18.	4.	2.	0.07
ROUTED TO	SR18S	0.	0.08	0.	0.	0.	0.07
HYDROGRAPH AT	SUB5S	72.	3.17	5.	1.	1.	0.03
HYDROGRAPH AT	GC1216	83.	3.17	6.	2.	1.	0.04
HYDROGRAPH AT	GC1415	104.	3.17	7.	2.	1.	0.05
HYDROGRAPH AT	SUB6S	53.	3.17	5.	1.	0.	0.02
HYDROGRAPH AT	SUB7S	79.	3.17	6.	2.	1.	0.03
5 COMBINED AT	CPRET2	391.	3.17	30.	7.	3.	0.16
ROUTED TO	SRRET2	0.	0.08	0.	0.	0.	0.16
4 COMBINED AT	CLEAR	0.	0.08	0.	0.	0.	17.72
HYDROGRAPH AT	SUB8S	76.	3.17	6.	1.	1.	0.03
ROUTED TO	RGC36	64.	3.25	6.	1.	1.	0.03
HYDROGRAPH AT	GC36	77.	3.17	7.	2.	1.	0.04
2 COMBINED AT	C1GC36	141.	3.17	13.	3.	1.	0.07
HYDROGRAPH AT	SUB9S	68.	3.17	5.	1.	1.	0.02
ROUTED TO	R9S	69.	3.17	5.	1.	1.	0.02
2 COMBINED AT	CPGC36	210.	3.17	18.	4.	2.	0.09
ROUTED TO	SRGC36	202.	3.25	18.	4.	2.	0.09
HYDROGRAPH AT	SUB7A	27.	3.17	2.	1.	0.	0.01
ROUTED TO	SR7A	7.	3.42	2.	1.	0.	0.01
ROUTED TO	R10S	7.	3.58	2.	1.	0.	0.01
HYDROGRAPH AT	SUB10S	78.	3.17	6.	2.	1.	0.02
2 COMBINED AT	CP10S	81.	3.17	8.	2.	1.	0.03
HYDROGRAPH AT	SUB11S	118.	3.08	7.	2.	1.	0.02
ROUTED TO	R11S	88.	3.17	7.	2.	1.	0.02
2 COMBINED AT	C10SA	169.	3.17	15.	4.	2.	0.06
ROUTED TO	R10SA	173.	3.17	15.	4.	2.	0.06
HYDROGRAPH AT	GC45	45.	3.08	2.	1.	0.	0.01

HYDROGRAPH AT	PC5	60.	3.17	5.	1.	1.	0.04
HYDROGRAPH AT	DPC4A	1123.	3.83	319.	90.	36.	1.99
5 COMBINED AT	CPC5	1263.	3.33	356.	100.	40.	2.10
ROUTED TO	RPC5	1195.	3.42	356.	100.	40.	2.10
HYDROGRAPH AT	SCN5C	351.	3.42	44.	11.	4.	0.27
HYDROGRAPH AT	SCN6	730.	3.25	82.	21.	8.	0.26
HYDROGRAPH AT	D52	2346.	3.58	699.	322.	129.	7.92
HYDROGRAPH AT	S53A	226.	3.33	24.	6.	2.	0.17
2 COMBINED AT	C53	2464.	3.50	721.	327.	131.	8.09
ROUTED TO	R53	2463.	3.50	720.	327.	131.	8.09
HYDROGRAPH AT	S53A1	445.	3.33	53.	13.	5.	0.34
2 COMBINED AT	C53A	2824.	3.42	769.	340.	136.	8.42
4 COMBINED AT	C1I	4637.	3.42	1214.	462.	186.	11.05
ROUTED TO	C1O	704.	5.75	655.	462.	186.	11.05
ROUTED TO	RC1	704.	5.83	655.	462.	186.	11.05
HYDROGRAPH AT	S54	136.	3.25	14.	4.	1.	0.09
HYDROGRAPH AT	SCN6A	198.	3.33	22.	6.	2.	0.13
3 COMBINED AT	C1A	717.	5.75	670.	471.	189.	11.27

*** NORMAL END OF HEC-1 ***

APPENDIX C

Detention basin area-capacity curves, outlet rating curves, stage hydrographs, and hydrographs for 100-year, 24-hour storms

FIGURES

APPENDIX C

Detention basin area-capacity curves, outlet rating curves, stage hydrographs, and hydrographs for 100-year, 24-hour storms

FIGURES

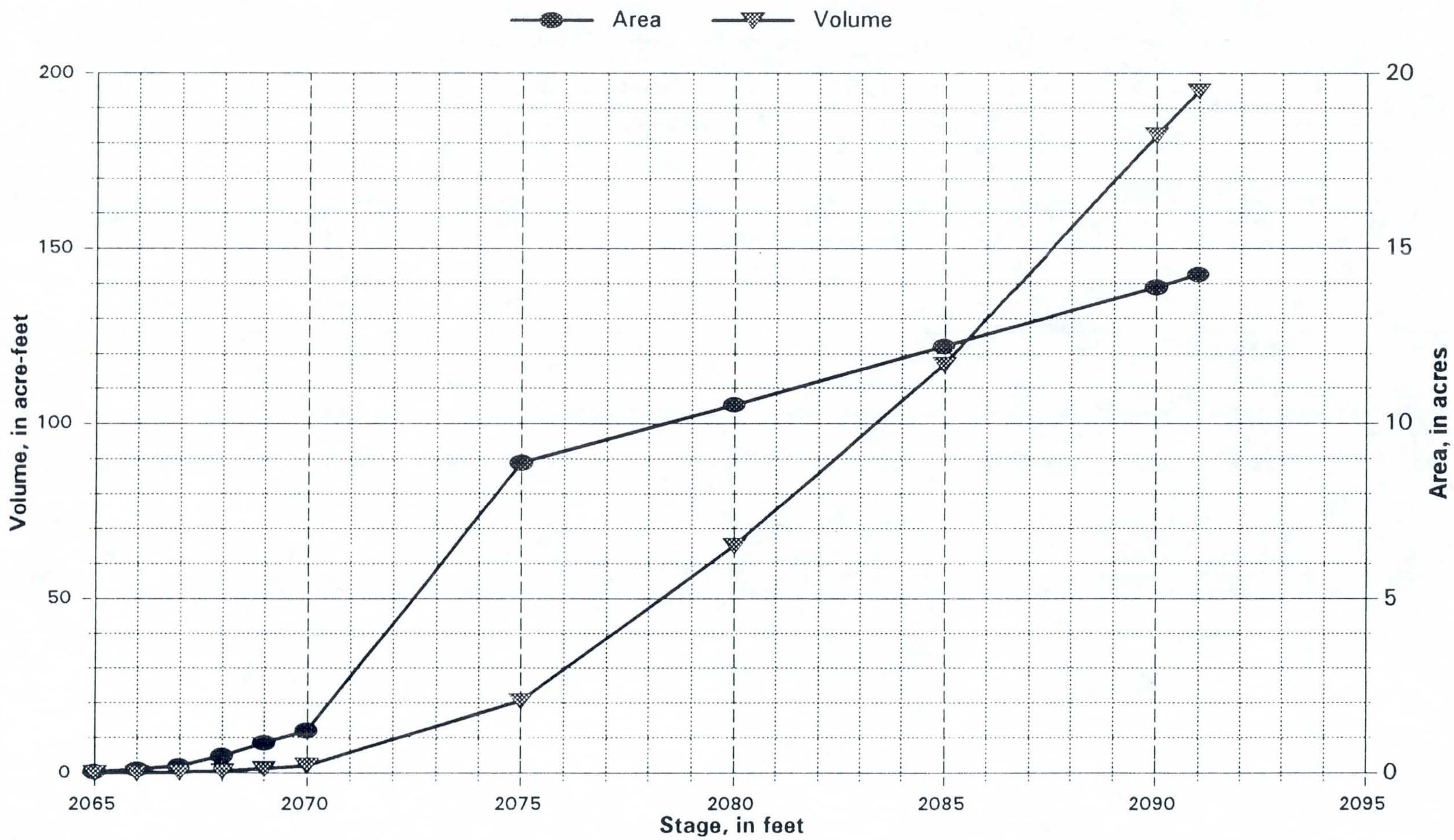

FIGURE C-1
Happy Valley Detention Basin
area - capacity curves

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02-Jan-97

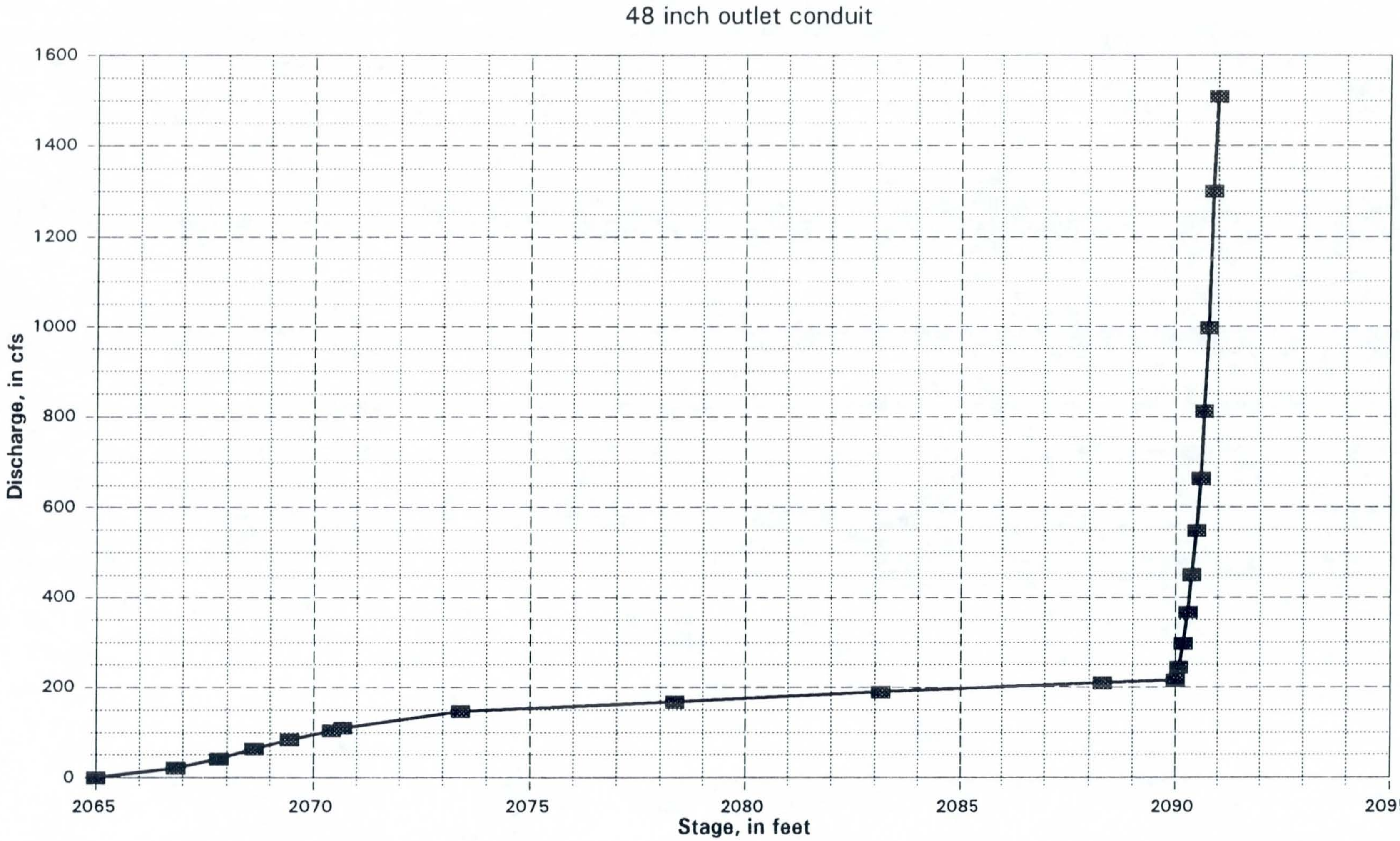

FIGURE C-2
Happy Valley Detention Basin
outlet rating curve

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02-Jan-97

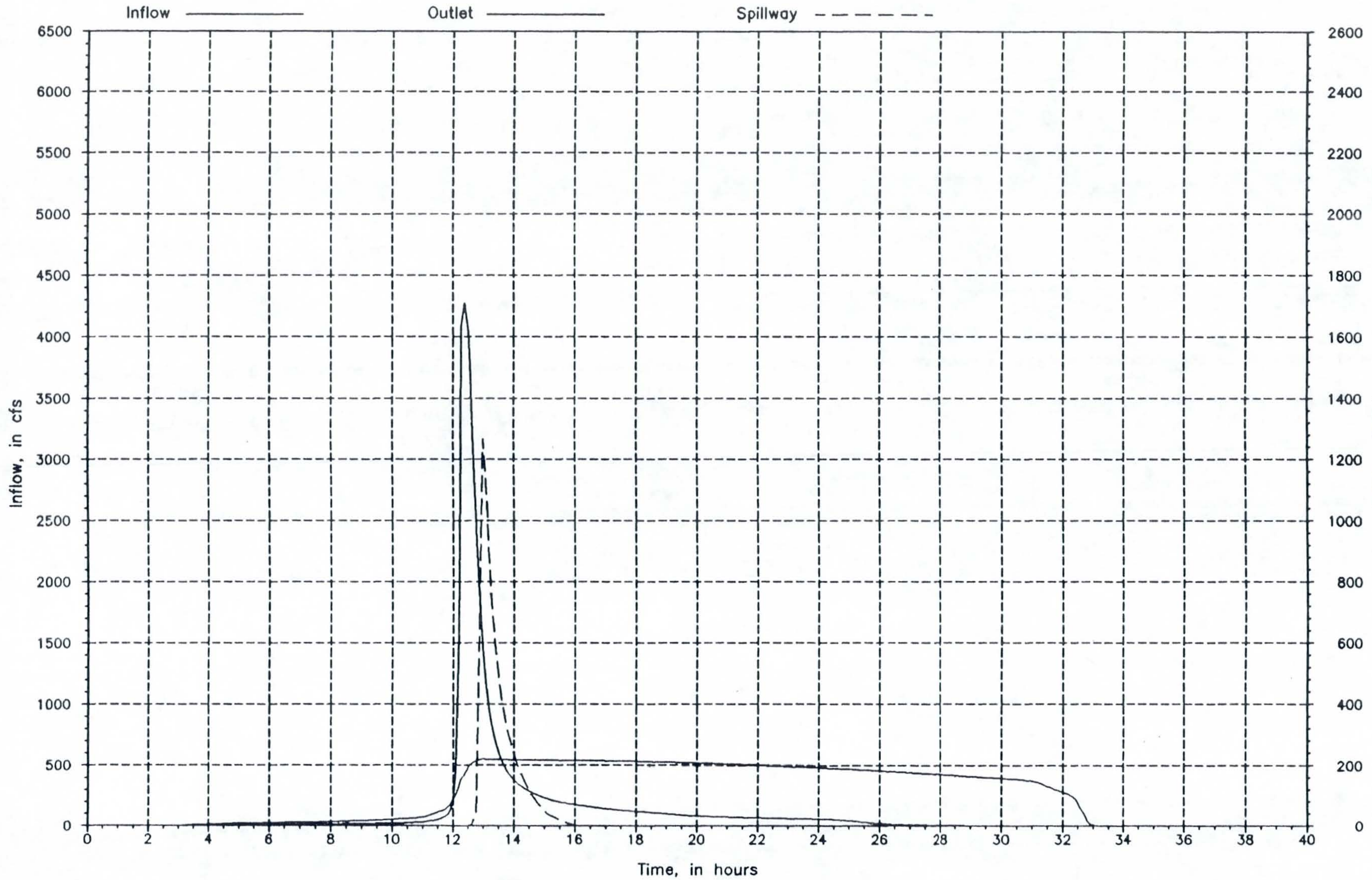

FIGURE C-3
Happy Valley Detention Basin hydrographs with 100% of runoff entering the basin for the 100-year, 24-hour storm

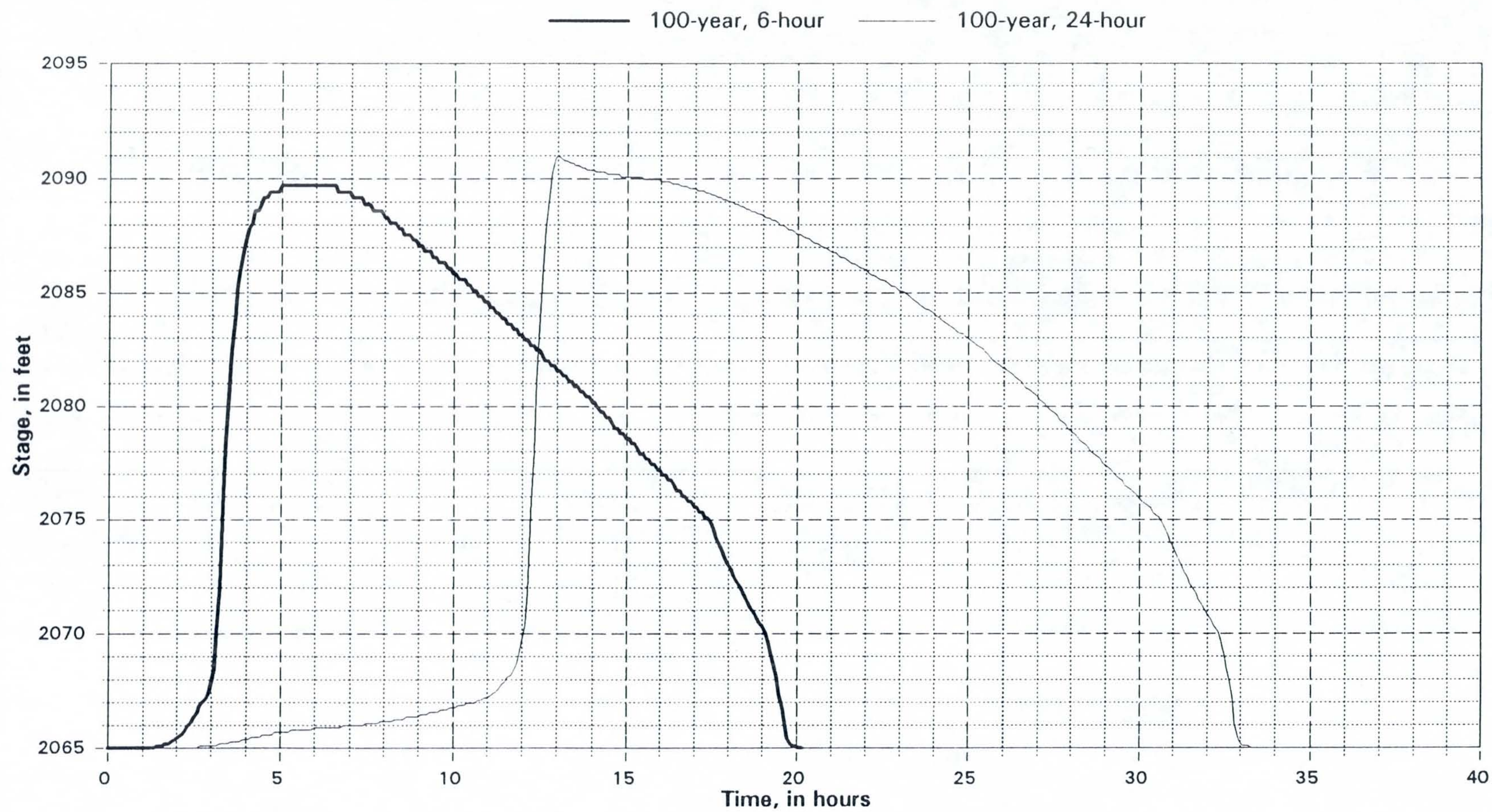

FIGURE C-4
Happy Valley Detention Basin
stage hydrographs

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02-Jan-97

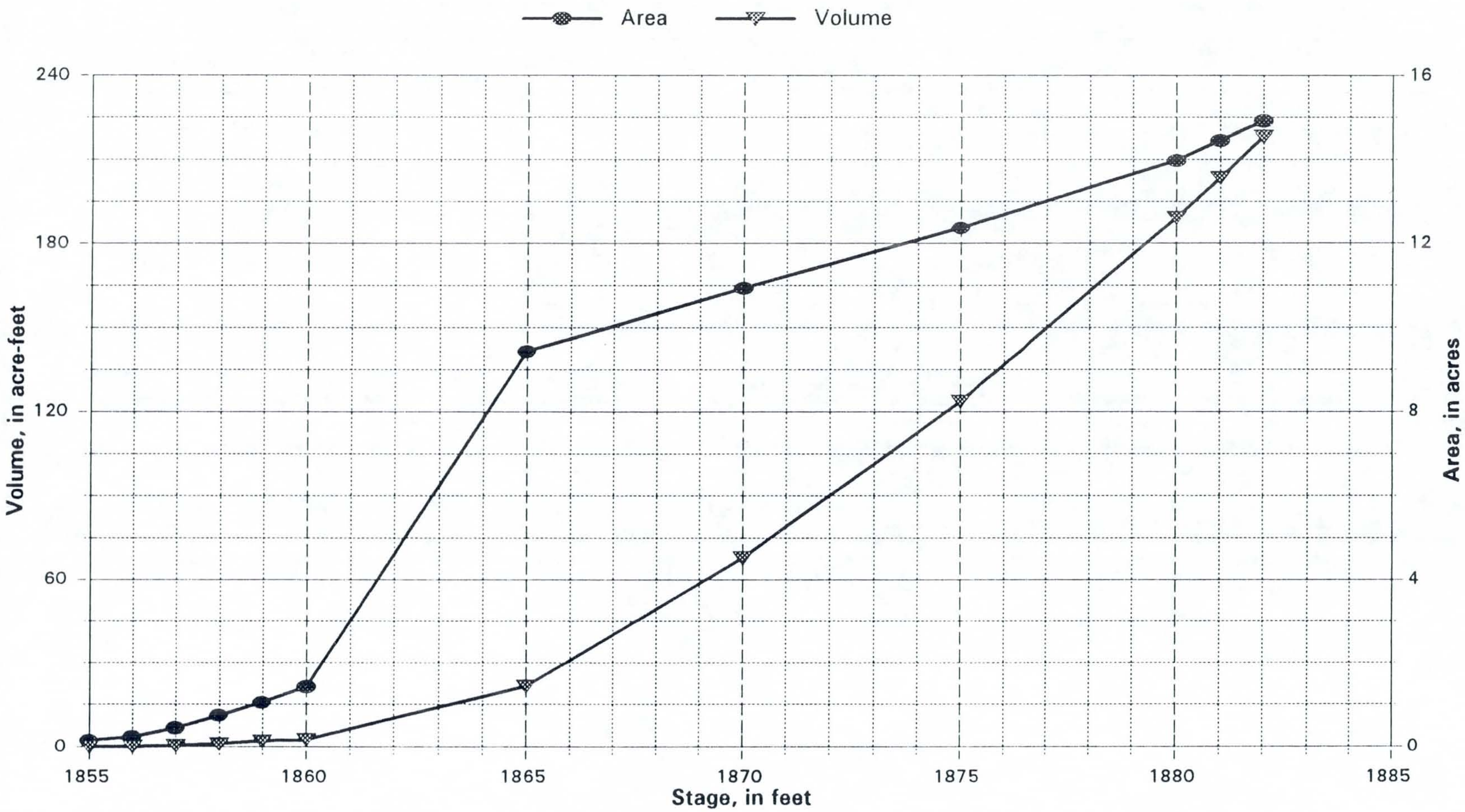

FIGURE C-5
Deer Valley Detention Basin - Option 1
area-capacity curves

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02-Jan-97

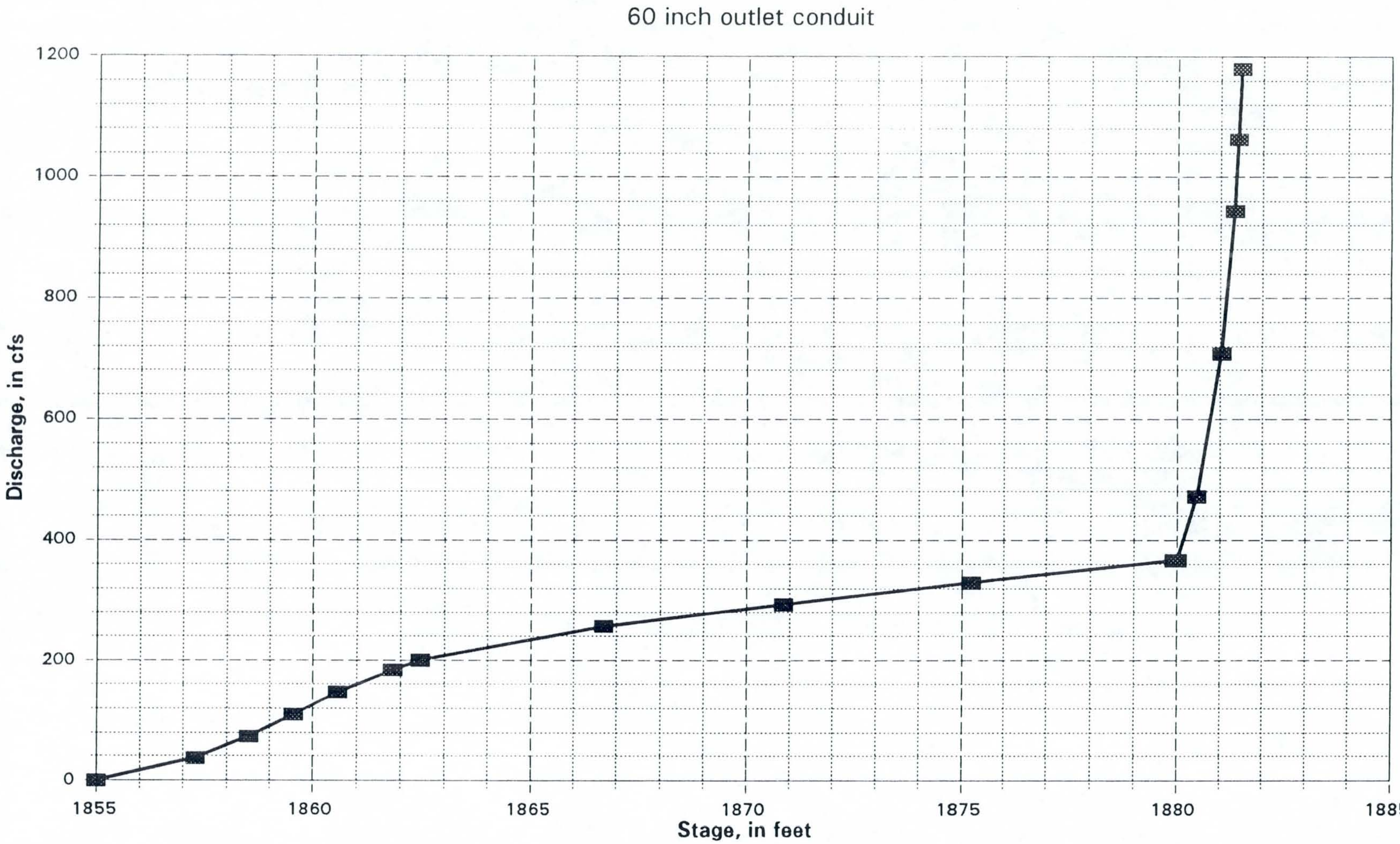

FIGURE C-6
Deer Valley Detention Basin - Option 1
outlet rating curve

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02-Jan-97

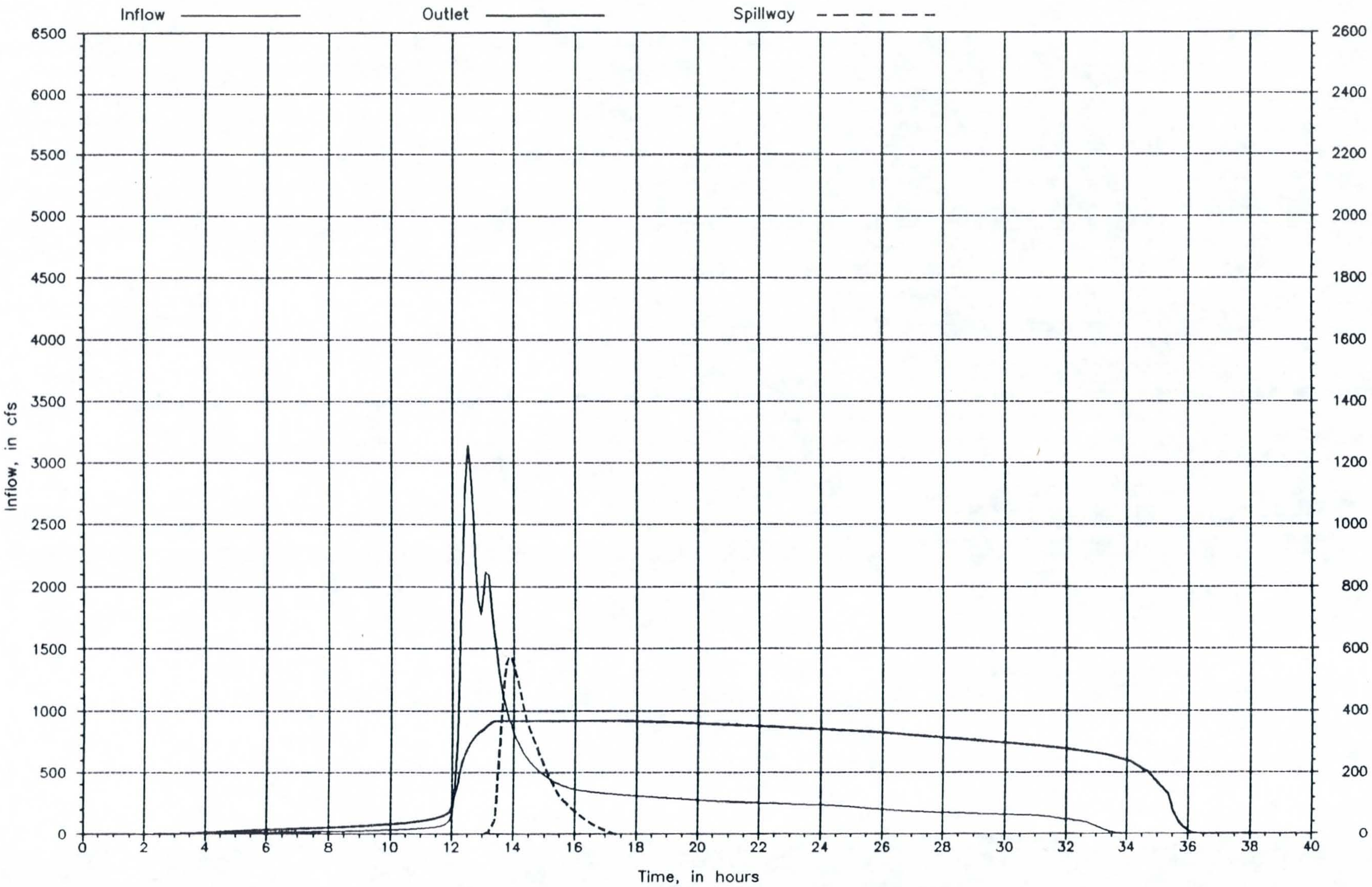

FIGURE C-7
Deer Valley Detention Basin - Option 1, Case 1
hydrographs for the 100-year, 24-hour storm

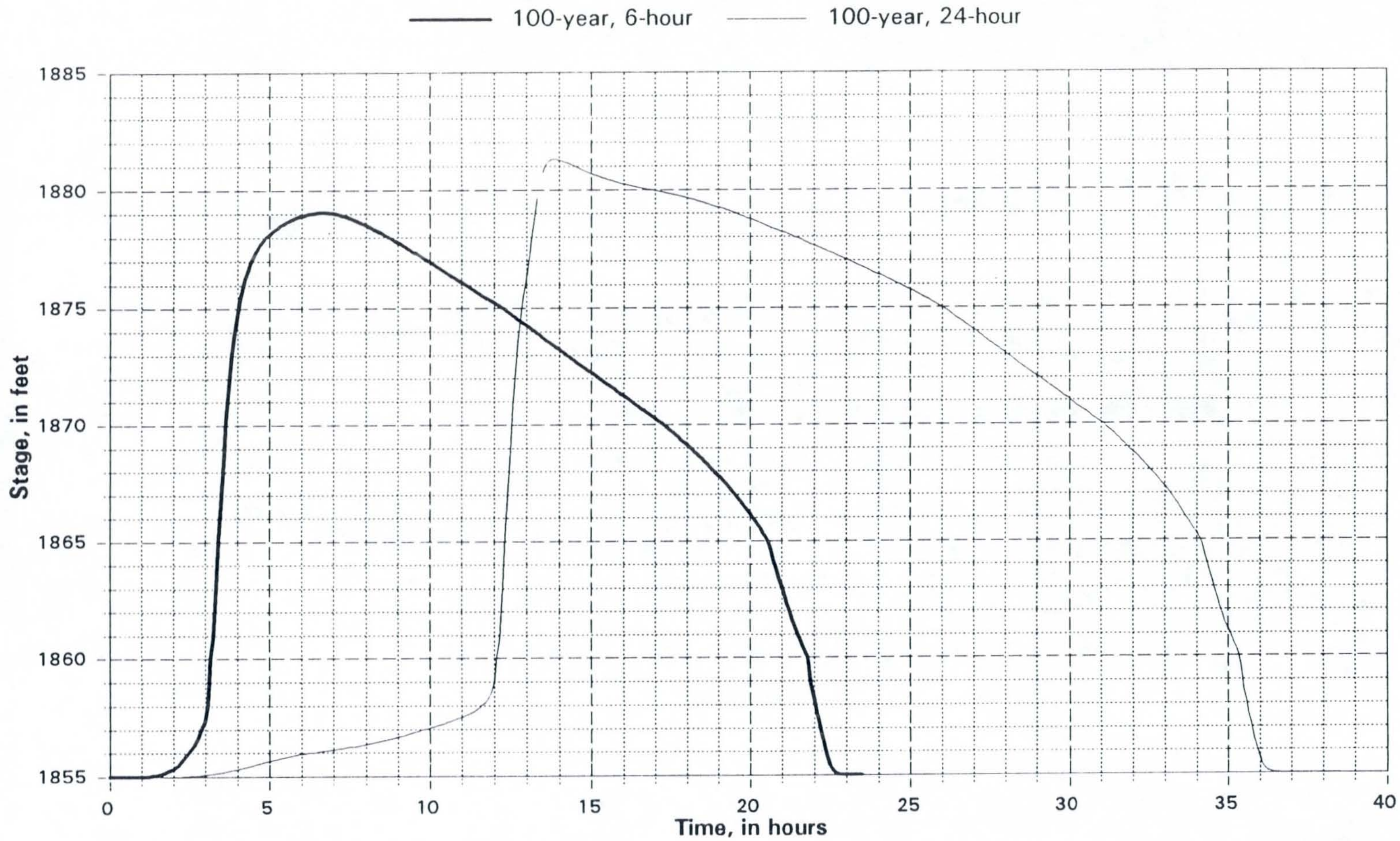

FIGURE C-8
Deer Valley Detention Basin - Option 1, Case 1
stage hydrographs

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02-Jan-97

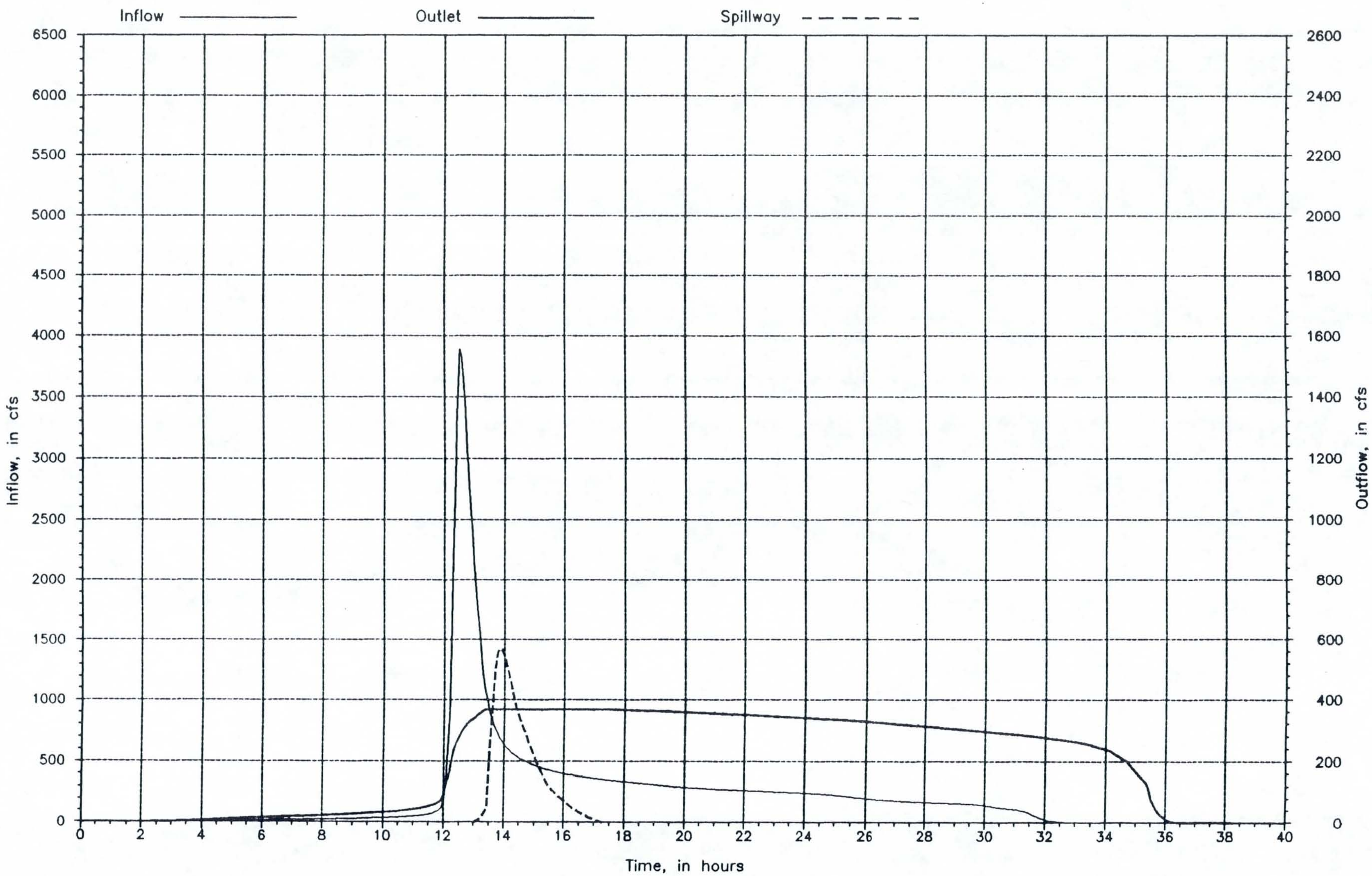

FIGURE C-9
Deer Valley Detention Basin - Option 1, Case 2
hydrographs for the 100-year, 24-hour storm

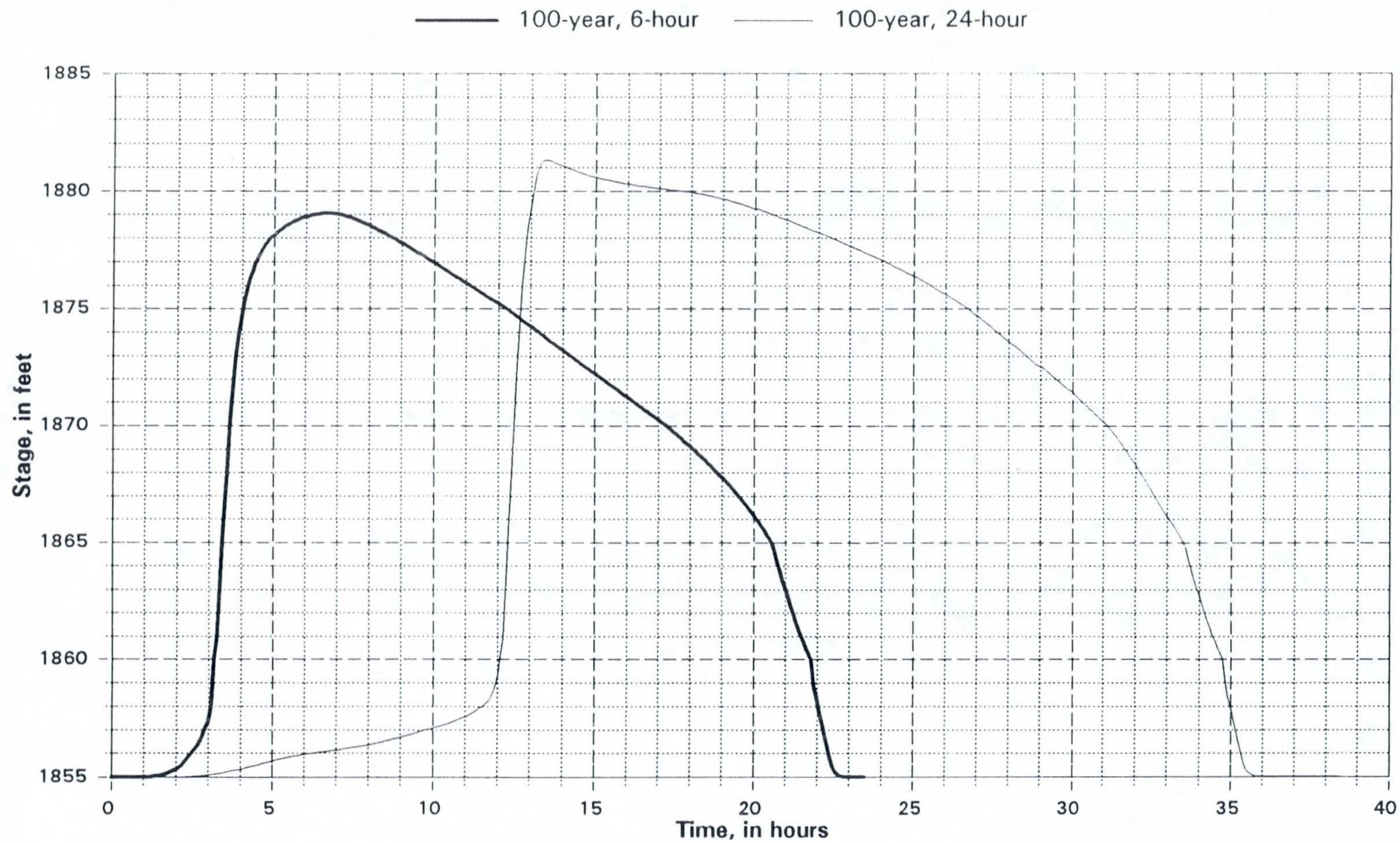

FIGURE C-10
Deer Valley Detention Basin - Option 1, Case 2
stage hydrographs

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02-Jan-97

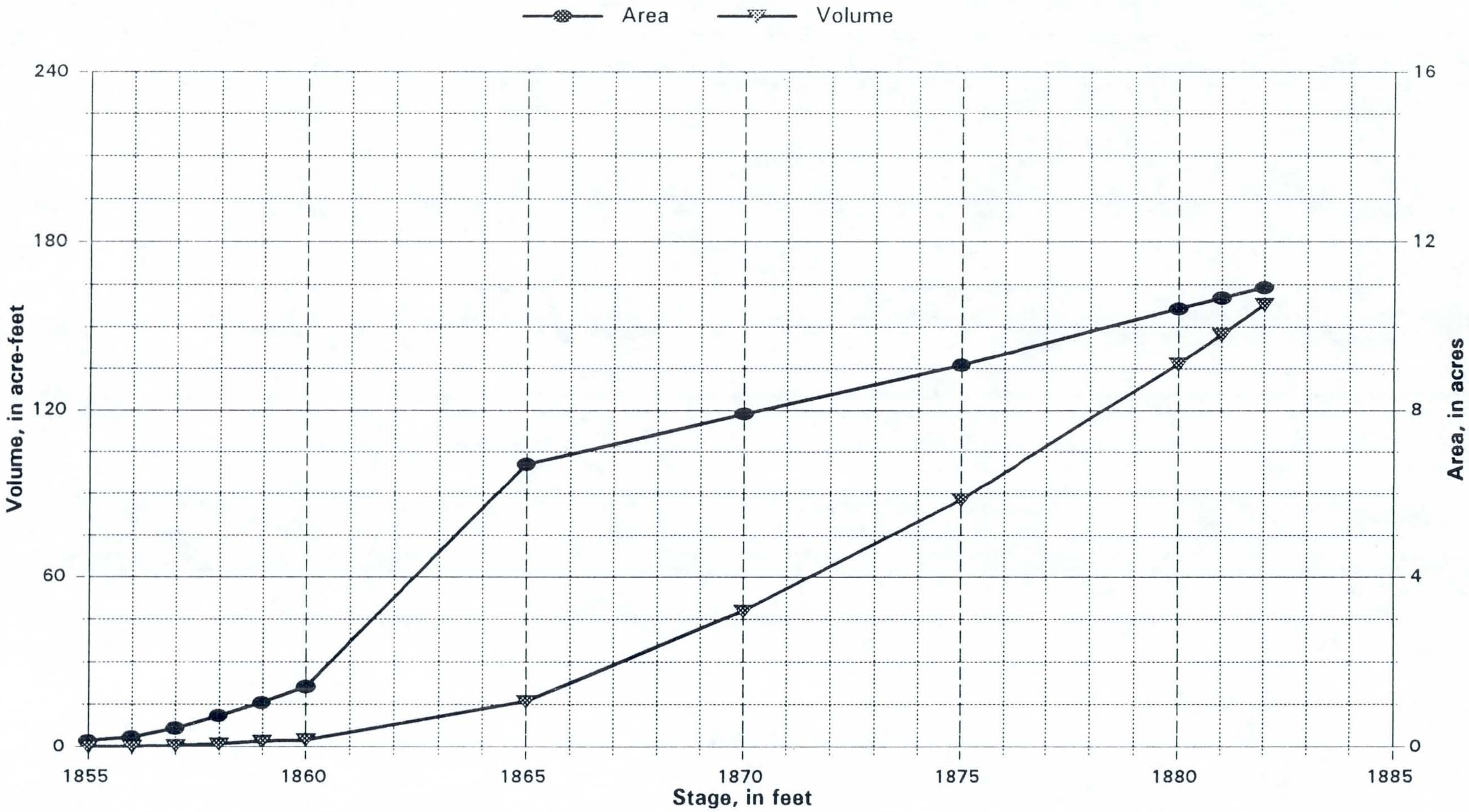

FIGURE C-11
Deer Valley Detention Basin - Option 2
area-capacity curves

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02-Jan-97

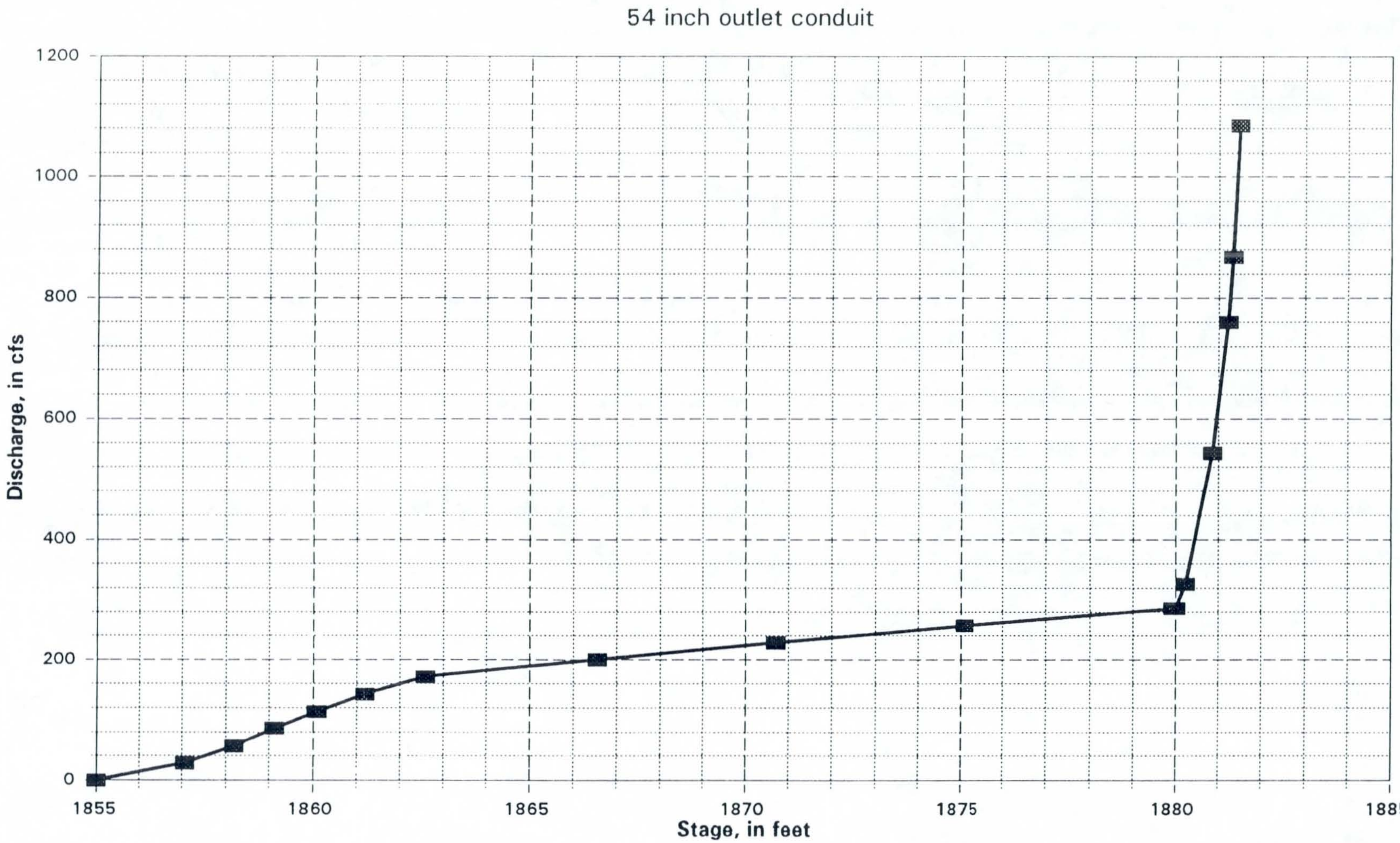

FIGURE C-12
Deer Valley Detention Basin - Option 2
outlet rating curve

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02-Jan-97

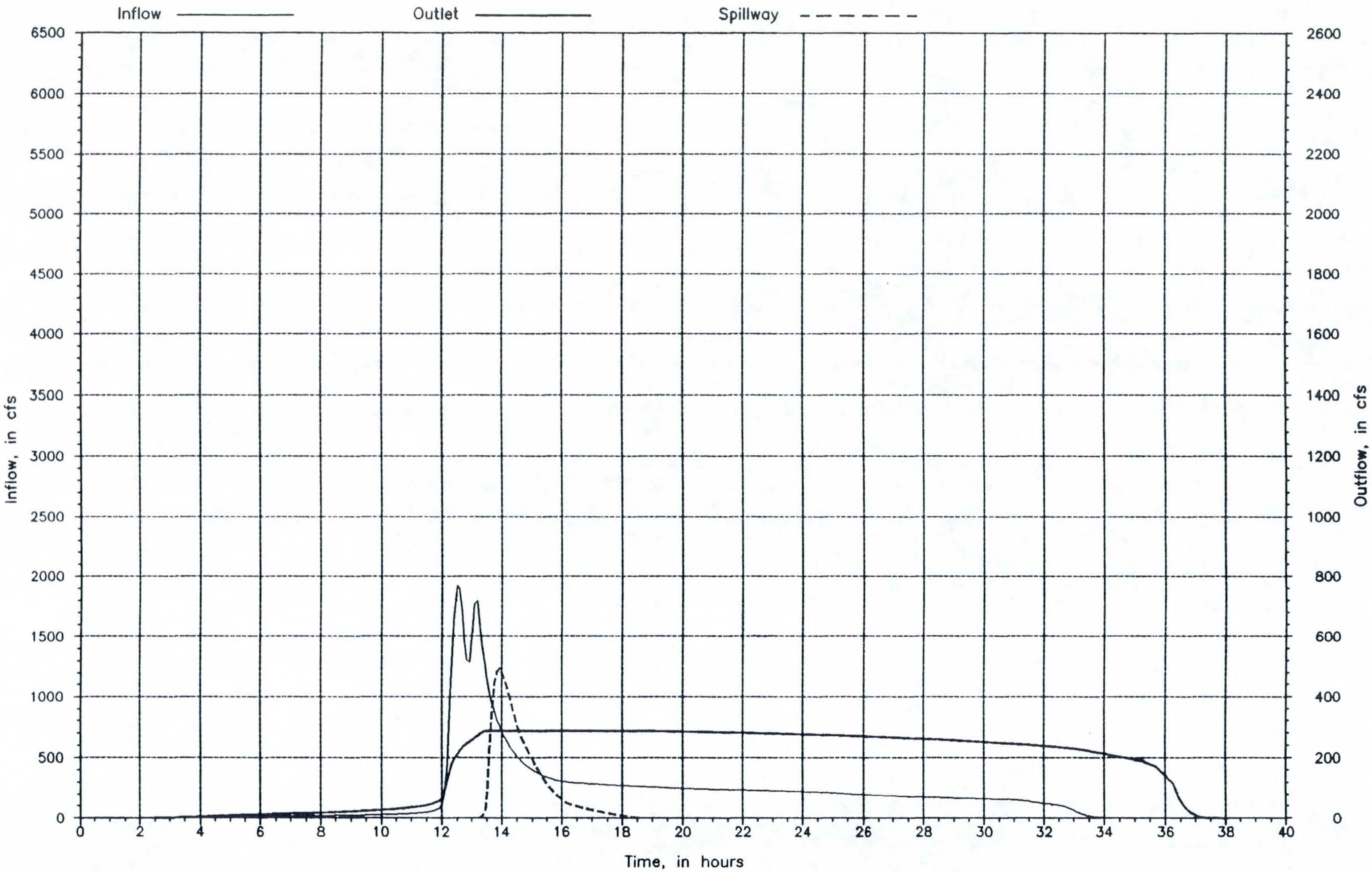

FIGURE C-13
Deer Valley Detention Basin - Option 2, Case 1
hydrographs for the 100-year, 24-hour storm

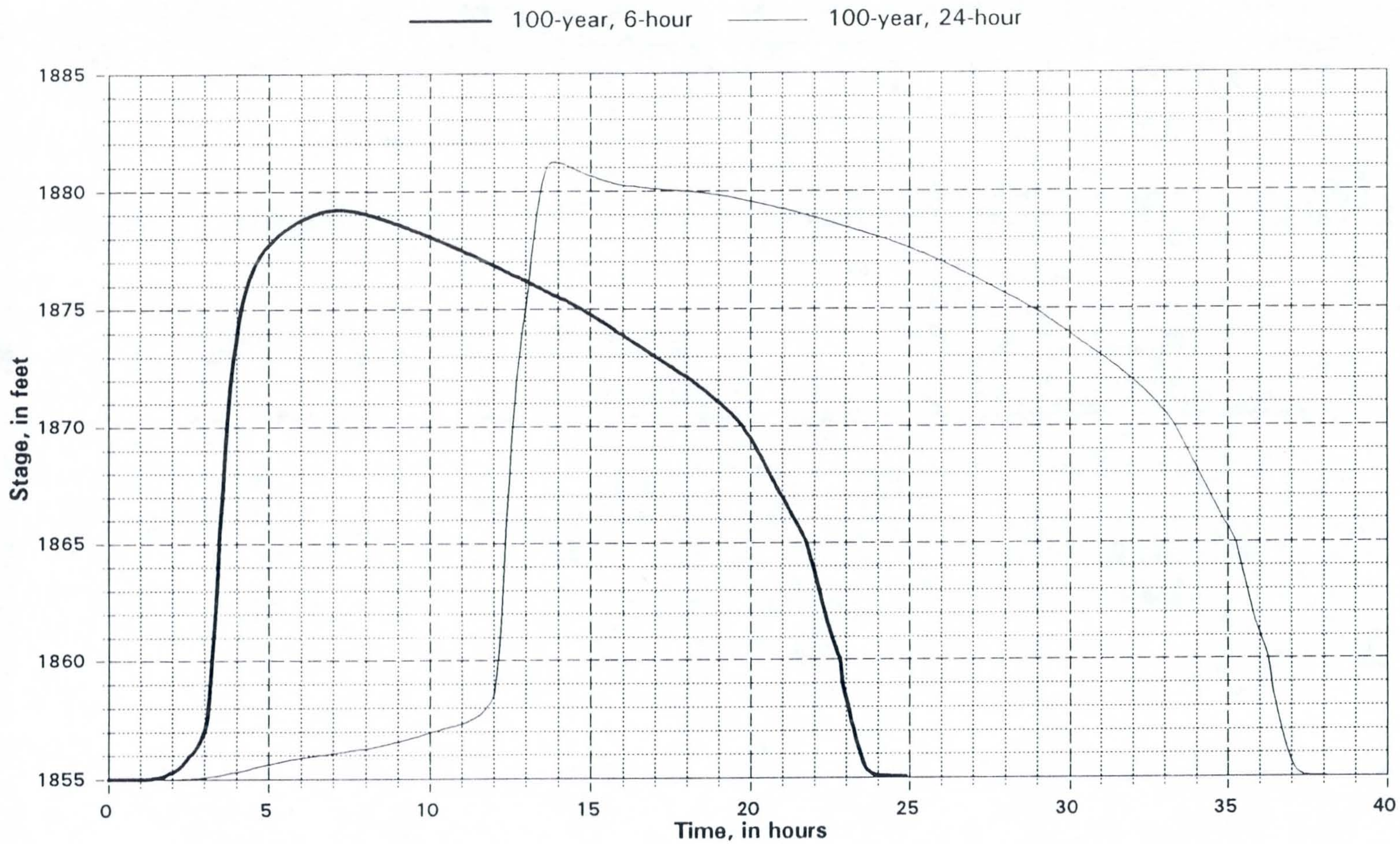

FIGURE C-14
Deer Valley Detention Basin - Option 2, Case 1
stage hydrographs

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02-Jan-97

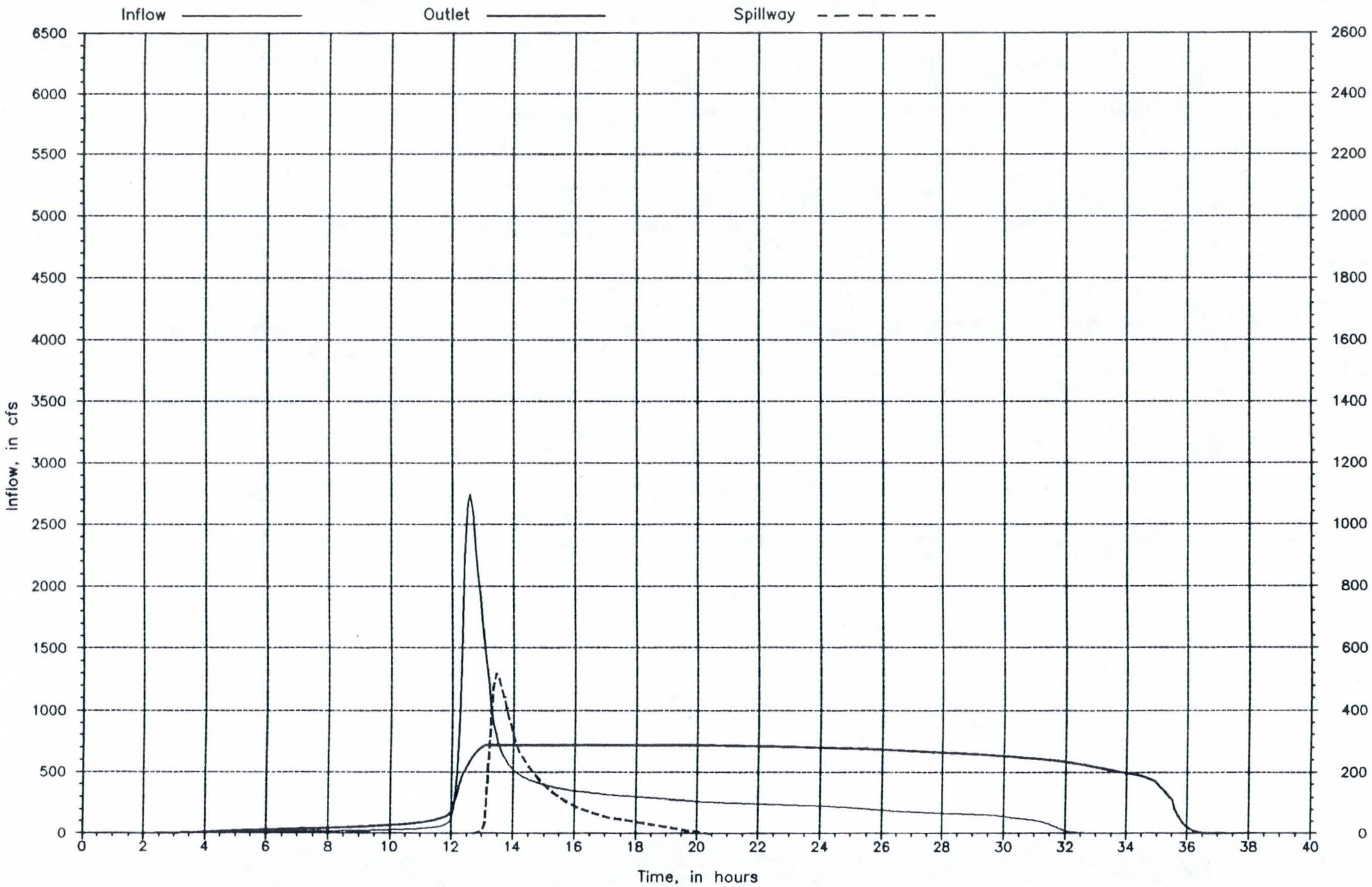

FIGURE C-15
Deer Valley Detention Basin - Option 2, Case 2
hydrographs for the 100-year, 24-hour storm

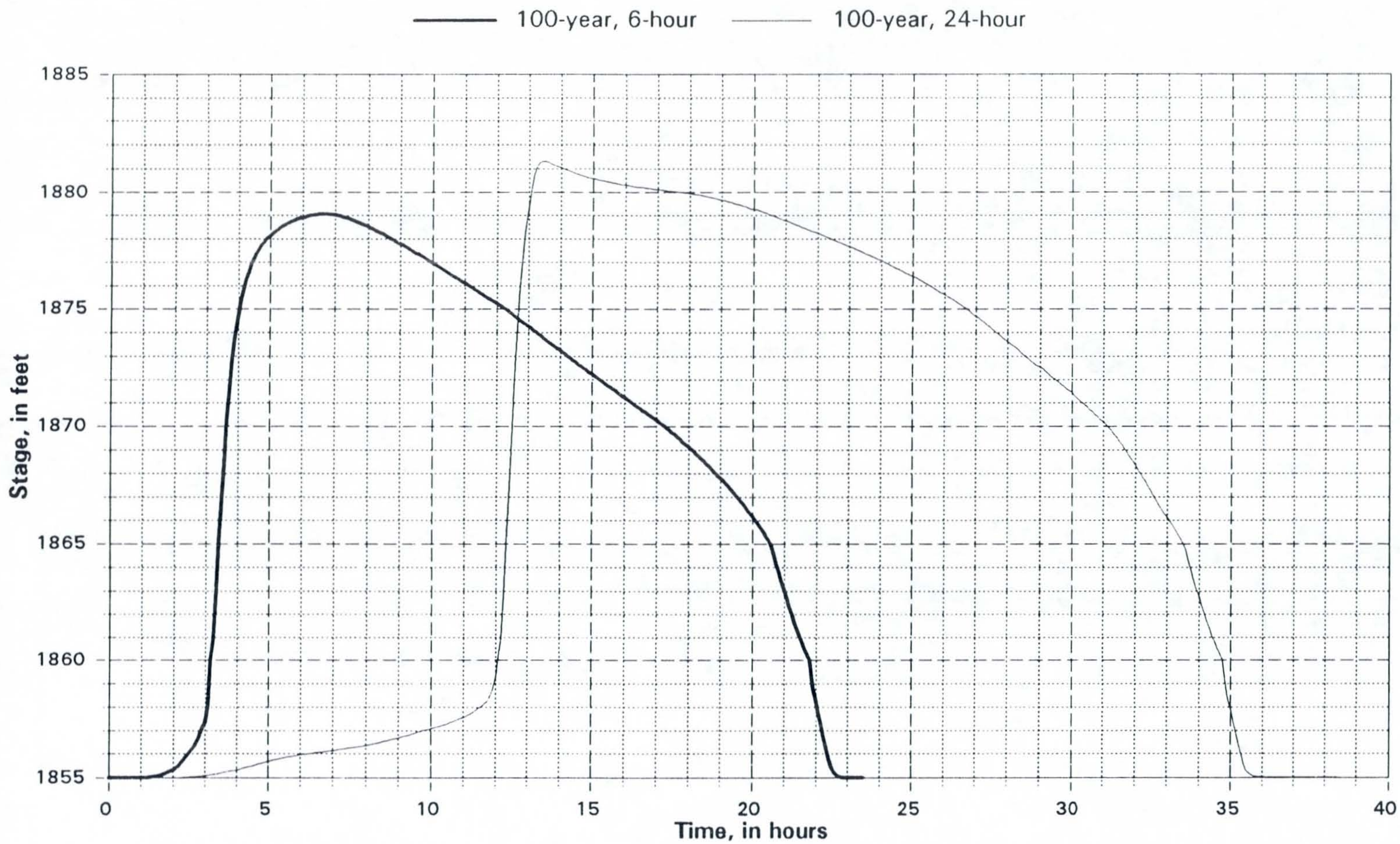

FIGURE C-16
Deer Valley Detention Basin - Option 2, Case 2
stage hydrographs

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02-Jan-97

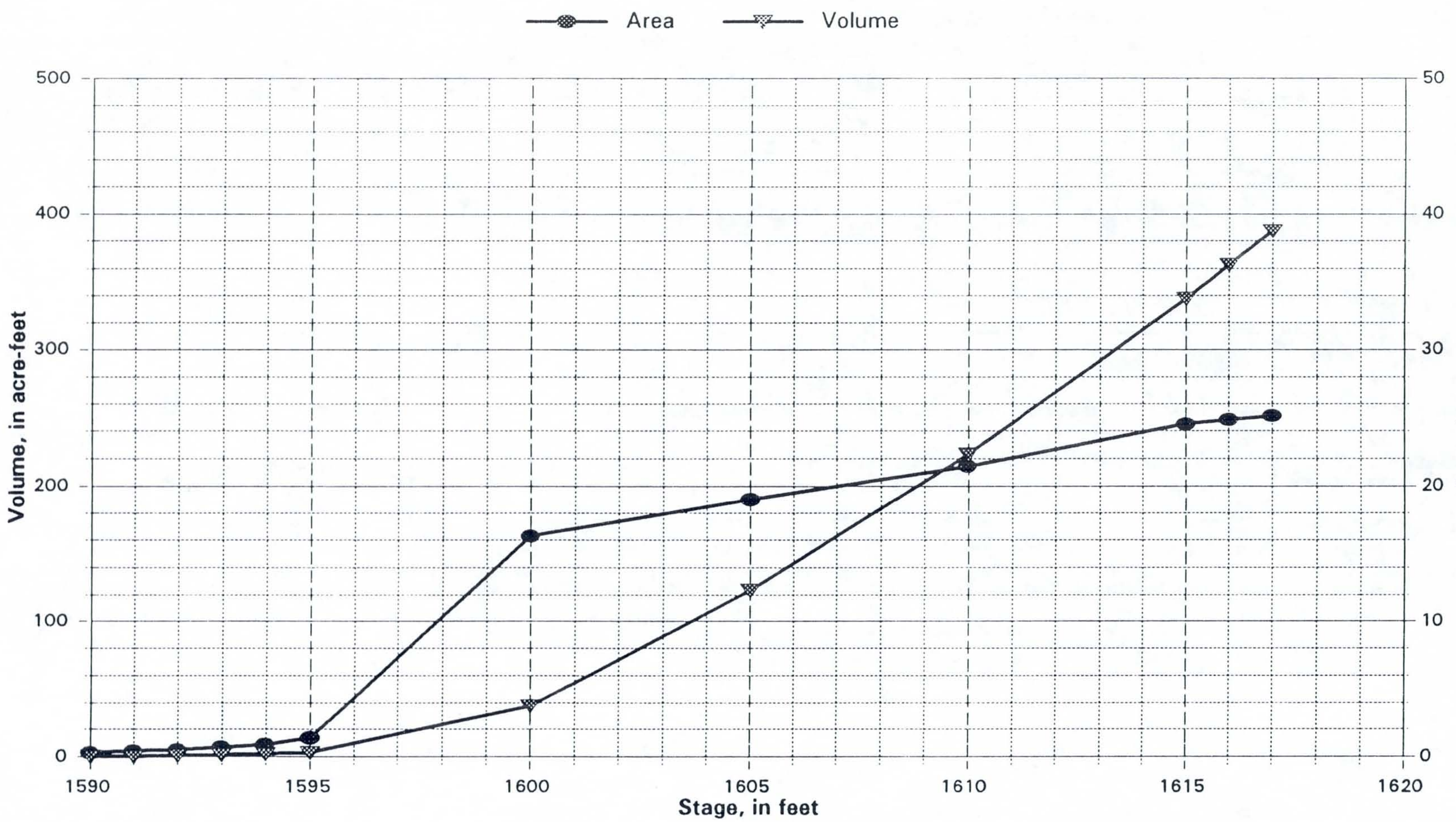

FIGURE C-17
Union Hills Detention Basin - Option 1
area-capacity curves

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02-Jan-97

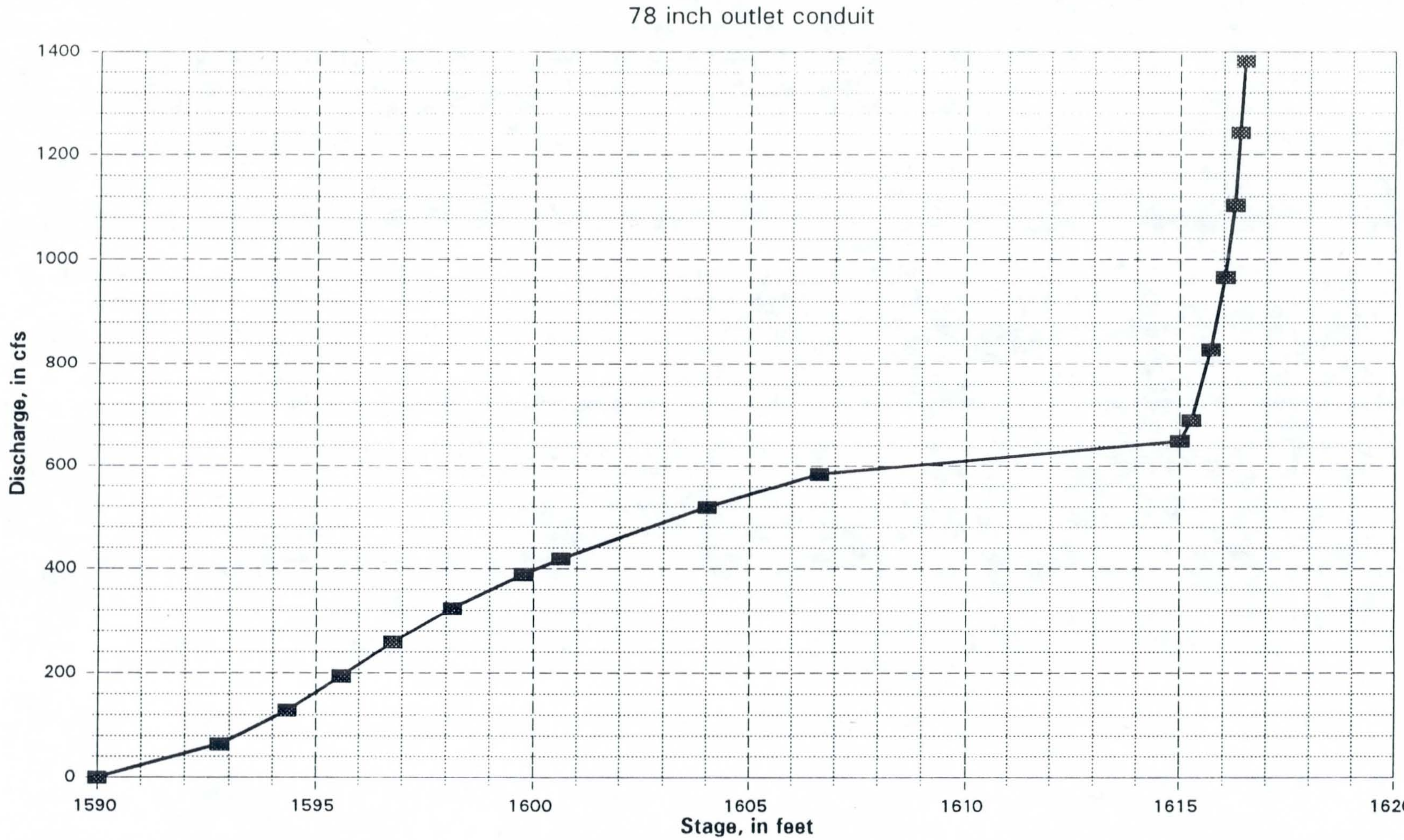

FIGURE C-18
Union Hills Detention Basin
outlet rating curve

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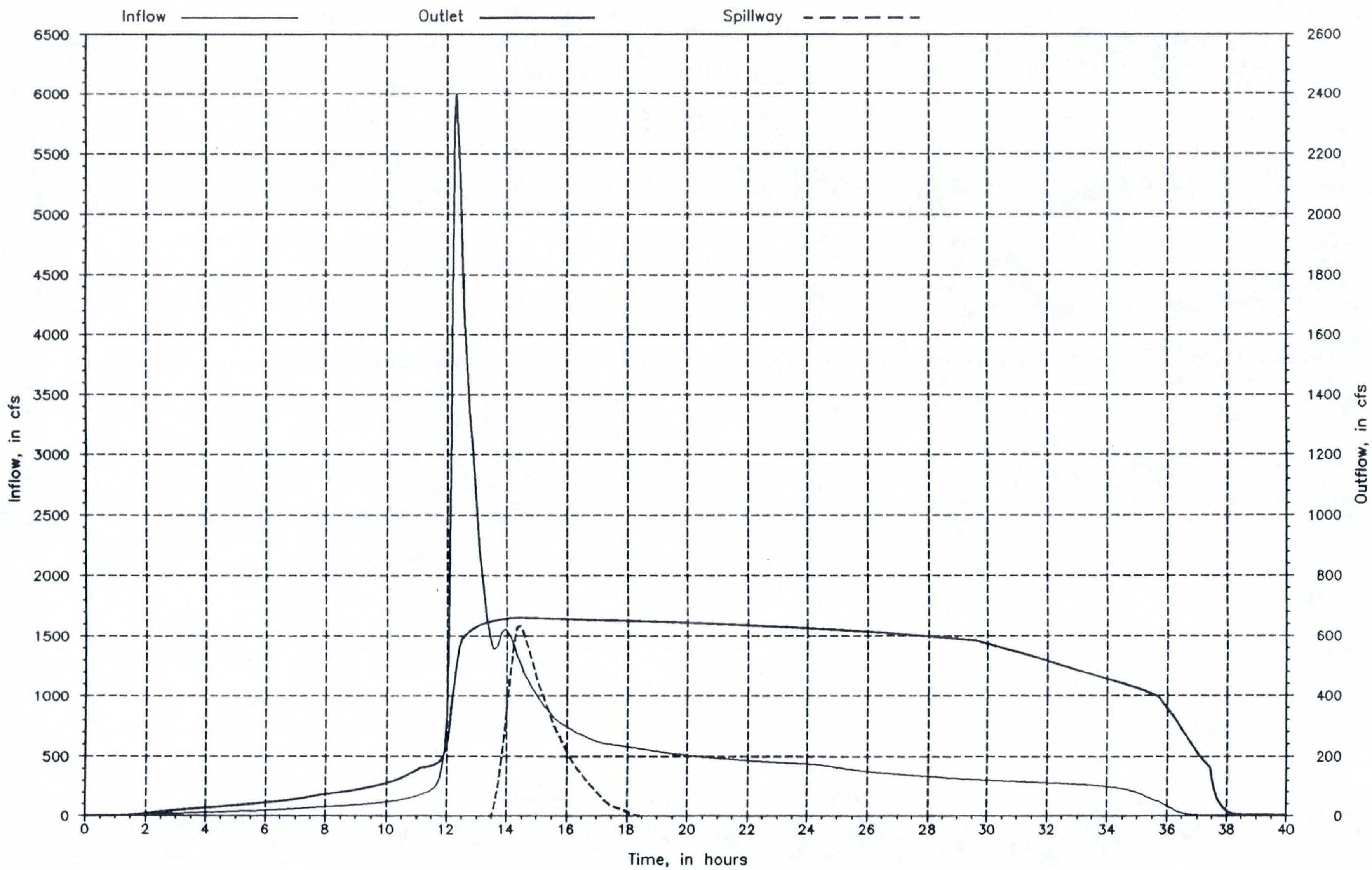

FIGURE C-19
Union Hills Detention Basin - Option 1, Case 1
hydrographs for the 100-year, 24-hour storm

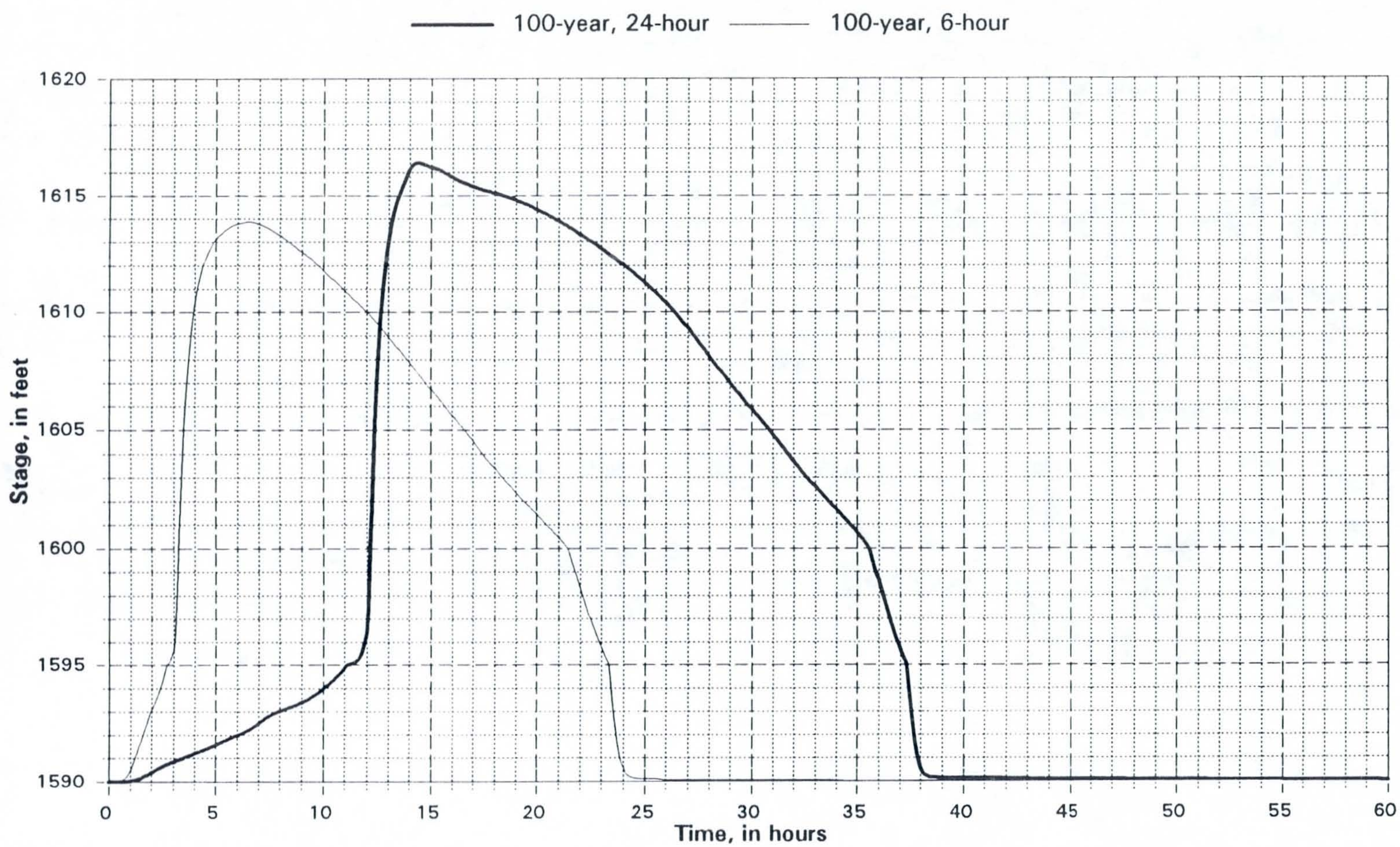

FIGURE C-20
Union Hills Detention Basin - Option 1, Case 1
stage hydrographs

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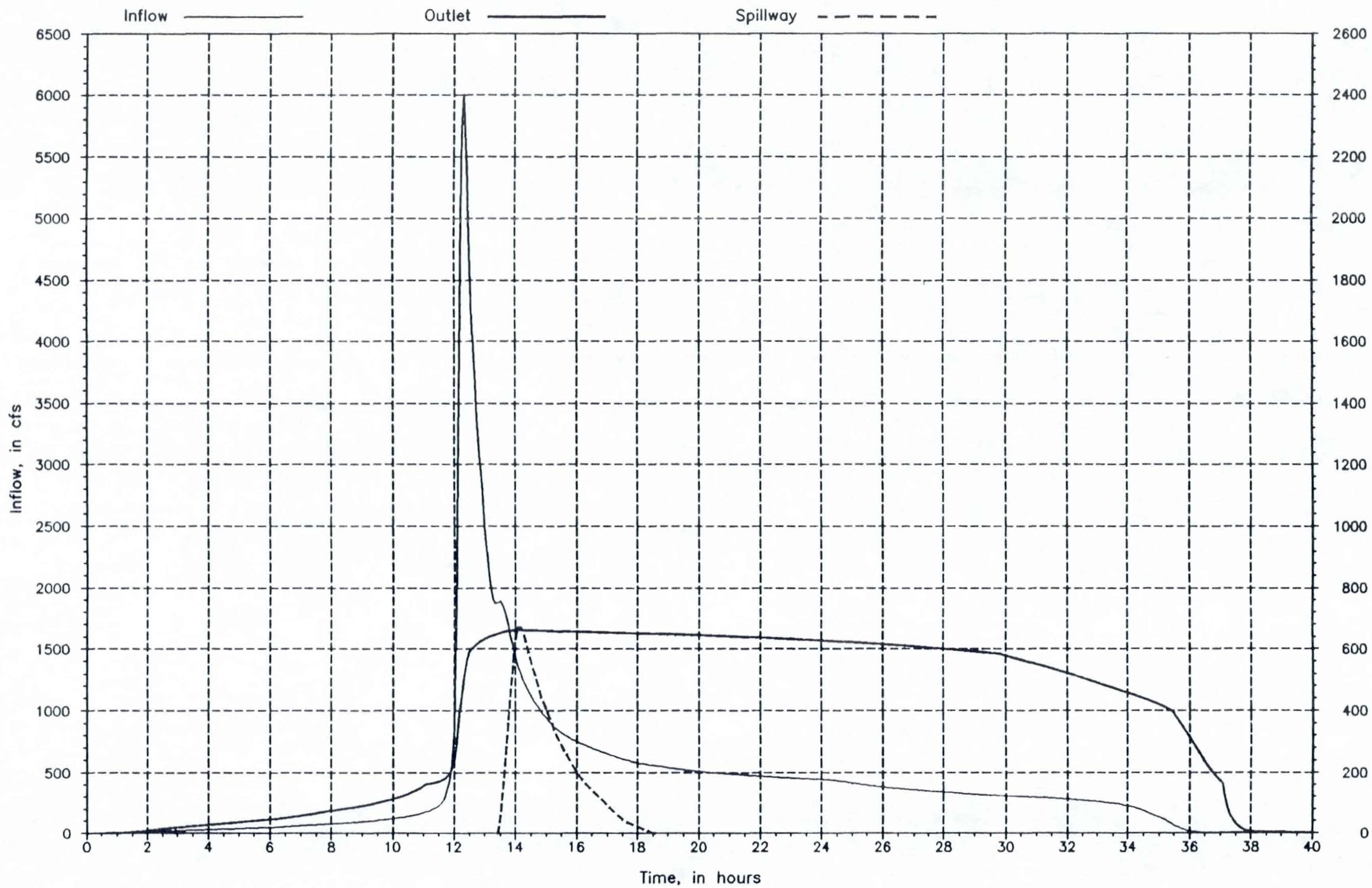

FIGURE C-21
Union Hills Detention Basin - Option 1, Case 2
hydrographs for the 100-year, 24-hour storm

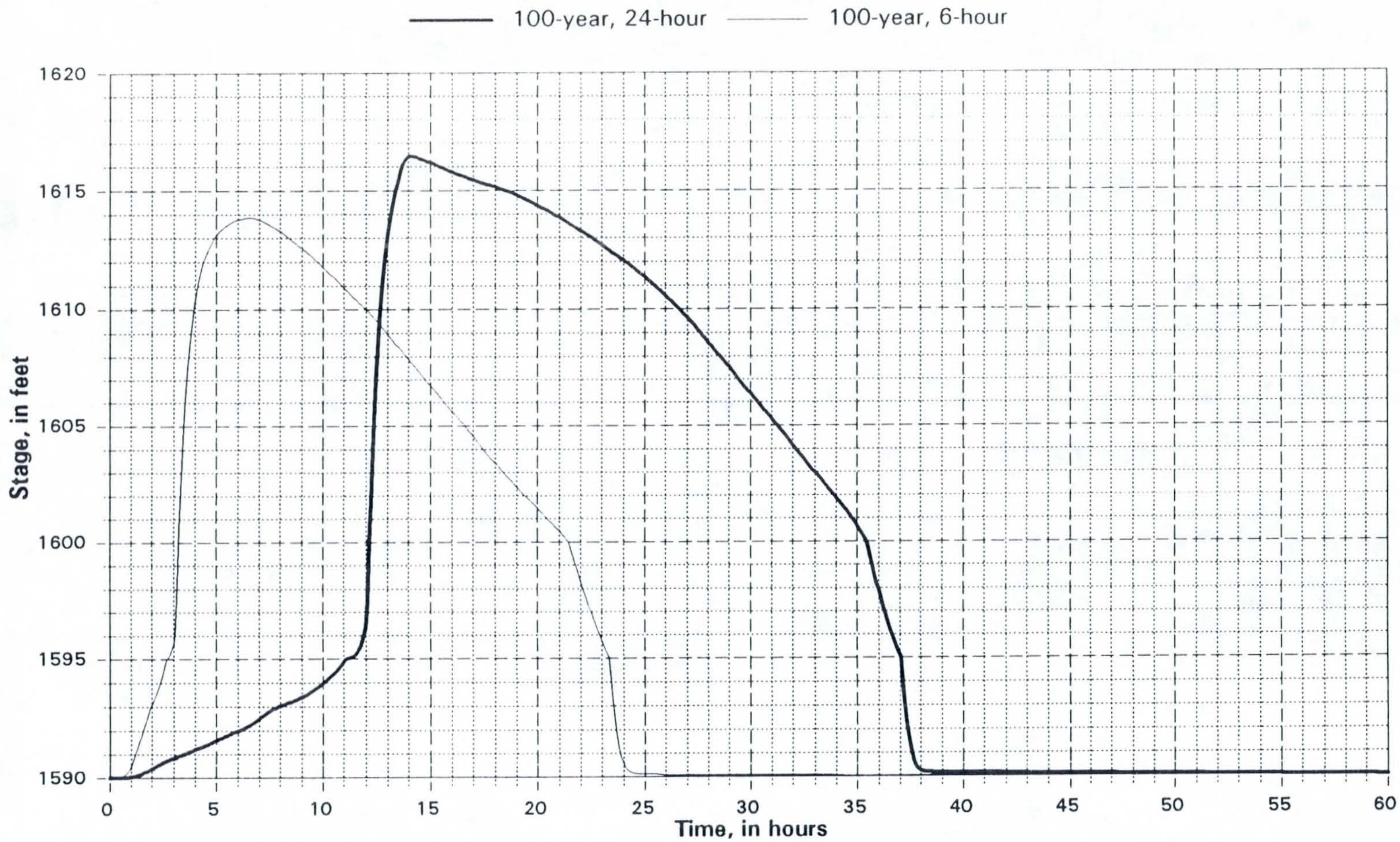

FIGURE C-22
Union Hills Detention Basin - Option 1, Case 2
stage hydrographs

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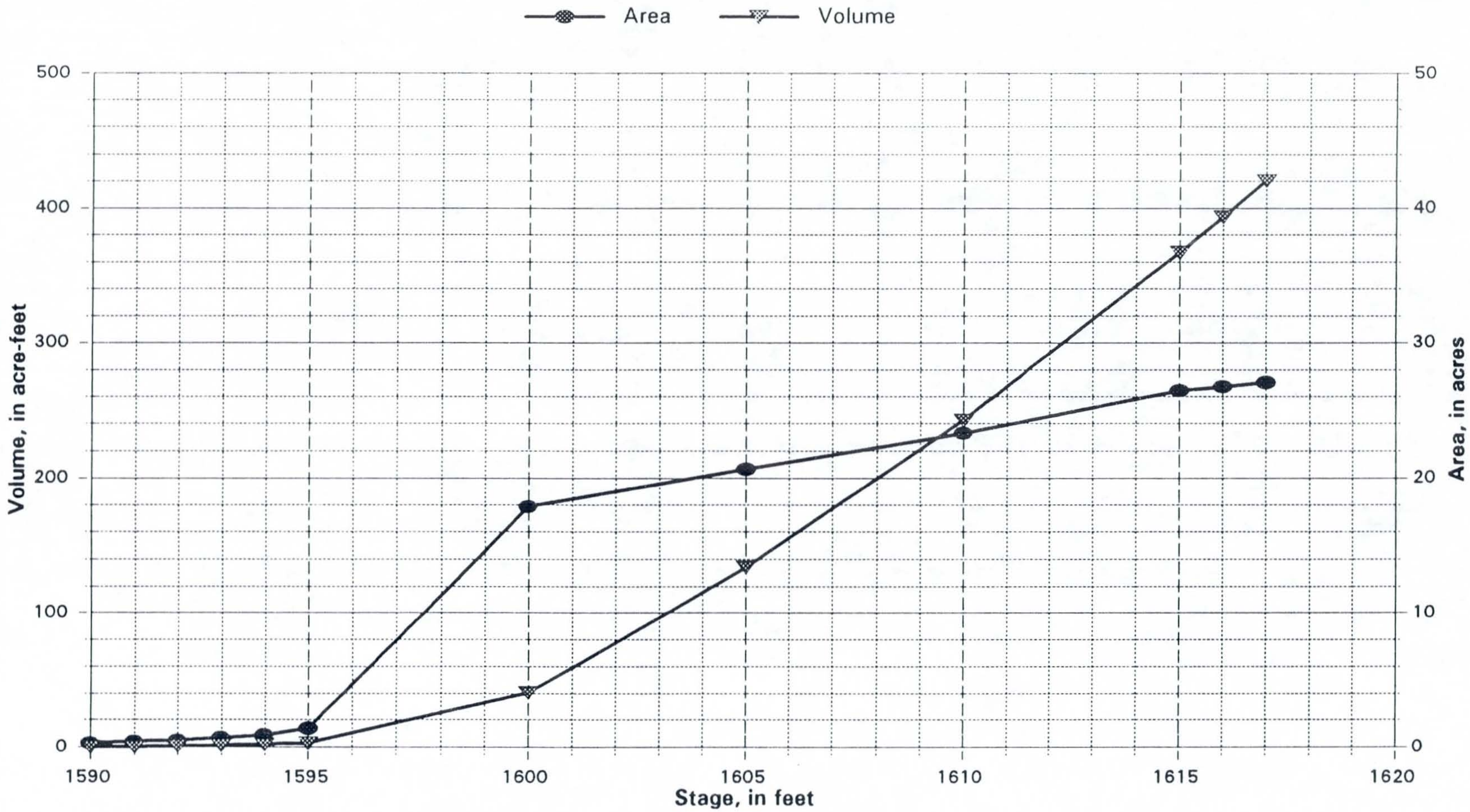

FIGURE C-23
Union Hills Detention Basin - Option 2
area-capacity curves

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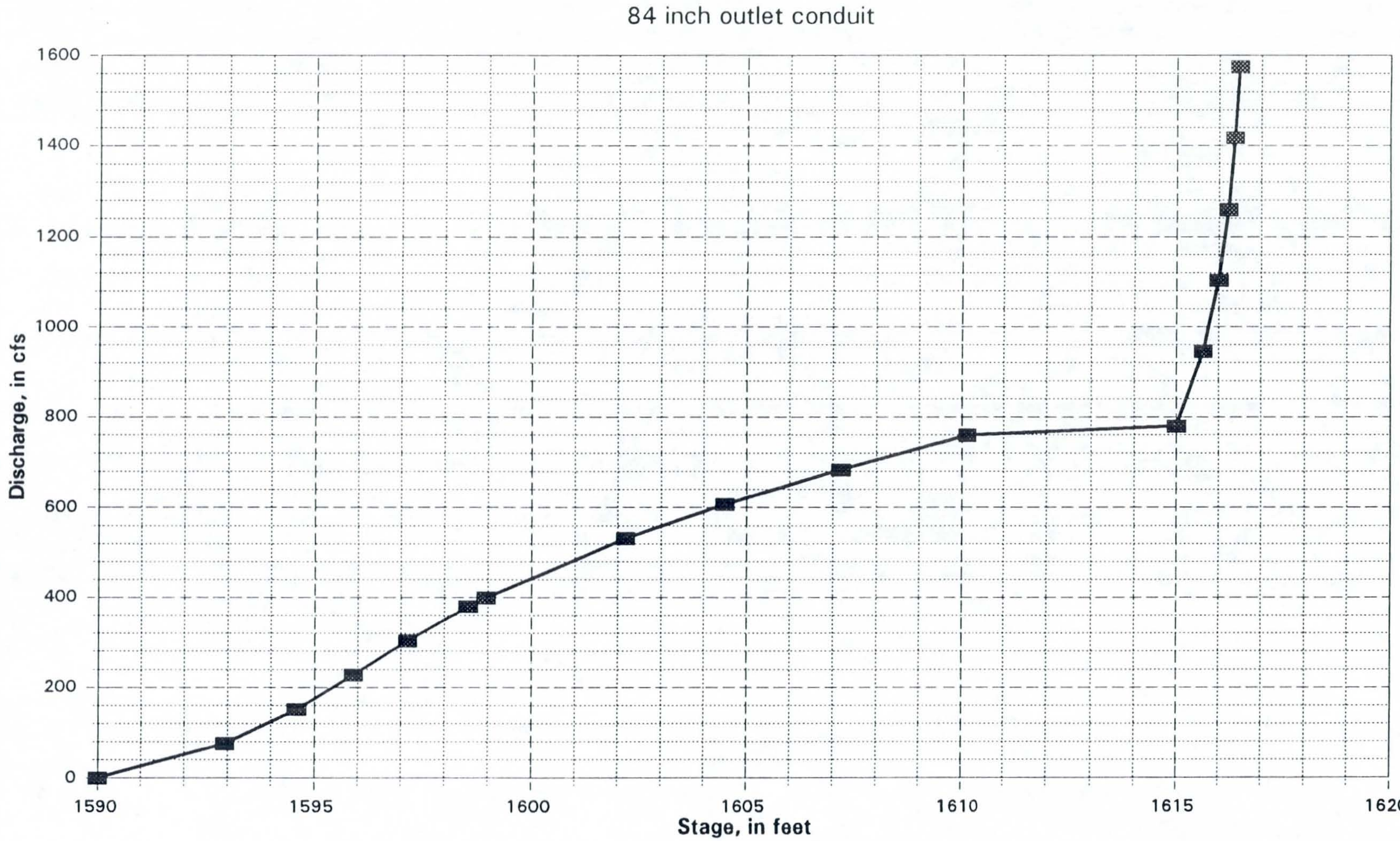

FIGURE C-24
Union Hills Detention Basin - Option 2
outlet rating curve

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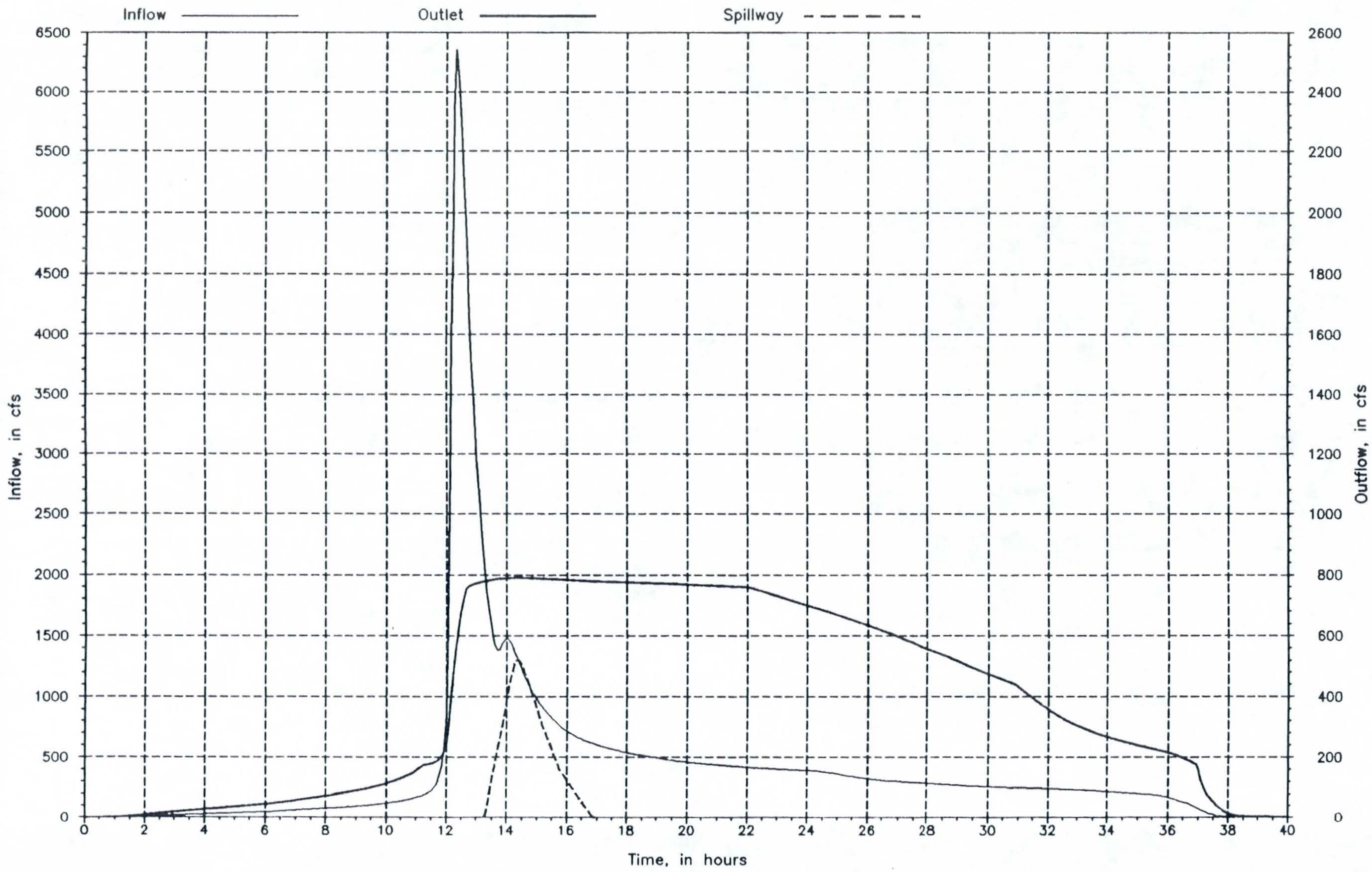

FIGURE C-25
Union Hills Detention Basin - Option 2, Case 1
hydrographs for the 100-year, 24-hour storm

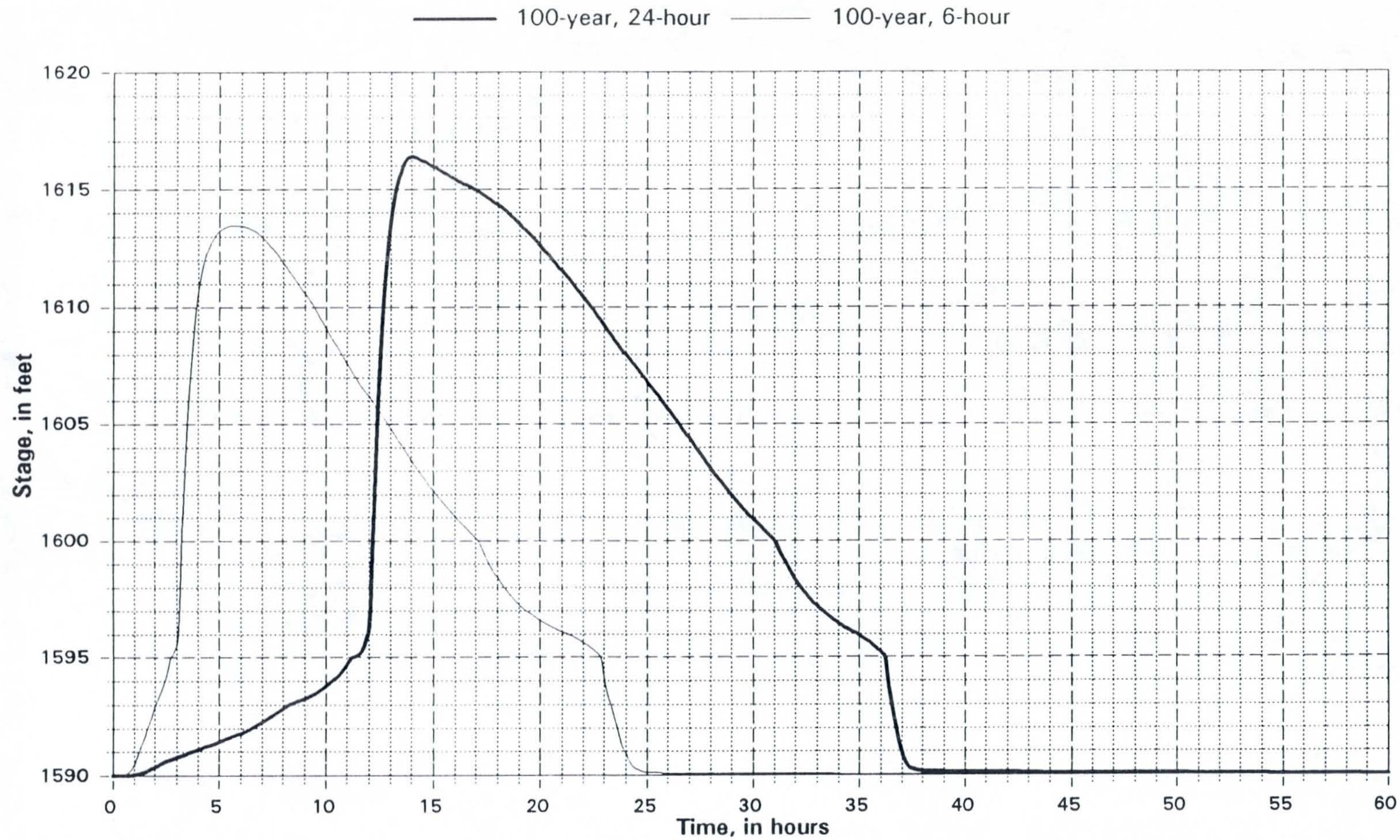

FIGURE C-26
Union Hills Detention Basin - Option 2, Case 1
stage hydrographs

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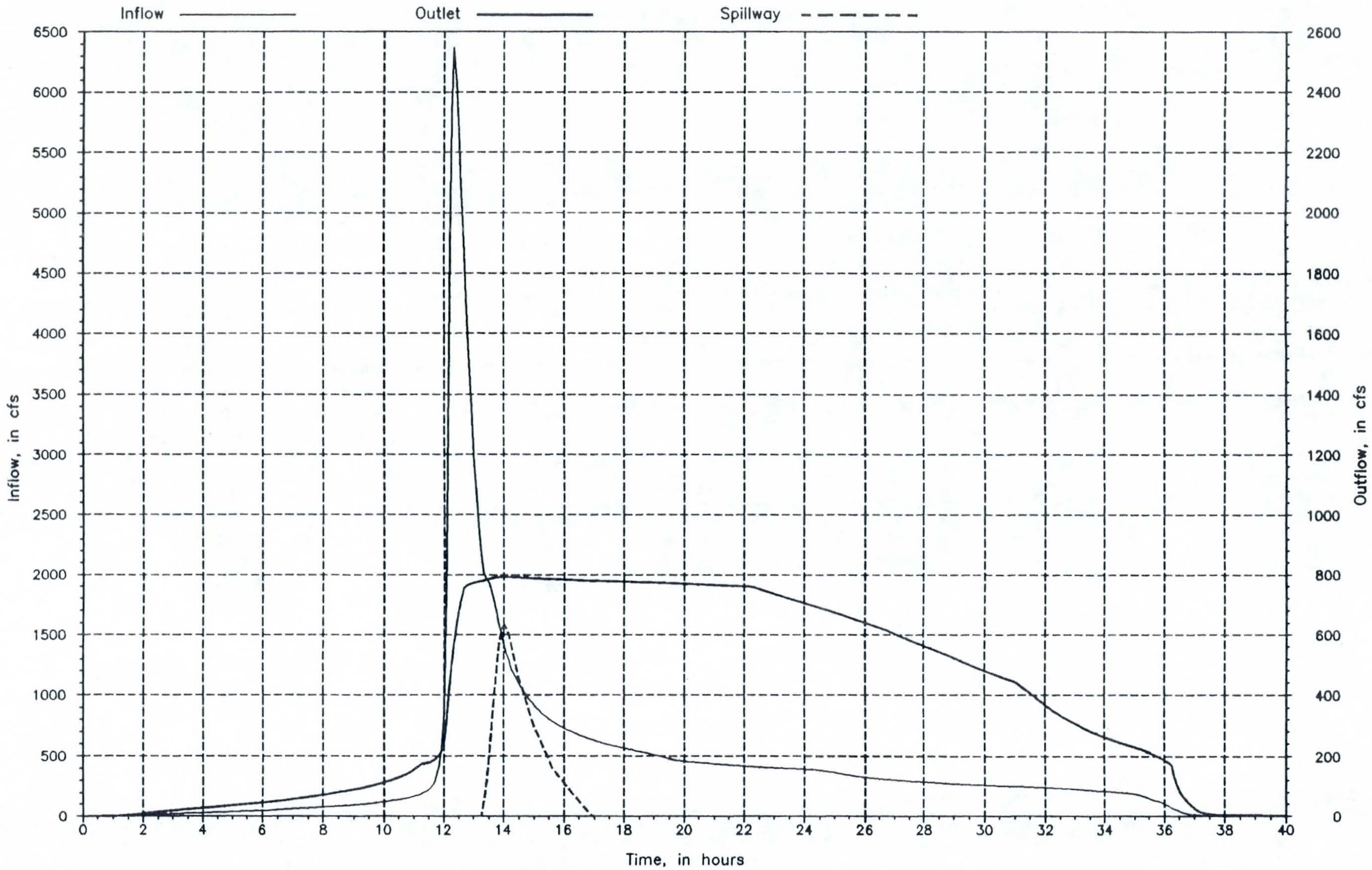

FIGURE C-27
Union Hills Detention Basin - Option 2, Case 2
hydrographs for the 100-year, 24-hour storm

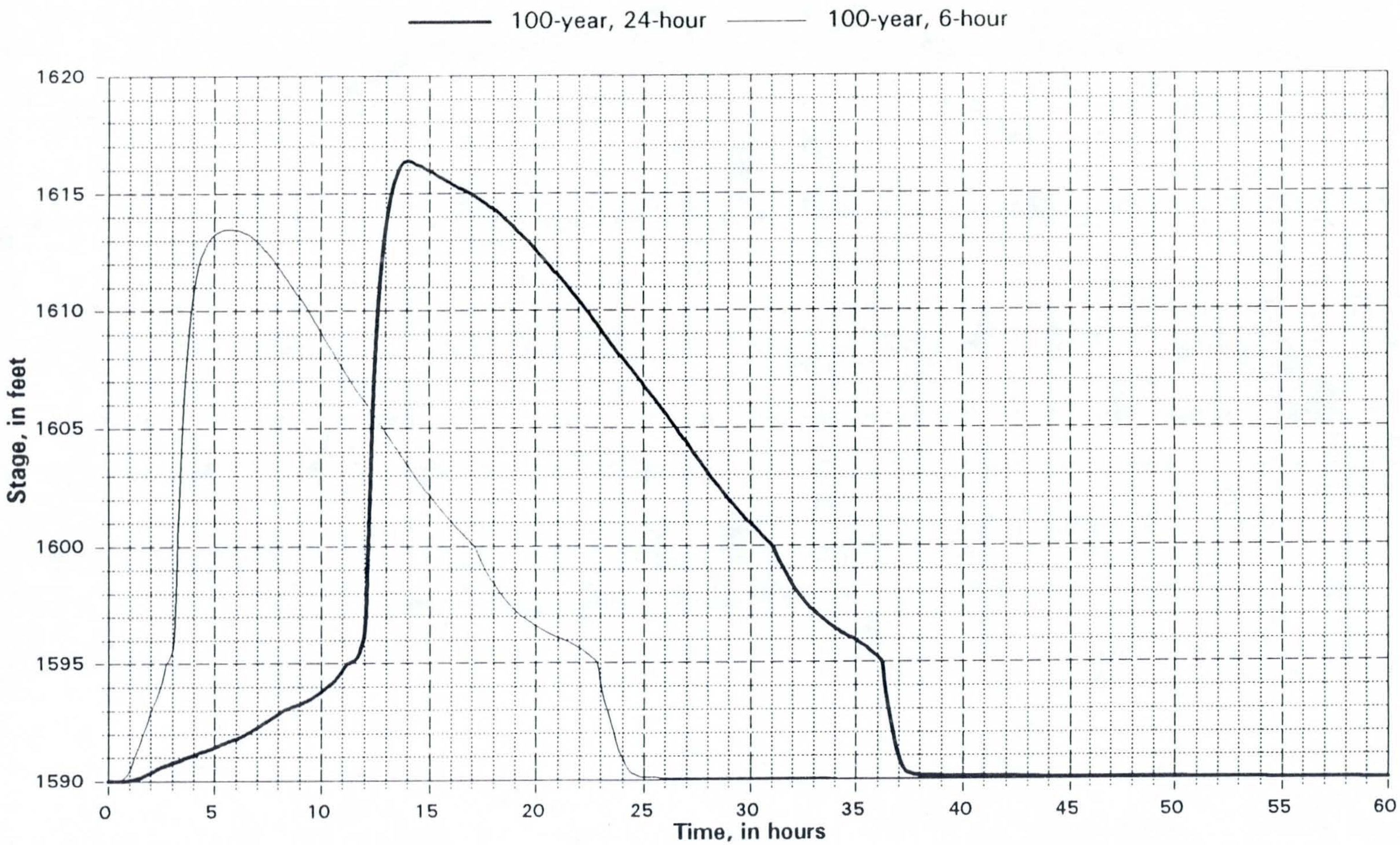

FIGURE C-28
Union Hills Detention Basin - Option 2, Case 2
stage hydrographs

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