Hydrology Report

For the

Rawhide Detention Basin

(Phase I)

Basin Alternatives Analysis

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Background

The purpose of this project is to alleviate flooding along Rawhide Wash, downstream of Jomax Road and to eliminate the alluvial fan flood hazard designation from this property. Two cities and two agencies are sponsoring this project. The Flood Control District of Maricopa County (District), charged with flood control in the county, and the Arizona State Land Department, the landowner, are the agency stakeholders. The Cities of Phoenix and Scottsdale are also stakeholders. The District is taking the lead for this project.

This project is based on the results of the **Rawhide Wash Detention Basin Feasibility Study,** completed in March of 1995. The feasibility study, a project with some of the same stakeholders as listed above, included hydrology, hydraulics, geotechnical investigation, and an engineers estimate of the probable costs. In the feasibility study a basin site was determined and four configurations were investigated. The study recommended a preferred alternative. It was noted in the feasibility report that further refinements to the basin size, grading, and outflow conditions would be required prior to final design of the facilities.

The current **Rawhide Wash Detention Basin Project** has been scoped in two phases. Phase I is the General Plan Amendment and Basin Alternatives Analysis, and Phase II is the Basin Final Design.

Phase I is a refinement of the feasibility study. The feasibility study recommended a hybrid of two alternatives in the preferred alternative. A final hydrologic model was not developed for this "hybrid" basin configuration. HDR's Alternative No. 1 of this project is the feasibility study preferred alternative. The Phase I effort includes reviewing the location of the Rawhide Detention Basin. Public acceptance of the basin would be enhanced if the basin were farther from Jomax Road. Alternatives were developed using the preferred alternative developed in the feasibility study as a guideline. At first the basin alternatives kept the same berm height, weir length, depth etc. as the feasibility study preferred alternative. Basin characteristics were then modified to meet preferences in the design. The City of Scottsdale General Plan amendment process includes the basin public education and involvement.

Phase II of this project will be the final design of the Rawhide Detention basin. The design will provide a detention facility to alleviate the flooding experienced downstream and eliminate the alluvial fan flooding designation.

Hydrology

The alternative study was based on the 100-year, 6-hour design flows on Rawhide Wash from the Feasibility Study. The model from the Feasibility Study was modified and/or amended to evaluate the alternatives developed for Phase I Study. The Title Cards at the beginning of the each of the models were edited to define model changes. New names reflecting the alternative as modeled were used. The model was executed using the *U.S.*

Army Corps of Engineers Flood Hydrograph Package (HEC-1). The date of release is *June 09 1992, Version 4.0.3E*. This version is slightly newer that the *May 1991, Version 4.0.1E* that was used in the feasibility study. There are slight variations in the model output (less than 5%).

Hydrology models were developed for the basin alternatives investigated. These hydrology models use Alternative No. 1, discussed previously, and are modified according to the location, configuration and size of the alternative basin being investigated. In addition to the alternative models, several other models were created for comparison and information:

- Existing condition model. Removing the basin data from the model used in the feasibility study created this model.
- Bypass Flow Model. This model provided information on possible bypass flows and the effect on the proposed basin
- Spillway Design Flood Models. These are several models that look at various spillway configurations for the design flood.

These models are discussed in more detail in following sections of this report.

Changes made in the hydrology model for the alternative studies were typical for all of the alternatives. The modifications are based on the basin geometry and the location of the basin in the watershed. Three areas were modified for each alternative:

1. Routed downstream subareas past the basin
2. Modified routing reach lengths
3. Adjusting the basin alternative storage-routing parameters. These include the volume, elevation, and discharge curves.

TABLE 1, summarizes the significant data for each basin alternative.

Table 1a
RAWHIDE WASH DETENTION BASIN PROJECT
ALTERNATIVE COMPARISON SUMMARY TABLE

Basin Number	Storage Volume[1] [Ac. Ft.]	Outflow Rate[2] [cfs]	Basin Depth[3] [feet]	Berm Height[4] [feet]	Spillway Height[4] [feet]
1	1,190	759	32	35	25
2	1,196	785	30	35	25
3	1,205	787	25	30	20
4	1,204	793	27	30	20
4A	1,220	788	21	28	~~20~~ 18
5	1,349	741	30, 22	20, 20	10, 10
6	1,313	742	30, 27	20, 23	10, 13
6A	1,309	742	21, 20	22, 25	12, 15

1. Based on "peak storage" in hydrologic model
2. Based on hydrology model at Jomax Road
3. As measured from invert to spillway
4. As measured from existing ground

Table 1b
RAWHIDE WASH DETENTION BASIN PROJECT
ALTERNATIVE COMPARISON SUMMARY TABLE

Basin Number	Cut Volume [Cu. Yd.]	Fill Volume [Cu. Yd.]	Net Waste [Cu. Yd.]	Power Line Area [acres]	Wash Area [acres]	Develop Able Area [acres]	Foot print Area [acres]
1	1,384,000	560,000	823,000	22.2	14.9	44.9	82.0
2	1,986,000	384,000	1,601,000	15.9	15.5	37.9	69.3
3	1,801,000	350,000	1,451,000	12.8	17.1	44.8	74.7
4	1,788,000	369,000	1,418,000	14.8	15.5	43.8	74.1
4A	1,724,000	480,000	1,244,000	15.0	18.2	57.4	90.6
5	2,939,000	219,000	2,720,000	28.4	35.1	28.0	91.5
6	2,987,000	192,000	2,795,000	31.4	26.1	28.8	86.3
6A	2,752,000	262,000	2,490,000	31.4	26.1	43.9	101.4

Other Hydrology Models

Several other hydrologic models were created to assist in the selection process for the preferred basin alternative. A short description of each model follows and the HEC-1 models are in the appendix.

Existing Conditions Model (Base Model)
An "existing conditions" model was created and flows were routed through the watershed. This is the "Do Nothing" model for the watershed. This model shows that the peak flow reaching the basin site (C21.05) is 12,190 CFS and the volume passing this point is 1346-acre feet (AF).

Bypass Model
A model was created to determine the volume of stormwater that would bypass and not have to be stored by the Rawhide basin. While this may be a final design issue, bypass flows would impact the basin design. A peak of 500 cfs was diverted from each of the two major channels that would enter a basin. The results of this model show that the peak inflow for the basin was lowered by 896 CFS to 11,294 CFS and the total volume decreased by 221AF to 1125 AF.

Spillway Design Flood Model (½ PMF)
Arizona Department of Water resources requires that the emergency spillway be able to pass one-half of the probable maximum flood (½ PMF). This requirement is because the Rawhide Detention Basin would be classified a "High Hazard, Small to Medium" dam. Several models were created, including a recreation of the feasibility ½ PMF model, to investigate the configuration of the emergency spillway. The size of the spillway influences the maximum water surface elevation in the basin. This directly affects the height of the berm around the basin since the berm must not be overtopped. The Table 2 below shows the results of the spillway design flood modeling.

Table 2
½ PMF SPILLWAY VARIATION RESULTS

Basin	Feasibility Preferred Basin	Alternative Basin No. 4A	Alternative Basin No. 4A	Alternative Basin No. 4A	Alternative Basin No. 4A
Weir Length	700 Feet	200 Feet	200 Feet	400 Feet	600 Feet
Weir Coefficient	3.2*	3.2*	2.88	2.88	2.88
Low Level Outlet	2 – 60 Inch	2 – 36 Inch	2 – 36 Inch	2 – 36 Inch	2 – 36 Inch
Head On Weir	4.3 Feet	7.3 Feet	7.7 Feet	5.5 Feet	4.5 Feet

*From the feasibility study

The spillway weir breadths and flow depths influence the weir coefficient. According to Brater and Kings *Handbook of Hydraulics*, page 5-40, the breadth of a broad crested weir is affects the coefficient used in the weir equations. A spillway for this type of basin typically would have a large breadth and a lower coefficient. Lower coefficients should be used based on this information and to provide a more conservative design.

Alternative Models
Eight models, each slightly different that the rest, were developed as refinement to the feasibility study. These basins are graphically shown in the appendix. They are listed as

Alternative 1 through Alternative 6A. The alternatives discussed in this section of the report refer to the figures as listed in the appendix.

Alternative No. 1

This alternative is a model of the feasibility study preferred basin alternative. No model was presented in the feasibility study report for the "hybrid" preferred basin. The largest portion of the storage pool for this alternative is located northeast of the powerline alignment. This alternative basin was modeled with a double barrel 36" outlet pipe and a 200-foot wide emergency spillway. The berm height is 35 feet from existing ground and is 42 feet high from the invert of the basin. The outflow from the low-level discharge is 452 cfs and the peak storage is 1190 AF. The single largest factor in the cost of constructing any of the basins is the net earthwork, or waste material to haul out. This basin has one of the lowest waste amounts of all of the basins studied. This basin is in the same location and is the same height as the feasibility study preferred basin.

Alternative No. 2

This alternative is in the same location as Alternative No.1. The location of the storage pool for this alternative has been shifted to the southeast side of the power line alignment. Since the storage pool is cut into higher ground, there is less need for a berm, while the amount of earth excavation is increased, and the net earthwork nearly doubles. This alternative has a double barrel 36" outlet pipe and also employs a 200-foot weir for emergency spills. The berm is 35 feet high from existing ground and is 40 feet high from the invert of the basin. The outflow from the low-level discharge is 422 cfs and the peak storage is 1196 AF. The basin is near Jomax Road and the top of the berm is the same height as the feasibility study preferred basin.

Alternative No. 3

This alternative locates the basin very near the center of Section 36. It is at the confluence of two major tributaries. The majority of the storage pool is northeast of the powerline alignment in higher ground. The berm height is less but the net excavation quantities are higher than the feasibility study basin. This basin has a double barrel 36" outlet pipe and a 200-foot wide emergency spillway. The berm is 30 feet high from existing ground and is 35 feet high from the invert of the basin. The outflow from the low-level discharge is 398 cfs and the peak storage is 1208 AF. This alternative basin is farther from Jomax Road and may be less visible. The berm is shorter than the feasibility basin.

Alternative No. 4

This alternative is also located near the center of the section and equalized the land used on both sides of the powerline alignment. In quantities and areas, this basin is very similar to Alternative No. 3. This basin has a double barrel 36" outlet pipe and a 200-foot wide emergency spillway. The berm is 30 feet high from existing ground and is 37 feet high from the invert of the basin. The outflow from the low-level discharge is 355 cfs and the peak storage is 1205 AF.

Alternative No. 4A

This alternative is a modification to Alternative No. 4 that lowers total berm height to 28'. The basin was lowered and the area expanded to enable the basin to accept the flood flows and to reduce the amount of net earthwork. This basin has a double barrel 36" outlet pipe and a 200-foot wide emergency spillway. The berm is 28 feet high from existing ground and is 31 feet high from the invert of the basin. The outflow from the low-level discharge is 328 cfs and the peak storage is 1220 AF. This basin has the lowest net excavation of all but one of the alternatives.

Alternative No. 5

Alternative No. 5 is a two basin alternative. One of the basins is located near the center of the section, at the confluence of two major tributaries, and the other basin is at the proposed feasibility basin location. This double basin system uses both basins during large events and only the upper basin during the more frequent, smaller events. Both basins have a double barrel 36" outlet pipe. The upstream basin has a 700-foot wide spillway and the lower basin has a 200-foot wide emergency spillway. The berms for these double basins are 20 feet high from existing ground. The upper basin is 40 from the top of berm to the invert of the basin, and the lower basin embankment is 32 feet high from the invert of the basin. The outflow from the low-level discharge below both basins is 302 cfs and the total peak storage is 1349 AF. The double basin alternative has significantly more net excavation over the single basin and requires more infrastructure to provide flood protection.

Alternative No. 6

Alternative No. 6 is a two basin alternative. The large basin, identical to Alternative No. 5, is located near the center of the section, and the other basin is located immediately downstream. This double basin system uses both basins during large events and only the upper basin during the more frequent, smaller events. Both basins have a double barrel 36" outlet pipe. The upstream basin has a 700-foot wide and the lower basin has a 200-foot wide emergency spillway. The berms for these double basins are 22 and 25 feet high from existing ground. The upper basin is 40 from the top of berm to the invert of the basin, and the lower basin is 37 feet high from the invert of the basin. The outflow from the two basin system is 327 cfs and the total peak storage is 1313 AF. The double basin alternative showed a significant increase in net excavation over the single basin and requires more infrastructure to provide flood protection.

Alternative No. 6A

Alternative No. 6A is a two basin alternative like that used in Alternative No. 6 but the footprint area was expanded in an effort to lower the amount of net excavation. The footprint area increased by approximately 17% and the earthwork decreased by only about 10%.

Basin Alternatives Analysis - Preferred Basin

The selection of an alternative to study further was made in an city/agency coordination meeting on October 6, 1998. Important criteria for an acceptable preferred alternative were:

1. The basin should be located away from existing development and roadways. The preferred basin should be away from Jomax Road.
2. The berm around the basin should not be higher than other structures in the area. It should be able to be screened using natural material and native vegetation.
3. Maximizing the use of currently "undevelopable" land (e.g. utility easement and washes) is also preferred.
4. Net excavation should minimize waste haul out. All the stakeholders prefer a lower cost alternative. Since net excavation is likely to be the single most costly item for the construction of the basin, the lower the quantity of waste material, the lower the cost of the basin.
5. The basin must contain the storage volume of stormwater to accomplish the goals of downstream flood control.
6. Outflow from the basin must be a low enough to be contained in the available downstream conveyance.
7. An excessively deep basin will adversely affect the aesthetics and future use of the basin.
8. The structures required to protect the basin and insure it's proper operation add to the cost of the basin. Structures would be constructed using concrete, RCC, or soil cement that are not natural materials.

An Alternative Evaluation chart was used to help visualize the positives, negatives and neutral aspects of each alternative. The chart is shown below.

Alternative Evaluation

Name	Location	Storage	Outflow	Basin Depth	Berm Height	Net Excavation	Land Use	Structures
1	-	+	+	-	-	+	-	+
2	-	+	+	-	-			+
3	+	+	+			+	-	+
4	+	+	+			+	-	+
4A	+	+	+	+	+	+	-	+
5	-	+	+	-	+	-	+	-
6	+	+	+	-	+	-	+	-
6A	+	+	+	+	+	-	-	-

The chart helps to show whether the alternatives meet or do not meet the criteria listed. A "plus" means the alternative more closely meets the criteria, while a "minus" means the alternative does not meet the criteria as well. Blanks are used if the alternative neither meets nor does not meet the criteria. The Alternatives Analysis shows that the Preferred Basin is the Alternative No. 4A. Basin Alternative No. 4A incorporates most of the preferences listed.

APPENDIX

Feasibility Study Drainage Map

Alternative Figures

Powerline, Wash, And Common Areas Figure

Basin 4A HEC-1 Model

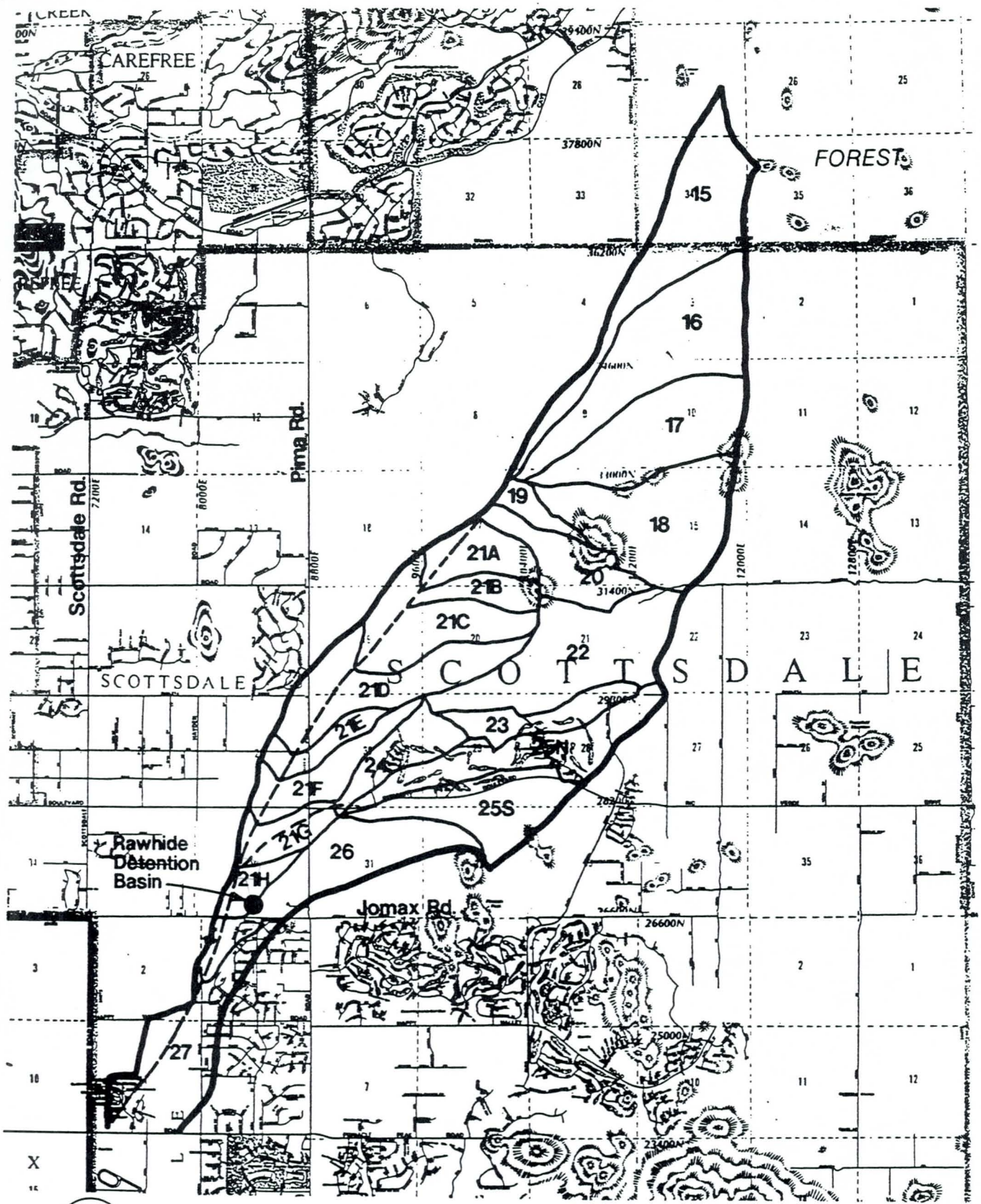
HEC-1 Models For Alternatives

Existing Conditions Model

Bypass HEC-1 Model

Spillway Design Flood HEC-1 Models

Feasibility Drainage Map



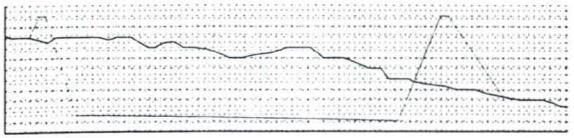
0 1 2 Miles
Scale Approx.

Figure 2-1
Rawhide Wash Watershed Map

CH2M HILL

Alternative Figures

SECTION A-A



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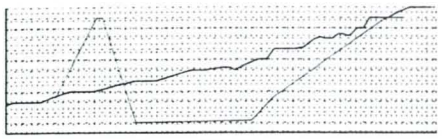

AREAS

FOOTPRINT	82.0 acres
POWERLINES	22.2 acres
WASH	14.9 acres
DEVELOPABLE	44.9 acres

ELEVATIONS

TOP OF BERM	2170 ft
SPILLWAY	2160 ft
EX. GROUND	2135 ft
INV. ELEV.	2128 ft

EXCAVATION VOLUMES

CUT	1,383,633 CY
FILL	560,297 CY
NET	823,336 CY

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Rawhide Wash Detention Basin

Alternative No. 1
Refine Feasibility Study
Preferred Alternative

N

SCALE: 1 INCH = 600 FEET

300 0 600 1200

CONTOUR INTERVAL = 5 FEET

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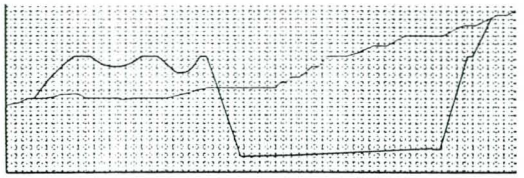
SECTION A-A



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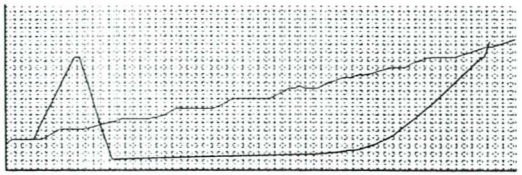


AREAS

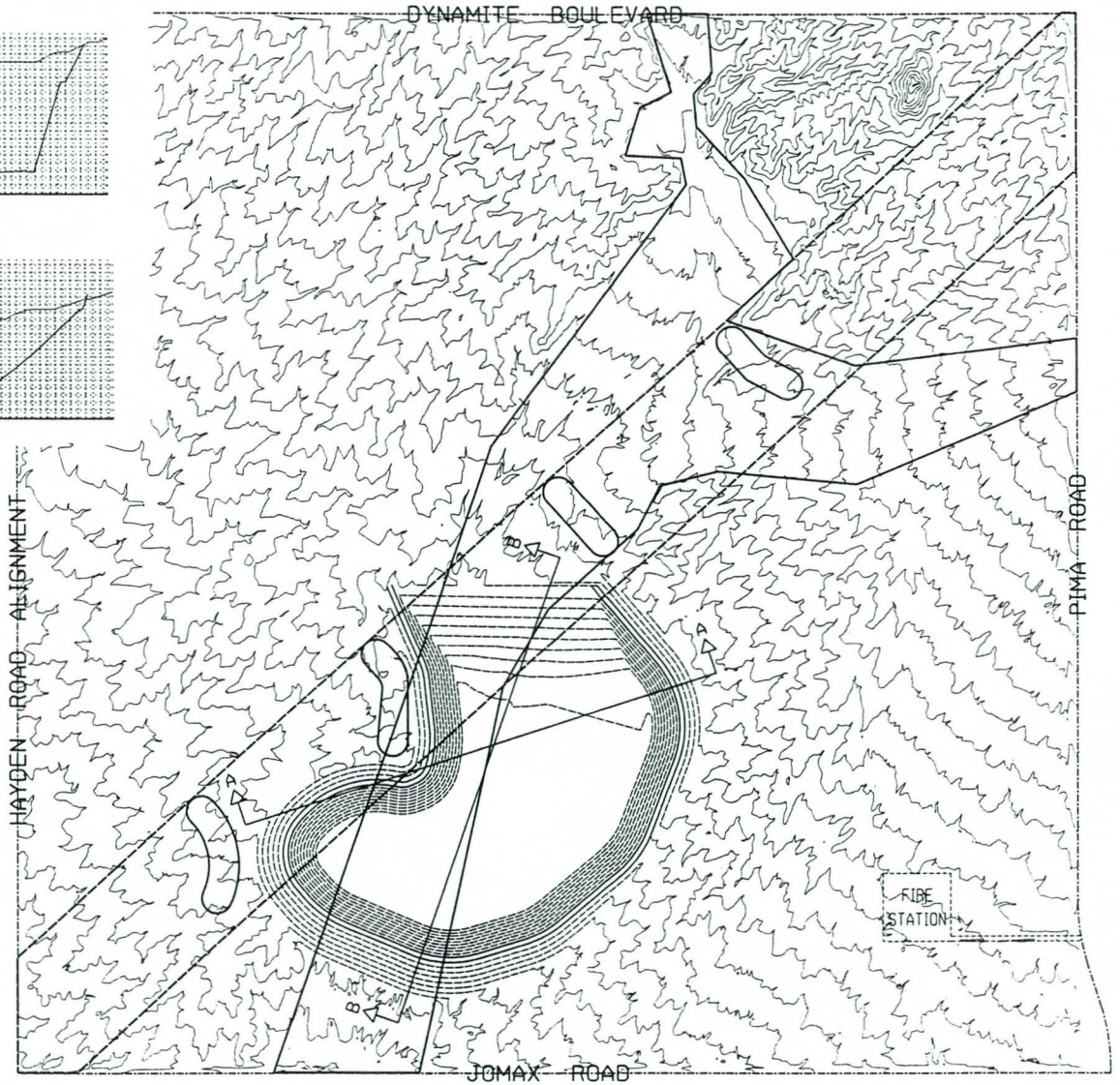
FOOTPRINT	69.3 acres
POWERLINES	15.9 acres
WASH	15.5 acres
DEVELOPABLE	37.9 acres

ELEVATIONS

TOP OF BERM	2170 ft
SPILLWAY	2160 ft
EX. GROUND	2135 ft
INV. ELEV.	2130 ft

EXCAVATION VOLUMES

CUT	1,985,548 CY
FILL	384,136 CY
NET	1,601,412 CY



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Rawhide Wash Detention Basin

Alternative No. 2
Feasibility Location
w/ Pool East of
Powerlines

N

SCALE: 1 INCH = 600 FEET

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CONTOUR INTERVAL = 5 FEET

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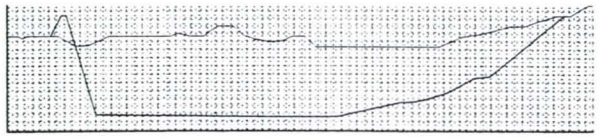
SECTION A-A



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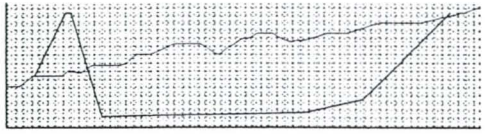

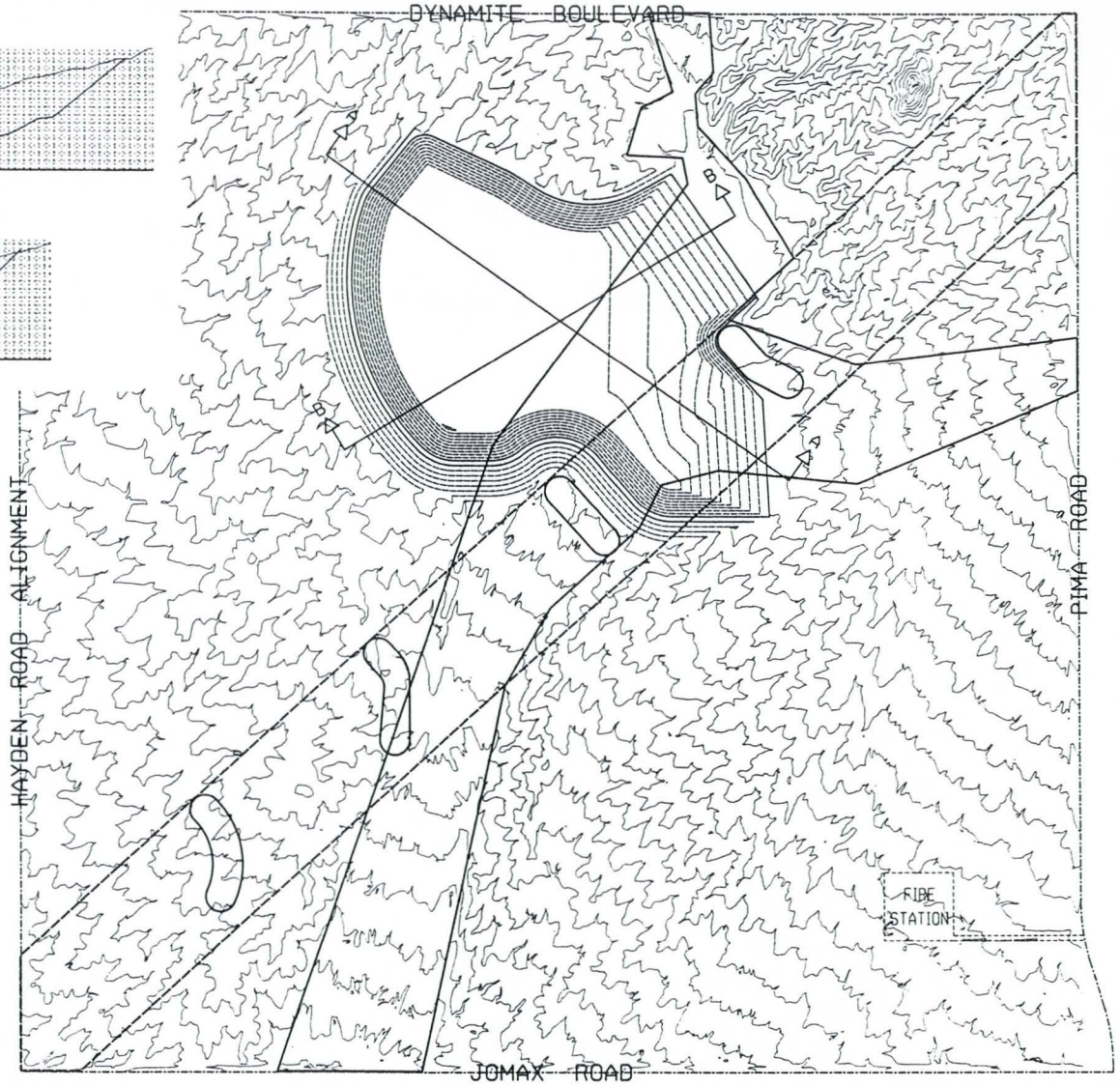

AREAS

FOOTPRINT	74.7 acres
POWERLINES	12.8 acres
WASH	17.1 acres
DEVELOPABLE	44.8 acres

ELEVATIONS

TOP OF BERM	2210 ft
SPILLWAY	2200 ft
EX. GROUND	2180 ft
INV. ELEV.	2175 ft

EXCAVATION VOLUMES

CUT	1,800,889 CY
FILL	349,737 CY
NET	1,451,152 CY

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Rawhide Wash Detention Basin

Alternative No. 3
Basin at Center
of Section - Pool
West of Powerlines

N

SCALE: 1 INCH = 600 FEET

300 0 600 1200

CONTOUR INTERVAL = 5 FEET

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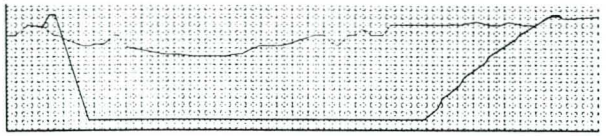
SECTION A-A



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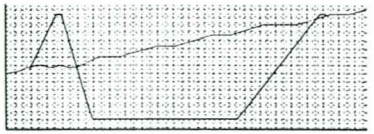

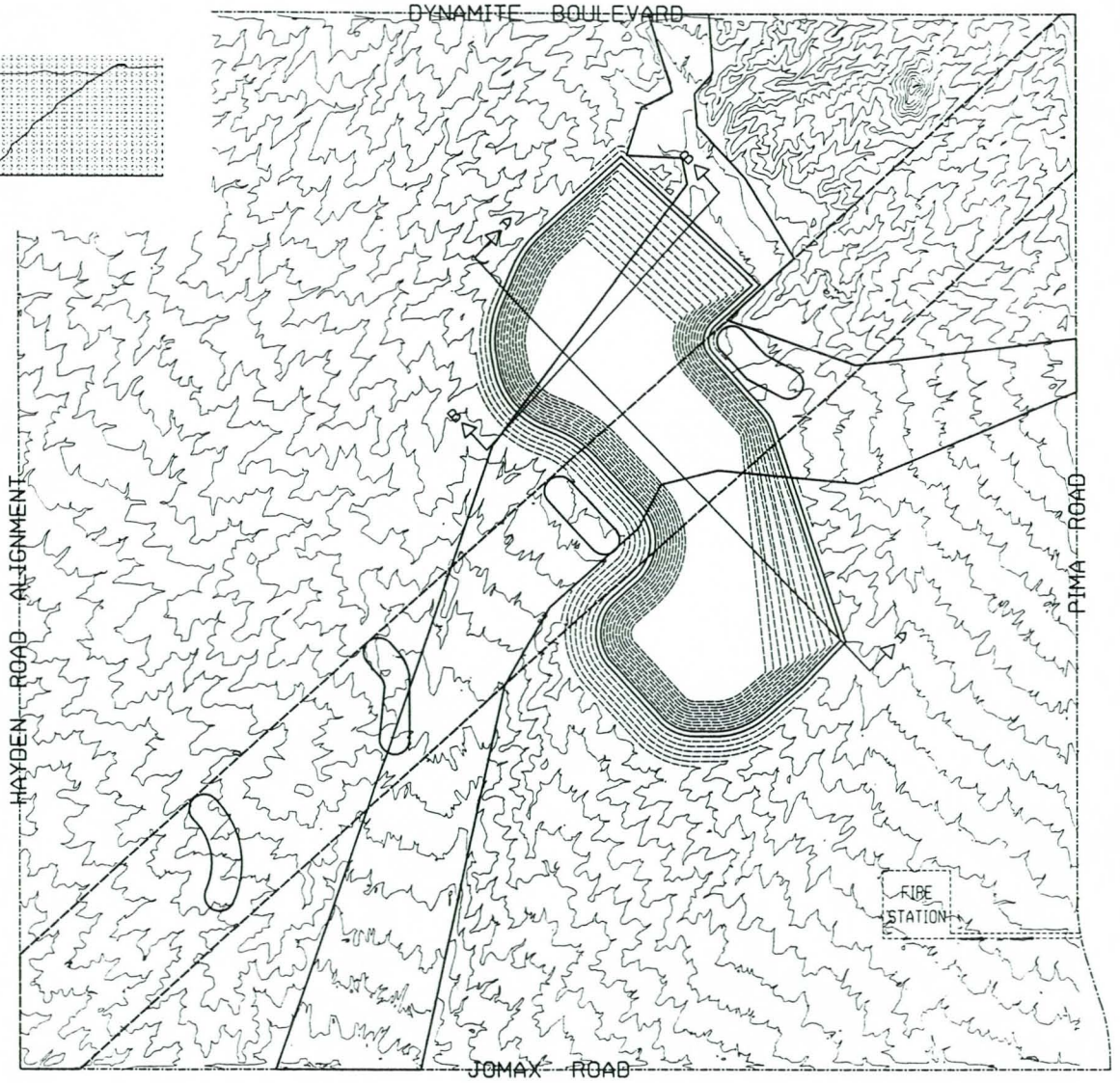

AREAS

FOOTPRINT	74.1 acres
POWERLINES	14.8 acres
WASH	15.5 acres
DEVELOPABLE	43.8 acres

ELEVATIONS

TOP OF BERM	2210 ft
SPILLWAY	2200 ft
EX. GROUND	2180 ft
INV. ELEV.	2173 ft

EXCAVATION VOLUMES

CUT	1,787,681 CY
FILL	369,348 CY
NET	1,418,333 CY

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Rawhide Wash Detention Basin

Alternative No. 4
Basin at Center
of Section - Pool
East of Powerlines

N

SCALE: 1 INCH = 600 FEET

300 0 600 1200

CONTOUR INTERVAL = 5 FEET

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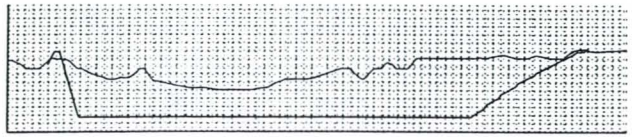
SECTION A-A



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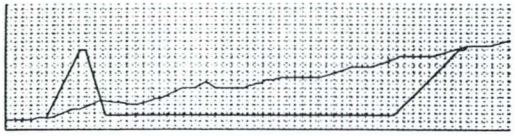

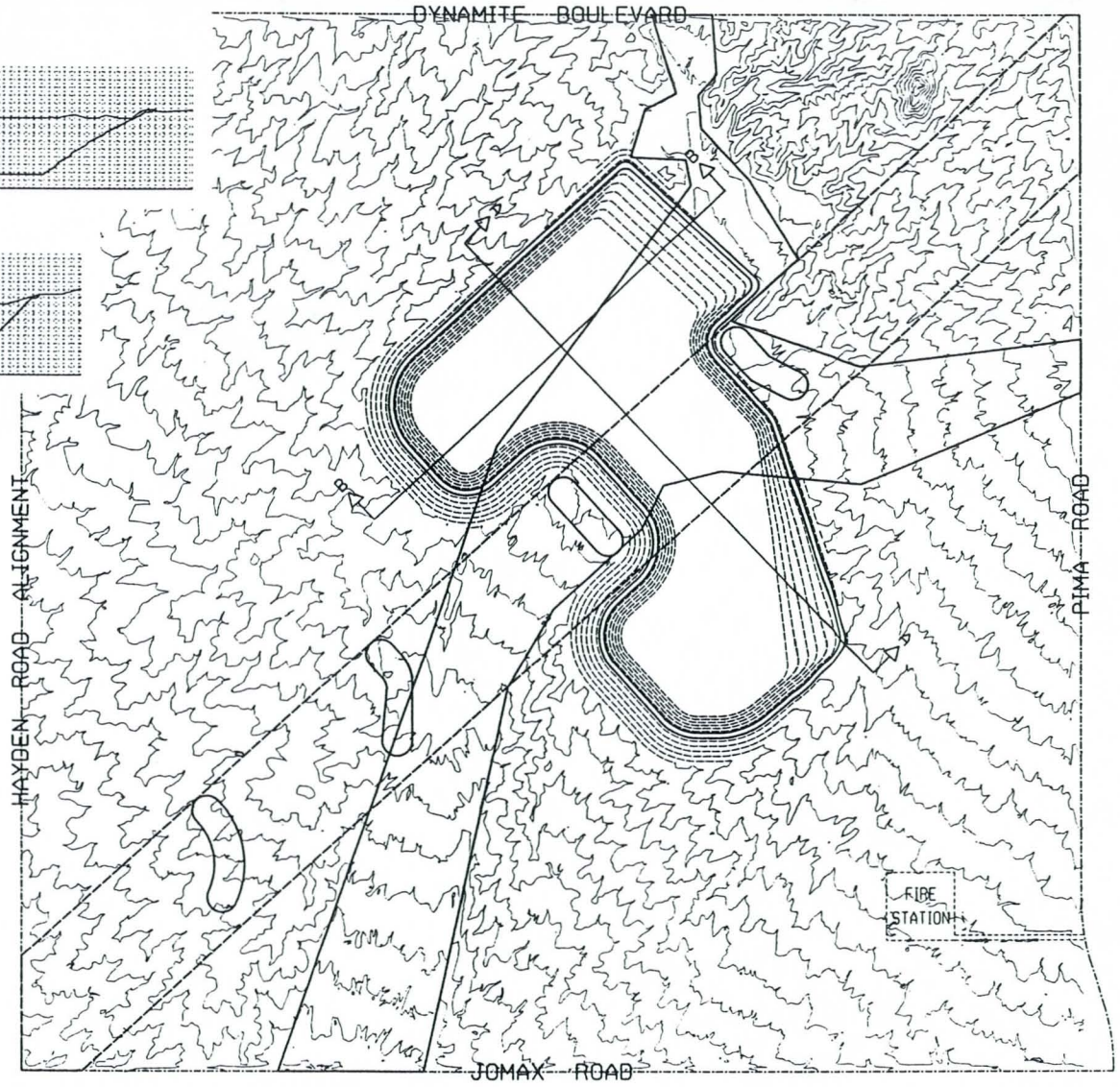

AREAS

FOOTPRINT	90.6 acres
POWERLINES	15.0 acres
WASH	18.2 acres
DEVELOPABLE	57.4 acres

ELEVATIONS

TOP OF BERM	2208 ft
SPILLWAY	2198 ft
EX. GROUND	2180 ft
INV. ELEV.	2177 ft

EXCAVATION VOLUMES

CUT	1,724,261 CY
FILL	479,793 CY
NET	1,244,468 CY

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Rawhide Wash Detention Basin

Alternative No. 4A
Basin at Center
of Section

N

SCALE: 1 INCH = 600 FEET

300 0 600 1200

CONTOUR INTERVAL = 5 FEET

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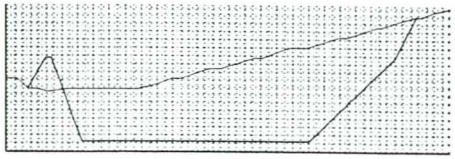
SECTION A-A



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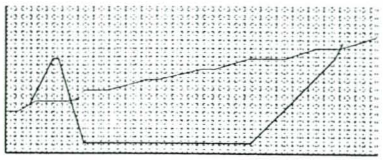
SECTION B-B



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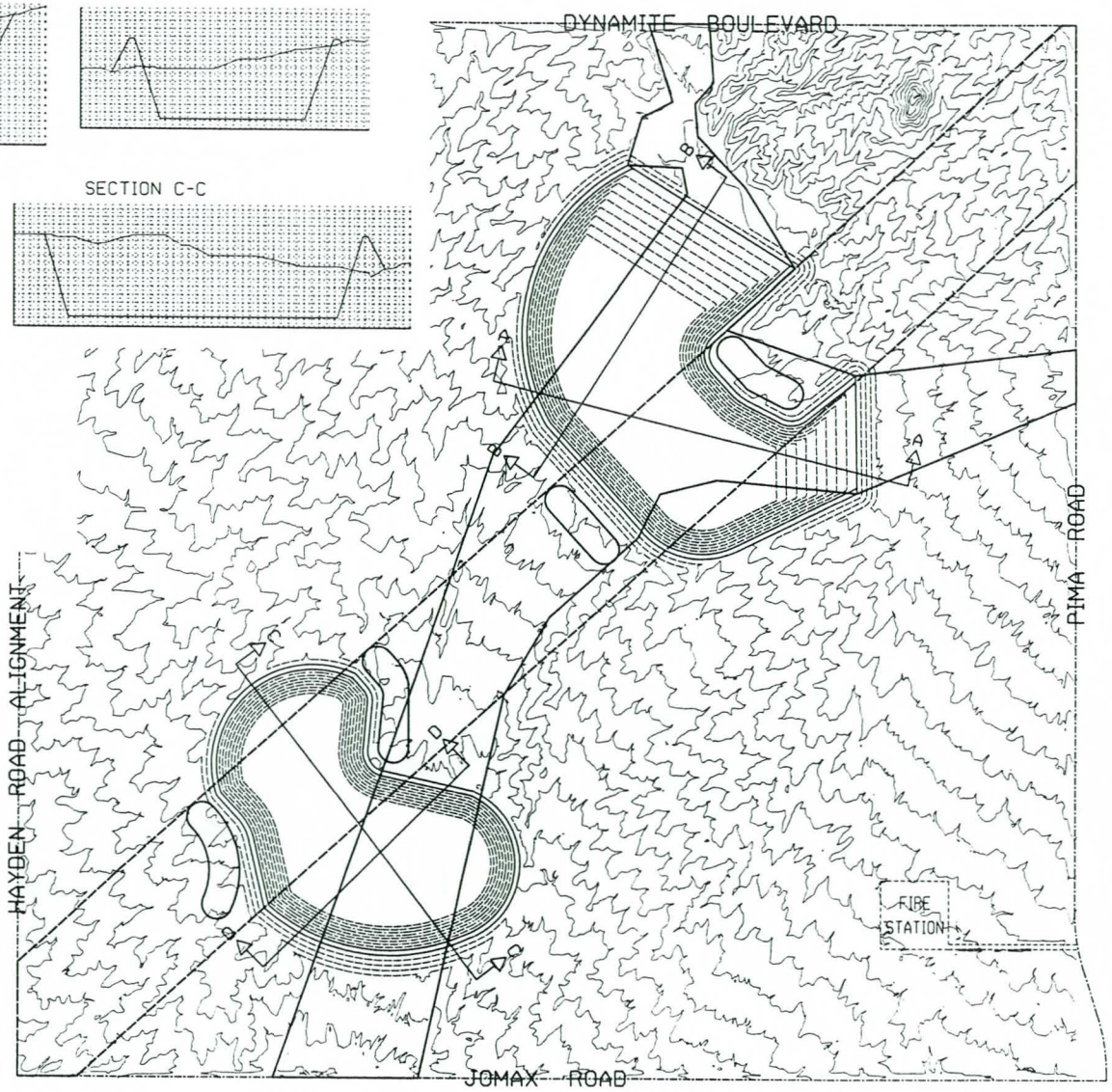


AREAS

FOOTPRINT	91.5 acres
POWERLINES	28.4 acres
WASH	35.1 acres
DEVELOPABLE	28.0 acres

UPSTREAM BASIN ELEVATIONS

TOP OF BERM	2205 ft
SPILLWAY	2195 ft
EX. GROUND	2185 ft
INV. ELEV.	2165 ft

DOWNSTREAM BASIN ELEVATIONS

TOP OF BERM	2155 ft
SPILLWAY	2145 ft
EX. GROUND	2135 ft
INV. ELEV.	2123 ft

EXCAVATION VOLUMES

CUT	2,939,021 CY
FILL	218,533 CY
NET	2,720,488 CY

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Rawhide Wash Detention Basin

Alternative No. 5
Two Basins - 1 at Center and 1 at Feasibility Location

N

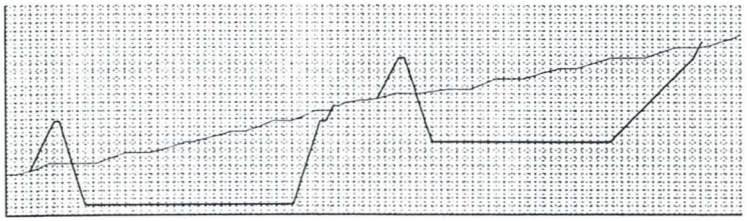
SCALE: 1 INCH = 600 FEET

300 0 600 1200

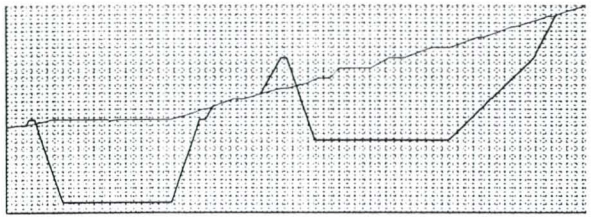
CONTOUR INTERVAL = 5 FEET

HDR
HDR Engineering, Inc.

SECTION A-A



SECTION B-B



AREAS

FOOTPRINT	86.3 acres
POWERLINES	31.4 acres
WASH	26.1 acres
DEVELOPABLE	28.8 acres

UPSTREAM BASIN ELEVATIONS

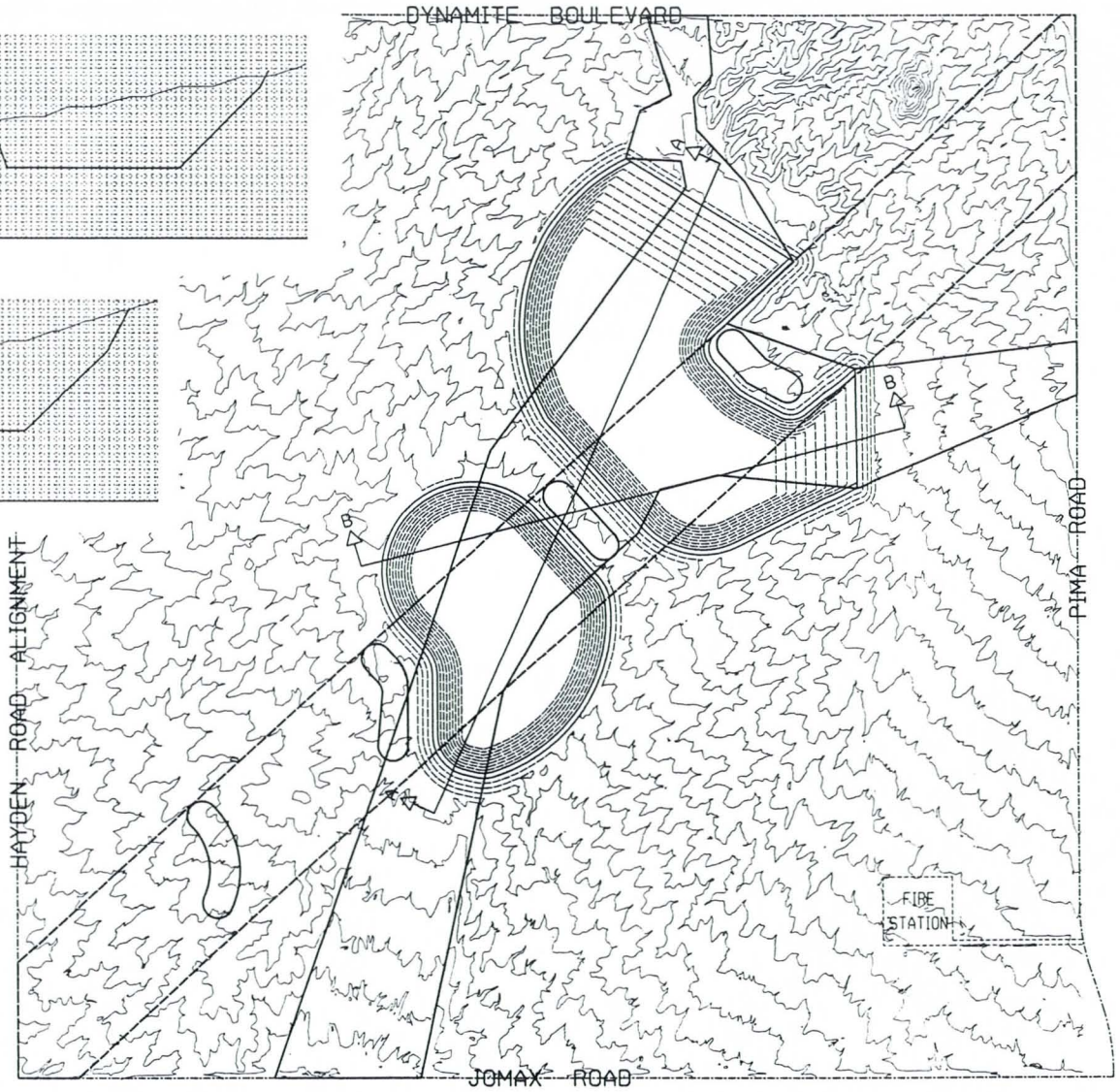
TOP OF BERM	2205 ft
SPILLWAY	2195 ft
EX. GROUND	2185 ft
INV. ELEV.	2165 ft

DOWNSTREAM BASIN ELEVATIONS

TOP OF BERM	2175 ft
SPILLWAY	2165 ft
EX. GROUND	2152 ft
INV. ELEV.	2138 ft

EXCAVATION VOLUMES

CUT	2,987,019 CY
FILL	191,590 CY
NET	2,795,429 CY



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Rawhide Wash Detention Basin

Alternative No. 6
Two Basins - Both
at Center of Section

N

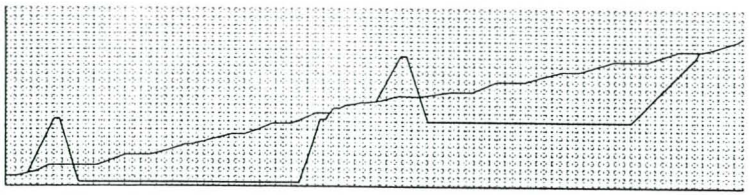
SCALE: 1 INCH = 600 FEET

300 0 600 1200

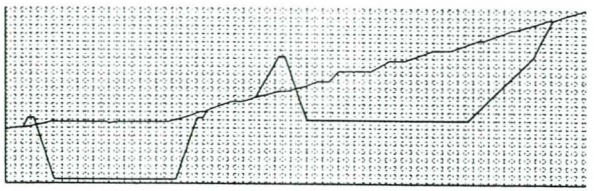
CONTOUR INTERVAL = 5 FEET

HDR
HDR Engineering, Inc.

SECTION A-A



SECTION B-B



AREAS

FOOTPRINT	101.4 acres
POWERLINES	31.4 acres
WASH	26.1 acres
DEVELOPABLE	43.9 acres

UPSTREAM BASIN ELEVATIONS

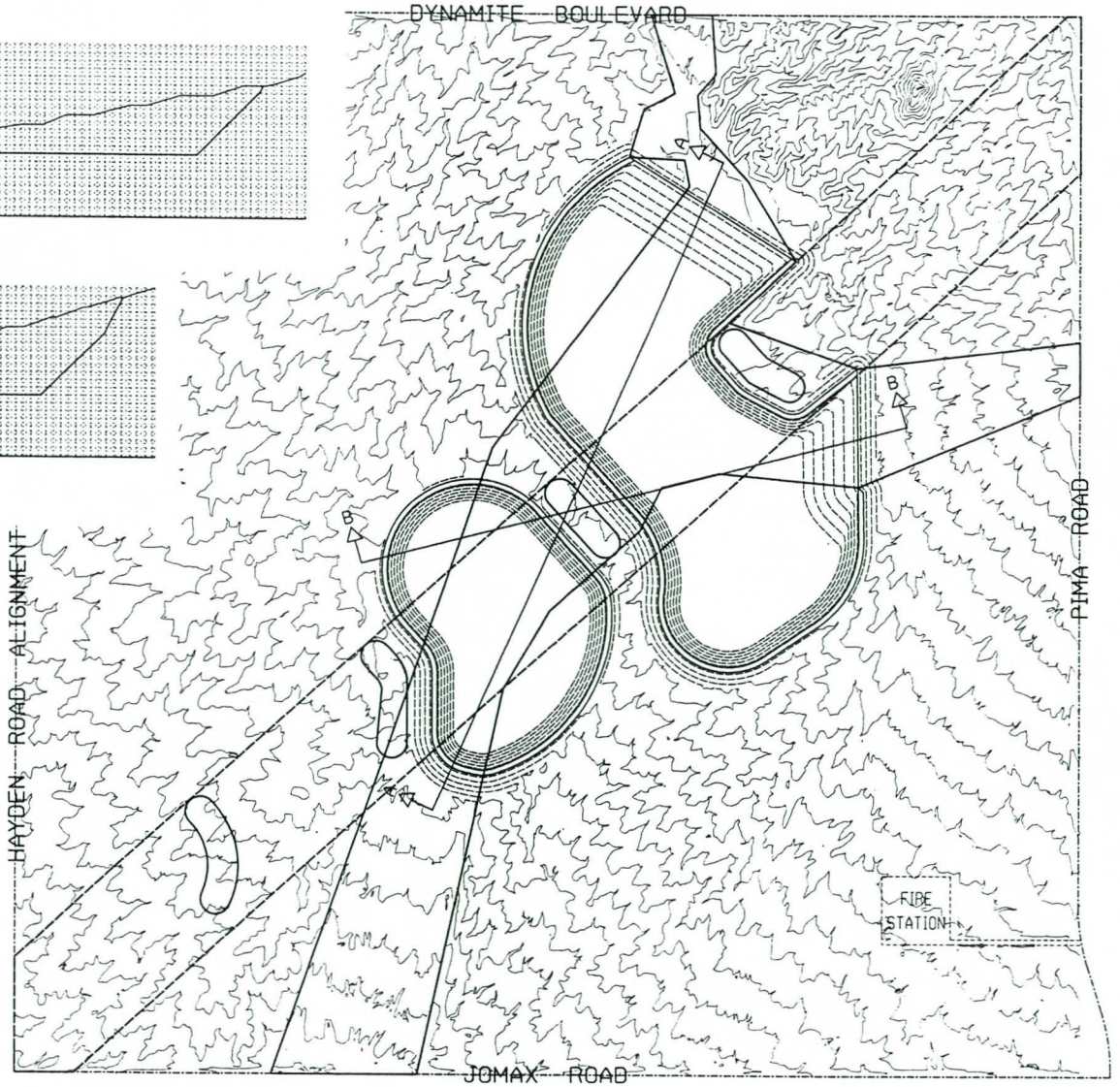
TOP OF BERM	2207 ft
SPILLWAY	2197 ft
EX. GROUND	2185 ft
INV. ELEV.	2176 ft

DOWNSTREAM BASIN ELEVATIONS

TOP OF BERM	2177 ft
SPILLWAY	2167 ft
EX. GROUND	2152 ft
INV. ELEV.	2147 ft

EXCAVATION VOLUMES

CUT	2,751,824 CY
FILL	261,949 CY
NET	2,489,875 CY



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Rawhide Wash Detention Basin

Alternative No. 6A
Two Basins - Both
at Center of Section

N

SCALE: 1 INCH = 600 FEET

300 0 600 1200

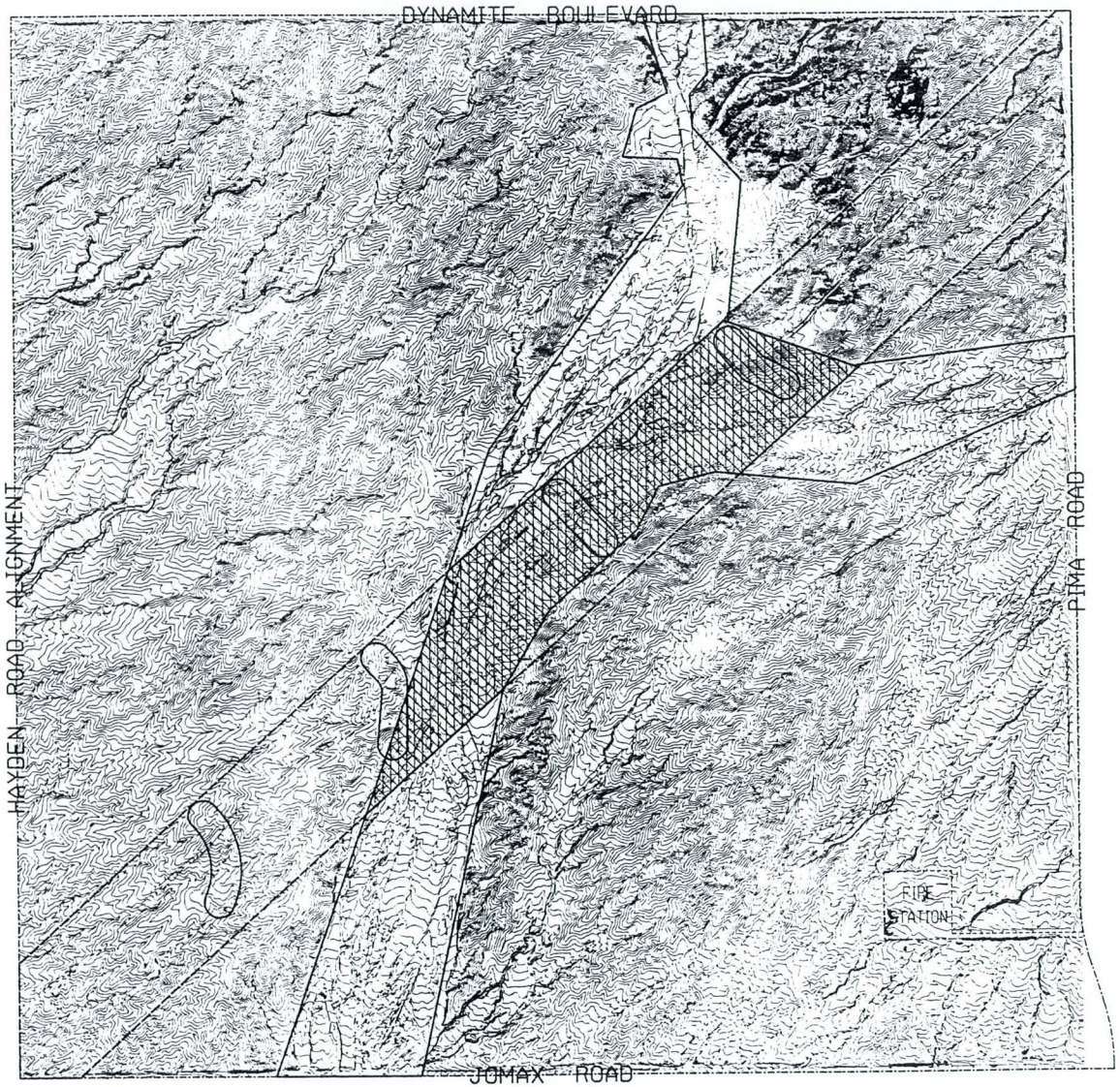
CONTOUR INTERVAL = 5 FEET

HDR
HDR Engineering, Inc.

Powerline, Wash, And Common Area Figure

Rawhide Wash Detention Basin

Powerline, Wash and Common Areas



AREAS

WASH	94.8 acres
POWERLINES	100.4 acres
COMMON	32.3 acres

N

SCALE: 1 INCH = 600 FEET

300 0 600 1200

CONTOUR INTERVAL = 5 FEET

HDR

HDR Engineering, Inc.

Basin 4A HEC-1 Model

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *             JUN 09 1992               *
 *           VERSION 4.0.3E              *
 *                                       *
 *  RUN DATE  10/26/98  TIME  12:32:03   *
 *                                       *
 *****************************************
```

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

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

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

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

1 HEC-1 INPUT PAGE 1

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

  1           ID        FILE <RWDAM21F.DAT>
  2           ID        THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
  3           ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
  4           ID
  5           ID        THE MODIFICIATION INCLUDE THE FOLLOWING:
  6           ID        1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
  7           ID           TO CONCENTRATION POINT AT THE APEX OF 21F
  8           ID        2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE
  9           ID
 10           ID        NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
 11           ID        1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
 12           ID        MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
 13           ID        25S.
 14           ID
 15           ID        100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
 16           ID        RAINFALL FROM NOAA ATLAS
 17           ID
 18           ID        FILE RAW4A.DAT
 19           ID        WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
 20           ID        FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
 21           ID        22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
 22           ID        THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
 23           ID        ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
 24           ID        INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
 25           ID        PROPOSED ROAD CROSSINGS.
 26           ID
 27           ID        REVISED BY GREINER 12-9-93 BY RON FERGUSON
 28           ID        REVISED BY C. J. LOVELY, COS, 3-9-94
 29           ID        Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
 30           ID           *Eliminate DSS Records
```

```
31          ID          *Divide #26 into 26N & 26S; 26N is portion north of Jomax
32          ID          *Add 26N @ CP21H and route with 21H to apex
33          ID          *Add 26S @ apex
34          ID          *Modify reach length in 26S & 26N to reflect division
35          ID
36          ID        ******************************************************************
37          ID        * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
38          ID        * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
39          ID        ******************************************************************
40          ID
41          ID    September 1998 - HDR Engineering Modified by adding basin to the
42          ID    September 1998 - center of Section 36 (Alternative No. 4)
43          ID    September 1998 - Filename <RAWALT4.DAT>
44          ID
45          ID
46          ID   ***************************************************************************
            *DIAGRAM
47          IT       5 03MAR94       0     300
48          IO       5       0       0       0
            *
1                                          HEC-1 INPUT                                    PAGE  2

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

49          KK      16     SUB
50          KM        RUNOFF FROM SUB-BASIN 16
51          BA  1.4570
52          PH       0     9.7    0.77    1.51    2.65    3.00    3.23    3.66
53          LS       0      83     9.8       0       0       0       0       0
54          UK     217   .0581     .20     100
55          RK   14800   .0216    .045       0    TRAP      25       3
            *

56          KK      17     SUB
57          KM        RUNOFF FROM SUB-BASIN 17
58          BA  1.1851       0       0
59          LS       0      83     9.8
60          UK     285   .0421     .20     100       0       0       0
61          RK   12200   .0254    .045       0    TRAP      25       3
            *

62          KK      18     SUB
63          KM        RUNOFF FROM SUB-BASIN 18
64          BA  1.2641
65          LS       0      83     6.5       0
66          UK     285   .0421     .20     100       0       0       0
67          RK   10840   .0259    .045       0    TRAP      25       3
            *

68          KK     19A      CP
69          KM        COMBINE HYDROGRAPHS SUB16, SUB17 AND SUB18
70          HC       3
            *

71          KK     19B      CP
72          KM        ROUTE CP19A TO CP19B
73          RS       1    FLOW      -1       0       0
74          RC    .055    .040    .055    1100   .0155       0       0       0
75          RX       0       1     126     132     167     173     298     299
76          RY      10       8       3       0       0       3       8      10
            *

77          KK      15     SUB
78          KM        RUNOFF FROM SUBBASIN 15
79          BA  1.3702       0       0
80          LS       0      82     5.4       0
```

```
 81          UK     217   .0581     .20     100       0       0       0
 82          RK   21200   .0236    .045       0    TRAP      25       3
             *

 83          KK     19C      CP
 84          KM        COMBINE HYDROGRAPHS SUB15 & CP19B
 85          HC       2
             *
1                                          HEC-1 INPUT                                                    PAGE  3
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 86          KK    19.1      CP
 87          KM        ROUTE CP 19C TO 19.1
 88          RS       1    FLOW      -1       0       0
 89          RC    .055    .040    .055    1800   .0200       0       0
 90          RX       0       1     151     166     216     231     381     382
 91          RY      10       9       3       0       0       3       9      10
             *

 92          KK      19     SUB
 93          KM        RUNOFF FROM SUB-BASIN 19
 94          BA  0.1872
 95          LS       0      84     7.2       0
 96          UK     275   .0800     .20     100       0       0       0
 97          RK    3730   .0352    .045    .160    TRAP      15       3
 98          RK    1800   .0200    .045       0    TRAP      50      30
             *

 99          KK      20     SUB
100          KM        RUNOFF FROM SUB-BASIN 20
101          BA  0.5698       0       0
102          LS       0      84     3.6       0
103          UK     300   .0750     .20     100       0       0       0
104          RK    9640   .0197    .045       0    TRAP      15       3
             *

105          KK    CP20      CP
106          KM        COMBINE SUB 19, SUB 20 AND CP 19.1
107          HC       3
             *
108          KM    *******BEGIN SUBAREA 21 BREAKDOWN-3/94 REVISIONS*****

109          KK  RRCP20      CP
110          KM        ROUTE CP20 TO CP 21A, WHICH IS 4600'
111          RS       1    FLOW      -1       0       0
112          RC    .055    .040    .055    4600   .0217       0       0       0
113          RX       0      30      60      85     195     220     250     280
114          RY      10       4       1       0       0       1       4      10
             *

115          KK     21A     SUB
116          KM        RUNOFF FROM SUB-BASIN 21A
117          BA     .42       0       0
118          LS       0      80     6.4       0       0       0
119          UK     297   .0558     .20     100       0       0       0
120          RK    6400   .0344    .045       0    TRAP      10       3
             *

121          KK   CP21A
122          HC       2
             *
1                                          HEC-1 INPUT                                                    PAGE  4
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
```

```
 123          KK   RR21A       CP
 124          KM        ROUTE CP21A TO 21B    WHICH IS 960'
 125          RS       1    FLOW      -1       0       0
 126          RC    .055    .040    .055     960   .0156       0       0       0
 127          RX       0      10      60     205     295     440     490     500
 128          RY       6       4       2       0       0       2       4       6
              *

 129          KK     21B     SUB
 130          KM        RUNOFF FROM SUB-BASIN 21B
 131          BA   0.276       0       0
 132          LS       0      80     6.4       0       0       0
 133          UK     297   .0558     .20     100       0       0       0
 134          RK    6300   .0381    .045       0    TRAP      10       3
              *

 135          KK   CP21B
 136          HC       2
              *

 137          KK   RR21B       CP
 138          KM        ROUTE CP21B TO 21C    WHICH IS 4400'
 139          RS       1    FLOW      -1       0       0
 140          RC    .055    .040    .055    4400   .0205       0       0       0
 141          RX       0      10      60     205     295     440     490     500
 142          RY       6       4       2       0       0       2       4       6
              *

 143          KK     21C     SUB
 144          KM        RUNOFF FROM SUB-BASIN 21C
 145          BA    .748       0       0
 146          LS       0      80     6.4       0       0       0
 147          UK     297   .0558     .20     100       0       0       0
 148          RK    9900   .0328    .045       0    TRAP      20       3
              *

 149          KK   CP21C
 150          HC       2
              *

 151          KK   RR21C       CP
 152          KM        ROUTE CP21C TO 21D    WHICH IS 5700'
 153          RS       1    FLOW      -1       0       0
 154          RC    .055    .040    .055    5700   .0181       0       0       0
 155          RX       0      20     175     210     300     335     490     510
 156          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
              *

 157          KK     21D     SUB
 158          KM        RUNOFF FROM SUB-BASIN 21D
 159          BA   1.059       0       0
 160          LS       0      80     6.4       0       0       0
 161          UK     297   .0558     .20     100       0       0       0
 162          RK   14500   .0252    .045       0    TRAP      30       3
              *
```



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

 163          KK   CP21D
 164          HC       2
              *

 165          KK   RR21D       CP
 166          KM        ROUTE CP21D TO 21E    WHICH IS 1100'
```

```
167          RS       1    FLOW      -1       0       0
168          RC    .055    .040    .055    1100   .0200       0       0       0
169          RX       0      20     175     210     300     335     490     510
170          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
             *

171          KK     21E     SUB
172          KM        RUNOFF FROM SUB-BASIN 21E
173          BA   0.257       0       0
174          LS       0      80     6.4       0       0       0
175          UK     297   .0333     .20     100       0       0       0
176          RK    6600   .0288    .045       0    TRAP      15       3
             *

177          KK   CP21E
178          HC       2
             *

179          KK   RR21E      CP
180          KM        ROUTE CP21E TO 21F    WHICH IS 2800'
181          RS       1    FLOW      -1       0       0
182          RC    .055    .040    .055    2800   .0143       0       0       0
183          RX       0      70     170     180     230     240     340     410
184          RY    10.5     4.5     3.5       0       0     3.5     4.5    10.5
             *

185          KK     21F     SUB
186          KM        RUNOFF FROM SUB-BASIN 21F
187          BA   0.469       0       0
188          LS       0      80     6.4       0       0       0
189          UK     297   .0333     .20     100       0       0       0
190          RK   10400   .0279    .045       0    TRAP      20       3
             *

191          KK   CP21F
192          HC       2
             *

193          KK   RR21F      CP
194          KM   ROUTE CP21F TO 21G (1900' DOWNSTREAM)
195          RS       1    FLOW      -1       0       0
196          RC    .055    .040    .055    1900   .0158       0       0       0
197          RX       0      20      70     345     455     730     780     800
198          RY      10       8       2       0       0       2       8      10
             *
1                                          HEC-1 INPUT                                          PAGE  6

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

199          KK     21G     SUB
200          KM   RUNOFF FROM SUB-BASIN 21G
201          BA   .0172       0       0
202          LS       0      80     6.4       0       0       0
203          UK     297   .0333     .20     100       0       0       0
204          RK    4000   .0300    .045       0    TRAP      10       3
             *

205          KK   CP21G
206          HC       2
             *

207          KK      22     SUB
208          KM       RUNOFF FROM SUB-BASIN 22
209          BA  1.3860
210          LS       0      84     5.1       0
211          UK     225   .0590     .20     100       0       0       0       0
```

```
 212          RK   13000   .0238    .045       0    TRAP      25       3
              *

 213          KK      23     SUB
 214          KM         RUNOFF FROM SUB-BASIN 23
 215          BA  0.3945       0       0
 216          LS       0      84     6.3       0
 217          UK     225   .0590     .20     100       0       0       0
 218          RK   10200   .0304    .045       0    TRAP      20       3
              *

 219          KK     24A      CP
 220          KM         COMBINE HYDROGRAPHS FOR SUB 22 AND SUB 23
 221          HC       2
              *

 222          KK    24.1      CP
 223          KM         ROUTE CP 24A TO CP 24.1
 224          RS       3    FLOW      -1       0       0
 225          RC    .055    .040    .055    6800   .0257       0       0       0
 226          RX       0       1     101     107     122     128     228     229
 227          RY      10       8       3       0       0       3       8      10
              *

 228          KK      24     SUB
 229          KM         RUNOFF FROM SUB-BASIN 24
 230          KM         DRAINAGE AREA CHANGED TO MATCH VALUE USED BY MICHAEL BAKER
 231          KM         Jr., INC.
 232          BA  0.4907       0       0
 233          LS       0      77     6.8       0
 234          UK     295   .0438     .20     100       0       0       0
 235          RK    6800   .0257    .045       0    TRAP      15       3
              *
1                                          HEC-1 INPUT                                          PAGE  7

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

 236          KK   24.2A      CP
 237          KM         COMBINE SUB 24 & CP 24.1 - APEX
 238          HC       2
              *

 239          KK     25N       SUB
 240          KM         RUNOFF FROM SUB-BASIN 25N - APEX
 241          BA  0.7834       0       0       0       0       0       0       0
 242          LS       0      84     9.0       0
 243          UK     295   .0438     .20     100       0       0       0
 244          RK   16700   .0302    .045       0    TRAP      25       3
              *

 245          KK     25S     SUB
 246          KM         RUNOFF FROM SUB-BASIN 25S - APEX
 247          BA  0.6256       0       0       0       0       0       0       0
 248          LS       0      86     9.0       0
 249          UK     295   .0438     .20     100       0       0       0
 250          RK    8900   .0278    .045       0    TRAP      25       3
              *

 251          KK    25.1      CP
 252          KM         COMBINE HYDROGRAPHS FOR SUB-BASINS 25N AND 25S
 253          HC       2
              *

 254          KK   24.2B      CP
 255          KM         COMBINE TOTAL HYDROGRAPH 24.2A WITH 25.1
 256          HC       2
```

```
                 *

257              KK  PIMARD      CP
258              KM   ROUTE THE TOTAL HYDROGRAPH AT THE CONCENTRATION POINT
259              KM   24.2B TO THE CULVERT AT THE PIMA ROAD. THERE IS NO
260              KM   CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
261              RS       1    FLOW      -1       0       0
262              RC    .055    .040    .055    2000   .0287       0       0       0
263              RX       0       1     101     107     122     128     228     229
264              RY      10       8       3       0       0       3       8      10
                 *

265              KK  RR24.2      CP
266              KM   ROUTE THE TOTAL HYDROGRAPH AT CONCENTRATION POINT
267              KM   24.2B FROM THE CULVERT UNDER PIMA ROAD TO CONCENTRATION
268              KM   POINT 21.05.
269              RS       1    FLOW      -1       0       0
270              RC    .055    .040    .055    3050   .0238       0       0       0
271              RX       0       1     101     107     122     128     228     229
272              RY      10       8       3       0       0       3       8      10
                 *
                 *
1                                                HEC-1 INPUT                                                    PAGE  8

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

273              KK  C21.05 CONFLUENCE OF DGB CHANNELS NEAR MID-SECTION 36
274              KM         COMBINE HYDROGRAPH CP21G WITH HYDROGRAPH RR24.2
275              KM         (FROM THE PIMA ROAD CULVERT)
276              HC       2
                 *  ******************************************************************************

277              KK     DAM
278              KO       3
279              RS       1    FLOW       0
280              SV       0     139     402     694    1010    1351    1717    1950
281              SE    2177    2180    2185    2190    2195    2200    2205    2210
282              SS    2198     200     3.2     1.5
                 *  2 - 36" RCP Culverts for outlet
283              SL    2177    14.1      .6      .5
                 *  ******************************************************************************
                 *

284              KK    R21G      CP
285              KM        ROUTE CP21G(21.05)TO 21H WHICH IS 3100'
286              RS       1    FLOW      -1       0       0
287              RC    .055    .040    .055    3100   .0194       0       0       0
288              RX       0      90     120     355     585     820     850     940
289              RY       9       4     1.5       0       0     1.5       4       9
                 *

290              KK     21H      SUB
291              KM        RUNOFF FROM SUB-BASIN 21H
292              BA   .0431       0       0
293              LS       0      80     6.4       0       0       0
294              UK     297   .0333     .20     100       0       0       0
295              RK    4600   .0278    .045       0    TRAP      20       3
                 *

296              KK     26N
297              KM       Runoff from sub-basin 26N
298              BA   .6376       0       0
299              LS       0      75    12.7       0
300              UK     200   .0250     .20     100       0
301              RK   12000   .0263    .045       0    TRAP      35      10
                 *
```

```
 302          KK   CP21H   JOMAX RD
 303          KO       3
 304          HC       3
              *

 305          KK   RR21H      CP
 306          KM        ROUTE HYDROGRAPH AT CONCENTRATION POINT 21H   DOWNSTREAM FROM
 307          KM        JOMAX ROAD           THERE IS NO ADDITIONAL CONTRIBUTING
 308          KM        DRAINAGE AREA AT THIS CONCENTRATION POINT.  USED CHANNEL
 309          KM        GEOMETRY                          FROM REACH SIX
 310          KM            DEVELOPED BY C. LOVELY
 311          RS       1    FLOW      -1       0       0
 312          RC    .055    .040    .055    2390   .0188       0       0       0
1                                          HEC-1 INPUT                                                    PAGE  9

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

 313          RX       0      90     120     355     585     820     850     940
 314          RY       9       4     1.5       0       0     1.5       4       9
              *

 315          KK     26S     SUB
 316          KM       RUNOFF FROM SUB-BASIN 26S
 317          BA  0.1672       0       0
 318          LS       0      75    12.7       0
 319          UK     200   .0250     .20     100       0       0       0
 320          RK    4000   .0263    .045       0    TRAP      35      10
              *

 321          KK  *APEX*      CP
 322          KM        COMBINE FLOW FROM SUB-BASIN 26 ,
 323          KM            AND ROUTED HYDROGRAPH FROM JOMAX ROAD.
 324          HC       2
              *
 325          KM        *********END SUBAREA 21 REVISIONS************

 326          KK   CP27A      CP AT HAPPY VALLEY RD
 327          KM        ROUTE FLOW FROM CONCENTRATION POINT APEX  TO 27A (HAPPY VALLEY
 328          KM        ROAD).  THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION PT.
 329          KM
 330          RS       1    FLOW      -1       0       0
 331          RC    .055    .040    .055    1600   .0196       0       0       0
 332          RX       0       1     201     211     261     271     471     472
 333          RY      10       4       2       0       0       2       4      10
              *

 334          KK   CP27B      CP AT MILLER RD
 335          KM        ROUTE FLOW FROM CONCENTRATION POINT 27B TO 27C (MILLER ROAD).
 336          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 337          RS       1    FLOW      -1       0       0
 338          RC    .055    .040    .055    3300   .0196       0       0       0
 339          RX       0       1     201     211     261     271     471     472
 340          RY      10       4       2       0       0       2       4      10
              *

 341          KK   CP27C      CP AT PINNACLE PEAK RD
 342          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (PINNACLE PK ROAD).
 343          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 344          RS       1    FLOW      -1       0       0
 345          RC    .055    .040    .055    3300   .0196       0       0       0
 346          RX       0       1     201     211     261     271     471     472
 347          RY      10       4       2       0       0       2       4      10
              *

 348          KK   CP27D     CP AT SCOTTSDALE RD
 349          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (SCOTTSDALE ROAD)
```

```
          350          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
          351          RS       1    FLOW      -1       0       0
          352          RC    .055    .040    .055    1000   .0196       0       0       0
          353          RX       0       1     201     211     261     271     471     472
          354          RY      10       4       2       0       0       2       4      10
                       *
1                                                HEC-1 INPUT                                                PAGE 10

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


          355          KK      27     SUB
          356          KM        RUNOFF FROM SUB-BASIN 27
          357          BA  1.1913       0       0
          358          LS       0      75    12.7       0
          359          UK     200   .0250     .20     100       0       0       0
          360          RK    1500   .0263    .045       0    TRAP      35      10
                       *

          361          KK    CP27      CP AT SCOTTSDALE RD
          362          KO       3
          363          KM        COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
          364          KM        POINT 27D WITH SUB 27 .  TOTAL FLOW AT
          365          KM        SCOTTSDALE ROAD FOR FAN 4.
          366          HC       2
                       *
          367          ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

    49          16
                 .
                 .
    56           .          17
                 .           .
                 .           .
    62           .           .          18
                 .           .           .
                 .           .           .
    68         19A.......................
                 V
                 V
    71         19B
                 .
                 .
    77           .          15
                 .           .
                 .           .
    83         19C............
                 V
                 V
    86        19.1
                 .
                 .
    92           .          19
                 .           .
                 .           .
    99           .           .          20
                 .           .           .
                 .           .           .
   105        CP20.......................
                 V
                 V
```

```
109     RRCP20
            .
115         .         21A
            .           .
121     CP21A.............
            V
            V
123     RR21A
            .
129         .         21B
            .           .
135     CP21B.............
            V
            V
137     RR21B
            .
143         .         21C
            .           .
149     CP21C.............
            V
            V
151     RR21C
            .
157         .         21D
            .           .
163     CP21D.............
            V
            V
165     RR21D
            .
171         .         21E
            .           .
177     CP21E.............
            V
            V
179     RR21E
            .
185         .         21F
            .           .
191     CP21F.............
            V
            V
193     RR21F
            .
199         .         21G
            .           .
205     CP21G.............
            .
207         .          22
            .           .
213         .           .         23
```

```
                .          .          .
                .          .          .
219             .        24A...........
                .          V
                .          V
222             .       24.1
                .          .
                .          .
228             .          .         24
                .          .          .
                .          .          .
236             .      24.2A...........
                .          .
                .          .
239             .          .        25N
                .          .          .
                .          .          .
245             .          .          .        25S
                .          .          .          .
                .          .          .          .
251             .          .      25.1...........
                .          .          .
                .          .          .
254             .      24.2B...........
                .          V
                .          V
257             .     PIMARD
                .          V
                .          V
265             .     RR24.2
                .          .
                .          .
273       C21.05...........
                V
                V
277          DAM
                V
                V
284         R21G
                .
                .
290             .        21H
                .          .
                .          .
296             .          .        26N
                .          .          .
                .          .          .
302        CP21H.........................
                V
                V
305        RR21H
                .
                .
315             .        26S
                .          .
                .          .
321       *APEX*...........
                V
                V
326        CP27A
                V
                V
334        CP27B
                V
                V
341        CP27C
                V
```

```
                V
  348        CP27D
                 .
                 .
  355            .          27
                 .           .
                 .           .
  361        CP27............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN 09 1992              *
*            VERSION 4.0.3E             *
*                                       *
*  RUN DATE  10/26/98  TIME  12:32:03   *
*                                       *
*****************************************
```

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

FILE <RWDAM21F.DAT>
THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.

THE MODIFICIATION INCLUDE THE FOLLOWING:
1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   TO CONCENTRATION POINT AT THE APEX OF 21F
2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE

NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
25S.

100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
RAINFALL FROM NOAA ATLAS

FILE RAW4A.DAT
WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
FOR 22, 23, 24, 25N, AND 25S. ROUTE COMBINED HYDROGRAPHS
22, 23, 24, 25N AND 25S TO 21G. SUN-BASIN 26 COMBINED AT
THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
PROPOSED ROAD CROSSINGS.

REVISED BY GREINER 12-9-93 BY RON FERGUSON
REVISED BY C. J. LOVELY, COS, 3-9-94
Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
   *Eliminate DSS Records
   *Divide #26 into 26N & 26S; 26N is portion north of Jomax
   *Add 26N @ CP21H and route with 21H to apex
   *Add 26S @ apex
   *Modify reach length in 26S & 26N to reflect division

```
*******************************************************************
* ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
* MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
*******************************************************************
```

September 1998 - HDR Engineering Modified by adding basin to the
September 1998 - center of Section 36 (Alternative No. 4)
September 1998 - Filename <RAWALT4.DAT>

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

  48 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      3MAR94  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      4MAR94  ENDING DATE
                      NDTIME        0055  ENDING TIME
                      ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL    0.08 HOURS
                       TOTAL TIME BASE   24.92 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
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0


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


            **************
            *            *
 277 KK     *       DAM  *
            *            *
            **************

 278 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

                HYDROGRAPH ROUTING DATA

 279 RS          STORAGE ROUTING
                       NSTPS           1  NUMBER OF SUBREACHES
```

```
                    ITYP        FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC        0.00  INITIAL CONDITION
                       X        0.00 WORKING R AND D COEFFICIENT

280 SV          STORAGE         0.0     139.0     402.0     694.0    1010.0    1351.0    1717.0    1950.0

281 SE        ELEVATION     2177.00   2180.00   2185.00   2190.00   2195.00   2200.00   2205.00   2210.00

283 SL        LOW-LEVEL OUTLET
                   ELEVL     2177.00  ELEVATION AT CENTER OF OUTLET
                   CAREA       14.10  CROSS-SECTIONAL AREA
                    COQL        0.60  COEFFICIENT
                    EXPL        0.50  EXPONENT OF HEAD

282 SS        SPILLWAY
                    CREL     2198.00  SPILLWAY CREST ELEVATION
                   SPWID      200.00  SPILLWAY WIDTH
                    COQW        3.20  WEIR COEFFICIENT
                    EXPW        1.50  EXPONENT OF HEAD

                                                  ***

                                        COMPUTED OUTFLOW-ELEVATION DATA

        OUTFLOW       0.00      98.56    107.76    118.85    132.49    149.67    171.97    202.07    244.95    310.92
      ELEVATION    2177.00    2179.11   2179.52   2180.07   2180.81   2181.87   2183.42   2185.87   2190.03   2198.00

        OUTFLOW     340.08     533.09   1048.47   2044.71   3680.28   6113.65   9503.26  14007.57  19785.02  26994.06
      ELEVATION    2198.12    2198.49   2199.09   2199.93   2201.01   2202.33   2203.89   2205.69   2207.72   2210.00

                                      COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

        STORAGE       0.00      97.77    116.87    139.00    142.60    181.78    237.16    319.11    402.00    452.80
        OUTFLOW       0.00      98.56    107.76    117.52    118.85    132.49    149.67    171.97    191.91    202.07
      ELEVATION    2177.00    2179.11   2179.52   2180.00   2180.07   2180.81   2181.87   2183.42   2185.00   2185.87

        STORAGE     694.00     696.11   1010.00   1214.60   1223.11   1247.92   1289.03   1346.42   1351.00   1425.18
        OUTFLOW     244.63     244.95    287.86    310.92    340.05    533.05   1048.53   2044.73   2135.59   3680.37
      ELEVATION    2190.00    2190.03   2195.00   2198.00   2198.12   2198.49   2199.09   2199.93   2200.00   2201.01

        STORAGE    1521.76    1635.83   1717.00   1749.08   1843.98   1950.00
        OUTFLOW    6113.51    9503.00  12211.99  14007.37  19785.15  26994.06
      ELEVATION    2202.33    2203.89   2205.00   2205.69   2207.72   2210.00

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

                     HYDROGRAPH AT STATION      DAM

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                              (CFS)
+     328.      8.08           311.        260.        250.        250.
                         (INCHES)       0.223       0.746       0.746       0.746
                          (AC-FT)        154.        516.        516.        516.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                     6-HR        24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
     1220.      8.08          1195.        929.        895.        895.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                     6-HR        24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
   2198.07      8.00        2197.71     2193.41     2192.81     2192.81
```

```
                    CUMULATIVE AREA =   12.96 SQ MI


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


            **************
            *            *
  302 KK    *     CP21H  *        JOMAX RD
            *            *
            **************

  303 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

  304 HC          HYDROGRAPH COMBINATION
                        ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                  ***
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0

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

                       HYDROGRAPH AT STATION    CP21H

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     783.      3.50                 376.        287.        276.        276.
                        (INCHES)    0.256       0.781       0.781       0.781
                         (AC-FT)     186.        568.        568.        568.

                       CUMULATIVE AREA =   13.64 SQ MI

MANE2 NPLAN,NSTM       1      0


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


            **************
            *            *
  361 KK    *      CP27  *          CP AT SCOTTSDALE RD
            *            *
            **************

  362 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                                COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
                                POINT 27D WITH SUB 27 .  TOTAL FLOW AT
                                SCOTTSDALE ROAD FOR FAN 4.

  366 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                  ***
MANE2 NPLAN,NSTM       1      0
```

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

                          HYDROGRAPH AT STATION     CP27

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                  (CFS)
+    2060.      3.17                560.        338.        325.        325.
                              (INCHES)       0.347       0.837       0.837       0.837
                               (AC-FT)        278.        670.        670.        670.

                          CUMULATIVE AREA =   15.00 SQ MI

1
                                              RUNOFF SUMMARY
                                        FLOW IN CUBIC FEET PER SECOND
                                     TIME IN HOURS,  AREA IN SQUARE MILES

                                     PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN    MAXIMUM    TIME OF
          OPERATION        STATION   FLOW    PEAK                                          AREA     STAGE    MAX STAGE
+                                                          6-HOUR      24-HOUR     72-HOUR

          HYDROGRAPH AT
+                             16     2683.   3.25         323.        81.         78.       1.46

          HYDROGRAPH AT
+                             17     2184.   3.25         262.        66.         64.       1.19

          HYDROGRAPH AT
+                             18     2431.   3.25         273.        69.         66.       1.26

          3 COMBINED AT
+                            19A     7297.   3.25         857.        216.        208.      3.91

          ROUTED TO
+                            19B     7225.   3.33         857.        216.        208.      3.91
+                                                                                                7.03       3.33

          HYDROGRAPH AT
+                             15     1901.   3.42         281.        71.         68.       1.37

          2 COMBINED AT
+                            19C     8929.   3.33        1138.        287.        277.      5.28

          ROUTED TO
+                           19.1     8529.   3.33        1138.        287.        277.      5.28
+                                                                                                6.10       3.33

          HYDROGRAPH AT
+                             19      445.   3.25          42.        11.         10.       0.19

          HYDROGRAPH AT
+                             20     1086.   3.25         125.        31.         30.       0.57

          3 COMBINED AT
+                           CP20     9887.   3.33        1305.        329.        317.      6.03

          ROUTED TO
+                          RRCP20    9129.   3.42        1303.        329.        317.      6.03
+                                                                                                4.09       3.42

          HYDROGRAPH AT
+                            21A      784.   3.25          81.        20.         20.       0.42

          2 COMBINED AT
+                          CP21A     9593.   3.42        1384.        350.        337.      6.45
```

```
                ROUTED TO
+                          RR21A    9383.   3.50     1383.     350.     337.    6.45
+                                                                                      3.46      3.50
                HYDROGRAPH AT
+                           21B     512.   3.25       53.      13.      13.    0.28
                2 COMBINED AT
+                          CP21B    9671.   3.42     1436.     363.     350.    6.73
                ROUTED TO
+                          RR21B    8973.   3.58     1435.     363.     350.    6.73
+                                                                                      3.74      3.58
                HYDROGRAPH AT
+                           21C    1248.   3.25      144.      36.      35.    0.75
                2 COMBINED AT
+                          CP21C    9578.   3.50     1578.     399.     385.    7.48
                ROUTED TO
+                          RR21C    7972.   3.67     1571.     399.     385.    7.48
+                                                                                      4.10      3.67
                HYDROGRAPH AT
+                           21D    1500.   3.33      204.      51.      50.    1.06
                2 COMBINED AT
+                          CP21D    8765.   3.67     1773.     451.     434.    8.54
                ROUTED TO
+                          RR21D    8701.   3.75     1773.     451.     434.    8.54
+                                                                                      4.16      3.75
                HYDROGRAPH AT
+                           21E     402.   3.33       50.      12.      12.    0.26
                2 COMBINED AT
+                          CP21E    8840.   3.75     1822.     463.     446.    8.79
                ROUTED TO
+                          RR21E    8580.   3.75     1819.     463.     446.    8.79
+                                                                                      6.35      3.75
                HYDROGRAPH AT
+                           21F     666.   3.33       90.      23.      22.    0.47
                2 COMBINED AT
+                          CP21F    8865.   3.75     1908.     486.     468.    9.26
                ROUTED TO
+                          RR21F    8833.   3.83     1905.     486.     468.    9.26
+                                                                                      2.70      3.83
                HYDROGRAPH AT
+                           21G      26.   3.33        3.       1.       1.    0.02
                2 COMBINED AT
+                          CP21G    8841.   3.83     1908.     487.     469.    9.28
                HYDROGRAPH AT
+                           22    2825.   3.25      307.      77.      74.    1.39
                HYDROGRAPH AT
+                           23     779.   3.25       88.      22.      21.    0.39
```

```
                2 COMBINED AT
+                          24A     3603.   3.25      395.      99.      96.    1.78
                ROUTED TO
+                          24.1    2924.   3.42      395.      99.      96.    1.78
+                                                                          5.59      3.42
                HYDROGRAPH AT
+                           24     708.    3.25       85.      21.      21.    0.49
                2 COMBINED AT
+                         24.2A    3467.   3.42      479.     121.     116.    2.27
                HYDROGRAPH AT
+                          25N     1244.   3.42      177.      45.      43.    0.78
                HYDROGRAPH AT
+                          25S     1424.   3.25      152.      38.      37.    0.63
                2 COMBINED AT
+                          25.1    2431.   3.33      329.      83.      80.    1.41
                2 COMBINED AT
+                         24.2B    5611.   3.42      809.     204.     197.    3.68
                ROUTED TO
+                        PIMARD    5550.   3.42      808.     204.     197.    3.68
+                                                                          6.86      3.42
                ROUTED TO
+                        RR24.2    5294.   3.50      808.     204.     197.    3.68
+                                                                          6.96      3.50
                2 COMBINED AT
+                        C21.05   12190.   3.75     2714.     691.     666.   12.96
                ROUTED TO
+                           DAM     328.   8.08      311.     260.     250.   12.96
+                                                                       2198.07      8.00
                ROUTED TO
+                           R21G    325.   8.33      311.     256.     247.   12.96
+                                                                          0.39      8.33
                HYDROGRAPH AT
+                           21H      64.   3.33        8.       2.       2.    0.04
                HYDROGRAPH AT
+                           26N     690.   3.50      110.      28.      27.    0.64
                3 COMBINED AT
+                          CP21H    783.   3.50      376.     287.     276.   13.64
                ROUTED TO
+                          RR21H    657.   3.58      370.     284.     273.   13.64
+                                                                          0.60      3.58
                HYDROGRAPH AT
+                           26S     239.   3.25       29.       7.       7.    0.17
                2 COMBINED AT
+                         *APEX*    775.   3.58      392.     291.     280.   13.81
                ROUTED TO
+                          CP27A    763.   3.67      392.     290.     279.   13.81
+                                                                          1.81      3.67
```

```
          ROUTED TO
+                        CP27B      732.    3.75        389.        288.        277.      13.81
+                                                                                                  1.77        3.75
          ROUTED TO
+                        CP27C      700.    3.83        387.        286.        275.      13.81
+                                                                                                  1.72        3.83
          ROUTED TO
+                        CP27D      695.    3.92        387.        285.        275.      13.81
+                                                                                                  1.72        3.92
          HYDROGRAPH AT
+                           27     2052.    3.17        207.         52.         50.       1.19
          2 COMBINED AT
+                         CP27     2060.    3.17        560.        338.        325.      15.00
1
                                   SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                       (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                INTERPOLATED TO
                                                                            COMPUTATION INTERVAL
            ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                      PEAK                                   PEAK

                                (MIN)     (CFS)      (MIN)      (IN)    (MIN)     (CFS)     (MIN)       (IN)
                 16  MANE        3.27   2790.08     197.97      2.08     5.00   2682.70    195.00       2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1620E+03 OUTFLOW=0.1613E+03 BASIN STORAGE=0.4299E-01 PERCENT ERROR=   0.4

                 17  MANE        3.68   2249.16     195.52      2.07     5.00   2183.62    195.00       2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1317E+03 OUTFLOW=0.1309E+03 BASIN STORAGE=0.4985E-01 PERCENT ERROR=   0.6

                 18  MANE        3.18   2466.56     196.97      2.02     5.00   2431.13    195.00       2.02

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1368E+03 OUTFLOW=0.1360E+03 BASIN STORAGE=0.5145E-01 PERCENT ERROR=   0.6

                 15  MANE        3.51   1901.39     207.57      1.93     5.00   1901.08    205.00       1.93

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1417E+03 OUTFLOW=0.1409E+03 BASIN STORAGE=0.5998E-01 PERCENT ERROR=   0.5

                 19  MANE        1.80    456.95     193.94      2.11     5.00    444.60    195.00       2.11

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2111E+02 OUTFLOW=0.2104E+02 BASIN STORAGE=0.3666E-02 PERCENT ERROR=   0.4

                 20  MANE        3.77   1138.08     196.21      2.05     5.00   1086.14    195.00       2.05

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6254E+02 OUTFLOW=0.6220E+02 BASIN STORAGE=0.1496E-01 PERCENT ERROR=   0.5

                21A  MANE        2.36    804.58     193.66      1.81     5.00    783.53    195.00       1.81

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4070E+02 OUTFLOW=0.4053E+02 BASIN STORAGE=0.1094E-01 PERCENT ERROR=   0.4
```

```
          21B  MANE        2.56    520.22    194.23      1.81      5.00    511.65    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2674E+02 OUTFLOW=0.2663E+02 BASIN STORAGE=0.7314E-02 PERCENT ERROR=   0.4

          21C  MANE        3.23   1300.20    196.60      1.81      5.00   1248.06    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7248E+02 OUTFLOW=0.7205E+02 BASIN STORAGE=0.2485E-01 PERCENT ERROR=   0.6

          21D  MANE        3.10   1538.29    200.70      1.81      5.00   1499.66    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1026E+03 OUTFLOW=0.1020E+03 BASIN STORAGE=0.5119E-01 PERCENT ERROR=   0.5

          21E  MANE        3.04    421.12    198.38      1.81      5.00    401.68    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2490E+02 OUTFLOW=0.2476E+02 BASIN STORAGE=0.1083E-01 PERCENT ERROR=   0.5

          21F  MANE        4.33    687.84    201.28      1.80      5.00    666.34    200.00        1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4544E+02 OUTFLOW=0.4507E+02 BASIN STORAGE=0.2383E-01 PERCENT ERROR=   0.8

          21G  MANE        4.06     26.27    199.44      1.80      5.00     26.04    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1667E+01 OUTFLOW=0.1656E+01 BASIN STORAGE=0.7499E-03 PERCENT ERROR=   0.6

           22  MANE        3.71   2850.96    194.47      2.07      5.00   2824.55    195.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1539E+03 OUTFLOW=0.1530E+03 BASIN STORAGE=0.3984E-01 PERCENT ERROR=   0.5

           23  MANE        3.96    781.94    194.26      2.09      5.00    778.56    195.00        2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4420E+02 OUTFLOW=0.4393E+02 BASIN STORAGE=0.9523E-02 PERCENT ERROR=   0.6

           24  MANE        2.78    735.98    195.89      1.62      5.00    708.45    195.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4263E+02 OUTFLOW=0.4239E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.5

          25N  MANE        4.27   1280.11    203.94      2.13      5.00   1243.86    205.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8954E+02 OUTFLOW=0.8895E+02 BASIN STORAGE=0.4329E-01 PERCENT ERROR=   0.6

          25S  MANE        3.07   1432.12    195.33      2.28      5.00   1424.44    195.00        2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7648E+02 OUTFLOW=0.7611E+02 BASIN STORAGE=0.2473E-01 PERCENT ERROR=   0.5
```

```
              21H  MANE        4.16     64.59    199.55      1.80      5.00     64.21    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4176E+01 OUTFLOW=0.4145E+01 BASIN STORAGE=0.2185E-02 PERCENT ERROR=   0.7

              26N  MANE        4.34    695.84    209.67      1.63      5.00    689.73    210.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5568E+02 OUTFLOW=0.5537E+02 BASIN STORAGE=0.2531E-01 PERCENT ERROR=   0.5

              26S  MANE        3.14    248.14    195.91      1.63      5.00    238.82    195.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1460E+02 OUTFLOW=0.1454E+02 BASIN STORAGE=0.4459E-02 PERCENT ERROR=   0.4

               27  MANE        0.61   2077.01    190.94      1.63      5.00   2052.00    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1040E+03 OUTFLOW=0.1038E+03 BASIN STORAGE=0.2468E-01 PERCENT ERROR=   0.2


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

HEC-1 Models For Alternatives

```
1****************************************                                    ****************************************
*                                      *                                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
*             JUN 09 1992              *                                    *    HYDROLOGIC ENGINEERING CENTER     *
*           VERSION 4.0.3E             *                                    *          609 SECOND STREET           *
*                                      *                                    *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE  09/30/98  TIME  17:46:00  *                                    *          (916) 551-1748              *
*                                      *                                    *                                      *
****************************************                                    ****************************************


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


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

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

1                                                   HEC-1 INPUT                                                   PAGE  1

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

           1          ID        FILE <RWDAM21F.DAT>
           2          ID        THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
           3          ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
           4          ID
           5          ID        THE MODIFICIATION INCLUDE THE FOLLOWING:
           6          ID        1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
           7          ID           TO CONCENTRATION POINT AT THE APEX OF 21F
           8          ID        2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE
           9          ID
          10          ID        NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
          11          ID        1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
          12          ID        MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
          13          ID        25S.
          14          ID
          15          ID        100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
          16          ID        RAINFALL FROM NOAA ATLAS
          17          ID
          18          ID        FILE RAW4A.DAT
          19          ID        WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
          20          ID        FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
          21          ID        22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
          22          ID        THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
          23          ID        ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
          24          ID        INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
          25          ID        PROPOSED ROAD CROSSINGS.
          26          ID
          27          ID        REVISED BY GREINER 12-9-93 BY RON FERGUSON
          28          ID        REVISED BY C. J. LOVELY, COS, 3-9-94
          29          ID        Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
          30          ID           *Eliminate DSS Records
```

```
 31          ID          *Divide #26 into 26N & 26S; 26N is portion north of Jomax
 32          ID          *Add 26N @ CP21H and route with 21H to apex
 33          ID          *Add 26S @ apex
 34          ID          *Modify reach length in 26S & 26N to reflect division
 35          ID
 36          ID        ******************************************************************
 37          ID        * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
 38          ID        * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
 39          ID        ******************************************************************
 40          ID
 41          ID    September 1998 - HDR Engineering Modified by adding basin south of the
 42          ID    September 1998 - center of Section 36 (Alternative No. 1)
 43          ID    September 1998 - Filename <RAWALT1.DAT>
 44          ID
 45          ID
 46          ID   ****************************************************************************
             *DIAGRAM
 47          IT       5 03MAR94       0     300
 48          IO       5       0       0       0
             *
1                                        HEC-1 INPUT                                    PAGE  2

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

 49          KK      16     SUB
 50          KM        RUNOFF FROM SUB-BASIN 16
 51          BA  1.4570
 52          PH       0     9.7    0.77    1.51    2.65    3.00    3.23    3.66
 53          LS       0      83     9.8       0       0       0       0       0
 54          UK     217   .0581     .20     100
 55          RK   14800   .0216    .045       0    TRAP      25       3
             *

 56          KK      17     SUB
 57          KM        RUNOFF FROM SUB-BASIN 17
 58          BA  1.1851       0       0
 59          LS       0      83     9.8
 60          UK     285   .0421     .20     100       0       0       0
 61          RK   12200   .0254    .045       0    TRAP      25       3
             *

 62          KK      18     SUB
 63          KM        RUNOFF FROM SUB-BASIN 18
 64          BA  1.2641
 65          LS       0      83     6.5       0
 66          UK     285   .0421     .20     100       0       0       0
 67          RK   10840   .0259    .045       0    TRAP      25       3
             *

 68          KK     19A      CP
 69          KM        COMBINE HYDROGRAPHS SUB16, SUB17 AND SUB18
 70          HC       3
             *

 71          KK     19B      CP
 72          KM        ROUTE CP19A TO CP19B
 73          RS       1    FLOW      -1       0       0
 74          RC    .055    .040    .055    1100   .0155       0       0       0
 75          RX       0       1     126     132     167     173     298     299
 76          RY      10       8       3       0       0       3       8      10
             *

 77          KK      15     SUB
 78          KM        RUNOFF FROM SUBBASIN 15
 79          BA  1.3702       0       0
 80          LS       0      82     5.4       0
```

```
 81          UK     217   .0581     .20     100       0       0       0
 82          RK   21200   .0236    .045       0    TRAP      25       3
             *

 83          KK     19C      CP
 84          KM        COMBINE HYDROGRAPHS SUB15 & CP19B
 85          HC       2
             *
1                                          HEC-1 INPUT                                                    PAGE  3

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

 86          KK    19.1      CP
 87          KM        ROUTE CP 19C TO 19.1
 88          RS       1    FLOW      -1       0       0
 89          RC    .055    .040    .055    1800   .0200       0       0
 90          RX       0       1     151     166     216     231     381     382
 91          RY      10       9       3       0       0       3       9      10
             *

 92          KK      19     SUB
 93          KM        RUNOFF FROM SUB-BASIN 19
 94          BA  0.1872
 95          LS       0      84     7.2       0
 96          UK     275   .0800     .20     100       0       0       0
 97          RK    3730   .0352    .045    .160    TRAP      15       3
 98          RK    1800   .0200    .045       0    TRAP      50      30
             *

 99          KK      20     SUB
100          KM        RUNOFF FROM SUB-BASIN 20
101          BA  0.5698       0       0
102          LS       0      84     3.6       0
103          UK     300   .0750     .20     100       0       0       0
104          RK    9640   .0197    .045       0    TRAP      15       3
             *

105          KK    CP20      CP
106          KM        COMBINE SUB 19, SUB 20 AND CP 19.1
107          HC       3
             *
108          KM    *******BEGIN SUBAREA 21 BREAKDOWN-3/94 REVISIONS*****

109          KK  RRCP20      CP
110          KM        ROUTE CP20 TO CP 21A, WHICH IS 4600'
111          RS       1    FLOW      -1       0       0
112          RC    .055    .040    .055    4600   .0217       0       0       0
113          RX       0      30      60      85     195     220     250     280
114          RY      10       4       1       0       0       1       4      10
             *

115          KK     21A     SUB
116          KM        RUNOFF FROM SUB-BASIN 21A
117          BA     .42       0       0
118          LS       0      80     6.4       0       0       0
119          UK     297   .0558     .20     100       0       0       0
120          RK    6400   .0344    .045       0    TRAP      10       3
             *

121          KK   CP21A
122          HC       2
             *
1                                          HEC-1 INPUT                                                    PAGE  4

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

```
 123          KK   RR21A       CP
 124          KM        ROUTE CP21A TO 21B    WHICH IS 960'
 125          RS       1    FLOW      -1       0       0
 126          RC    .055    .040    .055     960   .0156       0       0       0
 127          RX       0      10      60     205     295     440     490     500
 128          RY       6       4       2       0       0       2       4       6
              *

 129          KK     21B     SUB
 130          KM        RUNOFF FROM SUB-BASIN 21B
 131          BA   0.276       0       0
 132          LS       0      80     6.4       0       0       0
 133          UK     297   .0558     .20     100       0       0       0
 134          RK    6300   .0381    .045       0    TRAP      10       3
              *

 135          KK   CP21B
 136          HC       2
              *

 137          KK   RR21B       CP
 138          KM        ROUTE CP21B TO 21C    WHICH IS 4400'
 139          RS       1    FLOW      -1       0       0
 140          RC    .055    .040    .055    4400   .0205       0       0       0
 141          RX       0      10      60     205     295     440     490     500
 142          RY       6       4       2       0       0       2       4       6
              *

 143          KK     21C     SUB
 144          KM        RUNOFF FROM SUB-BASIN 21C
 145          BA    .748       0       0
 146          LS       0      80     6.4       0       0       0
 147          UK     297   .0558     .20     100       0       0       0
 148          RK    9900   .0328    .045       0    TRAP      20       3
              *

 149          KK   CP21C
 150          HC       2
              *

 151          KK   RR21C       CP
 152          KM        ROUTE CP21C TO 21D    WHICH IS 5700'
 153          RS       1    FLOW      -1       0       0
 154          RC    .055    .040    .055    5700   .0181       0       0       0
 155          RX       0      20     175     210     300     335     490     510
 156          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
              *

 157          KK     21D     SUB
 158          KM        RUNOFF FROM SUB-BASIN 21D
 159          BA   1.059       0       0
 160          LS       0      80     6.4       0       0       0
 161          UK     297   .0558     .20     100       0       0       0
 162          RK   14500   .0252    .045       0    TRAP      30       3
              *
```



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

 163          KK   CP21D
 164          HC       2
              *

 165          KK   RR21D       CP
 166          KM        ROUTE CP21D TO 21E    WHICH IS 1100'
```

```
167          RS       1    FLOW      -1       0       0
168          RC    .055    .040    .055    1100   .0200       0       0       0
169          RX       0      20     175     210     300     335     490     510
170          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
             *

171          KK     21E     SUB
172          KM        RUNOFF FROM SUB-BASIN 21E
173          BA   0.257       0       0
174          LS       0      80     6.4       0       0       0
175          UK     297  .0333     .20     100       0       0       0
176          RK    6600  .0288    .045       0    TRAP      15       3
             *

177          KK   CP21E
178          HC       2
             *

179          KK   RR21E      CP
180          KM        ROUTE CP21E TO 21F    WHICH IS 2800'
181          RS       1    FLOW      -1       0       0
182          RC    .055    .040    .055    2800   .0143       0       0       0
183          RX       0      70     170     180     230     240     340     410
184          RY    10.5     4.5     3.5       0       0     3.5     4.5    10.5
             *

185          KK     21F     SUB
186          KM        RUNOFF FROM SUB-BASIN 21F
187          BA   0.469       0       0
188          LS       0      80     6.4       0       0       0
189          UK     297  .0333     .20     100       0       0       0
190          RK   10400  .0279    .045       0    TRAP      20       3
             *

191          KK   CP21F
192          HC       2
             *

193          KK   RR21F      CP
194          KM   ROUTE CP21F TO 21G (1900' DOWNSTREAM)
195          RS       1    FLOW      -1       0       0
196          RC    .055    .040    .055    1900   .0158       0       0       0
197          RX       0      20      70     345     455     730     780     800
198          RY      10       8       2       0       0       2       8      10
             *
```



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

199          KK     21G     SUB
200          KM   RUNOFF FROM SUB-BASIN 21G
201          BA   .0172       0       0
202          LS       0      80     6.4       0       0       0
203          UK     297  .0333     .20     100       0       0       0
204          RK    4000  .0300    .045       0    TRAP      10       3
             *

205          KK   CP21G
206          HC       2
             *

207          KK      22     SUB
208          KM        RUNOFF FROM SUB-BASIN 22
209          BA  1.3860
210          LS       0      84     5.1       0
211          UK     225  .0590     .20     100       0       0       0       0
```

```
 212          RK   13000   .0238    .045       0    TRAP      25       3
              *

 213          KK      23     SUB
 214          KM         RUNOFF FROM SUB-BASIN 23
 215          BA  0.3945       0       0
 216          LS       0      84     6.3       0
 217          UK     225   .0590     .20     100       0       0       0
 218          RK   10200   .0304    .045       0    TRAP      20       3
              *

 219          KK     24A      CP
 220          KM         COMBINE HYDROGRAPHS FOR SUB 22 AND SUB 23
 221          HC       2
              *

 222          KK    24.1      CP
 223          KM         ROUTE CP 24A TO CP 24.1
 224          RS       3    FLOW      -1       0       0
 225          RC    .055    .040    .055    6800   .0257       0       0       0
 226          RX       0       1     101     107     122     128     228     229
 227          RY      10       8       3       0       0       3       8      10
              *

 228          KK      24     SUB
 229          KM         RUNOFF FROM SUB-BASIN 24
 230          KM         DRAINAGE AREA CHANGED TO MATCH VALUE USED BY MICHAEL BAKER
 231          KM         Jr., INC.
 232          BA  0.4907       0       0
 233          LS       0      77     6.8       0
 234          UK     295   .0438     .20     100       0       0       0
 235          RK    6800   .0257    .045       0    TRAP      15       3
              *
1                                          HEC-1 INPUT                                          PAGE  7

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

 236          KK   24.2A      CP
 237          KM         COMBINE SUB 24 & CP 24.1 - APEX
 238          HC       2
              *

 239          KK     25N       SUB
 240          KM         RUNOFF FROM SUB-BASIN 25N - APEX
 241          BA  0.7834       0       0       0       0       0       0       0
 242          LS       0      84     9.0       0
 243          UK     295   .0438     .20     100       0       0       0
 244          RK   16700   .0302    .045       0    TRAP      25       3
              *

 245          KK     25S     SUB
 246          KM         RUNOFF FROM SUB-BASIN 25S - APEX
 247          BA  0.6256       0       0       0       0       0       0       0
 248          LS       0      86     9.0       0
 249          UK     295   .0438     .20     100       0       0       0
 250          RK    8900   .0278    .045       0    TRAP      25       3
              *

 251          KK    25.1      CP
 252          KM         COMBINE HYDROGRAPHS FOR SUB-BASINS 25N AND 25S
 253          HC       2
              *

 254          KK   24.2B      CP
 255          KM         COMBINE TOTAL HYDROGRAPH 24.2A WITH 25.1
 256          HC       2
```

```
                 *

257              KK  PIMARD      CP
258              KM   ROUTE THE TOTAL HYDROGRAPH AT THE CONCENTRATION POINT
259              KM   24.2B TO THE CULVERT AT THE PIMA ROAD. THERE IS NO
260              KM   CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
261              RS       1    FLOW      -1       0       0
262              RC    .055    .040    .055    2000   .0287       0       0       0
263              RX       0       1     101     107     122     128     228     229
264              RY      10       8       3       0       0       3       8      10
                 *

265              KK  RR24.2      CP
266              KM   ROUTE THE TOTAL HYDROGRAPH AT CONCENTRATION POINT
267              KM   24.2B FROM THE CULVERT UNDER PIMA ROAD TO CONCENTRATION
268              KM   POINT 21.05.
269              RS       1    FLOW      -1       0       0
270              RC    .055    .040    .055    3050   .0238       0       0       0
271              RX       0       1     101     107     122     128     228     229
272              RY      10       8       3       0       0       3       8      10
                 *
1                                                HEC-1 INPUT                                                    PAGE  8

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

273              KK  C21.05 CONFLUENCE OF DGB CHANNELS NEAR MID-SECTION 36
274              KM         COMBINE HYDROGRAPH CP21G WITH HYDROGRAPH RR24.2
275              KM         (FROM THE PIMA ROAD CULVERT)
276              HC       2
                 *

277              KK  RR24.3      CP
278              KM   ROUTE THE TOTAL HYDROGRAPH FROM THE CONVLUENCE IN THE CENTER OF SECTION 36
279              KM   24.2B TO THE BASIN AND DAM JUST SOUTH OF THE CENTER OF THE SECTION
280              RS       1    FLOW      -1       0       0
281              RC    .055    .040    .055    1600   .0238       0       0       0
282              RX       0       1     101     107     122     128     228     229
283              RY      10       8       3       0       0       3       8      10
                 *  ******************************************************************************

284              KK     DAM
285              KO       3
286              RS       1    FLOW       0
287              SV       0      54     202     364     541     734     945    1179    1453    1781
288              SE    2128    2130    2135    2140    2145    2150    2155    2160    2165    2170
289              SS    2160     200     3.2     1.5
                 *  2 - 36" RCP Culverts for outlet
290              SL    2128    14.1      .6      .5
                 *  ******************************************************************************
                 *

291              KK    R21G      CP
292              KM        ROUTE CP21G(21.05)TO 21H WHICH IS 3100'
293              RS       1    FLOW      -1       0       0
294              RC    .055    .040    .055    3100   .0194       0       0       0
295              RX       0      90     120     355     585     820     850     940
296              RY       9       4     1.5       0       0     1.5       4       9
                 *

297              KK     21H     SUB
298              KM        RUNOFF FROM SUB-BASIN 21H
299              BA   .0431       0       0
300              LS       0      80     6.4       0       0       0
301              UK     297   .0333     .20     100       0       0       0
302              RK    4600   .0278    .045       0    TRAP      20       3
                 *
```

```
 303          KK     26N
 304          KM       Runoff from sub-basin 26N
 305          BA   .6376       0       0
 306          LS       0      75    12.7       0
 307          UK     200   .0250     .20     100       0
 308          RK   12000   .0263    .045       0    TRAP      35      10
              *
1                                          HEC-1 INPUT                                                    PAGE  9

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


 309          KK   CP21H   JOMAX RD
 310          KO       3
 311          HC       3
              *

 312          KK   RR21H      CP
 313          KM        ROUTE HYDROGRAPH AT CONCENTRATION POINT 21H   DOWNSTREAM FROM
 314          KM        JOMAX ROAD           THERE IS NO ADDITIONAL CONTRIBUTING
 315          KM        DRAINAGE AREA AT THIS CONCENTRATION POINT.  USED CHANNEL
 316          KM        GEOMETRY                          FROM REACH SIX
 317          KM            DEVELOPED BY C. LOVELY
 318          RS       1    FLOW      -1       0       0
 319          RC    .055    .040    .055    2390   .0188       0       0       0
 320          RX       0      90     120     355     585     820     850     940
 321          RY       9       4     1.5       0       0     1.5       4       9
              *

 322          KK     26S     SUB
 323          KM       RUNOFF FROM SUB-BASIN 26S
 324          BA  0.1672       0       0
 325          LS       0      75    12.7       0
 326          UK     200   .0250     .20     100       0       0       0
 327          RK    4000   .0263    .045       0    TRAP      35      10
              *

 328          KK  *APEX*      CP
 329          KM        COMBINE FLOW FROM SUB-BASIN 26 ,
 330          KM            AND ROUTED HYDROGRAPH FROM JOMAX ROAD.
 331          HC       2
              *
 332          KM        *********END SUBAREA 21 REVISIONS************

 333          KK   CP27A      CP AT HAPPY VALLEY RD
 334          KM        ROUTE FLOW FROM CONCENTRATION POINT APEX  TO 27A (HAPPY VALLEY
 335          KM        ROAD).  THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION PT.
 336          KM
 337          RS       1    FLOW      -1       0       0
 338          RC    .055    .040    .055    1600   .0196       0       0       0
 339          RX       0       1     201     211     261     271     471     472
 340          RY      10       4       2       0       0       2       4      10
              *

 341          KK   CP27B      CP AT MILLER RD
 342          KM        ROUTE FLOW FROM CONCENTRATION POINT 27B TO 27C (MILLER ROAD).
 343          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 344          RS       1    FLOW      -1       0       0
 345          RC    .055    .040    .055    3300   .0196       0       0       0
 346          RX       0       1     201     211     261     271     471     472
 347          RY      10       4       2       0       0       2       4      10
              *
1                                          HEC-1 INPUT                                                    PAGE 10

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

```
348          KK   CP27C      CP AT PINNACLE PEAK RD
349          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (PINNACLE PK ROAD).
350          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
351          RS       1    FLOW      -1       0       0
352          RC    .055    .040    .055    3300   .0196       0       0       0
353          RX       0       1     201     211     261     271     471     472
354          RY      10       4       2       0       0       2       4      10
             *

355          KK   CP27D      CP AT SCOTTSDALE RD
356          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (SCOTTSDALE ROAD)
357          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
358          RS       1    FLOW      -1       0       0
359          RC    .055    .040    .055    1000   .0196       0       0       0
360          RX       0       1     201     211     261     271     471     472
361          RY      10       4       2       0       0       2       4      10
             *

362          KK      27     SUB
363          KM        RUNOFF FROM SUB-BASIN 27
364          BA  1.1913       0       0
365          LS       0      75    12.7       0
366          UK     200   .0250     .20     100       0       0       0
367          RK    1500   .0263    .045       0    TRAP      35      10
             *

368          KK    CP27      CP AT SCOTTSDALE RD
369          KO       3
370          KM        COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
371          KM        POINT 27D WITH SUB 27 .  TOTAL FLOW AT
372          KM        SCOTTSDALE ROAD FOR FAN 4.
373          HC       2
             *
374          ZZ
1
             SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

   49          16
               .
               .
   56          .          17
               .           .
               .           .
   62          .           .          18
               .           .           .
               .           .           .
   68        19A.......................
               V
               V
   71        19B
               .
               .
   77          .          15
               .           .
               .           .
   83        19C............
               V
               V
   86       19.1
               .
               .
   92          .          19
```

```
                .          .
 99             .          .          20
                .          .           .
105          CP20.......................
                V
                V
109        RRCP20
                .
                .
115             .         21A
                .           .
                .           .
121          CP21A............
                V
                V
123          RR21A
                .
                .
129             .         21B
                .           .
                .           .
135          CP21B............
                V
                V
137          RR21B
                .
                .
143             .         21C
                .           .
                .           .
149          CP21C............
                V
                V
151          RR21C
                .
                .
157             .         21D
                .           .
                .           .
163          CP21D............
                V
                V
165          RR21D
                .
                .
171             .         21E
                .           .
                .           .
177          CP21E............
                V
                V
179          RR21E
                .
                .
185             .         21F
                .           .
                .           .
191          CP21F............
                V
                V
193          RR21F
                .
                .
199             .         21G
                .           .
```

```
205      CP21G............
             .           .
207          .        22
             .           .
213          .           .        23
             .           .         .
219          .       24A.............
             .           V
             .           V
222          .      24.1
             .           .
228          .           .        24
             .           .         .
236          .     24.2A.............
             .           .
239          .           .       25N
             .           .         .
245          .           .         .       25S
             .           .         .         .
251          .           .     25.1.............
             .           .         .
254          .     24.2B.............
             .           V
             .           V
257          .    PIMARD
             .           V
             .           V
265          .    RR24.2
             .           .
273      C21.05...........
             V
             V
277      RR24.3
             V
             V
284        DAM
             V
             V
291       R21G
             .
             .
297          .       21H
             .           .
303          .           .        26N
             .           .         .
309      CP21H........................
             V
             V
312      RR21H
             .
             .
322          .       26S
             .           .
             .           .
```

```
  328      *APEX*............
                V
                V
  333       CP27A
                V
                V
  341       CP27B
                V
                V
  348       CP27C
                V
                V
  355       CP27D
                .
                .
  362           .          27
                .           .
                .           .
  368        CP27............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN 09 1992              *
*            VERSION 4.0.3E            *
*                                      *
*  RUN DATE  09/30/98  TIME  17:46:00  *
*                                      *
****************************************
```

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

FILE <RWDAM21F.DAT>
THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.

THE MODIFICIATION INCLUDE THE FOLLOWING:
1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   TO CONCENTRATION POINT AT THE APEX OF 21F
2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE

NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
25S.

100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
RAINFALL FROM NOAA ATLAS

FILE RAW4A.DAT
WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
FOR 22, 23, 24, 25N, AND 25S. ROUTE COMBINED HYDROGRAPHS
22, 23, 24, 25N AND 25S TO 21G. SUN-BASIN 26 COMBINED AT
THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
PROPOSED ROAD CROSSINGS.

REVISED BY GREINER 12-9-93 BY RON FERGUSON
REVISED BY C. J. LOVELY, COS, 3-9-94
Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
   *Eliminate DSS Records
   *Divide #26 into 26N & 26S; 26N is portion north of Jomax
   *Add 26N @ CP21H and route with 21H to apex

```
                                  *Add 26S @ apex
                                  *Modify reach length in 26S & 26N to reflect division

                                 ******************************************************************
                                 * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
                                 * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
                                 ******************************************************************

                            September 1998 - HDR Engineering Modified by adding basin south of the
                            September 1998 - center of Section 36 (Alternative No. 1)
                            September 1998 - Filename <RAWALT1.DAT>

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

  48 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      3MAR94  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      4MAR94  ENDING DATE
                      NDTIME        0055  ENDING TIME
                      ICENT          19  CENTURY MARK

                   COMPUTATION INTERVAL    0.08 HOURS
                        TOTAL TIME BASE   24.92 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
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0

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

            **************
            *            *
  284 KK    *       DAM  *
            *            *
```

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

  285 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

                HYDROGRAPH ROUTING DATA

  286 RS          STORAGE ROUTING
                        NSTPS           1  NUMBER OF SUBREACHES
                         ITYP        FLOW  TYPE OF INITIAL CONDITION
                       RSVRIC        0.00  INITIAL CONDITION
                            X        0.00 WORKING R AND D COEFFICIENT

  287 SV            STORAGE         0.0      54.0     202.0     364.0     541.0     734.0     945.0    1179.0    1453.0    1781.0

  288 SE          ELEVATION     2128.00   2130.00   2135.00   2140.00   2145.00   2150.00   2155.00   2160.00   2165.00   2170.00

  290 SL          LOW-LEVEL OUTLET
                        ELEVL     2128.00  ELEVATION AT CENTER OF OUTLET
                        CAREA       14.10  CROSS-SECTIONAL AREA
                         COQL        0.60  COEFFICIENT
                         EXPL        0.50  EXPONENT OF HEAD

  289 SS          SPILLWAY
                         CREL     2160.00  SPILLWAY CREST ELEVATION
                        SPWID      200.00  SPILLWAY WIDTH
                         COQW        3.20  WEIR COEFFICIENT
                         EXPW        1.50  EXPONENT OF HEAD
                                                          ***
                                          COMPUTED OUTFLOW-ELEVATION DATA

            OUTFLOW       0.00     99.22    109.36    121.80    137.44    157.68    184.92    223.53    282.52    383.81
          ELEVATION    2128.00   2130.14   2130.60   2131.22   2132.10   2133.40   2135.43   2138.85   2145.34   2160.00

            OUTFLOW     405.77    552.02    943.25   1700.16   2943.43   4793.71   7371.68  10797.99  15193.32  20678.30
          ELEVATION    2160.10   2160.41   2160.91   2161.61   2162.51   2163.61   2164.91   2166.41   2168.10   2170.00

                                        COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE       0.00     54.00     58.10     71.70     90.19    116.25    154.67    202.00    215.87    326.86
            OUTFLOW       0.00     95.95     99.22    109.36    121.80    137.43    157.68    179.51    184.92    223.53
          ELEVATION    2128.00   2130.00   2130.14   2130.60   2131.22   2132.10   2133.40   2135.00   2135.43   2138.85

            STORAGE     364.00    541.00    554.06    734.00    945.00   1179.00   1184.67   1201.26   1228.77   1267.19
            OUTFLOW     235.04    279.75    282.52    318.24    352.55    383.81    405.75    551.96    943.15   1700.02
          ELEVATION    2140.00   2145.00   2145.34   2150.00   2155.00   2160.00   2160.10   2160.41   2160.91   2161.61

            STORAGE    1316.54   1376.79   1447.97   1453.00   1545.25   1656.59   1781.00
            OUTFLOW    2943.24   4793.50   7371.47   7568.13  10797.81  15193.20  20678.29
          ELEVATION    2162.51   2163.61   2164.91   2165.00   2166.41   2168.10   2170.00
      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION      DAM

  PEAK FLOW     TIME                      MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     452.      7.67                393.        320.        308.        308.
```

```
                        (INCHES)     0.282       0.918       0.918       0.918
                         (AC-FT)      195.        634.        634.        634.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
     1190.      7.67                   1158.        870.        838.        838.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
   2160.20      7.67                 2159.56     2152.52     2151.62     2151.62

                         CUMULATIVE AREA =   12.96 SQ MI


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


            **************
            *            *
  309 KK    *     CP21H  *        JOMAX RD
            *            *
            **************

  310 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

  311 HC          HYDROGRAPH COMBINATION
                        ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0

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

                          HYDROGRAPH AT STATION    CP21H

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     759.      3.50                   448.        346.        333.        333.
                        (INCHES)     0.305       0.942       0.942       0.942
                         (AC-FT)      222.        686.        686.        686.

                         CUMULATIVE AREA =   13.64 SQ MI

MANE2 NPLAN,NSTM       1      0


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


            **************
            *            *
  368 KK    *      CP27  *          CP AT SCOTTSDALE RD
            *            *
            **************

  369 KO          OUTPUT CONTROL VARIABLES
```

```
                    IPRNT          3  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE
                            COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
                            POINT 27D WITH SUB 27 .  TOTAL FLOW AT
                            SCOTTSDALE ROAD FOR FAN 4.

 373 HC          HYDROGRAPH COMBINATION
                    ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                  ***
MANE2 NPLAN,NSTM       1      0
      ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION     CP27

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                 (CFS)
+    2060.      3.17             623.        395.        381.        381.
                            (INCHES)       0.386       0.980       0.981       0.981
                             (AC-FT)        309.        784.        784.        784.

                      CUMULATIVE AREA =   15.00 SQ MI

1
                                          RUNOFF SUMMARY
                                     FLOW IN CUBIC FEET PER SECOND
                                  TIME IN HOURS,  AREA IN SQUARE MILES

                                   PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD    BASIN   MAXIMUM   TIME OF
          OPERATION       STATION  FLOW    PEAK                                        AREA    STAGE   MAX STAGE
+                                                     6-HOUR     24-HOUR     72-HOUR

          HYDROGRAPH AT
+                            16    2683.   3.25        323.        81.         78.      1.46
          HYDROGRAPH AT
+                            17    2184.   3.25        262.        66.         64.      1.19
          HYDROGRAPH AT
+                            18    2431.   3.25        273.        69.         66.      1.26
          3 COMBINED AT
+                           19A    7297.   3.25        857.       216.        208.      3.91
          ROUTED TO
+                           19B    7225.   3.33        857.       216.        208.      3.91
+                                                                                        7.03      3.33
          HYDROGRAPH AT
+                            15    1901.   3.42        281.        71.         68.      1.37
          2 COMBINED AT
+                           19C    8929.   3.33       1138.       287.        277.      5.28
          ROUTED TO
+                          19.1    8529.   3.33       1138.       287.        277.      5.28
+                                                                                        6.10      3.33
          HYDROGRAPH AT
+                            19     445.   3.25         42.        11.         10.      0.19
          HYDROGRAPH AT
+                            20    1086.   3.25        125.        31.         30.      0.57
```

```
                3 COMBINED AT
+                                CP20     9887.   3.33     1305.    329.    317.    6.03
                ROUTED TO
+                               RRCP20    9129.   3.42     1303.    329.    317.    6.03
+                                                                          4.09     3.42
                HYDROGRAPH AT
+                                 21A      784.   3.25       81.     20.     20.    0.42
                2 COMBINED AT
+                                CP21A     9593.   3.42     1384.    350.    337.    6.45
                ROUTED TO
+                               RR21A     9383.   3.50     1383.    350.    337.    6.45
+                                                                          3.46     3.50
                HYDROGRAPH AT
+                                 21B      512.   3.25       53.     13.     13.    0.28
                2 COMBINED AT
+                                CP21B     9671.   3.42     1436.    363.    350.    6.73
                ROUTED TO
+                               RR21B     8973.   3.58     1435.    363.    350.    6.73
+                                                                          3.74     3.58
                HYDROGRAPH AT
+                                 21C     1248.   3.25      144.     36.     35.    0.75
                2 COMBINED AT
+                                CP21C     9578.   3.50     1578.    399.    385.    7.48
                ROUTED TO
+                               RR21C     7972.   3.67     1571.    399.    385.    7.48
+                                                                          4.10     3.67
                HYDROGRAPH AT
+                                 21D     1500.   3.33      204.     51.     50.    1.06
                2 COMBINED AT
+                                CP21D     8765.   3.67     1773.    451.    434.    8.54
                ROUTED TO
+                               RR21D     8701.   3.75     1773.    451.    434.    8.54
+                                                                          4.16     3.75
                HYDROGRAPH AT
+                                 21E      402.   3.33       50.     12.     12.    0.26
                2 COMBINED AT
+                                CP21E     8840.   3.75     1822.    463.    446.    8.79
                ROUTED TO
+                               RR21E     8580.   3.75     1819.    463.    446.    8.79
+                                                                          6.35     3.75
                HYDROGRAPH AT
+                                 21F      666.   3.33       90.     23.     22.    0.47
                2 COMBINED AT
+                                CP21F     8865.   3.75     1908.    486.    468.    9.26
                ROUTED TO
+                               RR21F     8833.   3.83     1905.    486.    468.    9.26
+                                                                          2.70     3.83
```

```
+          HYDROGRAPH AT
                      21G       26.   3.33        3.       1.       1.    0.02
+          2 COMBINED AT
                     CP21G     8841.   3.83     1908.     487.     469.    9.28
+          HYDROGRAPH AT
                       22     2825.   3.25      307.      77.      74.    1.39
+          HYDROGRAPH AT
                       23      779.   3.25       88.      22.      21.    0.39
+          2 COMBINED AT
                      24A     3603.   3.25      395.      99.      96.    1.78
+          ROUTED TO
                     24.1     2924.   3.42      395.      99.      96.    1.78
+                                                                      5.59     3.42
+          HYDROGRAPH AT
                       24      708.   3.25       85.      21.      21.    0.49
+          2 COMBINED AT
                    24.2A     3467.   3.42      479.     121.     116.    2.27
+          HYDROGRAPH AT
                      25N     1244.   3.42      177.      45.      43.    0.78
+          HYDROGRAPH AT
                      25S     1424.   3.25      152.      38.      37.    0.63
+          2 COMBINED AT
                     25.1     2431.   3.33      329.      83.      80.    1.41
+          2 COMBINED AT
                    24.2B     5611.   3.42      809.     204.     197.    3.68
+          ROUTED TO
                   PIMARD     5550.   3.42      808.     204.     197.    3.68
+                                                                      6.86     3.42
+          ROUTED TO
                   RR24.2     5294.   3.50      808.     204.     197.    3.68
+                                                                      6.96     3.50
+          2 COMBINED AT
                   C21.05    12190.   3.75     2714.     691.     666.   12.96
+          ROUTED TO
                   RR24.3    12128.   3.75     2713.     691.     666.   12.96
+                                                                      9.07     3.75
+          ROUTED TO
                      DAM      452.   7.67      393.     320.     308.   12.96
+                                                                   2160.20     7.67
+          ROUTED TO
                      R21G     452.   7.92      393.     316.     304.   12.96
+                                                                      0.50     7.92
+          HYDROGRAPH AT
                      21H       64.   3.33        8.       2.       2.    0.04
+          HYDROGRAPH AT
                      26N      690.   3.50      110.      28.      27.    0.64
```

```
          3 COMBINED AT
+                        CP21H      759.   3.50        448.       346.       333.      13.64
          ROUTED TO
+                        RR21H      639.   3.58        441.       342.       330.      13.64
+                                                                                        0.59       3.58
          HYDROGRAPH AT
+                          26S      239.   3.25         29.         7.         7.       0.17
          2 COMBINED AT
+                       *APEX*      757.   3.58        462.       350.       337.      13.81
          ROUTED TO
+                        CP27A      745.   3.67        462.       349.       336.      13.81
+                                                                                        1.78       3.67
          ROUTED TO
+                        CP27B      716.   3.75        459.       346.       333.      13.81
+                                                                                        1.74       3.75
          ROUTED TO
+                        CP27C      686.   3.83        457.       344.       331.      13.81
+                                                                                        1.70       3.83
          ROUTED TO
+                        CP27D      683.   3.92        457.       343.       331.      13.81
+                                                                                        1.70       3.92
          HYDROGRAPH AT
+                           27     2052.   3.17        207.        52.        50.       1.19
          2 COMBINED AT
+                         CP27     2060.   3.17        623.       395.       381.      15.00
1
                                   SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                       (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                          INTERPOLATED TO
                                                                       COMPUTATION INTERVAL
          ISTAQ    ELEMENT      DT       PEAK    TIME TO      VOLUME      DT       PEAK    TIME TO     VOLUME
                                                    PEAK                                      PEAK

                              (MIN)     (CFS)     (MIN)      (IN)    (MIN)     (CFS)    (MIN)      (IN)

             16    MANE        3.27   2790.08    197.97      2.08     5.00   2682.70   195.00      2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1620E+03 OUTFLOW=0.1613E+03 BASIN STORAGE=0.4299E-01 PERCENT ERROR=   0.4

             17    MANE        3.68   2249.16    195.52      2.07     5.00   2183.62   195.00      2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1317E+03 OUTFLOW=0.1309E+03 BASIN STORAGE=0.4985E-01 PERCENT ERROR=   0.6

             18    MANE        3.18   2466.56    196.97      2.02     5.00   2431.13   195.00      2.02

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1368E+03 OUTFLOW=0.1360E+03 BASIN STORAGE=0.5145E-01 PERCENT ERROR=   0.6

             15    MANE        3.51   1901.39    207.57      1.93     5.00   1901.08   205.00      1.93

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1417E+03 OUTFLOW=0.1409E+03 BASIN STORAGE=0.5998E-01 PERCENT ERROR=   0.5
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                19  MANE        1.80    456.95    193.94      2.11      5.00    444.60    195.00        2.11

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2111E+02 OUTFLOW=0.2104E+02 BASIN STORAGE=0.3666E-02 PERCENT ERROR=   0.4

                20  MANE        3.77   1138.08    196.21      2.05      5.00   1086.14    195.00        2.05

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6254E+02 OUTFLOW=0.6220E+02 BASIN STORAGE=0.1496E-01 PERCENT ERROR=   0.5

               21A  MANE        2.36    804.58    193.66      1.81      5.00    783.53    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4070E+02 OUTFLOW=0.4053E+02 BASIN STORAGE=0.1094E-01 PERCENT ERROR=   0.4

               21B  MANE        2.56    520.22    194.23      1.81      5.00    511.65    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2674E+02 OUTFLOW=0.2663E+02 BASIN STORAGE=0.7314E-02 PERCENT ERROR=   0.4

               21C  MANE        3.23   1300.20    196.60      1.81      5.00   1248.06    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7248E+02 OUTFLOW=0.7205E+02 BASIN STORAGE=0.2485E-01 PERCENT ERROR=   0.6

               21D  MANE        3.10   1538.29    200.70      1.81      5.00   1499.66    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1026E+03 OUTFLOW=0.1020E+03 BASIN STORAGE=0.5119E-01 PERCENT ERROR=   0.5

               21E  MANE        3.04    421.12    198.38      1.81      5.00    401.68    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2490E+02 OUTFLOW=0.2476E+02 BASIN STORAGE=0.1083E-01 PERCENT ERROR=   0.5

               21F  MANE        4.33    687.84    201.28      1.80      5.00    666.34    200.00        1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4544E+02 OUTFLOW=0.4507E+02 BASIN STORAGE=0.2383E-01 PERCENT ERROR=   0.8

               21G  MANE        4.06     26.27    199.44      1.80      5.00     26.04    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1667E+01 OUTFLOW=0.1656E+01 BASIN STORAGE=0.7499E-03 PERCENT ERROR=   0.6

                22  MANE        3.71   2850.96    194.47      2.07      5.00   2824.55    195.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1539E+03 OUTFLOW=0.1530E+03 BASIN STORAGE=0.3984E-01 PERCENT ERROR=   0.5

                23  MANE        3.96    781.94    194.26      2.09      5.00    778.56    195.00        2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4420E+02 OUTFLOW=0.4393E+02 BASIN STORAGE=0.9523E-02 PERCENT ERROR=   0.6
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                24  MANE        2.78    735.98    195.89      1.62      5.00    708.45    195.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4263E+02 OUTFLOW=0.4239E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.5

               25N  MANE        4.27   1280.11    203.94      2.13      5.00   1243.86    205.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8954E+02 OUTFLOW=0.8895E+02 BASIN STORAGE=0.4329E-01 PERCENT ERROR=   0.6

               25S  MANE        3.07   1432.12    195.33      2.28      5.00   1424.44    195.00        2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7648E+02 OUTFLOW=0.7611E+02 BASIN STORAGE=0.2473E-01 PERCENT ERROR=   0.5

               21H  MANE        4.16     64.59    199.55      1.80      5.00     64.21    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4176E+01 OUTFLOW=0.4145E+01 BASIN STORAGE=0.2185E-02 PERCENT ERROR=   0.7

               26N  MANE        4.34    695.84    209.67      1.63      5.00    689.73    210.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5568E+02 OUTFLOW=0.5537E+02 BASIN STORAGE=0.2531E-01 PERCENT ERROR=   0.5

               26S  MANE        3.14    248.14    195.91      1.63      5.00    238.82    195.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1460E+02 OUTFLOW=0.1454E+02 BASIN STORAGE=0.4459E-02 PERCENT ERROR=   0.4

                27  MANE        0.61   2077.01    190.94      1.63      5.00   2052.00    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1040E+03 OUTFLOW=0.1038E+03 BASIN STORAGE=0.2468E-01 PERCENT ERROR=   0.2


*** NORMAL END OF HEC-1 ***
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1****************************************                    ****************************************
*                                      *                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *   U.S. ARMY CORPS OF ENGINEERS       *
*            JUN 09 1992               *                    *   HYDROLOGIC ENGINEERING CENTER      *
*           VERSION 4.0.3E             *                    *         609 SECOND STREET            *
*                                      *                    *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE  09/30/98  TIME  16:14:24  *                    *          (916) 551-1748              *
*                                      *                    *                                      *
****************************************                    ****************************************


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


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

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

1                                                HEC-1 INPUT                                                PAGE  1

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

        1           ID        FILE <RWDAM21F.DAT>
        2           ID        THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
        3           ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
        4           ID
        5           ID        THE MODIFICIATION INCLUDE THE FOLLOWING:
        6           ID        1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
        7           ID           TO CONCENTRATION POINT AT THE APEX OF 21F
        8           ID        2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE
        9           ID
       10           ID        NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
       11           ID        1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
       12           ID        MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
       13           ID        25S.
       14           ID
       15           ID        100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
       16           ID        RAINFALL FROM NOAA ATLAS
       17           ID
       18           ID        FILE RAW4A.DAT
       19           ID        WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
       20           ID        FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
       21           ID        22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
       22           ID        THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
       23           ID        ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
       24           ID        INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
       25           ID        PROPOSED ROAD CROSSINGS.
       26           ID
       27           ID        REVISED BY GREINER 12-9-93 BY RON FERGUSON
       28           ID        REVISED BY C. J. LOVELY, COS, 3-9-94
       29           ID        Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
       30           ID           *Eliminate DSS Records
```

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31          ID          *Divide #26 into 26N & 26S; 26N is portion north of Jomax
32          ID          *Add 26N @ CP21H and route with 21H to apex
33          ID          *Add 26S @ apex
34          ID          *Modify reach length in 26S & 26N to reflect division
35          ID
36          ID       ********************************************************************
37          ID       * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
38          ID       * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
39          ID       ********************************************************************
40          ID
41          ID    September 1998 - HDR Engineering Modified by adding basin south of the
42          ID    September 1998 - center of Section 36 (Alternative No. 3)
43          ID    September 1998 - Filename <RAWALT2.DAT>
44          ID
45          ID
46          ID   ***************************************************************************
            *DIAGRAM
47          IT       5 03MAR94       0     300
48          IO       5       0       0       0
            *
1                                        HEC-1 INPUT                                    PAGE  2

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

49          KK      16     SUB
50          KM        RUNOFF FROM SUB-BASIN 16
51          BA  1.4570
52          PH       0     9.7    0.77    1.51    2.65    3.00    3.23    3.66
53          LS       0      83     9.8       0       0       0       0       0
54          UK     217   .0581     .20     100
55          RK   14800   .0216    .045       0    TRAP      25       3
            *

56          KK      17     SUB
57          KM        RUNOFF FROM SUB-BASIN 17
58          BA  1.1851       0       0
59          LS       0      83     9.8
60          UK     285   .0421     .20     100       0       0       0
61          RK   12200   .0254    .045       0    TRAP      25       3
            *

62          KK      18     SUB
63          KM        RUNOFF FROM SUB-BASIN 18
64          BA  1.2641
65          LS       0      83     6.5       0
66          UK     285   .0421     .20     100       0       0       0
67          RK   10840   .0259    .045       0    TRAP      25       3
            *

68          KK     19A      CP
69          KM        COMBINE HYDROGRAPHS SUB16, SUB17 AND SUB18
70          HC       3
            *

71          KK     19B      CP
72          KM        ROUTE CP19A TO CP19B
73          RS       1    FLOW      -1       0       0
74          RC    .055    .040    .055    1100   .0155       0       0       0
75          RX       0       1     126     132     167     173     298     299
76          RY      10       8       3       0       0       3       8      10
            *

77          KK      15     SUB
78          KM        RUNOFF FROM SUBBASIN 15
79          BA  1.3702       0       0
80          LS       0      82     5.4       0
```

```
 81          UK     217   .0581     .20     100       0       0       0
 82          RK   21200   .0236    .045       0    TRAP      25       3
             *

 83          KK     19C      CP
 84          KM        COMBINE HYDROGRAPHS SUB15 & CP19B
 85          HC       2
             *
1                                          HEC-1 INPUT                                          PAGE  3

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

 86          KK    19.1      CP
 87          KM        ROUTE CP 19C TO 19.1
 88          RS       1    FLOW      -1       0       0
 89          RC    .055    .040    .055    1800   .0200       0       0
 90          RX       0       1     151     166     216     231     381     382
 91          RY      10       9       3       0       0       3       9      10
             *

 92          KK      19     SUB
 93          KM        RUNOFF FROM SUB-BASIN 19
 94          BA  0.1872
 95          LS       0      84     7.2       0
 96          UK     275   .0800     .20     100       0       0       0
 97          RK    3730   .0352    .045    .160    TRAP      15       3
 98          RK    1800   .0200    .045       0    TRAP      50      30
             *

 99          KK      20     SUB
100          KM        RUNOFF FROM SUB-BASIN 20
101          BA  0.5698       0       0
102          LS       0      84     3.6       0
103          UK     300   .0750     .20     100       0       0       0
104          RK    9640   .0197    .045       0    TRAP      15       3
             *

105          KK    CP20      CP
106          KM        COMBINE SUB 19, SUB 20 AND CP 19.1
107          HC       3
             *
108          KM    *******BEGIN SUBAREA 21 BREAKDOWN-3/94 REVISIONS*****

109          KK  RRCP20      CP
110          KM        ROUTE CP20 TO CP 21A, WHICH IS 4600'
111          RS       1    FLOW      -1       0       0
112          RC    .055    .040    .055    4600   .0217       0       0       0
113          RX       0      30      60      85     195     220     250     280
114          RY      10       4       1       0       0       1       4      10
             *

115          KK     21A     SUB
116          KM        RUNOFF FROM SUB-BASIN 21A
117          BA     .42       0       0
118          LS       0      80     6.4       0       0       0
119          UK     297   .0558     .20     100       0       0       0
120          RK    6400   .0344    .045       0    TRAP      10       3
             *

121          KK   CP21A
122          HC       2
             *
1                                          HEC-1 INPUT                                          PAGE  4

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
 123          KK   RR21A      CP
 124          KM        ROUTE CP21A TO 21B    WHICH IS 960'
 125          RS       1    FLOW      -1       0       0
 126          RC    .055    .040    .055     960   .0156       0       0       0
 127          RX       0      10      60     205     295     440     490     500
 128          RY       6       4       2       0       0       2       4       6
              *

 129          KK     21B     SUB
 130          KM        RUNOFF FROM SUB-BASIN 21B
 131          BA   0.276       0       0
 132          LS       0      80     6.4       0       0       0
 133          UK     297   .0558     .20     100       0       0       0
 134          RK    6300   .0381    .045       0    TRAP      10       3
              *

 135          KK   CP21B
 136          HC       2
              *

 137          KK   RR21B      CP
 138          KM        ROUTE CP21B TO 21C    WHICH IS 4400'
 139          RS       1    FLOW      -1       0       0
 140          RC    .055    .040    .055    4400   .0205       0       0       0
 141          RX       0      10      60     205     295     440     490     500
 142          RY       6       4       2       0       0       2       4       6
              *

 143          KK     21C     SUB
 144          KM        RUNOFF FROM SUB-BASIN 21C
 145          BA    .748       0       0
 146          LS       0      80     6.4       0       0       0
 147          UK     297   .0558     .20     100       0       0       0
 148          RK    9900   .0328    .045       0    TRAP      20       3
              *

 149          KK   CP21C
 150          HC       2
              *

 151          KK   RR21C      CP
 152          KM        ROUTE CP21C TO 21D    WHICH IS 5700'
 153          RS       1    FLOW      -1       0       0
 154          RC    .055    .040    .055    5700   .0181       0       0       0
 155          RX       0      20     175     210     300     335     490     510
 156          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
              *

 157          KK     21D     SUB
 158          KM        RUNOFF FROM SUB-BASIN 21D
 159          BA   1.059       0       0
 160          LS       0      80     6.4       0       0       0
 161          UK     297   .0558     .20     100       0       0       0
 162          RK   14500   .0252    .045       0    TRAP      30       3
              *
1                                        HEC-1 INPUT                                        PAGE  5

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

 163          KK   CP21D
 164          HC       2
              *

 165          KK   RR21D      CP
 166          KM        ROUTE CP21D TO 21E    WHICH IS 1100'
```

```
 167          RS       1    FLOW      -1       0       0
 168          RC    .055    .040    .055    1100   .0200       0       0       0
 169          RX       0      20     175     210     300     335     490     510
 170          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
              *

 171          KK     21E     SUB
 172          KM        RUNOFF FROM SUB-BASIN 21E
 173          BA   0.257       0       0
 174          LS       0      80     6.4       0       0       0
 175          UK     297   .0333     .20     100       0       0       0
 176          RK    6600   .0288    .045       0    TRAP      15       3
              *

 177          KK   CP21E
 178          HC       2
              *

 179          KK   RR21E      CP
 180          KM        ROUTE CP21E TO 21F    WHICH IS 2800'
 181          RS       1    FLOW      -1       0       0
 182          RC    .055    .040    .055    2800   .0143       0       0       0
 183          RX       0      70     170     180     230     240     340     410
 184          RY    10.5     4.5     3.5       0       0     3.5     4.5    10.5
              *

 185          KK     21F     SUB
 186          KM        RUNOFF FROM SUB-BASIN 21F
 187          BA   0.469       0       0
 188          LS       0      80     6.4       0       0       0
 189          UK     297   .0333     .20     100       0       0       0
 190          RK   10400   .0279    .045       0    TRAP      20       3
              *

 191          KK   CP21F
 192          HC       2
              *

 193          KK   RR21F      CP
 194          KM   ROUTE CP21F TO 21G (1900' DOWNSTREAM)
 195          RS       1    FLOW      -1       0       0
 196          RC    .055    .040    .055    1900   .0158       0       0       0
 197          RX       0      20      70     345     455     730     780     800
 198          RY      10       8       2       0       0       2       8      10
              *
```

1 HEC-1 INPUT PAGE 6

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

 199          KK     21G     SUB
 200          KM   RUNOFF FROM SUB-BASIN 21G
 201          BA   .0172       0       0
 202          LS       0      80     6.4       0       0       0
 203          UK     297   .0333     .20     100       0       0       0
 204          RK    4000   .0300    .045       0    TRAP      10       3
              *

 205          KK   CP21G
 206          HC       2
              *

 207          KK      22     SUB
 208          KM       RUNOFF FROM SUB-BASIN 22
 209          BA  1.3860
 210          LS       0      84     5.1       0
 211          UK     225   .0590     .20     100       0       0       0       0
```

```
212          RK   13000   .0238    .045       0    TRAP      25       3
             *

213          KK      23     SUB
214          KM        RUNOFF FROM SUB-BASIN 23
215          BA  0.3945       0       0
216          LS       0      84     6.3       0
217          UK     225   .0590     .20     100       0       0       0
218          RK   10200   .0304    .045       0    TRAP      20       3
             *

219          KK     24A      CP
220          KM        COMBINE HYDROGRAPHS FOR SUB 22 AND SUB 23
221          HC       2
             *

222          KK    24.1      CP
223          KM        ROUTE CP 24A TO CP 24.1
224          RS       3    FLOW      -1       0       0
225          RC    .055    .040    .055    6800   .0257       0       0       0
226          RX       0       1     101     107     122     128     228     229
227          RY      10       8       3       0       0       3       8      10
             *

228          KK      24     SUB
229          KM        RUNOFF FROM SUB-BASIN 24
230          KM        DRAINAGE AREA CHANGED TO MATCH VALUE USED BY MICHAEL BAKER
231          KM        Jr., INC.
232          BA  0.4907       0       0
233          LS       0      77     6.8       0
234          UK     295   .0438     .20     100       0       0       0
235          RK    6800   .0257    .045       0    TRAP      15       3
             *
```

1 HEC-1 INPUT PAGE 7

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

236          KK   24.2A      CP
237          KM        COMBINE SUB 24 & CP 24.1 - APEX
238          HC       2
             *

239          KK     25N       SUB
240          KM        RUNOFF FROM SUB-BASIN 25N - APEX
241          BA  0.7834       0       0       0       0       0       0       0
242          LS       0      84     9.0       0
243          UK     295   .0438     .20     100       0       0       0
244          RK   16700   .0302    .045       0    TRAP      25       3
             *

245          KK     25S     SUB
246          KM        RUNOFF FROM SUB-BASIN 25S - APEX
247          BA  0.6256       0       0       0       0       0       0       0
248          LS       0      86     9.0       0
249          UK     295   .0438     .20     100       0       0       0
250          RK    8900   .0278    .045       0    TRAP      25       3
             *

251          KK    25.1      CP
252          KM        COMBINE HYDROGRAPHS FOR SUB-BASINS 25N AND 25S
253          HC       2
             *

254          KK   24.2B      CP
255          KM        COMBINE TOTAL HYDROGRAPH 24.2A WITH 25.1
256          HC       2
```

```
                 *
257              KK  PIMARD      CP
258              KM   ROUTE THE TOTAL HYDROGRAPH AT THE CONCENTRATION POINT
259              KM   24.2B TO THE CULVERT AT THE PIMA ROAD. THERE IS NO
260              KM   CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
261              RS       1    FLOW      -1       0       0
262              RC    .055    .040    .055    2000   .0287       0       0       0
263              RX       0       1     101     107     122     128     228     229
264              RY      10       8       3       0       0       3       8      10
                 *
265              KK  RR24.2      CP
266              KM   ROUTE THE TOTAL HYDROGRAPH AT CONCENTRATION POINT
267              KM   24.2B FROM THE CULVERT UNDER PIMA ROAD TO CONCENTRATION
268              KM   POINT 21.05.
269              RS       1    FLOW      -1       0       0
270              RC    .055    .040    .055    3050   .0238       0       0       0
271              RX       0       1     101     107     122     128     228     229
272              RY      10       8       3       0       0       3       8      10
                 *
1                                                HEC-1 INPUT                                                PAGE  8

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

273              KK  C21.05 CONFLUENCE OF DGB CHANNELS NEAR MID-SECTION 36
274              KM         COMBINE HYDROGRAPH CP21G WITH HYDROGRAPH RR24.2
275              KM         (FROM THE PIMA ROAD CULVERT)
276              HC       2
                 *
277              KK  RR24.3      CP
278              KM   ROUTE THE TOTAL HYDROGRAPH FROM THE CONVLUENCE IN THE CENTER OF SECTION 36
279              KM   24.2B TO THE BASIN AND DAM JUST SOUTH OF THE CENTER OF THE SECTION
280              RS       1    FLOW      -1       0       0
281              RC    .055    .040    .055    1600   .0238       0       0       0
282              RX       0       1     101     107     122     128     228     229
283              RY      10       8       3       0       0       3       8      10
                 *  ******************************************************************************
284              KK     DAM
285              KO       3
286              RS       1    FLOW       0
287              SV       0     163     339     529     732     950    1187    1442    1714
288              SE    2130    2135    2140    2145    2150    2155    2160    2165    2170
289              SS    2160     200     3.2     1.5
                 *  2 - 36" RCP Culverts for outlet
290              SL    2130    14.1      .6      .5
                 *  ******************************************************************************
                 *
291              KK    R21G      CP
292              KM        ROUTE CP21G(21.05)TO 21H WHICH IS 3100'
293              RS       1    FLOW      -1       0       0
294              RC    .055    .040    .055    3100   .0194       0       0       0
295              RX       0      90     120     355     585     820     850     940
296              RY       9       4     1.5       0       0     1.5       4       9
                 *
297              KK     21H     SUB
298              KM        RUNOFF FROM SUB-BASIN 21H
299              BA   .0431       0       0
300              LS       0      80     6.4       0       0       0
301              UK     297   .0333     .20     100       0       0       0
302              RK    4600   .0278    .045       0    TRAP      20       3
                 *
```

```
 303          KK     26N
 304          KM       Runoff from sub-basin 26N
 305          BA   .6376       0       0
 306          LS      0      75    12.7       0
 307          UK    200   .0250     .20     100       0
 308          RK  12000   .0263    .045       0    TRAP      35      10
              *
1                                          HEC-1 INPUT                                                    PAGE  9

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

 309          KK   CP21H   JOMAX RD
 310          KO       3
 311          HC       3
              *

 312          KK   RR21H      CP
 313          KM        ROUTE HYDROGRAPH AT CONCENTRATION POINT 21H   DOWNSTREAM FROM
 314          KM        JOMAX ROAD           THERE IS NO ADDITIONAL CONTRIBUTING
 315          KM        DRAINAGE AREA AT THIS CONCENTRATION POINT.  USED CHANNEL
 316          KM        GEOMETRY                          FROM REACH SIX
 317          KM            DEVELOPED BY C. LOVELY
 318          RS       1    FLOW      -1       0       0
 319          RC    .055    .040    .055    2390   .0188       0       0       0
 320          RX       0      90     120     355     585     820     850     940
 321          RY       9       4     1.5       0       0     1.5       4       9
              *

 322          KK     26S     SUB
 323          KM       RUNOFF FROM SUB-BASIN 26S
 324          BA  0.1672       0       0
 325          LS       0      75    12.7       0
 326          UK     200   .0250     .20     100       0       0       0
 327          RK    4000   .0263    .045       0    TRAP      35      10
              *

 328          KK  *APEX*      CP
 329          KM        COMBINE FLOW FROM SUB-BASIN 26 ,
 330          KM            AND ROUTED HYDROGRAPH FROM JOMAX ROAD.
 331          HC       2
              *
 332          KM        *********END SUBAREA 21 REVISIONS************

 333          KK   CP27A      CP AT HAPPY VALLEY RD
 334          KM        ROUTE FLOW FROM CONCENTRATION POINT APEX  TO 27A (HAPPY VALLEY
 335          KM        ROAD).  THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION PT.
 336          KM
 337          RS       1    FLOW      -1       0       0
 338          RC    .055    .040    .055    1600   .0196       0       0       0
 339          RX       0       1     201     211     261     271     471     472
 340          RY      10       4       2       0       0       2       4      10
              *

 341          KK   CP27B      CP AT MILLER RD
 342          KM        ROUTE FLOW FROM CONCENTRATION POINT 27B TO 27C (MILLER ROAD).
 343          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 344          RS       1    FLOW      -1       0       0
 345          RC    .055    .040    .055    3300   .0196       0       0       0
 346          RX       0       1     201     211     261     271     471     472
 347          RY      10       4       2       0       0       2       4      10
              *
1                                          HEC-1 INPUT                                                    PAGE 10

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

```
348          KK   CP27C      CP AT PINNACLE PEAK RD
349          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (PINNACLE PK ROAD).
350          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
351          RS       1    FLOW      -1       0       0
352          RC    .055    .040    .055    3300   .0196       0       0       0
353          RX       0       1     201     211     261     271     471     472
354          RY      10       4       2       0       0       2       4      10
             *

355          KK   CP27D     CP AT SCOTTSDALE RD
356          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (SCOTTSDALE ROAD)
357          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
358          RS       1    FLOW      -1       0       0
359          RC    .055    .040    .055    1000   .0196       0       0       0
360          RX       0       1     201     211     261     271     471     472
361          RY      10       4       2       0       0       2       4      10
             *

362          KK      27     SUB
363          KM        RUNOFF FROM SUB-BASIN 27
364          BA  1.1913       0       0
365          LS       0      75    12.7       0
366          UK     200   .0250     .20     100       0       0       0
367          RK    1500   .0263    .045       0    TRAP      35      10
             *

368          KK    CP27      CP AT SCOTTSDALE RD
369          KO       3
370          KM        COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
371          KM        POINT 27D WITH SUB 27 .  TOTAL FLOW AT
372          KM        SCOTTSDALE ROAD FOR FAN 4.
373          HC       2
             *
374          ZZ
1
             SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

   49         16
               .
               .
   56          .          17
               .           .
               .           .
   62          .           .          18
               .           .           .
               .           .           .
   68        19A.......................
               V
               V
   71        19B
               .
               .
   77          .          15
               .           .
               .           .
   83        19C............
               V
               V
   86       19.1
               .
               .
   92          .          19
```

```
                .          .
                .          .
  99            .          .          20
                .          .           .
                .          .           .
 105         CP20.......................
                V
                V
 109       RRCP20
                .
                .
 115            .         21A
                .           .
                .           .
 121         CP21A............
                V
                V
 123         RR21A
                .
                .
 129            .         21B
                .           .
                .           .
 135         CP21B............
                V
                V
 137         RR21B
                .
                .
 143            .         21C
                .           .
                .           .
 149         CP21C............
                V
                V
 151         RR21C
                .
                .
 157            .         21D
                .           .
                .           .
 163         CP21D............
                V
                V
 165         RR21D
                .
                .
 171            .         21E
                .           .
                .           .
 177         CP21E............
                V
                V
 179         RR21E
                .
                .
 185            .         21F
                .           .
                .           .
 191         CP21F............
                V
                V
 193         RR21F
                .
                .
 199            .         21G
                .           .
```

```
205      CP21G...........
                 .
207              22
                 .
213              .          23
                 .           .
219              24A.........
                   V
                   V
222            24.1
                 .
228              .          24
                 .           .
236            24.2A........
                 .
239              .         25N
                 .           .
245              .           .        25S
                 .           .         .
251              .        25.1........
                 .           .
254            24.2B........
                   V
                   V
257          PIMARD
                   V
                   V
265          RR24.2
                 .
273      C21.05..........
             V
             V
277      RR24.3
             V
             V
284        DAM
             V
             V
291       R21G
                 .
297              21H
                 .
303              .         26N
                 .           .
309      CP21H......................
             V
             V
312      RR21H
                 .
322              26S
                 .
```

```
  328      *APEX*............
                V
                V
  333       CP27A
                V
                V
  341       CP27B
                V
                V
  348       CP27C
                V
                V
  355       CP27D
                .
                .
  362           .          27
                .           .
                .           .
  368        CP27............
 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************
*                                         *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)     *
*              JUN 09 1992                *
*            VERSION 4.0.3E               *
*                                         *
*  RUN DATE  09/30/98  TIME  16:14:24     *
*                                         *
*****************************************
```

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

FILE <RWDAM21F.DAT>
THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.

THE MODIFICIATION INCLUDE THE FOLLOWING:
1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   TO CONCENTRATION POINT AT THE APEX OF 21F
2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE

NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
25S.

100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
RAINFALL FROM NOAA ATLAS

FILE RAW4A.DAT
WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
FOR 22, 23, 24, 25N, AND 25S. ROUTE COMBINED HYDROGRAPHS
22, 23, 24, 25N AND 25S TO 21G. SUN-BASIN 26 COMBINED AT
THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
PROPOSED ROAD CROSSINGS.

REVISED BY GREINER 12-9-93 BY RON FERGUSON
REVISED BY C. J. LOVELY, COS, 3-9-94
Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
   *Eliminate DSS Records
   *Divide #26 into 26N & 26S; 26N is portion north of Jomax
   *Add 26N @ CP21H and route with 21H to apex

```
                                  *Add 26S @ apex
                                  *Modify reach length in 26S & 26N to reflect division

                              ******************************************************************
                              * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
                              * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.      *
                              ******************************************************************

                            September 1998 - HDR Engineering Modified by adding basin south of the
                            September 1998 - center of Section 36 (Alternative No. 3)
                            September 1998 - Filename <RAWALT2.DAT>


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

  48 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      3MAR94  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      4MAR94  ENDING DATE
                      NDTIME        0055  ENDING TIME
                       ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL    0.08 HOURS
                       TOTAL TIME BASE   24.92 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
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0


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


            **************
            *            *
 284 KK     *       DAM  *
            *            *
```

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

  285 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

                HYDROGRAPH ROUTING DATA

  286 RS          STORAGE ROUTING
                        NSTPS           1  NUMBER OF SUBREACHES
                         ITYP        FLOW  TYPE OF INITIAL CONDITION
                       RSVRIC        0.00  INITIAL CONDITION
                            X        0.00 WORKING R AND D COEFFICIENT

  287 SV            STORAGE         0.0     163.0     339.0     529.0     732.0     950.0    1187.0    1442.0    1714.0

  288 SE          ELEVATION     2130.00   2135.00   2140.00   2145.00   2150.00   2155.00   2160.00   2165.00   2170.00

  290 SL          LOW-LEVEL OUTLET
                        ELEVL     2130.00  ELEVATION AT CENTER OF OUTLET
                        CAREA       14.10  CROSS-SECTIONAL AREA
                         COQL        0.60  COEFFICIENT
                         EXPL        0.50  EXPONENT OF HEAD

  289 SS          SPILLWAY
                         CREL     2160.00  SPILLWAY CREST ELEVATION
                        SPWID      200.00  SPILLWAY WIDTH
                         COQW        3.20  WEIR COEFFICIENT
                         EXPW        1.50  EXPONENT OF HEAD

                                                          ***

                                          COMPUTED OUTFLOW-ELEVATION DATA

            OUTFLOW       0.00     99.13    109.13    121.38    136.72    156.51    182.99    220.26    276.59    371.63
          ELEVATION    2130.00   2132.13   2132.59   2133.20   2134.06   2135.32   2137.27   2140.54   2146.62   2160.00

            OUTFLOW     393.64    540.04    931.49   1688.66   2932.20   4782.74   7360.93  10787.40  15182.78  20667.69
          ELEVATION    2160.10   2160.41   2160.91   2161.61   2162.51   2163.61   2164.91   2166.41   2168.10   2170.00

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE       0.00     69.59     84.33    104.33    132.37    163.00    174.29    243.04    339.00    359.46
            OUTFLOW       0.00     99.13    109.13    121.38    136.72    151.72    156.51    182.99    214.56    220.26
          ELEVATION    2130.00   2132.13   2132.59   2133.20   2134.06   2135.00   2135.32   2137.27   2140.00   2140.54

            STORAGE     529.00    594.68    732.00    950.00   1187.00   1192.29   1207.73   1233.34   1269.10   1315.02
            OUTFLOW     262.78    276.59    303.43    339.25    371.63    393.66    540.00    931.59   1688.73   2932.26
          ELEVATION    2145.00   2146.62   2150.00   2155.00   2160.00   2160.10   2160.41   2160.91   2161.61   2162.51

            STORAGE    1371.10   1437.34   1442.00   1518.51   1610.84   1714.00
            OUTFLOW    4782.86   7361.19   7556.82  10787.31  15183.02  20667.69
          ELEVATION    2163.61   2164.91   2165.00   2166.41   2168.10   2170.00

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

                        HYDROGRAPH AT STATION      DAM

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                             (CFS)
+     427.      7.75                377.        308.        297.        297.
                          (INCHES)  0.271       0.885       0.885       0.885
                           (AC-FT)  187.        611.        611.        611.
```

```
 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
     1196.      7.75                   1166.        881.        849.        849.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
   2160.17      7.75                 2159.54     2152.91     2152.06     2152.06

                         CUMULATIVE AREA =   12.96 SQ MI


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


            **************
            *            *
  309 KK    *     CP21H  *        JOMAX RD
            *            *
            **************

  310 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

  311 HC          HYDROGRAPH COMBINATION
                        ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0

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

                          HYDROGRAPH AT STATION    CP21H

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                     (CFS)
+     785.      3.50                  432.        334.        322.        322.
                                 (INCHES)      0.295       0.911       0.911       0.911
                                  (AC-FT)       214.        663.        663.        663.

                         CUMULATIVE AREA =   13.64 SQ MI

MANE2 NPLAN,NSTM       1      0


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


            **************
            *            *
  368 KK    *      CP27  *          CP AT SCOTTSDALE RD
            *            *
            **************

  369 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
```

```
                    QSCAL          0.  HYDROGRAPH PLOT SCALE
                              COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
                              POINT 27D WITH SUB 27 .  TOTAL FLOW AT
                              SCOTTSDALE ROAD FOR FAN 4.

 373 HC          HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                  ***
MANE2 NPLAN,NSTM       1      0
      ***            ***            ***            ***            ***

                      HYDROGRAPH AT STATION     CP27

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    2060.      3.17       608.        384.        370.        370.
                       (INCHES)     0.377       0.953       0.953       0.953
                        (AC-FT)      302.        762.        762.        762.

                      CUMULATIVE AREA =   15.00 SQ MI

1
                                          RUNOFF SUMMARY
                                     FLOW IN CUBIC FEET PER SECOND
                                  TIME IN HOURS,  AREA IN SQUARE MILES

                                   PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD     BASIN    MAXIMUM    TIME OF
        OPERATION        STATION   FLOW    PEAK                                         AREA     STAGE    MAX STAGE
+                                                      6-HOUR      24-HOUR     72-HOUR
        HYDROGRAPH AT
+                           16     2683.   3.25         323.        81.         78.      1.46
        HYDROGRAPH AT
+                           17     2184.   3.25         262.        66.         64.      1.19
        HYDROGRAPH AT
+                           18     2431.   3.25         273.        69.         66.      1.26
        3 COMBINED AT
+                          19A     7297.   3.25         857.       216.        208.      3.91
        ROUTED TO
+                          19B     7225.   3.33         857.       216.        208.      3.91
+                                                                                        7.03       3.33
        HYDROGRAPH AT
+                           15     1901.   3.42         281.        71.         68.      1.37
        2 COMBINED AT
+                          19C     8929.   3.33        1138.       287.        277.      5.28
        ROUTED TO
+                         19.1     8529.   3.33        1138.       287.        277.      5.28
+                                                                                        6.10       3.33
        HYDROGRAPH AT
+                           19      445.   3.25          42.        11.         10.      0.19
        HYDROGRAPH AT
+                           20     1086.   3.25         125.        31.         30.      0.57
        3 COMBINED AT
```

```
+                    CP20    9887.  3.33    1305.   329.   317.   6.03
        ROUTED TO
+                    RRCP20  9129.  3.42    1303.   329.   317.   6.03
+                                                                        4.09     3.42
        HYDROGRAPH AT
+                    21A     784.   3.25    81.     20.    20.    0.42
        2 COMBINED AT
+                    CP21A   9593.  3.42    1384.   350.   337.   6.45
        ROUTED TO
+                    RR21A   9383.  3.50    1383.   350.   337.   6.45
+                                                                        3.46     3.50
        HYDROGRAPH AT
+                    21B     512.   3.25    53.     13.    13.    0.28
        2 COMBINED AT
+                    CP21B   9671.  3.42    1436.   363.   350.   6.73
        ROUTED TO
+                    RR21B   8973.  3.58    1435.   363.   350.   6.73
+                                                                        3.74     3.58
        HYDROGRAPH AT
+                    21C     1248.  3.25    144.    36.    35.    0.75
        2 COMBINED AT
+                    CP21C   9578.  3.50    1578.   399.   385.   7.48
        ROUTED TO
+                    RR21C   7972.  3.67    1571.   399.   385.   7.48
+                                                                        4.10     3.67
        HYDROGRAPH AT
+                    21D     1500.  3.33    204.    51.    50.    1.06
        2 COMBINED AT
+                    CP21D   8765.  3.67    1773.   451.   434.   8.54
        ROUTED TO
+                    RR21D   8701.  3.75    1773.   451.   434.   8.54
+                                                                        4.16     3.75
        HYDROGRAPH AT
+                    21E     402.   3.33    50.     12.    12.    0.26
        2 COMBINED AT
+                    CP21E   8840.  3.75    1822.   463.   446.   8.79
        ROUTED TO
+                    RR21E   8580.  3.75    1819.   463.   446.   8.79
+                                                                        6.35     3.75
        HYDROGRAPH AT
+                    21F     666.   3.33    90.     23.    22.    0.47
        2 COMBINED AT
+                    CP21F   8865.  3.75    1908.   486.   468.   9.26
        ROUTED TO
+                    RR21F   8833.  3.83    1905.   486.   468.   9.26
+                                                                        2.70     3.83
        HYDROGRAPH AT
```

```
+                    21G      26.   3.33      3.      1.      1.   0.02
      2 COMBINED AT
+                   CP21G    8841.   3.83   1908.    487.    469.   9.28
      HYDROGRAPH AT
+                     22    2825.   3.25    307.     77.     74.   1.39
      HYDROGRAPH AT
+                     23     779.   3.25     88.     22.     21.   0.39
      2 COMBINED AT
+                    24A    3603.   3.25    395.     99.     96.   1.78
      ROUTED TO
+                   24.1    2924.   3.42    395.     99.     96.   1.78
+                                                                   5.59      3.42
      HYDROGRAPH AT
+                     24     708.   3.25     85.     21.     21.   0.49
      2 COMBINED AT
+                  24.2A    3467.   3.42    479.    121.    116.   2.27
      HYDROGRAPH AT
+                    25N    1244.   3.42    177.     45.     43.   0.78
      HYDROGRAPH AT
+                    25S    1424.   3.25    152.     38.     37.   0.63
      2 COMBINED AT
+                   25.1    2431.   3.33    329.     83.     80.   1.41
      2 COMBINED AT
+                  24.2B    5611.   3.42    809.    204.    197.   3.68
      ROUTED TO
+                  PIMARD    5550.   3.42    808.    204.    197.   3.68
+                                                                   6.86      3.42
      ROUTED TO
+                  RR24.2    5294.   3.50    808.    204.    197.   3.68
+                                                                   6.96      3.50
      2 COMBINED AT
+                  C21.05   12190.   3.75   2714.    691.    666.  12.96
      ROUTED TO
+                  RR24.3   12128.   3.75   2713.    691.    666.  12.96
+                                                                   9.07      3.75
      ROUTED TO
+                     DAM     427.   7.75    377.    308.    297.  12.96
+                                                                2160.17      7.75
      ROUTED TO
+                     R21G     422.   8.00    377.    304.    293.  12.96
+                                                                   0.49      8.00
      HYDROGRAPH AT
+                     21H      64.   3.33      8.      2.      2.   0.04
      HYDROGRAPH AT
+                     26N     690.   3.50    110.     28.     27.   0.64
      3 COMBINED AT
+                   CP21H     785.   3.50    432.    334.    322.  13.64
```

```
          ROUTED TO
+                        RR21H      661.    3.67        426.       331.       319.      13.64
+                                                                                                  0.60       3.67
          HYDROGRAPH AT
+                          26S      239.    3.25         29.         7.         7.       0.17
          2 COMBINED AT
+                        *APEX*     777.    3.58        447.       338.       326.      13.81
          ROUTED TO
+                        CP27A      767.    3.67        446.       337.       325.      13.81
+                                                                                                  1.81       3.67
          ROUTED TO
+                        CP27B      736.    3.75        444.       335.       323.      13.81
+                                                                                                  1.77       3.75
          ROUTED TO
+                        CP27C      704.    3.83        442.       333.       320.      13.81
+                                                                                                  1.73       3.83
          ROUTED TO
+                        CP27D      701.    3.92        442.       332.       320.      13.81
+                                                                                                  1.72       3.92
          HYDROGRAPH AT
+                           27     2052.    3.17        207.        52.        50.       1.19
          2 COMBINED AT
+                         CP27     2060.    3.17        608.       384.       370.      15.00
1
                                   SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                       (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                  INTERPOLATED TO
                                                                              COMPUTATION INTERVAL
          ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                    PEAK                                    PEAK

                              (MIN)     (CFS)     (MIN)      (IN)    (MIN)     (CFS)     (MIN)       (IN)

             16  MANE          3.27   2790.08    197.97      2.08     5.00   2682.70    195.00       2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1620E+03 OUTFLOW=0.1613E+03 BASIN STORAGE=0.4299E-01 PERCENT ERROR=   0.4

             17  MANE          3.68   2249.16    195.52      2.07     5.00   2183.62    195.00       2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1317E+03 OUTFLOW=0.1309E+03 BASIN STORAGE=0.4985E-01 PERCENT ERROR=   0.6

             18  MANE          3.18   2466.56    196.97      2.02     5.00   2431.13    195.00       2.02

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1368E+03 OUTFLOW=0.1360E+03 BASIN STORAGE=0.5145E-01 PERCENT ERROR=   0.6

             15  MANE          3.51   1901.39    207.57      1.93     5.00   1901.08    205.00       1.93

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1417E+03 OUTFLOW=0.1409E+03 BASIN STORAGE=0.5998E-01 PERCENT ERROR=   0.5

             19  MANE          1.80    456.95    193.94      2.11     5.00    444.60    195.00       2.11
```

```
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2111E+02 OUTFLOW=0.2104E+02 BASIN STORAGE=0.3666E-02 PERCENT ERROR=   0.4

              20  MANE        3.77   1138.08    196.21      2.05      5.00   1086.14    195.00        2.05

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6254E+02 OUTFLOW=0.6220E+02 BASIN STORAGE=0.1496E-01 PERCENT ERROR=   0.5

             21A  MANE        2.36    804.58    193.66      1.81      5.00    783.53    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4070E+02 OUTFLOW=0.4053E+02 BASIN STORAGE=0.1094E-01 PERCENT ERROR=   0.4

             21B  MANE        2.56    520.22    194.23      1.81      5.00    511.65    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2674E+02 OUTFLOW=0.2663E+02 BASIN STORAGE=0.7314E-02 PERCENT ERROR=   0.4

             21C  MANE        3.23   1300.20    196.60      1.81      5.00   1248.06    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7248E+02 OUTFLOW=0.7205E+02 BASIN STORAGE=0.2485E-01 PERCENT ERROR=   0.6

             21D  MANE        3.10   1538.29    200.70      1.81      5.00   1499.66    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1026E+03 OUTFLOW=0.1020E+03 BASIN STORAGE=0.5119E-01 PERCENT ERROR=   0.5

             21E  MANE        3.04    421.12    198.38      1.81      5.00    401.68    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2490E+02 OUTFLOW=0.2476E+02 BASIN STORAGE=0.1083E-01 PERCENT ERROR=   0.5

             21F  MANE        4.33    687.84    201.28      1.80      5.00    666.34    200.00        1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4544E+02 OUTFLOW=0.4507E+02 BASIN STORAGE=0.2383E-01 PERCENT ERROR=   0.8

             21G  MANE        4.06     26.27    199.44      1.80      5.00     26.04    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1667E+01 OUTFLOW=0.1656E+01 BASIN STORAGE=0.7499E-03 PERCENT ERROR=   0.6

              22  MANE        3.71   2850.96    194.47      2.07      5.00   2824.55    195.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1539E+03 OUTFLOW=0.1530E+03 BASIN STORAGE=0.3984E-01 PERCENT ERROR=   0.5

              23  MANE        3.96    781.94    194.26      2.09      5.00    778.56    195.00        2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4420E+02 OUTFLOW=0.4393E+02 BASIN STORAGE=0.9523E-02 PERCENT ERROR=   0.6

              24  MANE        2.78    735.98    195.89      1.62      5.00    708.45    195.00        1.62
```

```
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4263E+02 OUTFLOW=0.4239E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.5

              25N  MANE         4.27   1280.11    203.94      2.13      5.00   1243.86    205.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8954E+02 OUTFLOW=0.8895E+02 BASIN STORAGE=0.4329E-01 PERCENT ERROR=   0.6

              25S  MANE         3.07   1432.12    195.33      2.28      5.00   1424.44    195.00        2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7648E+02 OUTFLOW=0.7611E+02 BASIN STORAGE=0.2473E-01 PERCENT ERROR=   0.5

              21H  MANE         4.16     64.59    199.55      1.80      5.00     64.21    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4176E+01 OUTFLOW=0.4145E+01 BASIN STORAGE=0.2185E-02 PERCENT ERROR=   0.7

              26N  MANE         4.34    695.84    209.67      1.63      5.00    689.73    210.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5568E+02 OUTFLOW=0.5537E+02 BASIN STORAGE=0.2531E-01 PERCENT ERROR=   0.5

              26S  MANE         3.14    248.14    195.91      1.63      5.00    238.82    195.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1460E+02 OUTFLOW=0.1454E+02 BASIN STORAGE=0.4459E-02 PERCENT ERROR=   0.4

               27  MANE         0.61   2077.01    190.94      1.63      5.00   2052.00    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1040E+03 OUTFLOW=0.1038E+03 BASIN STORAGE=0.2468E-01 PERCENT ERROR=   0.2


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

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN 09 1992              *
*           VERSION 4.0.3E             *
*                                      *
*  RUN DATE  09/30/98  TIME  15:36:42  *
*                                      *
****************************************
```

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

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

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

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

1 HEC-1 INPUT PAGE 1

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

   1          ID        FILE <RWDAM21F.DAT>
   2          ID        THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
   3          ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
   4          ID
   5          ID        THE MODIFICIATION INCLUDE THE FOLLOWING:
   6          ID        1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   7          ID           TO CONCENTRATION POINT AT THE APEX OF 21F
   8          ID        2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE
   9          ID
  10          ID        NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
  11          ID        1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
  12          ID        MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
  13          ID        25S.
  14          ID
  15          ID        100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
  16          ID        RAINFALL FROM NOAA ATLAS
  17          ID
  18          ID        FILE RAW4A.DAT
  19          ID        WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
  20          ID        FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
  21          ID        22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
  22          ID        THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
  23          ID        ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
  24          ID        INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
  25          ID        PROPOSED ROAD CROSSINGS.
  26          ID
  27          ID        REVISED BY GREINER 12-9-93 BY RON FERGUSON
  28          ID        REVISED BY C. J. LOVELY, COS, 3-9-94
  29          ID        Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
  30          ID           *Eliminate DSS Records
```

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31          ID          *Divide #26 into 26N & 26S; 26N is portion north of Jomax
32          ID          *Add 26N @ CP21H and route with 21H to apex
33          ID          *Add 26S @ apex
34          ID          *Modify reach length in 26S & 26N to reflect division
35          ID
36          ID        ******************************************************************
37          ID        * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
38          ID        * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
39          ID        ******************************************************************
40          ID
41          ID    September 1998 - HDR Engineering Modified by adding basin to the
42          ID    September 1998 - center of Section 36 (Alternative No. 3)
43          ID    September 1998 - Filename <RAWALT3.DAT>
44          ID
45          ID
46          ID   ****************************************************************************
            *DIAGRAM
47          IT       5 03MAR94       0     300
48          IO       5       0       0       0
            *
1                                   HEC-1 INPUT                                    PAGE  2

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

49          KK      16     SUB
50          KM        RUNOFF FROM SUB-BASIN 16
51          BA  1.4570
52          PH       0     9.7    0.77    1.51    2.65    3.00    3.23    3.66
53          LS       0      83     9.8       0       0       0       0       0
54          UK     217   .0581     .20     100
55          RK   14800   .0216    .045       0    TRAP      25       3
            *

56          KK      17     SUB
57          KM        RUNOFF FROM SUB-BASIN 17
58          BA  1.1851       0       0
59          LS       0      83     9.8
60          UK     285   .0421     .20     100       0       0       0
61          RK   12200   .0254    .045       0    TRAP      25       3
            *

62          KK      18     SUB
63          KM        RUNOFF FROM SUB-BASIN 18
64          BA  1.2641
65          LS       0      83     6.5       0
66          UK     285   .0421     .20     100       0       0       0
67          RK   10840   .0259    .045       0    TRAP      25       3
            *

68          KK     19A      CP
69          KM        COMBINE HYDROGRAPHS SUB16, SUB17 AND SUB18
70          HC       3
            *

71          KK     19B      CP
72          KM        ROUTE CP19A TO CP19B
73          RS       1    FLOW      -1       0       0
74          RC    .055    .040    .055    1100   .0155       0       0       0
75          RX       0       1     126     132     167     173     298     299
76          RY      10       8       3       0       0       3       8      10
            *

77          KK      15     SUB
78          KM        RUNOFF FROM SUBBASIN 15
79          BA  1.3702       0       0
80          LS       0      82     5.4       0
```

```
 81          UK     217   .0581     .20     100       0       0       0
 82          RK   21200   .0236    .045       0    TRAP      25       3
             *

 83          KK     19C      CP
 84          KM        COMBINE HYDROGRAPHS SUB15 & CP19B
 85          HC       2
             *
1                                          HEC-1 INPUT                                                    PAGE  3

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

 86          KK    19.1      CP
 87          KM        ROUTE CP 19C TO 19.1
 88          RS       1    FLOW      -1       0       0
 89          RC    .055    .040    .055    1800   .0200       0       0
 90          RX       0       1     151     166     216     231     381     382
 91          RY      10       9       3       0       0       3       9      10
             *

 92          KK      19     SUB
 93          KM        RUNOFF FROM SUB-BASIN 19
 94          BA  0.1872
 95          LS       0      84     7.2       0
 96          UK     275   .0800     .20     100       0       0       0
 97          RK    3730   .0352    .045    .160    TRAP      15       3
 98          RK    1800   .0200    .045       0    TRAP      50      30
             *

 99          KK      20     SUB
100          KM        RUNOFF FROM SUB-BASIN 20
101          BA  0.5698       0       0
102          LS       0      84     3.6       0
103          UK     300   .0750     .20     100       0       0       0
104          RK    9640   .0197    .045       0    TRAP      15       3
             *

105          KK    CP20      CP
106          KM        COMBINE SUB 19, SUB 20 AND CP 19.1
107          HC       3
             *
108          KM    *******BEGIN SUBAREA 21 BREAKDOWN-3/94 REVISIONS*****

109          KK  RRCP20      CP
110          KM        ROUTE CP20 TO CP 21A, WHICH IS 4600'
111          RS       1    FLOW      -1       0       0
112          RC    .055    .040    .055    4600   .0217       0       0       0
113          RX       0      30      60      85     195     220     250     280
114          RY      10       4       1       0       0       1       4      10
             *

115          KK     21A     SUB
116          KM        RUNOFF FROM SUB-BASIN 21A
117          BA     .42       0       0
118          LS       0      80     6.4       0       0       0
119          UK     297   .0558     .20     100       0       0       0
120          RK    6400   .0344    .045       0    TRAP      10       3
             *

121          KK   CP21A
122          HC       2
             *
1                                          HEC-1 INPUT                                                    PAGE  4

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

```
 123          KK   RR21A       CP
 124          KM        ROUTE CP21A TO 21B    WHICH IS 960'
 125          RS       1    FLOW      -1       0       0
 126          RC    .055    .040    .055     960   .0156       0       0       0
 127          RX       0      10      60     205     295     440     490     500
 128          RY       6       4       2       0       0       2       4       6
              *

 129          KK     21B     SUB
 130          KM        RUNOFF FROM SUB-BASIN 21B
 131          BA   0.276       0       0
 132          LS       0      80     6.4       0       0       0
 133          UK     297   .0558     .20     100       0       0       0
 134          RK    6300   .0381    .045       0    TRAP      10       3
              *

 135          KK   CP21B
 136          HC       2
              *

 137          KK   RR21B       CP
 138          KM        ROUTE CP21B TO 21C    WHICH IS 4400'
 139          RS       1    FLOW      -1       0       0
 140          RC    .055    .040    .055    4400   .0205       0       0       0
 141          RX       0      10      60     205     295     440     490     500
 142          RY       6       4       2       0       0       2       4       6
              *

 143          KK     21C     SUB
 144          KM        RUNOFF FROM SUB-BASIN 21C
 145          BA    .748       0       0
 146          LS       0      80     6.4       0       0       0
 147          UK     297   .0558     .20     100       0       0       0
 148          RK    9900   .0328    .045       0    TRAP      20       3
              *

 149          KK   CP21C
 150          HC       2
              *

 151          KK   RR21C       CP
 152          KM        ROUTE CP21C TO 21D    WHICH IS 5700'
 153          RS       1    FLOW      -1       0       0
 154          RC    .055    .040    .055    5700   .0181       0       0       0
 155          RX       0      20     175     210     300     335     490     510
 156          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
              *

 157          KK     21D     SUB
 158          KM        RUNOFF FROM SUB-BASIN 21D
 159          BA   1.059       0       0
 160          LS       0      80     6.4       0       0       0
 161          UK     297   .0558     .20     100       0       0       0
 162          RK   14500   .0252    .045       0    TRAP      30       3
              *
```



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

 163          KK   CP21D
 164          HC       2
              *

 165          KK   RR21D       CP
 166          KM        ROUTE CP21D TO 21E    WHICH IS 1100'
```

```
167          RS       1    FLOW      -1       0       0
168          RC    .055    .040    .055    1100   .0200       0       0       0
169          RX       0      20     175     210     300     335     490     510
170          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
             *

171          KK     21E     SUB
172          KM        RUNOFF FROM SUB-BASIN 21E
173          BA   0.257       0       0
174          LS       0      80     6.4       0       0       0
175          UK     297   .0333     .20     100       0       0       0
176          RK    6600   .0288    .045       0    TRAP      15       3
             *

177          KK   CP21E
178          HC       2
             *

179          KK   RR21E      CP
180          KM        ROUTE CP21E TO 21F    WHICH IS 2800'
181          RS       1    FLOW      -1       0       0
182          RC    .055    .040    .055    2800   .0143       0       0       0
183          RX       0      70     170     180     230     240     340     410
184          RY    10.5     4.5     3.5       0       0     3.5     4.5    10.5
             *

185          KK     21F     SUB
186          KM        RUNOFF FROM SUB-BASIN 21F
187          BA   0.469       0       0
188          LS       0      80     6.4       0       0       0
189          UK     297   .0333     .20     100       0       0       0
190          RK   10400   .0279    .045       0    TRAP      20       3
             *

191          KK   CP21F
192          HC       2
             *

193          KK   RR21F      CP
194          KM   ROUTE CP21F TO 21G (1900' DOWNSTREAM)
195          RS       1    FLOW      -1       0       0
196          RC    .055    .040    .055    1900   .0158       0       0       0
197          RX       0      20      70     345     455     730     780     800
198          RY      10       8       2       0       0       2       8      10
             *
1                                          HEC-1 INPUT                                          PAGE  6

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

199          KK     21G     SUB
200          KM   RUNOFF FROM SUB-BASIN 21G
201          BA   .0172       0       0
202          LS       0      80     6.4       0       0       0
203          UK     297   .0333     .20     100       0       0       0
204          RK    4000   .0300    .045       0    TRAP      10       3
             *

205          KK   CP21G
206          HC       2
             *

207          KK      22     SUB
208          KM       RUNOFF FROM SUB-BASIN 22
209          BA  1.3860
210          LS       0      84     5.1       0
211          UK     225   .0590     .20     100       0       0       0       0
```

```
 212          RK   13000   .0238    .045       0    TRAP      25       3
              *

 213          KK      23     SUB
 214          KM         RUNOFF FROM SUB-BASIN 23
 215          BA  0.3945       0       0
 216          LS       0      84     6.3       0
 217          UK     225   .0590     .20     100       0       0       0
 218          RK   10200   .0304    .045       0    TRAP      20       3
              *

 219          KK     24A      CP
 220          KM         COMBINE HYDROGRAPHS FOR SUB 22 AND SUB 23
 221          HC       2
              *

 222          KK    24.1      CP
 223          KM         ROUTE CP 24A TO CP 24.1
 224          RS       3    FLOW      -1       0       0
 225          RC    .055    .040    .055    6800   .0257       0       0       0
 226          RX       0       1     101     107     122     128     228     229
 227          RY      10       8       3       0       0       3       8      10
              *

 228          KK      24     SUB
 229          KM         RUNOFF FROM SUB-BASIN 24
 230          KM         DRAINAGE AREA CHANGED TO MATCH VALUE USED BY MICHAEL BAKER
 231          KM         Jr., INC.
 232          BA  0.4907       0       0
 233          LS       0      77     6.8       0
 234          UK     295   .0438     .20     100       0       0       0
 235          RK    6800   .0257    .045       0    TRAP      15       3
              *
```



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

 236          KK   24.2A      CP
 237          KM         COMBINE SUB 24 & CP 24.1 - APEX
 238          HC       2
              *

 239          KK     25N       SUB
 240          KM         RUNOFF FROM SUB-BASIN 25N - APEX
 241          BA  0.7834       0       0       0       0       0       0       0
 242          LS       0      84     9.0       0
 243          UK     295   .0438     .20     100       0       0       0
 244          RK   16700   .0302    .045       0    TRAP      25       3
              *

 245          KK     25S     SUB
 246          KM         RUNOFF FROM SUB-BASIN 25S - APEX
 247          BA  0.6256       0       0       0       0       0       0       0
 248          LS       0      86     9.0       0
 249          UK     295   .0438     .20     100       0       0       0
 250          RK    8900   .0278    .045       0    TRAP      25       3
              *

 251          KK    25.1      CP
 252          KM         COMBINE HYDROGRAPHS FOR SUB-BASINS 25N AND 25S
 253          HC       2
              *

 254          KK   24.2B      CP
 255          KM         COMBINE TOTAL HYDROGRAPH 24.2A WITH 25.1
 256          HC       2
```

```
                 *

 257             KK  PIMARD      CP
 258             KM   ROUTE THE TOTAL HYDROGRAPH AT THE CONCENTRATION POINT
 259             KM   24.2B TO THE CULVERT AT THE PIMA ROAD. THERE IS NO
 260             KM   CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 261             RS       1    FLOW      -1       0       0
 262             RC    .055    .040    .055    2000   .0287       0       0       0
 263             RX       0       1     101     107     122     128     228     229
 264             RY      10       8       3       0       0       3       8      10
                 *

 265             KK  RR24.2      CP
 266             KM   ROUTE THE TOTAL HYDROGRAPH AT CONCENTRATION POINT
 267             KM   24.2B FROM THE CULVERT UNDER PIMA ROAD TO CONCENTRATION
 268             KM   POINT 21.05.
 269             RS       1    FLOW      -1       0       0
 270             RC    .055    .040    .055    3050   .0238       0       0       0
 271             RX       0       1     101     107     122     128     228     229
 272             RY      10       8       3       0       0       3       8      10
                 *
                 *
1                                          HEC-1 INPUT                                                    PAGE  8
LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 273             KK  C21.05 CONFLUENCE OF DGB CHANNELS NEAR MID-SECTION 36
 274             KM         COMBINE HYDROGRAPH CP21G WITH HYDROGRAPH RR24.2
 275             KM         (FROM THE PIMA ROAD CULVERT)
 276             HC       2
                 *  ******************************************************************************

 277             KK     DAM
 278             KO       3
 279             RS       1    FLOW       0
 280             SV       0     204     426     666     923    1197    1491    1803
 281             SE    2175    2180    2185    2190    2195    2200    2205    2210
 282             SS    2200     200     3.2     1.5
                 *  2 - 36" RCP Culverts for outlet
 283             SL    2175    14.1      .6      .5
                 *  ******************************************************************************
                 *

 284             KK    R21G     CP
 285             KM        ROUTE CP21G(21.05)TO 21H WHICH IS 3100'
 286             RS       1    FLOW      -1       0       0
 287             RC    .055    .040    .055    3100   .0194       0       0       0
 288             RX       0      90     120     355     585     820     850     940
 289             RY       9       4     1.5       0       0     1.5       4       9
                 *

 290             KK     21H     SUB
 291             KM        RUNOFF FROM SUB-BASIN 21H
 292             BA   .0431       0       0
 293             LS       0      80     6.4       0       0       0
 294             UK     297   .0333     .20     100       0       0       0
 295             RK    4600   .0278    .045       0    TRAP      20       3
                 *

 296             KK     26N
 297             KM       Runoff from sub-basin 26N
 298             BA   .6376       0       0
 299             LS       0      75    12.7       0
 300             UK     200   .0250     .20     100       0
 301             RK   12000   .0263    .045       0    TRAP      35      10
                 *
```

```
302          KK   CP21H   JOMAX RD
303          KO       3
304          HC       3
             *

305          KK   RR21H      CP
306          KM        ROUTE HYDROGRAPH AT CONCENTRATION POINT 21H   DOWNSTREAM FROM
307          KM        JOMAX ROAD           THERE IS NO ADDITIONAL CONTRIBUTING
308          KM        DRAINAGE AREA AT THIS CONCENTRATION POINT.  USED CHANNEL
309          KM        GEOMETRY                          FROM REACH SIX
310          KM             DEVELOPED BY C. LOVELY
311          RS       1    FLOW      -1       0       0
312          RC    .055    .040    .055    2390   .0188       0       0       0
1                                         HEC-1 INPUT                                                    PAGE  9

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

313          RX       0      90     120     355     585     820     850     940
314          RY       9       4     1.5       0       0     1.5       4       9
             *

315          KK     26S     SUB
316          KM       RUNOFF FROM SUB-BASIN 26S
317          BA  0.1672       0       0
318          LS       0      75    12.7       0
319          UK     200   .0250     .20     100       0       0       0
320          RK    4000   .0263    .045       0    TRAP      35      10
             *

321          KK  *APEX*      CP
322          KM        COMBINE FLOW FROM SUB-BASIN 26 ,
323          KM            AND ROUTED HYDROGRAPH FROM JOMAX ROAD.
324          HC       2
             *
325          KM        *********END SUBAREA 21 REVISIONS************

326          KK   CP27A      CP AT HAPPY VALLEY RD
327          KM        ROUTE FLOW FROM CONCENTRATION POINT APEX  TO 27A (HAPPY VALLEY
328          KM        ROAD).  THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION PT.
329          KM
330          RS       1    FLOW      -1       0       0
331          RC    .055    .040    .055    1600   .0196       0       0       0
332          RX       0       1     201     211     261     271     471     472
333          RY      10       4       2       0       0       2       4      10
             *

334          KK   CP27B      CP AT MILLER RD
335          KM        ROUTE FLOW FROM CONCENTRATION POINT 27B TO 27C (MILLER ROAD).
336          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
337          RS       1    FLOW      -1       0       0
338          RC    .055    .040    .055    3300   .0196       0       0       0
339          RX       0       1     201     211     261     271     471     472
340          RY      10       4       2       0       0       2       4      10
             *

341          KK   CP27C      CP AT PINNACLE PEAK RD
342          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (PINNACLE PK ROAD).
343          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
344          RS       1    FLOW      -1       0       0
345          RC    .055    .040    .055    3300   .0196       0       0       0
346          RX       0       1     201     211     261     271     471     472
347          RY      10       4       2       0       0       2       4      10
             *

348          KK   CP27D     CP AT SCOTTSDALE RD
349          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (SCOTTSDALE ROAD)
```

```
          350          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
          351          RS       1     FLOW      -1       0       0
          352          RC    .055     .040    .055    1000   .0196       0       0       0
          353          RX       0        1     201     211     261     271     471     472
          354          RY      10        4       2       0       0       2       4      10
                       *
1                                                   HEC-1 INPUT                                                    PAGE 10

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


          355          KK      27     SUB
          356          KM        RUNOFF FROM SUB-BASIN 27
          357          BA  1.1913       0       0
          358          LS       0      75    12.7       0
          359          UK     200   .0250     .20     100       0       0       0
          360          RK    1500   .0263    .045       0    TRAP      35      10
                       *

          361          KK    CP27      CP AT SCOTTSDALE RD
          362          KO       3
          363          KM        COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
          364          KM        POINT 27D WITH SUB 27 .  TOTAL FLOW AT
          365          KM        SCOTTSDALE ROAD FOR FAN 4.
          366          HC       2
                       *
          367          ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

    49          16
                .
                .
    56          .          17
                .           .
                .           .
    62          .           .          18
                .           .           .
                .           .           .
    68        19A........................
                V
                V
    71        19B
                .
                .
    77          .          15
                .           .
                .           .
    83        19C............
                V
                V
    86       19.1
                .
                .
    92          .          19
                .           .
                .           .
    99          .           .          20
                .           .           .
                .           .           .
   105       CP20........................
                V
                V
```

```
109      RRCP20
             .
115          .          21A
             .            .
121      CP21A.............
             V
             V
123      RR21A
             .
129          .          21B
             .            .
135      CP21B.............
             V
             V
137      RR21B
             .
143          .          21C
             .            .
149      CP21C.............
             V
             V
151      RR21C
             .
157          .          21D
             .            .
163      CP21D.............
             V
             V
165      RR21D
             .
171          .          21E
             .            .
177      CP21E.............
             V
             V
179      RR21E
             .
185          .          21F
             .            .
191      CP21F.............
             V
             V
193      RR21F
             .
199          .          21G
             .            .
205      CP21G.............
             .
207          .           22
             .            .
213          .            .          23
```

```
                .          .          .
                .          .          .
219             .        24A...........
                .          V
                .          V
222             .       24.1
                .          .
                .          .
228             .          .         24
                .          .          .
                .          .          .
236             .     24.2A...........
                .          .
                .          .
239             .          .        25N
                .          .          .
                .          .          .
245             .          .          .        25S
                .          .          .          .
                .          .          .          .
251             .          .      25.1...........
                .          .          .
                .          .          .
254             .     24.2B...........
                .          V
                .          V
257             .    PIMARD
                .          V
                .          V
265             .    RR24.2
                .          .
                .          .
273       C21.05...........
                V
                V
277          DAM
                V
                V
284         R21G
                .
                .
290             .        21H
                .          .
                .          .
296             .          .        26N
                .          .          .
                .          .          .
302        CP21H.........................
                V
                V
305        RR21H
                .
                .
315             .        26S
                .          .
                .          .
321       *APEX*...........
                V
                V
326        CP27A
                V
                V
334        CP27B
                V
                V
341        CP27C
                V
```

```
                V
  348        CP27D
                 .
                 .
  355            .          27
                 .           .
                 .           .
  361        CP27.............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN 09 1992              *
*           VERSION 4.0.3E             *
*                                      *
*  RUN DATE  09/30/98  TIME  15:36:42  *
*                                      *
****************************************
```

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

FILE <RWDAM21F.DAT>
THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.

THE MODIFICIATION INCLUDE THE FOLLOWING:
1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   TO CONCENTRATION POINT AT THE APEX OF 21F
2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE

NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
25S.

100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
RAINFALL FROM NOAA ATLAS

FILE RAW4A.DAT
WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
FOR 22, 23, 24, 25N, AND 25S. ROUTE COMBINED HYDROGRAPHS
22, 23, 24, 25N AND 25S TO 21G. SUN-BASIN 26 COMBINED AT
THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
PROPOSED ROAD CROSSINGS.

REVISED BY GREINER 12-9-93 BY RON FERGUSON
REVISED BY C. J. LOVELY, COS, 3-9-94
Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
   *Eliminate DSS Records
   *Divide #26 into 26N & 26S; 26N is portion north of Jomax
   *Add 26N @ CP21H and route with 21H to apex
   *Add 26S @ apex
   *Modify reach length in 26S & 26N to reflect division

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*********************************************************************
* ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
* MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
*********************************************************************
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September 1998 - HDR Engineering Modified by adding basin to the
September 1998 - center of Section 36 (Alternative No. 3)
September 1998 - Filename <RAWALT3.DAT>

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

  48 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      3MAR94  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      4MAR94  ENDING DATE
                      NDTIME        0055  ENDING TIME
                       ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL    0.08 HOURS
                       TOTAL TIME BASE   24.92 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
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0


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


            **************
            *            *
 277 KK     *       DAM  *
            *            *
            **************

 278 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

 279 RS          STORAGE ROUTING
                       NSTPS           1  NUMBER OF SUBREACHES
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                    ITYP        FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC        0.00  INITIAL CONDITION
                       X        0.00 WORKING R AND D COEFFICIENT

280 SV          STORAGE         0.0     204.0     426.0     666.0     923.0    1197.0    1491.0    1803.0

281 SE        ELEVATION     2175.00   2180.00   2185.00   2190.00   2195.00   2200.00   2205.00   2210.00

283 SL        LOW-LEVEL OUTLET
                   ELEVL     2175.00  ELEVATION AT CENTER OF OUTLET
                   CAREA       14.10  CROSS-SECTIONAL AREA
                    COQL        0.60  COEFFICIENT
                    EXPL        0.50  EXPONENT OF HEAD

282 SS        SPILLWAY
                    CREL     2200.00  SPILLWAY CREST ELEVATION
                   SPWID      200.00  SPILLWAY WIDTH
                    COQW        3.20  WEIR COEFFICIENT
                    EXPW        1.50  EXPONENT OF HEAD
                                                  ***
                                        COMPUTED OUTFLOW-ELEVATION DATA

        OUTFLOW       0.00     98.85    108.45    120.13    134.62    153.09    177.43    210.97    260.16    339.25
      ELEVATION    2175.00   2177.12   2177.56   2178.13   2178.94   2180.09   2181.84   2184.67   2189.70   2200.00

        OUTFLOW     361.44    508.29    900.40   1658.34   2902.70   4754.02   7332.86  10759.77  15155.30  20639.98
      ELEVATION    2200.10   2200.41   2200.91   2201.61   2202.51   2203.61   2204.91   2206.41   2208.10   2210.00

                                      COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

        STORAGE       0.00     86.60    104.25    127.90    160.62    204.00    208.04    285.63    411.29    426.00
        OUTFLOW       0.00     98.85    108.46    120.13    134.62    151.72    153.09    177.43    210.97    214.56
      ELEVATION    2175.00   2177.12   2177.56   2178.13   2178.94   2180.00   2180.09   2181.84   2184.67   2185.00

        STORAGE     651.71    666.00    923.00   1197.00   1203.12   1220.94   1250.47   1291.72   1344.66   1409.32
        OUTFLOW     260.16    262.78    303.43    339.25    361.42    508.31    900.41   1658.46   2902.76   4754.21
      ELEVATION    2189.70   2190.00   2195.00   2200.00   2200.10   2200.41   2200.91   2201.61   2202.51   2203.61

        STORAGE    1485.67   1491.00   1578.81   1684.69   1803.00
        OUTFLOW    7332.93   7527.04  10759.95  15155.24  20639.98
      ELEVATION    2204.91   2205.00   2206.41   2208.10   2210.00

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

                     HYDROGRAPH AT STATION      DAM

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)      (HR)
                          (CFS)
+     398.     7.83                  347.        284.        273.        273.
                        (INCHES)    0.249       0.814       0.814       0.814
                         (AC-FT)     172.        563.        563.        563.

 PEAK STORAGE  TIME                          MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)     (HR)
     1208.     7.83                 1179.        906.        872.        872.

 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)     (HR)
   2200.18     7.83                2199.68     2194.31     2193.59     2193.59
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                        CUMULATIVE AREA =   12.96 SQ MI


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


            **************
            *            *
  302 KK    *     CP21H  *        JOMAX RD
            *            *
            **************

  303 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

  304 HC          HYDROGRAPH COMBINATION
                        ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0

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

                        HYDROGRAPH AT STATION    CP21H

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     787.      3.50                 408.        310.        299.        299.
                        (INCHES)    0.278       0.845       0.845       0.845
                         (AC-FT)     202.        615.        615.        615.

                        CUMULATIVE AREA =   13.64 SQ MI

MANE2 NPLAN,NSTM       1      0


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


            **************
            *            *
  361 KK    *      CP27  *          CP AT SCOTTSDALE RD
            *            *
            **************

  362 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                                 COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
                                 POINT 27D WITH SUB 27 .  TOTAL FLOW AT
                                 SCOTTSDALE ROAD FOR FAN 4.

  366 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
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      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION     CP27

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                  (CFS)
+    2060.      3.17              586.         361.        347.        347.
                                (INCHES)      0.363       0.894       0.894       0.894
                                 (AC-FT)      291.         715.        715.        715.

                        CUMULATIVE AREA =   15.00 SQ MI

1
                                          RUNOFF SUMMARY
                                     FLOW IN CUBIC FEET PER SECOND
                                   TIME IN HOURS,  AREA IN SQUARE MILES

                                     PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN    MAXIMUM    TIME OF
          OPERATION        STATION   FLOW   PEAK                                          AREA     STAGE     MAX STAGE
+                                                       6-HOUR     24-HOUR     72-HOUR
          HYDROGRAPH AT
+                             16     2683.   3.25        323.        81.         78.      1.46
          HYDROGRAPH AT
+                             17     2184.   3.25        262.        66.         64.      1.19
          HYDROGRAPH AT
+                             18     2431.   3.25        273.        69.         66.      1.26
          3 COMBINED AT
+                            19A     7297.   3.25        857.       216.        208.      3.91
          ROUTED TO
+                            19B     7225.   3.33        857.       216.        208.      3.91
+                                                                                          7.03       3.33
          HYDROGRAPH AT
+                             15     1901.   3.42        281.        71.         68.      1.37
          2 COMBINED AT
+                            19C     8929.   3.33       1138.       287.        277.      5.28
          ROUTED TO
+                           19.1     8529.   3.33       1138.       287.        277.      5.28
+                                                                                          6.10       3.33
          HYDROGRAPH AT
+                             19      445.   3.25         42.        11.         10.      0.19
          HYDROGRAPH AT
+                             20     1086.   3.25        125.        31.         30.      0.57
          3 COMBINED AT
+                           CP20     9887.   3.33       1305.       329.        317.      6.03
          ROUTED TO
+                          RRCP20    9129.   3.42       1303.       329.        317.      6.03
+                                                                                          4.09       3.42
          HYDROGRAPH AT
+                            21A      784.   3.25         81.        20.         20.      0.42
          2 COMBINED AT
+                          CP21A     9593.   3.42       1384.       350.        337.      6.45
```

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                ROUTED TO
+                          RR21A    9383.   3.50     1383.     350.     337.    6.45
+                                                                                      3.46      3.50
                HYDROGRAPH AT
+                            21B     512.   3.25       53.      13.      13.    0.28
                2 COMBINED AT
+                          CP21B    9671.   3.42     1436.     363.     350.    6.73
                ROUTED TO
+                          RR21B    8973.   3.58     1435.     363.     350.    6.73
+                                                                                      3.74      3.58
                HYDROGRAPH AT
+                            21C    1248.   3.25      144.      36.      35.    0.75
                2 COMBINED AT
+                          CP21C    9578.   3.50     1578.     399.     385.    7.48
                ROUTED TO
+                          RR21C    7972.   3.67     1571.     399.     385.    7.48
+                                                                                      4.10      3.67
                HYDROGRAPH AT
+                            21D    1500.   3.33      204.      51.      50.    1.06
                2 COMBINED AT
+                          CP21D    8765.   3.67     1773.     451.     434.    8.54
                ROUTED TO
+                          RR21D    8701.   3.75     1773.     451.     434.    8.54
+                                                                                      4.16      3.75
                HYDROGRAPH AT
+                            21E     402.   3.33       50.      12.      12.    0.26
                2 COMBINED AT
+                          CP21E    8840.   3.75     1822.     463.     446.    8.79
                ROUTED TO
+                          RR21E    8580.   3.75     1819.     463.     446.    8.79
+                                                                                      6.35      3.75
                HYDROGRAPH AT
+                            21F     666.   3.33       90.      23.      22.    0.47
                2 COMBINED AT
+                          CP21F    8865.   3.75     1908.     486.     468.    9.26
                ROUTED TO
+                          RR21F    8833.   3.83     1905.     486.     468.    9.26
+                                                                                      2.70      3.83
                HYDROGRAPH AT
+                            21G      26.   3.33        3.       1.       1.    0.02
                2 COMBINED AT
+                          CP21G    8841.   3.83     1908.     487.     469.    9.28
                HYDROGRAPH AT
+                             22    2825.   3.25      307.      77.      74.    1.39
                HYDROGRAPH AT
+                             23     779.   3.25       88.      22.      21.    0.39
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                2 COMBINED AT
+                          24A     3603.   3.25      395.      99.      96.    1.78
                ROUTED TO
+                          24.1    2924.   3.42      395.      99.      96.    1.78
+                                                                          5.59      3.42
                HYDROGRAPH AT
+                           24     708.    3.25       85.      21.      21.    0.49
                2 COMBINED AT
+                         24.2A    3467.   3.42      479.     121.     116.    2.27
                HYDROGRAPH AT
+                          25N     1244.   3.42      177.      45.      43.    0.78
                HYDROGRAPH AT
+                          25S     1424.   3.25      152.      38.      37.    0.63
                2 COMBINED AT
+                          25.1    2431.   3.33      329.      83.      80.    1.41
                2 COMBINED AT
+                         24.2B    5611.   3.42      809.     204.     197.    3.68
                ROUTED TO
+                        PIMARD    5550.   3.42      808.     204.     197.    3.68
+                                                                          6.86      3.42
                ROUTED TO
+                        RR24.2    5294.   3.50      808.     204.     197.    3.68
+                                                                          6.96      3.50
                2 COMBINED AT
+                        C21.05    12190.  3.75     2714.     691.     666.   12.96
                ROUTED TO
+                           DAM    398.    7.83      347.     284.     273.   12.96
+                                                                       2200.18      7.83
                ROUTED TO
+                           R21G   389.    8.08      347.     280.     270.   12.96
+                                                                          0.47      8.08
                HYDROGRAPH AT
+                           21H    64.     3.33        8.       2.       2.    0.04
                HYDROGRAPH AT
+                           26N    690.    3.50      110.      28.      27.    0.64
                3 COMBINED AT
+                         CP21H    787.    3.50      408.     310.     299.   13.64
                ROUTED TO
+                         RR21H    662.    3.67      401.     307.     296.   13.64
+                                                                          0.60      3.67
                HYDROGRAPH AT
+                           26S    239.    3.25       29.       7.       7.    0.17
                2 COMBINED AT
+                         *APEX*   779.    3.58      423.     314.     303.   13.81
                ROUTED TO
+                         CP27A    768.    3.67      422.     313.     302.   13.81
+                                                                          1.81      3.67
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          ROUTED TO
+                        CP27B      736.    3.75        420.       311.       300.      13.81
+                                                                                                  1.77       3.75
          ROUTED TO
+                        CP27C      704.    3.83        417.       309.       298.      13.81
+                                                                                                  1.73       3.83
          ROUTED TO
+                        CP27D      701.    3.92        417.       308.       297.      13.81
+                                                                                                  1.72       3.92
          HYDROGRAPH AT
+                           27     2052.    3.17        207.        52.        50.       1.19
          2 COMBINED AT
+                         CP27     2060.    3.17        586.       361.       347.      15.00
1
                                   SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                       (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                INTERPOLATED TO
                                                                            COMPUTATION INTERVAL
            ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                      PEAK                                   PEAK

                                (MIN)     (CFS)     (MIN)      (IN)    (MIN)     (CFS)     (MIN)      (IN)
                16   MANE         3.27   2790.08    197.97      2.08     5.00   2682.70    195.00      2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1620E+03 OUTFLOW=0.1613E+03 BASIN STORAGE=0.4299E-01 PERCENT ERROR=   0.4

                17   MANE         3.68   2249.16    195.52      2.07     5.00   2183.62    195.00      2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1317E+03 OUTFLOW=0.1309E+03 BASIN STORAGE=0.4985E-01 PERCENT ERROR=   0.6

                18   MANE         3.18   2466.56    196.97      2.02     5.00   2431.13    195.00      2.02

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1368E+03 OUTFLOW=0.1360E+03 BASIN STORAGE=0.5145E-01 PERCENT ERROR=   0.6

                15   MANE         3.51   1901.39    207.57      1.93     5.00   1901.08    205.00      1.93

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1417E+03 OUTFLOW=0.1409E+03 BASIN STORAGE=0.5998E-01 PERCENT ERROR=   0.5

                19   MANE         1.80    456.95    193.94      2.11     5.00    444.60    195.00      2.11

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2111E+02 OUTFLOW=0.2104E+02 BASIN STORAGE=0.3666E-02 PERCENT ERROR=   0.4

                20   MANE         3.77   1138.08    196.21      2.05     5.00   1086.14    195.00      2.05

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6254E+02 OUTFLOW=0.6220E+02 BASIN STORAGE=0.1496E-01 PERCENT ERROR=   0.5

               21A   MANE         2.36    804.58    193.66      1.81     5.00    783.53    195.00      1.81

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4070E+02 OUTFLOW=0.4053E+02 BASIN STORAGE=0.1094E-01 PERCENT ERROR=   0.4
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          21B  MANE        2.56    520.22    194.23      1.81      5.00    511.65    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2674E+02 OUTFLOW=0.2663E+02 BASIN STORAGE=0.7314E-02 PERCENT ERROR=   0.4

          21C  MANE        3.23   1300.20    196.60      1.81      5.00   1248.06    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7248E+02 OUTFLOW=0.7205E+02 BASIN STORAGE=0.2485E-01 PERCENT ERROR=   0.6

          21D  MANE        3.10   1538.29    200.70      1.81      5.00   1499.66    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1026E+03 OUTFLOW=0.1020E+03 BASIN STORAGE=0.5119E-01 PERCENT ERROR=   0.5

          21E  MANE        3.04    421.12    198.38      1.81      5.00    401.68    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2490E+02 OUTFLOW=0.2476E+02 BASIN STORAGE=0.1083E-01 PERCENT ERROR=   0.5

          21F  MANE        4.33    687.84    201.28      1.80      5.00    666.34    200.00        1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4544E+02 OUTFLOW=0.4507E+02 BASIN STORAGE=0.2383E-01 PERCENT ERROR=   0.8

          21G  MANE        4.06     26.27    199.44      1.80      5.00     26.04    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1667E+01 OUTFLOW=0.1656E+01 BASIN STORAGE=0.7499E-03 PERCENT ERROR=   0.6

           22  MANE        3.71   2850.96    194.47      2.07      5.00   2824.55    195.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1539E+03 OUTFLOW=0.1530E+03 BASIN STORAGE=0.3984E-01 PERCENT ERROR=   0.5

           23  MANE        3.96    781.94    194.26      2.09      5.00    778.56    195.00        2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4420E+02 OUTFLOW=0.4393E+02 BASIN STORAGE=0.9523E-02 PERCENT ERROR=   0.6

           24  MANE        2.78    735.98    195.89      1.62      5.00    708.45    195.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4263E+02 OUTFLOW=0.4239E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.5

          25N  MANE        4.27   1280.11    203.94      2.13      5.00   1243.86    205.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8954E+02 OUTFLOW=0.8895E+02 BASIN STORAGE=0.4329E-01 PERCENT ERROR=   0.6

          25S  MANE        3.07   1432.12    195.33      2.28      5.00   1424.44    195.00        2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7648E+02 OUTFLOW=0.7611E+02 BASIN STORAGE=0.2473E-01 PERCENT ERROR=   0.5
```

```
              21H  MANE        4.16     64.59    199.55      1.80      5.00     64.21    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4176E+01 OUTFLOW=0.4145E+01 BASIN STORAGE=0.2185E-02 PERCENT ERROR=   0.7

              26N  MANE        4.34    695.84    209.67      1.63      5.00    689.73    210.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5568E+02 OUTFLOW=0.5537E+02 BASIN STORAGE=0.2531E-01 PERCENT ERROR=   0.5

              26S  MANE        3.14    248.14    195.91      1.63      5.00    238.82    195.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1460E+02 OUTFLOW=0.1454E+02 BASIN STORAGE=0.4459E-02 PERCENT ERROR=   0.4

               27  MANE        0.61   2077.01    190.94      1.63      5.00   2052.00    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1040E+03 OUTFLOW=0.1038E+03 BASIN STORAGE=0.2468E-01 PERCENT ERROR=   0.2


*** NORMAL END OF HEC-1 ***
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1****************************************                    ****************************************
*                                      *                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *   U.S. ARMY CORPS OF ENGINEERS       *
*             JUN 09 1992              *                    *   HYDROLOGIC ENGINEERING CENTER      *
*           VERSION 4.0.3E             *                    *         609 SECOND STREET            *
*                                      *                    *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE  09/29/98  TIME  14:13:02  *                    *          (916) 551-1748              *
*                                      *                    *                                      *
****************************************                    ****************************************


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


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

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

1                                          HEC-1 INPUT                                          PAGE  1

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

        1           ID        FILE <RWDAM21F.DAT>
        2           ID        THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
        3           ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
        4           ID
        5           ID        THE MODIFICIATION INCLUDE THE FOLLOWING:
        6           ID        1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
        7           ID           TO CONCENTRATION POINT AT THE APEX OF 21F
        8           ID        2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE
        9           ID
       10           ID        NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
       11           ID        1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
       12           ID        MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
       13           ID        25S.
       14           ID
       15           ID        100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
       16           ID        RAINFALL FROM NOAA ATLAS
       17           ID
       18           ID        FILE RAW4A.DAT
       19           ID        WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
       20           ID        FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
       21           ID        22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
       22           ID        THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
       23           ID        ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
       24           ID        INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
       25           ID        PROPOSED ROAD CROSSINGS.
       26           ID
       27           ID        REVISED BY GREINER 12-9-93 BY RON FERGUSON
       28           ID        REVISED BY C. J. LOVELY, COS, 3-9-94
       29           ID        Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
       30           ID           *Eliminate DSS Records
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31          ID          *Divide #26 into 26N & 26S; 26N is portion north of Jomax
32          ID          *Add 26N @ CP21H and route with 21H to apex
33          ID          *Add 26S @ apex
34          ID          *Modify reach length in 26S & 26N to reflect division
35          ID
36          ID        ******************************************************************
37          ID        * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
38          ID        * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
39          ID        ******************************************************************
40          ID
41          ID    September 1998 - HDR Engineering Modified by adding basin to the
42          ID    September 1998 - center of Section 36 (Alternative No. 4)
43          ID    September 1998 - Filename <RAWALT4.DAT>
44          ID
45          ID
46          ID   ******************************************************************************
            *DIAGRAM
47          IT       5 03MAR94       0     300
48          IO       5       0       0       0
            *
1                                        HEC-1 INPUT                                    PAGE  2

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

49          KK      16     SUB
50          KM        RUNOFF FROM SUB-BASIN 16
51          BA  1.4570
52          PH       0     9.7    0.77    1.51    2.65    3.00    3.23    3.66
53          LS       0      83     9.8       0       0       0       0       0
54          UK     217   .0581     .20     100
55          RK   14800   .0216    .045       0    TRAP      25       3
            *

56          KK      17     SUB
57          KM        RUNOFF FROM SUB-BASIN 17
58          BA  1.1851       0       0
59          LS       0      83     9.8
60          UK     285   .0421     .20     100       0       0       0
61          RK   12200   .0254    .045       0    TRAP      25       3
            *

62          KK      18     SUB
63          KM        RUNOFF FROM SUB-BASIN 18
64          BA  1.2641
65          LS       0      83     6.5       0
66          UK     285   .0421     .20     100       0       0       0
67          RK   10840   .0259    .045       0    TRAP      25       3
            *

68          KK     19A      CP
69          KM        COMBINE HYDROGRAPHS SUB16, SUB17 AND SUB18
70          HC       3
            *

71          KK     19B      CP
72          KM        ROUTE CP19A TO CP19B
73          RS       1    FLOW      -1       0       0
74          RC    .055    .040    .055    1100   .0155       0       0       0
75          RX       0       1     126     132     167     173     298     299
76          RY      10       8       3       0       0       3       8      10
            *

77          KK      15     SUB
78          KM        RUNOFF FROM SUBBASIN 15
79          BA  1.3702       0       0
80          LS       0      82     5.4       0
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 81          UK     217   .0581     .20     100       0       0       0
 82          RK   21200   .0236    .045       0    TRAP      25       3
             *

 83          KK     19C      CP
 84          KM        COMBINE HYDROGRAPHS SUB15 & CP19B
 85          HC       2
             *
1                                          HEC-1 INPUT                                          PAGE  3

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

 86          KK    19.1      CP
 87          KM        ROUTE CP 19C TO 19.1
 88          RS       1    FLOW      -1       0       0
 89          RC    .055    .040    .055    1800   .0200       0       0
 90          RX       0       1     151     166     216     231     381     382
 91          RY      10       9       3       0       0       3       9      10
             *

 92          KK      19     SUB
 93          KM        RUNOFF FROM SUB-BASIN 19
 94          BA  0.1872
 95          LS       0      84     7.2       0
 96          UK     275   .0800     .20     100       0       0       0
 97          RK    3730   .0352    .045    .160    TRAP      15       3
 98          RK    1800   .0200    .045       0    TRAP      50      30
             *

 99          KK      20     SUB
100          KM        RUNOFF FROM SUB-BASIN 20
101          BA  0.5698       0       0
102          LS       0      84     3.6       0
103          UK     300   .0750     .20     100       0       0       0
104          RK    9640   .0197    .045       0    TRAP      15       3
             *

105          KK    CP20      CP
106          KM        COMBINE SUB 19, SUB 20 AND CP 19.1
107          HC       3
             *
108          KM    *******BEGIN SUBAREA 21 BREAKDOWN-3/94 REVISIONS*****

109          KK  RRCP20      CP
110          KM        ROUTE CP20 TO CP 21A, WHICH IS 4600'
111          RS       1    FLOW      -1       0       0
112          RC    .055    .040    .055    4600   .0217       0       0       0
113          RX       0      30      60      85     195     220     250     280
114          RY      10       4       1       0       0       1       4      10
             *

115          KK     21A     SUB
116          KM        RUNOFF FROM SUB-BASIN 21A
117          BA     .42       0       0
118          LS       0      80     6.4       0       0       0
119          UK     297   .0558     .20     100       0       0       0
120          RK    6400   .0344    .045       0    TRAP      10       3
             *

121          KK   CP21A
122          HC       2
             *
1                                          HEC-1 INPUT                                          PAGE  4

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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 123          KK   RR21A      CP
 124          KM        ROUTE CP21A TO 21B    WHICH IS 960'
 125          RS       1    FLOW      -1       0       0
 126          RC    .055    .040    .055     960   .0156       0       0       0
 127          RX       0      10      60     205     295     440     490     500
 128          RY       6       4       2       0       0       2       4       6
              *

 129          KK     21B     SUB
 130          KM        RUNOFF FROM SUB-BASIN 21B
 131          BA   0.276       0       0
 132          LS       0      80     6.4       0       0       0
 133          UK     297   .0558     .20     100       0       0       0
 134          RK    6300   .0381    .045       0    TRAP      10       3
              *

 135          KK   CP21B
 136          HC       2
              *

 137          KK   RR21B      CP
 138          KM        ROUTE CP21B TO 21C    WHICH IS 4400'
 139          RS       1    FLOW      -1       0       0
 140          RC    .055    .040    .055    4400   .0205       0       0       0
 141          RX       0      10      60     205     295     440     490     500
 142          RY       6       4       2       0       0       2       4       6
              *

 143          KK     21C     SUB
 144          KM        RUNOFF FROM SUB-BASIN 21C
 145          BA    .748       0       0
 146          LS       0      80     6.4       0       0       0
 147          UK     297   .0558     .20     100       0       0       0
 148          RK    9900   .0328    .045       0    TRAP      20       3
              *

 149          KK   CP21C
 150          HC       2
              *

 151          KK   RR21C      CP
 152          KM        ROUTE CP21C TO 21D    WHICH IS 5700'
 153          RS       1    FLOW      -1       0       0
 154          RC    .055    .040    .055    5700   .0181       0       0       0
 155          RX       0      20     175     210     300     335     490     510
 156          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
              *

 157          KK     21D     SUB
 158          KM        RUNOFF FROM SUB-BASIN 21D
 159          BA   1.059       0       0
 160          LS       0      80     6.4       0       0       0
 161          UK     297   .0558     .20     100       0       0       0
 162          RK   14500   .0252    .045       0    TRAP      30       3
              *
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 LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 163          KK   CP21D
 164          HC       2
              *

 165          KK   RR21D      CP
 166          KM        ROUTE CP21D TO 21E    WHICH IS 1100'
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167          RS       1    FLOW      -1       0       0
168          RC    .055    .040    .055    1100   .0200       0       0       0
169          RX       0      20     175     210     300     335     490     510
170          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
             *

171          KK     21E     SUB
172          KM         RUNOFF FROM SUB-BASIN 21E
173          BA   0.257       0       0
174          LS       0      80     6.4       0       0       0
175          UK     297   .0333     .20     100       0       0       0
176          RK    6600   .0288    .045       0    TRAP      15       3
             *

177          KK   CP21E
178          HC       2
             *

179          KK   RR21E      CP
180          KM         ROUTE CP21E TO 21F    WHICH IS 2800'
181          RS       1    FLOW      -1       0       0
182          RC    .055    .040    .055    2800   .0143       0       0       0
183          RX       0      70     170     180     230     240     340     410
184          RY    10.5     4.5     3.5       0       0     3.5     4.5    10.5
             *

185          KK     21F     SUB
186          KM         RUNOFF FROM SUB-BASIN 21F
187          BA   0.469       0       0
188          LS       0      80     6.4       0       0       0
189          UK     297   .0333     .20     100       0       0       0
190          RK   10400   .0279    .045       0    TRAP      20       3
             *

191          KK   CP21F
192          HC       2
             *

193          KK   RR21F      CP
194          KM   ROUTE CP21F TO 21G (1900' DOWNSTREAM)
195          RS       1    FLOW      -1       0       0
196          RC    .055    .040    .055    1900   .0158       0       0       0
197          RX       0      20      70     345     455     730     780     800
198          RY      10       8       2       0       0       2       8      10
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

199          KK     21G     SUB
200          KM   RUNOFF FROM SUB-BASIN 21G
201          BA   .0172       0       0
202          LS       0      80     6.4       0       0       0
203          UK     297   .0333     .20     100       0       0       0
204          RK    4000   .0300    .045       0    TRAP      10       3
             *

205          KK   CP21G
206          HC       2
             *

207          KK      22     SUB
208          KM       RUNOFF FROM SUB-BASIN 22
209          BA  1.3860
210          LS       0      84     5.1       0
211          UK     225   .0590     .20     100       0       0       0       0
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212          RK   13000   .0238    .045       0    TRAP      25       3
             *

213          KK      23     SUB
214          KM         RUNOFF FROM SUB-BASIN 23
215          BA  0.3945       0       0
216          LS       0      84     6.3       0
217          UK     225   .0590     .20     100       0       0       0
218          RK   10200   .0304    .045       0    TRAP      20       3
             *

219          KK     24A      CP
220          KM         COMBINE HYDROGRAPHS FOR SUB 22 AND SUB 23
221          HC       2
             *

222          KK    24.1      CP
223          KM         ROUTE CP 24A TO CP 24.1
224          RS       3    FLOW      -1       0       0
225          RC    .055    .040    .055    6800   .0257       0       0       0
226          RX       0       1     101     107     122     128     228     229
227          RY      10       8       3       0       0       3       8      10
             *

228          KK      24     SUB
229          KM         RUNOFF FROM SUB-BASIN 24
230          KM         DRAINAGE AREA CHANGED TO MATCH VALUE USED BY MICHAEL BAKER
231          KM         Jr., INC.
232          BA  0.4907       0       0
233          LS       0      77     6.8       0
234          UK     295   .0438     .20     100       0       0       0
235          RK    6800   .0257    .045       0    TRAP      15       3
             *
1                                          HEC-1 INPUT                                          PAGE  7

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

236          KK   24.2A      CP
237          KM         COMBINE SUB 24 & CP 24.1 - APEX
238          HC       2
             *

239          KK     25N       SUB
240          KM         RUNOFF FROM SUB-BASIN 25N - APEX
241          BA  0.7834       0       0       0       0       0       0       0
242          LS       0      84     9.0       0
243          UK     295   .0438     .20     100       0       0       0
244          RK   16700   .0302    .045       0    TRAP      25       3
             *

245          KK     25S     SUB
246          KM         RUNOFF FROM SUB-BASIN 25S - APEX
247          BA  0.6256       0       0       0       0       0       0       0
248          LS       0      86     9.0       0
249          UK     295   .0438     .20     100       0       0       0
250          RK    8900   .0278    .045       0    TRAP      25       3
             *

251          KK    25.1      CP
252          KM         COMBINE HYDROGRAPHS FOR SUB-BASINS 25N AND 25S
253          HC       2
             *

254          KK   24.2B      CP
255          KM         COMBINE TOTAL HYDROGRAPH 24.2A WITH 25.1
256          HC       2
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                 *
257              KK  PIMARD      CP
258              KM   ROUTE THE TOTAL HYDROGRAPH AT THE CONCENTRATION POINT
259              KM   24.2B TO THE CULVERT AT THE PIMA ROAD. THERE IS NO
260              KM   CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
261              RS       1    FLOW      -1       0       0
262              RC    .055    .040    .055    2000   .0287       0       0       0
263              RX       0       1     101     107     122     128     228     229
264              RY      10       8       3       0       0       3       8      10
                 *

265              KK  RR24.2      CP
266              KM   ROUTE THE TOTAL HYDROGRAPH AT CONCENTRATION POINT
267              KM   24.2B FROM THE CULVERT UNDER PIMA ROAD TO CONCENTRATION
268              KM   POINT 21.05.
269              RS       1    FLOW      -1       0       0
270              RC    .055    .040    .055    3050   .0238       0       0       0
271              RX       0       1     101     107     122     128     228     229
272              RY      10       8       3       0       0       3       8      10
                 *
                 *
1                                                HEC-1 INPUT                                                PAGE  8

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

273              KK  C21.05 CONFLUENCE OF DGB CHANNELS NEAR MID-SECTION 36
274              KM         COMBINE HYDROGRAPH CP21G WITH HYDROGRAPH RR24.2
275              KM         (FROM THE PIMA ROAD CULVERT)
276              HC       2
                 *  ******************************************************************************

277              KK     DAM
278              KO       3
279              RS       1    FLOW       0
280              SV       0      68     254     461     690     937    1204    1491    1802
281              SE    2173    2175    2180    2185    2190    2195    2200    2205    2210
282              SS    2200     200     3.2     1.5
                 *  2 - 36" RCP Culverts for outlet
283              SL    2173    14.1      .6      .5
                 *  ******************************************************************************
                 *

284              KK    R21G      CP
285              KM        ROUTE CP21G(21.05)TO 21H WHICH IS 3100'
286              RS       1    FLOW      -1       0       0
287              RC    .055    .040    .055    3100   .0194       0       0       0
288              RX       0      90     120     355     585     820     850     940
289              RY       9       4     1.5       0       0     1.5       4       9
                 *

290              KK     21H     SUB
291              KM       RUNOFF FROM SUB-BASIN 21H
292              BA   .0431       0       0
293              LS       0      80     6.4       0       0       0
294              UK     297   .0333     .20     100       0       0       0
295              RK    4600   .0278    .045       0    TRAP      20       3
                 *

296              KK     26N
297              KM       Runoff from sub-basin 26N
298              BA   .6376       0       0
299              LS       0      75    12.7       0
300              UK     200   .0250     .20     100       0
301              RK   12000   .0263    .045       0    TRAP      35      10
                 *
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 302          KK   CP21H   JOMAX RD
 303          KO       3
 304          HC       3
              *

 305          KK   RR21H      CP
 306          KM        ROUTE HYDROGRAPH AT CONCENTRATION POINT 21H   DOWNSTREAM FROM
 307          KM        JOMAX ROAD           THERE IS NO ADDITIONAL CONTRIBUTING
 308          KM        DRAINAGE AREA AT THIS CONCENTRATION POINT.  USED CHANNEL
 309          KM        GEOMETRY                          FROM REACH SIX
 310          KM            DEVELOPED BY C. LOVELY
 311          RS       1    FLOW      -1       0       0
 312          RC    .055    .040    .055    2390   .0188       0       0       0
1                                          HEC-1 INPUT                                                    PAGE  9

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

 313          RX       0      90     120     355     585     820     850     940
 314          RY       9       4     1.5       0       0     1.5       4       9
              *

 315          KK     26S     SUB
 316          KM       RUNOFF FROM SUB-BASIN 26S
 317          BA  0.1672       0       0
 318          LS       0      75    12.7       0
 319          UK     200   .0250     .20     100       0       0       0
 320          RK    4000   .0263    .045       0    TRAP      35      10
              *

 321          KK  *APEX*      CP
 322          KM        COMBINE FLOW FROM SUB-BASIN 26 ,
 323          KM           AND ROUTED HYDROGRAPH FROM JOMAX ROAD.
 324          HC       2
              *
 325          KM        *********END SUBAREA 21 REVISIONS************

 326          KK   CP27A      CP AT HAPPY VALLEY RD
 327          KM        ROUTE FLOW FROM CONCENTRATION POINT APEX  TO 27A (HAPPY VALLEY
 328          KM        ROAD).  THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION PT.
 329          KM
 330          RS       1    FLOW      -1       0       0
 331          RC    .055    .040    .055    1600   .0196       0       0       0
 332          RX       0       1     201     211     261     271     471     472
 333          RY      10       4       2       0       0       2       4      10
              *

 334          KK   CP27B      CP AT MILLER RD
 335          KM        ROUTE FLOW FROM CONCENTRATION POINT 27B TO 27C (MILLER ROAD).
 336          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 337          RS       1    FLOW      -1       0       0
 338          RC    .055    .040    .055    3300   .0196       0       0       0
 339          RX       0       1     201     211     261     271     471     472
 340          RY      10       4       2       0       0       2       4      10
              *

 341          KK   CP27C      CP AT PINNACLE PEAK RD
 342          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (PINNACLE PK ROAD).
 343          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 344          RS       1    FLOW      -1       0       0
 345          RC    .055    .040    .055    3300   .0196       0       0       0
 346          RX       0       1     201     211     261     271     471     472
 347          RY      10       4       2       0       0       2       4      10
              *

 348          KK   CP27D     CP AT SCOTTSDALE RD
 349          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (SCOTTSDALE ROAD)
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          350          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
          351          RS       1    FLOW      -1       0       0
          352          RC    .055    .040    .055    1000   .0196       0       0       0
          353          RX       0       1     201     211     261     271     471     472
          354          RY      10       4       2       0       0       2       4      10
                       *
1                                                HEC-1 INPUT                                                PAGE 10

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


          355          KK      27     SUB
          356          KM        RUNOFF FROM SUB-BASIN 27
          357          BA  1.1913       0       0
          358          LS       0      75    12.7       0
          359          UK     200   .0250     .20     100       0       0       0
          360          RK    1500   .0263    .045       0    TRAP      35      10
                       *

          361          KK    CP27      CP AT SCOTTSDALE RD
          362          KO       3
          363          KM        COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
          364          KM        POINT 27D WITH SUB 27 .  TOTAL FLOW AT
          365          KM        SCOTTSDALE ROAD FOR FAN 4.
          366          HC       2
                       *
          367          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

    49          16
                 .
                 .
    56           .          17
                 .           .
                 .           .
    62           .           .          18
                 .           .           .
                 .           .           .
    68         19A.......................
                 V
                 V
    71         19B
                 .
                 .
    77           .          15
                 .           .
                 .           .
    83         19C............
                 V
                 V
    86        19.1
                 .
                 .
    92           .          19
                 .           .
                 .           .
    99           .           .          20
                 .           .           .
                 .           .           .
   105        CP20.......................
                 V
                 V
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109     RRCP20
            .
            .
115         .          21A
            .            .
            .            .
121     CP21A............
            V
            V
123     RR21A
            .
            .
129         .          21B
            .            .
            .            .
135     CP21B............
            V
            V
137     RR21B
            .
            .
143         .          21C
            .            .
            .            .
149     CP21C............
            V
            V
151     RR21C
            .
            .
157         .          21D
            .            .
            .            .
163     CP21D............
            V
            V
165     RR21D
            .
            .
171         .          21E
            .            .
            .            .
177     CP21E............
            V
            V
179     RR21E
            .
            .
185         .          21F
            .            .
            .            .
191     CP21F............
            V
            V
193     RR21F
            .
            .
199         .          21G
            .            .
            .            .
205     CP21G............
            .
            .
207         .           22
            .            .
            .            .
213         .            .          23
```

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                .          .          .
219             .        24A..........
                .          V
                .          V
222             .       24.1
                .          .
                .          .
228             .          .         24
                .          .          .
                .          .          .
236             .     24.2A..........
                .          .
                .          .
239             .          .        25N
                .          .          .
                .          .          .
245             .          .          .        25S
                .          .          .          .
                .          .          .          .
251             .          .      25.1..........
                .          .          .
                .          .          .
254             .     24.2B..........
                .          V
                .          V
257             .    PIMARD
                .          V
                .          V
265             .    RR24.2
                .          .
                .          .
273       C21.05..........
                V
                V
277          DAM
                V
                V
284         R21G
                .
                .
290             .       21H
                .          .
                .          .
296             .          .        26N
                .          .          .
                .          .          .
302        CP21H.......................
                V
                V
305        RR21H
                .
                .
315             .       26S
                .          .
                .          .
321       *APEX*..........
                V
                V
326        CP27A
                V
                V
334        CP27B
                V
                V
341        CP27C
                V
```

```
                V
  348        CP27D
                 .
                 .
  355            .          27
                 .           .
                 .           .
  361        CP27............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN 09 1992               *
*            VERSION 4.0.3E             *
*                                       *
*  RUN DATE  09/29/98  TIME  14:13:02   *
*                                       *
*****************************************
```

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

```
FILE <RWDAM21F.DAT>
THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.

THE MODIFICIATION INCLUDE THE FOLLOWING:
1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   TO CONCENTRATION POINT AT THE APEX OF 21F
2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE

NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
25S.

100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
RAINFALL FROM NOAA ATLAS

FILE RAW4A.DAT
WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
PROPOSED ROAD CROSSINGS.

REVISED BY GREINER 12-9-93 BY RON FERGUSON
REVISED BY C. J. LOVELY, COS, 3-9-94
Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
   *Eliminate DSS Records
   *Divide #26 into 26N & 26S; 26N is portion north of Jomax
   *Add 26N @ CP21H and route with 21H to apex
   *Add 26S @ apex
   *Modify reach length in 26S & 26N to reflect division

*********************************************************************
* ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
* MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
*********************************************************************

September 1998 - HDR Engineering Modified by adding basin to the
September 1998 - center of Section 36 (Alternative No. 4)
September 1998 - Filename <RAWALT4.DAT>
```

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

  48 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      3MAR94  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      4MAR94  ENDING DATE
                      NDTIME        0055  ENDING TIME
                      ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL    0.08 HOURS
                       TOTAL TIME BASE   24.92 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
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0


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


            **************
            *            *
 277 KK     *       DAM  *
            *            *
            **************

 278 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

 279 RS          STORAGE ROUTING
                       NSTPS           1  NUMBER OF SUBREACHES
```

```
                    ITYP        FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC        0.00  INITIAL CONDITION
                       X        0.00 WORKING R AND D COEFFICIENT

280 SV          STORAGE         0.0      68.0     254.0     461.0     690.0     937.0    1204.0    1491.0    1802.0

281 SE        ELEVATION     2173.00   2175.00   2180.00   2185.00   2190.00   2195.00   2200.00   2205.00   2210.00

283 SL        LOW-LEVEL OUTLET
                   ELEVL     2173.00  ELEVATION AT CENTER OF OUTLET
                   CAREA       14.10  CROSS-SECTIONAL AREA
                    COQL        0.60  COEFFICIENT
                    EXPL        0.50  EXPONENT OF HEAD

282 SS        SPILLWAY
                    CREL     2200.00  SPILLWAY CREST ELEVATION
                   SPWID      200.00  SPILLWAY WIDTH
                    COQW        3.20  WEIR COEFFICIENT
                    EXPW        1.50  EXPONENT OF HEAD

                                                  ***

                                        COMPUTED OUTFLOW-ELEVATION DATA

        OUTFLOW       0.00     98.97    108.75    120.67    135.52    154.55    179.80    214.90    267.03    352.55
      ELEVATION    2173.00   2175.13   2175.57   2176.16   2176.99   2178.19   2180.02   2183.03   2188.49   2200.00

        OUTFLOW     374.67    521.33    913.15   1670.76   2914.76   4765.75   7344.31  10771.04  15166.50  20651.29
      ELEVATION    2200.10   2200.41   2200.91   2201.61   2202.51   2203.61   2204.91   2206.41   2208.10   2210.00

                                      COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

        STORAGE       0.00     68.00     72.75     89.16    111.26    142.02    186.62    254.00    254.92    379.51
        OUTFLOW       0.00     95.95     98.97    108.75    120.67    135.52    154.55    179.51    179.80    214.90
      ELEVATION    2173.00   2175.00   2175.13   2175.57   2176.16   2176.99   2178.19   2180.00   2180.02   2183.03

        STORAGE     461.00    620.81    690.00    937.00   1204.00   1209.97   1227.36   1256.17   1296.43   1348.12
        OUTFLOW     235.04    267.03    279.75    318.24    352.55    374.70    521.37    913.04   1670.78   2914.73
      ELEVATION    2185.00   2188.49   2190.00   2195.00   2200.00   2200.10   2200.41   2200.91   2201.61   2202.51

        STORAGE    1411.23   1485.77   1491.00   1578.51   1684.05   1802.00
        OUTFLOW    4765.79   7344.10   7539.23  10771.27  15166.19  20651.29
      ELEVATION    2203.61   2204.91   2205.00   2206.41   2208.10   2210.00

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

                     HYDROGRAPH AT STATION      DAM

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                              (CFS)
+     357.      7.92           349.        292.        281.        281.
                          (INCHES)       0.251       0.837       0.837       0.837
                           (AC-FT)        173.        579.        579.        579.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR        24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
    1205.       7.92          1177.        899.        866.        866.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR        24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
  2200.02       7.92          2199.49     2193.76     2193.00     2193.00
```

```
                        CUMULATIVE AREA =   12.96 SQ MI


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


            **************
            *            *
  302 KK    *     CP21H  *        JOMAX RD
            *            *
            **************

  303 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

  304 HC          HYDROGRAPH COMBINATION
                        ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
       ***             ***             ***             ***             ***

                         HYDROGRAPH AT STATION    CP21H

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     793.      3.50                410.        318.        306.        306.
                        (INCHES)    0.279       0.867       0.867       0.867
                         (AC-FT)     203.        631.        631.        631.

                        CUMULATIVE AREA =   13.64 SQ MI

MANE2 NPLAN,NSTM       1      0


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


            **************
            *            *
  361 KK    *      CP27  *          CP AT SCOTTSDALE RD
            *            *
            **************

  362 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                                 COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
                                 POINT 27D WITH SUB 27 .  TOTAL FLOW AT
                                 SCOTTSDALE ROAD FOR FAN 4.

  366 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
```

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

                        HYDROGRAPH AT STATION     CP27

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                   6-HR        24-HR        72-HR      24.92-HR
+  (CFS)        (HR)
                                 (CFS)
+   2061.       3.17              590.         368.         355.         355.
                                (INCHES)      0.365        0.913        0.913        0.913
                                 (AC-FT)      292.         730.         730.         730.

                        CUMULATIVE AREA =   15.00 SQ MI

1
                                          RUNOFF SUMMARY
                                     FLOW IN CUBIC FEET PER SECOND
                                   TIME IN HOURS,  AREA IN SQUARE MILES

                                     PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN   MAXIMUM    TIME OF
        OPERATION        STATION     FLOW    PEAK                                          AREA    STAGE    MAX STAGE
+                                                        6-HOUR      24-HOUR     72-HOUR

        HYDROGRAPH AT
+                           16       2683.   3.25         323.        81.         78.      1.46
        HYDROGRAPH AT
+                           17       2184.   3.25         262.        66.         64.      1.19
        HYDROGRAPH AT
+                           18       2431.   3.25         273.        69.         66.      1.26
        3 COMBINED AT
+                          19A       7297.   3.25         857.       216.        208.      3.91
        ROUTED TO
+                          19B       7225.   3.33         857.       216.        208.      3.91
+                                                                                          7.03       3.33
        HYDROGRAPH AT
+                           15       1901.   3.42         281.        71.         68.      1.37
        2 COMBINED AT
+                          19C       8929.   3.33        1138.       287.        277.      5.28
        ROUTED TO
+                         19.1       8529.   3.33        1138.       287.        277.      5.28
+                                                                                          6.10       3.33
        HYDROGRAPH AT
+                           19        445.   3.25          42.        11.         10.      0.19
        HYDROGRAPH AT
+                           20       1086.   3.25         125.        31.         30.      0.57
        3 COMBINED AT
+                         CP20       9887.   3.33        1305.       329.        317.      6.03
        ROUTED TO
+                       RRCP20       9129.   3.42        1303.       329.        317.      6.03
+                                                                                          4.09       3.42
        HYDROGRAPH AT
+                          21A        784.   3.25          81.        20.         20.      0.42
        2 COMBINED AT
+                       CP21A       9593.   3.42        1384.       350.        337.      6.45
```

```
+          ROUTED TO
+                        RR21A    9383.   3.50     1383.     350.     337.    6.45
+                                                                                    3.46      3.50
+          HYDROGRAPH AT
+                          21B     512.   3.25       53.      13.      13.    0.28
+          2 COMBINED AT
+                        CP21B    9671.   3.42     1436.     363.     350.    6.73
+          ROUTED TO
+                        RR21B    8973.   3.58     1435.     363.     350.    6.73
+                                                                                    3.74      3.58
+          HYDROGRAPH AT
+                          21C    1248.   3.25      144.      36.      35.    0.75
+          2 COMBINED AT
+                        CP21C    9578.   3.50     1578.     399.     385.    7.48
+          ROUTED TO
+                        RR21C    7972.   3.67     1571.     399.     385.    7.48
+                                                                                    4.10      3.67
+          HYDROGRAPH AT
+                          21D    1500.   3.33      204.      51.      50.    1.06
+          2 COMBINED AT
+                        CP21D    8765.   3.67     1773.     451.     434.    8.54
+          ROUTED TO
+                        RR21D    8701.   3.75     1773.     451.     434.    8.54
+                                                                                    4.16      3.75
+          HYDROGRAPH AT
+                          21E     402.   3.33       50.      12.      12.    0.26
+          2 COMBINED AT
+                        CP21E    8840.   3.75     1822.     463.     446.    8.79
+          ROUTED TO
+                        RR21E    8580.   3.75     1819.     463.     446.    8.79
+                                                                                    6.35      3.75
+          HYDROGRAPH AT
+                          21F     666.   3.33       90.      23.      22.    0.47
+          2 COMBINED AT
+                        CP21F    8865.   3.75     1908.     486.     468.    9.26
+          ROUTED TO
+                        RR21F    8833.   3.83     1905.     486.     468.    9.26
+                                                                                    2.70      3.83
+          HYDROGRAPH AT
+                          21G      26.   3.33        3.       1.       1.    0.02
+          2 COMBINED AT
+                        CP21G    8841.   3.83     1908.     487.     469.    9.28
+          HYDROGRAPH AT
+                           22    2825.   3.25      307.      77.      74.    1.39
+          HYDROGRAPH AT
+                           23     779.   3.25       88.      22.      21.    0.39
```

```
                2 COMBINED AT
+                         24A     3603.   3.25      395.      99.      96.    1.78
                ROUTED TO
+                        24.1     2924.   3.42      395.      99.      96.    1.78
+                                                                     5.59     3.42
                HYDROGRAPH AT
+                          24      708.   3.25       85.      21.      21.    0.49
                2 COMBINED AT
+                       24.2A     3467.   3.42      479.     121.     116.    2.27
                HYDROGRAPH AT
+                         25N     1244.   3.42      177.      45.      43.    0.78
                HYDROGRAPH AT
+                         25S     1424.   3.25      152.      38.      37.    0.63
                2 COMBINED AT
+                        25.1     2431.   3.33      329.      83.      80.    1.41
                2 COMBINED AT
+                       24.2B     5611.   3.42      809.     204.     197.    3.68
                ROUTED TO
+                      PIMARD     5550.   3.42      808.     204.     197.    3.68
+                                                                     6.86     3.42
                ROUTED TO
+                      RR24.2     5294.   3.50      808.     204.     197.    3.68
+                                                                     6.96     3.50
                2 COMBINED AT
+                      C21.05    12190.   3.75     2714.     691.     666.   12.96
                ROUTED TO
+                         DAM      357.   7.92      349.     292.     281.   12.96
+                                                                  2200.02     7.92
                ROUTED TO
+                         R21G     355.   8.17      349.     288.     277.   12.96
+                                                                     0.43     8.17
                HYDROGRAPH AT
+                         21H       64.   3.33        8.       2.       2.    0.04
                HYDROGRAPH AT
+                         26N      690.   3.50      110.      28.      27.    0.64
                3 COMBINED AT
+                       CP21H      793.   3.50      410.     318.     306.   13.64
                ROUTED TO
+                       RR21H      668.   3.67      403.     315.     303.   13.64
+                                                                     0.60     3.67
                HYDROGRAPH AT
+                         26S      239.   3.25       29.       7.       7.    0.17
                2 COMBINED AT
+                      *APEX*      784.   3.58      425.     322.     310.   13.81
                ROUTED TO
+                       CP27A      773.   3.67      424.     321.     309.   13.81
+                                                                     1.82     3.67
```

```
          ROUTED TO
+                        CP27B      742.    3.75        422.       319.       307.      13.81
+                                                                                                  1.78       3.75
          ROUTED TO
+                        CP27C      710.    3.83        420.       317.       305.      13.81
+                                                                                                  1.74       3.83
          ROUTED TO
+                        CP27D      707.    3.92        420.       316.       304.      13.81
+                                                                                                  1.73       3.92
          HYDROGRAPH AT
+                           27     2052.    3.17        207.        52.        50.       1.19
          2 COMBINED AT
+                         CP27     2061.    3.17        590.       368.       355.      15.00
1
                                   SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                      (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                          INTERPOLATED TO
                                                                       COMPUTATION INTERVAL
          ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                    PEAK                                     PEAK

                              (MIN)     (CFS)     (MIN)      (IN)    (MIN)     (CFS)     (MIN)       (IN)
             16    MANE        3.27   2790.08    197.97      2.08     5.00   2682.70    195.00       2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1620E+03 OUTFLOW=0.1613E+03 BASIN STORAGE=0.4299E-01 PERCENT ERROR=   0.4

             17    MANE        3.68   2249.16    195.52      2.07     5.00   2183.62    195.00       2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1317E+03 OUTFLOW=0.1309E+03 BASIN STORAGE=0.4985E-01 PERCENT ERROR=   0.6

             18    MANE        3.18   2466.56    196.97      2.02     5.00   2431.13    195.00       2.02

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1368E+03 OUTFLOW=0.1360E+03 BASIN STORAGE=0.5145E-01 PERCENT ERROR=   0.6

             15    MANE        3.51   1901.39    207.57      1.93     5.00   1901.08    205.00       1.93

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1417E+03 OUTFLOW=0.1409E+03 BASIN STORAGE=0.5998E-01 PERCENT ERROR=   0.5

             19    MANE        1.80    456.95    193.94      2.11     5.00    444.60    195.00       2.11

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2111E+02 OUTFLOW=0.2104E+02 BASIN STORAGE=0.3666E-02 PERCENT ERROR=   0.4

             20    MANE        3.77   1138.08    196.21      2.05     5.00   1086.14    195.00       2.05

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6254E+02 OUTFLOW=0.6220E+02 BASIN STORAGE=0.1496E-01 PERCENT ERROR=   0.5

            21A    MANE        2.36    804.58    193.66      1.81     5.00    783.53    195.00       1.81

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4070E+02 OUTFLOW=0.4053E+02 BASIN STORAGE=0.1094E-01 PERCENT ERROR=   0.4
```

```
          21B  MANE        2.56    520.22    194.23      1.81      5.00    511.65    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2674E+02 OUTFLOW=0.2663E+02 BASIN STORAGE=0.7314E-02 PERCENT ERROR=   0.4

          21C  MANE        3.23   1300.20    196.60      1.81      5.00   1248.06    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7248E+02 OUTFLOW=0.7205E+02 BASIN STORAGE=0.2485E-01 PERCENT ERROR=   0.6

          21D  MANE        3.10   1538.29    200.70      1.81      5.00   1499.66    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1026E+03 OUTFLOW=0.1020E+03 BASIN STORAGE=0.5119E-01 PERCENT ERROR=   0.5

          21E  MANE        3.04    421.12    198.38      1.81      5.00    401.68    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2490E+02 OUTFLOW=0.2476E+02 BASIN STORAGE=0.1083E-01 PERCENT ERROR=   0.5

          21F  MANE        4.33    687.84    201.28      1.80      5.00    666.34    200.00        1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4544E+02 OUTFLOW=0.4507E+02 BASIN STORAGE=0.2383E-01 PERCENT ERROR=   0.8

          21G  MANE        4.06     26.27    199.44      1.80      5.00     26.04    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1667E+01 OUTFLOW=0.1656E+01 BASIN STORAGE=0.7499E-03 PERCENT ERROR=   0.6

           22  MANE        3.71   2850.96    194.47      2.07      5.00   2824.55    195.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1539E+03 OUTFLOW=0.1530E+03 BASIN STORAGE=0.3984E-01 PERCENT ERROR=   0.5

           23  MANE        3.96    781.94    194.26      2.09      5.00    778.56    195.00        2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4420E+02 OUTFLOW=0.4393E+02 BASIN STORAGE=0.9523E-02 PERCENT ERROR=   0.6

           24  MANE        2.78    735.98    195.89      1.62      5.00    708.45    195.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4263E+02 OUTFLOW=0.4239E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.5

          25N  MANE        4.27   1280.11    203.94      2.13      5.00   1243.86    205.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8954E+02 OUTFLOW=0.8895E+02 BASIN STORAGE=0.4329E-01 PERCENT ERROR=   0.6

          25S  MANE        3.07   1432.12    195.33      2.28      5.00   1424.44    195.00        2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7648E+02 OUTFLOW=0.7611E+02 BASIN STORAGE=0.2473E-01 PERCENT ERROR=   0.5
```

```
              21H  MANE        4.16     64.59    199.55      1.80      5.00     64.21    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4176E+01 OUTFLOW=0.4145E+01 BASIN STORAGE=0.2185E-02 PERCENT ERROR=   0.7

              26N  MANE        4.34    695.84    209.67      1.63      5.00    689.73    210.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5568E+02 OUTFLOW=0.5537E+02 BASIN STORAGE=0.2531E-01 PERCENT ERROR=   0.5

              26S  MANE        3.14    248.14    195.91      1.63      5.00    238.82    195.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1460E+02 OUTFLOW=0.1454E+02 BASIN STORAGE=0.4459E-02 PERCENT ERROR=   0.4

               27  MANE        0.61   2077.01    190.94      1.63      5.00   2052.00    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1040E+03 OUTFLOW=0.1038E+03 BASIN STORAGE=0.2468E-01 PERCENT ERROR=   0.2


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

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *              JUN 09 1992              *
 *            VERSION 4.0.3E             *
 *                                       *
 *  RUN DATE  10/26/98  TIME  12:32:03   *
 *                                       *
 *****************************************
```

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

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

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

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

1 HEC-1 INPUT PAGE 1

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

   1          ID        FILE <RWDAM21F.DAT>
   2          ID        THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
   3          ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
   4          ID
   5          ID        THE MODIFICIATION INCLUDE THE FOLLOWING:
   6          ID        1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   7          ID           TO CONCENTRATION POINT AT THE APEX OF 21F
   8          ID        2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE
   9          ID
  10          ID        NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
  11          ID        1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
  12          ID        MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
  13          ID        25S.
  14          ID
  15          ID        100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
  16          ID        RAINFALL FROM NOAA ATLAS
  17          ID
  18          ID        FILE RAW4A.DAT
  19          ID        WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
  20          ID        FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
  21          ID        22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
  22          ID        THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
  23          ID        ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
  24          ID        INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
  25          ID        PROPOSED ROAD CROSSINGS.
  26          ID
  27          ID        REVISED BY GREINER 12-9-93 BY RON FERGUSON
  28          ID        REVISED BY C. J. LOVELY, COS, 3-9-94
  29          ID        Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
  30          ID           *Eliminate DSS Records
```

```
 31          ID          *Divide #26 into 26N & 26S; 26N is portion north of Jomax
 32          ID          *Add 26N @ CP21H and route with 21H to apex
 33          ID          *Add 26S @ apex
 34          ID          *Modify reach length in 26S & 26N to reflect division
 35          ID
 36          ID        ******************************************************************
 37          ID        * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
 38          ID        * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
 39          ID        ******************************************************************
 40          ID
 41          ID    September 1998 - HDR Engineering Modified by adding basin to the
 42          ID    September 1998 - center of Section 36 (Alternative No. 4)
 43          ID    September 1998 - Filename <RAWALT4.DAT>
 44          ID
 45          ID
 46          ID   ***********************************************************************
             *DIAGRAM
 47          IT       5 03MAR94       0     300
 48          IO       5       0       0       0
             *
1                                          HEC-1 INPUT                                    PAGE  2

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

 49          KK      16     SUB
 50          KM        RUNOFF FROM SUB-BASIN 16
 51          BA  1.4570
 52          PH       0     9.7    0.77    1.51    2.65    3.00    3.23    3.66
 53          LS       0      83     9.8       0       0       0       0       0
 54          UK     217   .0581     .20     100
 55          RK   14800   .0216    .045       0    TRAP      25       3
             *

 56          KK      17     SUB
 57          KM        RUNOFF FROM SUB-BASIN 17
 58          BA  1.1851       0       0
 59          LS       0      83     9.8
 60          UK     285   .0421     .20     100       0       0       0
 61          RK   12200   .0254    .045       0    TRAP      25       3
             *

 62          KK      18     SUB
 63          KM        RUNOFF FROM SUB-BASIN 18
 64          BA  1.2641
 65          LS       0      83     6.5       0
 66          UK     285   .0421     .20     100       0       0       0
 67          RK   10840   .0259    .045       0    TRAP      25       3
             *

 68          KK     19A      CP
 69          KM        COMBINE HYDROGRAPHS SUB16, SUB17 AND SUB18
 70          HC       3
             *

 71          KK     19B      CP
 72          KM        ROUTE CP19A TO CP19B
 73          RS       1    FLOW      -1       0       0
 74          RC    .055    .040    .055    1100   .0155       0       0       0
 75          RX       0       1     126     132     167     173     298     299
 76          RY      10       8       3       0       0       3       8      10
             *

 77          KK      15     SUB
 78          KM        RUNOFF FROM SUBBASIN 15
 79          BA  1.3702       0       0
 80          LS       0      82     5.4       0
```

```
 81          UK     217   .0581     .20     100       0       0       0
 82          RK   21200   .0236    .045       0    TRAP      25       3
             *

 83          KK     19C      CP
 84          KM        COMBINE HYDROGRAPHS SUB15 & CP19B
 85          HC       2
             *
1                                        HEC-1 INPUT                                          PAGE  3

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

 86          KK    19.1      CP
 87          KM        ROUTE CP 19C TO 19.1
 88          RS       1    FLOW      -1       0       0
 89          RC    .055    .040    .055    1800   .0200       0       0
 90          RX       0       1     151     166     216     231     381     382
 91          RY      10       9       3       0       0       3       9      10
             *

 92          KK      19     SUB
 93          KM        RUNOFF FROM SUB-BASIN 19
 94          BA  0.1872
 95          LS       0      84     7.2       0
 96          UK     275   .0800     .20     100       0       0       0
 97          RK    3730   .0352    .045    .160    TRAP      15       3
 98          RK    1800   .0200    .045       0    TRAP      50      30
             *

 99          KK      20     SUB
100          KM        RUNOFF FROM SUB-BASIN 20
101          BA  0.5698       0       0
102          LS       0      84     3.6       0
103          UK     300   .0750     .20     100       0       0       0
104          RK    9640   .0197    .045       0    TRAP      15       3
             *

105          KK    CP20      CP
106          KM        COMBINE SUB 19, SUB 20 AND CP 19.1
107          HC       3
             *
108          KM    *******BEGIN SUBAREA 21 BREAKDOWN-3/94 REVISIONS*****

109          KK  RRCP20      CP
110          KM        ROUTE CP20 TO CP 21A, WHICH IS 4600'
111          RS       1    FLOW      -1       0       0
112          RC    .055    .040    .055    4600   .0217       0       0       0
113          RX       0      30      60      85     195     220     250     280
114          RY      10       4       1       0       0       1       4      10
             *

115          KK     21A     SUB
116          KM        RUNOFF FROM SUB-BASIN 21A
117          BA     .42       0       0
118          LS       0      80     6.4       0       0       0
119          UK     297   .0558     .20     100       0       0       0
120          RK    6400   .0344    .045       0    TRAP      10       3
             *

121          KK   CP21A
122          HC       2
             *
1                                        HEC-1 INPUT                                          PAGE  4

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

```
 123          KK   RR21A      CP
 124          KM        ROUTE CP21A TO 21B    WHICH IS 960'
 125          RS       1    FLOW      -1       0       0
 126          RC    .055    .040    .055     960   .0156       0       0       0
 127          RX       0      10      60     205     295     440     490     500
 128          RY       6       4       2       0       0       2       4       6
              *

 129          KK     21B     SUB
 130          KM        RUNOFF FROM SUB-BASIN 21B
 131          BA   0.276       0       0
 132          LS       0      80     6.4       0       0       0
 133          UK     297   .0558     .20     100       0       0       0
 134          RK    6300   .0381    .045       0    TRAP      10       3
              *

 135          KK   CP21B
 136          HC       2
              *

 137          KK   RR21B      CP
 138          KM        ROUTE CP21B TO 21C    WHICH IS 4400'
 139          RS       1    FLOW      -1       0       0
 140          RC    .055    .040    .055    4400   .0205       0       0       0
 141          RX       0      10      60     205     295     440     490     500
 142          RY       6       4       2       0       0       2       4       6
              *

 143          KK     21C     SUB
 144          KM        RUNOFF FROM SUB-BASIN 21C
 145          BA    .748       0       0
 146          LS       0      80     6.4       0       0       0
 147          UK     297   .0558     .20     100       0       0       0
 148          RK    9900   .0328    .045       0    TRAP      20       3
              *

 149          KK   CP21C
 150          HC       2
              *

 151          KK   RR21C      CP
 152          KM        ROUTE CP21C TO 21D    WHICH IS 5700'
 153          RS       1    FLOW      -1       0       0
 154          RC    .055    .040    .055    5700   .0181       0       0       0
 155          RX       0      20     175     210     300     335     490     510
 156          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
              *

 157          KK     21D     SUB
 158          KM        RUNOFF FROM SUB-BASIN 21D
 159          BA   1.059       0       0
 160          LS       0      80     6.4       0       0       0
 161          UK     297   .0558     .20     100       0       0       0
 162          RK   14500   .0252    .045       0    TRAP      30       3
              *
1                                    HEC-1 INPUT                                    PAGE  5

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

 163          KK   CP21D
 164          HC       2
              *

 165          KK   RR21D      CP
 166          KM        ROUTE CP21D TO 21E    WHICH IS 1100'
```

```
167          RS       1    FLOW      -1       0       0
168          RC    .055    .040    .055    1100   .0200       0       0       0
169          RX       0      20     175     210     300     335     490     510
170          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
             *

171          KK     21E     SUB
172          KM         RUNOFF FROM SUB-BASIN 21E
173          BA   0.257       0       0
174          LS       0      80     6.4       0       0       0
175          UK     297   .0333     .20     100       0       0       0
176          RK    6600   .0288    .045       0    TRAP      15       3
             *

177          KK   CP21E
178          HC       2
             *

179          KK   RR21E      CP
180          KM         ROUTE CP21E TO 21F    WHICH IS 2800'
181          RS       1    FLOW      -1       0       0
182          RC    .055    .040    .055    2800   .0143       0       0       0
183          RX       0      70     170     180     230     240     340     410
184          RY    10.5     4.5     3.5       0       0     3.5     4.5    10.5
             *

185          KK     21F     SUB
186          KM         RUNOFF FROM SUB-BASIN 21F
187          BA   0.469       0       0
188          LS       0      80     6.4       0       0       0
189          UK     297   .0333     .20     100       0       0       0
190          RK   10400   .0279    .045       0    TRAP      20       3
             *

191          KK   CP21F
192          HC       2
             *

193          KK   RR21F      CP
194          KM   ROUTE CP21F TO 21G (1900' DOWNSTREAM)
195          RS       1    FLOW      -1       0       0
196          RC    .055    .040    .055    1900   .0158       0       0       0
197          RX       0      20      70     345     455     730     780     800
198          RY      10       8       2       0       0       2       8      10
             *
1                                          HEC-1 INPUT                                          PAGE  6

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

199          KK     21G     SUB
200          KM   RUNOFF FROM SUB-BASIN 21G
201          BA   .0172       0       0
202          LS       0      80     6.4       0       0       0
203          UK     297   .0333     .20     100       0       0       0
204          RK    4000   .0300    .045       0    TRAP      10       3
             *

205          KK   CP21G
206          HC       2
             *

207          KK      22     SUB
208          KM       RUNOFF FROM SUB-BASIN 22
209          BA  1.3860
210          LS       0      84     5.1       0
211          UK     225   .0590     .20     100       0       0       0       0
```

```
 212          RK   13000   .0238    .045       0    TRAP      25       3
              *

 213          KK      23     SUB
 214          KM        RUNOFF FROM SUB-BASIN 23
 215          BA  0.3945       0       0
 216          LS       0      84     6.3       0
 217          UK     225   .0590     .20     100       0       0       0
 218          RK   10200   .0304    .045       0    TRAP      20       3
              *

 219          KK     24A      CP
 220          KM        COMBINE HYDROGRAPHS FOR SUB 22 AND SUB 23
 221          HC       2
              *

 222          KK    24.1      CP
 223          KM        ROUTE CP 24A TO CP 24.1
 224          RS       3    FLOW      -1       0       0
 225          RC    .055    .040    .055    6800   .0257       0       0       0
 226          RX       0       1     101     107     122     128     228     229
 227          RY      10       8       3       0       0       3       8      10
              *

 228          KK      24     SUB
 229          KM        RUNOFF FROM SUB-BASIN 24
 230          KM        DRAINAGE AREA CHANGED TO MATCH VALUE USED BY MICHAEL BAKER
 231          KM        Jr., INC.
 232          BA  0.4907       0       0
 233          LS       0      77     6.8       0
 234          UK     295   .0438     .20     100       0       0       0
 235          RK    6800   .0257    .045       0    TRAP      15       3
              *
1                                          HEC-1 INPUT                                          PAGE  7
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 236          KK   24.2A      CP
 237          KM        COMBINE SUB 24 & CP 24.1 - APEX
 238          HC       2
              *

 239          KK     25N       SUB
 240          KM        RUNOFF FROM SUB-BASIN 25N - APEX
 241          BA  0.7834       0       0       0       0       0       0       0
 242          LS       0      84     9.0       0
 243          UK     295   .0438     .20     100       0       0       0
 244          RK   16700   .0302    .045       0    TRAP      25       3
              *

 245          KK     25S     SUB
 246          KM        RUNOFF FROM SUB-BASIN 25S - APEX
 247          BA  0.6256       0       0       0       0       0       0       0
 248          LS       0      86     9.0       0
 249          UK     295   .0438     .20     100       0       0       0
 250          RK    8900   .0278    .045       0    TRAP      25       3
              *

 251          KK    25.1      CP
 252          KM        COMBINE HYDROGRAPHS FOR SUB-BASINS 25N AND 25S
 253          HC       2
              *

 254          KK   24.2B      CP
 255          KM        COMBINE TOTAL HYDROGRAPH 24.2A WITH 25.1
 256          HC       2
```

```
                 *

257              KK  PIMARD      CP
258              KM   ROUTE THE TOTAL HYDROGRAPH AT THE CONCENTRATION POINT
259              KM   24.2B TO THE CULVERT AT THE PIMA ROAD. THERE IS NO
260              KM   CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
261              RS       1    FLOW      -1       0       0
262              RC    .055    .040    .055    2000   .0287       0       0       0
263              RX       0       1     101     107     122     128     228     229
264              RY      10       8       3       0       0       3       8      10
                 *

265              KK  RR24.2      CP
266              KM   ROUTE THE TOTAL HYDROGRAPH AT CONCENTRATION POINT
267              KM   24.2B FROM THE CULVERT UNDER PIMA ROAD TO CONCENTRATION
268              KM   POINT 21.05.
269              RS       1    FLOW      -1       0       0
270              RC    .055    .040    .055    3050   .0238       0       0       0
271              RX       0       1     101     107     122     128     228     229
272              RY      10       8       3       0       0       3       8      10
                 *
                 *
1                                                HEC-1 INPUT                                                    PAGE  8

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

273              KK  C21.05 CONFLUENCE OF DGB CHANNELS NEAR MID-SECTION 36
274              KM         COMBINE HYDROGRAPH CP21G WITH HYDROGRAPH RR24.2
275              KM         (FROM THE PIMA ROAD CULVERT)
276              HC       2
                 *  ******************************************************************************

277              KK     DAM
278              KO       3
279              RS       1    FLOW       0
280              SV       0     139     402     694    1010    1351    1717    1950
281              SE    2177    2180    2185    2190    2195    2200    2205    2210
282              SS    2198     200     3.2     1.5
                 *  2 - 36" RCP Culverts for outlet
283              SL    2177    14.1      .6      .5
                 *  ******************************************************************************
                 *

284              KK    R21G     CP
285              KM        ROUTE CP21G(21.05)TO 21H WHICH IS 3100'
286              RS       1    FLOW      -1       0       0
287              RC    .055    .040    .055    3100   .0194       0       0       0
288              RX       0      90     120     355     585     820     850     940
289              RY       9       4     1.5       0       0     1.5       4       9
                 *

290              KK     21H     SUB
291              KM        RUNOFF FROM SUB-BASIN 21H
292              BA   .0431       0       0
293              LS       0      80     6.4       0       0       0
294              UK     297   .0333     .20     100       0       0       0
295              RK    4600   .0278    .045       0    TRAP      20       3
                 *

296              KK     26N
297              KM       Runoff from sub-basin 26N
298              BA   .6376       0       0
299              LS       0      75    12.7       0
300              UK     200   .0250     .20     100       0
301              RK   12000   .0263    .045       0    TRAP      35      10
                 *
```

```
 302          KK   CP21H   JOMAX RD
 303          KO       3
 304          HC       3
              *

 305          KK   RR21H      CP
 306          KM        ROUTE HYDROGRAPH AT CONCENTRATION POINT 21H   DOWNSTREAM FROM
 307          KM        JOMAX ROAD           THERE IS NO ADDITIONAL CONTRIBUTING
 308          KM        DRAINAGE AREA AT THIS CONCENTRATION POINT.  USED CHANNEL
 309          KM        GEOMETRY                          FROM REACH SIX
 310          KM             DEVELOPED BY C. LOVELY
 311          RS       1    FLOW      -1       0       0
 312          RC    .055    .040    .055    2390   .0188       0       0       0
1                                          HEC-1 INPUT                                                    PAGE  9

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

 313          RX       0      90     120     355     585     820     850     940
 314          RY       9       4     1.5       0       0     1.5       4       9
              *

 315          KK     26S     SUB
 316          KM       RUNOFF FROM SUB-BASIN 26S
 317          BA  0.1672       0       0
 318          LS       0      75    12.7       0
 319          UK     200   .0250     .20     100       0       0       0
 320          RK    4000   .0263    .045       0    TRAP      35      10
              *

 321          KK  *APEX*      CP
 322          KM        COMBINE FLOW FROM SUB-BASIN 26 ,
 323          KM            AND ROUTED HYDROGRAPH FROM JOMAX ROAD.
 324          HC       2
              *
 325          KM        *********END SUBAREA 21 REVISIONS************

 326          KK   CP27A      CP AT HAPPY VALLEY RD
 327          KM        ROUTE FLOW FROM CONCENTRATION POINT APEX  TO 27A (HAPPY VALLEY
 328          KM        ROAD).  THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION PT.
 329          KM
 330          RS       1    FLOW      -1       0       0
 331          RC    .055    .040    .055    1600   .0196       0       0       0
 332          RX       0       1     201     211     261     271     471     472
 333          RY      10       4       2       0       0       2       4      10
              *

 334          KK   CP27B      CP AT MILLER RD
 335          KM        ROUTE FLOW FROM CONCENTRATION POINT 27B TO 27C (MILLER ROAD).
 336          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 337          RS       1    FLOW      -1       0       0
 338          RC    .055    .040    .055    3300   .0196       0       0       0
 339          RX       0       1     201     211     261     271     471     472
 340          RY      10       4       2       0       0       2       4      10
              *

 341          KK   CP27C      CP AT PINNACLE PEAK RD
 342          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (PINNACLE PK ROAD).
 343          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 344          RS       1    FLOW      -1       0       0
 345          RC    .055    .040    .055    3300   .0196       0       0       0
 346          RX       0       1     201     211     261     271     471     472
 347          RY      10       4       2       0       0       2       4      10
              *

 348          KK   CP27D     CP AT SCOTTSDALE RD
 349          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (SCOTTSDALE ROAD)
```

```
          350          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
          351          RS       1    FLOW      -1       0       0
          352          RC    .055    .040    .055    1000   .0196       0       0       0
          353          RX       0       1     201     211     261     271     471     472
          354          RY      10       4       2       0       0       2       4      10
                       *
1                                                HEC-1 INPUT                                                PAGE 10

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


          355          KK      27     SUB
          356          KM        RUNOFF FROM SUB-BASIN 27
          357          BA  1.1913       0       0
          358          LS       0      75    12.7       0
          359          UK     200   .0250     .20     100       0       0       0
          360          RK    1500   .0263    .045       0    TRAP      35      10
                       *

          361          KK    CP27      CP AT SCOTTSDALE RD
          362          KO       3
          363          KM        COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
          364          KM        POINT 27D WITH SUB 27 .  TOTAL FLOW AT
          365          KM        SCOTTSDALE ROAD FOR FAN 4.
          366          HC       2
                       *
          367          ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

    49          16
                 .
                 .
    56           .          17
                 .           .
                 .           .
    62           .           .          18
                 .           .           .
                 .           .           .
    68         19A.......................
                 V
                 V
    71         19B
                 .
                 .
    77           .          15
                 .           .
                 .           .
    83         19C............
                 V
                 V
    86        19.1
                 .
                 .
    92           .          19
                 .           .
                 .           .
    99           .           .          20
                 .           .           .
                 .           .           .
   105        CP20.......................
                 V
                 V
```

```
109     RRCP20
            .
            .
115         .         21A
            .           .
            .           .
121     CP21A............
            V
            V
123     RR21A
            .
            .
129         .         21B
            .           .
            .           .
135     CP21B............
            V
            V
137     RR21B
            .
            .
143         .         21C
            .           .
            .           .
149     CP21C............
            V
            V
151     RR21C
            .
            .
157         .         21D
            .           .
            .           .
163     CP21D............
            V
            V
165     RR21D
            .
            .
171         .         21E
            .           .
            .           .
177     CP21E............
            V
            V
179     RR21E
            .
            .
185         .         21F
            .           .
            .           .
191     CP21F............
            V
            V
193     RR21F
            .
            .
199         .         21G
            .           .
            .           .
205     CP21G............
            .
            .
207         .          22
            .           .
            .           .
213         .           .         23
```

```
                .          .          .
                .          .          .
219             .        24A...........
                .          V
                .          V
222             .       24.1
                .          .
                .          .
228             .          .         24
                .          .          .
                .          .          .
236             .     24.2A...........
                .          .
                .          .
239             .          .        25N
                .          .          .
                .          .          .
245             .          .          .        25S
                .          .          .          .
                .          .          .          .
251             .          .      25.1...........
                .          .          .
                .          .          .
254             .     24.2B...........
                .          V
                .          V
257             .    PIMARD
                .          V
                .          V
265             .    RR24.2
                .          .
                .          .
273       C21.05...........
                V
                V
277          DAM
                V
                V
284         R21G
                .
                .
290             .       21H
                .          .
                .          .
296             .          .        26N
                .          .          .
                .          .          .
302        CP21H.........................
                V
                V
305        RR21H
                .
                .
315             .       26S
                .          .
                .          .
321       *APEX*...........
                V
                V
326        CP27A
                V
                V
334        CP27B
                V
                V
341        CP27C
                V
```

```
                V
  348        CP27D
                .
                .
  355           .          27
                .           .
                .           .
  361        CP27............
 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN 09 1992             *
*            VERSION 4.0.3E            *
*                                      *
*  RUN DATE  10/26/98  TIME  12:32:03  *
*                                      *
****************************************
```

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

```
FILE <RWDAM21F.DAT>
THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.

THE MODIFICIATION INCLUDE THE FOLLOWING:
1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   TO CONCENTRATION POINT AT THE APEX OF 21F
2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE

NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
25S.

100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
RAINFALL FROM NOAA ATLAS

FILE RAW4A.DAT
WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
PROPOSED ROAD CROSSINGS.

REVISED BY GREINER 12-9-93 BY RON FERGUSON
REVISED BY C. J. LOVELY, COS, 3-9-94
Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
   *Eliminate DSS Records
   *Divide #26 into 26N & 26S; 26N is portion north of Jomax
   *Add 26N @ CP21H and route with 21H to apex
   *Add 26S @ apex
   *Modify reach length in 26S & 26N to reflect division

*******************************************************************
* ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
* MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
*******************************************************************

September 1998 - HDR Engineering Modified by adding basin to the
September 1998 - center of Section 36 (Alternative No. 4)
September 1998 - Filename <RAWALT4.DAT>
```

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

  48 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      3MAR94  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      4MAR94  ENDING DATE
                      NDTIME        0055  ENDING TIME
                       ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL    0.08 HOURS
                       TOTAL TIME BASE   24.92 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
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0


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


             **************
             *            *
 277 KK      *       DAM  *
             *            *
             **************

 278 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

 279 RS          STORAGE ROUTING
                       NSTPS           1  NUMBER OF SUBREACHES
```

```
                    ITYP        FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC        0.00  INITIAL CONDITION
                       X        0.00 WORKING R AND D COEFFICIENT

280 SV          STORAGE         0.0     139.0     402.0     694.0    1010.0    1351.0    1717.0    1950.0

281 SE        ELEVATION     2177.00   2180.00   2185.00   2190.00   2195.00   2200.00   2205.00   2210.00

283 SL        LOW-LEVEL OUTLET
                   ELEVL     2177.00  ELEVATION AT CENTER OF OUTLET
                   CAREA       14.10  CROSS-SECTIONAL AREA
                    COQL        0.60  COEFFICIENT
                    EXPL        0.50  EXPONENT OF HEAD

282 SS        SPILLWAY
                    CREL     2198.00  SPILLWAY CREST ELEVATION
                   SPWID      200.00  SPILLWAY WIDTH
                    COQW        3.20  WEIR COEFFICIENT
                    EXPW        1.50  EXPONENT OF HEAD
                                                  ***
                                      COMPUTED OUTFLOW-ELEVATION DATA

        OUTFLOW      0.00     98.56    107.76    118.85    132.49    149.67    171.97    202.07    244.95    310.92
      ELEVATION   2177.00   2179.11   2179.52   2180.07   2180.81   2181.87   2183.42   2185.87   2190.03   2198.00

        OUTFLOW    340.08    533.09   1048.47   2044.71   3680.28   6113.65   9503.26  14007.57  19785.02  26994.06
      ELEVATION   2198.12   2198.49   2199.09   2199.93   2201.01   2202.33   2203.89   2205.69   2207.72   2210.00

                                      COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

        STORAGE      0.00     97.77    116.87    139.00    142.60    181.78    237.16    319.11    402.00    452.80
        OUTFLOW      0.00     98.56    107.76    117.52    118.85    132.49    149.67    171.97    191.91    202.07
      ELEVATION   2177.00   2179.11   2179.52   2180.00   2180.07   2180.81   2181.87   2183.42   2185.00   2185.87

        STORAGE    694.00    696.11   1010.00   1214.60   1223.11   1247.92   1289.03   1346.42   1351.00   1425.18
        OUTFLOW    244.63    244.95    287.86    310.92    340.05    533.05   1048.53   2044.73   2135.59   3680.37
      ELEVATION   2190.00   2190.03   2195.00   2198.00   2198.12   2198.49   2199.09   2199.93   2200.00   2201.01

        STORAGE   1521.76   1635.83   1717.00   1749.08   1843.98   1950.00
        OUTFLOW   6113.51   9503.00  12211.99  14007.37  19785.15  26994.06
      ELEVATION   2202.33   2203.89   2205.00   2205.69   2207.72   2210.00

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

                    HYDROGRAPH AT STATION      DAM

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                              (CFS)
+     328.      8.08          311.       260.        250.        250.
                        (INCHES)      0.223      0.746       0.746       0.746
                         (AC-FT)       154.       516.        516.        516.

 PEAK STORAGE   TIME                        MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
     1220.      8.08         1195.       929.        895.        895.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
   2198.07      8.00         2197.71     2193.41     2192.81     2192.81
```

```
                        CUMULATIVE AREA =   12.96 SQ MI


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


            **************
            *            *
  302 KK    *     CP21H  *        JOMAX RD
            *            *
            **************

  303 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

  304 HC          HYDROGRAPH COMBINATION
                        ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0

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

                        HYDROGRAPH AT STATION    CP21H

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     783.      3.50                 376.        287.        276.        276.
                        (INCHES)    0.256       0.781       0.781       0.781
                         (AC-FT)     186.        568.        568.        568.

                        CUMULATIVE AREA =   13.64 SQ MI

MANE2 NPLAN,NSTM       1      0


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


            **************
            *            *
  361 KK    *      CP27  *          CP AT SCOTTSDALE RD
            *            *
            **************

  362 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                                COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
                                POINT 27D WITH SUB 27 .  TOTAL FLOW AT
                                SCOTTSDALE ROAD FOR FAN 4.

  366 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
```

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

                        HYDROGRAPH AT STATION     CP27

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                   (CFS)
+    2060.      3.17                560.        338.        325.        325.
                                (INCHES)      0.347       0.837       0.837       0.837
                                 (AC-FT)       278.        670.        670.        670.

                        CUMULATIVE AREA =   15.00 SQ MI

1
                                          RUNOFF SUMMARY
                                     FLOW IN CUBIC FEET PER SECOND
                                  TIME IN HOURS,  AREA IN SQUARE MILES

                                          PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN    MAXIMUM    TIME OF
          OPERATION        STATION       FLOW    PEAK                                           AREA     STAGE    MAX STAGE
+                                                                6-HOUR      24-HOUR     72-HOUR
          HYDROGRAPH AT
+                              16       2683.    3.25          323.         81.         78.      1.46
          HYDROGRAPH AT
+                              17       2184.    3.25          262.         66.         64.      1.19
          HYDROGRAPH AT
+                              18       2431.    3.25          273.         69.         66.      1.26
          3 COMBINED AT
+                             19A       7297.    3.25          857.        216.        208.      3.91
          ROUTED TO
+                             19B       7225.    3.33          857.        216.        208.      3.91
+                                                                                                          7.03       3.33
          HYDROGRAPH AT
+                              15       1901.    3.42          281.         71.         68.      1.37
          2 COMBINED AT
+                             19C       8929.    3.33         1138.        287.        277.      5.28
          ROUTED TO
+                            19.1       8529.    3.33         1138.        287.        277.      5.28
+                                                                                                          6.10       3.33
          HYDROGRAPH AT
+                              19        445.    3.25           42.         11.         10.      0.19
          HYDROGRAPH AT
+                              20       1086.    3.25          125.         31.         30.      0.57
          3 COMBINED AT
+                            CP20       9887.    3.33         1305.        329.        317.      6.03
          ROUTED TO
+                           RRCP20      9129.    3.42         1303.        329.        317.      6.03
+                                                                                                          4.09       3.42
          HYDROGRAPH AT
+                             21A        784.    3.25           81.         20.         20.      0.42
          2 COMBINED AT
+                           CP21A       9593.    3.42         1384.        350.        337.      6.45
```

```
                ROUTED TO
+                          RR21A    9383.   3.50     1383.     350.     337.    6.45
+                                                                                      3.46      3.50
                HYDROGRAPH AT
+                            21B     512.   3.25       53.      13.      13.    0.28
                2 COMBINED AT
+                          CP21B    9671.   3.42     1436.     363.     350.    6.73
                ROUTED TO
+                          RR21B    8973.   3.58     1435.     363.     350.    6.73
+                                                                                      3.74      3.58
                HYDROGRAPH AT
+                            21C    1248.   3.25      144.      36.      35.    0.75
                2 COMBINED AT
+                          CP21C    9578.   3.50     1578.     399.     385.    7.48
                ROUTED TO
+                          RR21C    7972.   3.67     1571.     399.     385.    7.48
+                                                                                      4.10      3.67
                HYDROGRAPH AT
+                            21D    1500.   3.33      204.      51.      50.    1.06
                2 COMBINED AT
+                          CP21D    8765.   3.67     1773.     451.     434.    8.54
                ROUTED TO
+                          RR21D    8701.   3.75     1773.     451.     434.    8.54
+                                                                                      4.16      3.75
                HYDROGRAPH AT
+                            21E     402.   3.33       50.      12.      12.    0.26
                2 COMBINED AT
+                          CP21E    8840.   3.75     1822.     463.     446.    8.79
                ROUTED TO
+                          RR21E    8580.   3.75     1819.     463.     446.    8.79
+                                                                                      6.35      3.75
                HYDROGRAPH AT
+                            21F     666.   3.33       90.      23.      22.    0.47
                2 COMBINED AT
+                          CP21F    8865.   3.75     1908.     486.     468.    9.26
                ROUTED TO
+                          RR21F    8833.   3.83     1905.     486.     468.    9.26
+                                                                                      2.70      3.83
                HYDROGRAPH AT
+                            21G      26.   3.33        3.       1.       1.    0.02
                2 COMBINED AT
+                          CP21G    8841.   3.83     1908.     487.     469.    9.28
                HYDROGRAPH AT
+                             22    2825.   3.25      307.      77.      74.    1.39
                HYDROGRAPH AT
+                             23     779.   3.25       88.      22.      21.    0.39
```

```
+          2 COMBINED AT
                              24A     3603.   3.25      395.      99.      96.     1.78
+          ROUTED TO
                              24.1    2924.   3.42      395.      99.      96.     1.78
+                                                                                          5.59      3.42
+          HYDROGRAPH AT
                               24      708.   3.25       85.      21.      21.     0.49
+          2 COMBINED AT
                              24.2A   3467.   3.42      479.     121.     116.     2.27
+          HYDROGRAPH AT
                              25N     1244.   3.42      177.      45.      43.     0.78
+          HYDROGRAPH AT
                              25S     1424.   3.25      152.      38.      37.     0.63
+          2 COMBINED AT
                              25.1    2431.   3.33      329.      83.      80.     1.41
+          2 COMBINED AT
                              24.2B   5611.   3.42      809.     204.     197.     3.68
+          ROUTED TO
                              PIMARD  5550.   3.42      808.     204.     197.     3.68
+                                                                                          6.86      3.42
+          ROUTED TO
                              RR24.2  5294.   3.50      808.     204.     197.     3.68
+                                                                                          6.96      3.50
+          2 COMBINED AT
                              C21.05 12190.   3.75     2714.     691.     666.    12.96
+          ROUTED TO
                               DAM     328.   8.08      311.     260.     250.    12.96
+                                                                                       2198.07      8.00
+          ROUTED TO
                              R21G     325.   8.33      311.     256.     247.    12.96
+                                                                                          0.39      8.33
+          HYDROGRAPH AT
                              21H       64.   3.33        8.       2.       2.     0.04
+          HYDROGRAPH AT
                              26N      690.   3.50      110.      28.      27.     0.64
+          3 COMBINED AT
                              CP21H    783.   3.50      376.     287.     276.    13.64
+          ROUTED TO
                              RR21H    657.   3.58      370.     284.     273.    13.64
+                                                                                          0.60      3.58
+          HYDROGRAPH AT
                              26S      239.   3.25       29.       7.       7.     0.17
+          2 COMBINED AT
                              *APEX*   775.   3.58      392.     291.     280.    13.81
+          ROUTED TO
                              CP27A    763.   3.67      392.     290.     279.    13.81
+                                                                                          1.81      3.67
```

```
          ROUTED TO
+                        CP27B      732.    3.75        389.       288.       277.      13.81
+                                                                                                  1.77       3.75
          ROUTED TO
+                        CP27C      700.    3.83        387.       286.       275.      13.81
+                                                                                                  1.72       3.83
          ROUTED TO
+                        CP27D      695.    3.92        387.       285.       275.      13.81
+                                                                                                  1.72       3.92
          HYDROGRAPH AT
+                           27     2052.    3.17        207.        52.        50.       1.19
          2 COMBINED AT
+                         CP27     2060.    3.17        560.       338.       325.      15.00
1
                                   SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                       (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                INTERPOLATED TO
                                                                            COMPUTATION INTERVAL
            ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                      PEAK                                   PEAK

                             (MIN)     (CFS)      (MIN)      (IN)    (MIN)     (CFS)     (MIN)       (IN)

                16  MANE        3.27   2790.08     197.97      2.08     5.00   2682.70    195.00       2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1620E+03 OUTFLOW=0.1613E+03 BASIN STORAGE=0.4299E-01 PERCENT ERROR=   0.4

                17  MANE        3.68   2249.16     195.52      2.07     5.00   2183.62    195.00       2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1317E+03 OUTFLOW=0.1309E+03 BASIN STORAGE=0.4985E-01 PERCENT ERROR=   0.6

                18  MANE        3.18   2466.56     196.97      2.02     5.00   2431.13    195.00       2.02

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1368E+03 OUTFLOW=0.1360E+03 BASIN STORAGE=0.5145E-01 PERCENT ERROR=   0.6

                15  MANE        3.51   1901.39     207.57      1.93     5.00   1901.08    205.00       1.93

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1417E+03 OUTFLOW=0.1409E+03 BASIN STORAGE=0.5998E-01 PERCENT ERROR=   0.5

                19  MANE        1.80    456.95     193.94      2.11     5.00    444.60    195.00       2.11

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2111E+02 OUTFLOW=0.2104E+02 BASIN STORAGE=0.3666E-02 PERCENT ERROR=   0.4

                20  MANE        3.77   1138.08     196.21      2.05     5.00   1086.14    195.00       2.05

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6254E+02 OUTFLOW=0.6220E+02 BASIN STORAGE=0.1496E-01 PERCENT ERROR=   0.5

               21A  MANE        2.36    804.58     193.66      1.81     5.00    783.53    195.00       1.81

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4070E+02 OUTFLOW=0.4053E+02 BASIN STORAGE=0.1094E-01 PERCENT ERROR=   0.4
```

```
          21B  MANE        2.56    520.22    194.23      1.81      5.00    511.65    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2674E+02 OUTFLOW=0.2663E+02 BASIN STORAGE=0.7314E-02 PERCENT ERROR=   0.4

          21C  MANE        3.23   1300.20    196.60      1.81      5.00   1248.06    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7248E+02 OUTFLOW=0.7205E+02 BASIN STORAGE=0.2485E-01 PERCENT ERROR=   0.6

          21D  MANE        3.10   1538.29    200.70      1.81      5.00   1499.66    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1026E+03 OUTFLOW=0.1020E+03 BASIN STORAGE=0.5119E-01 PERCENT ERROR=   0.5

          21E  MANE        3.04    421.12    198.38      1.81      5.00    401.68    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2490E+02 OUTFLOW=0.2476E+02 BASIN STORAGE=0.1083E-01 PERCENT ERROR=   0.5

          21F  MANE        4.33    687.84    201.28      1.80      5.00    666.34    200.00        1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4544E+02 OUTFLOW=0.4507E+02 BASIN STORAGE=0.2383E-01 PERCENT ERROR=   0.8

          21G  MANE        4.06     26.27    199.44      1.80      5.00     26.04    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1667E+01 OUTFLOW=0.1656E+01 BASIN STORAGE=0.7499E-03 PERCENT ERROR=   0.6

           22  MANE        3.71   2850.96    194.47      2.07      5.00   2824.55    195.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1539E+03 OUTFLOW=0.1530E+03 BASIN STORAGE=0.3984E-01 PERCENT ERROR=   0.5

           23  MANE        3.96    781.94    194.26      2.09      5.00    778.56    195.00        2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4420E+02 OUTFLOW=0.4393E+02 BASIN STORAGE=0.9523E-02 PERCENT ERROR=   0.6

           24  MANE        2.78    735.98    195.89      1.62      5.00    708.45    195.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4263E+02 OUTFLOW=0.4239E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.5

          25N  MANE        4.27   1280.11    203.94      2.13      5.00   1243.86    205.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8954E+02 OUTFLOW=0.8895E+02 BASIN STORAGE=0.4329E-01 PERCENT ERROR=   0.6

          25S  MANE        3.07   1432.12    195.33      2.28      5.00   1424.44    195.00        2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7648E+02 OUTFLOW=0.7611E+02 BASIN STORAGE=0.2473E-01 PERCENT ERROR=   0.5
```

```
              21H  MANE        4.16     64.59    199.55      1.80      5.00     64.21    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4176E+01 OUTFLOW=0.4145E+01 BASIN STORAGE=0.2185E-02 PERCENT ERROR=   0.7

              26N  MANE        4.34    695.84    209.67      1.63      5.00    689.73    210.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5568E+02 OUTFLOW=0.5537E+02 BASIN STORAGE=0.2531E-01 PERCENT ERROR=   0.5

              26S  MANE        3.14    248.14    195.91      1.63      5.00    238.82    195.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1460E+02 OUTFLOW=0.1454E+02 BASIN STORAGE=0.4459E-02 PERCENT ERROR=   0.4

               27  MANE        0.61   2077.01    190.94      1.63      5.00   2052.00    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1040E+03 OUTFLOW=0.1038E+03 BASIN STORAGE=0.2468E-01 PERCENT ERROR=   0.2


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

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *             JUN 09 1992              *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.0.3E             *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE  10/02/98  TIME  17:36:04  *                    *          (916) 551-1748              *
 *                                      *                    *                                      *
 ****************************************                    ****************************************


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


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

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

1                                                HEC-1 INPUT                                                PAGE  1

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

           1          ID        FILE <RWDAM21F.DAT>
           2          ID        THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
           3          ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
           4          ID
           5          ID        THE MODIFICIATION INCLUDE THE FOLLOWING:
           6          ID        1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
           7          ID           TO CONCENTRATION POINT AT THE APEX OF 21F
           8          ID        2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE
           9          ID
          10          ID        NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
          11          ID        1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
          12          ID        MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
          13          ID        25S.
          14          ID
          15          ID        100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
          16          ID        RAINFALL FROM NOAA ATLAS
          17          ID
          18          ID        FILE RAW4A.DAT
          19          ID        WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
          20          ID        FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
          21          ID        22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
          22          ID        THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
          23          ID        ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
          24          ID        INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
          25          ID        PROPOSED ROAD CROSSINGS.
          26          ID
          27          ID        REVISED BY GREINER 12-9-93 BY RON FERGUSON
          28          ID        REVISED BY C. J. LOVELY, COS, 3-9-94
          29          ID        Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
          30          ID           *Eliminate DSS Records
```

```
 31          ID          *Divide #26 into 26N & 26S; 26N is portion north of Jomax
 32          ID          *Add 26N @ CP21H and route with 21H to apex
 33          ID          *Add 26S @ apex
 34          ID          *Modify reach length in 26S & 26N to reflect division
 35          ID
 36          ID        ******************************************************************
 37          ID        * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
 38          ID        * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
 39          ID        ******************************************************************
 40          ID
 41          ID    September 1998 - HDR Engineering Modified by adding 2 basins to the
 42          ID    September 1998 - center of Section 36 (Alternative No. 5, adjacent basins)
 43          ID    September 1998 - Filename <RAWALT5.DAT>
 44          ID
 45          ID
 46          ID   ***************************************************************************
             *DIAGRAM
 47          IT       5 03MAR94       0     300
 48          IO       5       0       0       0
             *
1                                          HEC-1 INPUT                                    PAGE  2

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

 49          KK      16     SUB
 50          KM        RUNOFF FROM SUB-BASIN 16
 51          BA  1.4570
 52          PH       0     9.7    0.77    1.51    2.65    3.00    3.23    3.66
 53          LS       0      83     9.8       0       0       0       0       0
 54          UK     217   .0581     .20     100
 55          RK   14800   .0216    .045       0    TRAP      25       3
             *

 56          KK      17     SUB
 57          KM        RUNOFF FROM SUB-BASIN 17
 58          BA  1.1851       0       0
 59          LS       0      83     9.8
 60          UK     285   .0421     .20     100       0       0       0
 61          RK   12200   .0254    .045       0    TRAP      25       3
             *

 62          KK      18     SUB
 63          KM        RUNOFF FROM SUB-BASIN 18
 64          BA  1.2641
 65          LS       0      83     6.5       0
 66          UK     285   .0421     .20     100       0       0       0
 67          RK   10840   .0259    .045       0    TRAP      25       3
             *

 68          KK     19A      CP
 69          KM        COMBINE HYDROGRAPHS SUB16, SUB17 AND SUB18
 70          HC       3
             *

 71          KK     19B      CP
 72          KM        ROUTE CP19A TO CP19B
 73          RS       1    FLOW      -1       0       0
 74          RC    .055    .040    .055    1100   .0155       0       0       0
 75          RX       0       1     126     132     167     173     298     299
 76          RY      10       8       3       0       0       3       8      10
             *

 77          KK      15     SUB
 78          KM        RUNOFF FROM SUBBASIN 15
 79          BA  1.3702       0       0
 80          LS       0      82     5.4       0
```

```
 81          UK     217   .0581     .20     100       0       0       0
 82          RK   21200   .0236    .045       0    TRAP      25       3
             *

 83          KK     19C      CP
 84          KM        COMBINE HYDROGRAPHS SUB15 & CP19B
 85          HC       2
             *
1                                          HEC-1 INPUT                                          PAGE  3

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

 86          KK    19.1      CP
 87          KM        ROUTE CP 19C TO 19.1
 88          RS       1    FLOW      -1       0       0
 89          RC    .055    .040    .055    1800   .0200       0       0
 90          RX       0       1     151     166     216     231     381     382
 91          RY      10       9       3       0       0       3       9      10
             *

 92          KK      19     SUB
 93          KM        RUNOFF FROM SUB-BASIN 19
 94          BA  0.1872
 95          LS       0      84     7.2       0
 96          UK     275   .0800     .20     100       0       0       0
 97          RK    3730   .0352    .045    .160    TRAP      15       3
 98          RK    1800   .0200    .045       0    TRAP      50      30
             *

 99          KK      20     SUB
100          KM        RUNOFF FROM SUB-BASIN 20
101          BA  0.5698       0       0
102          LS       0      84     3.6       0
103          UK     300   .0750     .20     100       0       0       0
104          RK    9640   .0197    .045       0    TRAP      15       3
             *

105          KK    CP20      CP
106          KM        COMBINE SUB 19, SUB 20 AND CP 19.1
107          HC       3
             *
108          KM    *******BEGIN SUBAREA 21 BREAKDOWN-3/94 REVISIONS*****

109          KK  RRCP20      CP
110          KM        ROUTE CP20 TO CP 21A, WHICH IS 4600'
111          RS       1    FLOW      -1       0       0
112          RC    .055    .040    .055    4600   .0217       0       0       0
113          RX       0      30      60      85     195     220     250     280
114          RY      10       4       1       0       0       1       4      10
             *

115          KK     21A     SUB
116          KM        RUNOFF FROM SUB-BASIN 21A
117          BA     .42       0       0
118          LS       0      80     6.4       0       0       0
119          UK     297   .0558     .20     100       0       0       0
120          RK    6400   .0344    .045       0    TRAP      10       3
             *

121          KK   CP21A
122          HC       2
             *
1                                          HEC-1 INPUT                                          PAGE  4

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
 123          KK   RR21A       CP
 124          KM        ROUTE CP21A TO 21B    WHICH IS 960'
 125          RS       1    FLOW       -1       0       0
 126          RC    .055    .040     .055     960   .0156       0       0       0
 127          RX       0      10       60     205     295     440     490     500
 128          RY       6       4        2       0       0       2       4       6
              *

 129          KK     21B     SUB
 130          KM        RUNOFF FROM SUB-BASIN 21B
 131          BA   0.276       0        0
 132          LS       0      80      6.4       0       0       0
 133          UK     297   .0558      .20     100       0       0       0
 134          RK    6300   .0381     .045       0    TRAP      10       3
              *

 135          KK   CP21B
 136          HC       2
              *

 137          KK   RR21B       CP
 138          KM        ROUTE CP21B TO 21C    WHICH IS 4400'
 139          RS       1    FLOW       -1       0       0
 140          RC    .055    .040     .055    4400   .0205       0       0       0
 141          RX       0      10       60     205     295     440     490     500
 142          RY       6       4        2       0       0       2       4       6
              *

 143          KK     21C     SUB
 144          KM        RUNOFF FROM SUB-BASIN 21C
 145          BA    .748       0        0
 146          LS       0      80      6.4       0       0       0
 147          UK     297   .0558      .20     100       0       0       0
 148          RK    9900   .0328     .045       0    TRAP      20       3
              *

 149          KK   CP21C
 150          HC       2
              *

 151          KK   RR21C       CP
 152          KM        ROUTE CP21C TO 21D    WHICH IS 5700'
 153          RS       1    FLOW       -1       0       0
 154          RC    .055    .040     .055    5700   .0181       0       0       0
 155          RX       0      20      175     210     300     335     490     510
 156          RY     5.5     3.5      2.5       0       0     2.5     3.5     5.5
              *

 157          KK     21D     SUB
 158          KM        RUNOFF FROM SUB-BASIN 21D
 159          BA   1.059       0        0
 160          LS       0      80      6.4       0       0       0
 161          UK     297   .0558      .20     100       0       0       0
 162          RK   14500   .0252     .045       0    TRAP      30       3
              *
```



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

 163          KK   CP21D
 164          HC       2
              *

 165          KK   RR21D       CP
 166          KM        ROUTE CP21D TO 21E    WHICH IS 1100'
```

```
167          RS       1    FLOW      -1       0       0
168          RC    .055    .040    .055    1100   .0200       0       0       0
169          RX       0      20     175     210     300     335     490     510
170          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
             *

171          KK     21E     SUB
172          KM         RUNOFF FROM SUB-BASIN 21E
173          BA   0.257       0       0
174          LS       0      80     6.4       0       0       0
175          UK     297   .0333     .20     100       0       0       0
176          RK    6600   .0288    .045       0    TRAP      15       3
             *

177          KK   CP21E
178          HC       2
             *

179          KK   RR21E      CP
180          KM         ROUTE CP21E TO 21F    WHICH IS 2800'
181          RS       1    FLOW      -1       0       0
182          RC    .055    .040    .055    2800   .0143       0       0       0
183          RX       0      70     170     180     230     240     340     410
184          RY    10.5     4.5     3.5       0       0     3.5     4.5    10.5
             *

185          KK     21F     SUB
186          KM         RUNOFF FROM SUB-BASIN 21F
187          BA   0.469       0       0
188          LS       0      80     6.4       0       0       0
189          UK     297   .0333     .20     100       0       0       0
190          RK   10400   .0279    .045       0    TRAP      20       3
             *

191          KK   CP21F
192          HC       2
             *

193          KK   RR21F      CP
194          KM   ROUTE CP21F TO 21G (1900' DOWNSTREAM)
195          RS       1    FLOW      -1       0       0
196          RC    .055    .040    .055    1900   .0158       0       0       0
197          RX       0      20      70     345     455     730     780     800
198          RY      10       8       2       0       0       2       8      10
             *
```

1 HEC-1 INPUT PAGE 6

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

199          KK     21G     SUB
200          KM   RUNOFF FROM SUB-BASIN 21G
201          BA   .0172       0       0
202          LS       0      80     6.4       0       0       0
203          UK     297   .0333     .20     100       0       0       0
204          RK    4000   .0300    .045       0    TRAP      10       3
             *

205          KK   CP21G
206          HC       2
             *

207          KK      22     SUB
208          KM         RUNOFF FROM SUB-BASIN 22
209          BA  1.3860
210          LS       0      84     5.1       0
211          UK     225   .0590     .20     100       0       0       0       0
```

```
212          RK   13000   .0238    .045       0    TRAP      25       3
             *

213          KK      23     SUB
214          KM        RUNOFF FROM SUB-BASIN 23
215          BA  0.3945       0       0
216          LS       0      84     6.3       0
217          UK     225   .0590     .20     100       0       0       0
218          RK   10200   .0304    .045       0    TRAP      20       3
             *

219          KK     24A      CP
220          KM        COMBINE HYDROGRAPHS FOR SUB 22 AND SUB 23
221          HC       2
             *

222          KK    24.1      CP
223          KM        ROUTE CP 24A TO CP 24.1
224          RS       3    FLOW      -1       0       0
225          RC    .055    .040    .055    6800   .0257       0       0       0
226          RX       0       1     101     107     122     128     228     229
227          RY      10       8       3       0       0       3       8      10
             *

228          KK      24     SUB
229          KM        RUNOFF FROM SUB-BASIN 24
230          KM        DRAINAGE AREA CHANGED TO MATCH VALUE USED BY MICHAEL BAKER
231          KM        Jr., INC.
232          BA  0.4907       0       0
233          LS       0      77     6.8       0
234          UK     295   .0438     .20     100       0       0       0
235          RK    6800   .0257    .045       0    TRAP      15       3
             *
1                                        HEC-1 INPUT                                                    PAGE  7

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

236          KK   24.2A      CP
237          KM        COMBINE SUB 24 & CP 24.1 - APEX
238          HC       2
             *

239          KK     25N       SUB
240          KM        RUNOFF FROM SUB-BASIN 25N - APEX
241          BA  0.7834       0       0       0       0       0       0       0
242          LS       0      84     9.0       0
243          UK     295   .0438     .20     100       0       0       0
244          RK   16700   .0302    .045       0    TRAP      25       3
             *

245          KK     25S     SUB
246          KM        RUNOFF FROM SUB-BASIN 25S - APEX
247          BA  0.6256       0       0       0       0       0       0       0
248          LS       0      86     9.0       0
249          UK     295   .0438     .20     100       0       0       0
250          RK    8900   .0278    .045       0    TRAP      25       3
             *

251          KK    25.1      CP
252          KM        COMBINE HYDROGRAPHS FOR SUB-BASINS 25N AND 25S
253          HC       2
             *

254          KK   24.2B      CP
255          KM        COMBINE TOTAL HYDROGRAPH 24.2A WITH 25.1
256          HC       2
```

```
                 *
257              KK  PIMARD      CP
258              KM   ROUTE THE TOTAL HYDROGRAPH AT THE CONCENTRATION POINT
259              KM   24.2B TO THE CULVERT AT THE PIMA ROAD. THERE IS NO
260              KM   CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
261              RS       1    FLOW      -1       0       0
262              RC    .055    .040    .055    2000   .0287       0       0       0
263              RX       0       1     101     107     122     128     228     229
264              RY      10       8       3       0       0       3       8      10
                 *
265              KK  RR24.2      CP
266              KM   ROUTE THE TOTAL HYDROGRAPH AT CONCENTRATION POINT
267              KM   24.2B FROM THE CULVERT UNDER PIMA ROAD TO CONCENTRATION
268              KM   POINT 21.05.
269              RS       1    FLOW      -1       0       0
270              RC    .055    .040    .055    3050   .0238       0       0       0
271              RX       0       1     101     107     122     128     228     229
272              RY      10       8       3       0       0       3       8      10
                 *
                 *
1                                                HEC-1 INPUT                                                PAGE  8

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

273              KK  C21.05 CONFLUENCE OF DGB CHANNELS NEAR MID-SECTION 36
274              KM         COMBINE HYDROGRAPH CP21G WITH HYDROGRAPH RR24.2
275              KM         (FROM THE PIMA ROAD CULVERT)
276              HC       2
                 *  ******************************************************************************

277              KK    DAM1
278              KM   UPPER, LARGER BASIN IN THE 2 BASIN SYSTEM
279              KO       3
280              RS       1    FLOW       0
281              SV       0     108     227     359     503     662     835    1023    1228
282              SE    2165    2170    2175    2180    2185    2190    2195    2200    2205
283              SS    2195     700     3.2     1.5
                 *  2 - 36" RCP Culverts for outlet
284              SL    2165    14.1      .6      .5
                 *  ******************************************************************************
                 *

285              KK  RR24.3      CP
286              KM   ROUTE THE TOTAL HYDROGRAPH FROM THE UPPER DETENTION BASIN TO THE LOWER BASIN
287              KM   VIA A CONSTRUCTED/NATURAL CHANNEL
288              KM   POINT 21.05.
289              RS       1    FLOW      -1       0       0
290              RC    .055    .040    .055    1600   .0238       0       0       0
291              RX       0       1     101     107     122     128     228     229
292              RY      10       8       3       0       0       3       8      10
                 *
                 *  ******************************************************************************

293              KK    DAM2
294              KM   LOWER, SMALLER BASIN IN THE 2 BASIN SYSTEM
295              KO       3
296              RS       1    FLOW       0
297              SV       0      41     150     266     390     521     660     807
298              SE    2123    2125    2130    2135    2140    2145    2150    2155
299              SS    2145     200     3.2     1.5
                 *  2 - 36" RCP Culverts for outlet
300              SL    2123    14.1      .6      .5
                 *  ******************************************************************************
                 *
```

```
 301          KK    R21G      CP
 302          KM        ROUTE CP21G(21.05)TO 21H WHICH IS 3100'
 303          RS       1    FLOW      -1       0       0
 304          RC    .055    .040    .055    1700   .0194       0       0       0
 305          RX       0      90     120     355     585     820     850     940
 306          RY       9       4     1.5       0       0     1.5       4       9
              *
1                                          HEC-1 INPUT                                                    PAGE  9

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

 307          KK     21H     SUB
 308          KM        RUNOFF FROM SUB-BASIN 21H
 309          BA   .0431       0       0
 310          LS       0      80     6.4       0       0       0
 311          UK     297   .0333     .20     100       0       0       0
 312          RK    4600   .0278    .045       0    TRAP      20       3
              *

 313          KK     26N
 314          KM       Runoff from sub-basin 26N
 315          BA   .6376       0       0
 316          LS       0      75    12.7       0
 317          UK     200   .0250     .20     100       0
 318          RK   12000   .0263    .045       0    TRAP      35      10
              *

 319          KK   CP21H   JOMAX RD
 320          KO       3
 321          HC       3
              *

 322          KK   RR21H      CP
 323          KM        ROUTE HYDROGRAPH AT CONCENTRATION POINT 21H   DOWNSTREAM FROM
 324          KM        JOMAX ROAD          THERE IS NO ADDITIONAL CONTRIBUTING
 325          KM        DRAINAGE AREA AT THIS CONCENTRATION POINT.  USED CHANNEL
 326          KM        GEOMETRY                          FROM REACH SIX
 327          KM            DEVELOPED BY C. LOVELY
 328          RS       1    FLOW      -1       0       0
 329          RC    .055    .040    .055    2390   .0188       0       0       0
 330          RX       0      90     120     355     585     820     850     940
 331          RY       9       4     1.5       0       0     1.5       4       9
              *

 332          KK     26S     SUB
 333          KM       RUNOFF FROM SUB-BASIN 26S
 334          BA  0.1672       0       0
 335          LS       0      75    12.7       0
 336          UK     200   .0250     .20     100       0       0       0
 337          RK    4000   .0263    .045       0    TRAP      35      10
              *

 338          KK  *APEX*      CP
 339          KM        COMBINE FLOW FROM SUB-BASIN 26 ,
 340          KM            AND ROUTED HYDROGRAPH FROM JOMAX ROAD.
 341          HC       2
              *
 342          KM        *********END SUBAREA 21 REVISIONS************

 343          KK   CP27A      CP AT HAPPY VALLEY RD
 344          KM        ROUTE FLOW FROM CONCENTRATION POINT APEX  TO 27A (HAPPY VALLEY
 345          KM        ROAD).  THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION PT.
 346          KM
 347          RS       1    FLOW      -1       0       0
 348          RC    .055    .040    .055    1600   .0196       0       0       0
```

```
1                                          HEC-1 INPUT                                                PAGE 10

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

           349          RX       0       1     201     211     261     271     471     472
           350          RY      10       4       2       0       0       2       4      10
                        *

           351          KK   CP27B      CP AT MILLER RD
           352          KM        ROUTE FLOW FROM CONCENTRATION POINT 27B TO 27C (MILLER ROAD).
           353          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
           354          RS       1    FLOW      -1       0       0
           355          RC    .055    .040    .055    3300   .0196       0       0       0
           356          RX       0       1     201     211     261     271     471     472
           357          RY      10       4       2       0       0       2       4      10
                        *

           358          KK   CP27C      CP AT PINNACLE PEAK RD
           359          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (PINNACLE PK ROAD).
           360          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
           361          RS       1    FLOW      -1       0       0
           362          RC    .055    .040    .055    3300   .0196       0       0       0
           363          RX       0       1     201     211     261     271     471     472
           364          RY      10       4       2       0       0       2       4      10
                        *

           365          KK   CP27D     CP AT SCOTTSDALE RD
           366          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (SCOTTSDALE ROAD)
           367          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
           368          RS       1    FLOW      -1       0       0
           369          RC    .055    .040    .055    1000   .0196       0       0       0
           370          RX       0       1     201     211     261     271     471     472
           371          RY      10       4       2       0       0       2       4      10
                        *

           372          KK      27     SUB
           373          KM        RUNOFF FROM SUB-BASIN 27
           374          BA  1.1913       0       0
           375          LS       0      75    12.7       0
           376          UK     200   .0250     .20     100       0       0       0
           377          RK    1500   .0263    .045       0    TRAP      35      10
                        *

           378          KK    CP27      CP AT SCOTTSDALE RD
           379          KO       3
           380          KM        COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
           381          KM        POINT 27D WITH SUB 27 .  TOTAL FLOW AT
           382          KM        SCOTTSDALE ROAD FOR FAN 4.
           383          HC       2
                        *
           384          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

    49          16
                 .
                 .
    56           .          17
                 .           .
                 .           .
    62           .           .          18
                 .           .           .
                 .           .           .
```

```
 68        19A.......................
            V
            V
 71        19B
            .
            .
 77         .          15
            .           .
            .           .
 83        19C............
            V
            V
 86       19.1
            .
            .
 92         .          19
            .           .
            .           .
 99         .           .          20
            .           .           .
            .           .           .
105       CP20........................
            V
            V
109      RRCP20
            .
            .
115         .         21A
            .           .
            .           .
121      CP21A............
            V
            V
123      RR21A
            .
            .
129         .         21B
            .           .
            .           .
135      CP21B............
            V
            V
137      RR21B
            .
            .
143         .         21C
            .           .
            .           .
149      CP21C............
            V
            V
151      RR21C
            .
            .
157         .         21D
            .           .
            .           .
163      CP21D............
            V
            V
165      RR21D
            .
            .
171         .         21E
            .           .
            .           .
177      CP21E............
```

```
                V
                V
179        RR21E
                .
                .
185            .        21F
               .          .
               .          .
191        CP21F...........
                V
                V
193        RR21F
                .
                .
199            .        21G
               .          .
               .          .
205        CP21G...........
                .
                .
207            .         22
               .          .
               .          .
213            .          .         23
               .          .          .
               .          .          .
219            .        24A...........
               .          V
               .          V
222            .       24.1
               .          .
               .          .
228            .          .         24
               .          .          .
               .          .          .
236            .      24.2A...........
               .          .
               .          .
239            .          .        25N
               .          .          .
               .          .          .
245            .          .          .        25S
               .          .          .          .
               .          .          .          .
251            .          .      25.1...........
               .          .          .
               .          .          .
254            .      24.2B...........
               .          V
               .          V
257            .     PIMARD
               .          V
               .          V
265            .     RR24.2
               .          .
               .          .
273       C21.05...........
                V
                V
277         DAM1
                V
                V
285       RR24.3
                V
                V
293         DAM2
                V
```

```
                V
  301         R21G
                .
                .
  307           .          21H
                .            .
                .            .
  313           .            .          26N
                .            .            .
                .            .            .
  319        CP21H.......................
                V
                V
  322        RR21H
                .
                .
  332           .          26S
                .            .
                .            .
  338       *APEX*............
                V
                V
  343        CP27A
                V
                V
  351        CP27B
                V
                V
  358        CP27C
                V
                V
  365        CP27D
                .
                .
  372           .           27
                .            .
                .            .
  378         CP27............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN 09 1992               *
*           VERSION 4.0.3E              *
*                                       *
*  RUN DATE  10/02/98  TIME  17:36:04   *
*                                       *
*****************************************
```

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

FILE <RWDAM21F.DAT>
THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.

THE MODIFICIATION INCLUDE THE FOLLOWING:
1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   TO CONCENTRATION POINT AT THE APEX OF 21F
2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE

NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
25S.

```
                    100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
                    RAINFALL FROM NOAA ATLAS

                    FILE RAW4A.DAT
                    WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
                    FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
                    22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
                    THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
                    ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
                    INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
                    PROPOSED ROAD CROSSINGS.

                    REVISED BY GREINER 12-9-93 BY RON FERGUSON
                    REVISED BY C. J. LOVELY, COS, 3-9-94
                    Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
                       *Eliminate DSS Records
                       *Divide #26 into 26N & 26S; 26N is portion north of Jomax
                       *Add 26N @ CP21H and route with 21H to apex
                       *Add 26S @ apex
                       *Modify reach length in 26S & 26N to reflect division

                    ******************************************************************
                    * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
                    * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
                    ******************************************************************

                 September 1998 - HDR Engineering Modified by adding 2 basins to the
                 September 1998 - center of Section 36 (Alternative No. 5, adjacent basins)
                 September 1998 - Filename <RAWALT5.DAT>


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

  48 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      3MAR94  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      4MAR94  ENDING DATE
                      NDTIME        0055  ENDING TIME
                      ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL    0.08 HOURS
                      TOTAL TIME BASE   24.92 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
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
```

```
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0


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


            **************
            *            *
 277 KK     *      DAM1  *
            *            *
            **************

 279 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

                HYDROGRAPH ROUTING DATA

 280 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC        0.00  INITIAL CONDITION
                          X        0.00 WORKING R AND D COEFFICIENT

 281 SV            STORAGE         0.0     108.0     227.0     359.0     503.0     662.0     835.0    1023.0    1228.0

 282 SE          ELEVATION     2165.00   2170.00   2175.00   2180.00   2185.00   2190.00   2195.00   2200.00   2205.00

 284 SL          LOW-LEVEL OUTLET
                      ELEVL     2165.00  ELEVATION AT CENTER OF OUTLET
                      CAREA       14.10  CROSS-SECTIONAL AREA
                       COQL        0.60  COEFFICIENT
                       EXPL        0.50  EXPONENT OF HEAD

 283 SS          SPILLWAY
                       CREL     2195.00  SPILLWAY CREST ELEVATION
                      SPWID      700.00  SPILLWAY WIDTH
                       COQW        3.20  WEIR COEFFICIENT
                       EXPW        1.50  EXPONENT OF HEAD
                                                    ***
                                        COMPUTED OUTFLOW-ELEVATION DATA

          OUTFLOW       0.00     99.13    109.13    121.38    136.72    156.51    182.99    220.26    276.59    371.63
        ELEVATION    2165.00   2167.13   2167.59   2168.20   2169.06   2170.32   2172.27   2175.54   2181.62   2195.00

          OUTFLOW     444.21    944.76   2297.53   4926.77   9256.68  15711.51  24715.46  36692.74  52067.56  71264.13
        ELEVATION    2195.10   2195.40   2195.90   2196.60   2197.50   2198.60   2199.90   2201.40   2203.10   2205.00

                                        COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       0.00     46.11     55.88     69.12     87.71    108.00    115.64    162.12    227.00    241.21
          OUTFLOW       0.00     99.13    109.13    121.38    136.72    151.72    156.51    182.99    214.56    220.26
        ELEVATION    2165.00   2167.13   2167.59   2168.20   2169.06   2170.00   2170.32   2172.27   2175.00   2175.54
```

```
          STORAGE     359.00    405.59    503.00    662.00    835.00    838.80    850.11    868.93    895.26    929.11
          OUTFLOW     262.78    276.59    303.43    339.25    371.63    444.23    944.73   2297.19   4926.70   9256.76
        ELEVATION    2180.00   2181.62   2185.00   2190.00   2195.00   2195.10   2195.40   2195.90   2196.60   2197.50

          STORAGE     970.46   1019.33   1023.00   1080.48   1150.14   1228.00
          OUTFLOW   15711.42  24714.69  25445.36  36692.66  52067.81  71264.14
        ELEVATION    2198.60   2199.90   2200.00   2201.40   2203.10   2205.00

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

                        HYDROGRAPH AT STATION     DAM1

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                   (CFS)
+    3829.      4.67             1084.        480.        462.         462.
                             (INCHES)        0.778       1.377       1.377        1.377
                              (AC-FT)         537.        952.        952.         952.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
      884.      4.67              843.        596.        574.         574.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
   2196.31      4.67            2195.21     2187.30     2186.48      2186.48

                        CUMULATIVE AREA =   12.96 SQ MI


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


            **************
            *            *
  293 KK    *      DAM2  *
            *            *
            **************

  295 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

  296 RS          STORAGE ROUTING
                        NSTPS           1  NUMBER OF SUBREACHES
                         ITYP        FLOW  TYPE OF INITIAL CONDITION
                       RSVRIC        0.00  INITIAL CONDITION
                            X        0.00 WORKING R AND D COEFFICIENT

  297 SV            STORAGE         0.0      41.0     150.0     266.0     390.0     521.0     660.0     807.0

  298 SE          ELEVATION     2123.00   2125.00   2130.00   2135.00   2140.00   2145.00   2150.00   2155.00

  300 SL          LOW-LEVEL OUTLET
                        ELEVL     2123.00  ELEVATION AT CENTER OF OUTLET
                        CAREA       14.10  CROSS-SECTIONAL AREA
                         COQL        0.60  COEFFICIENT
                         EXPL        0.50  EXPONENT OF HEAD
```

```
299 SS          SPILLWAY
                      CREL     2145.00  SPILLWAY CREST ELEVATION
                     SPWID      200.00  SPILLWAY WIDTH
                      COQW        3.20  WEIR COEFFICIENT
                      EXPW        1.50  EXPONENT OF HEAD

                                                  ***

                                        COMPUTED OUTFLOW-ELEVATION DATA

          OUTFLOW       0.00     98.64    107.95    119.20    133.07    150.60    173.44    204.45    248.96    318.24
        ELEVATION    2123.00   2125.11   2125.53   2126.09   2126.85   2127.93   2129.53   2132.08   2136.46   2145.00

          OUTFLOW     340.56    487.76    880.36   1638.90   2883.86   4735.76   7315.08  10742.31  15137.91  20622.39
        ELEVATION    2145.10   2145.41   2145.91   2146.61   2147.51   2148.61   2149.91   2151.41   2153.10   2155.00

                                     COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       0.00     41.00     43.47     52.58     64.68     81.26    104.80    139.85    150.00    198.25
          OUTFLOW       0.00     95.95     98.64    107.95    119.20    133.07    150.60    173.44    179.51    204.45
        ELEVATION    2123.00   2125.00   2125.11   2125.53   2126.09   2126.85   2127.93   2129.53   2130.00   2132.08

          STORAGE     266.00    302.30    390.00    521.00    523.90    532.33    546.30    565.80    590.83    621.39
          OUTFLOW     235.04    248.96    279.75    318.24    340.54    487.79    880.25   1639.04   2883.92   4735.55
        ELEVATION    2135.00   2136.46   2140.00   2145.00   2145.10   2145.41   2145.91   2146.61   2147.51   2148.61

          STORAGE     657.50    660.00    701.39    751.26    807.00
          OUTFLOW    7314.87   7507.97  10742.52  15137.80  20622.39
        ELEVATION    2149.91   2150.00   2151.41   2153.10   2155.00

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

                       HYDROGRAPH AT STATION     DAM2

  PEAK FLOW     TIME                      MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     302.     21.58       302.        246.        237.        237.
                       (INCHES)     0.216       0.707       0.707       0.707
                        (AC-FT)      150.        489.        489.        489.

 PEAK STORAGE   TIME                     MAXIMUM AVERAGE STORAGE
                                   6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
     465.     21.67                464.        362.        349.        349.

  PEAK STAGE    TIME                      MAXIMUM AVERAGE STAGE
                                   6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
   2142.86     21.67             2142.83     2138.59     2138.02     2138.02

                       CUMULATIVE AREA =   12.96 SQ MI


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


           **************
           *            *
319 KK     *     CP21H  *        JOMAX RD
           *            *
           **************
```

```
  320 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

  321 HC          HYDROGRAPH COMBINATION
                        ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0

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

                          HYDROGRAPH AT STATION    CP21H

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                           (CFS)
+     741.      3.42                307.        274.        264.        264.
                         (INCHES)    0.209       0.748       0.748       0.748
                          (AC-FT)    152.        544.        544.        544.

                         CUMULATIVE AREA =   13.64 SQ MI

MANE2 NPLAN,NSTM       1      0


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


            **************
            *            *
  378 KK    *      CP27  *          CP AT SCOTTSDALE RD
            *            *
            **************

  379 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                                 COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
                                 POINT 27D WITH SUB 27 .  TOTAL FLOW AT
                                 SCOTTSDALE ROAD FOR FAN 4.

  383 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0

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

                          HYDROGRAPH AT STATION     CP27

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                           (CFS)
+    2060.      3.17                495.        324.        313.        313.
                         (INCHES)    0.307       0.804       0.805       0.805
                          (AC-FT)    245.        644.        644.        644.

                         CUMULATIVE AREA =   15.00 SQ MI
```

1

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	16	2683.	3.25	323.	81.	78.	1.46		
+	HYDROGRAPH AT	17	2184.	3.25	262.	66.	64.	1.19		
+	HYDROGRAPH AT	18	2431.	3.25	273.	69.	66.	1.26		
+	3 COMBINED AT	19A	7297.	3.25	857.	216.	208.	3.91		
+	ROUTED TO	19B	7225.	3.33	857.	216.	208.	3.91		
+									7.03	3.33
+	HYDROGRAPH AT	15	1901.	3.42	281.	71.	68.	1.37		
+	2 COMBINED AT	19C	8929.	3.33	1138.	287.	277.	5.28		
+	ROUTED TO	19.1	8529.	3.33	1138.	287.	277.	5.28		
+									6.10	3.33
+	HYDROGRAPH AT	19	445.	3.25	42.	11.	10.	0.19		
+	HYDROGRAPH AT	20	1086.	3.25	125.	31.	30.	0.57		
+	3 COMBINED AT	CP20	9887.	3.33	1305.	329.	317.	6.03		
+	ROUTED TO	RRCP20	9129.	3.42	1303.	329.	317.	6.03		
+									4.09	3.42
+	HYDROGRAPH AT	21A	784.	3.25	81.	20.	20.	0.42		
+	2 COMBINED AT	CP21A	9593.	3.42	1384.	350.	337.	6.45		
+	ROUTED TO	RR21A	9383.	3.50	1383.	350.	337.	6.45		
+									3.46	3.50
+	HYDROGRAPH AT	21B	512.	3.25	53.	13.	13.	0.28		
+	2 COMBINED AT	CP21B	9671.	3.42	1436.	363.	350.	6.73		
+	ROUTED TO	RR21B	8973.	3.58	1435.	363.	350.	6.73		
+									3.74	3.58

```
+          HYDROGRAPH AT
                          21C      1248.    3.25       144.       36.       35.      0.75
+          2 COMBINED AT
                          CP21C    9578.    3.50      1578.      399.      385.      7.48
+          ROUTED TO
                          RR21C    7972.    3.67      1571.      399.      385.      7.48
+                                                                                   4.10      3.67
+          HYDROGRAPH AT
                          21D      1500.    3.33       204.       51.       50.      1.06
+          2 COMBINED AT
                          CP21D    8765.    3.67      1773.      451.      434.      8.54
+          ROUTED TO
                          RR21D    8701.    3.75      1773.      451.      434.      8.54
+                                                                                   4.16      3.75
+          HYDROGRAPH AT
                          21E       402.    3.33        50.       12.       12.      0.26
+          2 COMBINED AT
                          CP21E    8840.    3.75      1822.      463.      446.      8.79
+          ROUTED TO
                          RR21E    8580.    3.75      1819.      463.      446.      8.79
+                                                                                   6.35      3.75
+          HYDROGRAPH AT
                          21F       666.    3.33        90.       23.       22.      0.47
+          2 COMBINED AT
                          CP21F    8865.    3.75      1908.      486.      468.      9.26
+          ROUTED TO
                          RR21F    8833.    3.83      1905.      486.      468.      9.26
+                                                                                   2.70      3.83
+          HYDROGRAPH AT
                          21G        26.    3.33         3.        1.        1.      0.02
+          2 COMBINED AT
                          CP21G    8841.    3.83      1908.      487.      469.      9.28
+          HYDROGRAPH AT
                          22       2825.    3.25       307.       77.       74.      1.39
+          HYDROGRAPH AT
                          23        779.    3.25        88.       22.       21.      0.39
+          2 COMBINED AT
                          24A      3603.    3.25       395.       99.       96.      1.78
+          ROUTED TO
                          24.1     2924.    3.42       395.       99.       96.      1.78
+                                                                                   5.59      3.42
+          HYDROGRAPH AT
                          24        708.    3.25        85.       21.       21.      0.49
+          2 COMBINED AT
                          24.2A    3467.    3.42       479.      121.      116.      2.27
           HYDROGRAPH AT
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```
+                    25N    1244.   3.42     177.     45.     43.    0.78
        HYDROGRAPH AT
+                    25S    1424.   3.25     152.     38.     37.    0.63
        2 COMBINED AT
+                   25.1    2431.   3.33     329.     83.     80.    1.41
        2 COMBINED AT
+                  24.2B    5611.   3.42     809.    204.    197.    3.68
        ROUTED TO
+                 PIMARD    5550.   3.42     808.    204.    197.    3.68
+                                                            6.86    3.42
        ROUTED TO
+                 RR24.2    5294.   3.50     808.    204.    197.    3.68
+                                                            6.96    3.50
        2 COMBINED AT
+                 C21.05   12190.   3.75    2714.    691.    666.   12.96
        ROUTED TO
+                   DAM1    3829.   4.67    1084.    480.    462.   12.96
+                                                         2196.31    4.67
        ROUTED TO
+                 RR24.3    3767.   4.75    1084.    479.    462.   12.96
+                                                            6.19    4.75
        ROUTED TO
+                   DAM2     302.  21.58     302.    246.    237.   12.96
+                                                         2142.86   21.67
        ROUTED TO
+                    R21G     302.  21.75     302.    244.    235.   12.96
+                                                            0.36   21.83
        HYDROGRAPH AT
+                    21H      64.   3.33       8.      2.      2.    0.04
        HYDROGRAPH AT
+                    26N     690.   3.50     110.     28.     27.    0.64
        3 COMBINED AT
+                  CP21H     741.   3.42     307.    274.    264.   13.64
        ROUTED TO
+                  RR21H     620.   3.58     302.    271.    261.   13.64
+                                                            0.58    3.58
        HYDROGRAPH AT
+                    26S     239.   3.25      29.      7.      7.    0.17
        2 COMBINED AT
+                 *APEX*     738.   3.58     325.    278.    268.   13.81
        ROUTED TO
+                  CP27A     722.   3.58     324.    277.    267.   13.81
+                                                            1.75    3.58
        ROUTED TO
+                  CP27B     686.   3.75     321.    275.    265.   13.81
+                                                            1.70    3.75
        ROUTED TO
+                  CP27C     653.   3.83     319.    273.    263.   13.81
```

```
+                                                                                                                    1.66        3.83
          ROUTED TO
+                          CP27D       650.    3.83         318.        272.        262.       13.81
+                                                                                                                    1.66        3.83
          HYDROGRAPH AT
+                             27      2052.    3.17         207.         52.         50.        1.19
          2 COMBINED AT
+                           CP27      2060.    3.17         495.        324.        313.       15.00
1
                                    SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                        (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                  INTERPOLATED TO
                                                                              COMPUTATION INTERVAL
            ISTAQ    ELEMENT      DT        PEAK    TIME TO      VOLUME      DT        PEAK    TIME TO      VOLUME
                                                      PEAK                                        PEAK

                                (MIN)      (CFS)     (MIN)       (IN)    (MIN)      (CFS)     (MIN)       (IN)
                16   MANE        3.27    2790.08    197.97       2.08     5.00    2682.70    195.00       2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1620E+03 OUTFLOW=0.1613E+03 BASIN STORAGE=0.4299E-01 PERCENT ERROR=   0.4

                17   MANE        3.68    2249.16    195.52       2.07     5.00    2183.62    195.00       2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1317E+03 OUTFLOW=0.1309E+03 BASIN STORAGE=0.4985E-01 PERCENT ERROR=   0.6

                18   MANE        3.18    2466.56    196.97       2.02     5.00    2431.13    195.00       2.02

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1368E+03 OUTFLOW=0.1360E+03 BASIN STORAGE=0.5145E-01 PERCENT ERROR=   0.6

                15   MANE        3.51    1901.39    207.57       1.93     5.00    1901.08    205.00       1.93

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1417E+03 OUTFLOW=0.1409E+03 BASIN STORAGE=0.5998E-01 PERCENT ERROR=   0.5

                19   MANE        1.80     456.95    193.94       2.11     5.00     444.60    195.00       2.11

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2111E+02 OUTFLOW=0.2104E+02 BASIN STORAGE=0.3666E-02 PERCENT ERROR=   0.4

                20   MANE        3.77    1138.08    196.21       2.05     5.00    1086.14    195.00       2.05

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6254E+02 OUTFLOW=0.6220E+02 BASIN STORAGE=0.1496E-01 PERCENT ERROR=   0.5

               21A   MANE        2.36     804.58    193.66       1.81     5.00     783.53    195.00       1.81

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4070E+02 OUTFLOW=0.4053E+02 BASIN STORAGE=0.1094E-01 PERCENT ERROR=   0.4

               21B   MANE        2.56     520.22    194.23       1.81     5.00     511.65    195.00       1.81

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2674E+02 OUTFLOW=0.2663E+02 BASIN STORAGE=0.7314E-02 PERCENT ERROR=   0.4
```

```
          21C  MANE        3.23   1300.20    196.60      1.81      5.00   1248.06    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7248E+02 OUTFLOW=0.7205E+02 BASIN STORAGE=0.2485E-01 PERCENT ERROR=   0.6

          21D  MANE        3.10   1538.29    200.70      1.81      5.00   1499.66    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1026E+03 OUTFLOW=0.1020E+03 BASIN STORAGE=0.5119E-01 PERCENT ERROR=   0.5

          21E  MANE        3.04    421.12    198.38      1.81      5.00    401.68    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2490E+02 OUTFLOW=0.2476E+02 BASIN STORAGE=0.1083E-01 PERCENT ERROR=   0.5

          21F  MANE        4.33    687.84    201.28      1.80      5.00    666.34    200.00        1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4544E+02 OUTFLOW=0.4507E+02 BASIN STORAGE=0.2383E-01 PERCENT ERROR=   0.8

          21G  MANE        4.06     26.27    199.44      1.80      5.00     26.04    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1667E+01 OUTFLOW=0.1656E+01 BASIN STORAGE=0.7499E-03 PERCENT ERROR=   0.6

           22  MANE        3.71   2850.96    194.47      2.07      5.00   2824.55    195.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1539E+03 OUTFLOW=0.1530E+03 BASIN STORAGE=0.3984E-01 PERCENT ERROR=   0.5

           23  MANE        3.96    781.94    194.26      2.09      5.00    778.56    195.00        2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4420E+02 OUTFLOW=0.4393E+02 BASIN STORAGE=0.9523E-02 PERCENT ERROR=   0.6

           24  MANE        2.78    735.98    195.89      1.62      5.00    708.45    195.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4263E+02 OUTFLOW=0.4239E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.5

          25N  MANE        4.27   1280.11    203.94      2.13      5.00   1243.86    205.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8954E+02 OUTFLOW=0.8895E+02 BASIN STORAGE=0.4329E-01 PERCENT ERROR=   0.6

          25S  MANE        3.07   1432.12    195.33      2.28      5.00   1424.44    195.00        2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7648E+02 OUTFLOW=0.7611E+02 BASIN STORAGE=0.2473E-01 PERCENT ERROR=   0.5

          21H  MANE        4.16     64.59    199.55      1.80      5.00     64.21    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4176E+01 OUTFLOW=0.4145E+01 BASIN STORAGE=0.2185E-02 PERCENT ERROR=   0.7
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              26N  MANE        4.34    695.84    209.67      1.63      5.00    689.73    210.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5568E+02 OUTFLOW=0.5537E+02 BASIN STORAGE=0.2531E-01 PERCENT ERROR=   0.5

              26S  MANE        3.14    248.14    195.91      1.63      5.00    238.82    195.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1460E+02 OUTFLOW=0.1454E+02 BASIN STORAGE=0.4459E-02 PERCENT ERROR=   0.4

               27  MANE        0.61   2077.01    190.94      1.63      5.00   2052.00    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1040E+03 OUTFLOW=0.1038E+03 BASIN STORAGE=0.2468E-01 PERCENT ERROR=   0.2


*** NORMAL END OF HEC-1 ***
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```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *             JUN 09 1992               *
 *            VERSION 4.0.3E             *
 *                                       *
 *  RUN DATE  10/02/98  TIME  17:38:11   *
 *                                       *
 *****************************************
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*****************************************
*                                       *
*   U.S. ARMY CORPS OF ENGINEERS        *
*   HYDROLOGIC ENGINEERING CENTER       *
*         609 SECOND STREET             *
*      DAVIS, CALIFORNIA 95616          *
*          (916) 551-1748               *
*                                       *
*****************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
```

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

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

1 HEC-1 INPUT PAGE 1

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

   1          ID        FILE <RWDAM21F.DAT>
   2          ID        THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
   3          ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
   4          ID
   5          ID        THE MODIFICIATION INCLUDE THE FOLLOWING:
   6          ID        1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   7          ID           TO CONCENTRATION POINT AT THE APEX OF 21F
   8          ID        2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE
   9          ID
  10          ID        NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
  11          ID        1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
  12          ID        MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
  13          ID        25S.
  14          ID
  15          ID        100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
  16          ID        RAINFALL FROM NOAA ATLAS
  17          ID
  18          ID        FILE RAW4A.DAT
  19          ID        WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
  20          ID        FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
  21          ID        22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
  22          ID        THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
  23          ID        ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
  24          ID        INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
  25          ID        PROPOSED ROAD CROSSINGS.
  26          ID
  27          ID        REVISED BY GREINER 12-9-93 BY RON FERGUSON
  28          ID        REVISED BY C. J. LOVELY, COS, 3-9-94
  29          ID        Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
  30          ID           *Eliminate DSS Records
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 31          ID          *Divide #26 into 26N & 26S; 26N is portion north of Jomax
 32          ID          *Add 26N @ CP21H and route with 21H to apex
 33          ID          *Add 26S @ apex
 34          ID          *Modify reach length in 26S & 26N to reflect division
 35          ID
 36          ID       ******************************************************************
 37          ID       * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
 38          ID       * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
 39          ID       ******************************************************************
 40          ID
 41          ID    September 1998 - HDR Engineering Modified by adding 2 basins to the
 42          ID    September 1998 - center of Section 36 (Alternative No. 6, separated basins)
 43          ID    September 1998 - Filename <RAWALT6.DAT>
 44          ID
 45          ID
 46          ID   ****************************************************************************
             *DIAGRAM
 47          IT       5 03MAR94       0     300
 48          IO       5       0       0       0
             *
1                                          HEC-1 INPUT                                    PAGE  2

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

 49          KK      16     SUB
 50          KM        RUNOFF FROM SUB-BASIN 16
 51          BA  1.4570
 52          PH       0     9.7    0.77    1.51    2.65    3.00    3.23    3.66
 53          LS       0      83     9.8       0       0       0       0       0
 54          UK     217   .0581     .20     100
 55          RK   14800   .0216    .045       0    TRAP      25       3
             *

 56          KK      17     SUB
 57          KM        RUNOFF FROM SUB-BASIN 17
 58          BA  1.1851       0       0
 59          LS       0      83     9.8
 60          UK     285   .0421     .20     100       0       0       0
 61          RK   12200   .0254    .045       0    TRAP      25       3
             *

 62          KK      18     SUB
 63          KM        RUNOFF FROM SUB-BASIN 18
 64          BA  1.2641
 65          LS       0      83     6.5       0
 66          UK     285   .0421     .20     100       0       0       0
 67          RK   10840   .0259    .045       0    TRAP      25       3
             *

 68          KK     19A      CP
 69          KM        COMBINE HYDROGRAPHS SUB16, SUB17 AND SUB18
 70          HC       3
             *

 71          KK     19B      CP
 72          KM        ROUTE CP19A TO CP19B
 73          RS       1    FLOW      -1       0       0
 74          RC    .055    .040    .055    1100   .0155       0       0       0
 75          RX       0       1     126     132     167     173     298     299
 76          RY      10       8       3       0       0       3       8      10
             *

 77          KK      15     SUB
 78          KM        RUNOFF FROM SUBBASIN 15
 79          BA  1.3702       0       0
 80          LS       0      82     5.4       0
```

```
 81          UK     217   .0581     .20     100       0       0       0
 82          RK   21200   .0236    .045       0    TRAP      25       3
             *

 83          KK     19C      CP
 84          KM        COMBINE HYDROGRAPHS SUB15 & CP19B
 85          HC       2
             *
1                                        HEC-1 INPUT                                          PAGE  3

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

 86          KK    19.1      CP
 87          KM        ROUTE CP 19C TO 19.1
 88          RS       1    FLOW      -1       0       0
 89          RC    .055    .040    .055    1800   .0200       0       0
 90          RX       0       1     151     166     216     231     381     382
 91          RY      10       9       3       0       0       3       9      10
             *

 92          KK      19     SUB
 93          KM        RUNOFF FROM SUB-BASIN 19
 94          BA  0.1872
 95          LS       0      84     7.2       0
 96          UK     275   .0800     .20     100       0       0       0
 97          RK    3730   .0352    .045    .160    TRAP      15       3
 98          RK    1800   .0200    .045       0    TRAP      50      30
             *

 99          KK      20     SUB
100          KM        RUNOFF FROM SUB-BASIN 20
101          BA  0.5698       0       0
102          LS       0      84     3.6       0
103          UK     300   .0750     .20     100       0       0       0
104          RK    9640   .0197    .045       0    TRAP      15       3
             *

105          KK    CP20      CP
106          KM        COMBINE SUB 19, SUB 20 AND CP 19.1
107          HC       3
             *
108          KM    *******BEGIN SUBAREA 21 BREAKDOWN-3/94 REVISIONS*****

109          KK  RRCP20      CP
110          KM        ROUTE CP20 TO CP 21A, WHICH IS 4600'
111          RS       1    FLOW      -1       0       0
112          RC    .055    .040    .055    4600   .0217       0       0       0
113          RX       0      30      60      85     195     220     250     280
114          RY      10       4       1       0       0       1       4      10
             *

115          KK     21A     SUB
116          KM        RUNOFF FROM SUB-BASIN 21A
117          BA     .42       0       0
118          LS       0      80     6.4       0       0       0
119          UK     297   .0558     .20     100       0       0       0
120          RK    6400   .0344    .045       0    TRAP      10       3
             *

121          KK   CP21A
122          HC       2
             *
1                                        HEC-1 INPUT                                          PAGE  4

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

```
 123          KK   RR21A       CP
 124          KM        ROUTE CP21A TO 21B    WHICH IS 960'
 125          RS       1    FLOW      -1       0       0
 126          RC    .055    .040    .055     960   .0156       0       0       0
 127          RX       0      10      60     205     295     440     490     500
 128          RY       6       4       2       0       0       2       4       6
              *

 129          KK     21B     SUB
 130          KM        RUNOFF FROM SUB-BASIN 21B
 131          BA   0.276       0       0
 132          LS       0      80     6.4       0       0       0
 133          UK     297   .0558     .20     100       0       0       0
 134          RK    6300   .0381    .045       0    TRAP      10       3
              *

 135          KK   CP21B
 136          HC       2
              *

 137          KK   RR21B       CP
 138          KM        ROUTE CP21B TO 21C    WHICH IS 4400'
 139          RS       1    FLOW      -1       0       0
 140          RC    .055    .040    .055    4400   .0205       0       0       0
 141          RX       0      10      60     205     295     440     490     500
 142          RY       6       4       2       0       0       2       4       6
              *

 143          KK     21C     SUB
 144          KM        RUNOFF FROM SUB-BASIN 21C
 145          BA    .748       0       0
 146          LS       0      80     6.4       0       0       0
 147          UK     297   .0558     .20     100       0       0       0
 148          RK    9900   .0328    .045       0    TRAP      20       3
              *

 149          KK   CP21C
 150          HC       2
              *

 151          KK   RR21C       CP
 152          KM        ROUTE CP21C TO 21D    WHICH IS 5700'
 153          RS       1    FLOW      -1       0       0
 154          RC    .055    .040    .055    5700   .0181       0       0       0
 155          RX       0      20     175     210     300     335     490     510
 156          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
              *

 157          KK     21D     SUB
 158          KM        RUNOFF FROM SUB-BASIN 21D
 159          BA   1.059       0       0
 160          LS       0      80     6.4       0       0       0
 161          UK     297   .0558     .20     100       0       0       0
 162          RK   14500   .0252    .045       0    TRAP      30       3
              *
```



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

 163          KK   CP21D
 164          HC       2
              *

 165          KK   RR21D       CP
 166          KM        ROUTE CP21D TO 21E    WHICH IS 1100'
```

```
167          RS       1    FLOW      -1       0       0
168          RC    .055    .040    .055    1100   .0200       0       0       0
169          RX       0      20     175     210     300     335     490     510
170          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
             *

171          KK     21E     SUB
172          KM        RUNOFF FROM SUB-BASIN 21E
173          BA   0.257       0       0
174          LS       0      80     6.4       0       0       0
175          UK     297  .0333     .20     100       0       0       0
176          RK    6600  .0288    .045       0    TRAP      15       3
             *

177          KK   CP21E
178          HC       2
             *

179          KK   RR21E      CP
180          KM        ROUTE CP21E TO 21F    WHICH IS 2800'
181          RS       1    FLOW      -1       0       0
182          RC    .055    .040    .055    2800   .0143       0       0       0
183          RX       0      70     170     180     230     240     340     410
184          RY    10.5     4.5     3.5       0       0     3.5     4.5    10.5
             *

185          KK     21F     SUB
186          KM        RUNOFF FROM SUB-BASIN 21F
187          BA   0.469       0       0
188          LS       0      80     6.4       0       0       0
189          UK     297  .0333     .20     100       0       0       0
190          RK   10400  .0279    .045       0    TRAP      20       3
             *

191          KK   CP21F
192          HC       2
             *

193          KK   RR21F      CP
194          KM   ROUTE CP21F TO 21G (1900' DOWNSTREAM)
195          RS       1    FLOW      -1       0       0
196          RC    .055    .040    .055    1900   .0158       0       0       0
197          RX       0      20      70     345     455     730     780     800
198          RY      10       8       2       0       0       2       8      10
             *
```

1 HEC-1 INPUT PAGE 6

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

199          KK     21G     SUB
200          KM   RUNOFF FROM SUB-BASIN 21G
201          BA   .0172       0       0
202          LS       0      80     6.4       0       0       0
203          UK     297  .0333     .20     100       0       0       0
204          RK    4000  .0300    .045       0    TRAP      10       3
             *

205          KK   CP21G
206          HC       2
             *

207          KK      22     SUB
208          KM        RUNOFF FROM SUB-BASIN 22
209          BA  1.3860
210          LS       0      84     5.1       0
211          UK     225  .0590     .20     100       0       0       0       0
```

```
 212          RK   13000   .0238    .045       0    TRAP      25       3
              *

 213          KK      23     SUB
 214          KM         RUNOFF FROM SUB-BASIN 23
 215          BA  0.3945       0       0
 216          LS       0      84     6.3       0
 217          UK     225   .0590     .20     100       0       0       0
 218          RK   10200   .0304    .045       0    TRAP      20       3
              *

 219          KK     24A      CP
 220          KM         COMBINE HYDROGRAPHS FOR SUB 22 AND SUB 23
 221          HC       2
              *

 222          KK    24.1      CP
 223          KM         ROUTE CP 24A TO CP 24.1
 224          RS       3    FLOW      -1       0       0
 225          RC    .055    .040    .055    6800   .0257       0       0       0
 226          RX       0       1     101     107     122     128     228     229
 227          RY      10       8       3       0       0       3       8      10
              *

 228          KK      24     SUB
 229          KM         RUNOFF FROM SUB-BASIN 24
 230          KM         DRAINAGE AREA CHANGED TO MATCH VALUE USED BY MICHAEL BAKER
 231          KM         Jr., INC.
 232          BA  0.4907       0       0
 233          LS       0      77     6.8       0
 234          UK     295   .0438     .20     100       0       0       0
 235          RK    6800   .0257    .045       0    TRAP      15       3
              *
```



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

 236          KK   24.2A      CP
 237          KM         COMBINE SUB 24 & CP 24.1 - APEX
 238          HC       2
              *

 239          KK     25N       SUB
 240          KM         RUNOFF FROM SUB-BASIN 25N - APEX
 241          BA  0.7834       0       0       0       0       0       0       0
 242          LS       0      84     9.0       0
 243          UK     295   .0438     .20     100       0       0       0
 244          RK   16700   .0302    .045       0    TRAP      25       3
              *

 245          KK     25S      SUB
 246          KM         RUNOFF FROM SUB-BASIN 25S - APEX
 247          BA  0.6256       0       0       0       0       0       0       0
 248          LS       0      86     9.0       0
 249          UK     295   .0438     .20     100       0       0       0
 250          RK    8900   .0278    .045       0    TRAP      25       3
              *

 251          KK    25.1      CP
 252          KM         COMBINE HYDROGRAPHS FOR SUB-BASINS 25N AND 25S
 253          HC       2
              *

 254          KK   24.2B      CP
 255          KM         COMBINE TOTAL HYDROGRAPH 24.2A WITH 25.1
 256          HC       2
```

```
                 *

257              KK  PIMARD      CP
258              KM   ROUTE THE TOTAL HYDROGRAPH AT THE CONCENTRATION POINT
259              KM   24.2B TO THE CULVERT AT THE PIMA ROAD. THERE IS NO
260              KM   CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
261              RS       1    FLOW      -1       0       0
262              RC    .055    .040    .055    2000   .0287       0       0       0
263              RX       0       1     101     107     122     128     228     229
264              RY      10       8       3       0       0       3       8      10
                 *

265              KK  RR24.2      CP
266              KM   ROUTE THE TOTAL HYDROGRAPH AT CONCENTRATION POINT
267              KM   24.2B FROM THE CULVERT UNDER PIMA ROAD TO CONCENTRATION
268              KM   POINT 21.05.
269              RS       1    FLOW      -1       0       0
270              RC    .055    .040    .055    3050   .0238       0       0       0
271              RX       0       1     101     107     122     128     228     229
272              RY      10       8       3       0       0       3       8      10
                 *
                 *
1                                          HEC-1 INPUT                                          PAGE  8

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

273              KK  C21.05 CONFLUENCE OF DGB CHANNELS NEAR MID-SECTION 36
274              KM         COMBINE HYDROGRAPH CP21G WITH HYDROGRAPH RR24.2
275              KM         (FROM THE PIMA ROAD CULVERT)
276              HC       2
                 *  ******************************************************************************

277              KK    DAM1
278              KM   UPPER, LARGER BASIN IN THE 2 BASIN SYSTEM
279              KO       3
280              RS       1    FLOW       0
281              SV       0     108     227     359     503     662     835    1023    1228
282              SE    2165    2170    2175    2180    2185    2190    2195    2200    2205
283              SS    2195     700     3.2     1.5
                 *  2 - 36" RCP Culverts for outlet
284              SL    2165    14.1      .6      .5
                 *  ******************************************************************************
                 *
                 *  ******************************************************************************

285              KK    DAM2
286              KM   LOWER, SMALLER BASIN IN THE 2 BASIN SYSTEM
287              KO       3
288              RS       1    FLOW       0
289              SV       0      31     114     204     299     401     509     623     744
290              SE    2138    2140    2145    2150    2155    2160    2165    2170    2175
291              SS    2165     200     3.2     1.5
                 *  2 - 36" RCP Culverts for outlet
292              SL    2138    14.1      .6      .5
                 *  ******************************************************************************
                 *

293              KK    R21G      CP
294              KM        ROUTE CP21G(21.05)TO 21H
295              RS       1    FLOW      -1       0       0
296              RC    .055    .040    .055    2500   .0194       0       0       0
297              RX       0      90     120     355     585     820     850     940
298              RY       9       4     1.5       0       0     1.5       4       9
                 *

299              KK     21H     SUB
```

```
 300          KM        RUNOFF FROM SUB-BASIN 21H
 301          BA   .0431       0       0
 302          LS       0      80     6.4       0       0       0
 303          UK     297   .0333     .20     100       0       0       0
 304          RK    4600   .0278    .045       0    TRAP      20       3
              *

 305          KK     26N
 306          KM       Runoff from sub-basin 26N
 307          BA   .6376       0       0
 308          LS       0      75    12.7       0
 309          UK     200   .0250     .20     100       0
 310          RK   12000   .0263    .045       0    TRAP      35      10
              *
1                                          HEC-1 INPUT                                                PAGE  9

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

 311          KK   CP21H   JOMAX RD
 312          KO       3
 313          HC       3
              *

 314          KK   RR21H      CP
 315          KM        ROUTE HYDROGRAPH AT CONCENTRATION POINT 21H   DOWNSTREAM FROM
 316          KM        JOMAX ROAD            THERE IS NO ADDITIONAL CONTRIBUTING
 317          KM        DRAINAGE AREA AT THIS CONCENTRATION POINT.  USED CHANNEL
 318          KM        GEOMETRY                          FROM REACH SIX
 319          KM            DEVELOPED BY C. LOVELY
 320          RS       1    FLOW      -1       0       0
 321          RC    .055    .040    .055    2390   .0188       0       0       0
 322          RX       0      90     120     355     585     820     850     940
 323          RY       9       4     1.5       0       0     1.5       4       9
              *

 324          KK     26S     SUB
 325          KM       RUNOFF FROM SUB-BASIN 26S
 326          BA  0.1672       0       0
 327          LS       0      75    12.7       0
 328          UK     200   .0250     .20     100       0       0       0
 329          RK    4000   .0263    .045       0    TRAP      35      10
              *

 330          KK  *APEX*      CP
 331          KM        COMBINE FLOW FROM SUB-BASIN 26 ,
 332          KM            AND ROUTED HYDROGRAPH FROM JOMAX ROAD.
 333          HC       2
              *
 334          KM        *********END SUBAREA 21 REVISIONS************

 335          KK   CP27A      CP AT HAPPY VALLEY RD
 336          KM        ROUTE FLOW FROM CONCENTRATION POINT APEX  TO 27A (HAPPY VALLEY
 337          KM        ROAD).  THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION PT.
 338          KM
 339          RS       1    FLOW      -1       0       0
 340          RC    .055    .040    .055    1600   .0196       0       0       0
 341          RX       0       1     201     211     261     271     471     472
 342          RY      10       4       2       0       0       2       4      10
              *

 343          KK   CP27B      CP AT MILLER RD
 344          KM        ROUTE FLOW FROM CONCENTRATION POINT 27B TO 27C (MILLER ROAD).
 345          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 346          RS       1    FLOW      -1       0       0
 347          RC    .055    .040    .055    3300   .0196       0       0       0
 348          RX       0       1     201     211     261     271     471     472
```

```
          349          RY      10       4       2       0       0       2       4      10
                       *
1                                                HEC-1 INPUT                                                PAGE 10

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

          350          KK   CP27C      CP AT PINNACLE PEAK RD
          351          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (PINNACLE PK ROAD).
          352          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
          353          RS       1    FLOW      -1       0       0
          354          RC    .055    .040    .055    3300   .0196       0       0       0
          355          RX       0       1     201     211     261     271     471     472
          356          RY      10       4       2       0       0       2       4      10
                       *

          357          KK   CP27D     CP AT SCOTTSDALE RD
          358          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (SCOTTSDALE ROAD)
          359          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
          360          RS       1    FLOW      -1       0       0
          361          RC    .055    .040    .055    1000   .0196       0       0       0
          362          RX       0       1     201     211     261     271     471     472
          363          RY      10       4       2       0       0       2       4      10
                       *

          364          KK      27     SUB
          365          KM        RUNOFF FROM SUB-BASIN 27
          366          BA  1.1913       0       0
          367          LS       0      75    12.7       0
          368          UK     200   .0250     .20     100       0       0       0
          369          RK    1500   .0263    .045       0    TRAP      35      10
                       *

          370          KK    CP27      CP AT SCOTTSDALE RD
          371          KO       3
          372          KM        COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
          373          KM        POINT 27D WITH SUB 27 .  TOTAL FLOW AT
          374          KM        SCOTTSDALE ROAD FOR FAN 4.
          375          HC       2
                       *
          376          ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

    49          16
                 .
                 .
    56           .          17
                 .           .
                 .           .
    62           .           .          18
                 .           .           .
                 .           .           .
    68         19A.........................
                 V
                 V
    71         19B
                 .
                 .
    77           .          15
                 .           .
                 .           .
    83         19C............
```

```
                V
                V
 86          19.1
                .
                .
 92             .          19
                .           .
 99             .           .          20
                .           .           .
                .           .           .
105          CP20.......................
                V
                V
109        RRCP20
                .
                .
115             .         21A
                .           .
                .           .
121         CP21A............
                V
                V
123         RR21A
                .
                .
129             .         21B
                .           .
                .           .
135         CP21B............
                V
                V
137         RR21B
                .
                .
143             .         21C
                .           .
                .           .
149         CP21C............
                V
                V
151         RR21C
                .
                .
157             .         21D
                .           .
                .           .
163         CP21D............
                V
                V
165         RR21D
                .
                .
171             .         21E
                .           .
                .           .
177         CP21E............
                V
                V
179         RR21E
                .
                .
185             .         21F
                .           .
                .           .
191         CP21F............
                V
```

```
                V
193        RR21F
                .
                .
199             .         21G
                .           .
                .           .
205        CP21G............
                .
                .
207             .          22
                .           .
                .           .
213             .           .          23
                .           .           .
                .           .           .
219             .         24A............
                .           V
                .           V
222             .        24.1
                .           .
                .           .
228             .           .          24
                .           .           .
                .           .           .
236             .       24.2A............
                .           .
                .           .
239             .           .         25N
                .           .           .
                .           .           .
245             .           .           .         25S
                .           .           .           .
                .           .           .           .
251             .           .       25.1............
                .           .           .
                .           .           .
254             .       24.2B............
                .           V
                .           V
257             .      PIMARD
                .           V
                .           V
265             .      RR24.2
                .           .
                .           .
273       C21.05............
                V
                V
277         DAM1
                V
                V
285         DAM2
                V
                V
293         R21G
                .
                .
299             .         21H
                .           .
                .           .
305             .           .         26N
                .           .           .
                .           .           .
311        CP21H........................
                V
                V
```

```
  314       RR21H
                .
                .
  324           .         26S
                .           .
                .           .
  330      *APEX*............
                V
                V
  335       CP27A
                V
                V
  343       CP27B
                V
                V
  350       CP27C
                V
                V
  357       CP27D
                .
                .
  364           .          27
                .           .
                .           .
  370        CP27............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN 09 1992              *
*           VERSION 4.0.3E             *
*                                      *
*  RUN DATE  10/02/98  TIME  17:38:11  *
*                                      *
****************************************
```

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

FILE <RWDAM21F.DAT>
THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.

THE MODIFICIATION INCLUDE THE FOLLOWING:
1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   TO CONCENTRATION POINT AT THE APEX OF 21F
2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE

NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
25S.

100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
RAINFALL FROM NOAA ATLAS

FILE RAW4A.DAT
WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
FOR 22, 23, 24, 25N, AND 25S. ROUTE COMBINED HYDROGRAPHS
22, 23, 24, 25N AND 25S TO 21G. SUN-BASIN 26 COMBINED AT
THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
PROPOSED ROAD CROSSINGS.

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                                REVISED BY GREINER 12-9-93 BY RON FERGUSON
                                REVISED BY C. J. LOVELY, COS, 3-9-94
                                Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
                                   *Eliminate DSS Records
                                   *Divide #26 into 26N & 26S; 26N is portion north of Jomax
                                   *Add 26N @ CP21H and route with 21H to apex
                                   *Add 26S @ apex
                                   *Modify reach length in 26S & 26N to reflect division

                                ******************************************************************
                                * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
                                * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.      *
                                ******************************************************************

                             September 1998 - HDR Engineering Modified by adding 2 basins to the
                             September 1998 - center of Section 36 (Alternative No. 6, separated basins)
                             September 1998 - Filename <RAWALT6.DAT>


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

   48 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      3MAR94  STARTING DATE
                        ITIME        0000  STARTING TIME
                           NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      4MAR94  ENDING DATE
                       NDTIME        0055  ENDING TIME
                       ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL    0.08 HOURS
                       TOTAL TIME BASE   24.92 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
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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                **************
                *            *
277 KK          *     DAM1   *
                *            *
                **************

279 KO              OUTPUT CONTROL VARIABLES
                          IPRNT          3  PRINT CONTROL
                          IPLOT          0  PLOT CONTROL
                          QSCAL         0.  HYDROGRAPH PLOT SCALE

                  HYDROGRAPH ROUTING DATA

280 RS              STORAGE ROUTING
                          NSTPS          1  NUMBER OF SUBREACHES
                           ITYP       FLOW  TYPE OF INITIAL CONDITION
                          RSVRIC       0.00  INITIAL CONDITION
                               X       0.00 WORKING R AND D COEFFICIENT

281 SV                STORAGE        0.0     108.0     227.0     359.0     503.0     662.0     835.0    1023.0    1228.0

282 SE              ELEVATION     2165.00   2170.00   2175.00   2180.00   2185.00   2190.00   2195.00   2200.00   2205.00

284 SL              LOW-LEVEL OUTLET
                          ELEVL     2165.00  ELEVATION AT CENTER OF OUTLET
                          CAREA       14.10  CROSS-SECTIONAL AREA
                           COQL        0.60  COEFFICIENT
                           EXPL        0.50  EXPONENT OF HEAD

283 SS              SPILLWAY
                           CREL     2195.00  SPILLWAY CREST ELEVATION
                          SPWID      700.00  SPILLWAY WIDTH
                           COQW        3.20  WEIR COEFFICIENT
                           EXPW        1.50  EXPONENT OF HEAD
                                                          ***
                                                COMPUTED OUTFLOW-ELEVATION DATA

                 OUTFLOW      0.00     99.13    109.13    121.38    136.72    156.51    182.99    220.26    276.59    371.63
               ELEVATION   2165.00   2167.13   2167.59   2168.20   2169.06   2170.32   2172.27   2175.54   2181.62   2195.00

                 OUTFLOW    444.21    944.76   2297.53   4926.77   9256.68  15711.51  24715.46  36692.74  52067.56  71264.13
               ELEVATION   2195.10   2195.40   2195.90   2196.60   2197.50   2198.60   2199.90   2201.40   2203.10   2205.00

                                              COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                 STORAGE      0.00     46.11     55.88     69.12     87.71    108.00    115.64    162.12    227.00    241.21
                 OUTFLOW      0.00     99.13    109.13    121.38    136.72    151.72    156.51    182.99    214.56    220.26
               ELEVATION   2165.00   2167.13   2167.59   2168.20   2169.06   2170.00   2170.32   2172.27   2175.00   2175.54

                 STORAGE    359.00    405.59    503.00    662.00    835.00    838.80    850.11    868.93    895.26    929.11
                 OUTFLOW    262.78    276.59    303.43    339.25    371.63    444.23    944.73   2297.19   4926.70   9256.76
               ELEVATION   2180.00   2181.62   2185.00   2190.00   2195.00   2195.10   2195.40   2195.90   2196.60   2197.50

                 STORAGE    970.46   1019.33   1023.00   1080.48   1150.14   1228.00
                 OUTFLOW  15711.42  24714.69  25445.36  36692.66  52067.81  71264.14
               ELEVATION   2198.60   2199.90   2200.00   2201.40   2203.10   2205.00

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

                        HYDROGRAPH AT STATION     DAM1

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
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```
                                        6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                 (CFS)
+    3829.      4.67             1084.        480.        462.        462.
                            (INCHES)      0.778       1.377       1.377       1.377
                             (AC-FT)       537.        952.        952.        952.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
     884.      4.67              843.        596.        574.        574.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
   2196.31      4.67           2195.21     2187.30     2186.48     2186.48

                          CUMULATIVE AREA =   12.96 SQ MI


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


            **************
            *            *
  285 KK    *      DAM2  *
            *            *
            **************

  287 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

                HYDROGRAPH ROUTING DATA

  288 RS          STORAGE ROUTING
                        NSTPS           1  NUMBER OF SUBREACHES
                         ITYP        FLOW  TYPE OF INITIAL CONDITION
                       RSVRIC        0.00  INITIAL CONDITION
                            X        0.00 WORKING R AND D COEFFICIENT

  289 SV            STORAGE         0.0      31.0     114.0     204.0     299.0     401.0     509.0     623.0     744.0

  290 SE          ELEVATION     2138.00   2140.00   2145.00   2150.00   2155.00   2160.00   2165.00   2170.00   2175.00

  292 SL          LOW-LEVEL OUTLET
                        ELEVL     2138.00  ELEVATION AT CENTER OF OUTLET
                        CAREA       14.10  CROSS-SECTIONAL AREA
                         COQL        0.60  COEFFICIENT
                         EXPL        0.50  EXPONENT OF HEAD

  291 SS          SPILLWAY
                         CREL     2165.00  SPILLWAY CREST ELEVATION
                        SPWID      200.00  SPILLWAY WIDTH
                         COQW        3.20  WEIR COEFFICIENT
                         EXPW        1.50  EXPONENT OF HEAD
                                                                  ***

                                                   COMPUTED OUTFLOW-ELEVATION DATA

            OUTFLOW       0.00     98.97    108.75    120.67    135.52    154.55    179.80    214.90    267.03    352.55
          ELEVATION    2138.00   2140.13   2140.57   2141.16   2141.99   2143.19   2145.02   2148.03   2153.49   2165.00
```

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          OUTFLOW    374.67   521.33   913.15  1670.76  2914.76  4765.75  7344.31 10771.04 15166.50 20651.29
        ELEVATION   2165.10  2165.41  2165.91  2166.61  2167.51  2168.61  2169.91  2171.41  2173.10  2175.00

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE      0.00    31.00    33.12    40.44    50.30    64.03    83.93   114.00   114.40   168.57
          OUTFLOW      0.00    95.95    98.97   108.75   120.67   135.52   154.55   179.51   179.80   214.90
        ELEVATION   2138.00  2140.00  2140.13  2140.57  2141.16  2141.99  2143.19  2145.00  2145.02  2148.03

          STORAGE    204.00   270.30   299.00   401.00   509.00   511.37   518.28   529.72   545.72   566.24
          OUTFLOW    235.04   267.03   279.75   318.24   352.55   374.70   521.37   913.04  1670.78  2914.73
        ELEVATION   2150.00  2153.49  2155.00  2160.00  2165.00  2165.10  2165.41  2165.91  2166.61  2167.51

          STORAGE    591.32   620.92   623.00   657.05   698.11   744.00
          OUTFLOW   4765.79  7344.10  7539.23 10771.27 15166.19 20651.29
        ELEVATION   2168.61  2169.91  2170.00  2171.41  2173.10  2175.00

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

                     HYDROGRAPH AT STATION     DAM2

  PEAK FLOW     TIME                      MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+     327.     17.25        327.        271.        261.        261.
                         (INCHES)     0.234       0.777       0.777       0.777
                          (AC-FT)      162.        537.        537.        537.

 PEAK STORAGE   TIME                     MAXIMUM AVERAGE STORAGE
                                   6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
     429.     17.33                428.        342.        329.        329.

  PEAK STAGE    TIME                      MAXIMUM AVERAGE STAGE
                                   6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
   2161.27     17.33             2161.24     2156.69     2156.01     2156.01

                       CUMULATIVE AREA =   12.96 SQ MI


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


            **************
            *            *
  311 KK    *     CP21H  *        JOMAX RD
            *            *
            **************

  312 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

  313 HC          HYDROGRAPH COMBINATION
                        ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                  ***
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0

      ***          ***          ***          ***          ***
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                        HYDROGRAPH AT STATION    CP21H

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     742.      3.42                329.        297.        286.        286.
                        (INCHES)    0.224       0.811       0.811       0.811
                         (AC-FT)    163.        590.        590.        590.

                        CUMULATIVE AREA =   13.64 SQ MI

MANE2 NPLAN,NSTM       1      0


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


            **************
            *            *
  370 KK    *      CP27  *          CP AT SCOTTSDALE RD
            *            *
            **************

  371 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                                 COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
                                 POINT 27D WITH SUB 27 .  TOTAL FLOW AT
                                 SCOTTSDALE ROAD FOR FAN 4.

  375 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     CP27

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    2060.      3.17                512.        347.        334.        334.
                        (INCHES)    0.318       0.861       0.861       0.861
                         (AC-FT)    254.        688.        688.        688.

                        CUMULATIVE AREA =   15.00 SQ MI

1
                                                RUNOFF SUMMARY
                                         FLOW IN CUBIC FEET PER SECOND
                                       TIME IN HOURS,  AREA IN SQUARE MILES

                                     PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN     MAXIMUM     TIME OF
        OPERATION       STATION      FLOW    PEAK                                           AREA      STAGE     MAX STAGE
+                                                                6-HOUR     24-HOUR     72-HOUR

        HYDROGRAPH AT
+                          16       2683.   3.25          323.        81.         78.       1.46

        HYDROGRAPH AT
```

```
+                    17    2184.   3.25     262.     66.     64.    1.19
        HYDROGRAPH AT
+                    18    2431.   3.25     273.     69.     66.    1.26
        3 COMBINED AT
+                   19A    7297.   3.25     857.    216.    208.    3.91
        ROUTED TO
+                   19B    7225.   3.33     857.    216.    208.    3.91
+                                                                   7.03      3.33
        HYDROGRAPH AT
+                    15    1901.   3.42     281.     71.     68.    1.37
        2 COMBINED AT
+                   19C    8929.   3.33    1138.    287.    277.    5.28
        ROUTED TO
+                  19.1    8529.   3.33    1138.    287.    277.    5.28
+                                                                   6.10      3.33
        HYDROGRAPH AT
+                    19     445.   3.25      42.     11.     10.    0.19
        HYDROGRAPH AT
+                    20    1086.   3.25     125.     31.     30.    0.57
        3 COMBINED AT
+                  CP20    9887.   3.33    1305.    329.    317.    6.03
        ROUTED TO
+                 RRCP20   9129.   3.42    1303.    329.    317.    6.03
+                                                                   4.09      3.42
        HYDROGRAPH AT
+                   21A     784.   3.25      81.     20.     20.    0.42
        2 COMBINED AT
+                 CP21A    9593.   3.42    1384.    350.    337.    6.45
        ROUTED TO
+                 RR21A    9383.   3.50    1383.    350.    337.    6.45
+                                                                   3.46      3.50
        HYDROGRAPH AT
+                   21B     512.   3.25      53.     13.     13.    0.28
        2 COMBINED AT
+                 CP21B    9671.   3.42    1436.    363.    350.    6.73
        ROUTED TO
+                 RR21B    8973.   3.58    1435.    363.    350.    6.73
+                                                                   3.74      3.58
        HYDROGRAPH AT
+                   21C    1248.   3.25     144.     36.     35.    0.75
        2 COMBINED AT
+                 CP21C    9578.   3.50    1578.    399.    385.    7.48
        ROUTED TO
+                 RR21C    7972.   3.67    1571.    399.    385.    7.48
+                                                                   4.10      3.67
        HYDROGRAPH AT
+                   21D    1500.   3.33     204.     51.     50.    1.06
```

```
                2 COMBINED AT
+                          CP21D    8765.   3.67     1773.     451.     434.    8.54
                ROUTED TO
+                          RR21D    8701.   3.75     1773.     451.     434.    8.54
+                                                                          4.16     3.75
                HYDROGRAPH AT
+                            21E     402.   3.33       50.      12.      12.    0.26
                2 COMBINED AT
+                          CP21E    8840.   3.75     1822.     463.     446.    8.79
                ROUTED TO
+                          RR21E    8580.   3.75     1819.     463.     446.    8.79
+                                                                          6.35     3.75
                HYDROGRAPH AT
+                            21F     666.   3.33       90.      23.      22.    0.47
                2 COMBINED AT
+                          CP21F    8865.   3.75     1908.     486.     468.    9.26
                ROUTED TO
+                          RR21F    8833.   3.83     1905.     486.     468.    9.26
+                                                                          2.70     3.83
                HYDROGRAPH AT
+                            21G      26.   3.33        3.       1.       1.    0.02
                2 COMBINED AT
+                          CP21G    8841.   3.83     1908.     487.     469.    9.28
                HYDROGRAPH AT
+                             22    2825.   3.25      307.      77.      74.    1.39
                HYDROGRAPH AT
+                             23     779.   3.25       88.      22.      21.    0.39
                2 COMBINED AT
+                            24A    3603.   3.25      395.      99.      96.    1.78
                ROUTED TO
+                           24.1    2924.   3.42      395.      99.      96.    1.78
+                                                                          5.59     3.42
                HYDROGRAPH AT
+                             24     708.   3.25       85.      21.      21.    0.49
                2 COMBINED AT
+                          24.2A    3467.   3.42      479.     121.     116.    2.27
                HYDROGRAPH AT
+                            25N    1244.   3.42      177.      45.      43.    0.78
                HYDROGRAPH AT
+                            25S    1424.   3.25      152.      38.      37.    0.63
                2 COMBINED AT
+                           25.1    2431.   3.33      329.      83.      80.    1.41
                2 COMBINED AT
+                          24.2B    5611.   3.42      809.     204.     197.    3.68
                ROUTED TO
+                          PIMARD   5550.   3.42      808.     204.     197.    3.68
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```
+                                                                                                  6.86        3.42
          ROUTED TO
+                          RR24.2     5294.    3.50        808.       204.       197.      3.68
+                                                                                                  6.96        3.50
          2 COMBINED AT
+                          C21.05    12190.    3.75       2714.       691.       666.     12.96
          ROUTED TO
+                            DAM1     3829.    4.67       1084.       480.       462.     12.96
+                                                                                               2196.31        4.67
          ROUTED TO
+                            DAM2      327.   17.25        327.       271.       261.     12.96
+                                                                                               2161.27       17.33
          ROUTED TO
+                            R21G      327.   17.50        327.       267.       257.     12.96
+                                                                                                  0.39       17.58
          HYDROGRAPH AT
+                             21H       64.    3.33          8.         2.         2.      0.04
          HYDROGRAPH AT
+                             26N      690.    3.50        110.        28.        27.      0.64
          3 COMBINED AT
+                           CP21H      742.    3.42        329.       297.       286.     13.64
          ROUTED TO
+                           RR21H      622.    3.58        327.       294.       283.     13.64
+                                                                                                  0.58        3.58
          HYDROGRAPH AT
+                             26S      239.    3.25         29.         7.         7.      0.17
          2 COMBINED AT
+                           *APEX*     739.    3.58        345.       301.       290.     13.81
          ROUTED TO
+                           CP27A      723.    3.58        345.       300.       289.     13.81
+                                                                                                  1.75        3.58
          ROUTED TO
+                           CP27B      688.    3.75        342.       298.       287.     13.81
+                                                                                                  1.71        3.75
          ROUTED TO
+                           CP27C      654.    3.83        340.       295.       285.     13.81
+                                                                                                  1.66        3.83
          ROUTED TO
+                           CP27D      651.    3.83        339.       295.       284.     13.81
+                                                                                                  1.66        3.83
          HYDROGRAPH AT
+                              27     2052.    3.17        207.        52.        50.      1.19
          2 COMBINED AT
+                            CP27     2060.    3.17        512.       347.       334.     15.00
1
                                   SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                       (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                          INTERPOLATED TO
                                                                       COMPUTATION INTERVAL
     ISTAQ    ELEMENT       DT       PEAK    TIME TO     VOLUME       DT       PEAK    TIME TO     VOLUME
```

```
                                          PEAK                                  PEAK
                          (MIN)    (CFS)    (MIN)    (IN)    (MIN)    (CFS)    (MIN)    (IN)
            16  MANE       3.27  2790.08   197.97    2.08     5.00  2682.70   195.00    2.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1620E+03 OUTFLOW=0.1613E+03 BASIN STORAGE=0.4299E-01 PERCENT ERROR=   0.4

            17  MANE       3.68  2249.16   195.52    2.07     5.00  2183.62   195.00    2.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1317E+03 OUTFLOW=0.1309E+03 BASIN STORAGE=0.4985E-01 PERCENT ERROR=   0.6

            18  MANE       3.18  2466.56   196.97    2.02     5.00  2431.13   195.00    2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1368E+03 OUTFLOW=0.1360E+03 BASIN STORAGE=0.5145E-01 PERCENT ERROR=   0.6

            15  MANE       3.51  1901.39   207.57    1.93     5.00  1901.08   205.00    1.93

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1417E+03 OUTFLOW=0.1409E+03 BASIN STORAGE=0.5998E-01 PERCENT ERROR=   0.5

            19  MANE       1.80   456.95   193.94    2.11     5.00   444.60   195.00    2.11

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2111E+02 OUTFLOW=0.2104E+02 BASIN STORAGE=0.3666E-02 PERCENT ERROR=   0.4

            20  MANE       3.77  1138.08   196.21    2.05     5.00  1086.14   195.00    2.05

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6254E+02 OUTFLOW=0.6220E+02 BASIN STORAGE=0.1496E-01 PERCENT ERROR=   0.5

           21A  MANE       2.36   804.58   193.66    1.81     5.00   783.53   195.00    1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4070E+02 OUTFLOW=0.4053E+02 BASIN STORAGE=0.1094E-01 PERCENT ERROR=   0.4

           21B  MANE       2.56   520.22   194.23    1.81     5.00   511.65   195.00    1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2674E+02 OUTFLOW=0.2663E+02 BASIN STORAGE=0.7314E-02 PERCENT ERROR=   0.4

           21C  MANE       3.23  1300.20   196.60    1.81     5.00  1248.06   195.00    1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7248E+02 OUTFLOW=0.7205E+02 BASIN STORAGE=0.2485E-01 PERCENT ERROR=   0.6

           21D  MANE       3.10  1538.29   200.70    1.81     5.00  1499.66   200.00    1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1026E+03 OUTFLOW=0.1020E+03 BASIN STORAGE=0.5119E-01 PERCENT ERROR=   0.5

           21E  MANE       3.04   421.12   198.38    1.81     5.00   401.68   200.00    1.81
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CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2490E+02 OUTFLOW=0.2476E+02 BASIN STORAGE=0.1083E-01 PERCENT ERROR=   0.5

              21F  MANE        4.33    687.84    201.28      1.80      5.00    666.34    200.00        1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4544E+02 OUTFLOW=0.4507E+02 BASIN STORAGE=0.2383E-01 PERCENT ERROR=   0.8

              21G  MANE        4.06     26.27    199.44      1.80      5.00     26.04    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1667E+01 OUTFLOW=0.1656E+01 BASIN STORAGE=0.7499E-03 PERCENT ERROR=   0.6

               22  MANE        3.71   2850.96    194.47      2.07      5.00   2824.55    195.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1539E+03 OUTFLOW=0.1530E+03 BASIN STORAGE=0.3984E-01 PERCENT ERROR=   0.5

               23  MANE        3.96    781.94    194.26      2.09      5.00    778.56    195.00        2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4420E+02 OUTFLOW=0.4393E+02 BASIN STORAGE=0.9523E-02 PERCENT ERROR=   0.6

               24  MANE        2.78    735.98    195.89      1.62      5.00    708.45    195.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4263E+02 OUTFLOW=0.4239E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.5

              25N  MANE        4.27   1280.11    203.94      2.13      5.00   1243.86    205.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8954E+02 OUTFLOW=0.8895E+02 BASIN STORAGE=0.4329E-01 PERCENT ERROR=   0.6

              25S  MANE        3.07   1432.12    195.33      2.28      5.00   1424.44    195.00        2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7648E+02 OUTFLOW=0.7611E+02 BASIN STORAGE=0.2473E-01 PERCENT ERROR=   0.5

              21H  MANE        4.16     64.59    199.55      1.80      5.00     64.21    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4176E+01 OUTFLOW=0.4145E+01 BASIN STORAGE=0.2185E-02 PERCENT ERROR=   0.7

              26N  MANE        4.34    695.84    209.67      1.63      5.00    689.73    210.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5568E+02 OUTFLOW=0.5537E+02 BASIN STORAGE=0.2531E-01 PERCENT ERROR=   0.5

              26S  MANE        3.14    248.14    195.91      1.63      5.00    238.82    195.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1460E+02 OUTFLOW=0.1454E+02 BASIN STORAGE=0.4459E-02 PERCENT ERROR=   0.4

               27  MANE        0.61   2077.01    190.94      1.63      5.00   2052.00    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1040E+03 OUTFLOW=0.1038E+03 BASIN STORAGE=0.2468E-01 PERCENT ERROR=   0.2
```

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

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *             JUN 09 1992              *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.0.3E             *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE  10/13/98  TIME  11:14:58  *                    *          (916) 551-1748              *
 *                                      *                    *                                      *
 ****************************************                    ****************************************


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


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

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

1                                                   HEC-1 INPUT                                                PAGE  1

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

            1           ID        FILE <RWDAM21F.DAT>
            2           ID        THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
            3           ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
            4           ID
            5           ID        THE MODIFICIATION INCLUDE THE FOLLOWING:
            6           ID        1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
            7           ID           TO CONCENTRATION POINT AT THE APEX OF 21F
            8           ID        2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE
            9           ID
           10           ID        NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
           11           ID        1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
           12           ID        MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
           13           ID        25S.
           14           ID
           15           ID        100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
           16           ID        RAINFALL FROM NOAA ATLAS
           17           ID
           18           ID        FILE RAW4A.DAT
           19           ID        WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
           20           ID        FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
           21           ID        22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
           22           ID        THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
           23           ID        ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
           24           ID        INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
           25           ID        PROPOSED ROAD CROSSINGS.
           26           ID
           27           ID        REVISED BY GREINER 12-9-93 BY RON FERGUSON
           28           ID        REVISED BY C. J. LOVELY, COS, 3-9-94
           29           ID        Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
           30           ID           *Eliminate DSS Records
```

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 31          ID          *Divide #26 into 26N & 26S; 26N is portion north of Jomax
 32          ID          *Add 26N @ CP21H and route with 21H to apex
 33          ID          *Add 26S @ apex
 34          ID          *Modify reach length in 26S & 26N to reflect division
 35          ID
 36          ID       ********************************************************************
 37          ID       * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
 38          ID       * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
 39          ID       ********************************************************************
 40          ID
 41          ID    September 1998 - HDR Engineering Modified by adding 2 basins to the
 42          ID    September 1998 - center of Section 36 (Alternative No. 6A, separated basins)
 43          ID    September 1998 - Modified Alt. 6 by raising the weir by 2 feet, expanding
 44          ID    September 1998 - basin area.
 45          ID    September 1998 - Filename <RAWALT6A.DAT>
 46          ID
 47          ID
 48          ID   ******************************************************************************
             *DIAGRAM
 49          IT       5 03MAR94       0     300
 50          IO       5       0       0       0
             *
1                                          HEC-1 INPUT                                    PAGE  2

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

 51          KK      16     SUB
 52          KM        RUNOFF FROM SUB-BASIN 16
 53          BA  1.4570
 54          PH       0     9.7    0.77    1.51    2.65    3.00    3.23    3.66
 55          LS       0      83     9.8       0       0       0       0       0
 56          UK     217   .0581     .20     100
 57          RK   14800   .0216    .045       0    TRAP      25       3
             *

 58          KK      17     SUB
 59          KM        RUNOFF FROM SUB-BASIN 17
 60          BA  1.1851       0       0
 61          LS       0      83     9.8
 62          UK     285   .0421     .20     100       0       0       0
 63          RK   12200   .0254    .045       0    TRAP      25       3
             *

 64          KK      18     SUB
 65          KM        RUNOFF FROM SUB-BASIN 18
 66          BA  1.2641
 67          LS       0      83     6.5       0
 68          UK     285   .0421     .20     100       0       0       0
 69          RK   10840   .0259    .045       0    TRAP      25       3
             *

 70          KK     19A      CP
 71          KM        COMBINE HYDROGRAPHS SUB16, SUB17 AND SUB18
 72          HC       3
             *

 73          KK     19B      CP
 74          KM        ROUTE CP19A TO CP19B
 75          RS       1    FLOW      -1       0       0
 76          RC    .055    .040    .055    1100   .0155       0       0       0
 77          RX       0       1     126     132     167     173     298     299
 78          RY      10       8       3       0       0       3       8      10
             *

 79          KK      15     SUB
 80          KM        RUNOFF FROM SUBBASIN 15
```

```
 81          BA  1.3702       0       0
 82          LS       0      82     5.4       0
 83          UK     217   .0581     .20     100       0       0       0
 84          RK   21200   .0236    .045       0    TRAP      25       3
             *

 85          KK     19C      CP
 86          KM        COMBINE HYDROGRAPHS SUB15 & CP19B
 87          HC       2
             *
1                                    HEC-1 INPUT                                    PAGE  3

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

 88          KK    19.1      CP
 89          KM        ROUTE CP 19C TO 19.1
 90          RS       1    FLOW      -1       0       0
 91          RC    .055    .040    .055    1800   .0200       0       0
 92          RX       0       1     151     166     216     231     381     382
 93          RY      10       9       3       0       0       3       9      10
             *

 94          KK      19     SUB
 95          KM        RUNOFF FROM SUB-BASIN 19
 96          BA  0.1872
 97          LS       0      84     7.2       0
 98          UK     275   .0800     .20     100       0       0       0
 99          RK    3730   .0352    .045    .160    TRAP      15       3
100          RK    1800   .0200    .045       0    TRAP      50      30
             *

101          KK      20     SUB
102          KM        RUNOFF FROM SUB-BASIN 20
103          BA  0.5698       0       0
104          LS       0      84     3.6       0
105          UK     300   .0750     .20     100       0       0       0
106          RK    9640   .0197    .045       0    TRAP      15       3
             *

107          KK    CP20      CP
108          KM        COMBINE SUB 19, SUB 20 AND CP 19.1
109          HC       3
             *
110          KM    *******BEGIN SUBAREA 21 BREAKDOWN-3/94 REVISIONS*****

111          KK  RRCP20      CP
112          KM        ROUTE CP20 TO CP 21A, WHICH IS 4600'
113          RS       1    FLOW      -1       0       0
114          RC    .055    .040    .055    4600   .0217       0       0       0
115          RX       0      30      60      85     195     220     250     280
116          RY      10       4       1       0       0       1       4      10
             *

117          KK     21A     SUB
118          KM        RUNOFF FROM SUB-BASIN 21A
119          BA     .42       0       0
120          LS       0      80     6.4       0       0       0
121          UK     297   .0558     .20     100       0       0       0
122          RK    6400   .0344    .045       0    TRAP      10       3
             *

123          KK   CP21A
124          HC       2
             *
1                                    HEC-1 INPUT                                    PAGE  4
```

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

 125          KK   RR21A       CP
 126          KM        ROUTE CP21A TO 21B    WHICH IS 960'
 127          RS       1     FLOW      -1       0       0
 128          RC    .055     .040     .055     960   .0156       0       0       0
 129          RX       0       10       60     205     295     440     490     500
 130          RY       6        4        2       0       0       2       4       6
              *

 131          KK     21B      SUB
 132          KM        RUNOFF FROM SUB-BASIN 21B
 133          BA   0.276        0        0
 134          LS       0       80      6.4       0       0       0
 135          UK     297   .0558      .20     100       0       0       0
 136          RK    6300   .0381     .045       0    TRAP      10       3
              *

 137          KK   CP21B
 138          HC       2
              *

 139          KK   RR21B       CP
 140          KM        ROUTE CP21B TO 21C    WHICH IS 4400'
 141          RS       1     FLOW      -1       0       0
 142          RC    .055     .040     .055    4400   .0205       0       0       0
 143          RX       0       10       60     205     295     440     490     500
 144          RY       6        4        2       0       0       2       4       6
              *

 145          KK     21C      SUB
 146          KM        RUNOFF FROM SUB-BASIN 21C
 147          BA    .748        0        0
 148          LS       0       80      6.4       0       0       0
 149          UK     297   .0558      .20     100       0       0       0
 150          RK    9900   .0328     .045       0    TRAP      20       3
              *

 151          KK   CP21C
 152          HC       2
              *

 153          KK   RR21C       CP
 154          KM        ROUTE CP21C TO 21D    WHICH IS 5700'
 155          RS       1     FLOW      -1       0       0
 156          RC    .055     .040     .055    5700   .0181       0       0       0
 157          RX       0       20      175     210     300     335     490     510
 158          RY     5.5      3.5      2.5       0       0     2.5     3.5     5.5
              *

 159          KK     21D      SUB
 160          KM        RUNOFF FROM SUB-BASIN 21D
 161          BA   1.059        0        0
 162          LS       0       80      6.4       0       0       0
 163          UK     297   .0558      .20     100       0       0       0
 164          RK   14500   .0252     .045       0    TRAP      30       3
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 165          KK   CP21D
 166          HC       2
              *
```

```
167          KK   RR21D      CP
168          KM        ROUTE CP21D TO 21E    WHICH IS 1100'
169          RS       1    FLOW      -1       0       0
170          RC    .055    .040    .055    1100   .0200       0       0       0
171          RX       0      20     175     210     300     335     490     510
172          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
             *

173          KK     21E     SUB
174          KM        RUNOFF FROM SUB-BASIN 21E
175          BA   0.257       0       0
176          LS       0      80     6.4       0       0       0
177          UK     297   .0333     .20     100       0       0       0
178          RK    6600   .0288    .045       0    TRAP      15       3
             *

179          KK   CP21E
180          HC       2
             *

181          KK   RR21E      CP
182          KM        ROUTE CP21E TO 21F    WHICH IS 2800'
183          RS       1    FLOW      -1       0       0
184          RC    .055    .040    .055    2800   .0143       0       0       0
185          RX       0      70     170     180     230     240     340     410
186          RY    10.5     4.5     3.5       0       0     3.5     4.5    10.5
             *

187          KK     21F     SUB
188          KM        RUNOFF FROM SUB-BASIN 21F
189          BA   0.469       0       0
190          LS       0      80     6.4       0       0       0
191          UK     297   .0333     .20     100       0       0       0
192          RK   10400   .0279    .045       0    TRAP      20       3
             *

193          KK   CP21F
194          HC       2
             *

195          KK   RR21F      CP
196          KM   ROUTE CP21F TO 21G (1900' DOWNSTREAM)
197          RS       1    FLOW      -1       0       0
198          RC    .055    .040    .055    1900   .0158       0       0       0
199          RX       0      20      70     345     455     730     780     800
200          RY      10       8       2       0       0       2       8      10
             *
```



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

201          KK     21G     SUB
202          KM   RUNOFF FROM SUB-BASIN 21G
203          BA   .0172       0       0
204          LS       0      80     6.4       0       0       0
205          UK     297   .0333     .20     100       0       0       0
206          RK    4000   .0300    .045       0    TRAP      10       3
             *

207          KK   CP21G
208          HC       2
             *

209          KK      22     SUB
210          KM       RUNOFF FROM SUB-BASIN 22
211          BA  1.3860
```

```
 212          LS       0      84     5.1       0
 213          UK     225   .0590     .20     100       0       0       0       0
 214          RK   13000   .0238    .045       0    TRAP      25       3
              *

 215          KK      23     SUB
 216          KM         RUNOFF FROM SUB-BASIN 23
 217          BA  0.3945       0       0
 218          LS       0      84     6.3       0
 219          UK     225   .0590     .20     100       0       0       0
 220          RK   10200   .0304    .045       0    TRAP      20       3
              *

 221          KK     24A      CP
 222          KM         COMBINE HYDROGRAPHS FOR SUB 22 AND SUB 23
 223          HC       2
              *

 224          KK    24.1      CP
 225          KM         ROUTE CP 24A TO CP 24.1
 226          RS       3    FLOW      -1       0       0
 227          RC    .055    .040    .055    6800   .0257       0       0       0
 228          RX       0       1     101     107     122     128     228     229
 229          RY      10       8       3       0       0       3       8      10
              *

 230          KK      24     SUB
 231          KM         RUNOFF FROM SUB-BASIN 24
 232          KM         DRAINAGE AREA CHANGED TO MATCH VALUE USED BY MICHAEL BAKER
 233          KM         Jr., INC.
 234          BA  0.4907       0       0
 235          LS       0      77     6.8       0
 236          UK     295   .0438     .20     100       0       0       0
 237          RK    6800   .0257    .045       0    TRAP      15       3
              *
1                                          HEC-1 INPUT                                          PAGE  7

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

 238          KK   24.2A      CP
 239          KM         COMBINE SUB 24 & CP 24.1 - APEX
 240          HC       2
              *

 241          KK     25N      SUB
 242          KM         RUNOFF FROM SUB-BASIN 25N - APEX
 243          BA  0.7834       0       0       0       0       0       0       0
 244          LS       0      84     9.0       0
 245          UK     295   .0438     .20     100       0       0       0
 246          RK   16700   .0302    .045       0    TRAP      25       3
              *

 247          KK     25S      SUB
 248          KM         RUNOFF FROM SUB-BASIN 25S - APEX
 249          BA  0.6256       0       0       0       0       0       0       0
 250          LS       0      86     9.0       0
 251          UK     295   .0438     .20     100       0       0       0
 252          RK    8900   .0278    .045       0    TRAP      25       3
              *

 253          KK    25.1      CP
 254          KM         COMBINE HYDROGRAPHS FOR SUB-BASINS 25N AND 25S
 255          HC       2
              *

 256          KK   24.2B      CP
```

```
 257          KM        COMBINE TOTAL HYDROGRAPH 24.2A WITH 25.1
 258          HC       2
              *

 259          KK  PIMARD      CP
 260          KM   ROUTE THE TOTAL HYDROGRAPH AT THE CONCENTRATION POINT
 261          KM   24.2B TO THE CULVERT AT THE PIMA ROAD. THERE IS NO
 262          KM   CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 263          RS       1    FLOW      -1       0       0
 264          RC    .055    .040    .055    2000   .0287       0       0       0
 265          RX       0       1     101     107     122     128     228     229
 266          RY      10       8       3       0       0       3       8      10
              *

 267          KK  RR24.2      CP
 268          KM   ROUTE THE TOTAL HYDROGRAPH AT CONCENTRATION POINT
 269          KM   24.2B FROM THE CULVERT UNDER PIMA ROAD TO CONCENTRATION
 270          KM   POINT 21.05.
 271          RS       1    FLOW      -1       0       0
 272          RC    .055    .040    .055    3050   .0238       0       0       0
 273          RX       0       1     101     107     122     128     228     229
 274          RY      10       8       3       0       0       3       8      10
              *
              *
1                                          HEC-1 INPUT                                          PAGE  8

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

 275          KK  C21.05 CONFLUENCE OF DGB CHANNELS NEAR MID-SECTION 36
 276          KM         COMBINE HYDROGRAPH CP21G WITH HYDROGRAPH RR24.2
 277          KM         (FROM THE PIMA ROAD CULVERT)
 278          HC       2
              *  ******************************************************************************

 279          KK    DAM1
 280          KM   UPPER, LARGER BASIN IN THE 2 BASIN SYSTEM
 281          KO       3
 282          RS       1    FLOW       0
 283          SV       0      33     215     413     628     860    1111    1381
 284          SE    2176    2177    2182    2187    2192    2197    2202    2207
 285          SS    2197     700     3.2     1.5
              *  2 - 36" RCP Culverts for outlet
 286          SL    2176    14.1      .6      .5
              *  ******************************************************************************
              *
              *  ******************************************************************************

 287          KK    DAM2
 288          KM   LOWER, SMALLER BASIN IN THE 2 BASIN SYSTEM
 289          KO       3
 290          RS       1    FLOW       0
 291          SV       0      90     185     287     395     509     630
 292          SE    2147    2152    2157    2162    2167    2172    2177
 293          SS    2167     200     3.2     1.5
              *  2 - 36" RCP Culverts for outlet
 294          SL    2147    14.1      .6      .5
              *  ******************************************************************************
              *

 295          KK    R21G     CP
 296          KM     ROUTE CP21G(21.05)TO 21H
 297          RS       1    FLOW      -1       0       0
 298          RC    .055    .040    .055    2500   .0194       0       0       0
 299          RX       0      90     120     355     585     820     850     940
 300          RY       9       4     1.5       0       0     1.5       4       9
              *
```

```
 301          KK     21H     SUB
 302          KM        RUNOFF FROM SUB-BASIN 21H
 303          BA   .0431       0       0
 304          LS       0      80     6.4       0       0       0
 305          UK     297   .0333     .20     100       0       0       0
 306          RK    4600   .0278    .045       0    TRAP      20       3
              *

 307          KK     26N
 308          KM        Runoff from sub-basin 26N
 309          BA   .6376       0       0
 310          LS       0      75    12.7       0
 311          UK     200   .0250     .20     100       0
 312          RK   12000   .0263    .045       0    TRAP      35      10
              *
1                                          HEC-1 INPUT                                                    PAGE  9

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

 313          KK   CP21H   JOMAX RD
 314          KO       3
 315          HC       3
              *

 316          KK   RR21H      CP
 317          KM        ROUTE HYDROGRAPH AT CONCENTRATION POINT 21H   DOWNSTREAM FROM
 318          KM        JOMAX ROAD           THERE IS NO ADDITIONAL CONTRIBUTING
 319          KM        DRAINAGE AREA AT THIS CONCENTRATION POINT.  USED CHANNEL
 320          KM        GEOMETRY                          FROM REACH SIX
 321          KM             DEVELOPED BY C. LOVELY
 322          RS       1    FLOW      -1       0       0
 323          RC    .055    .040    .055    2390   .0188       0       0       0
 324          RX       0      90     120     355     585     820     850     940
 325          RY       9       4     1.5       0       0     1.5       4       9
              *

 326          KK     26S     SUB
 327          KM       RUNOFF FROM SUB-BASIN 26S
 328          BA  0.1672       0       0
 329          LS       0      75    12.7       0
 330          UK     200   .0250     .20     100       0       0       0
 331          RK    4000   .0263    .045       0    TRAP      35      10
              *

 332          KK  *APEX*      CP
 333          KM        COMBINE FLOW FROM SUB-BASIN 26 ,
 334          KM            AND ROUTED HYDROGRAPH FROM JOMAX ROAD.
 335          HC       2
              *
 336          KM        *********END SUBAREA 21 REVISIONS************

 337          KK   CP27A      CP AT HAPPY VALLEY RD
 338          KM        ROUTE FLOW FROM CONCENTRATION POINT APEX  TO 27A (HAPPY VALLEY
 339          KM        ROAD).  THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION PT.
 340          KM
 341          RS       1    FLOW      -1       0       0
 342          RC    .055    .040    .055    1600   .0196       0       0       0
 343          RX       0       1     201     211     261     271     471     472
 344          RY      10       4       2       0       0       2       4      10
              *

 345          KK   CP27B      CP AT MILLER RD
 346          KM        ROUTE FLOW FROM CONCENTRATION POINT 27B TO 27C (MILLER ROAD).
 347          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 348          RS       1    FLOW      -1       0       0
```

```
          349          RC    .055     .040     .055    3300   .0196       0       0       0
          350          RX       0        1      201     211     261     271     471     472
          351          RY      10        4        2       0       0       2       4      10
                       *
1                                                HEC-1 INPUT                                                    PAGE 10

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

          352          KK   CP27C      CP AT PINNACLE PEAK RD
          353          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (PINNACLE PK ROAD).
          354          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
          355          RS       1    FLOW      -1       0       0
          356          RC    .055     .040     .055    3300   .0196       0       0       0
          357          RX       0        1      201     211     261     271     471     472
          358          RY      10        4        2       0       0       2       4      10
                       *

          359          KK   CP27D      CP AT SCOTTSDALE RD
          360          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (SCOTTSDALE ROAD)
          361          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
          362          RS       1    FLOW      -1       0       0
          363          RC    .055     .040     .055    1000   .0196       0       0       0
          364          RX       0        1      201     211     261     271     471     472
          365          RY      10        4        2       0       0       2       4      10
                       *

          366          KK      27      SUB
          367          KM        RUNOFF FROM SUB-BASIN 27
          368          BA  1.1913        0        0
          369          LS       0       75     12.7       0
          370          UK     200    .0250      .20     100       0       0       0
          371          RK    1500    .0263     .045       0    TRAP      35      10
                       *

          372          KK    CP27      CP AT SCOTTSDALE RD
          373          KO       3
          374          KM        COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
          375          KM        POINT 27D WITH SUB 27 .  TOTAL FLOW AT
          376          KM        SCOTTSDALE ROAD FOR FAN 4.
          377          HC       2
                       *
          378          ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

    51          16
                 .
                 .
    58           .          17
                 .           .
                 .           .
    64           .           .          18
                 .           .           .
                 .           .           .
    70         19A.......................
                 V
                 V
    73         19B
                 .
                 .
    79           .          15
                 .           .
```

```
 85          19C............
              V
              V
 88         19.1
              .
              .
 94           .          19
              .           .
              .           .
101           .           .          20
              .           .           .
              .           .           .
107         CP20........................
              V
              V
111        RRCP20
              .
              .
117           .         21A
              .           .
              .           .
123        CP21A............
              V
              V
125        RR21A
              .
              .
131           .         21B
              .           .
              .           .
137        CP21B............
              V
              V
139        RR21B
              .
              .
145           .         21C
              .           .
              .           .
151        CP21C............
              V
              V
153        RR21C
              .
              .
159           .         21D
              .           .
              .           .
165        CP21D............
              V
              V
167        RR21D
              .
              .
173           .         21E
              .           .
              .           .
179        CP21E............
              V
              V
181        RR21E
              .
              .
187           .         21F
              .           .
              .           .
```

```
193      CP21F............
             V
             V
195      RR21F
             .
             .
201          .        21G
             .          .
             .          .
207      CP21G............
             .
             .
209          .         22
             .          .
             .          .
215          .          .         23
             .          .          .
             .          .          .
221          .        24A............
             .          V
             .          V
224          .       24.1
             .          .
             .          .
230          .          .         24
             .          .          .
             .          .          .
238          .      24.2A............
             .          .
             .          .
241          .          .        25N
             .          .          .
             .          .          .
247          .          .          .        25S
             .          .          .          .
             .          .          .          .
253          .          .      25.1............
             .          .          .
             .          .          .
256          .      24.2B............
             .          V
             .          V
259          .     PIMARD
             .          V
             .          V
267          .     RR24.2
             .          .
             .          .
275     C21.05............
             V
             V
279       DAM1
             V
             V
287       DAM2
             V
             V
295       R21G
             .
             .
301          .        21H
             .          .
             .          .
307          .          .        26N
             .          .          .
             .          .          .
313     CP21H........................
```

```
                V
                V
  316        RR21H
                .
                .
  326           .          26S
                .            .
                .            .
  332       *APEX*............
                V
                V
  337        CP27A
                V
                V
  345        CP27B
                V
                V
  352        CP27C
                V
                V
  359        CP27D
                .
                .
  366           .           27
                .            .
                .            .
  372         CP27............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN 09 1992              *
*            VERSION 4.0.3E            *
*                                      *
*  RUN DATE  10/13/98  TIME  11:14:58  *
*                                      *
****************************************
```

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

FILE <RWDAM21F.DAT>
THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.

THE MODIFICIATION INCLUDE THE FOLLOWING:
1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   TO CONCENTRATION POINT AT THE APEX OF 21F
2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE

NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
25S.

100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
RAINFALL FROM NOAA ATLAS

FILE RAW4A.DAT
WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
FOR 22, 23, 24, 25N, AND 25S. ROUTE COMBINED HYDROGRAPHS
22, 23, 24, 25N AND 25S TO 21G. SUN-BASIN 26 COMBINED AT
THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE

```
                                PROPOSED ROAD CROSSINGS.

                                REVISED BY GREINER 12-9-93 BY RON FERGUSON
                                REVISED BY C. J. LOVELY, COS, 3-9-94
                                Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
                                   *Eliminate DSS Records
                                   *Divide #26 into 26N & 26S; 26N is portion north of Jomax
                                   *Add 26N @ CP21H and route with 21H to apex
                                   *Add 26S @ apex
                                   *Modify reach length in 26S & 26N to reflect division

                                ********************************************************************
                                * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
                                * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
                                ********************************************************************

                             September 1998 - HDR Engineering Modified by adding 2 basins to the
                             September 1998 - center of Section 36 (Alternative No. 6A, separated basins)
                             September 1998 - Modified Alt. 6 by raising the weir by 2 feet, expanding
                             September 1998 - basin area.
                             September 1998 - Filename <RAWALT6A.DAT>


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

   50 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      3MAR94  STARTING DATE
                        ITIME        0000  STARTING TIME
                           NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      4MAR94  ENDING DATE
                       NDTIME        0055  ENDING TIME
                        ICENT          19  CENTURY MARK

                   COMPUTATION INTERVAL    0.08 HOURS
                        TOTAL TIME BASE   24.92 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
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
```

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

          **************
          *            *
279 KK    *      DAM1  *
          *            *
          **************

281 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           3  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

282 RS          STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        FLOW  TYPE OF INITIAL CONDITION
                    RSVRIC        0.00  INITIAL CONDITION
                         X        0.00 WORKING R AND D COEFFICIENT

283 SV            STORAGE         0.0      33.0     215.0     413.0     628.0     860.0    1111.0    1381.0

284 SE          ELEVATION     2176.00   2177.00   2182.00   2187.00   2192.00   2197.00   2202.00   2207.00

286 SL          LOW-LEVEL OUTLET
                     ELEVL     2176.00  ELEVATION AT CENTER OF OUTLET
                     CAREA       14.10  CROSS-SECTIONAL AREA
                      COQL        0.60  COEFFICIENT
                      EXPL        0.50  EXPONENT OF HEAD

285 SS          SPILLWAY
                      CREL     2197.00  SPILLWAY CREST ELEVATION
                     SPWID      700.00  SPILLWAY WIDTH
                      COQW        3.20  WEIR COEFFICIENT
                      EXPW        1.50  EXPONENT OF HEAD

                                                    ***

                                   COMPUTED OUTFLOW-ELEVATION DATA

          OUTFLOW       0.00     98.56    107.76    118.85    132.49    149.67    171.97    202.07    244.95    310.92
        ELEVATION    2176.00   2178.11   2178.52   2179.07   2179.81   2180.87   2182.42   2184.87   2189.03   2197.00

          OUTFLOW     383.85    885.32   2239.43   4870.25   9201.84  15658.24  24663.51  36641.66  52016.75  71212.80
        ELEVATION    2197.10   2197.40   2197.90   2198.60   2199.50   2200.60   2201.90   2203.40   2205.10   2207.00

                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       0.00     33.00     73.41     88.42    108.29    135.40    173.73    215.00    231.79    328.65
          OUTFLOW       0.00     67.85     98.56    107.76    118.85    132.49    149.67    166.20    171.97    202.07
        ELEVATION    2176.00   2177.00   2178.11   2178.52   2179.07   2179.81   2180.87   2182.00   2182.42   2184.87

          STORAGE     413.00    500.44    628.00    860.00    865.09    880.20    905.32    940.48    985.67   1040.88
          OUTFLOW     225.03    244.95    271.40    310.92    383.91    885.56   2239.12   4869.93   9201.48  15657.77
        ELEVATION    2187.00   2189.03   2192.00   2197.00   2197.10   2197.40   2197.90   2198.60   2199.50   2200.60

          STORAGE    1106.12   1111.00   1186.73   1278.47   1381.00
          OUTFLOW   24662.79  25389.93  36642.63  52017.35  71212.79
        ELEVATION    2201.90   2202.00   2203.40   2205.10   2207.00

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

```
                        HYDROGRAPH AT STATION     DAM1

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                  (CFS)
+    3224.      4.75             1017.        433.        417.        417.
                             (INCHES)     0.730       1.242       1.242       1.242
                              (AC-FT)      504.        858.        858.        858.

 PEAK STORAGE   TIME                        MAXIMUM AVERAGE STORAGE
                                     6-HR        24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
     918.      4.75                875.        646.        622.        622.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR        24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
   2198.17      4.75            2197.30     2192.08     2191.49     2191.49

                        CUMULATIVE AREA =   12.96 SQ MI


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


            **************
            *            *
  287 KK    *      DAM2  *
            *            *
            **************

  289 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

  290 RS          STORAGE ROUTING
                        NSTPS           1  NUMBER OF SUBREACHES
                         ITYP        FLOW  TYPE OF INITIAL CONDITION
                       RSVRIC        0.00  INITIAL CONDITION
                            X        0.00 WORKING R AND D COEFFICIENT

  291 SV            STORAGE         0.0      90.0     185.0     287.0     395.0     509.0     630.0

  292 SE          ELEVATION     2147.00   2152.00   2157.00   2162.00   2167.00   2172.00   2177.00

  294 SL          LOW-LEVEL OUTLET
                        ELEVL     2147.00  ELEVATION AT CENTER OF OUTLET
                        CAREA       14.10  CROSS-SECTIONAL AREA
                         COQL        0.60  COEFFICIENT
                         EXPL        0.50  EXPONENT OF HEAD

  293 SS          SPILLWAY
                         CREL     2167.00  SPILLWAY CREST ELEVATION
                        SPWID      200.00  SPILLWAY WIDTH
                         COQW        3.20  WEIR COEFFICIENT
                         EXPW        1.50  EXPONENT OF HEAD
                                                          ***
                                          COMPUTED OUTFLOW-ELEVATION DATA
```

```
          OUTFLOW      0.00     98.47    107.55    118.48    131.88    148.69    170.42    199.58    240.78    303.43
        ELEVATION   2147.00   2149.11   2149.51   2150.05   2150.78   2151.80   2153.31   2155.65   2159.59   2167.00

          OUTFLOW    325.86    473.32    866.32   1625.31   2870.76   4723.11   7302.80  10730.25  15125.91  20610.20
        ELEVATION   2167.10   2167.41   2167.91   2168.61   2169.51   2170.61   2171.91   2173.41   2175.10   2177.00


                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE      0.00     37.92     45.23     54.89     68.00     86.44     90.00    114.86    159.40    185.00
          OUTFLOW      0.00     98.47    107.55    118.48    131.88    148.69    151.72    170.42    199.58    214.56
        ELEVATION   2147.00   2149.11   2149.51   2150.05   2150.78   2151.80   2152.00   2153.31   2155.65   2157.00

          STORAGE    237.92    287.00    395.00    397.38    404.30    415.76    431.75    452.28    477.35    506.96
          OUTFLOW    240.79    262.78    303.43    325.84    473.27    866.43   1625.36   2870.67   4723.21   7302.58
        ELEVATION   2159.59   2162.00   2167.00   2167.10   2167.41   2167.91   2168.61   2169.51   2170.61   2171.91

          STORAGE    509.00    543.07    584.13    630.00
          OUTFLOW   7494.66  10730.16  15125.89  20610.20
        ELEVATION   2172.00   2173.41   2175.10   2177.00

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

                       HYDROGRAPH AT STATION     DAM2

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                              (CFS)
+     302.     11.58                302.        248.        239.         239.
                          (INCHES)  0.217       0.713       0.713        0.713
                           (AC-FT)  150.        493.        493.         493.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
      391.     11.58                391.        311.        299.         299.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
   2166.83     11.58              2166.81     2162.82     2162.24      2162.24

                       CUMULATIVE AREA =   12.96 SQ MI


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


            **************
            *            *
  313 KK    *     CP21H  *        JOMAX RD
            *            *
            **************

  314 KO          OUTPUT CONTROL VARIABLES
                        IPRNT          3  PRINT CONTROL
                        IPLOT          0  PLOT CONTROL
                        QSCAL         0.  HYDROGRAPH PLOT SCALE

  315 HC          HYDROGRAPH COMBINATION
                        ICOMP          3  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
```

```
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
       ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION    CP21H

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     742.      3.42                309.        275.        265.        265.
                         (INCHES)    0.210       0.751       0.751       0.751
                          (AC-FT)    153.        546.        546.        546.

                         CUMULATIVE AREA =   13.64 SQ MI

MANE2 NPLAN,NSTM        1      0


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


            **************
            *            *
  372 KK    *      CP27  *          CP AT SCOTTSDALE RD
            *            *
            **************

  373 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                                 COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
                                 POINT 27D WITH SUB 27 .  TOTAL FLOW AT
                                 SCOTTSDALE ROAD FOR FAN 4.

  377 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM        1      0
       ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION     CP27

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    2060.      3.17                495.        326.        314.        314.
                         (INCHES)    0.307       0.808       0.808       0.808
                          (AC-FT)    245.        646.        646.        646.

                         CUMULATIVE AREA =   15.00 SQ MI

1
                                                   RUNOFF SUMMARY
                                              FLOW IN CUBIC FEET PER SECOND
                                           TIME IN HOURS,  AREA IN SQUARE MILES

                                   PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN     MAXIMUM     TIME OF
        OPERATION       STATION    FLOW    PEAK                                           AREA      STAGE     MAX STAGE
+                                                      6-HOUR     24-HOUR     72-HOUR
```

+	HYDROGRAPH AT	16	2683.	3.25	323.	81.	78.	1.46	
+	HYDROGRAPH AT	17	2184.	3.25	262.	66.	64.	1.19	
+	HYDROGRAPH AT	18	2431.	3.25	273.	69.	66.	1.26	
+	3 COMBINED AT	19A	7297.	3.25	857.	216.	208.	3.91	
+	ROUTED TO	19B	7225.	3.33	857.	216.	208.	3.91	
+									7.03 3.33
+	HYDROGRAPH AT	15	1901.	3.42	281.	71.	68.	1.37	
+	2 COMBINED AT	19C	8929.	3.33	1138.	287.	277.	5.28	
+	ROUTED TO	19.1	8529.	3.33	1138.	287.	277.	5.28	
+									6.10 3.33
+	HYDROGRAPH AT	19	445.	3.25	42.	11.	10.	0.19	
+	HYDROGRAPH AT	20	1086.	3.25	125.	31.	30.	0.57	
+	3 COMBINED AT	CP20	9887.	3.33	1305.	329.	317.	6.03	
+	ROUTED TO	RRCP20	9129.	3.42	1303.	329.	317.	6.03	
+									4.09 3.42
+	HYDROGRAPH AT	21A	784.	3.25	81.	20.	20.	0.42	
+	2 COMBINED AT	CP21A	9593.	3.42	1384.	350.	337.	6.45	
+	ROUTED TO	RR21A	9383.	3.50	1383.	350.	337.	6.45	
+									3.46 3.50
+	HYDROGRAPH AT	21B	512.	3.25	53.	13.	13.	0.28	
+	2 COMBINED AT	CP21B	9671.	3.42	1436.	363.	350.	6.73	
+	ROUTED TO	RR21B	8973.	3.58	1435.	363.	350.	6.73	
+									3.74 3.58
+	HYDROGRAPH AT	21C	1248.	3.25	144.	36.	35.	0.75	
+	2 COMBINED AT	CP21C	9578.	3.50	1578.	399.	385.	7.48	
+	ROUTED TO	RR21C	7972.	3.67	1571.	399.	385.	7.48	

```
+                                                                                                  4.10       3.67
          HYDROGRAPH AT
+                          21D      1500.   3.33        204.       51.       50.      1.06
          2 COMBINED AT
+                        CP21D      8765.   3.67       1773.      451.      434.      8.54
          ROUTED TO
+                        RR21D      8701.   3.75       1773.      451.      434.      8.54
+                                                                                                  4.16       3.75
          HYDROGRAPH AT
+                          21E       402.   3.33         50.       12.       12.      0.26
          2 COMBINED AT
+                        CP21E      8840.   3.75       1822.      463.      446.      8.79
          ROUTED TO
+                        RR21E      8580.   3.75       1819.      463.      446.      8.79
+                                                                                                  6.35       3.75
          HYDROGRAPH AT
+                          21F       666.   3.33         90.       23.       22.      0.47
          2 COMBINED AT
+                        CP21F      8865.   3.75       1908.      486.      468.      9.26
          ROUTED TO
+                        RR21F      8833.   3.83       1905.      486.      468.      9.26
+                                                                                                  2.70       3.83
          HYDROGRAPH AT
+                          21G        26.   3.33          3.        1.        1.      0.02
          2 COMBINED AT
+                        CP21G      8841.   3.83       1908.      487.      469.      9.28
          HYDROGRAPH AT
+                           22      2825.   3.25        307.       77.       74.      1.39
          HYDROGRAPH AT
+                           23       779.   3.25         88.       22.       21.      0.39
          2 COMBINED AT
+                          24A      3603.   3.25        395.       99.       96.      1.78
          ROUTED TO
+                         24.1      2924.   3.42        395.       99.       96.      1.78
+                                                                                                  5.59       3.42
          HYDROGRAPH AT
+                           24       708.   3.25         85.       21.       21.      0.49
          2 COMBINED AT
+                        24.2A      3467.   3.42        479.      121.      116.      2.27
          HYDROGRAPH AT
+                          25N      1244.   3.42        177.       45.       43.      0.78
          HYDROGRAPH AT
+                          25S      1424.   3.25        152.       38.       37.      0.63
          2 COMBINED AT
+                         25.1      2431.   3.33        329.       83.       80.      1.41
          2 COMBINED AT
```

```
+                    24.2B    5611.   3.42      809.     204.     197.    3.68
        ROUTED TO
+                   PIMARD    5550.   3.42      808.     204.     197.    3.68
+                                                                        6.86      3.42
        ROUTED TO
+                   RR24.2    5294.   3.50      808.     204.     197.    3.68
+                                                                        6.96      3.50
        2 COMBINED AT
+                   C21.05   12190.   3.75     2714.     691.     666.   12.96
        ROUTED TO
+                     DAM1    3224.   4.75     1017.     433.     417.   12.96
+                                                                     2198.17      4.75
        ROUTED TO
+                     DAM2     302.  11.58      302.     248.     239.   12.96
+                                                                     2166.83     11.58
        ROUTED TO
+                     R21G     302.  11.83      302.     245.     236.   12.96
+                                                                        0.36     11.92
        HYDROGRAPH AT
+                      21H      64.   3.33        8.       2.       2.    0.04
        HYDROGRAPH AT
+                      26N     690.   3.50      110.      28.      27.    0.64
        3 COMBINED AT
+                    CP21H     742.   3.42      309.     275.     265.   13.64
        ROUTED TO
+                    RR21H     621.   3.58      304.     272.     262.   13.64
+                                                                        0.58      3.58
        HYDROGRAPH AT
+                      26S     239.   3.25       29.       7.       7.    0.17
        2 COMBINED AT
+                   *APEX*     738.   3.58      326.     280.     269.   13.81
        ROUTED TO
+                    CP27A     723.   3.58      325.     279.     268.   13.81
+                                                                        1.75      3.58
        ROUTED TO
+                    CP27B     686.   3.75      323.     276.     266.   13.81
+                                                                        1.71      3.75
        ROUTED TO
+                    CP27C     653.   3.83      320.     274.     264.   13.81
+                                                                        1.66      3.83
        ROUTED TO
+                    CP27D     650.   3.83      320.     273.     263.   13.81
+                                                                        1.66      3.83
        HYDROGRAPH AT
+                       27    2052.   3.17      207.      52.      50.    1.19
        2 COMBINED AT
+                     CP27    2060.   3.17      495.     326.     314.   15.00
1
                    SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
```

(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
16	MANE	3.27	2790.08	197.97	2.08	5.00	2682.70	195.00	2.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1620E+03 OUTFLOW=0.1613E+03 BASIN STORAGE=0.4299E-01 PERCENT ERROR= 0.4

17	MANE	3.68	2249.16	195.52	2.07	5.00	2183.62	195.00	2.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1317E+03 OUTFLOW=0.1309E+03 BASIN STORAGE=0.4985E-01 PERCENT ERROR= 0.6

18	MANE	3.18	2466.56	196.97	2.02	5.00	2431.13	195.00	2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1368E+03 OUTFLOW=0.1360E+03 BASIN STORAGE=0.5145E-01 PERCENT ERROR= 0.6

15	MANE	3.51	1901.39	207.57	1.93	5.00	1901.08	205.00	1.93

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1417E+03 OUTFLOW=0.1409E+03 BASIN STORAGE=0.5998E-01 PERCENT ERROR= 0.5

19	MANE	1.80	456.95	193.94	2.11	5.00	444.60	195.00	2.11

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2111E+02 OUTFLOW=0.2104E+02 BASIN STORAGE=0.3666E-02 PERCENT ERROR= 0.4

20	MANE	3.77	1138.08	196.21	2.05	5.00	1086.14	195.00	2.05

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6254E+02 OUTFLOW=0.6220E+02 BASIN STORAGE=0.1496E-01 PERCENT ERROR= 0.5

21A	MANE	2.36	804.58	193.66	1.81	5.00	783.53	195.00	1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4070E+02 OUTFLOW=0.4053E+02 BASIN STORAGE=0.1094E-01 PERCENT ERROR= 0.4

21B	MANE	2.56	520.22	194.23	1.81	5.00	511.65	195.00	1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2674E+02 OUTFLOW=0.2663E+02 BASIN STORAGE=0.7314E-02 PERCENT ERROR= 0.4

21C	MANE	3.23	1300.20	196.60	1.81	5.00	1248.06	195.00	1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7248E+02 OUTFLOW=0.7205E+02 BASIN STORAGE=0.2485E-01 PERCENT ERROR= 0.6

21D	MANE	3.10	1538.29	200.70	1.81	5.00	1499.66	200.00	1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1026E+03 OUTFLOW=0.1020E+03 BASIN STORAGE=0.5119E-01 PERCENT ERROR= 0.5

```
              21E  MANE        3.04    421.12    198.38      1.81      5.00    401.68    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2490E+02 OUTFLOW=0.2476E+02 BASIN STORAGE=0.1083E-01 PERCENT ERROR=   0.5

              21F  MANE        4.33    687.84    201.28      1.80      5.00    666.34    200.00        1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4544E+02 OUTFLOW=0.4507E+02 BASIN STORAGE=0.2383E-01 PERCENT ERROR=   0.8

              21G  MANE        4.06     26.27    199.44      1.80      5.00     26.04    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1667E+01 OUTFLOW=0.1656E+01 BASIN STORAGE=0.7499E-03 PERCENT ERROR=   0.6

               22  MANE        3.71   2850.96    194.47      2.07      5.00   2824.55    195.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1539E+03 OUTFLOW=0.1530E+03 BASIN STORAGE=0.3984E-01 PERCENT ERROR=   0.5

               23  MANE        3.96    781.94    194.26      2.09      5.00    778.56    195.00        2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4420E+02 OUTFLOW=0.4393E+02 BASIN STORAGE=0.9523E-02 PERCENT ERROR=   0.6

               24  MANE        2.78    735.98    195.89      1.62      5.00    708.45    195.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4263E+02 OUTFLOW=0.4239E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.5

              25N  MANE        4.27   1280.11    203.94      2.13      5.00   1243.86    205.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8954E+02 OUTFLOW=0.8895E+02 BASIN STORAGE=0.4329E-01 PERCENT ERROR=   0.6

              25S  MANE        3.07   1432.12    195.33      2.28      5.00   1424.44    195.00        2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7648E+02 OUTFLOW=0.7611E+02 BASIN STORAGE=0.2473E-01 PERCENT ERROR=   0.5

              21H  MANE        4.16     64.59    199.55      1.80      5.00     64.21    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4176E+01 OUTFLOW=0.4145E+01 BASIN STORAGE=0.2185E-02 PERCENT ERROR=   0.7

              26N  MANE        4.34    695.84    209.67      1.63      5.00    689.73    210.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5568E+02 OUTFLOW=0.5537E+02 BASIN STORAGE=0.2531E-01 PERCENT ERROR=   0.5

              26S  MANE        3.14    248.14    195.91      1.63      5.00    238.82    195.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1460E+02 OUTFLOW=0.1454E+02 BASIN STORAGE=0.4459E-02 PERCENT ERROR=   0.4
```

```
                27  MANE          0.61    2077.01     190.94      1.63      5.00   2052.00     190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1040E+03 OUTFLOW=0.1038E+03 BASIN STORAGE=0.2468E-01 PERCENT ERROR=   0.2


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

Existing Conditions Model

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *             JUN 09 1992               *
 *            VERSION 4.0.3E             *
 *                                       *
 *  RUN DATE  09/28/98  TIME  17:33:22   *
 *                                       *
 *****************************************

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

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

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

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

1                                    HEC-1 INPUT                                    PAGE  1

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

         1          ID        FILE <RWDAM21F.DAT>
         2          ID        THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
         3          ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
         4          ID
         5          ID        THE MODIFICIATION INCLUDE THE FOLLOWING:
         6          ID        1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
         7          ID           TO CONCENTRATION POINT AT THE APEX OF 21F
         8          ID        2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE
         9          ID
        10          ID        NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
        11          ID        1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
        12          ID        MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
        13          ID        25S.
        14          ID
        15          ID        100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
        16          ID        RAINFALL FROM NOAA ATLAS
        17          ID
        18          ID        FILE RAW4A.DAT
        19          ID        WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
        20          ID        FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
        21          ID        22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
        22          ID        THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
        23          ID        ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
        24          ID        INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
        25          ID        PROPOSED ROAD CROSSINGS.
        26          ID
        27          ID        REVISED BY GREINER 12-9-93 BY RON FERGUSON
        28          ID        REVISED BY C. J. LOVELY, COS, 3-9-94
        29          ID        Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
        30          ID           *Eliminate DSS Records
```

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31          ID          *Divide #26 into 26N & 26S; 26N is portion north of Jomax
32          ID          *Add 26N @ CP21H and route with 21H to apex
33          ID          *Add 26S @ apex
34          ID          *Modify reach length in 26S & 26N to reflect division
35          ID
36          ID        ********************************************************************
37          ID        * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
38          ID        * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
39          ID        ********************************************************************
40          ID                                    Used as the base condition for the
41          ID    September 1998 - Rawhide Detention Basin Design Project FCD 97-23
42          ID    September 1998 - Filename <RAWBASE.DAT>
43          ID
44          ID
45          ID   ***************************************************************************
            *DIAGRAM
46          IT       5 03MAR94       0     300
47          IO       3       0       0       0
            *
1                                          HEC-1 INPUT                                    PAGE  2

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

48          KK      16     SUB
49          KM        RUNOFF FROM SUB-BASIN 16
50          BA  1.4570
51          PH       0     9.7    0.77    1.51    2.65    3.00    3.23    3.66
52          LS       0      83     9.8       0       0       0       0       0
53          UK     217   .0581     .20     100
54          RK   14800   .0216    .045       0    TRAP      25       3
            *

55          KK      17     SUB
56          KM        RUNOFF FROM SUB-BASIN 17
57          BA  1.1851       0       0
58          LS       0      83     9.8
59          UK     285   .0421     .20     100       0       0       0
60          RK   12200   .0254    .045       0    TRAP      25       3
            *

61          KK      18     SUB
62          KM        RUNOFF FROM SUB-BASIN 18
63          BA  1.2641
64          LS       0      83     6.5       0
65          UK     285   .0421     .20     100       0       0       0
66          RK   10840   .0259    .045       0    TRAP      25       3
            *

67          KK     19A      CP
68          KM        COMBINE HYDROGRAPHS SUB16, SUB17 AND SUB18
69          HC       3
            *

70          KK     19B      CP
71          KM        ROUTE CP19A TO CP19B
72          RS       1    FLOW      -1       0       0
73          RC    .055    .040    .055    1100   .0155       0       0       0
74          RX       0       1     126     132     167     173     298     299
75          RY      10       8       3       0       0       3       8      10
            *

76          KK      15     SUB
77          KM        RUNOFF FROM SUBBASIN 15
78          BA  1.3702       0       0
79          LS       0      82     5.4       0
80          UK     217   .0581     .20     100       0       0       0
```

```
 81          RK   21200   .0236    .045       0    TRAP      25       3
             *

 82          KK     19C      CP
 83          KM        COMBINE HYDROGRAPHS SUB15 & CP19B
 84          HC       2
             *
1                                          HEC-1 INPUT                                                PAGE  3

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

 85          KK    19.1      CP
 86          KM        ROUTE CP 19C TO 19.1
 87          RS       1    FLOW      -1       0       0
 88          RC    .055    .040    .055    1800   .0200       0       0
 89          RX       0       1     151     166     216     231     381     382
 90          RY      10       9       3       0       0       3       9      10
             *

 91          KK      19     SUB
 92          KM        RUNOFF FROM SUB-BASIN 19
 93          BA  0.1872
 94          LS       0      84     7.2       0
 95          UK     275   .0800     .20     100       0       0       0
 96          RK    3730   .0352    .045    .160    TRAP      15       3
 97          RK    1800   .0200    .045       0    TRAP      50      30
             *

 98          KK      20     SUB
 99          KM        RUNOFF FROM SUB-BASIN 20
100          BA  0.5698       0       0
101          LS       0      84     3.6       0
102          UK     300   .0750     .20     100       0       0       0
103          RK    9640   .0197    .045       0    TRAP      15       3
             *

104          KK    CP20      CP
105          KM        COMBINE SUB 19, SUB 20 AND CP 19.1
106          HC       3
             *
107          KM    *******BEGIN SUBAREA 21 BREAKDOWN-3/94 REVISIONS*****

108          KK  RRCP20      CP
109          KM        ROUTE CP20 TO CP 21A, WHICH IS 4600'
110          RS       1    FLOW      -1       0       0
111          RC    .055    .040    .055    4600   .0217       0       0       0
112          RX       0      30      60      85     195     220     250     280
113          RY      10       4       1       0       0       1       4      10
             *

114          KK     21A     SUB
115          KM        RUNOFF FROM SUB-BASIN 21A
116          BA     .42       0       0
117          LS       0      80     6.4       0       0       0
118          UK     297   .0558     .20     100       0       0       0
119          RK    6400   .0344    .045       0    TRAP      10       3
             *

120          KK   CP21A
121          HC       2
             *
1                                          HEC-1 INPUT                                                PAGE  4

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

```
 122          KK   RR21A      CP
 123          KM        ROUTE CP21A TO 21B    WHICH IS 960'
 124          RS       1    FLOW      -1       0       0
 125          RC    .055    .040    .055     960   .0156       0       0       0
 126          RX       0      10      60     205     295     440     490     500
 127          RY       6       4       2       0       0       2       4       6
              *

 128          KK     21B     SUB
 129          KM        RUNOFF FROM SUB-BASIN 21B
 130          BA   0.276       0       0
 131          LS       0      80     6.4       0       0       0
 132          UK     297   .0558     .20     100       0       0       0
 133          RK    6300   .0381    .045       0    TRAP      10       3
              *

 134          KK   CP21B
 135          HC       2
              *

 136          KK   RR21B      CP
 137          KM        ROUTE CP21B TO 21C    WHICH IS 4400'
 138          RS       1    FLOW      -1       0       0
 139          RC    .055    .040    .055    4400   .0205       0       0       0
 140          RX       0      10      60     205     295     440     490     500
 141          RY       6       4       2       0       0       2       4       6
              *

 142          KK     21C     SUB
 143          KM        RUNOFF FROM SUB-BASIN 21C
 144          BA    .748       0       0
 145          LS       0      80     6.4       0       0       0
 146          UK     297   .0558     .20     100       0       0       0
 147          RK    9900   .0328    .045       0    TRAP      20       3
              *

 148          KK   CP21C
 149          HC       2
              *

 150          KK   RR21C      CP
 151          KM        ROUTE CP21C TO 21D    WHICH IS 5700'
 152          RS       1    FLOW      -1       0       0
 153          RC    .055    .040    .055    5700   .0181       0       0       0
 154          RX       0      20     175     210     300     335     490     510
 155          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
              *

 156          KK     21D     SUB
 157          KM        RUNOFF FROM SUB-BASIN 21D
 158          BA   1.059       0       0
 159          LS       0      80     6.4       0       0       0
 160          UK     297   .0558     .20     100       0       0       0
 161          RK   14500   .0252    .045       0    TRAP      30       3
              *
```



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

 162          KK   CP21D
 163          HC       2
              *

 164          KK   RR21D      CP
 165          KM        ROUTE CP21D TO 21E    WHICH IS 1100'
 166          RS       1    FLOW      -1       0       0
```

```
167          RC    .055    .040    .055    1100   .0200      0      0      0
168          RX       0      20     175     210     300    335    490    510
169          RY     5.5     3.5     2.5       0       0    2.5    3.5    5.5
             *

170          KK     21E     SUB
171          KM        RUNOFF FROM SUB-BASIN 21E
172          BA   0.257       0       0
173          LS       0      80     6.4       0       0      0
174          UK     297   .0333     .20     100       0      0      0
175          RK    6600   .0288    .045       0    TRAP     15      3
             *

176          KK   CP21E
177          HC       2
             *

178          KK   RR21E      CP
179          KM        ROUTE CP21E TO 21F    WHICH IS 2800'
180          RS       1    FLOW      -1       0       0
181          RC    .055    .040    .055    2800   .0143      0      0      0
182          RX       0      70     170     180     230    240    340    410
183          RY    10.5     4.5     3.5       0       0    3.5    4.5   10.5
             *

184          KK     21F     SUB
185          KM        RUNOFF FROM SUB-BASIN 21F
186          BA   0.469       0       0
187          LS       0      80     6.4       0       0      0
188          UK     297   .0333     .20     100       0      0      0
189          RK   10400   .0279    .045       0    TRAP     20      3
             *

190          KK   CP21F
191          HC       2
             *

192          KK   RR21F      CP
193          KM   ROUTE CP21F TO 21G (1900' DOWNSTREAM)
194          RS       1    FLOW      -1       0       0
195          RC    .055    .040    .055    1900   .0158      0      0      0
196          RX       0      20      70     345     455    730    780    800
197          RY      10       8       2       0       0      2      8     10
             *
```



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

198          KK     21G     SUB
199          KM   RUNOFF FROM SUB-BASIN 21G
200          BA   .0172       0       0
201          LS       0      80     6.4       0       0      0
202          UK     297   .0333     .20     100       0      0      0
203          RK    4000   .0300    .045       0    TRAP     10      3
             *

204          KK   CP21G
205          HC       2
             *

206          KK      22     SUB
207          KM       RUNOFF FROM SUB-BASIN 22
208          BA  1.3860
209          LS       0      84     5.1       0
210          UK     225   .0590     .20     100       0      0      0      0
211          RK   13000   .0238    .045       0    TRAP     25      3
```

```
                 *

212              KK      23      SUB
213              KM         RUNOFF FROM SUB-BASIN 23
214              BA  0.3945       0       0
215              LS       0      84     6.3       0
216              UK     225   .0590     .20     100       0       0       0
217              RK   10200   .0304    .045       0    TRAP      20       3
                 *

218              KK     24A      CP
219              KM         COMBINE HYDROGRAPHS FOR SUB 22 AND SUB 23
220              HC       2
                 *

221              KK    24.1      CP
222              KM         ROUTE CP 24A TO CP 24.1
223              RS       3    FLOW      -1       0       0
224              RC    .055    .040    .055    6800   .0257       0       0       0
225              RX       0       1     101     107     122     128     228     229
226              RY      10       8       3       0       0       3       8      10
                 *

227              KK      24      SUB
228              KM         RUNOFF FROM SUB-BASIN 24
229              KM         DRAINAGE AREA CHANGED TO MATCH VALUE USED BY MICHAEL BAKER
230              KM         Jr., INC.
231              BA  0.4907       0       0
232              LS       0      77     6.8       0
233              UK     295   .0438     .20     100       0       0       0
234              RK    6800   .0257    .045       0    TRAP      15       3
                 *
1                                          HEC-1 INPUT                                          PAGE  7

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

235              KK   24.2A      CP
236              KM         COMBINE SUB 24 & CP 24.1 - APEX
237              HC       2
                 *

238              KK     25N       SUB
239              KM         RUNOFF FROM SUB-BASIN 25N - APEX
240              BA  0.7834       0       0       0       0       0       0       0
241              LS       0      84     9.0       0
242              UK     295   .0438     .20     100       0       0       0
243              RK   16700   .0302    .045       0    TRAP      25       3
                 *

244              KK     25S      SUB
245              KM         RUNOFF FROM SUB-BASIN 25S - APEX
246              BA  0.6256       0       0       0       0       0       0       0
247              LS       0      86     9.0       0
248              UK     295   .0438     .20     100       0       0       0
249              RK    8900   .0278    .045       0    TRAP      25       3
                 *

250              KK    25.1      CP
251              KM         COMBINE HYDROGRAPHS FOR SUB-BASINS 25N AND 25S
252              HC       2
                 *

253              KK   24.2B      CP
254              KM         COMBINE TOTAL HYDROGRAPH 24.2A WITH 25.1
255              HC       2
                 *
```

```
256          KK  PIMARD      CP
257          KM   ROUTE THE TOTAL HYDROGRAPH AT THE CONCENTRATION POINT
258          KM   24.2B TO THE CULVERT AT THE PIMA ROAD. THERE IS NO
259          KM   CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
260          RS       1    FLOW      -1       0       0
261          RC    .055    .040    .055    2000   .0287       0       0       0
262          RX       0       1     101     107     122     128     228     229
263          RY      10       8       3       0       0       3       8      10
             *

264          KK  RR24.2      CP
265          KM   ROUTE THE TOTAL HYDROGRAPH AT CONCENTRATION POINT
266          KM   24.2B FROM THE CULVERT UNDER PIMA ROAD TO CONCENTRATION
267          KM   POINT 21.05.
268          RS       1    FLOW      -1       0       0
269          RC    .055    .040    .055    3050   .0238       0       0       0
270          RX       0       1     101     107     122     128     228     229
271          RY      10       8       3       0       0       3       8      10
             *
             *
1                                          HEC-1 INPUT                                                PAGE  8
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

272          KK  C21.05 CONFLUENCE OF DGB CHANNELS NEAR MID-SECTION 36
273          KM         COMBINE HYDROGRAPH CP21G WITH HYDROGRAPH RR24.2
274          KM         (FROM THE PIMA ROAD CULVERT)
275          HC       2
             *

276          KK    R21G     CP
277          KM        ROUTE CP21G(21.05)TO 21H WHICH IS 3100'
278          RS       1    FLOW      -1       0       0
279          RC    .055    .040    .055    3100   .0194       0       0       0
280          RX       0      90     120     355     585     820     850     940
281          RY       9       4     1.5       0       0     1.5       4       9
             *

282          KK     21H     SUB
283          KM        RUNOFF FROM SUB-BASIN 21H
284          BA   .0431       0       0
285          LS       0      80     6.4       0       0       0
286          UK     297   .0333     .20     100       0       0       0
287          RK    4600   .0278    .045       0    TRAP      20       3
             *

288          KK     26N
289          KM       Runoff from sub-basin 26N
290          BA   .6376       0       0
291          LS       0      75    12.7       0
292          UK     200   .0250     .20     100       0
293          RK   12000   .0263    .045       0    TRAP      35      10
             *

294          KK   CP21H   JOMAX RD
295          KO       3
296          HC       3
             *

297          KK   RR21H      CP
298          KM        ROUTE HYDROGRAPH AT CONCENTRATION POINT 21H   DOWNSTREAM FROM
299          KM        JOMAX ROAD            THERE IS NO ADDITIONAL CONTRIBUTING
300          KM        DRAINAGE AREA AT THIS CONCENTRATION POINT.  USED CHANNEL
301          KM        GEOMETRY                          FROM REACH SIX
302          KM             DEVELOPED BY C. LOVELY
```

```
303          RS       1    FLOW      -1       0       0
304          RC    .055    .040    .055    2390   .0188       0       0       0
305          RX       0      90     120     355     585     820     850     940
306          RY       9       4     1.5       0       0     1.5       4       9
             *

307          KK     26S     SUB
308          KM       RUNOFF FROM SUB-BASIN 26S
309          BA  0.1672       0       0
310          LS       0      75    12.7       0
311          UK     200   .0250     .20     100       0       0       0
312          RK    4000   .0263    .045       0    TRAP      35      10
             *
1                                          HEC-1 INPUT                                                    PAGE  9

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

313          KK  *APEX*      CP
314          KM        COMBINE FLOW FROM SUB-BASIN 26 ,
315          KM            AND ROUTED HYDROGRAPH FROM JOMAX ROAD.
316          HC       2
             *
317          KM        *********END SUBAREA 21 REVISIONS************

318          KK   CP27A      CP AT HAPPY VALLEY RD
319          KM        ROUTE FLOW FROM CONCENTRATION POINT APEX  TO 27A (HAPPY VALLEY
320          KM        ROAD).  THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION PT.
321          KM
322          RS       1    FLOW      -1       0       0
323          RC    .055    .040    .055    1600   .0196       0       0       0
324          RX       0       1     201     211     261     271     471     472
325          RY      10       4       2       0       0       2       4      10
             *

326          KK   CP27B      CP AT MILLER RD
327          KM        ROUTE FLOW FROM CONCENTRATION POINT 27B TO 27C (MILLER ROAD).
328          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
329          RS       1    FLOW      -1       0       0
330          RC    .055    .040    .055    3300   .0196       0       0       0
331          RX       0       1     201     211     261     271     471     472
332          RY      10       4       2       0       0       2       4      10
             *

333          KK   CP27C      CP AT PINNACLE PEAK RD
334          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (PINNACLE PK ROAD).
335          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
336          RS       1    FLOW      -1       0       0
337          RC    .055    .040    .055    3300   .0196       0       0       0
338          RX       0       1     201     211     261     271     471     472
339          RY      10       4       2       0       0       2       4      10
             *

340          KK   CP27D     CP AT SCOTTSDALE RD
341          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (SCOTTSDALE ROAD)
342          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
343          RS       1    FLOW      -1       0       0
344          RC    .055    .040    .055    1000   .0196       0       0       0
345          RX       0       1     201     211     261     271     471     472
346          RY      10       4       2       0       0       2       4      10
             *

347          KK      27     SUB
348          KM       RUNOFF FROM SUB-BASIN 27
349          BA  1.1913       0       0
350          LS       0      75    12.7       0
351          UK     200   .0250     .20     100       0       0       0
```

```
          352          RK    1500   .0263    .045       0    TRAP      35      10
                       *
1                                                HEC-1 INPUT                                                    PAGE 10

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


          353          KK    CP27      CP AT SCOTTSDALE RD
          354          KO       3
          355          KM        COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
          356          KM        POINT 27D WITH SUB 27 .  TOTAL FLOW AT
          357          KM        SCOTTSDALE ROAD FOR FAN 4.
          358          HC       2
                       *
          359          ZZ
1
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

    48          16
                 .
                 .
    55           .          17
                 .           .
                 .           .
    61           .           .          18
                 .           .           .
                 .           .           .
    67         19A.......................
                 V
                 V
    70         19B
                 .
                 .
    76           .          15
                 .           .
                 .           .
    82         19C............
                 V
                 V
    85        19.1
                 .
                 .
    91           .          19
                 .           .
                 .           .
    98           .           .          20
                 .           .           .
                 .           .           .
   104        CP20.......................
                 V
                 V
   108      RRCP20
                 .
                 .
   114           .         21A
                 .           .
                 .           .
   120       CP21A............
                 V
                 V
   122       RR21A
                 .
                 .
```

```
128          .         21B
             .           .
             .           .
134      CP21B...........
             V
             V
136      RR21B
             .
             .
142          .         21C
             .           .
             .           .
148      CP21C...........
             V
             V
150      RR21C
             .
             .
156          .         21D
             .           .
             .           .
162      CP21D...........
             V
             V
164      RR21D
             .
             .
170          .         21E
             .           .
             .           .
176      CP21E...........
             V
             V
178      RR21E
             .
             .
184          .         21F
             .           .
             .           .
190      CP21F...........
             V
             V
192      RR21F
             .
             .
198          .         21G
             .           .
             .           .
204      CP21G...........
             .
             .
206          .          22
             .           .
             .           .
212          .           .         23
             .           .           .
             .           .           .
218          .         24A...........
             .           V
             .           V
221          .        24.1
             .           .
             .           .
227          .           .         24
             .           .           .
             .           .           .
235          .      24.2A...........
```

```
                .          .
  238           .          .        25N
                .          .          .
  244           .          .          .        25S
                .          .          .          .
  250           .          .       25.1...........
                .          .          .
  253           .      24.2B...........
                .         V
                .         V
  256           .     PIMARD
                .         V
                .         V
  264           .     RR24.2
                .          .
                .          .
  272      C21.05...........
                V
                V
  276        R21G
                .
                .
  282           .        21H
                .          .
                .          .
  288           .          .        26N
                .          .          .
                .          .          .
  294       CP21H........................
                V
                V
  297       RR21H
                .
                .
  307           .        26S
                .          .
                .          .
  313      *APEX*...........
                V
                V
  318       CP27A
                V
                V
  326       CP27B
                V
                V
  333       CP27C
                V
                V
  340       CP27D
                .
                .
  347           .         27
                .          .
                .          .
  353        CP27...........
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN 09 1992               *
*            VERSION 4.0.3E             *
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
```

```
*                                        *                                        *      DAVIS, CALIFORNIA 95616       *
*  RUN DATE  09/28/98  TIME  17:33:22    *                                        *          (916) 551-1748            *
*                                        *                                        *                                    *
******************************************                                        ****************************************


                                FILE <RWDAM21F.DAT>
                                THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
                                THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.

                                THE MODIFICIATION INCLUDE THE FOLLOWING:
                                1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
                                   TO CONCENTRATION POINT AT THE APEX OF 21F
                                2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE

                                NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
                                1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
                                MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
                                25S.

                                100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
                                RAINFALL FROM NOAA ATLAS

                                FILE RAW4A.DAT
                                WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
                                FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
                                22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
                                THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
                                ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
                                INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
                                PROPOSED ROAD CROSSINGS.

                                REVISED BY GREINER 12-9-93 BY RON FERGUSON
                                REVISED BY C. J. LOVELY, COS, 3-9-94
                                Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
                                   *Eliminate DSS Records
                                   *Divide #26 into 26N & 26S; 26N is portion north of Jomax
                                   *Add 26N @ CP21H and route with 21H to apex
                                   *Add 26S @ apex
                                   *Modify reach length in 26S & 26N to reflect division

                                ******************************************************************
                                * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
                                * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
                                ******************************************************************
                                                        Used as the base condition for the
                            September 1998 - Rawhide Detention Basin Design Project FCD 97-23
                            September 1998 - Filename <RAWBASE.DAT>


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

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

    IT          HYDROGRAPH TIME DATA
                       NMIN           5  MINUTES IN COMPUTATION INTERVAL
                      IDATE      3MAR94  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      4MAR94  ENDING DATE
                     NDTIME        0055  ENDING TIME
```

```
                    ICENT          19  CENTURY MARK

                COMPUTATION INTERVAL    0.08 HOURS
                     TOTAL TIME BASE   24.92 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


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


           **************
           *            *
  48 KK    *        16  *          SUB
           *            *
           **************
                              RUNOFF FROM SUB-BASIN 16

              SUBBASIN RUNOFF DATA

  50 BA         SUBBASIN CHARACTERISTICS
                      TAREA        1.46  SUBBASIN AREA

                PRECIPITATION DATA

  51 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............  ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                STORM AREA =    9.70

  52 LS         SCS LOSS RATE
                      STRTL        0.41  INITIAL ABSTRACTION
                     CRVNBR       83.00  CURVE NUMBER
                      RTIMP        9.80  PERCENT IMPERVIOUS AREA

                KINEMATIC WAVE
  53 UK           OVERLAND-FLOW ELEMENT NO. 1
                          L        217.  OVERLAND FLOW LENGTH
                          S      0.0581  SLOPE
                          N       0.200  ROUGHNESS COEFFICIENT
                         PA       100.0  PERCENT OF SUBBASIN
                     DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                KINEMATIC WAVE
  54 RK           MAIN CHANNEL
                          L      14800.  CHANNEL LENGTH
                          S      0.0216  SLOPE
                          N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                         CA        1.46  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD       25.00  BOTTOM WIDTH OR DIAMETER
                          Z        3.00  SIDE SLOPE
                     NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                     RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH
                                                                  ***
                                  COMPUTED KINEMATIC PARAMETERS
```

```
                                        VARIABLE TIME STEP
                                      (DT SHOWN IS A MINIMUM)

                 ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                              PEAK                  CELERITY
                                                (MIN)      (FT)     (CFS)     (MIN)       (IN)      (FPS)

                 PLANE1       1.80      1.67       1.43     43.40   4161.67    185.53       2.08       0.54
                 MAIN         0.82      1.50       3.27   3700.00   2790.08    197.97       2.08      18.89

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.1620E+03 OUTFLOW=0.1613E+03 BASIN STORAGE=0.4299E-01 PERCENT ERROR=   0.4

                                      INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                 MAIN         0.82      1.50       5.00             2682.70    195.00       2.08

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

                      HYDROGRAPH AT STATION       16

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.49, TOTAL EXCESS =    2.08

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                   (CFS)
+    2683.      3.25                323.         81.         78.         78.
                                (INCHES)      2.060       2.079       2.079       2.079
                                 (AC-FT)       160.        162.        162.        162.

                                CUMULATIVE AREA =    1.46 SQ MI


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


            **************
            *            *
   55 KK    *        17  *          SUB
            *            *
            **************
                                RUNOFF FROM SUB-BASIN 17

               SUBBASIN RUNOFF DATA

   57 BA          SUBBASIN CHARACTERISTICS
                        TAREA        1.19  SUBBASIN AREA

                  PRECIPITATION DATA

   51 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                STORM AREA =    9.70

   58 LS          SCS LOSS RATE
                        STRTL        0.41  INITIAL ABSTRACTION
                       CRVNBR       83.00  CURVE NUMBER
                        RTIMP        9.80  PERCENT IMPERVIOUS AREA
```

```
                 KINEMATIC WAVE
  59 UK            OVERLAND-FLOW ELEMENT NO. 1
                           L        285.  OVERLAND FLOW LENGTH
                           S      0.0421  SLOPE
                           N       0.200  ROUGHNESS COEFFICIENT
                          PA       100.0  PERCENT OF SUBBASIN
                      DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                 KINEMATIC WAVE
  60 RK            MAIN CHANNEL
                           L      12200.  CHANNEL LENGTH
                           S      0.0254  SLOPE
                           N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                          CA        1.19  CONTRIBUTING AREA
                       SHAPE        TRAP  CHANNEL SHAPE
                          WD       25.00  BOTTOM WIDTH OR DIAMETER
                           Z        3.00  SIDE SLOPE
                      NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                      RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH
                                                   ***
                                  COMPUTED KINEMATIC PARAMETERS
                                       VARIABLE TIME STEP
                                    (DT SHOWN IS A MINIMUM)

                   ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                  PEAK                CELERITY
                                                   (MIN)      (FT)     (CFS)     (MIN)      (IN)      (FPS)

                   PLANE1      1.53      1.67       1.95     57.00   2886.13    189.38      2.08       0.52
                   MAIN        0.89      1.50       3.68   4066.67   2249.16    195.52      2.07      19.18

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.1317E+03 OUTFLOW=0.1309E+03 BASIN STORAGE=0.4985E-01 PERCENT ERROR=   0.6

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                   MAIN        0.89      1.50       5.00             2183.62    195.00      2.08
      ***          ***         ***        ***        ***
                          HYDROGRAPH AT STATION       17
    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.49, TOTAL EXCESS =    2.08
  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    2184.      3.25                262.        66.         64.         64.
                         (INCHES)   2.054       2.075       2.075       2.075
                          (AC-FT)    130.        131.        131.        131.
                          CUMULATIVE AREA =    1.19 SQ MI


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

            **************
            *            *
  61 KK     *        18  *          SUB
            *            *
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**************
                    RUNOFF FROM SUB-BASIN 18

          SUBBASIN RUNOFF DATA

63 BA       SUBBASIN CHARACTERISTICS
                TAREA        1.26  SUBBASIN AREA

            PRECIPITATION DATA

51 PH                          DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
            ..... HYDRO-35 ......  ............... TP-40 ...............  ........... TP-49 ...........
            5-MIN  15-MIN  60-MIN   2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
             0.77    1.51    2.65   3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                          STORM AREA =    9.70

64 LS       SCS LOSS RATE
              STRTL        0.41  INITIAL ABSTRACTION
             CRVNBR       83.00  CURVE NUMBER
              RTIMP        6.50  PERCENT IMPERVIOUS AREA

            KINEMATIC WAVE
65 UK         OVERLAND-FLOW ELEMENT NO. 1
                  L        285.  OVERLAND FLOW LENGTH
                  S      0.0421  SLOPE
                  N       0.200  ROUGHNESS COEFFICIENT
                 PA       100.0  PERCENT OF SUBBASIN
              DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

            KINEMATIC WAVE
66 RK         MAIN CHANNEL
                  L      10840.  CHANNEL LENGTH
                  S      0.0259  SLOPE
                  N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                 CA        1.26  CONTRIBUTING AREA
              SHAPE        TRAP  CHANNEL SHAPE
                 WD       25.00  BOTTOM WIDTH OR DIAMETER
                  Z        3.00  SIDE SLOPE
             NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
             RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH

                                                  ***
                          COMPUTED KINEMATIC PARAMETERS
                               VARIABLE TIME STEP
                            (DT SHOWN IS A MINIMUM)

              ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                          PEAK                  CELERITY
                                                (MIN)     (FT)     (CFS)    (MIN)      (IN)      (FPS)

              PLANE1      1.53     1.67       1.88     57.00   3001.18    188.72      2.02       0.51
              MAIN        0.90     1.50       3.18   3613.33   2466.56    196.97      2.02      19.96

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.1368E+03 OUTFLOW=0.1360E+03 BASIN STORAGE=0.5145E-01 PERCENT ERROR=   0.6

                                  INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

              MAIN        0.90     1.50       5.00             2431.13    195.00      2.02
   ***          ***          ***          ***          ***
                     HYDROGRAPH AT STATION       18
```

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     TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.55, TOTAL EXCESS =    2.03

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                   (CFS)
+    2431.      3.25                273.        69.         66.         66.
                                (INCHES)      2.004       2.021       2.022       2.022
                                 (AC-FT)      135.        136.        136.        136.

                                CUMULATIVE AREA =    1.26 SQ MI


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


            **************
            *            *
   67 KK    *       19A  *          CP
            *            *
            **************
                                COMBINE HYDROGRAPHS SUB16, SUB17 AND SUB18

   69 HC          HYDROGRAPH COMBINATION
                        ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0

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

                          HYDROGRAPH AT STATION      19A

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                   (CFS)
+    7297.      3.25                857.       216.        208.        208.
                                (INCHES)      2.040       2.059       2.059       2.059
                                 (AC-FT)      425.        429.        429.        429.

                                CUMULATIVE AREA =    3.91 SQ MI


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


            **************
            *            *
   70 KK    *       19B  *          CP
            *            *
            **************
                                ROUTE CP19A TO CP19B

               HYDROGRAPH ROUTING DATA

   72 RS          STORAGE ROUTING
                       NSTPS           1  NUMBER OF SUBREACHES
                        ITYP        FLOW  TYPE OF INITIAL CONDITION
                       RSVRIC       -1.00  INITIAL CONDITION
                            X        0.00 WORKING R AND D COEFFICIENT
```

```
 73 RC          NORMAL DEPTH CHANNEL
                        ANL       0.055  LEFT OVERBANK N-VALUE
                       ANCH       0.040  MAIN CHANNEL N-VALUE
                        ANR       0.055  RIGHT OVERBANK N-VALUE
                      RLNTH       1100.  REACH LENGTH
                        SEL      0.0155  ENERGY SLOPE
                      ELMAX         0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                   CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 75 RY        ELEVATION     10.00      8.00      3.00      0.00      0.00      3.00      8.00     10.00
 74 RX        DISTANCE       0.00      1.00    126.00    132.00    167.00    173.00    298.00    299.00

                                                          ***

                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       0.00      0.48      0.99      1.52      2.08      2.68      3.31      4.21      5.47      7.07
          OUTFLOW       0.00     56.02    179.16    355.05    578.70    847.61   1171.35   1583.36   2089.74   2712.17
        ELEVATION       0.00      0.53      1.05      1.58      2.11      2.63      3.16      3.68      4.21      4.74

          STORAGE       9.03     11.33     13.98     16.99     20.34     24.04     27.98     31.94     35.90     39.87
          OUTFLOW    3469.17   4377.53   5452.81   6709.70   8162.20   9823.73  11911.32  14259.55  16805.32  19539.52
        ELEVATION       5.26      5.79      6.32      6.84      7.37      7.89      8.42      8.95      9.47     10.00

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN      179. TO    19540.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                        HYDROGRAPH AT STATION      19B

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                             (CFS)
+    7225.      3.33         857.       216.       208.        208.
                         (INCHES)     2.040      2.059      2.059       2.059
                          (AC-FT)      425.       429.       429.        429.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
       18.      3.33           3.         1.         1.          1.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      7.03      3.33          1.89       0.49       0.47        0.47

                        CUMULATIVE AREA =    3.91 SQ MI


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


            **************
            *            *
 76 KK      *        15  *          SUB
            *            *
            **************
                                RUNOFF FROM SUBBASIN 15
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                SUBBASIN RUNOFF DATA

 78 BA            SUBBASIN CHARACTERISTICS
                        TAREA        1.37  SUBBASIN AREA

                  PRECIPITATION DATA

 51 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                STORM AREA =    9.70

 79 LS            SCS LOSS RATE
                        STRTL        0.44  INITIAL ABSTRACTION
                       CRVNBR       82.00  CURVE NUMBER
                        RTIMP        5.40  PERCENT IMPERVIOUS AREA

                  KINEMATIC WAVE
 80 UK              OVERLAND-FLOW ELEMENT NO. 1
                            L        217.  OVERLAND FLOW LENGTH
                            S      0.0581  SLOPE
                            N       0.200  ROUGHNESS COEFFICIENT
                           PA       100.0  PERCENT OF SUBBASIN
                        DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                  KINEMATIC WAVE
 81 RK              MAIN CHANNEL
                            L      21200.  CHANNEL LENGTH
                            S      0.0236  SLOPE
                            N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                           CA        1.37  CONTRIBUTING AREA
                        SHAPE        TRAP  CHANNEL SHAPE
                           WD       25.00  BOTTOM WIDTH OR DIAMETER
                            Z        3.00  SIDE SLOPE
                       NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                       RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH

                                                   ***
                                     COMPUTED KINEMATIC PARAMETERS
                                          VARIABLE TIME STEP
                                       (DT SHOWN IS A MINIMUM)

                    ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                   PEAK                CELERITY
                                                   (MIN)      (FT)     (CFS)     (MIN)       (IN)      (FPS)

                    PLANE1      1.80    1.67       1.42     43.40   3597.62    186.49       1.93       0.52
                    MAIN        0.86    1.50       3.51   3533.33   1901.39    207.57       1.93      16.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.1417E+03 OUTFLOW=0.1409E+03 BASIN STORAGE=0.5998E-01 PERCENT ERROR=   0.5

                                          INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                    MAIN        0.86    1.50       5.00             1901.08    205.00       1.93

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

                          HYDROGRAPH AT STATION       15

   TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.64, TOTAL EXCESS =    1.94

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
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                                        6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    1901.      3.42                    281.         71.         68.         68.
                        (INCHES)      1.907       1.928       1.928       1.928
                         (AC-FT)       139.        141.        141.        141.

                        CUMULATIVE AREA =    1.37 SQ MI


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


            **************
            *            *
  82 KK     *      19C   *          CP
            *            *
            **************
                                COMBINE HYDROGRAPHS SUB15 & CP19B

  84 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
      ***             ***            ***            ***            ***

                        HYDROGRAPH AT STATION      19C

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    8929.      3.33                   1138.        287.        277.        277.
                        (INCHES)      2.005       2.025       2.025       2.025
                         (AC-FT)       564.        570.        570.        570.

                        CUMULATIVE AREA =    5.28 SQ MI


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


            **************
            *            *
  85 KK     *      19.1  *          CP
            *            *
            **************
                                ROUTE CP 19C TO 19.1

               HYDROGRAPH ROUTING DATA

  87 RS          STORAGE ROUTING
                       NSTPS           1  NUMBER OF SUBREACHES
                        ITYP        FLOW  TYPE OF INITIAL CONDITION
                      RSVRIC       -1.00  INITIAL CONDITION
                           X        0.00 WORKING R AND D COEFFICIENT

  88 RC          NORMAL DEPTH CHANNEL
                         ANL       0.055  LEFT OVERBANK N-VALUE
                        ANCH       0.040  MAIN CHANNEL N-VALUE
                         ANR       0.055  RIGHT OVERBANK N-VALUE
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                    RLNTH       1800.  REACH LENGTH
                      SEL      0.0200  ENERGY SLOPE
                    ELMAX         0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                 CROSS-SECTION DATA
                        --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 90 RY       ELEVATION     10.00      9.00      3.00      0.00      0.00      3.00      9.00     10.00
 89 RX       DISTANCE       0.00      1.00    151.00    166.00    216.00    231.00    381.00    382.00

                                                          ***

                                 COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       0.00      1.14      2.40      3.78      5.27      6.87      8.61     10.80     13.57     16.92
          OUTFLOW       0.00     91.97    297.76    597.74    986.99   1464.43   2055.99   2818.18   3725.74   4801.25
        ELEVATION       0.00      0.53      1.05      1.58      2.11      2.63      3.16      3.68      4.21      4.74

          STORAGE      20.83     25.32     30.38     36.01     42.21     48.99     56.34     64.26     72.53     80.83
          OUTFLOW    6064.07   7531.82   9221.01  11147.26  13325.57  15770.35  18495.58  21514.81  25191.32  29197.22
        ELEVATION       5.26      5.79      6.32      6.84      7.37      7.89      8.42      8.95      9.47     10.00

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN      987. TO    29197.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                      HYDROGRAPH AT STATION     19.1

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR     24.92-HR
+   (CFS)      (HR)
                          (CFS)
+    8529.     3.33        1138.       287.       277.        277.
                       (INCHES)      2.005      2.025      2.025       2.025
                        (AC-FT)       564.       570.       570.        570.

 PEAK STORAGE  TIME                         MAXIMUM AVERAGE STORAGE
                                   6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)     (HR)
      28.      3.33          5.         1.         1.          1.

 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                   6-HR       24-HR       72-HR     24.92-HR
+   (FEET)     (HR)
     6.10      3.33       1.68       0.44       0.42        0.42

                       CUMULATIVE AREA =    5.28 SQ MI


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


            **************
            *            *
 91 KK      *        19  *          SUB
            *            *
            **************
                                RUNOFF FROM SUB-BASIN 19

              SUBBASIN RUNOFF DATA

 93 BA          SUBBASIN CHARACTERISTICS
                      TAREA        0.19  SUBBASIN AREA
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                PRECIPITATION DATA

 51 PH                          DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                STORM AREA =    9.70

 94 LS          SCS LOSS RATE
                      STRTL        0.38  INITIAL ABSTRACTION
                     CRVNBR       84.00  CURVE NUMBER
                      RTIMP        7.20  PERCENT IMPERVIOUS AREA

                KINEMATIC WAVE
 95 UK            OVERLAND-FLOW ELEMENT NO. 1
                          L        275.  OVERLAND FLOW LENGTH
                          S      0.0800  SLOPE
                          N       0.200  ROUGHNESS COEFFICIENT
                         PA       100.0  PERCENT OF SUBBASIN
                      DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                KINEMATIC WAVE
 96 RK            COLLECTOR CHANNEL
                          L       3730.  CHANNEL LENGTH
                          S      0.0352  SLOPE
                          N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                         CA        0.16  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD       15.00  BOTTOM WIDTH OR DIAMETER
                          Z        3.00  SIDE SLOPE
                     NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
 97 RK            MAIN CHANNEL
                          L       1800.  CHANNEL LENGTH
                          S      0.0200  SLOPE
                          N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                         CA        0.19  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD       50.00  BOTTOM WIDTH OR DIAMETER
                          Z       30.00  SIDE SLOPE
                     NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                     RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH

                                                  ***
                                COMPUTED KINEMATIC PARAMETERS
                                     VARIABLE TIME STEP
                                  (DT SHOWN IS A MINIMUM)

                  ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                              PEAK                  CELERITY
                                                  (MIN)     (FT)     (CFS)    (MIN)       (IN)      (FPS)

                  PLANE1      2.11     1.67       1.41     55.00    534.71   186.22       2.11       0.65
                  COLLECTOR1  1.42     1.45       1.73   1243.33    494.07   190.72       2.11      13.08
                  MAIN        0.69     1.38       1.80    600.00    456.95   193.94       2.11       6.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.2111E+02 OUTFLOW=0.2104E+02 BASIN STORAGE=0.3666E-02 PERCENT ERROR=   0.4

                                INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                  MAIN        0.69     1.38       5.00              444.60   195.00       2.11

     ***            ***            ***            ***            ***
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                    HYDROGRAPH AT STATION       19

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.46, TOTAL EXCESS =    2.11

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                  (CFS)
+     445.      3.25                42.         11.         10.         10.
                             (INCHES)     2.096       2.108       2.108       2.108
                              (AC-FT)       21.         21.         21.         21.

                         CUMULATIVE AREA =    0.19 SQ MI


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


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            *            *
  98 KK     *        20  *          SUB
            *            *
            **************
                                RUNOFF FROM SUB-BASIN 20

               SUBBASIN RUNOFF DATA

  100 BA          SUBBASIN CHARACTERISTICS
                        TAREA        0.57  SUBBASIN AREA

                  PRECIPITATION DATA

   51 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                  STORM AREA =    9.70

  101 LS          SCS LOSS RATE
                        STRTL        0.38  INITIAL ABSTRACTION
                       CRVNBR       84.00  CURVE NUMBER
                        RTIMP        3.60  PERCENT IMPERVIOUS AREA

                  KINEMATIC WAVE
  102 UK            OVERLAND-FLOW ELEMENT NO. 1
                            L        300.  OVERLAND FLOW LENGTH
                            S      0.0750  SLOPE
                            N       0.200  ROUGHNESS COEFFICIENT
                           PA       100.0  PERCENT OF SUBBASIN
                        DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                  KINEMATIC WAVE
  103 RK            MAIN CHANNEL
                            L       9640.  CHANNEL LENGTH
                            S      0.0197  SLOPE
                            N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                           CA        0.57  CONTRIBUTING AREA
                        SHAPE        TRAP  CHANNEL SHAPE
                           WD       15.00  BOTTOM WIDTH OR DIAMETER
                            Z        3.00  SIDE SLOPE
                       NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                       RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH
```

```
                                                                    ***
                                        COMPUTED KINEMATIC PARAMETERS
                                             VARIABLE TIME STEP
                                           (DT SHOWN IS A MINIMUM)

                    ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                  PEAK                CELERITY
                                                     (MIN)     (FT)     (CFS)    (MIN)       (IN)      (FPS)

                    PLANE1       2.04      1.67       1.63     60.00   1504.44   186.29       2.05       0.65
                    MAIN         1.06      1.45       3.77   3213.33   1138.08   196.21       2.05      14.21

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.6254E+02 OUTFLOW=0.6220E+02 BASIN STORAGE=0.1496E-01 PERCENT ERROR=   0.5

                                          INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                    MAIN         1.06      1.45       5.00            1086.14   195.00       2.05

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

                        HYDROGRAPH AT STATION       20

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.52, TOTAL EXCESS =    2.06

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    1086.      3.25                125.        31.         30.         30.
                        (INCHES)    2.036       2.049       2.049       2.049
                         (AC-FT)     62.         62.         62.         62.

                        CUMULATIVE AREA =    0.57 SQ MI


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            *            *
  104 KK    *      CP20  *          CP
            *            *
            **************
                                 COMBINE SUB 19, SUB 20 AND CP 19.1
                            *******BEGIN SUBAREA 21 BREAKDOWN-3/94 REVISIONS*****

  106 HC          HYDROGRAPH COMBINATION
                        ICOMP          3  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                    ***
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0

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

                        HYDROGRAPH AT STATION     CP20

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    9887.      3.33               1305.       329.        317.        317.
```

```
                    (INCHES)     2.010       2.030       2.030       2.030
                     (AC-FT)      647.        653.        653.        653.

                     CUMULATIVE AREA =    6.03 SQ MI


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


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            *            *
 108 KK     *    RRCP20  *          CP
            *            *
            **************
                                ROUTE CP20 TO CP 21A, WHICH IS 4600'

               HYDROGRAPH ROUTING DATA

 110 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC       -1.00  INITIAL CONDITION
                          X        0.00 WORKING R AND D COEFFICIENT

 111 RC          NORMAL DEPTH CHANNEL
                        ANL       0.055  LEFT OVERBANK N-VALUE
                       ANCH       0.040  MAIN CHANNEL N-VALUE
                        ANR       0.055  RIGHT OVERBANK N-VALUE
                      RLNTH       4600.  REACH LENGTH
                        SEL      0.0217  ENERGY SLOPE
                      ELMAX         0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                         CROSS-SECTION DATA
                            --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 113 RY        ELEVATION     10.00      4.00      1.00      0.00      0.00      1.00      4.00     10.00
 112 RX        DISTANCE       0.00     30.00     60.00     85.00    195.00    220.00    250.00    280.00
                                                                  ***

                                         COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

           STORAGE       0.00      6.85     15.15     24.39     34.22     44.63     55.63     67.22     79.36     91.85
           OUTFLOW       0.00    216.67    731.53   1585.60   2702.21   4068.56   5677.64   7525.69   9621.30  11963.14
         ELEVATION       0.00      0.53      1.05      1.58      2.11      2.63      3.16      3.68      4.21      4.74

           STORAGE     104.64    117.71    131.08    144.74    158.70    172.94    187.48    202.31    217.44    232.85
           OUTFLOW   14528.59  17313.31  20314.04  23528.32  26954.28  30590.50  34435.97  38489.92  42751.86  47221.51
         ELEVATION       5.26      5.79      6.32      6.84      7.37      7.89      8.42      8.95      9.47     10.00

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

                        HYDROGRAPH AT STATION   RRCP20

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    9129.      3.42                1303.        329.        317.        317.
                        (INCHES)     2.008       2.030       2.030       2.030
                         (AC-FT)      646.        653.        653.        653.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR        24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
```

```
      77.      3.42                  17.          4.          4.          4.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                      6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
     4.09      3.42                  1.09        0.28        0.27        0.27

                         CUMULATIVE AREA =    6.03 SQ MI


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


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            *            *
  114 KK    *       21A  *          SUB
            *            *
            **************
                                 RUNOFF FROM SUB-BASIN 21A

               SUBBASIN RUNOFF DATA

  116 BA         SUBBASIN CHARACTERISTICS
                       TAREA        0.42  SUBBASIN AREA

                 PRECIPITATION DATA

   51 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                   STORM AREA =    9.70

  117 LS         SCS LOSS RATE
                       STRTL        0.50  INITIAL ABSTRACTION
                      CRVNBR       80.00  CURVE NUMBER
                       RTIMP        6.40  PERCENT IMPERVIOUS AREA

                 KINEMATIC WAVE
  118 UK           OVERLAND-FLOW ELEMENT NO. 1
                            L        297.  OVERLAND FLOW LENGTH
                            S      0.0558  SLOPE
                            N       0.200  ROUGHNESS COEFFICIENT
                           PA       100.0  PERCENT OF SUBBASIN
                        DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                 KINEMATIC WAVE
  119 RK           MAIN CHANNEL
                            L       6400.  CHANNEL LENGTH
                            S      0.0344  SLOPE
                            N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                           CA        0.42  CONTRIBUTING AREA
                        SHAPE        TRAP  CHANNEL SHAPE
                           WD       10.00  BOTTOM WIDTH OR DIAMETER
                            Z        3.00  SIDE SLOPE
                       NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                       RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH
                                                                  ***
                                     COMPUTED KINEMATIC PARAMETERS
                                          VARIABLE TIME STEP
                                       (DT SHOWN IS A MINIMUM)

                     ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
```

```
                                                                                PEAK                CELERITY
                                                        (MIN)      (FT)     (CFS)    (MIN)      (IN)     (FPS)

                PLANE1        1.76      1.67       1.92     59.40    898.78    189.02      1.81      0.54
                MAIN          1.70      1.42       2.36   2133.33    804.58    193.66      1.81     15.91

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.4070E+02 OUTFLOW=0.4053E+02 BASIN STORAGE=0.1094E-01 PERCENT ERROR=   0.4

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                MAIN          1.70      1.42       5.00              783.53    195.00      1.81
      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION      21A

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.76, TOTAL EXCESS =    1.82

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     784.      3.25                 81.         20.         20.         20.
                        (INCHES)    1.795       1.809       1.809       1.809
                         (AC-FT)     40.         41.         41.         41.

                        CUMULATIVE AREA =    0.42 SQ MI


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


            **************
            *            *
  120 KK    *     CP21A  *
            *            *
            **************

  121 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION    CP21A

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    9593.      3.42                1384.        350.        337.        337.
                        (INCHES)    1.994       2.015       2.015       2.015
                         (AC-FT)     686.        694.        694.        694.

                        CUMULATIVE AREA =    6.45 SQ MI


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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              **************
              *            *
  122 KK      *     RR21A  *          CP
              *            *
              **************
                                ROUTE CP21A TO 21B    WHICH IS 960'

                 HYDROGRAPH ROUTING DATA

  124 RS           STORAGE ROUTING
                        NSTPS           1  NUMBER OF SUBREACHES
                         ITYP        FLOW  TYPE OF INITIAL CONDITION
                        RSVRIC       -1.00  INITIAL CONDITION
                             X        0.00 WORKING R AND D COEFFICIENT

  125 RC           NORMAL DEPTH CHANNEL
                          ANL       0.055  LEFT OVERBANK N-VALUE
                         ANCH       0.040  MAIN CHANNEL N-VALUE
                          ANR       0.055  RIGHT OVERBANK N-VALUE
                        RLNTH        960.  REACH LENGTH
                          SEL      0.0156  ENERGY SLOPE
                        ELMAX         0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                      CROSS-SECTION DATA
                            --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
  127 RY         ELEVATION      6.00      4.00      2.00      0.00      0.00      2.00      4.00      6.00
  126 RX         DISTANCE       0.00     10.00     60.00    205.00    295.00    440.00    490.00    500.00

                                                                  ***

                                      COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE       0.00      0.79      1.89      3.31      5.05      7.12      9.49     12.15     14.92     17.80
            OUTFLOW       0.00     68.01    241.98    530.81    949.73   1514.25   2239.48   3274.87   4558.83   6020.42
          ELEVATION       0.00      0.32      0.63      0.95      1.26      1.58      1.89      2.21      2.53      2.84

            STORAGE      20.79     23.90     27.11     30.43     33.78     37.17     40.57     43.99     47.44     50.91
            OUTFLOW    7656.61   9465.31  11445.12  13604.49  15948.99  18453.97  21114.79  23927.53  26888.80  29995.69
          ELEVATION       3.16      3.47      3.79      4.11      4.42      4.74      5.05      5.37      5.68      6.00

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN     1514. TO    29996.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                        HYDROGRAPH AT STATION    RR21A

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    9383.      3.50                1383.        350.        337.        337.
                        (INCHES)    1.993       2.015       2.015       2.015
                         (AC-FT)     686.        694.        694.        694.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
       24.      3.50                   5.          1.          1.          1.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
```

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    3.46      3.50                 1.15        0.30        0.29        0.29

                      CUMULATIVE AREA =    6.45 SQ MI


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

            **************
            *            *
128 KK      *       21B  *          SUB
            *            *
            **************
                                RUNOFF FROM SUB-BASIN 21B

               SUBBASIN RUNOFF DATA

130 BA           SUBBASIN CHARACTERISTICS
                       TAREA        0.28  SUBBASIN AREA

                 PRECIPITATION DATA

 51 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......  ............... TP-40 ...............  ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                 STORM AREA =    9.70

131 LS           SCS LOSS RATE
                       STRTL        0.50  INITIAL ABSTRACTION
                      CRVNBR       80.00  CURVE NUMBER
                       RTIMP        6.40  PERCENT IMPERVIOUS AREA

                 KINEMATIC WAVE
132 UK             OVERLAND-FLOW ELEMENT NO. 1
                          L        297.  OVERLAND FLOW LENGTH
                          S      0.0558  SLOPE
                          N       0.200  ROUGHNESS COEFFICIENT
                         PA       100.0  PERCENT OF SUBBASIN
                      DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                 KINEMATIC WAVE
133 RK             MAIN CHANNEL
                          L       6300.  CHANNEL LENGTH
                          S      0.0381  SLOPE
                          N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                         CA        0.28  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD       10.00  BOTTOM WIDTH OR DIAMETER
                          Z        3.00  SIDE SLOPE
                     NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                     RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH

                                                   ***
                                   COMPUTED KINEMATIC PARAMETERS
                                         VARIABLE TIME STEP
                                      (DT SHOWN IS A MINIMUM)

                   ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                 PEAK                CELERITY
                                                   (MIN)      (FT)     (CFS)    (MIN)       (IN)      (FPS)

                   PLANE1      1.76      1.67      1.92     59.40    590.62   189.02       1.81      0.54
                   MAIN        1.79      1.42      2.56   2100.00    520.22   194.23       1.81     14.49
```

```
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.2674E+02 OUTFLOW=0.2663E+02 BASIN STORAGE=0.7314E-02 PERCENT ERROR=   0.4

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                  MAIN          1.79      1.42       5.00              511.65    195.00      1.81
      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION      21B

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.76, TOTAL EXCESS =    1.82
  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     512.      3.25                53.         13.         13.         13.
                        (INCHES)    1.797       1.810       1.811       1.811
                         (AC-FT)     26.         27.         27.         27.

                        CUMULATIVE AREA =    0.28 SQ MI


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


            **************
            *            *
  134 KK    *     CP21B  *
            *            *
            **************

  135 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION    CP21B

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    9671.      3.42               1436.        363.        350.        350.
                        (INCHES)    1.984       2.007       2.007       2.007
                         (AC-FT)     712.        720.        720.        720.

                        CUMULATIVE AREA =    6.73 SQ MI


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


            **************
            *            *
  136 KK    *     RR21B  *          CP
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*            *
**************
                    ROUTE CP21B TO 21C    WHICH IS 4400'

          HYDROGRAPH ROUTING DATA

138 RS      STORAGE ROUTING
                 NSTPS          1  NUMBER OF SUBREACHES
                  ITYP       FLOW  TYPE OF INITIAL CONDITION
                RSVRIC      -1.00  INITIAL CONDITION
                     X       0.00 WORKING R AND D COEFFICIENT

139 RC      NORMAL DEPTH CHANNEL
                   ANL      0.055  LEFT OVERBANK N-VALUE
                  ANCH      0.040  MAIN CHANNEL N-VALUE
                   ANR      0.055  RIGHT OVERBANK N-VALUE
                 RLNTH      4400.  REACH LENGTH
                   SEL     0.0205  ENERGY SLOPE
                 ELMAX        0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                CROSS-SECTION DATA
                      --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
141 RY     ELEVATION     6.00     4.00    20.00     0.00     0.00     2.00     4.00     6.00
140 RX     DISTANCE      0.00    10.00    60.00   205.00   295.00   440.00   490.00   500.00

                                                    ***

                                COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

       STORAGE      0.00    14.03    36.96    65.66    97.94   132.92   170.13   208.78   248.59   289.56
       OUTFLOW      0.00   637.58  2511.78  6188.60 11262.24 17724.47 25513.07 34628.88 44969.78 56505.15
     ELEVATION      0.00     1.05     2.11     3.16     4.21     5.26     6.32     7.37     8.42     9.47

       STORAGE    331.69   374.98   419.44   465.05   511.83   559.77   608.87   659.13   710.55   763.13
       OUTFLOW  69214.94 83086.18 98110.84 114284.61 131606.02 150075.81 169696.53 190472.13 212407.91 235509.84
     ELEVATION     10.53    11.58    12.63    13.68    14.74    15.79    16.84    17.89    18.95    20.00

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN    56505. TO   235510.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                    HYDROGRAPH AT STATION    RR21B

 PEAK FLOW     TIME                      MAXIMUM AVERAGE FLOW
                                  6-HR       24-HR       72-HR     24.92-HR
+   (CFS)      (HR)
                          (CFS)
+    8973.     3.58       1435.       363.        350.        350.
                       (INCHES)     1.982       2.007       2.007       2.007
                        (AC-FT)      711.        720.        720.        720.

 PEAK STORAGE  TIME                    MAXIMUM AVERAGE STORAGE
                                  6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)     (HR)
      83.      3.58         19.          5.          5.          5.

 PEAK STAGE    TIME                      MAXIMUM AVERAGE STAGE
                                  6-HR       24-HR       72-HR     24.92-HR
+   (FEET)     (HR)
     3.74      3.58        1.14        0.29        0.28        0.28

                       CUMULATIVE AREA =    6.73 SQ MI
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
142 KK    *      21C   *          SUB
          *            *
          **************
                              RUNOFF FROM SUB-BASIN 21C

             SUBBASIN RUNOFF DATA

144 BA         SUBBASIN CHARACTERISTICS
                     TAREA        0.75  SUBBASIN AREA

               PRECIPITATION DATA

 51 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                STORM AREA =    9.70

145 LS         SCS LOSS RATE
                     STRTL        0.50  INITIAL ABSTRACTION
                    CRVNBR       80.00  CURVE NUMBER
                     RTIMP        6.40  PERCENT IMPERVIOUS AREA

               KINEMATIC WAVE
146 UK           OVERLAND-FLOW ELEMENT NO. 1
                         L        297.  OVERLAND FLOW LENGTH
                         S      0.0558  SLOPE
                         N       0.200  ROUGHNESS COEFFICIENT
                        PA       100.0  PERCENT OF SUBBASIN
                     DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

               KINEMATIC WAVE
147 RK           MAIN CHANNEL
                         L       9900.  CHANNEL LENGTH
                         S      0.0328  SLOPE
                         N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                        CA        0.75  CONTRIBUTING AREA
                     SHAPE        TRAP  CHANNEL SHAPE
                        WD       20.00  BOTTOM WIDTH OR DIAMETER
                         Z        3.00  SIDE SLOPE
                    NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                    RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH
                                                          ***
                                  COMPUTED KINEMATIC PARAMETERS
                                       VARIABLE TIME STEP
                                     (DT SHOWN IS A MINIMUM)

                  ELEMENT    ALPHA       M        DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                              PEAK                  CELERITY
                                                (MIN)      (FT)     (CFS)    (MIN)       (IN)      (FPS)

                  PLANE1      1.76      1.67      1.92     59.40   1600.68    189.02      1.81       0.54
                  MAIN        1.16      1.48      3.23   3300.00   1300.20    196.60      1.81      17.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.7248E+02 OUTFLOW=0.7205E+02 BASIN STORAGE=0.2485E-01 PERCENT ERROR=   0.6
```

```
                                    INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                 MAIN          1.16      1.48       5.00            1248.06    195.00      1.81
      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION      21C

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.76, TOTAL EXCESS =    1.82

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    1248.      3.25                144.        36.         35.         35.
                        (INCHES)    1.790       1.805       1.805       1.805
                         (AC-FT)     71.         72.         72.         72.

                        CUMULATIVE AREA =    0.75 SQ MI


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


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            *            *
  148 KK    *     CP21C  *
            *            *
            **************

  149 HC          HYDROGRAPH COMBINATION
                       ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                  ***
MANE2 NPLAN,NSTM       1      0
      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION    CP21C

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    9578.      3.50                1578.       399.        385.        385.
                        (INCHES)    1.962       1.987       1.987       1.987
                         (AC-FT)     782.        792.        792.        792.

                        CUMULATIVE AREA =    7.48 SQ MI


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


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            *            *
  150 KK    *     RR21C  *          CP
            *            *
            **************
                                ROUTE CP21C TO 21D    WHICH IS 5700'
               HYDROGRAPH ROUTING DATA
```

```
 152 RS          STORAGE ROUTING
                       NSTPS          1  NUMBER OF SUBREACHES
                        ITYP       FLOW  TYPE OF INITIAL CONDITION
                      RSVRIC      -1.00  INITIAL CONDITION
                           X       0.00 WORKING R AND D COEFFICIENT

 153 RC          NORMAL DEPTH CHANNEL
                         ANL      0.055  LEFT OVERBANK N-VALUE
                        ANCH      0.040  MAIN CHANNEL N-VALUE
                         ANR      0.055  RIGHT OVERBANK N-VALUE
                       RLNTH      5700.  REACH LENGTH
                         SEL     0.0181  ENERGY SLOPE
                       ELMAX        0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                      CROSS-SECTION DATA
                            --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 155 RY        ELEVATION      5.50      3.50      2.50      0.00      0.00      2.50      3.50      5.50
 154 RX        DISTANCE       0.00     20.00    175.00    210.00    300.00    335.00    490.00    510.00
                                                                  ***

                                      COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       0.00      3.56      7.43     11.61     16.09     20.88     25.98     31.39     37.10     43.32
          OUTFLOW       0.00     58.04    187.48    375.33    617.91    914.02   1263.50   1666.84   2124.82   2669.63
        ELEVATION       0.00      0.29      0.58      0.87      1.16      1.45      1.74      2.03      2.32      2.61

          STORAGE      52.32     64.71     80.51     98.39    116.50    134.83    153.38    172.15    191.14    210.35
          OUTFLOW    3352.99   4163.08   5129.75   6330.52   7703.30   9230.41  10903.79  12717.49  14666.87  16748.21
        ELEVATION       2.89      3.18      3.47      3.76      4.05      4.34      4.63      4.92      5.21      5.50

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

                        HYDROGRAPH AT STATION    RR21C

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+    7972.      3.67       1571.       399.        385.        385.
                       (INCHES)      1.954       1.987       1.987       1.987
                        (AC-FT)       779.        792.        792.        792.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
      120.      3.67                  29.          8.          7.          7.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      4.10      3.67                 1.55        0.42        0.40        0.40

                        CUMULATIVE AREA =    7.48 SQ MI


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


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            *            *
 156 KK     *      21D   *          SUB
            *            *
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                    RUNOFF FROM SUB-BASIN 21D

          SUBBASIN RUNOFF DATA

158 BA      SUBBASIN CHARACTERISTICS
                TAREA        1.06  SUBBASIN AREA

            PRECIPITATION DATA

 51 PH                          DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
            ..... HYDRO-35 ......  ............... TP-40 ...............  ........... TP-49 ...........
            5-MIN  15-MIN  60-MIN   2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
             0.77    1.51    2.65   3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                          STORM AREA =    9.70

159 LS      SCS LOSS RATE
                STRTL        0.50  INITIAL ABSTRACTION
               CRVNBR       80.00  CURVE NUMBER
                RTIMP        6.40  PERCENT IMPERVIOUS AREA

            KINEMATIC WAVE
160 UK        OVERLAND-FLOW ELEMENT NO. 1
                    L        297.  OVERLAND FLOW LENGTH
                    S      0.0558  SLOPE
                    N       0.200  ROUGHNESS COEFFICIENT
                   PA       100.0  PERCENT OF SUBBASIN
               DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

            KINEMATIC WAVE
161 RK        MAIN CHANNEL
                    L      14500.  CHANNEL LENGTH
                    S      0.0252  SLOPE
                    N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                   CA        1.06  CONTRIBUTING AREA
                SHAPE        TRAP  CHANNEL SHAPE
                   WD       30.00  BOTTOM WIDTH OR DIAMETER
                    Z        3.00  SIDE SLOPE
              NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
              RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH

                                                  ***
                              COMPUTED KINEMATIC PARAMETERS
                                   VARIABLE TIME STEP
                                (DT SHOWN IS A MINIMUM)

              ELEMENT    ALPHA       M        DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                          PEAK                  CELERITY
                                                (MIN)     (FT)     (CFS)    (MIN)      (IN)      (FPS)

              PLANE1       1.76    1.67      1.92     59.40   2266.20   189.02       1.81       0.54
              MAIN         0.78    1.51      3.10   2900.00   1538.29   200.70       1.81      16.04

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.1026E+03 OUTFLOW=0.1020E+03 BASIN STORAGE=0.5119E-01 PERCENT ERROR=   0.5

                                   INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

              MAIN         0.78    1.51      5.00             1499.66   200.00       1.81
    ***          ***          ***          ***            ***

                     HYDROGRAPH AT STATION      21D
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     TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.76, TOTAL EXCESS =    1.82
  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                   (CFS)
+    1500.      3.33                204.         51.         50.         50.
                              (INCHES)      1.788       1.807       1.807       1.807
                               (AC-FT)       101.        102.        102.        102.
                              CUMULATIVE AREA =    1.06 SQ MI


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            **************
            *            *
  162 KK    *     CP21D  *
            *            *
            **************

  163 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION    CP21D
  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                   (CFS)
+    8765.      3.67                1773.        451.        434.        434.
                              (INCHES)      1.932       1.965       1.965       1.965
                               (AC-FT)       879.        894.        894.        894.
                              CUMULATIVE AREA =    8.54 SQ MI


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

            **************
            *            *
  164 KK    *     RR21D  *          CP
            *            *
            **************
                                ROUTE CP21D TO 21E    WHICH IS 1100'
               HYDROGRAPH ROUTING DATA

  166 RS          STORAGE ROUTING
                        NSTPS           1  NUMBER OF SUBREACHES
                         ITYP        FLOW  TYPE OF INITIAL CONDITION
                        RSVRIC       -1.00  INITIAL CONDITION
                             X        0.00 WORKING R AND D COEFFICIENT

  167 RC          NORMAL DEPTH CHANNEL
                          ANL       0.055  LEFT OVERBANK N-VALUE
```

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                    ANCH       0.040  MAIN CHANNEL N-VALUE
                     ANR       0.055  RIGHT OVERBANK N-VALUE
                   RLNTH       1100.  REACH LENGTH
                     SEL      0.0200  ENERGY SLOPE
                   ELMAX         0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                  CROSS-SECTION DATA
                        --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 169 RY      ELEVATION      5.50      3.50      2.50      0.00      0.00      2.50      3.50      5.50
 168 RX      DISTANCE       0.00     20.00    175.00    210.00    300.00    335.00    490.00    510.00

                                                   ***

                                  COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       0.00      0.69      1.43      2.24      3.11      4.03      5.01      6.06      7.16      8.36
          OUTFLOW       0.00     61.01    197.08    394.53    649.54    960.79   1328.17   1752.14   2233.56   2806.26
        ELEVATION       0.00      0.29      0.58      0.87      1.16      1.45      1.74      2.03      2.32      2.61

          STORAGE      10.10     12.49     15.54     18.99     22.48     26.02     29.60     33.22     36.89     40.59
          OUTFLOW    3524.59   4376.13   5392.27   6654.50   8097.53   9702.79  11461.81  13368.33  15417.47  17605.33
        ELEVATION       2.89      3.18      3.47      3.76      4.05      4.34      4.63      4.92      5.21      5.50

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN      395. TO    17605.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                        HYDROGRAPH AT STATION    RR21D

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+    8701.      3.75        1773.       451.        434.        434.
                        (INCHES)      1.931       1.965       1.965       1.965
                         (AC-FT)       879.        894.        894.        894.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR        24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
      24.       3.75          6.          2.          1.          1.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR        24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      4.16      3.75        1.62        0.44        0.42        0.42

                        CUMULATIVE AREA =    8.54 SQ MI


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


            **************
            *            *
 170 KK     *      21E   *          SUB
            *            *
            **************
                                RUNOFF FROM SUB-BASIN 21E

               SUBBASIN RUNOFF DATA
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 172 BA          SUBBASIN CHARACTERISTICS
                       TAREA        0.26  SUBBASIN AREA

                 PRECIPITATION DATA

  51 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......  ............... TP-40 ...............  ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                STORM AREA =    9.70

 173 LS          SCS LOSS RATE
                       STRTL        0.50  INITIAL ABSTRACTION
                      CRVNBR       80.00  CURVE NUMBER
                       RTIMP        6.40  PERCENT IMPERVIOUS AREA

                 KINEMATIC WAVE
 174 UK            OVERLAND-FLOW ELEMENT NO. 1
                           L        297.  OVERLAND FLOW LENGTH
                           S      0.0333  SLOPE
                           N       0.200  ROUGHNESS COEFFICIENT
                          PA       100.0  PERCENT OF SUBBASIN
                       DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                 KINEMATIC WAVE
 175 RK            MAIN CHANNEL
                           L       6600.  CHANNEL LENGTH
                           S      0.0288  SLOPE
                           N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                          CA        0.26  CONTRIBUTING AREA
                       SHAPE        TRAP  CHANNEL SHAPE
                          WD       15.00  BOTTOM WIDTH OR DIAMETER
                           Z        3.00  SIDE SLOPE
                      NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                      RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH
                                                          ***
                                   COMPUTED KINEMATIC PARAMETERS
                                        VARIABLE TIME STEP
                                     (DT SHOWN IS A MINIMUM)

                   ELEMENT    ALPHA       M        DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                              PEAK                  CELERITY
                                                   (MIN)      (FT)     (CFS)    (MIN)       (IN)      (FPS)

                   PLANE1      1.36     1.67      2.27     59.40    497.15    190.45      1.81      0.44
                   MAIN        1.28     1.45      3.04   2200.00    421.12    198.38      1.81     12.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.2490E+02 OUTFLOW=0.2476E+02 BASIN STORAGE=0.1083E-01 PERCENT ERROR=   0.5

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                   MAIN        1.28     1.45      5.00              401.68    200.00      1.81
      ***          ***          ***       ***       ***
                              HYDROGRAPH AT STATION      21E

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.76, TOTAL EXCESS =    1.82

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
```

```
                          (CFS)
+     402.      3.33                50.         12.         12.         12.
                        (INCHES)    1.791       1.808       1.808       1.808
                         (AC-FT)     25.         25.         25.         25.

                        CUMULATIVE AREA =    0.26 SQ MI


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


            **************
            *            *
  176 KK    *     CP21E  *
            *            *
            **************

  177 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
      ***             ***            ***            ***            ***

                        HYDROGRAPH AT STATION    CP21E

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    8840.      3.75                1822.        463.        446.        446.
                        (INCHES)    1.926       1.960       1.960       1.960
                         (AC-FT)     903.        919.        919.        919.

                        CUMULATIVE AREA =    8.79 SQ MI


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


            **************
            *            *
  178 KK    *     RR21E  *          CP
            *            *
            **************
                                ROUTE CP21E TO 21F    WHICH IS 2800'

               HYDROGRAPH ROUTING DATA

  180 RS          STORAGE ROUTING
                       NSTPS           1  NUMBER OF SUBREACHES
                        ITYP        FLOW  TYPE OF INITIAL CONDITION
                       RSVRIC       -1.00  INITIAL CONDITION
                            X        0.00 WORKING R AND D COEFFICIENT

  181 RC          NORMAL DEPTH CHANNEL
                         ANL       0.055  LEFT OVERBANK N-VALUE
                        ANCH       0.040  MAIN CHANNEL N-VALUE
                         ANR       0.055  RIGHT OVERBANK N-VALUE
                       RLNTH       2800.  REACH LENGTH
                         SEL      0.0143  ENERGY SLOPE
                       ELMAX         0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION
```

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                                   CROSS-SECTION DATA
                         --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 183 RY       ELEVATION     10.50      4.50      3.50      0.00      0.00      3.50      4.50     10.50
 182 RX       DISTANCE       0.00     70.00    170.00    180.00    230.00    240.00    340.00    410.00
                                                          ***

                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       0.00      1.83      3.78      5.83      8.00     10.28     12.68     16.03     23.10     32.82
          OUTFLOW       0.00     83.61    268.02    532.40    869.67   1276.42   1750.95   2348.00   3170.09   4356.31
        ELEVATION       0.00      0.55      1.11      1.66      2.21      2.76      3.32      3.87      4.42      4.97

          STORAGE      43.03     53.70     64.83     76.41     88.46    100.96    113.92    127.34    141.22    155.56
          OUTFLOW    5845.45   7604.04   9620.48  11888.69  14405.58  17169.97  20181.89  23442.26  26952.63  30714.99
        ELEVATION       5.53      6.08      6.63      7.18      7.74      8.29      8.84      9.39      9.95     10.50

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

                     HYDROGRAPH AT STATION    RR21E

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    8580.      3.75                1819.        463.        446.        446.
                        (INCHES)    1.924       1.960       1.960       1.960
                         (AC-FT)     902.        919.        919.        919.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
      59.       3.75                  14.          4.          4.          4.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
     6.35       3.75                 2.61        0.71        0.68        0.68

                      CUMULATIVE AREA =    8.79 SQ MI


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


            **************
            *            *
 184 KK     *      21F   *          SUB
            *            *
            **************
                                RUNOFF FROM SUB-BASIN 21F

               SUBBASIN RUNOFF DATA

 186 BA          SUBBASIN CHARACTERISTICS
                       TAREA        0.47  SUBBASIN AREA

                 PRECIPITATION DATA

  51 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......  ............... TP-40 ...............  ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00
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                                                STORM AREA =    9.70

 187 LS          SCS LOSS RATE
                      STRTL        0.50  INITIAL ABSTRACTION
                     CRVNBR       80.00  CURVE NUMBER
                      RTIMP        6.40  PERCENT IMPERVIOUS AREA

                 KINEMATIC WAVE
 188 UK            OVERLAND-FLOW ELEMENT NO. 1
                          L        297.  OVERLAND FLOW LENGTH
                          S      0.0333  SLOPE
                          N       0.200  ROUGHNESS COEFFICIENT
                         PA       100.0  PERCENT OF SUBBASIN
                     DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                 KINEMATIC WAVE
 189 RK            MAIN CHANNEL
                          L      10400.  CHANNEL LENGTH
                          S      0.0279  SLOPE
                          N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                         CA        0.47  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD       20.00  BOTTOM WIDTH OR DIAMETER
                          Z        3.00  SIDE SLOPE
                     NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                     RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH
                                                          ***
                                   COMPUTED KINEMATIC PARAMETERS
                                        VARIABLE TIME STEP
                                     (DT SHOWN IS A MINIMUM)

                   ELEMENT    ALPHA       M        DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                PEAK                CELERITY
                                                   (MIN)      (FT)     (CFS)    (MIN)       (IN)      (FPS)

                   PLANE1      1.36      1.67      2.27     59.40    907.24    190.45      1.81      0.44
                   MAIN        1.07      1.48      4.33   3466.67    687.84    201.28      1.80     13.54

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.4544E+02 OUTFLOW=0.4507E+02 BASIN STORAGE=0.2383E-01 PERCENT ERROR=   0.8

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                   MAIN        1.07      1.48      5.00              666.34    200.00      1.80

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

                        HYDROGRAPH AT STATION      21F

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.76, TOTAL EXCESS =    1.82

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                       6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                     (CFS)
+     666.      3.33                    90.         23.         22.         22.
                                   (INCHES)      1.780       1.800       1.800       1.800
                                    (AC-FT)        45.         45.         45.         45.

                        CUMULATIVE AREA =    0.47 SQ MI
```

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

            **************
            *            *
  190 KK    *     CP21F  *
            *            *
            **************

  191 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION    CP21F

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    8865.      3.75                1908.        486.        468.        468.
                        (INCHES)     1.915       1.952       1.952       1.952
                         (AC-FT)      946.        964.        964.        964.

                        CUMULATIVE AREA =    9.26 SQ MI


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

            **************
            *            *
  192 KK    *     RR21F  *           CP
            *            *
            **************
                          ROUTE CP21F TO 21G (1900' DOWNSTREAM)

               HYDROGRAPH ROUTING DATA

  194 RS          STORAGE ROUTING
                       NSTPS           1  NUMBER OF SUBREACHES
                        ITYP        FLOW  TYPE OF INITIAL CONDITION
                       RSVRIC       -1.00  INITIAL CONDITION
                            X        0.00 WORKING R AND D COEFFICIENT

  195 RC          NORMAL DEPTH CHANNEL
                         ANL       0.055  LEFT OVERBANK N-VALUE
                        ANCH       0.040  MAIN CHANNEL N-VALUE
                         ANR       0.055  RIGHT OVERBANK N-VALUE
                       RLNTH       1900.  REACH LENGTH
                         SEL      0.0158  ENERGY SLOPE
                       ELMAX         0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                   CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
  197 RY        ELEVATION     10.00      8.00      2.00      0.00      0.00      2.00      8.00     10.00
  196 RX        DISTANCE       0.00     20.00     70.00    345.00    455.00    730.00    780.00    800.00
                                                                   ***
                                       COMPUTED STORAGE-OUTFLOW-ELEVATION DATA
```

```
          STORAGE      0.00      4.19     11.70     22.53     36.62     51.91     67.41     83.10     99.00    115.10
          OUTFLOW      0.00    234.45    962.51   2335.41   4614.26   8222.74  12631.82  17784.35  23639.46  30166.23
        ELEVATION      0.00      0.53      1.05      1.58      2.11      2.63      3.16      3.68      4.21      4.74

          STORAGE    131.40    147.90    164.60    181.50    198.61    215.91    233.43    251.19    269.20    287.44
          OUTFLOW  37340.32  45142.01  53555.01  62565.66  72162.31  82334.98  93056.95 104338.91 116180.28 128576.20
        ELEVATION      5.26      5.79      6.32      6.84      7.37      7.89      8.42      8.95      9.47     10.00

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN    12632. TO   128576.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                        HYDROGRAPH AT STATION    RR21F

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    8833.      3.83      1905.       486.        468.        468.
                       (INCHES)     1.912       1.952       1.952       1.952
                        (AC-FT)      945.        964.        964.        964.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
      54.       3.83        16.         4.          4.          4.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
     2.70       3.83      1.16        0.31        0.30        0.30

                       CUMULATIVE AREA =    9.26 SQ MI


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


            **************
            *            *
  198 KK    *      21G   *          SUB
            *            *
            **************
                         RUNOFF FROM SUB-BASIN 21G

               SUBBASIN RUNOFF DATA

  200 BA         SUBBASIN CHARACTERISTICS
                       TAREA        0.02  SUBBASIN AREA

                 PRECIPITATION DATA

   51 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                   STORM AREA =    9.70

  201 LS         SCS LOSS RATE
                       STRTL        0.50  INITIAL ABSTRACTION
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                    CRVNBR       80.00  CURVE NUMBER
                     RTIMP        6.40  PERCENT IMPERVIOUS AREA

                KINEMATIC WAVE
 202 UK           OVERLAND-FLOW ELEMENT NO. 1
                         L         297.  OVERLAND FLOW LENGTH
                         S      0.0333  SLOPE
                         N       0.200  ROUGHNESS COEFFICIENT
                        PA       100.0  PERCENT OF SUBBASIN
                     DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                KINEMATIC WAVE
 203 RK           MAIN CHANNEL
                         L       4000.  CHANNEL LENGTH
                         S      0.0300  SLOPE
                         N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                        CA        0.02  CONTRIBUTING AREA
                     SHAPE        TRAP  CHANNEL SHAPE
                        WD       10.00  BOTTOM WIDTH OR DIAMETER
                         Z        3.00  SIDE SLOPE
                    NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                    RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH

                                                  ***
                                COMPUTED KINEMATIC PARAMETERS
                                     VARIABLE TIME STEP
                                  (DT SHOWN IS A MINIMUM)

                  ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                               PEAK                  CELERITY
                                                  (MIN)     (FT)     (CFS)    (MIN)       (IN)      (FPS)

                  PLANE1      1.36      1.67      2.27     59.40     33.27   190.45       1.81       0.44
                  MAIN        1.59      1.42      4.06   1333.33     26.27   199.44       1.80       5.48

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.1667E+01 OUTFLOW=0.1656E+01 BASIN STORAGE=0.7499E-03 PERCENT ERROR=   0.6

                                      INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                  MAIN        1.59      1.42      5.00              26.04   200.00       1.81
      ***          ***         ***       ***       ***
                       HYDROGRAPH AT STATION      21G

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.76, TOTAL EXCESS =    1.82

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     26.       3.33          3.         1.          1.          1.
                       (INCHES)     1.789      1.807       1.807       1.807
                        (AC-FT)        2.         2.          2.          2.

                       CUMULATIVE AREA =    0.02 SQ MI


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

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                *            *
  204 KK        *     CP21G  *
                *            *
               **************

  205 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                   ***
MANE2 NPLAN,NSTM        1       0

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

                         HYDROGRAPH AT STATION    CP21G

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR        72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+    8841.      3.83                1908.        487.         469.         469.
                         (INCHES)   1.912       1.952        1.952        1.952
                          (AC-FT)    946.        966.         966.         966.

                         CUMULATIVE AREA =    9.28 SQ MI


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


               **************
               *            *
  206 KK       *        22  *          SUB
               *            *
               **************
                                 RUNOFF FROM SUB-BASIN 22

                SUBBASIN RUNOFF DATA

  208 BA          SUBBASIN CHARACTERISTICS
                        TAREA        1.39  SUBBASIN AREA

                  PRECIPITATION DATA

   51 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......  ............... TP-40 ...............  ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                   STORM AREA =    9.70

  209 LS          SCS LOSS RATE
                        STRTL        0.38  INITIAL ABSTRACTION
                       CRVNBR       84.00  CURVE NUMBER
                        RTIMP        5.10  PERCENT IMPERVIOUS AREA

                  KINEMATIC WAVE
  210 UK            OVERLAND-FLOW ELEMENT NO. 1
                             L        225.  OVERLAND FLOW LENGTH
                             S      0.0590  SLOPE
                             N       0.200  ROUGHNESS COEFFICIENT
                            PA       100.0  PERCENT OF SUBBASIN
                         DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                  KINEMATIC WAVE
  211 RK            MAIN CHANNEL
```

```
                    L      13000.  CHANNEL LENGTH
                    S      0.0238  SLOPE
                    N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                   CA        1.39  CONTRIBUTING AREA
                SHAPE        TRAP  CHANNEL SHAPE
                   WD       25.00  BOTTOM WIDTH OR DIAMETER
                    Z        3.00  SIDE SLOPE
               NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
               RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH

                                                   ***
                              COMPUTED KINEMATIC PARAMETERS
                                   VARIABLE TIME STEP
                                (DT SHOWN IS A MINIMUM)

            ELEMENT    ALPHA       M        DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                          PEAK                CELERITY
                                             (MIN)     (FT)     (CFS)    (MIN)      (IN)      (FPS)

            PLANE1      1.81      1.67      1.42     45.00   3980.02    186.00      2.08       0.55
            MAIN        0.86      1.50      3.71   4333.33   2850.96    194.47      2.07      20.15

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.1539E+03 OUTFLOW=0.1530E+03 BASIN STORAGE=0.3984E-01 PERCENT ERROR=   0.5

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

            MAIN        0.86      1.50      5.00             2824.55    195.00      2.07

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

                      HYDROGRAPH AT STATION       22

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.49, TOTAL EXCESS =    2.08

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    2825.      3.25                307.        77.         74.         74.
                        (INCHES)    2.060       2.074       2.074       2.074
                         (AC-FT)     152.       153.        153.        153.

                       CUMULATIVE AREA =    1.39 SQ MI


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


            **************
            *            *
  212 KK    *        23  *          SUB
            *            *
            **************
                                RUNOFF FROM SUB-BASIN 23

               SUBBASIN RUNOFF DATA

  214 BA          SUBBASIN CHARACTERISTICS
                        TAREA        0.39  SUBBASIN AREA

                  PRECIPITATION DATA
```

```
 51 PH                                  DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                        ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                       5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                        0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                   STORM AREA =    9.70

 215 LS                SCS LOSS RATE
                            STRTL        0.38  INITIAL ABSTRACTION
                           CRVNBR       84.00  CURVE NUMBER
                            RTIMP        6.30  PERCENT IMPERVIOUS AREA

                       KINEMATIC WAVE
 216 UK                  OVERLAND-FLOW ELEMENT NO. 1
                                  L        225.  OVERLAND FLOW LENGTH
                                  S      0.0590  SLOPE
                                  N       0.200  ROUGHNESS COEFFICIENT
                                 PA       100.0  PERCENT OF SUBBASIN
                             DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                       KINEMATIC WAVE
 217 RK                  MAIN CHANNEL
                                  L      10200.  CHANNEL LENGTH
                                  S      0.0304  SLOPE
                                  N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                                 CA        0.39  CONTRIBUTING AREA
                              SHAPE        TRAP  CHANNEL SHAPE
                                 WD       20.00  BOTTOM WIDTH OR DIAMETER
                                  Z        3.00  SIDE SLOPE
                             NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                             RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH

                                                                   ***
                                          COMPUTED KINEMATIC PARAMETERS
                                               VARIABLE TIME STEP
                                            (DT SHOWN IS A MINIMUM)

                          ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                          PEAK                CELERITY
                                                                  (MIN)      (FT)     (CFS)     (MIN)       (IN)     (FPS)

                         PLANE1       1.81      1.67       1.52     45.00   1131.14    185.24      2.10      0.55
                         MAIN         1.12      1.48       3.96   3400.00    781.94    194.26      2.09     14.56

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.4420E+02 OUTFLOW=0.4393E+02 BASIN STORAGE=0.9523E-02 PERCENT ERROR=   0.6

                                                INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                         MAIN         1.12      1.48       5.00              778.56    195.00      2.09
      ***             ***             ***             ***             ***

                                HYDROGRAPH AT STATION       23

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.48, TOTAL EXCESS =    2.10

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     779.      3.25                   88.         22.         21.         21.
                        (INCHES)    2.071      2.086       2.086       2.086
                         (AC-FT)       44.         44.         44.         44.
```

```
                    CUMULATIVE AREA =    0.39 SQ MI


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


            **************
            *            *
 218 KK     *      24A   *          CP
            *            *
            **************
                              COMBINE HYDROGRAPHS FOR SUB 22 AND SUB 23

 220 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
      ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION      24A

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                  6-HR       24-HR       72-HR     24.92-HR
+  (CFS)       (HR)
                         (CFS)
+   3603.      3.25        395.        99.         96.         96.
                      (INCHES)     2.063       2.077       2.077       2.077
                       (AC-FT)      196.        197.        197.        197.

                    CUMULATIVE AREA =    1.78 SQ MI


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


            **************
            *            *
 221 KK     *      24.1  *          CP
            *            *
            **************
                              ROUTE CP 24A TO CP 24.1

               HYDROGRAPH ROUTING DATA

 223 RS          STORAGE ROUTING
                      NSTPS           3  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC       -1.00  INITIAL CONDITION
                          X        0.00 WORKING R AND D COEFFICIENT

 224 RC          NORMAL DEPTH CHANNEL
                        ANL       0.055  LEFT OVERBANK N-VALUE
                       ANCH       0.040  MAIN CHANNEL N-VALUE
                        ANR       0.055  RIGHT OVERBANK N-VALUE
                      RLNTH       6800.  REACH LENGTH
                        SEL      0.0257  ENERGY SLOPE
                      ELMAX         0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                   CROSS-SECTION DATA
                        --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 226 RY        ELEVATION     10.00      8.00      3.00      0.00      0.00      3.00      8.00     10.00
```

```
 225 RX        DISTANCE       0.00      1.00    101.00    107.00    122.00    128.00    228.00    229.00
                                                                  ***
                                                COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE       0.00      1.32      2.81      4.48      6.31      8.32     10.58     14.18     19.51     26.57
            OUTFLOW       0.00     31.22    101.24    203.89    338.11    504.13    713.81   1001.79   1374.65   1855.17
          ELEVATION       0.00      0.53      1.05      1.58      2.11      2.63      3.16      3.68      4.21      4.74

            STORAGE      35.36     45.89     58.14     72.12     87.83    105.27    123.90    142.60    161.35    180.15
            OUTFLOW    2462.85   3215.29   4128.86   5218.97   6500.29   7986.88   9899.50  12068.87  14430.67  16975.64
          ELEVATION       5.26      5.79      6.32      6.84      7.37      7.89      8.42      8.95      9.47     10.00

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN     7987. TO    16976.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                        HYDROGRAPH AT STATION     24.1

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    2924.      3.42                395.         99.         96.         96.
                        (INCHES)    2.061       2.077       2.077       2.077
                         (AC-FT)     196.        197.        197.        197.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
      14.       3.42                  2.          1.          1.          1.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
     5.59       3.42                 1.63        0.42        0.41        0.41

                        CUMULATIVE AREA =    1.78 SQ MI


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


            **************
            *            *
 227 KK     *        24  *          SUB
            *            *
            **************
                                 RUNOFF FROM SUB-BASIN 24
                                 DRAINAGE AREA CHANGED TO MATCH VALUE USED BY MICHAEL BAKER
                                 Jr., INC.

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                       TAREA        0.49  SUBBASIN AREA

                 PRECIPITATION DATA

  51 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
```

```
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                STORM AREA =    9.70

 232 LS          SCS LOSS RATE
                      STRTL        0.60  INITIAL ABSTRACTION
                     CRVNBR       77.00  CURVE NUMBER
                      RTIMP        6.80  PERCENT IMPERVIOUS AREA

                 KINEMATIC WAVE
 233 UK            OVERLAND-FLOW ELEMENT NO. 1
                          L        295.  OVERLAND FLOW LENGTH
                          S      0.0438  SLOPE
                          N       0.200  ROUGHNESS COEFFICIENT
                         PA       100.0  PERCENT OF SUBBASIN
                     DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                 KINEMATIC WAVE
 234 RK            MAIN CHANNEL
                          L       6800.  CHANNEL LENGTH
                          S      0.0257  SLOPE
                          N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                         CA        0.49  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD       15.00  BOTTOM WIDTH OR DIAMETER
                          Z        3.00  SIDE SLOPE
                     NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                     RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH

                                                    ***
                                   COMPUTED KINEMATIC PARAMETERS
                                        VARIABLE TIME STEP
                                     (DT SHOWN IS A MINIMUM)

                   ELEMENT    ALPHA       M        DT        DX      PEAK    TIME TO     VOLUME    MAXIMUM
                                                                              PEAK                  CELERITY
                                                   (MIN)     (FT)    (CFS)    (MIN)      (IN)      (FPS)

                   PLANE1      1.56     1.67      2.26     59.00    856.02   190.74      1.62       0.46
                   MAIN        1.21     1.45      2.78   2266.67    735.98   195.89      1.62      13.86

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.4263E+02 OUTFLOW=0.4239E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.5

                                         INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                   MAIN        1.21     1.45      5.00              708.45   195.00      1.62

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

                          HYDROGRAPH AT STATION       24

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.95, TOTAL EXCESS =    1.63

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                    (CFS)
+     708.      3.25                   85.         21.         21.         21.
                                  (INCHES)      1.606       1.621       1.621       1.621
                                   (AC-FT)        42.         42.         42.         42.

                                  CUMULATIVE AREA =    0.49 SQ MI
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
  235 KK    *     24.2A  *          CP
            *            *
            **************
                                COMBINE SUB 24 & CP 24.1 - APEX

  237 HC          HYDROGRAPH COMBINATION
                        ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                  ***
MANE2 NPLAN,NSTM        1      0
      ***             ***            ***            ***            ***

                        HYDROGRAPH AT STATION    24.2A

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    3467.      3.42                479.        121.        116.        116.
                        (INCHES)    1.962       1.978       1.979       1.979
                         (AC-FT)    238.        240.        240.        240.

                        CUMULATIVE AREA =    2.27 SQ MI


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

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            *            *
  238 KK    *       25N  *          SUB
            *            *
            **************
                                RUNOFF FROM SUB-BASIN 25N - APEX

               SUBBASIN RUNOFF DATA

  240 BA          SUBBASIN CHARACTERISTICS
                        TAREA        0.78  SUBBASIN AREA

                  PRECIPITATION DATA

   51 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......  ............... TP-40 ...............  ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                STORM AREA =    9.70

  241 LS          SCS LOSS RATE
                        STRTL        0.38  INITIAL ABSTRACTION
                       CRVNBR       84.00  CURVE NUMBER
                        RTIMP        9.00  PERCENT IMPERVIOUS AREA

                  KINEMATIC WAVE
  242 UK            OVERLAND-FLOW ELEMENT NO. 1
```

```
                        L        295.  OVERLAND FLOW LENGTH
                        S      0.0438  SLOPE
                        N       0.200  ROUGHNESS COEFFICIENT
                       PA       100.0  PERCENT OF SUBBASIN
                    DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                 KINEMATIC WAVE
 243 RK            MAIN CHANNEL
                        L      16700.  CHANNEL LENGTH
                        S      0.0302  SLOPE
                        N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                       CA        0.78  CONTRIBUTING AREA
                    SHAPE        TRAP  CHANNEL SHAPE
                       WD       25.00  BOTTOM WIDTH OR DIAMETER
                        Z        3.00  SIDE SLOPE
                   NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                   RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH
                                                        ***
                                   COMPUTED KINEMATIC PARAMETERS
                                        VARIABLE TIME STEP
                                     (DT SHOWN IS A MINIMUM)

                  ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                PEAK                CELERITY
                                                   (MIN)      (FT)     (CFS)    (MIN)      (IN)      (FPS)

                  PLANE1      1.56      1.67       1.92     59.00   1957.06    187.77      2.14       0.54
                  MAIN        0.97      1.50       4.27   4175.00   1280.11    203.94      2.13      16.32

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.8954E+02 OUTFLOW=0.8895E+02 BASIN STORAGE=0.4329E-01 PERCENT ERROR=   0.6

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                  MAIN        0.97      1.50       5.00             1243.86    205.00      2.13
      ***          ***          ***          ***          ***

                       HYDROGRAPH AT STATION      25N

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.43, TOTAL EXCESS =    2.14

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                    (CFS)
+    1244.      3.42                 177.         45.         43.         43.
                                 (INCHES)       2.105       2.131       2.131       2.131
                                  (AC-FT)        88.         89.         89.         89.

                       CUMULATIVE AREA =    0.78 SQ MI


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


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            *            *
 244 KK     *       25S  *          SUB
            *            *
            **************
                                RUNOFF FROM SUB-BASIN 25S - APEX
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                SUBBASIN RUNOFF DATA

 246 BA           SUBBASIN CHARACTERISTICS
                        TAREA        0.63  SUBBASIN AREA

                  PRECIPITATION DATA

  51 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                  STORM AREA =    9.70

 247 LS           SCS LOSS RATE
                        STRTL        0.33  INITIAL ABSTRACTION
                       CRVNBR       86.00  CURVE NUMBER
                        RTIMP        9.00  PERCENT IMPERVIOUS AREA

                  KINEMATIC WAVE
 248 UK             OVERLAND-FLOW ELEMENT NO. 1
                            L        295.  OVERLAND FLOW LENGTH
                            S      0.0438  SLOPE
                            N       0.200  ROUGHNESS COEFFICIENT
                           PA       100.0  PERCENT OF SUBBASIN
                        DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                  KINEMATIC WAVE
 249 RK             MAIN CHANNEL
                            L       8900.  CHANNEL LENGTH
                            S      0.0278  SLOPE
                            N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                           CA        0.63  CONTRIBUTING AREA
                        SHAPE        TRAP  CHANNEL SHAPE
                           WD       25.00  BOTTOM WIDTH OR DIAMETER
                            Z        3.00  SIDE SLOPE
                       NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                       RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH

                                                     ***
                                   COMPUTED KINEMATIC PARAMETERS
                                        VARIABLE TIME STEP
                                     (DT SHOWN IS A MINIMUM)

                    ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                   PEAK                CELERITY
                                                    (MIN)     (FT)     (CFS)    (MIN)       (IN)      (FPS)

                   PLANE1       1.56      1.67      1.93     59.00   1715.16    188.26      2.29       0.56
                   MAIN         0.93      1.50      3.07   2966.67   1432.12    195.33      2.28      16.99

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.7648E+02 OUTFLOW=0.7611E+02 BASIN STORAGE=0.2473E-01 PERCENT ERROR=   0.5

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                   MAIN         0.93      1.50      5.00             1424.44    195.00      2.28

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

                          HYDROGRAPH AT STATION      25S

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.28, TOTAL EXCESS =    2.29
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```
  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    1424.      3.25                152.        38.         37.         37.
                        (INCHES)    2.261       2.280       2.280       2.280
                         (AC-FT)     75.         76.         76.         76.

                        CUMULATIVE AREA =    0.63 SQ MI


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


            **************
            *            *
  250 KK    *     25.1   *          CP
            *            *
            **************
                                COMBINE HYDROGRAPHS FOR SUB-BASINS 25N AND 25S

  252 HC          HYDROGRAPH COMBINATION
                        ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
      ***             ***            ***            ***            ***

                        HYDROGRAPH AT STATION     25.1

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    2431.      3.33                329.        83.         80.         80.
                        (INCHES)    2.173       2.197       2.197       2.197
                         (AC-FT)    163.        165.        165.        165.

                        CUMULATIVE AREA =    1.41 SQ MI


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


            **************
            *            *
  253 KK    *    24.2B   *          CP
            *            *
            **************
                                COMBINE TOTAL HYDROGRAPH 24.2A WITH 25.1

  255 HC          HYDROGRAPH COMBINATION
                        ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
      ***             ***            ***            ***            ***

                        HYDROGRAPH AT STATION    24.2B

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
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                                    6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+    5611.      3.42                809.        204.        197.        197.
                       (INCHES)    2.043       2.062       2.062       2.062
                        (AC-FT)      401.        405.        405.        405.

                       CUMULATIVE AREA =    3.68 SQ MI


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


            **************
            *            *
 256 KK     *    PIMARD  *          CP
            *            *
            **************
                           ROUTE THE TOTAL HYDROGRAPH AT THE CONCENTRATION POINT
                           24.2B TO THE CULVERT AT THE PIMA ROAD. THERE IS NO
                           CONTRIBUTING AREA AT THIS CONCENTRATION POINT.

               HYDROGRAPH ROUTING DATA

 260 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC       -1.00  INITIAL CONDITION
                          X        0.00 WORKING R AND D COEFFICIENT

 261 RC          NORMAL DEPTH CHANNEL
                        ANL       0.055  LEFT OVERBANK N-VALUE
                       ANCH       0.040  MAIN CHANNEL N-VALUE
                        ANR       0.055  RIGHT OVERBANK N-VALUE
                      RLNTH       2000.  REACH LENGTH
                        SEL      0.0287  ENERGY SLOPE
                      ELMAX         0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                      CROSS-SECTION DATA
                            --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 263 RY        ELEVATION     10.00      8.00      3.00      0.00      0.00      3.00      8.00     10.00
 262 RX        DISTANCE       0.00      1.00    101.00    107.00    122.00    128.00    228.00    229.00
                                                                  ***

                                      COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

           STORAGE       0.00      0.39      0.83      1.32      1.86      2.45      3.11      4.17      5.74      7.82
           OUTFLOW       0.00     33.00    106.99    215.46    357.30    532.75    754.33   1058.65   1452.67   1960.46
         ELEVATION       0.00      0.53      1.05      1.58      2.11      2.63      3.16      3.68      4.21      4.74

           STORAGE      10.40     13.50     17.10     21.21     25.83     30.96     36.44     41.94     47.46     52.98
           OUTFLOW    2602.63   3397.77   4363.19   5515.17   6869.22   8440.18  10461.35  12753.84  15249.69  17939.09
         ELEVATION       5.26      5.79      6.32      6.84      7.37      7.89      8.42      8.95      9.47     10.00

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN      357. TO    17939.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                        HYDROGRAPH AT STATION   PIMARD

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
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```
                                        6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                              (CFS)
+    5550.      3.42                    808.        204.        197.        197.
                          (INCHES)     2.042       2.062       2.062       2.062
                           (AC-FT)      401.        405.        405.        405.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
       21.      3.42                      3.          1.          1.          1.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      6.86      3.42                     2.30        0.61        0.59        0.59

                          CUMULATIVE AREA =    3.68 SQ MI


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


            **************
            *            *
  264 KK    *    RR24.2  *          CP
            *            *
            **************
                           ROUTE THE TOTAL HYDROGRAPH AT CONCENTRATION POINT
                           24.2B FROM THE CULVERT UNDER PIMA ROAD TO CONCENTRATION
                           POINT 21.05.

               HYDROGRAPH ROUTING DATA

  268 RS          STORAGE ROUTING
                        NSTPS          1  NUMBER OF SUBREACHES
                         ITYP       FLOW  TYPE OF INITIAL CONDITION
                        RSVRIC      -1.00  INITIAL CONDITION
                             X       0.00 WORKING R AND D COEFFICIENT

  269 RC          NORMAL DEPTH CHANNEL
                          ANL      0.055  LEFT OVERBANK N-VALUE
                         ANCH      0.040  MAIN CHANNEL N-VALUE
                          ANR      0.055  RIGHT OVERBANK N-VALUE
                        RLNTH      3050.  REACH LENGTH
                          SEL     0.0238  ENERGY SLOPE
                        ELMAX        0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                          CROSS-SECTION DATA
                             --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
  271 RY        ELEVATION     10.00      8.00      3.00      0.00      0.00      3.00      8.00     10.00
  270 RX        DISTANCE       0.00      1.00    101.00    107.00    122.00    128.00    228.00    229.00

                                                                  ***

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

           STORAGE       0.00      0.59      1.26      2.01      2.83      3.73      4.74      6.36      8.75     11.92
           OUTFLOW       0.00     30.05     97.43    196.21    325.38    485.14    686.92    964.05   1322.86   1785.28
         ELEVATION       0.00      0.53      1.05      1.58      2.11      2.63      3.16      3.68      4.21      4.74

           STORAGE      15.86     20.58     26.08     32.35     39.39     47.22     55.57     63.96     72.37     80.80
           OUTFLOW    2370.06   3094.15   3973.31   5022.35   6255.39   7685.98   9526.54  11614.18  13887.00  16336.08
         ELEVATION       5.26      5.79      6.32      6.84      7.37      7.89      8.42      8.95      9.47     10.00
```

```
*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN    13887. TO    16336.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                        HYDROGRAPH AT STATION   RR24.2

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                              (CFS)
+    5294.      3.50                808.        204.        197.        197.
                          (INCHES)  2.041       2.062       2.062       2.062
                           (AC-FT)  401.        405.        405.        405.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
      34.       3.50                  6.          1.          1.          1.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
     6.96       3.50                2.43        0.64        0.62        0.62

                          CUMULATIVE AREA =    3.68 SQ MI


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


            **************
            *            *
  272 KK    *    C21.05  *      CONFLUENCE OF DGB CHANNELS NEAR MID-SECTION 36
            *            *
            **************
                              COMBINE HYDROGRAPH CP21G WITH HYDROGRAPH RR24.2
                              (FROM THE PIMA ROAD CULVERT)

  275 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0

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

                        HYDROGRAPH AT STATION   C21.05

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                              (CFS)
+   12190.      3.75               2714.        691.        666.        666.
                          (INCHES)  1.947       1.983       1.983       1.983
                           (AC-FT)  1346.       1371.       1371.       1371.

                          CUMULATIVE AREA =   12.96 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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                **************
                *            *
  276 KK        *     R21G   *          CP
                *            *
                **************
                                ROUTE CP21G(21.05)TO 21H WHICH IS 3100'

                   HYDROGRAPH ROUTING DATA

  278 RS             STORAGE ROUTING
                          NSTPS           1  NUMBER OF SUBREACHES
                           ITYP        FLOW  TYPE OF INITIAL CONDITION
                          RSVRIC       -1.00  INITIAL CONDITION
                               X        0.00 WORKING R AND D COEFFICIENT

  279 RC             NORMAL DEPTH CHANNEL
                            ANL       0.055  LEFT OVERBANK N-VALUE
                           ANCH       0.040  MAIN CHANNEL N-VALUE
                            ANR       0.055  RIGHT OVERBANK N-VALUE
                          RLNTH       3100.  REACH LENGTH
                            SEL      0.0194  ENERGY SLOPE
                          ELMAX         0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                          CROSS-SECTION DATA
                                --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
  281 RY          ELEVATION      9.00      4.00      1.50      0.00      0.00      1.50      4.00      9.00
  280 RX          DISTANCE       0.00     90.00    120.00    355.00    585.00    820.00    850.00    940.00
                                                                   ***

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE       0.00     10.26     25.51     45.78     69.44     93.54    118.04    142.91    168.17    193.84
            OUTFLOW       0.00    392.78   1439.00   3230.72   6298.69  10280.65  15025.67  20488.34  26635.34  33431.25
          ELEVATION       0.00      0.47      0.95      1.42      1.89      2.37      2.84      3.32      3.79      4.26

            STORAGE     220.07    246.87    274.24    302.19    330.72    359.82    389.50    419.75    450.57    481.97
            OUTFLOW   40866.80  48938.79  57637.09  66953.80  76882.58  87418.43  98557.38 110296.27 122632.68 135564.81
          ELEVATION       4.74      5.21      5.68      6.16      6.63      7.11      7.58      8.05      8.53      9.00

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN    40867. TO   135565.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                        HYDROGRAPH AT STATION     R21G

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                             (CFS)
+   12012.      3.83          2707.        691.        666.        666.
                         (INCHES)       1.942       1.983       1.983       1.983
                          (AC-FT)       1342.       1371.       1371.       1371.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR        24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
      102.      3.83            33.          9.          8.          8.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR        24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
```

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     2.54      3.83                 1.04        0.28        0.27        0.27
                        CUMULATIVE AREA =   12.96 SQ MI


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

            **************
            *            *
 282 KK     *       21H  *          SUB
            *            *
            **************
                                RUNOFF FROM SUB-BASIN 21H

               SUBBASIN RUNOFF DATA

 284 BA          SUBBASIN CHARACTERISTICS
                       TAREA        0.04  SUBBASIN AREA

                 PRECIPITATION DATA

  51 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                STORM AREA =    9.70

 285 LS          SCS LOSS RATE
                       STRTL        0.50  INITIAL ABSTRACTION
                      CRVNBR       80.00  CURVE NUMBER
                       RTIMP        6.40  PERCENT IMPERVIOUS AREA

                 KINEMATIC WAVE
 286 UK            OVERLAND-FLOW ELEMENT NO. 1
                           L        297.  OVERLAND FLOW LENGTH
                           S      0.0333  SLOPE
                           N       0.200  ROUGHNESS COEFFICIENT
                          PA       100.0  PERCENT OF SUBBASIN
                       DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                 KINEMATIC WAVE
 287 RK            MAIN CHANNEL
                           L       4600.  CHANNEL LENGTH
                           S      0.0278  SLOPE
                           N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                          CA        0.04  CONTRIBUTING AREA
                       SHAPE        TRAP  CHANNEL SHAPE
                          WD       20.00  BOTTOM WIDTH OR DIAMETER
                           Z        3.00  SIDE SLOPE
                      NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                      RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH

                                                        ***
                                   COMPUTED KINEMATIC PARAMETERS
                                        VARIABLE TIME STEP
                                     (DT SHOWN IS A MINIMUM)

                    ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                   PEAK               CELERITY
                                                   (MIN)      (FT)     (CFS)     (MIN)       (IN)      (FPS)

                    PLANE1      1.36      1.67      2.27     59.40     83.37    190.45      1.81      0.44
                    MAIN        1.07      1.48      4.16   1533.33     64.59    199.55      1.80      6.34
```

```
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.4176E+01 OUTFLOW=0.4145E+01 BASIN STORAGE=0.2185E-02 PERCENT ERROR=   0.7

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                 MAIN          1.07      1.48       5.00              64.21    200.00      1.81
      ***            ***             ***             ***             ***

                       HYDROGRAPH AT STATION      21H

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.76, TOTAL EXCESS =    1.82

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+      64.      3.33                 8.          2.          2.          2.
                        (INCHES)   1.786       1.806       1.806       1.806
                         (AC-FT)     4.          4.          4.          4.

                        CUMULATIVE AREA =    0.04 SQ MI


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


            **************
            *            *
  288 KK    *       26N  *
            *            *
            **************
                                Runoff from sub-basin 26N

               SUBBASIN RUNOFF DATA

  290 BA         SUBBASIN CHARACTERISTICS
                       TAREA        0.64  SUBBASIN AREA

                 PRECIPITATION DATA

   51 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                   STORM AREA =    9.70

  291 LS         SCS LOSS RATE
                       STRTL        0.67  INITIAL ABSTRACTION
                      CRVNBR       75.00  CURVE NUMBER
                       RTIMP       12.70  PERCENT IMPERVIOUS AREA

                 KINEMATIC WAVE
  292 UK           OVERLAND-FLOW ELEMENT NO. 1
                            L        200.  OVERLAND FLOW LENGTH
                            S      0.0250  SLOPE
                            N       0.200  ROUGHNESS COEFFICIENT
                           PA       100.0  PERCENT OF SUBBASIN
                       DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                 KINEMATIC WAVE
```

```
 293 RK            MAIN CHANNEL
                          L      12000.  CHANNEL LENGTH
                          S     0.0263  SLOPE
                          N      0.045  CHANNEL ROUGHNESS COEFFICIENT
                         CA       0.64  CONTRIBUTING AREA
                      SHAPE       TRAP  CHANNEL SHAPE
                         WD      35.00  BOTTOM WIDTH OR DIAMETER
                          Z      10.00  SIDE SLOPE
                     NDXMIN          2  MINIMUM NUMBER OF DX INTERVALS
                     RUPSTQ         NO  ROUTE UPSTREAM HYDROGRAPH

                                                   ***
                                  COMPUTED KINEMATIC PARAMETERS
                                       VARIABLE TIME STEP
                                     (DT SHOWN IS A MINIMUM)

                   ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                  PEAK                CELERITY
                                                   (MIN)      (FT)     (CFS)     (MIN)       (IN)      (FPS)

                   PLANE1      1.18      1.67       2.02     40.00   1134.68    190.57       1.63       0.34
                   MAIN        0.87      1.43       4.34   2400.00    695.84    209.67       1.63       9.48

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.5568E+02 OUTFLOW=0.5537E+02 BASIN STORAGE=0.2531E-01 PERCENT ERROR=   0.5

                                          INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                   MAIN        0.87      1.43       5.00              689.73    210.00       1.63
      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION      26N

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.94, TOTAL EXCESS =    1.64

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     690.      3.50                110.         28.         27.         27.
                        (INCHES)    1.606      1.631       1.631       1.631
                         (AC-FT)     55.         55.         55.         55.

                        CUMULATIVE AREA =    0.64 SQ MI


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


            **************
            *            *
 294 KK     *     CP21H  *        JOMAX RD
            *            *
            **************

 295 KO           OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

 296 HC           HYDROGRAPH COMBINATION
                        ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE
```

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                                                                    ***
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0

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

                        HYDROGRAPH AT STATION    CP21H

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+   12375.      3.83                2823.        721.        695.        695.
                          (INCHES)   1.924       1.966       1.966       1.966
                           (AC-FT)   1400.       1430.       1430.       1430.

                          CUMULATIVE AREA =   13.64 SQ MI


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


            **************
            *            *
  297 KK    *     RR21H  *          CP
            *            *
            **************
                                ROUTE HYDROGRAPH AT CONCENTRATION POINT 21H   DOWNSTREAM FROM
                                JOMAX ROAD           THERE IS NO ADDITIONAL CONTRIBUTING
                                DRAINAGE AREA AT THIS CONCENTRATION POINT.  USED CHANNEL
                                GEOMETRY                          FROM REACH SIX
                                     DEVELOPED BY C. LOVELY

               HYDROGRAPH ROUTING DATA

  303 RS          STORAGE ROUTING
                        NSTPS          1  NUMBER OF SUBREACHES
                         ITYP       FLOW  TYPE OF INITIAL CONDITION
                        RSVRIC      -1.00  INITIAL CONDITION
                             X       0.00 WORKING R AND D COEFFICIENT

  304 RC          NORMAL DEPTH CHANNEL
                          ANL      0.055  LEFT OVERBANK N-VALUE
                         ANCH      0.040  MAIN CHANNEL N-VALUE
                          ANR      0.055  RIGHT OVERBANK N-VALUE
                        RLNTH      2390.  REACH LENGTH
                          SEL     0.0188  ENERGY SLOPE
                        ELMAX        0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                     CROSS-SECTION DATA
                            --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
  306 RY        ELEVATION      9.00      4.00      1.50      0.00      0.00      1.50      4.00      9.00
  305 RX        DISTANCE       0.00     90.00    120.00    355.00    585.00    820.00    850.00    940.00
                                                                    ***

                                     COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE       0.00      7.91     19.67     35.29     53.53     72.12     91.00    110.18    129.65    149.44
            OUTFLOW       0.00    386.66   1416.57   3180.37   6200.53  10120.42  14791.49  20169.02  26220.22  32910.21
          ELEVATION       0.00      0.47      0.95      1.42      1.89      2.37      2.84      3.32      3.79      4.26

            STORAGE     169.66    190.33    211.43    232.98    254.97    277.41    300.29    323.61    347.38    371.59
            OUTFLOW   40229.88  48176.06  56738.80  65910.30  75684.34  86055.98  97021.32 108577.26 120721.40 133451.97
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          ELEVATION       4.74      5.21      5.68      6.16      6.63      7.11      7.58      8.05      8.53      9.00

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN    20169. TO   133452.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                        HYDROGRAPH AT STATION    RR21H

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+   12234.      3.83               2817.        721.        695.        695.
                         (INCHES)   1.920       1.966       1.966       1.966
                          (AC-FT)   1397.       1430.       1430.       1430.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
      81.      3.83                 27.          7.          7.          7.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
     2.58      3.83                 1.08        0.29        0.28        0.28

                        CUMULATIVE AREA =   13.64 SQ MI


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


            **************
            *            *
  307 KK    *       26S  *          SUB
            *            *
            **************
                                RUNOFF FROM SUB-BASIN 26S

               SUBBASIN RUNOFF DATA

  309 BA          SUBBASIN CHARACTERISTICS
                        TAREA        0.17  SUBBASIN AREA

                  PRECIPITATION DATA

   51 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                   STORM AREA =    9.70

  310 LS          SCS LOSS RATE
                        STRTL        0.67  INITIAL ABSTRACTION
                       CRVNBR       75.00  CURVE NUMBER
                        RTIMP       12.70  PERCENT IMPERVIOUS AREA

                  KINEMATIC WAVE
  311 UK            OVERLAND-FLOW ELEMENT NO. 1
                            L        200.  OVERLAND FLOW LENGTH
                            S      0.0250  SLOPE
```

```
                        N       0.200  ROUGHNESS COEFFICIENT
                       PA       100.0  PERCENT OF SUBBASIN
                    DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                 KINEMATIC WAVE
 312 RK            MAIN CHANNEL
                        L       4000.  CHANNEL LENGTH
                        S      0.0263  SLOPE
                        N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                       CA        0.17  CONTRIBUTING AREA
                    SHAPE        TRAP  CHANNEL SHAPE
                       WD       35.00  BOTTOM WIDTH OR DIAMETER
                        Z       10.00  SIDE SLOPE
                   NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                   RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH
                                                        ***
                                   COMPUTED KINEMATIC PARAMETERS
                                        VARIABLE TIME STEP
                                     (DT SHOWN IS A MINIMUM)

                  ELEMENT    ALPHA       M        DT        DX      PEAK    TIME TO     VOLUME    MAXIMUM
                                                                             PEAK                  CELERITY
                                                   (MIN)     (FT)     (CFS)    (MIN)      (IN)      (FPS)

                  PLANE1      1.18      1.67      2.02     40.00    297.55   190.57      1.63      0.34
                  MAIN        0.87      1.43      3.14   1333.33    248.14   195.91      1.63      7.22

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.1460E+02 OUTFLOW=0.1454E+02 BASIN STORAGE=0.4459E-02 PERCENT ERROR=   0.4

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                  MAIN        0.87      1.43      5.00             238.82   195.00      1.63
      ***          ***        ***        ***        ***
                          HYDROGRAPH AT STATION      26S

    TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.94, TOTAL EXCESS =    1.64

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     239.      3.25        29.         7.          7.          7.
                        (INCHES)     1.607       1.627       1.627       1.627
                         (AC-FT)      14.         15.         15.         15.
                          CUMULATIVE AREA =    0.17 SQ MI


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


            **************
            *            *
 313 KK     *    *APEX*  *          CP
            *            *
            **************
                                COMBINE FLOW FROM SUB-BASIN 26 ,
                                    AND ROUTED HYDROGRAPH FROM JOMAX ROAD.
                               *********END SUBAREA 21 REVISIONS************
```

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  316 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
      ***            ***             ***             ***             ***

                       HYDROGRAPH AT STATION   *APEX*

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+   12296.      3.83                2843.        728.        702.        702.
                        (INCHES)     1.915       1.962       1.962       1.962
                         (AC-FT)     1410.       1445.       1445.       1445.

                        CUMULATIVE AREA =   13.81 SQ MI


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


            **************
            *            *
  318 KK    *     CP27A  *          CP AT HAPPY VALLEY RD
            *            *
            **************
                                ROUTE FLOW FROM CONCENTRATION POINT APEX  TO 27A (HAPPY VALLEY
                                ROAD).  THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION PT.


               HYDROGRAPH ROUTING DATA

  322 RS          STORAGE ROUTING
                       NSTPS           1  NUMBER OF SUBREACHES
                        ITYP        FLOW  TYPE OF INITIAL CONDITION
                      RSVRIC       -1.00  INITIAL CONDITION
                           X        0.00 WORKING R AND D COEFFICIENT

  323 RC          NORMAL DEPTH CHANNEL
                         ANL       0.055  LEFT OVERBANK N-VALUE
                        ANCH       0.040  MAIN CHANNEL N-VALUE
                         ANR       0.055  RIGHT OVERBANK N-VALUE
                       RLNTH       1600.  REACH LENGTH
                         SEL      0.0196  ENERGY SLOPE
                       ELMAX         0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                          CROSS-SECTION DATA
                            --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
  325 RY        ELEVATION     10.00      4.00      2.00      0.00      0.00      2.00      4.00     10.00
  324 RX        DISTANCE       0.00      1.00    201.00    211.00    261.00    271.00    471.00    472.00
                                                                   ***
                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE       0.00      1.02      2.14      3.36      4.72      7.50     12.31     19.16     27.88     36.97
            OUTFLOW       0.00     91.04    294.77    591.73    986.85   1576.38   2463.81   3753.15   5635.98   8178.79
          ELEVATION       0.00      0.53      1.05      1.58      2.11      2.63      3.16      3.68      4.21      4.74

            STORAGE      46.06     55.15     64.25     73.36     82.46     91.57    100.69    109.80    118.92    128.04
            OUTFLOW   11173.05  14581.44  18376.29  22535.82  27042.13  31880.16  37036.89  42500.89  48262.05  54311.25
```

```
          ELEVATION       5.26      5.79      6.32      6.84      7.37      7.89      8.42      8.95      9.47     10.00

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN     8179. TO    54311.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                        HYDROGRAPH AT STATION    CP27A

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+   12273.      3.92                2842.        728.        702.        702.
                         (INCHES)   1.914       1.962       1.962       1.962
                          (AC-FT)   1409.       1445.       1445.       1445.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
      49.       3.92                  13.          3.          3.          3.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
     5.43       3.92                 2.68        0.76        0.73        0.73

                        CUMULATIVE AREA =   13.81 SQ MI


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


            **************
            *            *
  326 KK    *     CP27B  *          CP AT MILLER RD
            *            *
            **************
                                ROUTE FLOW FROM CONCENTRATION POINT 27B TO 27C (MILLER ROAD).
                                THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.

               HYDROGRAPH ROUTING DATA

  329 RS          STORAGE ROUTING
                        NSTPS          1  NUMBER OF SUBREACHES
                         ITYP       FLOW  TYPE OF INITIAL CONDITION
                       RSVRIC      -1.00  INITIAL CONDITION
                            X       0.00 WORKING R AND D COEFFICIENT

  330 RC          NORMAL DEPTH CHANNEL
                          ANL      0.055  LEFT OVERBANK N-VALUE
                         ANCH      0.040  MAIN CHANNEL N-VALUE
                          ANR      0.055  RIGHT OVERBANK N-VALUE
                        RLNTH      3300.  REACH LENGTH
                          SEL     0.0196  ENERGY SLOPE
                        ELMAX        0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                      CROSS-SECTION DATA
                            --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
  332 RY        ELEVATION     10.00      4.00      2.00      0.00      0.00      2.00      4.00     10.00
  331 RX        DISTANCE       0.00      1.00    201.00    211.00    261.00    271.00    471.00    472.00
                                                                      ***
```

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	2.10	4.41	6.93	9.73	15.46	25.39	39.51	57.50	76.24
OUTFLOW	0.00	91.04	294.77	591.73	986.85	1576.38	2463.81	3753.15	5635.98	8178.79
ELEVATION	0.00	0.53	1.05	1.58	2.11	2.63	3.16	3.68	4.21	4.74
STORAGE	95.00	113.76	132.52	151.30	170.08	188.87	207.66	226.47	245.27	264.09
OUTFLOW	11173.05	14581.44	18376.29	22535.82	27042.13	31880.16	37036.89	42500.89	48262.05	54311.25
ELEVATION	5.26	5.79	6.32	6.84	7.37	7.89	8.42	8.95	9.47	10.00

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 37037. TO 54311.
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

HYDROGRAPH AT STATION CP27B

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 12010.	4.00		2839.	728.	702.	702.
		(INCHES)	1.911	1.962	1.962	1.962
		(AC-FT)	1408.	1445.	1445.	1445.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
100.	4.00	27.	7.	7.	7.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
5.39	4.00	2.69	0.77	0.74	0.74

CUMULATIVE AREA = 13.81 SQ MI

*** ***

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              **************
              *            *
333 KK        *     CP27C  *          CP AT PINNACLE PEAK RD
              *            *
              **************
```

ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (PINNACLE PK ROAD).
THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.

HYDROGRAPH ROUTING DATA

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336 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       FLOW  TYPE OF INITIAL CONDITION
                    RSVRIC      -1.00  INITIAL CONDITION
                         X       0.00  WORKING R AND D COEFFICIENT

337 RC          NORMAL DEPTH CHANNEL
                       ANL      0.055  LEFT OVERBANK N-VALUE
                      ANCH      0.040  MAIN CHANNEL N-VALUE
                       ANR      0.055  RIGHT OVERBANK N-VALUE
                     RLNTH      3300.  REACH LENGTH
```

```
                        SEL      0.0196  ENERGY SLOPE
                      ELMAX         0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                   CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 339 RY        ELEVATION     10.00      4.00      2.00      0.00      0.00      2.00      4.00     10.00
 338 RX        DISTANCE       0.00      1.00    201.00    211.00    261.00    271.00    471.00    472.00

                                                          ***

                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE       0.00      2.10      4.41      6.93      9.73     15.46     25.39     39.51     57.50     76.24
            OUTFLOW       0.00     91.04    294.77    591.73    986.85   1576.38   2463.81   3753.15   5635.98   8178.79
          ELEVATION       0.00      0.53      1.05      1.58      2.11      2.63      3.16      3.68      4.21      4.74

            STORAGE      95.00    113.76    132.52    151.30    170.08    188.87    207.66    226.47    245.27    264.09
            OUTFLOW   11173.05  14581.44  18376.29  22535.82  27042.13  31880.16  37036.89  42500.89  48262.05  54311.25
          ELEVATION       5.26      5.79      6.32      6.84      7.37      7.89      8.42      8.95      9.47     10.00

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN    37037. TO    54311.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                        HYDROGRAPH AT STATION    CP27C

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+   11721.      4.08      2835.       728.        702.        702.
                       (INCHES)     1.909       1.962       1.962       1.962
                        (AC-FT)     1406.       1445.       1445.       1445.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
      98.       4.08        27.         7.          7.          7.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      5.35      4.08       2.71        0.78        0.75        0.75

                        CUMULATIVE AREA =   13.81 SQ MI


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


            **************
            *            *
 340 KK     *     CP27D  *          CP AT SCOTTSDALE RD
            *            *
            **************
                                 ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (SCOTTSDALE ROAD)
                                 THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.

               HYDROGRAPH ROUTING DATA

 343 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
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                        ITYP        FLOW  TYPE OF INITIAL CONDITION
                      RSVRIC       -1.00  INITIAL CONDITION
                           X        0.00 WORKING R AND D COEFFICIENT

 344 RC          NORMAL DEPTH CHANNEL
                         ANL       0.055  LEFT OVERBANK N-VALUE
                        ANCH       0.040  MAIN CHANNEL N-VALUE
                         ANR       0.055  RIGHT OVERBANK N-VALUE
                       RLNTH       1000.  REACH LENGTH
                         SEL      0.0196  ENERGY SLOPE
                       ELMAX         0.0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                   CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 346 RY        ELEVATION     10.00      4.00      2.00      0.00      0.00      2.00      4.00     10.00
 345 RX        DISTANCE       0.00      1.00    201.00    211.00    261.00    271.00    471.00    472.00
                                                                  ***

                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

           STORAGE       0.00      0.64      1.34      2.10      2.95      4.69      7.69     11.97     17.42     23.10
           OUTFLOW       0.00     91.04    294.77    591.73    986.85   1576.38   2463.81   3753.15   5635.98   8178.79
         ELEVATION       0.00      0.53      1.05      1.58      2.11      2.63      3.16      3.68      4.21      4.74

           STORAGE      28.79     34.47     40.16     45.85     51.54     57.23     62.93     68.63     74.33     80.03
           OUTFLOW   11173.05  14581.44  18376.29  22535.82  27042.13  31880.16  37036.89  42500.89  48262.05  54311.25
         ELEVATION       5.26      5.79      6.32      6.84      7.37      7.89      8.42      8.95      9.47     10.00

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN       91. TO    54311.
                 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                        HYDROGRAPH AT STATION    CP27D

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                             (CFS)
+   11724.      4.08        2834.       728.        702.        702.
                         (INCHES)     1.909       1.962       1.962       1.962
                          (AC-FT)     1406.       1445.       1445.       1445.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR        24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
      30.       4.08                  8.          2.          2.          2.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR        24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
     5.35       4.08                 2.71        0.78        0.75        0.75

                        CUMULATIVE AREA =   13.81 SQ MI


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


            ***************
            *             *
 347 KK     *        27   *          SUB
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          *           *
          **************
                          RUNOFF FROM SUB-BASIN 27

             SUBBASIN RUNOFF DATA

349 BA         SUBBASIN CHARACTERISTICS
                     TAREA        1.19  SUBBASIN AREA

               PRECIPITATION DATA

 51 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                0.77    1.51    2.65    3.00    3.23    3.66    0.00    0.00    0.00    0.00    0.00    0.00

                                                STORM AREA =    9.70

350 LS         SCS LOSS RATE
                     STRTL        0.67  INITIAL ABSTRACTION
                    CRVNBR       75.00  CURVE NUMBER
                     RTIMP       12.70  PERCENT IMPERVIOUS AREA

               KINEMATIC WAVE
351 UK           OVERLAND-FLOW ELEMENT NO. 1
                         L        200.  OVERLAND FLOW LENGTH
                         S      0.0250  SLOPE
                         N       0.200  ROUGHNESS COEFFICIENT
                        PA       100.0  PERCENT OF SUBBASIN
                     DXMIN           5  MINIMUM NUMBER OF DX INTERVALS

               KINEMATIC WAVE
352 RK           MAIN CHANNEL
                         L       1500.  CHANNEL LENGTH
                         S      0.0263  SLOPE
                         N       0.045  CHANNEL ROUGHNESS COEFFICIENT
                        CA        1.19  CONTRIBUTING AREA
                     SHAPE        TRAP  CHANNEL SHAPE
                        WD       35.00  BOTTOM WIDTH OR DIAMETER
                         Z       10.00  SIDE SLOPE
                    NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                    RUPSTQ          NO  ROUTE UPSTREAM HYDROGRAPH
                                                          ***
                                  COMPUTED KINEMATIC PARAMETERS
                                       VARIABLE TIME STEP
                                   (DT SHOWN IS A MINIMUM)

                  ELEMENT    ALPHA       M        DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                              PEAK                  CELERITY
                                                (MIN)      (FT)     (CFS)     (MIN)       (IN)      (FPS)

                  PLANE1      1.18     1.67      2.02     40.00   2120.05    190.57      1.63       0.34
                  MAIN        0.87     1.43      0.61    500.00   2077.01    190.94      1.63      13.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00  EXCESS=0.1040E+03 OUTFLOW=0.1038E+03 BASIN STORAGE=0.2468E-01 PERCENT ERROR=   0.2

                                  INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                  MAIN        0.87     1.43      5.00             2052.00    190.00      1.63
     ***            ***            ***            ***            ***

                       HYDROGRAPH AT STATION       27
```

```
     TOTAL RAINFALL =    3.58, TOTAL LOSS =    1.94, TOTAL EXCESS =    1.64

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                   (CFS)
+    2052.      3.17                207.         52.         50.         50.
                                (INCHES)      1.615       1.633       1.633       1.633
                                 (AC-FT)      103.        104.        104.        104.

                                CUMULATIVE AREA =    1.19 SQ MI


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


            **************
            *            *
  353 KK    *      CP27  *          CP AT SCOTTSDALE RD
            *            *
            **************

  354 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                                 COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
                                 POINT 27D WITH SUB 27 .  TOTAL FLOW AT
                                 SCOTTSDALE ROAD FOR FAN 4.

  358 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
       ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION     CP27

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                                   (CFS)
+   11942.      4.08               3016.        781.        752.        752.
                                (INCHES)      1.870       1.936       1.936       1.936
                                 (AC-FT)      1496.       1548.       1548.       1548.

                                CUMULATIVE AREA =   15.00 SQ MI

1
                                                RUNOFF SUMMARY
                                          FLOW IN CUBIC FEET PER SECOND
                                       TIME IN HOURS,  AREA IN SQUARE MILES

                                   PEAK   TIME OF     AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN     MAXIMUM     TIME OF
        OPERATION       STATION    FLOW    PEAK                                           AREA      STAGE     MAX STAGE
+                                                                6-HOUR     24-HOUR     72-HOUR

        HYDROGRAPH AT
+                          16      2683.   3.25          323.        81.         78.       1.46

        HYDROGRAPH AT
+                          17      2184.   3.25          262.        66.         64.       1.19
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+          HYDROGRAPH AT
                      18     2431.   3.25      273.      69.      66.     1.26
+          3 COMBINED AT
                      19A    7297.   3.25      857.     216.     208.     3.91
+          ROUTED TO
                      19B    7225.   3.33      857.     216.     208.     3.91
+                                                                        7.03      3.33
+          HYDROGRAPH AT
                      15     1901.   3.42      281.      71.      68.     1.37
+          2 COMBINED AT
                      19C    8929.   3.33     1138.     287.     277.     5.28
+          ROUTED TO
                      19.1   8529.   3.33     1138.     287.     277.     5.28
+                                                                        6.10      3.33
+          HYDROGRAPH AT
                      19     445.    3.25       42.      11.      10.     0.19
+          HYDROGRAPH AT
                      20     1086.   3.25      125.      31.      30.     0.57
+          3 COMBINED AT
                      CP20   9887.   3.33     1305.     329.     317.     6.03
+          ROUTED TO
                      RRCP20 9129.   3.42     1303.     329.     317.     6.03
+                                                                        4.09      3.42
+          HYDROGRAPH AT
                      21A    784.    3.25       81.      20.      20.     0.42
+          2 COMBINED AT
                      CP21A  9593.   3.42     1384.     350.     337.     6.45
+          ROUTED TO
                      RR21A  9383.   3.50     1383.     350.     337.     6.45
+                                                                        3.46      3.50
+          HYDROGRAPH AT
                      21B    512.    3.25       53.      13.      13.     0.28
+          2 COMBINED AT
                      CP21B  9671.   3.42     1436.     363.     350.     6.73
+          ROUTED TO
                      RR21B  8973.   3.58     1435.     363.     350.     6.73
+                                                                        3.74      3.58
+          HYDROGRAPH AT
                      21C    1248.   3.25      144.      36.      35.     0.75
+          2 COMBINED AT
                      CP21C  9578.   3.50     1578.     399.     385.     7.48
+          ROUTED TO
                      RR21C  7972.   3.67     1571.     399.     385.     7.48
+                                                                        4.10      3.67
+          HYDROGRAPH AT
                      21D    1500.   3.33      204.      51.      50.     1.06
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                2 COMBINED AT
+                       CP21D     8765.    3.67      1773.      451.      434.      8.54
                ROUTED TO
+                       RR21D     8701.    3.75      1773.      451.      434.      8.54
+                                                                          4.16      3.75
                HYDROGRAPH AT
+                         21E      402.    3.33        50.       12.       12.      0.26
                2 COMBINED AT
+                       CP21E     8840.    3.75      1822.      463.      446.      8.79
                ROUTED TO
+                       RR21E     8580.    3.75      1819.      463.      446.      8.79
+                                                                          6.35      3.75
                HYDROGRAPH AT
+                         21F      666.    3.33        90.       23.       22.      0.47
                2 COMBINED AT
+                       CP21F     8865.    3.75      1908.      486.      468.      9.26
                ROUTED TO
+                       RR21F     8833.    3.83      1905.      486.      468.      9.26
+                                                                          2.70      3.83
                HYDROGRAPH AT
+                         21G       26.    3.33         3.        1.        1.      0.02
                2 COMBINED AT
+                       CP21G     8841.    3.83      1908.      487.      469.      9.28
                HYDROGRAPH AT
+                          22     2825.    3.25       307.       77.       74.      1.39
                HYDROGRAPH AT
+                          23      779.    3.25        88.       22.       21.      0.39
                2 COMBINED AT
+                         24A     3603.    3.25       395.       99.       96.      1.78
                ROUTED TO
+                        24.1     2924.    3.42       395.       99.       96.      1.78
+                                                                          5.59      3.42
                HYDROGRAPH AT
+                          24      708.    3.25        85.       21.       21.      0.49
                2 COMBINED AT
+                       24.2A     3467.    3.42       479.      121.      116.      2.27
                HYDROGRAPH AT
+                         25N     1244.    3.42       177.       45.       43.      0.78
                HYDROGRAPH AT
+                         25S     1424.    3.25       152.       38.       37.      0.63
                2 COMBINED AT
+                        25.1     2431.    3.33       329.       83.       80.      1.41
                2 COMBINED AT
+                       24.2B     5611.    3.42       809.      204.      197.      3.68
                ROUTED TO
+                      PIMARD     5550.    3.42       808.      204.      197.      3.68
+                                                                          6.86      3.42
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+          ROUTED TO
                          RR24.2     5294.    3.50       808.       204.       197.      3.68
+                                                                                                  6.96       3.50
           2 COMBINED AT
+                          C21.05    12190.    3.75      2714.       691.       666.     12.96
           ROUTED TO
+                            R21G    12012.    3.83      2707.       691.       666.     12.96
+                                                                                                  2.54       3.83
           HYDROGRAPH AT
+                             21H       64.    3.33         8.         2.         2.      0.04
           HYDROGRAPH AT
+                             26N      690.    3.50       110.        28.        27.      0.64
           3 COMBINED AT
+                           CP21H    12375.    3.83      2823.       721.       695.     13.64
           ROUTED TO
+                           RR21H    12234.    3.83      2817.       721.       695.     13.64
+                                                                                                  2.58       3.83
           HYDROGRAPH AT
+                             26S      239.    3.25        29.         7.         7.      0.17
           2 COMBINED AT
+                          *APEX*    12296.    3.83      2843.       728.       702.     13.81
           ROUTED TO
+                           CP27A    12273.    3.92      2842.       728.       702.     13.81
+                                                                                                  5.43       3.92
           ROUTED TO
+                           CP27B    12010.    4.00      2839.       728.       702.     13.81
+                                                                                                  5.39       4.00
           ROUTED TO
+                           CP27C    11721.    4.08      2835.       728.       702.     13.81
+                                                                                                  5.35       4.08
           ROUTED TO
+                           CP27D    11724.    4.08      2834.       728.       702.     13.81
+                                                                                                  5.35       4.08
           HYDROGRAPH AT
+                              27     2052.    3.17       207.        52.        50.      1.19
           2 COMBINED AT
+                            CP27    11942.    4.08      3016.       781.       752.     15.00
1
                                   SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                       (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                          INTERPOLATED TO
                                                                      COMPUTATION INTERVAL
          ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT      PEAK    TIME TO     VOLUME
                                                    PEAK                                    PEAK

                              (MIN)     (CFS)     (MIN)      (IN)    (MIN)     (CFS)     (MIN)       (IN)

             16    MANE         3.27   2790.08    197.97      2.08     5.00   2682.70    195.00       2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1620E+03 OUTFLOW=0.1613E+03 BASIN STORAGE=0.4299E-01 PERCENT ERROR=   0.4
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```
                17  MANE        3.68   2249.16    195.52      2.07      5.00   2183.62    195.00        2.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1317E+03 OUTFLOW=0.1309E+03 BASIN STORAGE=0.4985E-01 PERCENT ERROR=   0.6

                18  MANE        3.18   2466.56    196.97      2.02      5.00   2431.13    195.00        2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1368E+03 OUTFLOW=0.1360E+03 BASIN STORAGE=0.5145E-01 PERCENT ERROR=   0.6

                15  MANE        3.51   1901.39    207.57      1.93      5.00   1901.08    205.00        1.93

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1417E+03 OUTFLOW=0.1409E+03 BASIN STORAGE=0.5998E-01 PERCENT ERROR=   0.5

                19  MANE        1.80    456.95    193.94      2.11      5.00    444.60    195.00        2.11

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2111E+02 OUTFLOW=0.2104E+02 BASIN STORAGE=0.3666E-02 PERCENT ERROR=   0.4

                20  MANE        3.77   1138.08    196.21      2.05      5.00   1086.14    195.00        2.05

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6254E+02 OUTFLOW=0.6220E+02 BASIN STORAGE=0.1496E-01 PERCENT ERROR=   0.5

               21A  MANE        2.36    804.58    193.66      1.81      5.00    783.53    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4070E+02 OUTFLOW=0.4053E+02 BASIN STORAGE=0.1094E-01 PERCENT ERROR=   0.4

               21B  MANE        2.56    520.22    194.23      1.81      5.00    511.65    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2674E+02 OUTFLOW=0.2663E+02 BASIN STORAGE=0.7314E-02 PERCENT ERROR=   0.4

               21C  MANE        3.23   1300.20    196.60      1.81      5.00   1248.06    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7248E+02 OUTFLOW=0.7205E+02 BASIN STORAGE=0.2485E-01 PERCENT ERROR=   0.6

               21D  MANE        3.10   1538.29    200.70      1.81      5.00   1499.66    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1026E+03 OUTFLOW=0.1020E+03 BASIN STORAGE=0.5119E-01 PERCENT ERROR=   0.5

               21E  MANE        3.04    421.12    198.38      1.81      5.00    401.68    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2490E+02 OUTFLOW=0.2476E+02 BASIN STORAGE=0.1083E-01 PERCENT ERROR=   0.5

               21F  MANE        4.33    687.84    201.28      1.80      5.00    666.34    200.00        1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4544E+02 OUTFLOW=0.4507E+02 BASIN STORAGE=0.2383E-01 PERCENT ERROR=   0.8
```

```
          21G  MANE        4.06     26.27    199.44      1.80      5.00     26.04    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1667E+01 OUTFLOW=0.1656E+01 BASIN STORAGE=0.7499E-03 PERCENT ERROR=   0.6

           22  MANE        3.71   2850.96    194.47      2.07      5.00   2824.55    195.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1539E+03 OUTFLOW=0.1530E+03 BASIN STORAGE=0.3984E-01 PERCENT ERROR=   0.5

           23  MANE        3.96    781.94    194.26      2.09      5.00    778.56    195.00        2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4420E+02 OUTFLOW=0.4393E+02 BASIN STORAGE=0.9523E-02 PERCENT ERROR=   0.6

           24  MANE        2.78    735.98    195.89      1.62      5.00    708.45    195.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4263E+02 OUTFLOW=0.4239E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.5

          25N  MANE        4.27   1280.11    203.94      2.13      5.00   1243.86    205.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8954E+02 OUTFLOW=0.8895E+02 BASIN STORAGE=0.4329E-01 PERCENT ERROR=   0.6

          25S  MANE        3.07   1432.12    195.33      2.28      5.00   1424.44    195.00        2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7648E+02 OUTFLOW=0.7611E+02 BASIN STORAGE=0.2473E-01 PERCENT ERROR=   0.5

          21H  MANE        4.16     64.59    199.55      1.80      5.00     64.21    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4176E+01 OUTFLOW=0.4145E+01 BASIN STORAGE=0.2185E-02 PERCENT ERROR=   0.7

          26N  MANE        4.34    695.84    209.67      1.63      5.00    689.73    210.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5568E+02 OUTFLOW=0.5537E+02 BASIN STORAGE=0.2531E-01 PERCENT ERROR=   0.5

          26S  MANE        3.14    248.14    195.91      1.63      5.00    238.82    195.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1460E+02 OUTFLOW=0.1454E+02 BASIN STORAGE=0.4459E-02 PERCENT ERROR=   0.4

           27  MANE        0.61   2077.01    190.94      1.63      5.00   2052.00    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1040E+03 OUTFLOW=0.1038E+03 BASIN STORAGE=0.2468E-01 PERCENT ERROR=   0.2


*** NORMAL END OF HEC-1 ***
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Bypass HEC-1 Model

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1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN 09 1992              *
*            VERSION 4.0.3E            *
*                                      *
*  RUN DATE  09/29/98  TIME  10:38:25  *
*                                      *
****************************************
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```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748             *
*                                      *
****************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
```

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

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

1 HEC-1 INPUT PAGE 1

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

   1          ID        FILE <RWDAM21F.DAT>
   2          ID        THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
   3          ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
   4          ID
   5          ID        THE MODIFICIATION INCLUDE THE FOLLOWING:
   6          ID        1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   7          ID           TO CONCENTRATION POINT AT THE APEX OF 21F
   8          ID        2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE
   9          ID
  10          ID        NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
  11          ID        1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
  12          ID        MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
  13          ID        25S.
  14          ID
  15          ID        100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
  16          ID        RAINFALL FROM NOAA ATLAS
  17          ID
  18          ID        FILE RAW4A.DAT
  19          ID        WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
  20          ID        FOR 22, 23, 24, 25N, AND 25S.  ROUTE COMBINED HYDROGRAPHS
  21          ID        22, 23, 24, 25N AND 25S TO 21G.  SUN-BASIN 26 COMBINED AT
  22          ID        THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
  23          ID        ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
  24          ID        INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
  25          ID        PROPOSED ROAD CROSSINGS.
  26          ID
  27          ID        REVISED BY GREINER 12-9-93 BY RON FERGUSON
  28          ID        REVISED BY C. J. LOVELY, COS, 3-9-94
  29          ID        Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study
  30          ID           *Eliminate DSS Records
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 31          ID          *Divide #26 into 26N & 26S; 26N is portion north of Jomax
 32          ID          *Add 26N @ CP21H and route with 21H to apex
 33          ID          *Add 26S @ apex
 34          ID          *Modify reach length in 26S & 26N to reflect division
 35          ID
 36          ID        ******************************************************************
 37          ID        * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
 38          ID        * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.       *
 39          ID        ******************************************************************
 40          ID    September 1998 - Added a bypass flow to the two branches of flow in
 41          ID    September 1998 - Section 36. Will bypass the first flows up to 500 cfs each.
 42          ID    September 1998 - Filename <RAWBYPSS.DAT>
 43          ID
 44          ID
 45          ID   ***********************************************************************
             *DIAGRAM
 46          IT       5 03MAR94       0     300
 47          IO       5       0       0       0
             *
1                                          HEC-1 INPUT                                    PAGE  2

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

 48          KK      16     SUB
 49          KM         RUNOFF FROM SUB-BASIN 16
 50          BA  1.4570
 51          PH       0     9.7    0.77    1.51    2.65    3.00    3.23    3.66
 52          LS       0      83     9.8       0       0       0       0       0
 53          UK     217   .0581     .20     100
 54          RK   14800   .0216    .045       0    TRAP      25       3
             *

 55          KK      17     SUB
 56          KM         RUNOFF FROM SUB-BASIN 17
 57          BA  1.1851       0       0
 58          LS       0      83     9.8
 59          UK     285   .0421     .20     100       0       0       0
 60          RK   12200   .0254    .045       0    TRAP      25       3
             *

 61          KK      18     SUB
 62          KM         RUNOFF FROM SUB-BASIN 18
 63          BA  1.2641
 64          LS       0      83     6.5       0
 65          UK     285   .0421     .20     100       0       0       0
 66          RK   10840   .0259    .045       0    TRAP      25       3
             *

 67          KK     19A      CP
 68          KM         COMBINE HYDROGRAPHS SUB16, SUB17 AND SUB18
 69          HC       3
             *

 70          KK     19B      CP
 71          KM         ROUTE CP19A TO CP19B
 72          RS       1    FLOW      -1       0       0
 73          RC    .055    .040    .055    1100   .0155       0       0       0
 74          RX       0       1     126     132     167     173     298     299
 75          RY      10       8       3       0       0       3       8      10
             *

 76          KK      15     SUB
 77          KM         RUNOFF FROM SUBBASIN 15
 78          BA  1.3702       0       0
 79          LS       0      82     5.4       0
 80          UK     217   .0581     .20     100       0       0       0
```

```
 81          RK   21200   .0236    .045       0    TRAP      25       3
             *

 82          KK     19C      CP
 83          KM        COMBINE HYDROGRAPHS SUB15 & CP19B
 84          HC       2
             *
1                                          HEC-1 INPUT                                                PAGE  3
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 85          KK    19.1      CP
 86          KM        ROUTE CP 19C TO 19.1
 87          RS       1    FLOW      -1       0       0
 88          RC    .055    .040    .055    1800   .0200       0       0
 89          RX       0       1     151     166     216     231     381     382
 90          RY      10       9       3       0       0       3       9      10
             *

 91          KK      19     SUB
 92          KM        RUNOFF FROM SUB-BASIN 19
 93          BA  0.1872
 94          LS       0      84     7.2       0
 95          UK     275   .0800     .20     100       0       0       0
 96          RK    3730   .0352    .045    .160    TRAP      15       3
 97          RK    1800   .0200    .045       0    TRAP      50      30
             *

 98          KK      20     SUB
 99          KM        RUNOFF FROM SUB-BASIN 20
100          BA  0.5698       0       0
101          LS       0      84     3.6       0
102          UK     300   .0750     .20     100       0       0       0
103          RK    9640   .0197    .045       0    TRAP      15       3
             *

104          KK    CP20      CP
105          KM        COMBINE SUB 19, SUB 20 AND CP 19.1
106          HC       3
             *
107          KM    *******BEGIN SUBAREA 21 BREAKDOWN-3/94 REVISIONS*****

108          KK  RRCP20      CP
109          KM        ROUTE CP20 TO CP 21A, WHICH IS 4600'
110          RS       1    FLOW      -1       0       0
111          RC    .055    .040    .055    4600   .0217       0       0       0
112          RX       0      30      60      85     195     220     250     280
113          RY      10       4       1       0       0       1       4      10
             *

114          KK     21A     SUB
115          KM        RUNOFF FROM SUB-BASIN 21A
116          BA     .42       0       0
117          LS       0      80     6.4       0       0       0
118          UK     297   .0558     .20     100       0       0       0
119          RK    6400   .0344    .045       0    TRAP      10       3
             *

120          KK   CP21A
121          HC       2
             *
1                                          HEC-1 INPUT                                                PAGE  4
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
 122          KK   RR21A      CP
 123          KM        ROUTE CP21A TO 21B    WHICH IS 960'
 124          RS       1    FLOW      -1       0       0
 125          RC    .055    .040    .055     960   .0156       0       0       0
 126          RX       0      10      60     205     295     440     490     500
 127          RY       6       4       2       0       0       2       4       6
              *

 128          KK     21B     SUB
 129          KM        RUNOFF FROM SUB-BASIN 21B
 130          BA   0.276       0       0
 131          LS       0      80     6.4       0       0       0
 132          UK     297   .0558     .20     100       0       0       0
 133          RK    6300   .0381    .045       0    TRAP      10       3
              *

 134          KK   CP21B
 135          HC       2
              *

 136          KK   RR21B      CP
 137          KM        ROUTE CP21B TO 21C    WHICH IS 4400'
 138          RS       1    FLOW      -1       0       0
 139          RC    .055    .040    .055    4400   .0205       0       0       0
 140          RX       0      10      60     205     295     440     490     500
 141          RY       6       4       2       0       0       2       4       6
              *

 142          KK     21C     SUB
 143          KM        RUNOFF FROM SUB-BASIN 21C
 144          BA    .748       0       0
 145          LS       0      80     6.4       0       0       0
 146          UK     297   .0558     .20     100       0       0       0
 147          RK    9900   .0328    .045       0    TRAP      20       3
              *

 148          KK   CP21C
 149          HC       2
              *

 150          KK   RR21C      CP
 151          KM        ROUTE CP21C TO 21D    WHICH IS 5700'
 152          RS       1    FLOW      -1       0       0
 153          RC    .055    .040    .055    5700   .0181       0       0       0
 154          RX       0      20     175     210     300     335     490     510
 155          RY     5.5     3.5     2.5       0       0     2.5     3.5     5.5
              *

 156          KK     21D     SUB
 157          KM        RUNOFF FROM SUB-BASIN 21D
 158          BA   1.059       0       0
 159          LS       0      80     6.4       0       0       0
 160          UK     297   .0558     .20     100       0       0       0
 161          RK   14500   .0252    .045       0    TRAP      30       3
              *
1                                        HEC-1 INPUT                                        PAGE  5

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

 162          KK   CP21D
 163          HC       2
              *

 164          KK   RR21D      CP
 165          KM        ROUTE CP21D TO 21E    WHICH IS 1100'
 166          RS       1    FLOW      -1       0       0
```

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 167          RC     .055    .040    .055    1100   .0200       0       0       0
 168          RX        0      20     175     210     300     335     490     510
 169          RY      5.5     3.5     2.5       0       0     2.5     3.5     5.5
              *

 170          KK      21E     SUB
 171          KM         RUNOFF FROM SUB-BASIN 21E
 172          BA    0.257       0       0
 173          LS        0      80     6.4       0       0       0
 174          UK      297   .0333     .20     100       0       0       0
 175          RK     6600   .0288    .045       0    TRAP      15       3
              *

 176          KK    CP21E
 177          HC        2
              *

 178          KK    RR21E      CP
 179          KM         ROUTE CP21E TO 21F    WHICH IS 2800'
 180          RS        1    FLOW      -1       0       0
 181          RC     .055    .040    .055    2800   .0143       0       0       0
 182          RX        0      70     170     180     230     240     340     410
 183          RY     10.5     4.5     3.5       0       0     3.5     4.5    10.5
              *

 184          KK      21F     SUB
 185          KM         RUNOFF FROM SUB-BASIN 21F
 186          BA    0.469       0       0
 187          LS        0      80     6.4       0       0       0
 188          UK      297   .0333     .20     100       0       0       0
 189          RK    10400   .0279    .045       0    TRAP      20       3
              *

 190          KK    CP21F
 191          HC        2
              *

 192          KK    RR21F      CP
 193          KM    ROUTE CP21F TO 21G (1900' DOWNSTREAM)
 194          RS        1    FLOW      -1       0       0
 195          RC     .055    .040    .055    1900   .0158       0       0       0
 196          RX        0      20      70     345     455     730     780     800
 197          RY       10       8       2       0       0       2       8      10
              *
1                                         HEC-1 INPUT                                        PAGE  6

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

 198          KK      21G     SUB
 199          KM    RUNOFF FROM SUB-BASIN 21G
 200          BA    .0172       0       0
 201          LS        0      80     6.4       0       0       0
 202          UK      297   .0333     .20     100       0       0       0
 203          RK     4000   .0300    .045       0    TRAP      10       3
              *

 204          KK    CP21G
 205          HC        2
              *  DDDDDDDDDDDDDDDDDDDDDDDDDDDDDIVERSIONDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD

 206          KK      DIV
 207          KM    DIVERSION OF THE NORTH INFLOWS TO DETERMINE VOLUME
 208          KO        1       2
 209          DT     DIVN       0
 210          DI        0     200    8841
 211          DQ        0     200     500
```

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                 *  DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD

 212             KK      22     SUB
 213             KM         RUNOFF FROM SUB-BASIN 22
 214             BA  1.3860
 215             LS       0      84     5.1       0
 216             UK     225   .0590     .20     100       0       0       0       0
 217             RK   13000   .0238    .045       0    TRAP      25       3
                 *

 218             KK      23     SUB
 219             KM          RUNOFF FROM SUB-BASIN 23
 220             BA  0.3945       0       0
 221             LS       0      84     6.3       0
 222             UK     225   .0590     .20     100       0       0       0
 223             RK   10200   .0304    .045       0    TRAP      20       3
                 *

 224             KK     24A      CP
 225             KM          COMBINE HYDROGRAPHS FOR SUB 22 AND SUB 23
 226             HC       2
                 *

 227             KK    24.1      CP
 228             KM          ROUTE CP 24A TO CP 24.1
 229             RS       3    FLOW      -1       0       0
 230             RC    .055    .040    .055    6800   .0257       0       0       0
 231             RX       0       1     101     107     122     128     228     229
 232             RY      10       8       3       0       0       3       8      10
                 *
1                                        HEC-1 INPUT                                       PAGE  7

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

 233             KK      24     SUB
 234             KM          RUNOFF FROM SUB-BASIN 24
 235             KM          DRAINAGE AREA CHANGED TO MATCH VALUE USED BY MICHAEL BAKER
 236             KM          Jr., INC.
 237             BA  0.4907       0       0
 238             LS       0      77     6.8       0
 239             UK     295   .0438     .20     100       0       0       0
 240             RK    6800   .0257    .045       0    TRAP      15       3
                 *

 241             KK   24.2A      CP
 242             KM          COMBINE SUB 24 & CP 24.1 - APEX
 243             HC       2
                 *

 244             KK     25N       SUB
 245             KM          RUNOFF FROM SUB-BASIN 25N - APEX
 246             BA  0.7834       0       0       0       0       0       0       0
 247             LS       0      84     9.0       0
 248             UK     295   .0438     .20     100       0       0       0
 249             RK   16700   .0302    .045       0    TRAP      25       3
                 *

 250             KK     25S     SUB
 251             KM          RUNOFF FROM SUB-BASIN 25S - APEX
 252             BA  0.6256       0       0       0       0       0       0       0
 253             LS       0      86     9.0       0
 254             UK     295   .0438     .20     100       0       0       0
 255             RK    8900   .0278    .045       0    TRAP      25       3
                 *

 256             KK    25.1      CP
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 257          KM        COMBINE HYDROGRAPHS FOR SUB-BASINS 25N AND 25S
 258          HC       2
              *

 259          KK   24.2B      CP
 260          KM        COMBINE TOTAL HYDROGRAPH 24.2A WITH 25.1
 261          HC       2
              *

 262          KK  PIMARD      CP
 263          KM   ROUTE THE TOTAL HYDROGRAPH AT THE CONCENTRATION POINT
 264          KM   24.2B TO THE CULVERT AT THE PIMA ROAD. THERE IS NO
 265          KM   CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 266          RS       1    FLOW      -1       0       0
 267          RC    .055    .040    .055    2000   .0287       0       0       0
 268          RX       0       1     101     107     122     128     228     229
 269          RY      10       8       3       0       0       3       8      10
              *
1                                          HEC-1 INPUT                                                    PAGE  8
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 270          KK  RR24.2      CP
 271          KM   ROUTE THE TOTAL HYDROGRAPH AT CONCENTRATION POINT
 272          KM   24.2B FROM THE CULVERT UNDER PIMA ROAD TO CONCENTRATION
 273          KM   POINT 21.05.
 274          RS       1    FLOW      -1       0       0
 275          RC    .055    .040    .055    3050   .0238       0       0       0
 276          RX       0       1     101     107     122     128     228     229
 277          RY      10       8       3       0       0       3       8      10
              *  DDDDDDDDDDDDDDDDDDDDDDDDDDDDDIVERSIONDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD

 278          KK     DIV
 279          KM   DIVERSION OF THE NORTH INFLOWS TO DETERMINE VOLUME
 280          KO       1       2
 281          DT    DIVE       0
 282          DI       0     200    5294
 283          DQ       0     200     500
              *  DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
              *

 284          KK  C21.05 CONFLUENCE OF DGB CHANNELS NEAR MID-SECTION 36
 285          KM         COMBINE HYDROGRAPH CP21G WITH HYDROGRAPH RR24.2
 286          KM         (FROM THE PIMA ROAD CULVERT)
 287          KO       3       1
 288          HC       2
              *
              *    THIS IS WHERE THE BASIN FOR ALTERNATIVE 3 WILL GO......
              *
              *
              *

 289          KK    R21G     CP
 290          KM        ROUTE CP21G(21.05)TO 21H WHICH IS 3100'
 291          RS       1    FLOW      -1       0       0
 292          RC    .055    .040    .055    3100   .0194       0       0       0
 293          RX       0      90     120     355     585     820     850     940
 294          RY       9       4     1.5       0       0     1.5       4       9
              *

 295          KK     21H     SUB
 296          KM        RUNOFF FROM SUB-BASIN 21H
 297          BA   .0431       0       0
 298          LS       0      80     6.4       0       0       0
 299          UK     297   .0333     .20     100       0       0       0
 300          RK    4600   .0278    .045       0    TRAP      20       3
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                    *

 301                KK     26N
 302                KM       Runoff from sub-basin 26N
 303                BA   .6376       0       0
 304                LS       0      75    12.7       0
 305                UK     200   .0250     .20     100       0
 306                RK   12000   .0263    .045       0    TRAP      35      10
                    *
1                                          HEC-1 INPUT                                                    PAGE  9

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


 307                KK   CP21H   JOMAX RD
 308                KO       3
 309                HC       3
                    *

 310                KK   RR21H      CP
 311                KM        ROUTE HYDROGRAPH AT CONCENTRATION POINT 21H   DOWNSTREAM FROM
 312                KM        JOMAX ROAD           THERE IS NO ADDITIONAL CONTRIBUTING
 313                KM        DRAINAGE AREA AT THIS CONCENTRATION POINT.  USED CHANNEL
 314                KM        GEOMETRY                          FROM REACH SIX
 315                KM            DEVELOPED BY C. LOVELY
 316                RS       1    FLOW      -1       0       0
 317                RC    .055    .040    .055    2390   .0188       0       0       0
 318                RX       0      90     120     355     585     820     850     940
 319                RY       9       4     1.5       0       0     1.5       4       9
                    *

 320                KK     26S     SUB
 321                KM       RUNOFF FROM SUB-BASIN 26S
 322                BA  0.1672       0       0
 323                LS       0      75    12.7       0
 324                UK     200   .0250     .20     100       0       0       0
 325                RK    4000   .0263    .045       0    TRAP      35      10
                    *

 326                KK  *APEX*      CP
 327                KM        COMBINE FLOW FROM SUB-BASIN 26 ,
 328                KM            AND ROUTED HYDROGRAPH FROM JOMAX ROAD.
 329                HC       2
                    *
 330                KM        *********END SUBAREA 21 REVISIONS************

 331                KK   CP27A      CP AT HAPPY VALLEY RD
 332                KM        ROUTE FLOW FROM CONCENTRATION POINT APEX  TO 27A (HAPPY VALLEY
 333                KM        ROAD).  THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION PT.
 334                KM
 335                RS       1    FLOW      -1       0       0
 336                RC    .055    .040    .055    1600   .0196       0       0       0
 337                RX       0       1     201     211     261     271     471     472
 338                RY      10       4       2       0       0       2       4      10
                    *

 339                KK   CP27B      CP AT MILLER RD
 340                KM        ROUTE FLOW FROM CONCENTRATION POINT 27B TO 27C (MILLER ROAD).
 341                KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
 342                RS       1    FLOW      -1       0       0
 343                RC    .055    .040    .055    3300   .0196       0       0       0
 344                RX       0       1     201     211     261     271     471     472
 345                RY      10       4       2       0       0       2       4      10
                    *
1                                          HEC-1 INPUT                                                    PAGE 10

LINE                ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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346          KK   CP27C      CP AT PINNACLE PEAK RD
347          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (PINNACLE PK ROAD).
348          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
349          RS       1    FLOW      -1       0       0
350          RC    .055    .040    .055    3300   .0196       0       0       0
351          RX       0       1     201     211     261     271     471     472
352          RY      10       4       2       0       0       2       4      10
             *

353          KK   CP27D     CP AT SCOTTSDALE RD
354          KM        ROUTE FLOW FROM CONCENTRATION POINT 27C TO 27D (SCOTTSDALE ROAD)
355          KM        THERE IS NO CONTRIBUTING AREA AT THIS CONCENTRATION POINT.
356          RS       1    FLOW      -1       0       0
357          RC    .055    .040    .055    1000   .0196       0       0       0
358          RX       0       1     201     211     261     271     471     472
359          RY      10       4       2       0       0       2       4      10
             *

360          KK      27     SUB
361          KM        RUNOFF FROM SUB-BASIN 27
362          BA  1.1913       0       0
363          LS       0      75    12.7       0
364          UK     200   .0250     .20     100       0       0       0
365          RK    1500   .0263    .045       0    TRAP      35      10
             *

366          KK    CP27      CP AT SCOTTSDALE RD
367          KO       3
368          KM        COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
369          KM        POINT 27D WITH SUB 27 .  TOTAL FLOW AT
370          KM        SCOTTSDALE ROAD FOR FAN 4.
371          HC       2
             *
372          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

   48          16
                .
                .
   55           .          17
                .           .
                .           .
   61           .           .          18
                .           .           .
                .           .           .
   67         19A.......................
                V
                V
   70         19B
                .
                .
   76           .          15
                .           .
                .           .
   82         19C............
                V
                V
   85        19.1
                .
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 91          .          19
             .           .
 98          .           .          20
             .           .           .
             .           .           .
104       CP20.......................
             V
             V
108     RRCP20
             .
             .
114          .         21A
             .           .
             .           .
120      CP21A............
             V
             V
122      RR21A
             .
             .
128          .         21B
             .           .
             .           .
134      CP21B............
             V
             V
136      RR21B
             .
             .
142          .         21C
             .           .
             .           .
148      CP21C............
             V
             V
150      RR21C
             .
             .
156          .         21D
             .           .
             .           .
162      CP21D............
             V
             V
164      RR21D
             .
             .
170          .         21E
             .           .
             .           .
176      CP21E............
             V
             V
178      RR21E
             .
             .
184          .         21F
             .           .
             .           .
190      CP21F............
             V
             V
192      RR21F
             .
             .
198          .         21G
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                .          .
                .          .
204        CP21G...........
                .
                .
209             .-------->    DIVN
206          DIV
                .
                .
212             .          22
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                .          .
218             .          .          23
                .          .          .
                .          .          .
224             .        24A...........
                .          V
                .          V
227             .       24.1
                .          .
                .          .
233             .          .          24
                .          .          .
                .          .          .
241             .     24.2A...........
                .          .
                .          .
244             .          .        25N
                .          .          .
                .          .          .
250             .          .          .        25S
                .          .          .         .
                .          .          .         .
256             .          .      25.1...........
                .          .          .
                .          .          .
259             .     24.2B...........
                .          V
                .          V
262             .    PIMARD
                .          V
                .          V
270             .    RR24.2
                .          .
                .          .
281             .          .-------->    DIVE
278             .        DIV
                .          .
                .          .
284        C21.05...........
                V
                V
289          R21G
                .
                .
295             .        21H
                .          .
                .          .
301             .          .        26N
                .          .          .
                .          .          .
307        CP21H.........................
                V
                V
310        RR21H
                .
                .
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  320          .         26S
               .           .
               .           .
  326      *APEX*...........
               V
               V
  331       CP27A
               V
               V
  339       CP27B
               V
               V
  346       CP27C
               V
               V
  353       CP27D
               .
               .
  360          .          27
               .           .
               .           .
  366        CP27...........
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN 09 1992              *
*           VERSION 4.0.3E             *
*                                      *
*  RUN DATE  09/29/98  TIME  10:38:25  *
*                                      *
****************************************
```

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

FILE <RWDAM21F.DAT>
THIS FILE IS MODIFIED FROM RAW10024.DAT OBTAINED FROM
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.

THE MODIFICIATION INCLUDE THE FOLLOWING:
1) RE-ROUTING OF RUNOFF FROM SUB BASINS 22, 23, 24, 25N AND 25S
   TO CONCENTRATION POINT AT THE APEX OF 21F
2) DAM WAS MOVED TO THE APEX OF 21F ACCORDING TO ALTERNATIVE

NORTH SCOTTSDALE FLOOD INSURANCE STUYD, FUTURE CONDITIONS
1992 MODELING REVISIONS BASED ON REATA PASS SENSITIVITY ANALYSIS
MODEL FAN4.6I -- SUB-BASINS 15 THROUGH 21, 22, 23, 24 25N, &
25S.

100-YEAR, 6-HOUR STORM, USING HEC-1 HYPOTHETICAL DISTRIBUTION
RAINFALL FROM NOAA ATLAS

FILE RAW4A.DAT
WITH SUB-BASIN 21 SUBDIVIED PER CJL AND COMBINE HYDROGRAPHS
FOR 22, 23, 24, 25N, AND 25S. ROUTE COMBINED HYDROGRAPHS
22, 23, 24, 25N AND 25S TO 21G. SUN-BASIN 26 COMBINED AT
THE APEX ROUTE THE HYDROGRAPH AT THE APEX TO SCOTTSDALE
ROAD JUST SOUTH OF PINNACLE PEAK ROAD.
INTERMEDIATE CONCENTRATION POINTS ARE CALLED FOR AT FUTURE
PROPOSED ROAD CROSSINGS.

REVISED BY GREINER 12-9-93 BY RON FERGUSON
REVISED BY C. J. LOVELY, COS, 3-9-94
Revised by CH2M Hill, Fuller, 7-94 for Detention Feasibility Study

```
                                  *Eliminate DSS Records
                                  *Divide #26 into 26N & 26S; 26N is portion north of Jomax
                                  *Add 26N @ CP21H and route with 21H to apex
                                  *Add 26S @ apex
                                  *Modify reach length in 26S & 26N to reflect division

                                 ******************************************************************
                                 * ROUTING REACHES AND CP'S ADDED WITHIN SUB AREA 21 TO REFLECT IN *
                                 * MORE DETAIL ACTUAL DRAINAGE AND CHANNEL REACH CONDITIONS.      *
                                 ******************************************************************
                              September 1998 - Added a bypass flow to the two branches of flow in
                              September 1998 - Section 36. Will bypass the first flows up to 500 cfs each.
                              September 1998 - Filename <RAWBYPSS.DAT>

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

   47 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      3MAR94  STARTING DATE
                        ITIME        0000  STARTING TIME
                           NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE      4MAR94  ENDING DATE
                       NDTIME        0055  ENDING TIME
                        ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL    0.08 HOURS
                       TOTAL TIME BASE   24.92 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
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0
MANE2 NPLAN,NSTM        1      0


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


            **************
            *            *
  206 KK    *       DIV  *
            *            *
            **************

  208 KO          OUTPUT CONTROL VARIABLES
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                    IPRNT          1  PRINT CONTROL
                    IPLOT          2  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

     DT          DIVERSION
                    ISTAD       DIVN  DIVERSION HYDROGRAPH IDENTIFICATION

     DI             INFLOW       0.00    200.00   8841.00

     DQ       DIVERTED FLOW      0.00    200.00    500.00
                                                        ***
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DIVERSION HYDROGRAPH DIVN

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DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
3	MAR	0000	1	0.	3	MAR	0615	76	224.	3	MAR	1230	151	18.	3	MAR	1845	226	2.
3	MAR	0005	2	0.	3	MAR	0620	77	223.	3	MAR	1235	152	17.	3	MAR	1850	227	2.
3	MAR	0010	3	0.	3	MAR	0625	78	222.	3	MAR	1240	153	16.	3	MAR	1855	228	2.
3	MAR	0015	4	0.	3	MAR	0630	79	221.	3	MAR	1245	154	16.	3	MAR	1900	229	2.
3	MAR	0020	5	0.	3	MAR	0635	80	220.	3	MAR	1250	155	15.	3	MAR	1905	230	2.
3	MAR	0025	6	0.	3	MAR	0640	81	219.	3	MAR	1255	156	14.	3	MAR	1910	231	2.
3	MAR	0030	7	0.	3	MAR	0645	82	218.	3	MAR	1300	157	14.	3	MAR	1915	232	1.
3	MAR	0035	8	0.	3	MAR	0650	83	217.	3	MAR	1305	158	13.	3	MAR	1920	233	1.
3	MAR	0040	9	0.	3	MAR	0655	84	216.	3	MAR	1310	159	12.	3	MAR	1925	234	1.
3	MAR	0045	10	0.	3	MAR	0700	85	215.	3	MAR	1315	160	12.	3	MAR	1930	235	1.
3	MAR	0050	11	0.	3	MAR	0705	86	213.	3	MAR	1320	161	11.	3	MAR	1935	236	1.
3	MAR	0055	12	0.	3	MAR	0710	87	212.	3	MAR	1325	162	11.	3	MAR	1940	237	1.
3	MAR	0100	13	0.	3	MAR	0715	88	211.	3	MAR	1330	163	11.	3	MAR	1945	238	1.
3	MAR	0105	14	0.	3	MAR	0720	89	210.	3	MAR	1335	164	10.	3	MAR	1950	239	1.
3	MAR	0110	15	0.	3	MAR	0725	90	209.	3	MAR	1340	165	10.	3	MAR	1955	240	1.
3	MAR	0115	16	0.	3	MAR	0730	91	208.	3	MAR	1345	166	9.	3	MAR	2000	241	1.
3	MAR	0120	17	0.	3	MAR	0735	92	207.	3	MAR	1350	167	9.	3	MAR	2005	242	1.
3	MAR	0125	18	0.	3	MAR	0740	93	206.	3	MAR	1355	168	9.	3	MAR	2010	243	1.
3	MAR	0130	19	0.	3	MAR	0745	94	205.	3	MAR	1400	169	8.	3	MAR	2015	244	1.
3	MAR	0135	20	0.	3	MAR	0750	95	205.	3	MAR	1405	170	8.	3	MAR	2020	245	1.
3	MAR	0140	21	0.	3	MAR	0755	96	204.	3	MAR	1410	171	8.	3	MAR	2025	246	1.
3	MAR	0145	22	0.	3	MAR	0800	97	203.	3	MAR	1415	172	7.	3	MAR	2030	247	1.
3	MAR	0150	23	1.	3	MAR	0805	98	202.	3	MAR	1420	173	7.	3	MAR	2035	248	1.
3	MAR	0155	24	1.	3	MAR	0810	99	202.	3	MAR	1425	174	7.	3	MAR	2040	249	1.
3	MAR	0200	25	1.	3	MAR	0815	100	201.	3	MAR	1430	175	7.	3	MAR	2045	250	1.
3	MAR	0205	26	1.	3	MAR	0820	101	201.	3	MAR	1435	176	6.	3	MAR	2050	251	1.
3	MAR	0210	27	1.	3	MAR	0825	102	201.	3	MAR	1440	177	6.	3	MAR	2055	252	1.
3	MAR	0215	28	2.	3	MAR	0830	103	200.	3	MAR	1445	178	6.	3	MAR	2100	253	1.
3	MAR	0220	29	2.	3	MAR	0835	104	196.	3	MAR	1450	179	6.	3	MAR	2105	254	1.
3	MAR	0225	30	2.	3	MAR	0840	105	185.	3	MAR	1455	180	6.	3	MAR	2110	255	1.
3	MAR	0230	31	3.	3	MAR	0845	106	175.	3	MAR	1500	181	5.	3	MAR	2115	256	1.
3	MAR	0235	32	4.	3	MAR	0850	107	165.	3	MAR	1505	182	5.	3	MAR	2120	257	1.
3	MAR	0240	33	4.	3	MAR	0855	108	155.	3	MAR	1510	183	5.	3	MAR	2125	258	1.
3	MAR	0245	34	6.	3	MAR	0900	109	145.	3	MAR	1515	184	5.	3	MAR	2130	259	1.
3	MAR	0250	35	8.	3	MAR	0905	110	136.	3	MAR	1520	185	5.	3	MAR	2135	260	1.
3	MAR	0255	36	13.	3	MAR	0910	111	128.	3	MAR	1525	186	5.	3	MAR	2140	261	1.
3	MAR	0300	37	23.	3	MAR	0915	112	119.	3	MAR	1530	187	4.	3	MAR	2145	262	1.
3	MAR	0305	38	55.	3	MAR	0920	113	112.	3	MAR	1535	188	4.	3	MAR	2150	263	1.
3	MAR	0310	39	161.	3	MAR	0925	114	105.	3	MAR	1540	189	4.	3	MAR	2155	264	1.
3	MAR	0315	40	212.	3	MAR	0930	115	98.	3	MAR	1545	190	4.	3	MAR	2200	265	1.
3	MAR	0320	41	244.	3	MAR	0935	116	93.	3	MAR	1550	191	4.	3	MAR	2205	266	1.
3	MAR	0325	42	288.	3	MAR	0940	117	88.	3	MAR	1555	192	4.	3	MAR	2210	267	1.
3	MAR	0330	43	336.	3	MAR	0945	118	83.	3	MAR	1600	193	4.	3	MAR	2215	268	1.
3	MAR	0335	44	393.	3	MAR	0950	119	79.	3	MAR	1605	194	4.	3	MAR	2220	269	1.
3	MAR	0340	45	448.	3	MAR	0955	120	75.	3	MAR	1610	195	4.	3	MAR	2225	270	1.
3	MAR	0345	46	485.	3	MAR	1000	121	72.	3	MAR	1615	196	3.	3	MAR	2230	271	1.

3 MAR 0350	47	500.	*	3 MAR 1005	122	69.	*	3 MAR 1620	197	3.	*	3 MAR 2235	272	1.
3 MAR 0355	48	490.	*	3 MAR 1010	123	66.	*	3 MAR 1625	198	3.	*	3 MAR 2240	273	1.
3 MAR 0400	49	469.	*	3 MAR 1015	124	63.	*	3 MAR 1630	199	3.	*	3 MAR 2245	274	1.
3 MAR 0405	50	444.	*	3 MAR 1020	125	61.	*	3 MAR 1635	200	3.	*	3 MAR 2250	275	1.
3 MAR 0410	51	417.	*	3 MAR 1025	126	58.	*	3 MAR 1640	201	3.	*	3 MAR 2255	276	1.
3 MAR 0415	52	392.	*	3 MAR 1030	127	56.	*	3 MAR 1645	202	3.	*	3 MAR 2300	277	1.
3 MAR 0420	53	369.	*	3 MAR 1035	128	53.	*	3 MAR 1650	203	3.	*	3 MAR 2305	278	1.
3 MAR 0425	54	349.	*	3 MAR 1040	129	51.	*	3 MAR 1655	204	3.	*	3 MAR 2310	279	1.
3 MAR 0430	55	333.	*	3 MAR 1045	130	49.	*	3 MAR 1700	205	3.	*	3 MAR 2315	280	1.
3 MAR 0435	56	317.	*	3 MAR 1050	131	47.	*	3 MAR 1705	206	3.	*	3 MAR 2320	281	1.
3 MAR 0440	57	302.	*	3 MAR 1055	132	45.	*	3 MAR 1710	207	3.	*	3 MAR 2325	282	1.
3 MAR 0445	58	289.	*	3 MAR 1100	133	43.	*	3 MAR 1715	208	3.	*	3 MAR 2330	283	1.
3 MAR 0450	59	278.	*	3 MAR 1105	134	41.	*	3 MAR 1720	209	2.	*	3 MAR 2335	284	1.
3 MAR 0455	60	269.	*	3 MAR 1110	135	39.	*	3 MAR 1725	210	2.	*	3 MAR 2340	285	1.
3 MAR 0500	61	261.	*	3 MAR 1115	136	37.	*	3 MAR 1730	211	2.	*	3 MAR 2345	286	1.
3 MAR 0505	62	255.	*	3 MAR 1120	137	35.	*	3 MAR 1735	212	2.	*	3 MAR 2350	287	1.
3 MAR 0510	63	250.	*	3 MAR 1125	138	34.	*	3 MAR 1740	213	2.	*	3 MAR 2355	288	1.
3 MAR 0515	64	246.	*	3 MAR 1130	139	32.	*	3 MAR 1745	214	2.	*	4 MAR 0000	289	1.
3 MAR 0520	65	243.	*	3 MAR 1135	140	31.	*	3 MAR 1750	215	2.	*	4 MAR 0005	290	1.
3 MAR 0525	66	240.	*	3 MAR 1140	141	29.	*	3 MAR 1755	216	2.	*	4 MAR 0010	291	1.
3 MAR 0530	67	237.	*	3 MAR 1145	142	28.	*	3 MAR 1800	217	2.	*	4 MAR 0015	292	1.
3 MAR 0535	68	235.	*	3 MAR 1150	143	26.	*	3 MAR 1805	218	2.	*	4 MAR 0020	293	1.
3 MAR 0540	69	233.	*	3 MAR 1155	144	25.	*	3 MAR 1810	219	2.	*	4 MAR 0025	294	1.
3 MAR 0545	70	231.	*	3 MAR 1200	145	24.	*	3 MAR 1815	220	2.	*	4 MAR 0030	295	1.
3 MAR 0550	71	229.	*	3 MAR 1205	146	23.	*	3 MAR 1820	221	2.	*	4 MAR 0035	296	1.
3 MAR 0555	72	228.	*	3 MAR 1210	147	22.	*	3 MAR 1825	222	2.	*	4 MAR 0040	297	1.
3 MAR 0600	73	227.	*	3 MAR 1215	148	21.	*	3 MAR 1830	223	2.	*	4 MAR 0045	298	1.
3 MAR 0605	74	226.	*	3 MAR 1220	149	20.	*	3 MAR 1835	224	2.	*	4 MAR 0050	299	1.
3 MAR 0610	75	225.	*	3 MAR 1225	150	19.	*	3 MAR 1840	225	2.	*	4 MAR 0055	300	1.

****

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
+ (CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
		(CFS)				
+ 500.	3.83		255.	74.	71.	71.
		(INCHES)	0.256	0.296	0.296	0.296
		(AC-FT)	127.	146.	146.	146.

CUMULATIVE AREA = 9.28 SQ MI

****

HYDROGRAPH AT STATION DIV

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DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW	*	DA MON HRMN	ORD	FLOW
3 MAR 0000	1	0.	*	3 MAR 0615	76	657.	*	3 MAR 1230	151	0.	*	3 MAR 1845	226	0.
3 MAR 0005	2	0.	*	3 MAR 0620	77	630.	*	3 MAR 1235	152	0.	*	3 MAR 1850	227	0.
3 MAR 0010	3	0.	*	3 MAR 0625	78	603.	*	3 MAR 1240	153	0.	*	3 MAR 1855	228	0.
3 MAR 0015	4	0.	*	3 MAR 0630	79	575.	*	3 MAR 1245	154	0.	*	3 MAR 1900	229	0.
3 MAR 0020	5	0.	*	3 MAR 0635	80	548.	*	3 MAR 1250	155	0.	*	3 MAR 1905	230	0.
3 MAR 0025	6	0.	*	3 MAR 0640	81	520.	*	3 MAR 1255	156	0.	*	3 MAR 1910	231	0.
3 MAR 0030	7	0.	*	3 MAR 0645	82	492.	*	3 MAR 1300	157	0.	*	3 MAR 1915	232	0.
3 MAR 0035	8	0.	*	3 MAR 0650	83	463.	*	3 MAR 1305	158	0.	*	3 MAR 1920	233	0.
3 MAR 0040	9	0.	*	3 MAR 0655	84	434.	*	3 MAR 1310	159	0.	*	3 MAR 1925	234	0.
3 MAR 0045	10	0.	*	3 MAR 0700	85	404.	*	3 MAR 1315	160	0.	*	3 MAR 1930	235	0.
3 MAR 0050	11	0.	*	3 MAR 0705	86	373.	*	3 MAR 1320	161	0.	*	3 MAR 1935	236	0.
3 MAR 0055	12	0.	*	3 MAR 0710	87	343.	*	3 MAR 1325	162	0.	*	3 MAR 1940	237	0.
3 MAR 0100	13	0.	*	3 MAR 0715	88	313.	*	3 MAR 1330	163	0.	*	3 MAR 1945	238	0.
3 MAR 0105	14	0.	*	3 MAR 0720	89	282.	*	3 MAR 1335	164	0.	*	3 MAR 1950	239	0.
3 MAR 0110	15	0.	*	3 MAR 0725	90	253.	*	3 MAR 1340	165	0.	*	3 MAR 1955	240	0.
3 MAR 0115	16	0.	*	3 MAR 0730	91	225.	*	3 MAR 1345	166	0.	*	3 MAR 2000	241	0.

3	MAR	0120	17	0.	*	3	MAR	0735	92	198.	*	3	MAR	1350	167	0.	*	3	MAR	2005	242	0.
3	MAR	0125	18	0.	*	3	MAR	0740	93	173.	*	3	MAR	1355	168	0.	*	3	MAR	2010	243	0.
3	MAR	0130	19	0.	*	3	MAR	0745	94	149.	*	3	MAR	1400	169	0.	*	3	MAR	2015	244	0.
3	MAR	0135	20	0.	*	3	MAR	0750	95	127.	*	3	MAR	1405	170	0.	*	3	MAR	2020	245	0.
3	MAR	0140	21	0.	*	3	MAR	0755	96	105.	*	3	MAR	1410	171	0.	*	3	MAR	2025	246	0.
3	MAR	0145	22	0.	*	3	MAR	0800	97	86.	*	3	MAR	1415	172	0.	*	3	MAR	2030	247	0.
3	MAR	0150	23	0.	*	3	MAR	0805	98	68.	*	3	MAR	1420	173	0.	*	3	MAR	2035	248	0.
3	MAR	0155	24	0.	*	3	MAR	0810	99	52.	*	3	MAR	1425	174	0.	*	3	MAR	2040	249	0.
3	MAR	0200	25	0.	*	3	MAR	0815	100	36.	*	3	MAR	1430	175	0.	*	3	MAR	2045	250	0.
3	MAR	0205	26	0.	*	3	MAR	0820	101	26.	*	3	MAR	1435	176	0.	*	3	MAR	2050	251	0.
3	MAR	0210	27	0.	*	3	MAR	0825	102	16.	*	3	MAR	1440	177	0.	*	3	MAR	2055	252	0.
3	MAR	0215	28	0.	*	3	MAR	0830	103	6.	*	3	MAR	1445	178	0.	*	3	MAR	2100	253	0.
3	MAR	0220	29	0.	*	3	MAR	0835	104	0.	*	3	MAR	1450	179	0.	*	3	MAR	2105	254	0.
3	MAR	0225	30	0.	*	3	MAR	0840	105	0.	*	3	MAR	1455	180	0.	*	3	MAR	2110	255	0.
3	MAR	0230	31	0.	*	3	MAR	0845	106	0.	*	3	MAR	1500	181	0.	*	3	MAR	2115	256	0.
3	MAR	0235	32	0.	*	3	MAR	0850	107	0.	*	3	MAR	1505	182	0.	*	3	MAR	2120	257	0.
3	MAR	0240	33	0.	*	3	MAR	0855	108	0.	*	3	MAR	1510	183	0.	*	3	MAR	2125	258	0.
3	MAR	0245	34	0.	*	3	MAR	0900	109	0.	*	3	MAR	1515	184	0.	*	3	MAR	2130	259	0.
3	MAR	0250	35	0.	*	3	MAR	0905	110	0.	*	3	MAR	1520	185	0.	*	3	MAR	2135	260	0.
3	MAR	0255	36	0.	*	3	MAR	0910	111	0.	*	3	MAR	1525	186	0.	*	3	MAR	2140	261	0.
3	MAR	0300	37	0.	*	3	MAR	0915	112	0.	*	3	MAR	1530	187	0.	*	3	MAR	2145	262	0.
3	MAR	0305	38	0.	*	3	MAR	0920	113	0.	*	3	MAR	1535	188	0.	*	3	MAR	2150	263	0.
3	MAR	0310	39	0.	*	3	MAR	0925	114	0.	*	3	MAR	1540	189	0.	*	3	MAR	2155	264	0.
3	MAR	0315	40	340.	*	3	MAR	0930	115	0.	*	3	MAR	1545	190	0.	*	3	MAR	2200	265	0.
3	MAR	0320	41	1223.	*	3	MAR	0935	116	0.	*	3	MAR	1550	191	0.	*	3	MAR	2205	266	0.
3	MAR	0325	42	2443.	*	3	MAR	0940	117	0.	*	3	MAR	1555	192	0.	*	3	MAR	2210	267	0.
3	MAR	0330	43	3770.	*	3	MAR	0945	118	0.	*	3	MAR	1600	193	0.	*	3	MAR	2215	268	0.
3	MAR	0335	44	5354.	*	3	MAR	0950	119	0.	*	3	MAR	1605	194	0.	*	3	MAR	2220	269	0.
3	MAR	0340	45	6886.	*	3	MAR	0955	120	0.	*	3	MAR	1610	195	0.	*	3	MAR	2225	270	0.
3	MAR	0345	46	7933.	*	3	MAR	1000	121	0.	*	3	MAR	1615	196	0.	*	3	MAR	2230	271	0.
3	MAR	0350	47	8341.	*	3	MAR	1005	122	0.	*	3	MAR	1620	197	0.	*	3	MAR	2235	272	0.
3	MAR	0355	48	8059.	*	3	MAR	1010	123	0.	*	3	MAR	1625	198	0.	*	3	MAR	2240	273	0.
3	MAR	0400	49	7467.	*	3	MAR	1015	124	0.	*	3	MAR	1630	199	0.	*	3	MAR	2245	274	0.
3	MAR	0405	50	6771.	*	3	MAR	1020	125	0.	*	3	MAR	1635	200	0.	*	3	MAR	2250	275	0.
3	MAR	0410	51	6028.	*	3	MAR	1025	126	0.	*	3	MAR	1640	201	0.	*	3	MAR	2255	276	0.
3	MAR	0415	52	5331.	*	3	MAR	1030	127	0.	*	3	MAR	1645	202	0.	*	3	MAR	2300	277	0.
3	MAR	0420	53	4693.	*	3	MAR	1035	128	0.	*	3	MAR	1650	203	0.	*	3	MAR	2305	278	0.
3	MAR	0425	54	4139.	*	3	MAR	1040	129	0.	*	3	MAR	1655	204	0.	*	3	MAR	2310	279	0.
3	MAR	0430	55	3704.	*	3	MAR	1045	130	0.	*	3	MAR	1700	205	0.	*	3	MAR	2315	280	0.
3	MAR	0435	56	3250.	*	3	MAR	1050	131	0.	*	3	MAR	1705	206	0.	*	3	MAR	2320	281	0.
3	MAR	0440	57	2833.	*	3	MAR	1055	132	0.	*	3	MAR	1710	207	0.	*	3	MAR	2325	282	0.
3	MAR	0445	58	2476.	*	3	MAR	1100	133	0.	*	3	MAR	1715	208	0.	*	3	MAR	2330	283	0.
3	MAR	0450	59	2157.	*	3	MAR	1105	134	0.	*	3	MAR	1720	209	0.	*	3	MAR	2335	284	0.
3	MAR	0455	60	1907.	*	3	MAR	1110	135	0.	*	3	MAR	1725	210	0.	*	3	MAR	2340	285	0.
3	MAR	0500	61	1710.	*	3	MAR	1115	136	0.	*	3	MAR	1730	211	0.	*	3	MAR	2345	286	0.
3	MAR	0505	62	1542.	*	3	MAR	1120	137	0.	*	3	MAR	1735	212	0.	*	3	MAR	2350	287	0.
3	MAR	0510	63	1402.	*	3	MAR	1125	138	0.	*	3	MAR	1740	213	0.	*	3	MAR	2355	288	0.
3	MAR	0515	64	1285.	*	3	MAR	1130	139	0.	*	3	MAR	1745	214	0.	*	4	MAR	0000	289	0.
3	MAR	0520	65	1188.	*	3	MAR	1135	140	0.	*	3	MAR	1750	215	0.	*	4	MAR	0005	290	0.
3	MAR	0525	66	1105.	*	3	MAR	1140	141	0.	*	3	MAR	1755	216	0.	*	4	MAR	0010	291	0.
3	MAR	0530	67	1033.	*	3	MAR	1145	142	0.	*	3	MAR	1800	217	0.	*	4	MAR	0015	292	0.
3	MAR	0535	68	968.	*	3	MAR	1150	143	0.	*	3	MAR	1805	218	0.	*	4	MAR	0020	293	0.
3	MAR	0540	69	911.	*	3	MAR	1155	144	0.	*	3	MAR	1810	219	0.	*	4	MAR	0025	294	0.
3	MAR	0545	70	861.	*	3	MAR	1200	145	0.	*	3	MAR	1815	220	0.	*	4	MAR	0030	295	0.
3	MAR	0550	71	817.	*	3	MAR	1205	146	0.	*	3	MAR	1820	221	0.	*	4	MAR	0035	296	0.
3	MAR	0555	72	777.	*	3	MAR	1210	147	0.	*	3	MAR	1825	222	0.	*	4	MAR	0040	297	0.
3	MAR	0600	73	741.	*	3	MAR	1215	148	0.	*	3	MAR	1830	223	0.	*	4	MAR	0045	298	0.
3	MAR	0605	74	713.	*	3	MAR	1220	149	0.	*	3	MAR	1835	224	0.	*	4	MAR	0050	299	0.
3	MAR	0610	75	685.	*	3	MAR	1225	150	0.	*	3	MAR	1840	225	0.	*	4	MAR	0055	300	0.
					*						*						*					

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PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW (CFS) 6-HR	24-HR	72-HR	24.92-HR
+ 8341.	3.83	1653.	413.	398.	398.

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                    (INCHES)     1.656       1.656       1.656       1.656
                     (AC-FT)      820.        820.        820.        820.

                    CUMULATIVE AREA =    9.28 SQ MI

MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0


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


          **************
          *            *
 278 KK   *      DIV   *
          *            *
          **************

 280 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          1  PRINT CONTROL
                      IPLOT          2  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE

     DT          DIVERSION
                      ISTAD       DIVE  DIVERSION HYDROGRAPH IDENTIFICATION

     DI             INFLOW       0.00    200.00   5294.00

     DQ      DIVERTED FLOW       0.00    200.00    500.00
                                                        ***
*****************************************************************************************************************************

                                                DIVERSION HYDROGRAPH     DIVE
*****************************************************************************************************************************
                                 *                                 *                                 *
   DA MON HRMN  ORD      FLOW    *  DA MON HRMN  ORD      FLOW    *  DA MON HRMN  ORD      FLOW    *  DA MON HRMN  ORD      FLOW
                                 *                                 *                                 *
    3 MAR 0000    1        0.    *   3 MAR 0615   76      205.    *   3 MAR 1230  151        3.    *   3 MAR 1845  226        0.
    3 MAR 0005    2        0.    *   3 MAR 0620   77      204.    *   3 MAR 1235  152        3.    *   3 MAR 1850  227        0.
    3 MAR 0010    3        0.    *   3 MAR 0625   78      203.    *   3 MAR 1240  153        3.    *   3 MAR 1855  228        0.
    3 MAR 0015    4        0.    *   3 MAR 0630   79      202.    *   3 MAR 1245  154        3.    *   3 MAR 1900  229        0.
    3 MAR 0020    5        0.    *   3 MAR 0635   80      201.    *   3 MAR 1250  155        3.    *   3 MAR 1905  230        0.
    3 MAR 0025    6        0.    *   3 MAR 0640   81      200.    *   3 MAR 1255  156        2.    *   3 MAR 1910  231        0.
    3 MAR 0030    7        0.    *   3 MAR 0645   82      193.    *   3 MAR 1300  157        2.    *   3 MAR 1915  232        0.
    3 MAR 0035    8        0.    *   3 MAR 0650   83      179.    *   3 MAR 1305  158        2.    *   3 MAR 1920  233        0.
    3 MAR 0040    9        0.    *   3 MAR 0655   84      164.    *   3 MAR 1310  159        2.    *   3 MAR 1925  234        0.
    3 MAR 0045   10        0.    *   3 MAR 0700   85      149.    *   3 MAR 1315  160        2.    *   3 MAR 1930  235        0.
    3 MAR 0050   11        0.    *   3 MAR 0705   86      135.    *   3 MAR 1320  161        2.    *   3 MAR 1935  236        0.
    3 MAR 0055   12        0.    *   3 MAR 0710   87      121.    *   3 MAR 1325  162        2.    *   3 MAR 1940  237        0.
    3 MAR 0100   13        0.    *   3 MAR 0715   88      110.    *   3 MAR 1330  163        2.    *   3 MAR 1945  238        0.
    3 MAR 0105   14        0.    *   3 MAR 0720   89       99.    *   3 MAR 1335  164        2.    *   3 MAR 1950  239        0.
    3 MAR 0110   15        0.    *   3 MAR 0725   90       91.    *   3 MAR 1340  165        2.    *   3 MAR 1955  240        0.
    3 MAR 0115   16        0.    *   3 MAR 0730   91       83.    *   3 MAR 1345  166        2.    *   3 MAR 2000  241        0.
    3 MAR 0120   17        0.    *   3 MAR 0735   92       76.    *   3 MAR 1350  167        2.    *   3 MAR 2005  242        0.
    3 MAR 0125   18        0.    *   3 MAR 0740   93       69.    *   3 MAR 1355  168        2.    *   3 MAR 2010  243        0.
    3 MAR 0130   19        1.    *   3 MAR 0745   94       64.    *   3 MAR 1400  169        2.    *   3 MAR 2015  244        0.
    3 MAR 0135   20        1.    *   3 MAR 0750   95       59.    *   3 MAR 1405  170        2.    *   3 MAR 2020  245        0.
    3 MAR 0140   21        1.    *   3 MAR 0755   96       55.    *   3 MAR 1410  171        2.    *   3 MAR 2025  246        0.
    3 MAR 0145   22        1.    *   3 MAR 0800   97       51.    *   3 MAR 1415  172        2.    *   3 MAR 2030  247        0.
    3 MAR 0150   23        1.    *   3 MAR 0805   98       47.    *   3 MAR 1420  173        1.    *   3 MAR 2035  248        0.
    3 MAR 0155   24        1.    *   3 MAR 0810   99       44.    *   3 MAR 1425  174        1.    *   3 MAR 2040  249        0.
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3 MAR	0200	25	2.	*	3 MAR	0815	100	41.	*	3 MAR	1430	175	1.	*	3 MAR	2045	250	0.
3 MAR	0205	26	2.	*	3 MAR	0820	101	38.	*	3 MAR	1435	176	1.	*	3 MAR	2050	251	0.
3 MAR	0210	27	3.	*	3 MAR	0825	102	35.	*	3 MAR	1440	177	1.	*	3 MAR	2055	252	0.
3 MAR	0215	28	3.	*	3 MAR	0830	103	33.	*	3 MAR	1445	178	1.	*	3 MAR	2100	253	0.
3 MAR	0220	29	4.	*	3 MAR	0835	104	31.	*	3 MAR	1450	179	1.	*	3 MAR	2105	254	0.
3 MAR	0225	30	4.	*	3 MAR	0840	105	29.	*	3 MAR	1455	180	1.	*	3 MAR	2110	255	0.
3 MAR	0230	31	6.	*	3 MAR	0845	106	28.	*	3 MAR	1500	181	1.	*	3 MAR	2115	256	0.
3 MAR	0235	32	7.	*	3 MAR	0850	107	27.	*	3 MAR	1505	182	1.	*	3 MAR	2120	257	0.
3 MAR	0240	33	9.	*	3 MAR	0855	108	25.	*	3 MAR	1510	183	1.	*	3 MAR	2125	258	0.
3 MAR	0245	34	12.	*	3 MAR	0900	109	24.	*	3 MAR	1515	184	1.	*	3 MAR	2130	259	0.
3 MAR	0250	35	18.	*	3 MAR	0905	110	22.	*	3 MAR	1520	185	1.	*	3 MAR	2135	260	0.
3 MAR	0255	36	32.	*	3 MAR	0910	111	21.	*	3 MAR	1525	186	1.	*	3 MAR	2140	261	0.
3 MAR	0300	37	93.	*	3 MAR	0915	112	20.	*	3 MAR	1530	187	1.	*	3 MAR	2145	262	0.
3 MAR	0305	38	209.	*	3 MAR	0920	113	18.	*	3 MAR	1535	188	1.	*	3 MAR	2150	263	0.
3 MAR	0310	39	252.	*	3 MAR	0925	114	17.	*	3 MAR	1540	189	1.	*	3 MAR	2155	264	0.
3 MAR	0315	40	320.	*	3 MAR	0930	115	16.	*	3 MAR	1545	190	1.	*	3 MAR	2200	265	0.
3 MAR	0320	41	406.	*	3 MAR	0935	116	15.	*	3 MAR	1550	191	1.	*	3 MAR	2205	266	0.
3 MAR	0325	42	474.	*	3 MAR	0940	117	14.	*	3 MAR	1555	192	1.	*	3 MAR	2210	267	0.
3 MAR	0330	43	500.	*	3 MAR	0945	118	13.	*	3 MAR	1600	193	1.	*	3 MAR	2215	268	0.
3 MAR	0335	44	487.	*	3 MAR	0950	119	12.	*	3 MAR	1605	194	1.	*	3 MAR	2220	269	0.
3 MAR	0340	45	452.	*	3 MAR	0955	120	12.	*	3 MAR	1610	195	1.	*	3 MAR	2225	270	0.
3 MAR	0345	46	410.	*	3 MAR	1000	121	11.	*	3 MAR	1615	196	1.	*	3 MAR	2230	271	0.
3 MAR	0350	47	372.	*	3 MAR	1005	122	10.	*	3 MAR	1620	197	1.	*	3 MAR	2235	272	0.
3 MAR	0355	48	339.	*	3 MAR	1010	123	10.	*	3 MAR	1625	198	1.	*	3 MAR	2240	273	0.
3 MAR	0400	49	312.	*	3 MAR	1015	124	9.	*	3 MAR	1630	199	1.	*	3 MAR	2245	274	0.
3 MAR	0405	50	290.	*	3 MAR	1020	125	9.	*	3 MAR	1635	200	1.	*	3 MAR	2250	275	0.
3 MAR	0410	51	272.	*	3 MAR	1025	126	8.	*	3 MAR	1640	201	1.	*	3 MAR	2255	276	0.
3 MAR	0415	52	258.	*	3 MAR	1030	127	8.	*	3 MAR	1645	202	1.	*	3 MAR	2300	277	0.
3 MAR	0420	53	248.	*	3 MAR	1035	128	8.	*	3 MAR	1650	203	1.	*	3 MAR	2305	278	0.
3 MAR	0425	54	241.	*	3 MAR	1040	129	7.	*	3 MAR	1655	204	1.	*	3 MAR	2310	279	0.
3 MAR	0430	55	235.	*	3 MAR	1045	130	7.	*	3 MAR	1700	205	1.	*	3 MAR	2315	280	0.
3 MAR	0435	56	231.	*	3 MAR	1050	131	7.	*	3 MAR	1705	206	1.	*	3 MAR	2320	281	0.
3 MAR	0440	57	227.	*	3 MAR	1055	132	6.	*	3 MAR	1710	207	1.	*	3 MAR	2325	282	0.
3 MAR	0445	58	224.	*	3 MAR	1100	133	6.	*	3 MAR	1715	208	1.	*	3 MAR	2330	283	0.
3 MAR	0450	59	222.	*	3 MAR	1105	134	6.	*	3 MAR	1720	209	1.	*	3 MAR	2335	284	0.
3 MAR	0455	60	220.	*	3 MAR	1110	135	5.	*	3 MAR	1725	210	1.	*	3 MAR	2340	285	0.
3 MAR	0500	61	218.	*	3 MAR	1115	136	5.	*	3 MAR	1730	211	1.	*	3 MAR	2345	286	0.
3 MAR	0505	62	217.	*	3 MAR	1120	137	5.	*	3 MAR	1735	212	1.	*	3 MAR	2350	287	0.
3 MAR	0510	63	215.	*	3 MAR	1125	138	5.	*	3 MAR	1740	213	1.	*	3 MAR	2355	288	0.
3 MAR	0515	64	214.	*	3 MAR	1130	139	5.	*	3 MAR	1745	214	1.	*	4 MAR	0000	289	0.
3 MAR	0520	65	213.	*	3 MAR	1135	140	4.	*	3 MAR	1750	215	1.	*	4 MAR	0005	290	0.
3 MAR	0525	66	212.	*	3 MAR	1140	141	4.	*	3 MAR	1755	216	1.	*	4 MAR	0010	291	0.
3 MAR	0530	67	211.	*	3 MAR	1145	142	4.	*	3 MAR	1800	217	1.	*	4 MAR	0015	292	0.
3 MAR	0535	68	210.	*	3 MAR	1150	143	4.	*	3 MAR	1805	218	1.	*	4 MAR	0020	293	0.
3 MAR	0540	69	209.	*	3 MAR	1155	144	4.	*	3 MAR	1810	219	1.	*	4 MAR	0025	294	0.
3 MAR	0545	70	209.	*	3 MAR	1200	145	4.	*	3 MAR	1815	220	1.	*	4 MAR	0030	295	0.
3 MAR	0550	71	208.	*	3 MAR	1205	146	3.	*	3 MAR	1820	221	1.	*	4 MAR	0035	296	0.
3 MAR	0555	72	207.	*	3 MAR	1210	147	3.	*	3 MAR	1825	222	1.	*	4 MAR	0040	297	0.
3 MAR	0600	73	207.	*	3 MAR	1215	148	3.	*	3 MAR	1830	223	0.	*	4 MAR	0045	298	0.
3 MAR	0605	74	206.	*	3 MAR	1220	149	3.	*	3 MAR	1835	224	0.	*	4 MAR	0050	299	0.
3 MAR	0610	75	206.	*	3 MAR	1225	150	3.	*	3 MAR	1840	225	0.	*	4 MAR	0055	300	0.
				*					*					*				

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 500.	3.50		191.	50.	48.	48.
		(INCHES)	0.483	0.504	0.504	0.504
		(AC-FT)	95.	99.	99.	99.

CUMULATIVE AREA = 3.68 SQ MI

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HYDROGRAPH AT STATION DIV

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
3	MAR	0000	1	0.	3	MAR	0615	76	80.	3	MAR	1230	151	0.	3	MAR	1845	226	0.
3	MAR	0005	2	0.	3	MAR	0620	77	68.	3	MAR	1235	152	0.	3	MAR	1850	227	0.
3	MAR	0010	3	0.	3	MAR	0625	78	54.	3	MAR	1240	153	0.	3	MAR	1855	228	0.
3	MAR	0015	4	0.	3	MAR	0630	79	39.	3	MAR	1245	154	0.	3	MAR	1900	229	0.
3	MAR	0020	5	0.	3	MAR	0635	80	23.	3	MAR	1250	155	0.	3	MAR	1905	230	0.
3	MAR	0025	6	0.	3	MAR	0640	81	8.	3	MAR	1255	156	0.	3	MAR	1910	231	0.
3	MAR	0030	7	0.	3	MAR	0645	82	0.	3	MAR	1300	157	0.	3	MAR	1915	232	0.
3	MAR	0035	8	0.	3	MAR	0650	83	0.	3	MAR	1305	158	0.	3	MAR	1920	233	0.
3	MAR	0040	9	0.	3	MAR	0655	84	0.	3	MAR	1310	159	0.	3	MAR	1925	234	0.
3	MAR	0045	10	0.	3	MAR	0700	85	0.	3	MAR	1315	160	0.	3	MAR	1930	235	0.
3	MAR	0050	11	0.	3	MAR	0705	86	0.	3	MAR	1320	161	0.	3	MAR	1935	236	0.
3	MAR	0055	12	0.	3	MAR	0710	87	0.	3	MAR	1325	162	0.	3	MAR	1940	237	0.
3	MAR	0100	13	0.	3	MAR	0715	88	0.	3	MAR	1330	163	0.	3	MAR	1945	238	0.
3	MAR	0105	14	0.	3	MAR	0720	89	0.	3	MAR	1335	164	0.	3	MAR	1950	239	0.
3	MAR	0110	15	0.	3	MAR	0725	90	0.	3	MAR	1340	165	0.	3	MAR	1955	240	0.
3	MAR	0115	16	0.	3	MAR	0730	91	0.	3	MAR	1345	166	0.	3	MAR	2000	241	0.
3	MAR	0120	17	0.	3	MAR	0735	92	0.	3	MAR	1350	167	0.	3	MAR	2005	242	0.
3	MAR	0125	18	0.	3	MAR	0740	93	0.	3	MAR	1355	168	0.	3	MAR	2010	243	0.
3	MAR	0130	19	0.	3	MAR	0745	94	0.	3	MAR	1400	169	0.	3	MAR	2015	244	0.
3	MAR	0135	20	0.	3	MAR	0750	95	0.	3	MAR	1405	170	0.	3	MAR	2020	245	0.
3	MAR	0140	21	0.	3	MAR	0755	96	0.	3	MAR	1410	171	0.	3	MAR	2025	246	0.
3	MAR	0145	22	0.	3	MAR	0800	97	0.	3	MAR	1415	172	0.	3	MAR	2030	247	0.
3	MAR	0150	23	0.	3	MAR	0805	98	0.	3	MAR	1420	173	0.	3	MAR	2035	248	0.
3	MAR	0155	24	0.	3	MAR	0810	99	0.	3	MAR	1425	174	0.	3	MAR	2040	249	0.
3	MAR	0200	25	0.	3	MAR	0815	100	0.	3	MAR	1430	175	0.	3	MAR	2045	250	0.
3	MAR	0205	26	0.	3	MAR	0820	101	0.	3	MAR	1435	176	0.	3	MAR	2050	251	0.
3	MAR	0210	27	0.	3	MAR	0825	102	0.	3	MAR	1440	177	0.	3	MAR	2055	252	0.
3	MAR	0215	28	0.	3	MAR	0830	103	0.	3	MAR	1445	178	0.	3	MAR	2100	253	0.
3	MAR	0220	29	0.	3	MAR	0835	104	0.	3	MAR	1450	179	0.	3	MAR	2105	254	0.
3	MAR	0225	30	0.	3	MAR	0840	105	0.	3	MAR	1455	180	0.	3	MAR	2110	255	0.
3	MAR	0230	31	0.	3	MAR	0845	106	0.	3	MAR	1500	181	0.	3	MAR	2115	256	0.
3	MAR	0235	32	0.	3	MAR	0850	107	0.	3	MAR	1505	182	0.	3	MAR	2120	257	0.
3	MAR	0240	33	0.	3	MAR	0855	108	0.	3	MAR	1510	183	0.	3	MAR	2125	258	0.
3	MAR	0245	34	0.	3	MAR	0900	109	0.	3	MAR	1515	184	0.	3	MAR	2130	259	0.
3	MAR	0250	35	0.	3	MAR	0905	110	0.	3	MAR	1520	185	0.	3	MAR	2135	260	0.
3	MAR	0255	36	0.	3	MAR	0910	111	0.	3	MAR	1525	186	0.	3	MAR	2140	261	0.
3	MAR	0300	37	0.	3	MAR	0915	112	0.	3	MAR	1530	187	0.	3	MAR	2145	262	0.
3	MAR	0305	38	144.	3	MAR	0920	113	0.	3	MAR	1535	188	0.	3	MAR	2150	263	0.
3	MAR	0310	39	835.	3	MAR	0925	114	0.	3	MAR	1540	189	0.	3	MAR	2155	264	0.
3	MAR	0315	40	1912.	3	MAR	0930	115	0.	3	MAR	1545	190	0.	3	MAR	2200	265	0.
3	MAR	0320	41	3298.	3	MAR	0935	116	0.	3	MAR	1550	191	0.	3	MAR	2205	266	0.
3	MAR	0325	42	4383.	3	MAR	0940	117	0.	3	MAR	1555	192	0.	3	MAR	2210	267	0.
3	MAR	0330	43	4794.	3	MAR	0945	118	0.	3	MAR	1600	193	0.	3	MAR	2215	268	0.
3	MAR	0335	44	4585.	3	MAR	0950	119	0.	3	MAR	1605	194	0.	3	MAR	2220	269	0.
3	MAR	0340	45	4025.	3	MAR	0955	120	0.	3	MAR	1610	195	0.	3	MAR	2225	270	0.
3	MAR	0345	46	3361.	3	MAR	1000	121	0.	3	MAR	1615	196	0.	3	MAR	2230	271	0.
3	MAR	0350	47	2746.	3	MAR	1005	122	0.	3	MAR	1620	197	0.	3	MAR	2235	272	0.
3	MAR	0355	48	2226.	3	MAR	1010	123	0.	3	MAR	1625	198	0.	3	MAR	2240	273	0.
3	MAR	0400	49	1792.	3	MAR	1015	124	0.	3	MAR	1630	199	0.	3	MAR	2245	274	0.
3	MAR	0405	50	1436.	3	MAR	1020	125	0.	3	MAR	1635	200	0.	3	MAR	2250	275	0.
3	MAR	0410	51	1153.	3	MAR	1025	126	0.	3	MAR	1640	201	0.	3	MAR	2255	276	0.
3	MAR	0415	52	934.	3	MAR	1030	127	0.	3	MAR	1645	202	0.	3	MAR	2300	277	0.
3	MAR	0420	53	773.	3	MAR	1035	128	0.	3	MAR	1650	203	0.	3	MAR	2305	278	0.
3	MAR	0425	54	650.	3	MAR	1040	129	0.	3	MAR	1655	204	0.	3	MAR	2310	279	0.
3	MAR	0430	55	558.	3	MAR	1045	130	0.	3	MAR	1700	205	0.	3	MAR	2315	280	0.
3	MAR	0435	56	487.	3	MAR	1050	131	0.	3	MAR	1705	206	0.	3	MAR	2320	281	0.
3	MAR	0440	57	430.	3	MAR	1055	132	0.	3	MAR	1710	207	0.	3	MAR	2325	282	0.
3	MAR	0445	58	384.	3	MAR	1100	133	0.	3	MAR	1715	208	0.	3	MAR	2330	283	0.
3	MAR	0450	59	347.	3	MAR	1105	134	0.	3	MAR	1720	209	0.	3	MAR	2335	284	0.
3	MAR	0455	60	315.	3	MAR	1110	135	0.	3	MAR	1725	210	0.	3	MAR	2340	285	0.
3	MAR	0500	61	288.	3	MAR	1115	136	0.	3	MAR	1730	211	0.	3	MAR	2345	286	0.

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    3 MAR 0505   62      264.   *    3 MAR 1120  137        0.   *    3 MAR 1735  212        0.   *    3 MAR 2350  287        0.
    3 MAR 0510   63      243.   *    3 MAR 1125  138        0.   *    3 MAR 1740  213        0.   *    3 MAR 2355  288        0.
    3 MAR 0515   64      223.   *    3 MAR 1130  139        0.   *    3 MAR 1745  214        0.   *    4 MAR 0000  289        0.
    3 MAR 0520   65      205.   *    3 MAR 1135  140        0.   *    3 MAR 1750  215        0.   *    4 MAR 0005  290        0.
    3 MAR 0525   66      190.   *    3 MAR 1140  141        0.   *    3 MAR 1755  216        0.   *    4 MAR 0010  291        0.
    3 MAR 0530   67      175.   *    3 MAR 1145  142        0.   *    3 MAR 1800  217        0.   *    4 MAR 0015  292        0.
    3 MAR 0535   68      162.   *    3 MAR 1150  143        0.   *    3 MAR 1805  218        0.   *    4 MAR 0020  293        0.
    3 MAR 0540   69      149.   *    3 MAR 1155  144        0.   *    3 MAR 1810  219        0.   *    4 MAR 0025  294        0.
    3 MAR 0545   70      138.   *    3 MAR 1200  145        0.   *    3 MAR 1815  220        0.   *    4 MAR 0030  295        0.
    3 MAR 0550   71      127.   *    3 MAR 1205  146        0.   *    3 MAR 1820  221        0.   *    4 MAR 0035  296        0.
    3 MAR 0555   72      117.   *    3 MAR 1210  147        0.   *    3 MAR 1825  222        0.   *    4 MAR 0040  297        0.
    3 MAR 0600   73      109.   *    3 MAR 1215  148        0.   *    3 MAR 1830  223        0.   *    4 MAR 0045  298        0.
    3 MAR 0605   74      100.   *    3 MAR 1220  149        0.   *    3 MAR 1835  224        0.   *    4 MAR 0050  299        0.
    3 MAR 0610   75       90.   *    3 MAR 1225  150        0.   *    3 MAR 1840  225        0.   *    4 MAR 0055  300        0.
                                *                                   *                                   *
 ************************************************************************************************************************************

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+    4794.      3.50                 617.        154.        149.        149.
                         (INCHES)   1.559       1.559       1.559       1.559
                          (AC-FT)    306.        306.        306.        306.

                         CUMULATIVE AREA =    3.68 SQ MI


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


            **************
            *            *
  284 KK    *    C21.05  *      CONFLUENCE OF DGB CHANNELS NEAR MID-SECTION 36
            *            *
            **************

  287 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           1  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

  288 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                  ***
MANE2 NPLAN,NSTM        1      0
      ***             ***            ***            ***            ***

                         HYDROGRAPH AT STATION   C21.05

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+   11294.      3.75                2270.        567.        547.        547.
                         (INCHES)   1.628       1.628       1.628       1.628
                          (AC-FT)   1125.       1125.       1125.       1125.

                         CUMULATIVE AREA =   12.96 SQ MI
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
  307 KK    *     CP21H  *        JOMAX RD
            *            *
            **************

  308 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

  309 HC          HYDROGRAPH COMBINATION
                        ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0
MANE2 NPLAN,NSTM       1      0

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

                        HYDROGRAPH AT STATION    CP21H

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                          (CFS)
+   11478.      3.83                2387.        597.        576.        576.
                        (INCHES)     1.627       1.629       1.629       1.629
                         (AC-FT)     1184.       1185.       1185.       1185.

                        CUMULATIVE AREA =   13.64 SQ MI

MANE2 NPLAN,NSTM       1      0


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

            **************
            *            *
  366 KK    *      CP27  *          CP AT SCOTTSDALE RD
            *            *
            **************

  367 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                                 COMBINE TOTAL HYDROGRAPH FROM CONCENTRATION
                                 POINT 27D WITH SUB 27 .  TOTAL FLOW AT
                                 SCOTTSDALE ROAD FOR FAN 4.

  371 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
MANE2 NPLAN,NSTM       1      0

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

                        HYDROGRAPH AT STATION     CP27

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
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                                          6-HR        24-HR       72-HR      24.92-HR
+   (CFS)       (HR)
                                  (CFS)
+   10917.      4.08                  2605.        657.        633.        633.
                             (INCHES)  1.615       1.629       1.629       1.629
                              (AC-FT)  1292.       1303.       1303.       1303.

                          CUMULATIVE AREA =   15.00 SQ MI

1
                                          RUNOFF SUMMARY
                                     FLOW IN CUBIC FEET PER SECOND
                                  TIME IN HOURS,  AREA IN SQUARE MILES

                                          PEAK   TIME OF   AVERAGE FLOW FOR MAXIMUM PERIOD   BASIN   MAXIMUM   TIME OF
+       OPERATION          STATION        FLOW    PEAK                                      AREA    STAGE   MAX STAGE
                                                            6-HOUR      24-HOUR     72-HOUR
+       HYDROGRAPH AT
                                 16      2683.    3.25        323.        81.         78.      1.46
+       HYDROGRAPH AT
                                 17      2184.    3.25        262.        66.         64.      1.19
+       HYDROGRAPH AT
                                 18      2431.    3.25        273.        69.         66.      1.26
+       3 COMBINED AT
                                 19A     7297.    3.25        857.        216.        208.     3.91
+       ROUTED TO
                                 19B     7225.    3.33        857.        216.        208.     3.91
+                                                                                              7.03      3.33
+       HYDROGRAPH AT
                                 15      1901.    3.42        281.        71.         68.      1.37
+       2 COMBINED AT
                                 19C     8929.    3.33       1138.        287.        277.     5.28
+       ROUTED TO
                                 19.1    8529.    3.33       1138.        287.        277.     5.28
+                                                                                              6.10      3.33
+       HYDROGRAPH AT
                                 19       445.    3.25         42.        11.         10.      0.19
+       HYDROGRAPH AT
                                 20      1086.    3.25        125.        31.         30.      0.57
+       3 COMBINED AT
                                 CP20    9887.    3.33       1305.        329.        317.     6.03
+       ROUTED TO
                                 RRCP20  9129.    3.42       1303.        329.        317.     6.03
+                                                                                              4.09      3.42
+       HYDROGRAPH AT
                                 21A      784.    3.25         81.        20.         20.      0.42
+       2 COMBINED AT
                                 CP21A   9593.    3.42       1384.        350.        337.     6.45
+       ROUTED TO
                                 RR21A   9383.    3.50       1383.        350.        337.     6.45
+                                                                                              3.46      3.50
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+          HYDROGRAPH AT
                          21B      512.   3.25       53.      13.      13.    0.28
+          2 COMBINED AT
                          CP21B   9671.   3.42     1436.     363.     350.    6.73
+          ROUTED TO
+                         RR21B   8973.   3.58     1435.     363.     350.    6.73
+                                                                            3.74      3.58
+          HYDROGRAPH AT
                          21C     1248.   3.25      144.      36.      35.    0.75
+          2 COMBINED AT
                          CP21C   9578.   3.50     1578.     399.     385.    7.48
+          ROUTED TO
+                         RR21C   7972.   3.67     1571.     399.     385.    7.48
+                                                                            4.10      3.67
+          HYDROGRAPH AT
                          21D     1500.   3.33      204.      51.      50.    1.06
+          2 COMBINED AT
                          CP21D   8765.   3.67     1773.     451.     434.    8.54
+          ROUTED TO
+                         RR21D   8701.   3.75     1773.     451.     434.    8.54
+                                                                            4.16      3.75
+          HYDROGRAPH AT
                          21E      402.   3.33       50.      12.      12.    0.26
+          2 COMBINED AT
                          CP21E   8840.   3.75     1822.     463.     446.    8.79
+          ROUTED TO
+                         RR21E   8580.   3.75     1819.     463.     446.    8.79
+                                                                            6.35      3.75
+          HYDROGRAPH AT
                          21F      666.   3.33       90.      23.      22.    0.47
+          2 COMBINED AT
                          CP21F   8865.   3.75     1908.     486.     468.    9.26
+          ROUTED TO
+                         RR21F   8833.   3.83     1905.     486.     468.    9.26
+                                                                            2.70      3.83
+          HYDROGRAPH AT
                          21G       26.   3.33        3.       1.       1.    0.02
+          2 COMBINED AT
                          CP21G   8841.   3.83     1908.     487.     469.    9.28
+          DIVERSION TO
                          DIVN     500.   3.83      255.      74.      71.    9.28
+          HYDROGRAPH AT
                          DIV     8341.   3.83     1653.     413.     398.    9.28
+          HYDROGRAPH AT
                          22      2825.   3.25      307.      77.      74.    1.39
+          HYDROGRAPH AT
                          23       779.   3.25       88.      22.      21.    0.39
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                2 COMBINED AT
+                         24A     3603.   3.25      395.      99.      96.     1.78
                ROUTED TO
+                        24.1     2924.   3.42      395.      99.      96.     1.78
+                                                                          5.59      3.42
                HYDROGRAPH AT
+                         24      708.   3.25       85.      21.      21.     0.49
                2 COMBINED AT
+                       24.2A     3467.   3.42      479.     121.     116.     2.27
                HYDROGRAPH AT
+                         25N     1244.   3.42      177.      45.      43.     0.78
                HYDROGRAPH AT
+                         25S     1424.   3.25      152.      38.      37.     0.63
                2 COMBINED AT
+                        25.1     2431.   3.33      329.      83.      80.     1.41
                2 COMBINED AT
+                       24.2B     5611.   3.42      809.     204.     197.     3.68
                ROUTED TO
+                      PIMARD     5550.   3.42      808.     204.     197.     3.68
+                                                                          6.86      3.42
                ROUTED TO
+                      RR24.2     5294.   3.50      808.     204.     197.     3.68
+                                                                          6.96      3.50
                DIVERSION TO
+                        DIVE      500.   3.50      191.      50.      48.     3.68
                HYDROGRAPH AT
+                         DIV     4794.   3.50      617.     154.     149.     3.68
                2 COMBINED AT
+                      C21.05    11294.   3.75     2270.     567.     547.    12.96
                ROUTED TO
+                        R21G    11115.   3.83     2269.     567.     547.    12.96
+                                                                          2.45      3.83
                HYDROGRAPH AT
+                         21H       64.   3.33        8.       2.       2.     0.04
                HYDROGRAPH AT
+                         26N      690.   3.50      110.      28.      27.     0.64
                3 COMBINED AT
+                       CP21H    11478.   3.83     2387.     597.     576.    13.64
                ROUTED TO
+                       RR21H    11302.   3.83     2386.     597.     576.    13.64
+                                                                          2.49      3.83
                HYDROGRAPH AT
+                         26S      239.   3.25       29.       7.       7.     0.17
                2 COMBINED AT
+                       *APEX*    11365.   3.83     2414.     605.     583.    13.81
                ROUTED TO
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+                        CP27A     11376.    3.92        2414.        605.        583.       13.81
+                                                                                                          5.29        3.92
          ROUTED TO
+                        CP27B     11067.    4.00        2412.        605.        583.       13.81
+                                                                                                          5.24        4.00
          ROUTED TO
+                        CP27C     10758.    4.08        2409.        605.        583.       13.81
+                                                                                                          5.19        4.08
          ROUTED TO
+                        CP27D     10699.    4.08        2409.        605.        583.       13.81
+                                                                                                          5.18        4.08
          HYDROGRAPH AT
+                           27      2052.    3.17         207.         52.         50.        1.19
          2 COMBINED AT
+                         CP27     10917.    4.08        2605.        657.        633.       15.00
1
                                   SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                      (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                  INTERPOLATED TO
                                                                              COMPUTATION INTERVAL
          ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                    PEAK                                    PEAK

                              (MIN)     (CFS)      (MIN)      (IN)    (MIN)     (CFS)     (MIN)       (IN)

             16    MANE         3.27   2790.08    197.97      2.08     5.00   2682.70    195.00       2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1620E+03 OUTFLOW=0.1613E+03 BASIN STORAGE=0.4299E-01 PERCENT ERROR=   0.4

             17    MANE         3.68   2249.16    195.52      2.07     5.00   2183.62    195.00       2.08

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1317E+03 OUTFLOW=0.1309E+03 BASIN STORAGE=0.4985E-01 PERCENT ERROR=   0.6

             18    MANE         3.18   2466.56    196.97      2.02     5.00   2431.13    195.00       2.02

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1368E+03 OUTFLOW=0.1360E+03 BASIN STORAGE=0.5145E-01 PERCENT ERROR=   0.6

             15    MANE         3.51   1901.39    207.57      1.93     5.00   1901.08    205.00       1.93

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1417E+03 OUTFLOW=0.1409E+03 BASIN STORAGE=0.5998E-01 PERCENT ERROR=   0.5

             19    MANE         1.80    456.95    193.94      2.11     5.00    444.60    195.00       2.11

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2111E+02 OUTFLOW=0.2104E+02 BASIN STORAGE=0.3666E-02 PERCENT ERROR=   0.4

             20    MANE         3.77   1138.08    196.21      2.05     5.00   1086.14    195.00       2.05

 CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.6254E+02 OUTFLOW=0.6220E+02 BASIN STORAGE=0.1496E-01 PERCENT ERROR=   0.5

            21A    MANE         2.36    804.58    193.66      1.81     5.00    783.53    195.00       1.81
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CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4070E+02 OUTFLOW=0.4053E+02 BASIN STORAGE=0.1094E-01 PERCENT ERROR=   0.4

              21B  MANE        2.56    520.22    194.23      1.81      5.00    511.65    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2674E+02 OUTFLOW=0.2663E+02 BASIN STORAGE=0.7314E-02 PERCENT ERROR=   0.4

              21C  MANE        3.23   1300.20    196.60      1.81      5.00   1248.06    195.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7248E+02 OUTFLOW=0.7205E+02 BASIN STORAGE=0.2485E-01 PERCENT ERROR=   0.6

              21D  MANE        3.10   1538.29    200.70      1.81      5.00   1499.66    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1026E+03 OUTFLOW=0.1020E+03 BASIN STORAGE=0.5119E-01 PERCENT ERROR=   0.5

              21E  MANE        3.04    421.12    198.38      1.81      5.00    401.68    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.2490E+02 OUTFLOW=0.2476E+02 BASIN STORAGE=0.1083E-01 PERCENT ERROR=   0.5

              21F  MANE        4.33    687.84    201.28      1.80      5.00    666.34    200.00        1.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4544E+02 OUTFLOW=0.4507E+02 BASIN STORAGE=0.2383E-01 PERCENT ERROR=   0.8

              21G  MANE        4.06     26.27    199.44      1.80      5.00     26.04    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1667E+01 OUTFLOW=0.1656E+01 BASIN STORAGE=0.7499E-03 PERCENT ERROR=   0.6

               22  MANE        3.71   2850.96    194.47      2.07      5.00   2824.55    195.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1539E+03 OUTFLOW=0.1530E+03 BASIN STORAGE=0.3984E-01 PERCENT ERROR=   0.5

               23  MANE        3.96    781.94    194.26      2.09      5.00    778.56    195.00        2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4420E+02 OUTFLOW=0.4393E+02 BASIN STORAGE=0.9523E-02 PERCENT ERROR=   0.6

               24  MANE        2.78    735.98    195.89      1.62      5.00    708.45    195.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4263E+02 OUTFLOW=0.4239E+02 BASIN STORAGE=0.1521E-01 PERCENT ERROR=   0.5

              25N  MANE        4.27   1280.11    203.94      2.13      5.00   1243.86    205.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.8954E+02 OUTFLOW=0.8895E+02 BASIN STORAGE=0.4329E-01 PERCENT ERROR=   0.6

              25S  MANE        3.07   1432.12    195.33      2.28      5.00   1424.44    195.00        2.28
```

```
CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.7648E+02 OUTFLOW=0.7611E+02 BASIN STORAGE=0.2473E-01 PERCENT ERROR=   0.5

              21H  MANE        4.16     64.59    199.55      1.80      5.00     64.21    200.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.4176E+01 OUTFLOW=0.4145E+01 BASIN STORAGE=0.2185E-02 PERCENT ERROR=   0.7

              26N  MANE        4.34    695.84    209.67      1.63      5.00    689.73    210.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.5568E+02 OUTFLOW=0.5537E+02 BASIN STORAGE=0.2531E-01 PERCENT ERROR=   0.5

              26S  MANE        3.14    248.14    195.91      1.63      5.00    238.82    195.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1460E+02 OUTFLOW=0.1454E+02 BASIN STORAGE=0.4459E-02 PERCENT ERROR=   0.4

               27  MANE        0.61   2077.01    190.94      1.63      5.00   2052.00    190.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.0000E+00 EXCESS=0.1040E+03 OUTFLOW=0.1038E+03 BASIN STORAGE=0.2468E-01 PERCENT ERROR=   0.2


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

Spillway Design Flood HEC-1 Models

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN 09 1992              *
*           VERSION 4.0.3E             *
*                                      *
*  RUN DATE  10/22/98  TIME  17:16:36  *
*                                      *
****************************************
```

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

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

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

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

basin

FFAS:
700' Weir
3.2 Coeff.
2-60" Outlet pipes
H = 4.3'

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

  1           ID        RAWHIDE WASH DETENTION BASIN
  2           ID        PMP ESTIMATION
  3           ID        LOCAL STORM, 6 HOUR PMP
  4           ID        REDUCE LAG BY 15%
  5           ID        BASE MODEL                    FILE: RAWPMP.DAT
  6           ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
  7           ID        WATERSHED MANAGEMENT BRANCH, AA, AMM, 8/22/94
  8           ID        REVISED PMP AA, 10-5-94
  9           ID        ALTERNATIVE #4 ALIGNMENT
 10           ID
 11           ID    OCTOBER 1998 - HDR Engineering Recreated the PMP model
 12           ID    OCTOBER 1998 -
 13           ID    OCTOBER 1998 - Filename <RAPMP4A.DAT>
 14           ID
 15           ID
 16           ID   ******************************************************************************
 17           IT       5 03MAR94       0     300
 18           IO       5       0       0       0
 19           JR    FLOW      .5
              *

 20           KK      S1     SUB
 21           KM        THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN:
 22           KM        L = 9.2    Lca = 4.4  S = 108.0   Kn = 0.035  LAG = 72.0
 23           KM        PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 24           KM        BASIN S1                                          KM            04
 25           KO       3
 26           BA    13.7
 27           IN      15
 28           PI       0    0.06    0.06    0.06    0.06    0.12    0.12    0.12   0.012    5.80
 29           PI    1.18    0.47    0.39    0.28    0.18    0.28    0.28      .1      .1      .1
 30           PI      .1     .04     .04     .04     .04       0
 31           LG     .15     .25     6.6     .16       0
 32           UI     641     641     641    1648    2344    2875    3257    3599    3937    4405
 33           UI    4906    5641    7072    8283    7465    6396    5686    5182    4667    4131
 34           UI    3741    3260    2988    2362    1841    1133    1123    1053    1006     641
 35           UI     196     196     196     196     196     196     196     196     196     196
 36           UI     196     196       0       0       0       0       0       0       0       0
 37           UI       0       0       0       0       0       0       0       0       0       0
              *
              *
              *      <HDR Basin Alternative No. 4A
              *
              *  ******************************************************************************
              * KK   DAM
              * KO     3
              * RS     1    FLOW       0
              * SV     0      45     300     583     890    1221    1577    1962
              * SE  2179    2180    2185    2190    2195    2200    2205    2210
              * SS  2200     200     3.2     1.5
              *  2 - 36" RCP Culverts for outlet
              * SL  2179    14.1      .6      .5
              *  ******************************************************************************
              *
              *       <Feasibility Basin #4>
              *
```

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

  38          KK     DAM  PROPOSED GRADIN PLAN FOR ALTERNATIVE #4
  39          KO       3
  40          RS       1    FLOW       0
  41          SA       0      10    18.9    31.1    39.9    44.8      48
  42          SE  2120.5    2122    2124    2153    2163    2167    2170
  43          SS    2163     700     3.2     1.5
  44          SL    2122      30     0.6     0.5
              *
              *
  45          ZZ
```

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN 09 1992              *
*           VERSION 4.0.3E             *
*                                      *
*  RUN DATE  10/22/98  TIME  17:16:36  *
*                                      *
****************************************
```

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

```
                    RAWHIDE WASH DETENTION BASIN
                    PMP ESTIMATION
                    LOCAL STORM, 6 HOUR PMP
                    REDUCE LAG BY 15%
                    BASE MODEL                    FILE: RAWPMP.DAT
                    THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
                    WATERSHED MANAGEMENT BRANCH, AA, AMM, 8/22/94
                    REVISED PMP AA, 10-5-94
                    ALTERNATIVE #4 ALIGNMENT

                OCTOBER 1998 - HDR Engineering Recreated the PMP model
                OCTOBER 1998 -
                OCTOBER 1998 - Filename <RAPMP4A.DAT>

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

 18 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      3MAR94  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      4MAR94  ENDING DATE
                     NDTIME        0055  ENDING TIME
                      ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL    0.08 HOURS
                      TOTAL TIME BASE   24.92 HOURS

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

    JP          MULTI-PLAN OPTION
                      NPLAN           1  NUMBER OF PLANS
```

```
   JR          MULTI-RATIO OPTION
                   RATIOS OF RUNOFF
                  0.50


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


            **************
            *            *
 20 KK      *        S1  *          SUB
            *            *
            **************

 25 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

 27 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN          15  TIME INTERVAL IN MINUTES
                     JXDATE      3MAR94  STARTING DATE
                     JXTIME           0  STARTING TIME

              SUBBASIN RUNOFF DATA

 26 BA          SUBBASIN CHARACTERISTICS
                      TAREA       13.70  SUBBASIN AREA

                PRECIPITATION DATA

 28 PB                STORM       10.03  BASIN TOTAL PRECIPITATION

 28 PI            INCREMENTAL PRECIPITATION PATTERN
                     0.00      0.00      0.00      0.02      0.02      0.02      0.02      0.02      0.02      0.02
                     0.02      0.02      0.02      0.02      0.02      0.04      0.04      0.04      0.04      0.04
                     0.04      0.04      0.04      0.04      0.00      0.00      0.00      1.93      1.93      1.93
                     0.39      0.39      0.39      0.16      0.16      0.16      0.13      0.13      0.13      0.09
                     0.09      0.09      0.06      0.06      0.06      0.09      0.09      0.09      0.09      0.09
                     0.09      0.03      0.03      0.03      0.03      0.03      0.03      0.03      0.03      0.03
                     0.03      0.03      0.03      0.01      0.01      0.01      0.01      0.01      0.01      0.01
                     0.01      0.01      0.01      0.01      0.01

 31 LG          GREEN AND AMPT LOSS RATE
                      STRTL        0.15  STARTING LOSS
                        DTH        0.25  MOISTURE DEFICIT
                       PSIF        6.60  WETTING FRONT SUCTION
                      XKSAT        0.16  HYDRAULIC CONDUCTIVITY
                      RTIMP        0.00  PERCENT IMPERVIOUS AREA

 31 UI          INPUT UNITGRAPH,  42 ORDINATES,  VOLUME = 0.99
                    641.0     641.0     641.0    1648.0    2344.0    2875.0    3257.0    3599.0    3937.0    4405.0
                   4906.0    5641.0    7072.0    8283.0    7465.0    6396.0    5686.0    5182.0    4667.0    4131.0
                   3741.0    3260.0    2988.0    2362.0    1841.0    1133.0    1123.0    1053.0    1006.0     641.0
                    196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0
                    196.0     196.0

                                                   ***
```

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

                    HYDROGRAPH AT STATION       S1
                      FOR PLAN 1, RATIO = 0.50

  TOTAL RAINFALL =   10.03, TOTAL LOSS =    2.02, TOTAL EXCESS =    8.02

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     24.92-HR
  50122.      3.58       (CFS)     11680.       2920.       2813.       2813.
                       (INCHES)     7.927       7.927       7.927       7.927
                        (AC-FT)     5792.       5792.       5792.       5792.

                      CUMULATIVE AREA =   13.70 SQ MI


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

                    HYDROGRAPH AT STATION       S1
                      FOR PLAN 1, RATIO = 0.50

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     24.92-HR
  25061.      3.58       (CFS)      5840.       1460.       1406.       1406.
                       (INCHES)     3.963       3.963       3.963       3.963
                        (AC-FT)     2896.       2896.       2896.       2896.

                      CUMULATIVE AREA =   13.70 SQ MI


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

          **************
          *            *
 38 KK    *       DAM  *       PROPOSED GRADIN PLAN FOR ALTERNATIVE #4
          *            *
          **************

 39 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

            HYDROGRAPH ROUTING DATA

 40 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC        0.00  INITIAL CONDITION
                          X        0.00 WORKING R AND D COEFFICIENT

 41 SA              AREA         0.0      10.0      18.9      31.1      39.9      44.8      48.0

 42 SE          ELEVATION     2120.50   2122.00   2124.00   2153.00   2163.00   2167.00   2170.00

 44 SL          LOW-LEVEL OUTLET
                      ELEVL     2122.00  ELEVATION AT CENTER OF OUTLET
```

CAREA	30.00	CROSS-SECTIONAL AREA
COQL	0.60	COEFFICIENT
EXPL	0.50	EXPONENT OF HEAD

43 SS SPILLWAY

CREL	2163.00	SPILLWAY CREST ELEVATION
SPWID	700.00	SPILLWAY WIDTH
COQW	3.20	WEIR COEFFICIENT
EXPW	1.50	EXPONENT OF HEAD

***

COMPUTED STORAGE-ELEVATION DATA

STORAGE	0.00	5.00	33.43	751.13	1105.22	1274.52	1413.69
ELEVATION	2120.50	2122.00	2124.00	2153.00	2163.00	2167.00	2170.00

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	0.00	0.00	257.39	286.97	324.23	372.62	437.97	531.13	674.62	924.35
ELEVATION	2120.50	2122.00	2125.18	2125.95	2127.04	2128.66	2131.20	2135.54	2143.84	2163.00
OUTFLOW	968.08	1264.50	2061.55	3607.19	6149.35	9935.97	15214.99	22234.30	31241.85	42485.54
ELEVATION	2163.07	2163.28	2163.63	2164.12	2164.75	2165.52	2166.43	2167.48	2168.67	2170.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	5.00	33.43	55.97	71.02	92.70	125.62	179.38	276.92	485.60
OUTFLOW	0.00	0.00	204.16	257.39	286.97	324.23	372.62	437.97	531.13	674.62
ELEVATION	2120.50	2122.00	2124.00	2125.18	2125.95	2127.04	2128.66	2131.20	2135.54	2143.84
STORAGE	751.13	1105.22	1108.07	1116.55	1130.74	1150.83	1177.06	1209.77	1249.36	1274.52
OUTFLOW	803.76	924.36	968.02	1264.70	2061.70	3607.20	6149.14	9935.48	15215.66	18888.40
ELEVATION	2153.00	2163.00	2163.07	2163.28	2163.63	2164.12	2164.75	2165.52	2166.43	2167.00
STORAGE	1296.28	1350.88	1413.69							
OUTFLOW	22234.79	31242.11	42485.54							
ELEVATION	2167.48	2168.67	2170.00							

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

HYDROGRAPH AT STATION DAM
FOR PLAN 1, RATIO = 0.50

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
20674.	3.83	(CFS)	3972.	1411.	1359.	1359.
		(INCHES)	2.696	3.831	3.831	3.831
		(AC-FT)	1970.	2799.	2799.	2799.

4.2'

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	24.92-HR
1286.	3.83	1084.	569.	548.	548.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	24.92-HR
2167.26	3.83	2162.24	2145.17	2144.32	2144.32

CUMULATIVE AREA = 13.70 SQ MI

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

					RATIOS APPLIED TO FLOWS
OPERATION	STATION	AREA	PLAN		RATIO 1
					0.50
HYDROGRAPH AT	S1	13.70	1	FLOW	25061.
				TIME	3.58
ROUTED TO	DAM	13.70	1	FLOW	20674.
				TIME	3.83

** PEAK STAGES IN FEET **

1	STAGE	2167.26
	TIME	3.83

** NORMAL END OF HEC-1 ***

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN 09 1992              *
*           VERSION 4.0.3E             *
*                                      *
* RUN DATE  10/22/98  TIME  17:18:39   *
*                                      *
****************************************
```

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

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

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

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

HDR Basin 4A
200' Weir
3.2 Coeff.
2-36" Outlet Pipes
17 = 7.3

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

  1           ID        RAWHIDE WASH DETENTION BASIN
  2           ID        PMP ESTIMATION
  3           ID        LOCAL STORM, 6 HOUR PMP
  4           ID        REDUCE LAG BY 15%
  5           ID        BASE MODEL                    FILE: RAWPMP.DAT
  6           ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
  7           ID        WATERSHED MANAGEMENT BRANCH, AA, AMM, 8/22/94
  8           ID        REVISED PMP AA, 10-5-94
  9           ID        ALTERNATIVE #4 ALIGNMENT
 10           ID
 11           ID    OCTOBER 1998 - HDR Engineering Recreated the PMP model
 12           ID    OCTOBER 1998 -
 13           ID    OCTOBER 1998 - Filename <RAPMP4A.DAT>
 14           ID
 15           ID
 16           ID   ******************************************************************************
 17           IT       5 03MAR94       0     300
 18           IO       5       0       0       0
 19           JR    FLOW      .5
              *

 20           KK      S1     SUB
 21           KM        THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN:
 22           KM        L = 9.2    Lca = 4.4  S = 108.0   Kn = 0.035  LAG = 72.0
 23           KM        PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 24           KM        BASIN S1                                          KM              04
 25           KO       3
 26           BA    13.7
 27           IN      15
 28           PI       0    0.06    0.06    0.06    0.06    0.12    0.12    0.12   0.012    5.80
 29           PI    1.18    0.47    0.39    0.28    0.18    0.28    0.28      .1      .1      .1
 30           PI      .1     .04     .04     .04     .04       0
 31           LG     .15     .25     6.6     .16       0
 32           UI     641     641     641    1648    2344    2875    3257    3599    3937    4405
 33           UI    4906    5641    7072    8283    7465    6396    5686    5182    4667    4131
 34           UI    3741    3260    2988    2362    1841    1133    1123    1053    1006     641
 35           UI     196     196     196     196     196     196     196     196     196     196
 36           UI     196     196       0       0       0       0       0       0       0       0
 37           UI       0       0       0       0       0       0       0       0       0       0
              *
              *
              *      <HDR Basin Alternative No. 4A
              *
              *  ******************************************************************************

 38           KK     DAM
 39           KO       3
 40           RS       1    FLOW       0
 41           SV       0      45     300     583     890    1221    1577    1962
 42           SE    2179    2180    2185    2190    2195    2200    2205    2210
 43           SS    2200     200     3.2     1.5
              * 2 - 36" RCP Culverts for outlet
 44           SL    2179    14.1      .6      .5
              *  ******************************************************************************
              *
              *       <Feasibility Basin #4>
```

```
*
* KK   DAM  PROPOSED GRADIN PLAN FOR ALTERNATIVE #4
* KO     3
* RS     1    FLOW       0
* SA     0      10    18.9    31.1    39.9    44.8      48
* SE2120.5    2122    2124    2153    2163    2167    2170
* SS  2163     700     3.2     1.5
* SL  2122      30     0.6     0.5
*
*
```

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

  45          ZZ
```

```
****************************************                    ************************************
*                                      *                    *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS
*             JUN 09 1992              *                    *    HYDROLOGIC ENGINEERING CENTER
*           VERSION 4.0.3E             *                    *          609 SECOND STREET
*                                      *                    *       DAVIS, CALIFORNIA 95616
*  RUN DATE  10/22/98  TIME  17:18:39  *                    *          (916) 551-1748
*                                      *                    *
****************************************                    ************************************
```

```
                    RAWHIDE WASH DETENTION BASIN
                    PMP ESTIMATION
                    LOCAL STORM, 6 HOUR PMP
                    REDUCE LAG BY 15%
                    BASE MODEL                    FILE: RAWPMP.DAT
                    THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
                    WATERSHED MANAGEMENT BRANCH, AA, AMM, 8/22/94
                    REVISED PMP AA, 10-5-94
                    ALTERNATIVE #4 ALIGNMENT

                OCTOBER 1998 - HDR Engineering Recreated the PMP model
                OCTOBER 1998 -
                OCTOBER 1998 - Filename <RAPMP4A.DAT>

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

 18 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      3MAR94  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      4MAR94  ENDING DATE
                     NDTIME        0055  ENDING TIME
                      ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL    0.08 HOURS
                      TOTAL TIME BASE   24.92 HOURS

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

    JP          MULTI-PLAN OPTION
                      NPLAN           1  NUMBER OF PLANS
```

```
  JR          MULTI-RATIO OPTION
                  RATIOS OF RUNOFF
                 0.50


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


          **************
          *            *
 20 KK    *        S1  *          SUB
          *            *
          **************

 25 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

 27 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN          15  TIME INTERVAL IN MINUTES
                     JXDATE      3MAR94  STARTING DATE
                     JXTIME           0  STARTING TIME

            SUBBASIN RUNOFF DATA

 26 BA          SUBBASIN CHARACTERISTICS
                      TAREA       13.70  SUBBASIN AREA

                PRECIPITATION DATA

 28 PB                STORM       10.03  BASIN TOTAL PRECIPITATION

 28 PI            INCREMENTAL PRECIPITATION PATTERN
                     0.00      0.00      0.00      0.02      0.02      0.02      0.02      0.02      0.02      0.02
                     0.02      0.02      0.02      0.02      0.02      0.04      0.04      0.04      0.04      0.04
                     0.04      0.04      0.04      0.04      0.00      0.00      0.00      1.93      1.93      1.93
                     0.39      0.39      0.39      0.16      0.16      0.16      0.13      0.13      0.13      0.09
                     0.09      0.09      0.06      0.06      0.06      0.09      0.09      0.09      0.09      0.09
                     0.09      0.03      0.03      0.03      0.03      0.03      0.03      0.03      0.03      0.03
                     0.03      0.03      0.03      0.01      0.01      0.01      0.01      0.01      0.01      0.01
                     0.01      0.01      0.01      0.01      0.01

 31 LG          GREEN AND AMPT LOSS RATE
                      STRTL        0.15  STARTING LOSS
                        DTH        0.25  MOISTURE DEFICIT
                       PSIF        6.60  WETTING FRONT SUCTION
                      XKSAT        0.16  HYDRAULIC CONDUCTIVITY
                      RTIMP        0.00  PERCENT IMPERVIOUS AREA

 31 UI          INPUT UNITGRAPH,  42 ORDINATES,  VOLUME = 0.99
                   641.0     641.0     641.0    1648.0    2344.0    2875.0    3257.0    3599.0    3937.0    4405.0
                  4906.0    5641.0    7072.0    8283.0    7465.0    6396.0    5686.0    5182.0    4667.0    4131.0
                  3741.0    3260.0    2988.0    2362.0    1841.0    1133.0    1123.0    1053.0    1006.0     641.0
                   196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0
                   196.0     196.0

                                                                                  ***
```

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

                    HYDROGRAPH AT STATION       S1
                      FOR PLAN 1, RATIO = 0.50

  TOTAL RAINFALL =   10.03, TOTAL LOSS =    2.02, TOTAL EXCESS =    8.02

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     24.92-HR
  50122.      3.58       (CFS)    11680.       2920.       2813.        2813.
                       (INCHES)    7.927       7.927       7.927        7.927
                        (AC-FT)    5792.       5792.       5792.        5792.

                      CUMULATIVE AREA =   13.70 SQ MI


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

                    HYDROGRAPH AT STATION       S1
                      FOR PLAN 1, RATIO = 0.50

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     24.92-HR
  25061.      3.58       (CFS)     5840.       1460.       1406.        1406.
                       (INCHES)    3.963       3.963       3.963        3.963
                        (AC-FT)    2896.       2896.       2896.        2896.

                      CUMULATIVE AREA =   13.70 SQ MI


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


          **************
          *            *
 38 KK    *       DAM  *
          *            *
          **************

 39 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

            HYDROGRAPH ROUTING DATA

 40 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC        0.00  INITIAL CONDITION
                          X        0.00 WORKING R AND D COEFFICIENT

 41 SV            STORAGE         0.0      45.0     300.0     583.0     890.0    1221.0    1577.0    1962.0

 42 SE          ELEVATION     2179.00   2180.00   2185.00   2190.00   2195.00   2200.00   2205.00   2210.00

 44 SL          LOW-LEVEL OUTLET
                      ELEVL     2179.00  ELEVATION AT CENTER OF OUTLET
```

CAREA	14.10	CROSS-SECTIONAL AREA
COQL	0.60	COEFFICIENT
EXPL	0.50	EXPONENT OF HEAD

43 SS SPILLWAY

CREL	2200.00	SPILLWAY CREST ELEVATION
SPWID	200.00	SPILLWAY WIDTH
COQW	3.20	WEIR COEFFICIENT
EXPW	1.50	EXPONENT OF HEAD

***

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	0.00	98.56	107.76	118.85	132.49	149.67	171.97	202.07	244.95	310.92
ELEVATION	2179.00	2181.11	2181.52	2182.07	2182.81	2183.87	2185.42	2187.87	2192.03	2200.00
OUTFLOW	333.30	480.62	873.41	1632.17	2877.37	4729.49	7308.99	10736.32	15131.96	20616.35
ELEVATION	2200.10	2200.41	2200.91	2201.61	2202.51	2203.61	2204.91	2206.41	2208.10	2210.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	45.00	101.62	122.65	150.49	188.47	242.18	300.00	324.00	462.43
OUTFLOW	0.00	67.85	98.56	107.76	118.85	132.49	149.67	166.20	171.97	202.07
ELEVATION	2179.00	2180.00	2181.11	2181.52	2182.07	2182.81	2183.87	2185.00	2185.42	2187.87
STORAGE	583.00	707.85	890.00	1221.00	1228.44	1250.05	1285.80	1335.76	1399.87	1478.16
OUTFLOW	225.03	244.95	271.40	310.92	333.31	480.69	873.31	1632.28	2877.37	4729.68
ELEVATION	2190.00	2192.03	2195.00	2200.00	2200.10	2200.41	2200.91	2201.61	2202.51	2203.61
STORAGE	1570.60	1577.00	1685.39	1816.05	1962.00					
OUTFLOW	7308.79	7501.38	10736.10	15132.24	20616.34					
ELEVATION	2204.91	2205.00	2206.41	2208.10	2210.00					

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

HYDROGRAPH AT STATION DAM
FOR PLAN 1, RATIO = 0.50

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
13093.	4.25	(CFS)	3396.	1039.	1001.	1001.
		(INCHES)	2.305	2.821	2.821	2.821
		(AC-FT)	1684.	2062.	2062.	2062.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	24.92-HR
1755.	4.25	1381.	1010.	972.	972.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	24.92-HR
2207.32	4.25	2202.22	2196.53	2195.89	2195.89

CUMULATIVE AREA = 13.70 SQ MI

7.3

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

					RATIOS APPLIED TO FLOWS
OPERATION	STATION	AREA	PLAN		RATIO 1
					0.50
HYDROGRAPH AT	S1	13.70	1	FLOW	25061.
				TIME	3.58
ROUTED TO	DAM	13.70	1	FLOW	13093.
				TIME	4.25

** PEAK STAGES IN FEET **

1	STAGE	2207.32
	TIME	4.25

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

```
****************************************
*                                      *
  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
            JUN 09 1992                *
*          VERSION 4.0.3E              *
                                       *
  RUN DATE  10/22/98  TIME  17:27:04   *
*                                      *
****************************************
```

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

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

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

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

HDR Basin 4A
200' Weir
2.88 Coeff.
2 - 36" Outlet Pipes
H = 7.7'

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

  1           ID        RAWHIDE WASH DETENTION BASIN
  2           ID        PMP ESTIMATION
  3           ID        LOCAL STORM, 6 HOUR PMP
  4           ID        REDUCE LAG BY 15%
  5           ID        BASE MODEL                    FILE: RAWPMP.DAT
  6           ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
  7           ID        WATERSHED MANAGEMENT BRANCH, AA, AMM, 8/22/94
  8           ID        REVISED PMP AA, 10-5-94
  9           ID        ALTERNATIVE #4 ALIGNMENT
 10           ID
 11           ID    OCTOBER 1998 - HDR Engineering Recreated the PMP model
 12           ID    OCTOBER 1998 -
 13           ID    OCTOBER 1998 - Filename <RAPMP4A.DAT>
 14           ID
 15           ID
 16           ID   ****************************************************************************
 17           IT       5 03MAR94       0     300
 18           IO       5       0       0       0
 19           JR    FLOW      .5
              *

 20           KK      S1     SUB
 21           KM        THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN:
 22           KM        L = 9.2    Lca = 4.4  S = 108.0   Kn = 0.035  LAG = 72.0
 23           KM        PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 24           KM        BASIN S1                                          KM            04
 25           KO       3
 26           BA    13.7
 27           IN      15
 28           PI       0    0.06    0.06    0.06    0.06    0.12    0.12    0.12   0.012    5.80
 29           PI    1.18    0.47    0.39    0.28    0.18    0.28    0.28      .1      .1      .1
 30           PI      .1     .04     .04     .04     .04       0
 31           LG     .15     .25     6.6     .16       0
 32           UI     641     641     641    1648    2344    2875    3257    3599    3937    4405
 33           UI    4906    5641    7072    8283    7465    6396    5686    5182    4667    4131
 34           UI    3741    3260    2988    2362    1841    1133    1123    1053    1006     641
 35           UI     196     196     196     196     196     196     196     196     196     196
 36           UI     196     196       0       0       0       0       0       0       0       0
 37           UI       0       0       0       0       0       0       0       0       0       0
              *
              *
              *      <HDR Basin Alternative No. 4A
              *
              *  ****************************************************************************

 38           KK     DAM
 39           KO       3
 40           RS       1    FLOW       0
 41           SV       0      45     300     583     890    1221    1577    1962
 42           SE    2179    2180    2185    2190    2195    2200    2205    2210
 43           SS    2200     200    2.88     1.5
              * 2 - 36" RCP Culverts for outlet
 44           SL    2179    14.1      .6      .5
              *  ****************************************************************************
              *
              *       <Feasibility Basin #4>
```

```
*
* KK   DAM  PROPOSED GRADIN PLAN FOR ALTERNATIVE #4
* KO     3
* RS     1    FLOW       0
* SA     0      10    18.9    31.1    39.9    44.8      48
* SE2120.5    2122    2124    2153    2163    2167    2170
* SS  2163     700     3.2     1.5
* SL  2122      30     0.6     0.5
*
*
```

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

  45          ZZ
```

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN 09 1992              *
*           VERSION 4.0.3E             *
*                                      *
*  RUN DATE  10/22/98  TIME  17:27:04  *
*                                      *
****************************************
```

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

```
                    RAWHIDE WASH DETENTION BASIN
                    PMP ESTIMATION
                    LOCAL STORM, 6 HOUR PMP
                    REDUCE LAG BY 15%
                    BASE MODEL                    FILE: RAWPMP.DAT
                    THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
                    WATERSHED MANAGEMENT BRANCH, AA, AMM, 8/22/94
                    REVISED PMP AA, 10-5-94
                    ALTERNATIVE #4 ALIGNMENT

                OCTOBER 1998 - HDR Engineering Recreated the PMP model
                OCTOBER 1998 -
                OCTOBER 1998 - Filename <RAPMP4A.DAT>

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

 18 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      3MAR94  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      4MAR94  ENDING DATE
                     NDTIME        0055  ENDING TIME
                      ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL    0.08 HOURS
                      TOTAL TIME BASE   24.92 HOURS

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

    JP          MULTI-PLAN OPTION
                      NPLAN           1  NUMBER OF PLANS
```

```
   JR         MULTI-RATIO OPTION
                  RATIOS OF RUNOFF
                 0.50


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

         **************
         *            *
  20 KK  *      S1    *      SUB
         *            *
         **************

  25 KO       OUTPUT CONTROL VARIABLES
                   IPRNT           3  PRINT CONTROL
                   IPLOT           0  PLOT CONTROL
                   QSCAL          0.  HYDROGRAPH PLOT SCALE

  27 IN       TIME DATA FOR INPUT TIME SERIES
                   JXMIN          15  TIME INTERVAL IN MINUTES
                  JXDATE      3MAR94  STARTING DATE
                  JXTIME           0  STARTING TIME

            SUBBASIN RUNOFF DATA

  26 BA       SUBBASIN CHARACTERISTICS
                   TAREA       13.70  SUBBASIN AREA

              PRECIPITATION DATA

  28 PB            STORM       10.03  BASIN TOTAL PRECIPITATION

  28 PI         INCREMENTAL PRECIPITATION PATTERN
                  0.00      0.00      0.00      0.02      0.02      0.02      0.02      0.02      0.02      0.02
                  0.02      0.02      0.02      0.02      0.02      0.04      0.04      0.04      0.04      0.04
                  0.04      0.04      0.04      0.04      0.00      0.00      0.00      1.93      1.93      1.93
                  0.39      0.39      0.39      0.16      0.16      0.16      0.13      0.13      0.13      0.09
                  0.09      0.09      0.06      0.06      0.06      0.09      0.09      0.09      0.09      0.09
                  0.09      0.03      0.03      0.03      0.03      0.03      0.03      0.03      0.03      0.03
                  0.03      0.03      0.03      0.01      0.01      0.01      0.01      0.01      0.01      0.01
                  0.01      0.01      0.01      0.01      0.01

  31 LG       GREEN AND AMPT LOSS RATE
                   STRTL        0.15  STARTING LOSS
                     DTH        0.25  MOISTURE DEFICIT
                    PSIF        6.60  WETTING FRONT SUCTION
                   XKSAT        0.16  HYDRAULIC CONDUCTIVITY
                   RTIMP        0.00  PERCENT IMPERVIOUS AREA

  31 UI       INPUT UNITGRAPH,  42 ORDINATES,  VOLUME = 0.99
                 641.0     641.0     641.0    1648.0    2344.0    2875.0    3257.0    3599.0    3937.0    4405.0
                4906.0    5641.0    7072.0    8283.0    7465.0    6396.0    5686.0    5182.0    4667.0    4131.0
                3741.0    3260.0    2988.0    2362.0    1841.0    1133.0    1123.0    1053.0    1006.0     641.0
                 196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0
                 196.0     196.0

                                                            ***
```

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

                    HYDROGRAPH AT STATION       S1
                      FOR PLAN 1, RATIO = 0.50

 TOTAL RAINFALL =   10.03, TOTAL LOSS =    2.02, TOTAL EXCESS =    8.02

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     24.92-HR
  50122.      3.58       (CFS)    11680.       2920.       2813.        2813.
                       (INCHES)    7.927       7.927       7.927        7.927
                        (AC-FT)    5792.       5792.       5792.        5792.

                     CUMULATIVE AREA =   13.70 SQ MI


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

                    HYDROGRAPH AT STATION       S1
                      FOR PLAN 1, RATIO = 0.50

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     24.92-HR
  25061.      3.58       (CFS)     5840.       1460.       1406.        1406.
                       (INCHES)    3.963       3.963       3.963        3.963
                        (AC-FT)    2896.       2896.       2896.        2896.

                     CUMULATIVE AREA =   13.70 SQ MI


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


          **************
          *            *
 38 KK    *       DAM  *
          *            *
          **************

 39 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

             HYDROGRAPH ROUTING DATA

 40 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC        0.00  INITIAL CONDITION
                          X        0.00 WORKING R AND D COEFFICIENT

 41 SV            STORAGE         0.0      45.0     300.0     583.0     890.0    1221.0    1577.0    1962.0

 42 SE          ELEVATION     2179.00   2180.00   2185.00   2190.00   2195.00   2200.00   2205.00   2210.00

 44 SL          LOW-LEVEL OUTLET
                      ELEVL     2179.00  ELEVATION AT CENTER OF OUTLET
```

CAREA	14.10	CROSS-SECTIONAL AREA
COQL	0.60	COEFFICIENT
EXPL	0.50	EXPONENT OF HEAD

43 SS SPILLWAY

CREL	2200.00	SPILLWAY CREST ELEVATION
SPWID	200.00	SPILLWAY WIDTH
COQW	2.88	WEIR COEFFICIENT
EXPW	1.50	EXPONENT OF HEAD

***

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	0.00	98.56	107.76	118.85	132.49	149.67	171.97	202.07	244.95	310.92
ELEVATION	2179.00	2181.11	2181.52	2182.07	2182.81	2183.87	2185.42	2187.87	2192.03	2200.00
OUTFLOW	331.28	464.44	818.78	1502.66	2624.40	4292.35	6614.81	9700.11	13656.57	18592.48
ELEVATION	2200.10	2200.41	2200.91	2201.61	2202.51	2203.61	2204.91	2206.41	2208.10	2210.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	45.00	101.62	122.65	150.49	188.47	242.18	300.00	324.00	462.43
OUTFLOW	0.00	67.85	98.56	107.76	118.85	132.49	149.67	166.20	171.97	202.07
ELEVATION	2179.00	2180.00	2181.11	2181.52	2182.07	2182.81	2183.87	2185.00	2185.42	2187.87
STORAGE	583.00	707.85	890.00	1221.00	1228.47	1250.10	1285.89	1335.85	1399.97	1478.25
OUTFLOW	225.03	244.95	271.40	310.92	331.29	464.43	818.75	1502.66	2624.55	4292.38
ELEVATION	2190.00	2192.03	2195.00	2200.00	2200.10	2200.41	2200.91	2201.61	2202.51	2203.61
STORAGE	1570.69	1577.00	1685.47	1816.08	1962.00					
OUTFLOW	6614.79	6785.84	9700.15	13656.82	18592.49					
ELEVATION	2204.91	2205.00	2206.41	2208.10	2210.00					

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

HYDROGRAPH AT STATION DAM
FOR PLAN 1, RATIO = 0.50

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
12610.	4.25	(CFS)	3387.	1037.	999.	999.
		(INCHES)	2.298	2.816	2.816	2.816
		(AC-FT)	1679.	2057.	2057.	2057.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	24.92-HR
1782.	4.25	1395.	1016.	979.	979.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	24.92-HR
2207.66	4.25	2202.41	2196.63	2195.98	2195.98

CUMULATIVE AREA = 13.70 SQ MI

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

					RATIOS APPLIED TO FLOWS
PERATION	STATION	AREA	PLAN		RATIO 1
					0.50
HYDROGRAPH AT	S1	13.70	1	FLOW	25061.
				TIME	3.58
ROUTED TO	DAM	13.70	1	FLOW	12610.
				TIME	4.25

** PEAK STAGES IN FEET **

1	STAGE	2207.66
	TIME	4.25

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

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN 09 1992              *
*           VERSION 4.0.3E             *
*                                      *
*  RUN DATE  10/22/98  TIME  17:28:42  *
*                                      *
****************************************
```

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

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

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

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

HDR Basin 4A
400' Wier
2.85 Coeff.
2 - 36" Outlet Pipes
H = 5.5'

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

  1           ID        RAWHIDE WASH DETENTION BASIN
  2           ID        PMP ESTIMATION
  3           ID        LOCAL STORM, 6 HOUR PMP
  4           ID        REDUCE LAG BY 15%
  5           ID        BASE MODEL                    FILE: RAWPMP.DAT
  6           ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
  7           ID        WATERSHED MANAGEMENT BRANCH, AA, AMM, 8/22/94
  8           ID        REVISED PMP AA, 10-5-94
  9           ID        ALTERNATIVE #4 ALIGNMENT
 10           ID
 11           ID    OCTOBER 1998 - HDR Engineering Recreated the PMP model
 12           ID    OCTOBER 1998 -
 13           ID    OCTOBER 1998 - Filename <RAPMP4A.DAT>
 14           ID
 15           ID
 16           ID   ******************************************************************************
 17           IT       5 03MAR94       0     300
 18           IO       5       0       0       0
 19           JR    FLOW      .5
              *

 20           KK      S1     SUB
 21           KM        THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN:
 22           KM        L = 9.2    Lca = 4.4  S = 108.0   Kn = 0.035  LAG = 72.0
 23           KM        PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 24           KM        BASIN S1                                          KM              04
 25           KO       3
 26           BA    13.7
 27           IN      15
 28           PI       0    0.06    0.06    0.06    0.06    0.12    0.12    0.12   0.012    5.80
 29           PI    1.18    0.47    0.39    0.28    0.18    0.28    0.28      .1      .1      .1
 30           PI      .1     .04     .04     .04     .04       0
 31           LG     .15     .25     6.6     .16       0
 32           UI     641     641     641    1648    2344    2875    3257    3599    3937    4405
 33           UI    4906    5641    7072    8283    7465    6396    5686    5182    4667    4131
 34           UI    3741    3260    2988    2362    1841    1133    1123    1053    1006     641
 35           UI     196     196     196     196     196     196     196     196     196     196
 36           UI     196     196       0       0       0       0       0       0       0       0
 37           UI       0       0       0       0       0       0       0       0       0       0
              *
              *
              *      <HDR Basin Alternative No. 4A
              *
              *  ******************************************************************************

 38           KK     DAM
 39           KO       3
 40           RS       1    FLOW       0
 41           SV       0      45     300     583     890    1221    1577    1962
 42           SE    2179    2180    2185    2190    2195    2200    2205    2210
 43           SS    2200     400    2.88     1.5
              * 2 - 36" RCP Culverts for outlet
 44           SL    2179    14.1      .6      .5
              *  ******************************************************************************
              *
              *       <Feasibility Basin #4>
```

```
*
* KK   DAM  PROPOSED GRADIN PLAN FOR ALTERNATIVE #4
* KO     3
* RS     1    FLOW       0
* SA     0      10    18.9    31.1    39.9    44.8      48
* SE2120.5    2122    2124    2153    2163    2167    2170
* SS  2163     700     3.2     1.5
* SL  2122      30     0.6     0.5
*
*
```

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

  45          ZZ
```

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN 09 1992              *
*           VERSION 4.0.3E             *
*                                      *
*  RUN DATE  10/22/98  TIME  17:28:42  *
*                                      *
****************************************
```

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

```
RAWHIDE WASH DETENTION BASIN
PMP ESTIMATION
LOCAL STORM, 6 HOUR PMP
REDUCE LAG BY 15%
BASE MODEL                    FILE: RAWPMP.DAT
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
WATERSHED MANAGEMENT BRANCH, AA, AMM, 8/22/94
REVISED PMP AA, 10-5-94
ALTERNATIVE #4 ALIGNMENT

OCTOBER 1998 - HDR Engineering Recreated the PMP model
OCTOBER 1998 -
OCTOBER 1998 - Filename <RAPMP4A.DAT>

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

18 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      3MAR94  STARTING DATE
                     ITIME        0000  STARTING TIME
                        NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      4MAR94  ENDING DATE
                    NDTIME        0055  ENDING TIME
                     ICENT          19  CENTURY MARK

               COMPUTATION INTERVAL    0.08 HOURS
                    TOTAL TIME BASE   24.92 HOURS

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

   JP          MULTI-PLAN OPTION
                     NPLAN           1  NUMBER OF PLANS
```

```
JR          MULTI-RATIO OPTION
                RATIOS OF RUNOFF
               0.50


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


          **************
          *            *
20 KK     *        S1  *          SUB
          *            *
          **************

25 KO       OUTPUT CONTROL VARIABLES
                 IPRNT           3  PRINT CONTROL
                 IPLOT           0  PLOT CONTROL
                 QSCAL          0.  HYDROGRAPH PLOT SCALE

27 IN       TIME DATA FOR INPUT TIME SERIES
                 JXMIN          15  TIME INTERVAL IN MINUTES
                JXDATE      3MAR94  STARTING DATE
                JXTIME           0  STARTING TIME

          SUBBASIN RUNOFF DATA

26 BA       SUBBASIN CHARACTERISTICS
                 TAREA       13.70  SUBBASIN AREA

            PRECIPITATION DATA

28 PB            STORM       10.03  BASIN TOTAL PRECIPITATION

28 PI         INCREMENTAL PRECIPITATION PATTERN
                0.00      0.00      0.00      0.02      0.02      0.02      0.02      0.02      0.02      0.02
                0.02      0.02      0.02      0.02      0.02      0.04      0.04      0.04      0.04      0.04
                0.04      0.04      0.04      0.04      0.00      0.00      0.00      1.93      1.93      1.93
                0.39      0.39      0.39      0.16      0.16      0.16      0.13      0.13      0.13      0.09
                0.09      0.09      0.06      0.06      0.06      0.09      0.09      0.09      0.09      0.09
                0.09      0.03      0.03      0.03      0.03      0.03      0.03      0.03      0.03      0.03
                0.03      0.03      0.03      0.01      0.01      0.01      0.01      0.01      0.01      0.01
                0.01      0.01      0.01      0.01      0.01

31 LG       GREEN AND AMPT LOSS RATE
                 STRTL        0.15  STARTING LOSS
                   DTH        0.25  MOISTURE DEFICIT
                  PSIF        6.60  WETTING FRONT SUCTION
                 XKSAT        0.16  HYDRAULIC CONDUCTIVITY
                 RTIMP        0.00  PERCENT IMPERVIOUS AREA

31 UI       INPUT UNITGRAPH,  42 ORDINATES,  VOLUME = 0.99
              641.0     641.0     641.0    1648.0    2344.0    2875.0    3257.0    3599.0    3937.0    4405.0
             4906.0    5641.0    7072.0    8283.0    7465.0    6396.0    5686.0    5182.0    4667.0    4131.0
             3741.0    3260.0    2988.0    2362.0    1841.0    1133.0    1123.0    1053.0    1006.0     641.0
              196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0
              196.0     196.0

                                                                  ***
```

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

                    HYDROGRAPH AT STATION       S1
                      FOR PLAN 1, RATIO = 0.50

  TOTAL RAINFALL =   10.03, TOTAL LOSS =    2.02, TOTAL EXCESS =    8.02

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     24.92-HR
  50122.      3.58        (CFS)    11680.       2920.       2813.       2813.
                        (INCHES)    7.927       7.927       7.927       7.927
                         (AC-FT)    5792.       5792.       5792.       5792.

                       CUMULATIVE AREA =   13.70 SQ MI


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

                    HYDROGRAPH AT STATION       S1
                      FOR PLAN 1, RATIO = 0.50

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     24.92-HR
  25061.      3.58        (CFS)     5840.       1460.       1406.       1406.
                        (INCHES)    3.963       3.963       3.963       3.963
                         (AC-FT)    2896.       2896.       2896.       2896.

                       CUMULATIVE AREA =   13.70 SQ MI


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


          **************
          *            *
 38 KK    *       DAM  *
          *            *
          **************

 39 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

            HYDROGRAPH ROUTING DATA

 40 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC        0.00  INITIAL CONDITION
                          X        0.00 WORKING R AND D COEFFICIENT

 41 SV            STORAGE         0.0      45.0     300.0     583.0     890.0    1221.0    1577.0    1962.0

 42 SE          ELEVATION     2179.00   2180.00   2185.00   2190.00   2195.00   2200.00   2205.00   2210.00

 44 SL          LOW-LEVEL OUTLET
                      ELEVL     2179.00  ELEVATION AT CENTER OF OUTLET
```

CAREA	14.10	CROSS-SECTIONAL AREA
COQL	0.60	COEFFICIENT
EXPL	0.50	EXPONENT OF HEAD

43 SS SPILLWAY

CREL	2200.00	SPILLWAY CREST ELEVATION
SPWID	400.00	SPILLWAY WIDTH
COQW	2.88	WEIR COEFFICIENT
EXPW	1.50	EXPONENT OF HEAD

***

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	0.00	98.56	107.76	118.85	132.49	149.67	171.97	202.07	244.95	310.92
ELEVATION	2179.00	2181.11	2181.52	2182.07	2182.81	2183.87	2185.42	2187.87	2192.03	2200.00
OUTFLOW	349.46	610.10	1310.51	2668.32	4901.17	8226.66	12862.41	19026.01	26935.07	36807.19
ELEVATION	2200.10	2200.40	2200.91	2201.61	2202.51	2203.61	2204.91	2206.40	2208.10	2210.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	45.00	101.62	122.65	150.49	188.47	242.18	300.00	324.00	462.43
OUTFLOW	0.00	67.85	98.56	107.76	118.85	132.49	149.67	166.20	171.97	202.07
ELEVATION	2179.00	2180.00	2181.11	2181.52	2182.07	2182.81	2183.87	2185.00	2185.42	2187.87
STORAGE	583.00	707.85	890.00	1221.00	1228.30	1249.79	1285.49	1335.38	1399.49	1477.78
OUTFLOW	225.03	244.95	271.40	310.92	349.51	610.05	1310.61	2668.18	4901.33	8226.46
ELEVATION	2190.00	2192.03	2195.00	2200.00	2200.10	2200.40	2200.91	2201.61	2202.51	2203.61
STORAGE	1570.29	1577.00	1685.13	1815.90	1962.00					
OUTFLOW	12862.68	13225.72	19025.84	26935.57	36807.21					
ELEVATION	2204.91	2205.00	2206.40	2208.10	2210.00					

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

HYDROGRAPH AT STATION DAM
FOR PLAN 1, RATIO = 0.50

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
15407.	4.08	(CFS)	3436.	1048.	1009.	1009.
		(INCHES)	2.332	2.844	2.844	2.844
		(AC-FT)	1704.	2078.	2078.	2078.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	24.92-HR
1618.	4.08	1318.	982.	946.	946.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	24.92-HR
2205.53	4.08	2201.36	2196.14	2195.51	2195.51

CUMULATIVE AREA = 13.70 SQ MI

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

					RATIOS APPLIED TO FLOWS
OPERATION	STATION	AREA	PLAN		RATIO 1
					0.50
HYDROGRAPH AT	S1	13.70	1	FLOW	25061.
				TIME	3.58
ROUTED TO	DAM	13.70	1	FLOW	15407.
				TIME	4.08

** PEAK STAGES IN FEET **

1	STAGE	2205.53
	TIME	4.08

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

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            JUN 09 1992               *
*          VERSION 4.0.3E              *
*                                      *
*  RUN DATE  10/22/98  TIME  17:29:48  *
*                                      *
****************************************
```

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

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

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

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

4A

HDR Basin
600' Wier
2.88 Coeff.
2-36" Outlet Pipes
H = 4.5'

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

  1           ID        RAWHIDE WASH DETENTION BASIN
  2           ID        PMP ESTIMATION
  3           ID        LOCAL STORM, 6 HOUR PMP
  4           ID        REDUCE LAG BY 15%
  5           ID        BASE MODEL                    FILE: RAWPMP.DAT
  6           ID        THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
  7           ID        WATERSHED MANAGEMENT BRANCH, AA, AMM, 8/22/94
  8           ID        REVISED PMP AA, 10-5-94
  9           ID        ALTERNATIVE #4 ALIGNMENT
 10           ID
 11           ID    OCTOBER 1998 - HDR Engineering Recreated the PMP model
 12           ID    OCTOBER 1998 -
 13           ID    OCTOBER 1998 - Filename <RAPMP4A.DAT>
 14           ID
 15           ID
 16           ID   ******************************************************************************
 17           IT       5 03MAR94       0     300
 18           IO       5       0       0       0
 19           JR    FLOW      .5
              *

 20           KK      S1     SUB
 21           KM        THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN:
 22           KM        L = 9.2    Lca = 4.4  S = 108.0   Kn = 0.035  LAG = 72.0
 23           KM        PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 24           KM        BASIN S1                                          KM              04
 25           KO       3
 26           BA    13.7
 27           IN      15
 28           PI       0    0.06    0.06    0.06    0.06    0.12    0.12    0.12   0.012    5.80
 29           PI    1.18    0.47    0.39    0.28    0.18    0.28    0.28      .1      .1      .1
 30           PI      .1     .04     .04     .04     .04       0
 31           LG     .15     .25     6.6     .16       0
 32           UI     641     641     641    1648    2344    2875    3257    3599    3937    4405
 33           UI    4906    5641    7072    8283    7465    6396    5686    5182    4667    4131
 34           UI    3741    3260    2988    2362    1841    1133    1123    1053    1006     641
 35           UI     196     196     196     196     196     196     196     196     196     196
 36           UI     196     196       0       0       0       0       0       0       0       0
 37           UI       0       0       0       0       0       0       0       0       0       0
              *
              *
              *      <HDR Basin Alternative No. 4A
              *
              *  ******************************************************************************

 38           KK     DAM
 39           KO       3
 40           RS       1    FLOW       0
 41           SV       0      45     300     583     890    1221    1577    1962
 42           SE    2179    2180    2185    2190    2195    2200    2205    2210
 43           SS    2200     600    2.88     1.5
              * 2 - 36" RCP Culverts for outlet
 44           SL    2179    14.1      .6      .5
              *  ******************************************************************************
              *
              *       <Feasibility Basin #4>
```

```
*
* KK   DAM  PROPOSED GRADIN PLAN FOR ALTERNATIVE #4
* KO     3
* RS     1    FLOW       0
* SA     0      10    18.9    31.1    39.9    44.8      48
* SE2120.5    2122    2124    2153    2163    2167    2170
* SS  2163     700     3.2     1.5
* SL  2122      30     0.6     0.5
*
*
```

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

  45          ZZ
```

```
****************************************                    ************************************
*                                      *                    *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                    *   U.S. ARMY CORPS OF ENGINEERS
*            JUN 09 1992               *                    *   HYDROLOGIC ENGINEERING CENTER
*          VERSION 4.0.3E              *                    *         609 SECOND STREET
*                                      *                    *      DAVIS, CALIFORNIA 95616
*  RUN DATE  10/22/98  TIME  17:29:48  *                    *          (916) 551-1748
*                                      *                    *
****************************************                    ************************************
```

RAWHIDE WASH DETENTION BASIN
PMP ESTIMATION
LOCAL STORM, 6 HOUR PMP
REDUCE LAG BY 15%
BASE MODEL FILE: RAWPMP.DAT
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY.
WATERSHED MANAGEMENT BRANCH, AA, AMM, 8/22/94
REVISED PMP AA, 10-5-94
ALTERNATIVE #4 ALIGNMENT

OCTOBER 1998 - HDR Engineering Recreated the PMP model
OCTOBER 1998 -
OCTOBER 1998 - Filename <RAPMP4A.DAT>

****

```
18 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      3MAR94  STARTING DATE
                    ITIME        0000  STARTING TIME
                       NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE      4MAR94  ENDING DATE
                   NDTIME        0055  ENDING TIME
                    ICENT          19  CENTURY MARK

              COMPUTATION INTERVAL    0.08 HOURS
                   TOTAL TIME BASE   24.92 HOURS

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

   JP          MULTI-PLAN OPTION
                    NPLAN           1  NUMBER OF PLANS
```

```
   JR          MULTI-RATIO OPTION
                   RATIOS OF RUNOFF
                  0.50


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

          **************
          *            *
 20 KK    *        S1  *          SUB
          *            *
          **************

 25 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

 27 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN          15  TIME INTERVAL IN MINUTES
                     JXDATE      3MAR94  STARTING DATE
                     JXTIME           0  STARTING TIME

            SUBBASIN RUNOFF DATA

 26 BA          SUBBASIN CHARACTERISTICS
                      TAREA       13.70  SUBBASIN AREA

                PRECIPITATION DATA

 28 PB                STORM       10.03  BASIN TOTAL PRECIPITATION

 28 PI            INCREMENTAL PRECIPITATION PATTERN
                    0.00      0.00      0.00      0.02      0.02      0.02      0.02      0.02      0.02      0.02
                    0.02      0.02      0.02      0.02      0.02      0.04      0.04      0.04      0.04      0.04
                    0.04      0.04      0.04      0.04      0.00      0.00      0.00      1.93      1.93      1.93
                    0.39      0.39      0.39      0.16      0.16      0.16      0.13      0.13      0.13      0.09
                    0.09      0.09      0.06      0.06      0.06      0.09      0.09      0.09      0.09      0.09
                    0.09      0.03      0.03      0.03      0.03      0.03      0.03      0.03      0.03      0.03
                    0.03      0.03      0.03      0.01      0.01      0.01      0.01      0.01      0.01      0.01
                    0.01      0.01      0.01      0.01      0.01

 31 LG          GREEN AND AMPT LOSS RATE
                      STRTL        0.15  STARTING LOSS
                        DTH        0.25  MOISTURE DEFICIT
                       PSIF        6.60  WETTING FRONT SUCTION
                      XKSAT        0.16  HYDRAULIC CONDUCTIVITY
                      RTIMP        0.00  PERCENT IMPERVIOUS AREA

 31 UI          INPUT UNITGRAPH,  42 ORDINATES,  VOLUME = 0.99
                   641.0     641.0     641.0    1648.0    2344.0    2875.0    3257.0    3599.0    3937.0    4405.0
                  4906.0    5641.0    7072.0    8283.0    7465.0    6396.0    5686.0    5182.0    4667.0    4131.0
                  3741.0    3260.0    2988.0    2362.0    1841.0    1133.0    1123.0    1053.0    1006.0     641.0
                   196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0     196.0
                   196.0     196.0

                                                  ***
```

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

                    HYDROGRAPH AT STATION       S1
                      FOR PLAN 1, RATIO = 0.50

 TOTAL RAINFALL =   10.03, TOTAL LOSS =    2.02, TOTAL EXCESS =    8.02

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     24.92-HR
  50122.      3.58       (CFS)    11680.       2920.       2813.        2813.
                       (INCHES)     7.927       7.927       7.927        7.927
                        (AC-FT)     5792.       5792.       5792.        5792.

                     CUMULATIVE AREA =   13.70 SQ MI


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

                    HYDROGRAPH AT STATION       S1
                      FOR PLAN 1, RATIO = 0.50

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     24.92-HR
  25061.      3.58       (CFS)     5840.       1460.       1406.        1406.
                       (INCHES)     3.963       3.963       3.963        3.963
                        (AC-FT)     2896.       2896.       2896.        2896.

                     CUMULATIVE AREA =   13.70 SQ MI


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


          **************
          *            *
 38 KK    *       DAM  *
          *            *
          **************

 39 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

            HYDROGRAPH ROUTING DATA

 40 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC        0.00  INITIAL CONDITION
                          X        0.00 WORKING R AND D COEFFICIENT

 41 SV            STORAGE         0.0      45.0     300.0     583.0     890.0    1221.0    1577.0    1962.0

 42 SE          ELEVATION     2179.00   2180.00   2185.00   2190.00   2195.00   2200.00   2205.00   2210.00

 44 SL          LOW-LEVEL OUTLET
                      ELEVL     2179.00  ELEVATION AT CENTER OF OUTLET
```

CAREA	14.10	CROSS-SECTIONAL AREA
COQL	0.60	COEFFICIENT
EXPL	0.50	EXPONENT OF HEAD

43 SS SPILLWAY

CREL	2200.00	SPILLWAY CREST ELEVATION
SPWID	600.00	SPILLWAY WIDTH
COQW	2.88	WEIR COEFFICIENT
EXPW	1.50	EXPONENT OF HEAD

***

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	0.00	98.56	107.76	118.85	132.49	149.67	171.97	202.07	244.95	310.92
ELEVATION	2179.00	2181.11	2181.52	2182.07	2182.81	2183.87	2185.42	2187.87	2192.03	2200.00
OUTFLOW	367.66	755.80	1802.28	3834.04	7177.99	12161.02	19110.04	28351.93	40213.59	55021.91
ELEVATION	2200.10	2200.40	2200.90	2201.60	2202.50	2203.60	2204.90	2206.40	2208.10	2210.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	45.00	101.62	122.65	150.49	188.47	242.18	300.00	324.00	462.43
OUTFLOW	0.00	67.85	98.56	107.76	118.85	132.49	149.67	166.20	171.97	202.07
ELEVATION	2179.00	2180.00	2181.11	2181.52	2182.07	2182.81	2183.87	2185.00	2185.42	2187.87
STORAGE	583.00	707.85	890.00	1221.00	1228.23	1249.68	1285.35	1335.22	1399.33	1477.62
OUTFLOW	225.03	244.95	271.40	310.92	367.60	755.70	1802.31	3833.75	7178.48	12160.59
ELEVATION	2190.00	2192.03	2195.00	2200.00	2200.10	2200.40	2200.90	2201.60	2202.50	2203.60
STORAGE	1570.15	1577.00	1685.02	1815.82	1962.00					
OUTFLOW	19110.13	19665.59	28351.56	40213.14	55021.93					
ELEVATION	2204.90	2205.00	2206.40	2208.10	2210.00					

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

HYDROGRAPH AT STATION DAM
FOR PLAN 1, RATIO = 0.50

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
16896.	4.00	(CFS)	3453.	1051.	1013.	1013.
		(INCHES)	2.343	2.854	2.854	2.854
		(AC-FT)	1712.	2085.	2085.	2085.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	24.92-HR
1541.	4.00	1289.	970.	934.	934.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	24.92-HR
2204.49	4.00	2200.95	2195.96	2195.34	2195.34

CUMULATIVE AREA = 13.70 SQ MI

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS

FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES

TIME TO PEAK IN HOURS

					RATIOS APPLIED TO FLOWS
OPERATION	STATION	AREA	PLAN		RATIO 1
					0.50
HYDROGRAPH AT	S1	13.70	1	FLOW	25061.
				TIME	3.58
ROUTED TO	DAM	13.70	1	FLOW	16896.
				TIME	4.00

** PEAK STAGES IN FEET **

1	STAGE	2204.49
	TIME	4.00

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