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FLOOD CONTROL
DISTRICT OF
MARICOPA COUNTY

43rd Avenue & Baseline Rd
Detention Basin
Concept Report
September, 1998

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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43rd AVENUE & BASELINE RD DETENTION BASIN

CONCEPT REPORT

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Registered Professional Engineer (Civil)
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ARIZONA, U.S.A.

September, 1998

Prepared For:
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43rd AVENUE & BASELINE ROAD DETENTION BASIN CONCEPT REPORT

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43rd AVENUE & BASELINE ROAD DETENTION BASIN CONCEPT REPORT

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1.0 PROJECT DESCRIPTION

1.1 Purpose

The purpose of this report is to present the results of an investigation that was performed to explore ways of reducing the cost and impacts of the large storm drain in 43rd Ave determined in the "Preliminary Design Report," dated July 1997. This report is an addendum to the "Preliminary Design Report" prepared by HDR, Inc. The Preferred Focus Alternative shown in the Preliminary Report determined that the storm drain in 43rd Avenue would need to be a triple barrel - 10' x 7' concrete box culvert to convey flows from the upper watershed to the Salt River. In addition to the cost of such a large size storm drain, the feasibility of constructing it without major impacts to adjacent properties and utilities is a concern to the District.

1.2 Approach

The investigation considered construction of an additional detention basin along the storm drain alignment to attenuate the flows in order to reduce the size of the storm drain. The most feasible location identified was to place an additional basin site at the northeast corner of 43rd Avenue and Baseline Road (See Figure 1). The current use of this land is agricultural, and the land does not appear to have any existing structural improvements. After locating this basin site, a similar sized basin to that of the basin planned at the southeast corner of 43rd Avenue and Southern Avenue was modeled. A parcel of 20 acres was used because it can accommodate mixed uses: detention and recreation. Results of the HEC-1 model are listed in Table 1.

After determining the new discharges, the storm drain sizes were reduced, and then a cost estimate was prepared to compare if any cost savings would be realized. The costs of the two alternatives are summarized in Table 2.

A detention basin at 43rd Avenue and Baseline Road does more than just attenuate the flow. This basin also works as a place to remove sediment from the system. Sediment that enters the system will settle out at this location. It will be easier and more efficient to remove the sediment than at the pump station. Removing sediment from the storm drain prior to the pump station should also extend the life of the pumps.

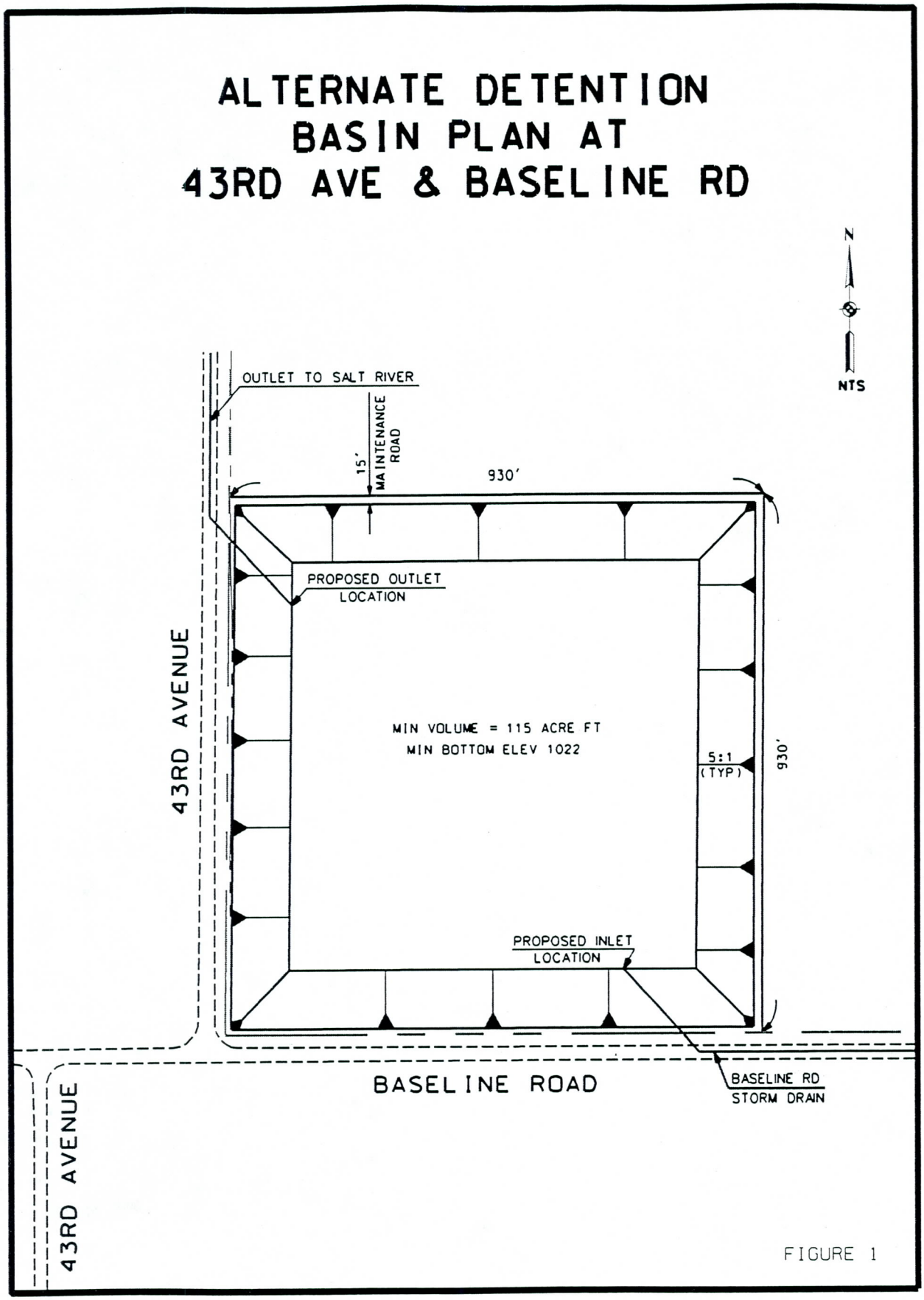
ALTERNATE DETENTION
BASIN PLAN AT
43RD AVE & BASELINE RD
N
NTS
OUTLET TO SALT RIVER
15'
MAINTENANCE ROAD
930'
PROPOSED OUTLET LOCATION
43RD AVENUE
MIN VOLUME = 115 ACRE FT
MIN BOTTOM ELEV 1022
5:1 (TYP)
930'
PROPOSED INLET LOCATION
BASELINE ROAD
BASELINE RD STORM DRAIN
43RD AVENUE
FIGURE 1

FIGURE 1

Table 1. Return Frequencies with and without Basin @ Baseline Rd

Return Frequency	Sub-Basin	100-yr FUTURE	
		w/o Basin	w/BASIN
7th Ave			
South Mtn - Dobbins Rd	C3CE	242	242
Dobbins Rd - Baseline	DIVM5C	250	250
Baseline Rd			
7th Ave - 19th Ave	DIVbde	300	300
19th Ave - Basin	CBR19C	460	460
27th Ave Basin Bypass Flows	D1927	156	156
27th Ave -35th Ave	CPB27C	239	239
35th Ave - 39th Ave	RPB352	553	553
39th Ave - 43rd Ave	CG39	562	562
43rd Ave			
Baseline -Southern	RBR43C	566	264
Southern - Salt River	RAV43B	568	294
27th Ave			
27th Ave & Dobbins Rd	ST27.4	45	45
27th Ave south of Baseline Rd	C35CE	87	87
27th Ave Basin Bypass Flows	D35CE	43	43

Table 2. Cost Comparison with and without Basin @ Baseline Rd

Location/Reach	Cost	
	w/o Basin @ Baseline Rd	w/Basin @ Baseline Rd
7th Ave	$ 1,508,200	$ 1,508,200
Baseline Rd	$ 6,078,885	$ 6,078,885
43rd Ave	$ 10,026,000	$ 5,070,800
27th Ave	$ 670,720	$ 670,720
Storm Drain Cost	$ 18,283,805	$ 13,328,605
* Basin @ Baseline Rd & 43rd Av	$ -	$ 1,491,646
TOTAL STORM DRAIN & BASIN COST	$ 18,283,805	$ 14,820,251
SAVINGS		**$ 3,463,554**

1.3 Location

The project is located in an area known as Laveen. The area has been incorporated into the limits of the City of Phoenix since the South Phoenix/Laveen Drainage Improvement Project began. The drainage area is bounded on the south by the South Mountains, on the east by 7th Avenue, on the north by the Salt River, and on the west by 43rd Avenue (Figure 2.). The drainage area encompasses 26 square miles of the southwest portion of the City of Phoenix.

1.4 Rights-of-Way

Purchase of additional rights-of-way is necessary for the construction of the additional basin at 43rd Avenue & Baseline Road. It is recommended that the District acquire this 20+ acre site for construction of this basin through advanced acquisition because it is likely that development may occur in the near future potentially eliminating the feasibility of the site. Prior to construction, the District may continue to lease this parcel out so that the agricultural activity can continue. To take advantage of the large cost savings proposed in this report, the site must be reserved for use as a detention basin.

1.5 Utilities

No major utilities exist in the parcel to be acquired.

2.0 BASIN HYDRAULIC ANALYSIS

2.1 Basin Modeling Parameters

The concept is to construct the outfall in 43rd Avenue deep enough that the basin will be able to gravity drain. The discharge-rating curve used in the HEC-1 model is based upon a 54" concrete pipe outfall operating under inlet control. It may be necessary to modify the outfall based upon the final configuration of the basin. The shape of the basin was assumed to be rectangular with 6:1 side slopes. Again, the basin shape has the ability to be modified to accommodate mixed uses. It is anticipated that this basin will also be a park in the future.

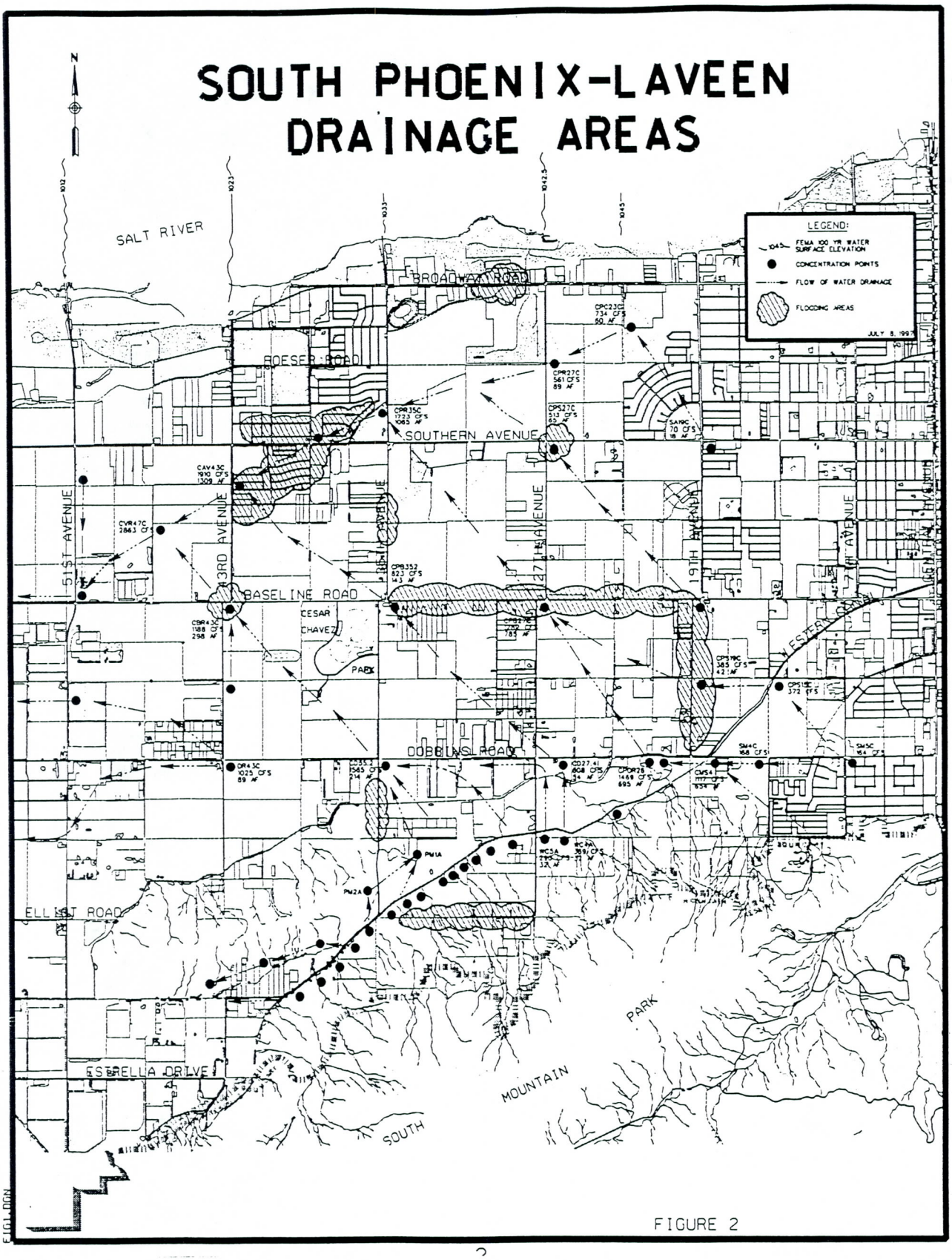

FIGURE 2

FIGURE 2

2.2 Inlet Description

The inlet into the detention basin will consist of a headwall and an energy dissipater at the end of the Baseline Road Storm Drain. Flows from the storm drain can enter near the southeast corner of the basin near the floor of the basin. The flows from the inlet will be conveyed in a low-flow swale to the outfall. The basin is an on-line basin and as such will receive all of the flows in the pipe and also collect sediment from the storm drain.

In the interim before the basin is constructed, the Baseline Road storm drain should be aligned as close the south edge of the basin as possible to facilitate connection to the basin at a later time.

2.3 Outlet Description

The concept for an outlet is a 54" diameter pipe located along the west side of the basin. The outlet was modeled operating under inlet control. It is proposed that the outlet structure will have openings along the face of the structure and the openings will be covered with trash racks on the front side for trash and safety concerns. The outlet structure will be connected to the 43rd Avenue storm drain. A least a 72" diameter stub-out should be constructed with the 43rd Avenue Storm Drain Project to facilitate the future tie in to the basin and provide flexibility for sizing the actual basin outlet.

2.4 Emergency Spillway

In addition to the outlet structure, the basin will require an emergency spillway. The spillway should be located along the west side of the basin near the lowest ground elevation. It is anticipated that the emergency spillway will consist of an unlined depression in the top of the bank.

2.5 Storage Requirements

The HEC-1 model for the 100-year event indicates that 110 Ac-Ft of volume is required for the outlet modeled. The model assumed a 500' x 500' rectangular basin floor with 6:1 side slopes beginning at elevation 1022.0. With this configuration, the basin meets its volume requirements at elevation 1035.95 that may be higher than lowest elevation of the final layout. Therefore, instead of providing a maximum water surface elevation, the following parameters are provided for the final design of the basin.

Minimum Floor Elevation – 1022.0

Minimum Storage Capability – 115 Ac-Ft

Maximum Peak Discharge – 264 CFS

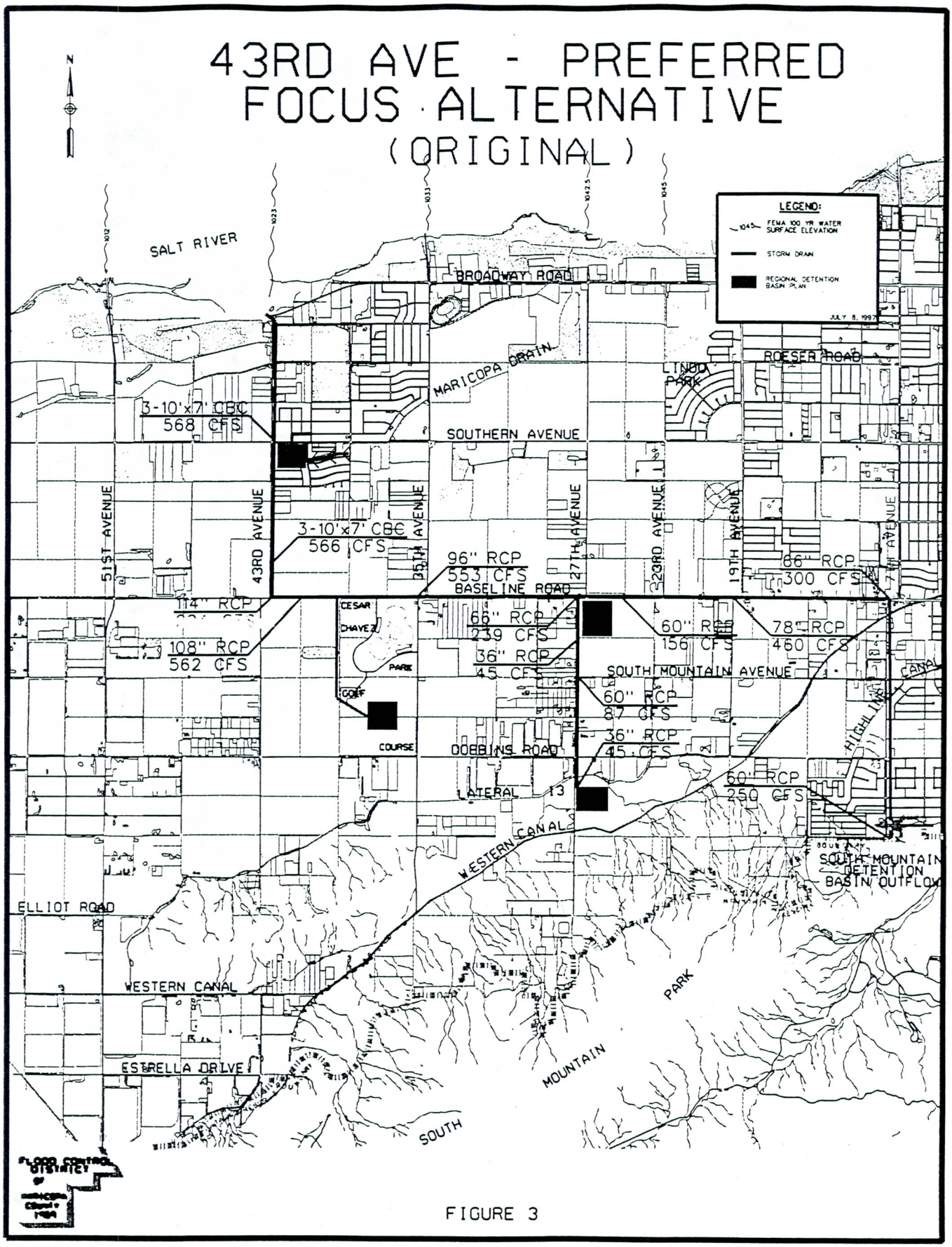

FIGURE 3

FIGURE 3

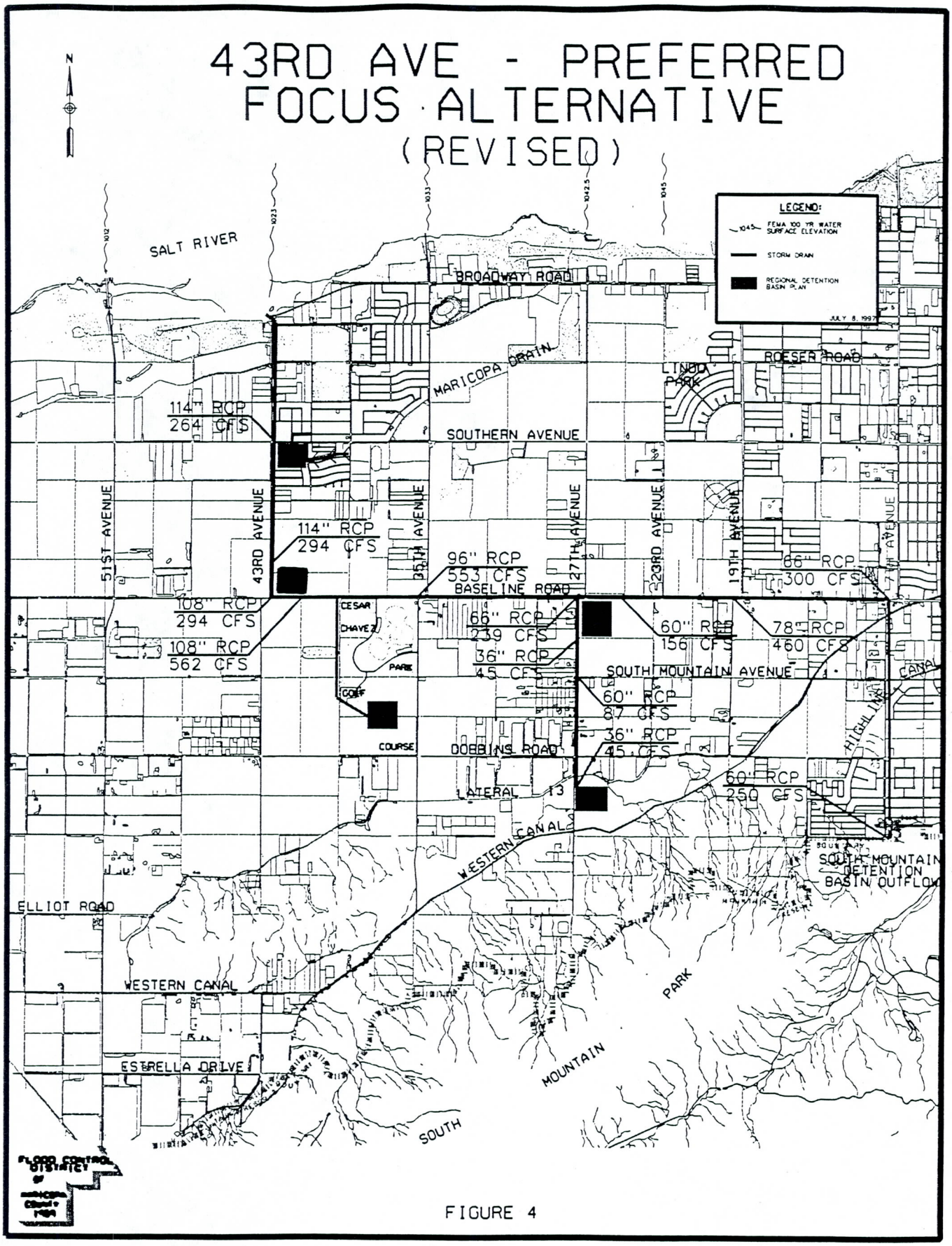

FIGURE 4

FIGURE 4

```
1*************************************                    *************************************
*                                   *                    *                                   *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)*                    *   U.S. ARMY CORPS OF ENGINEERS    *
*             JUL   1997            *                    *   HYDROLOGIC ENGINEERING CENTER   *
*           VERSION 4.1             *                    *         609 SECOND STREET         *
*                                   *                    *      DAVIS, CALIFORNIA 95616      *
* RUN DATE   06AUG98  TIME  11:34:38*                    *          (916) 756-1104           *
*                                   *                    *                                   *
*************************************                    *************************************

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

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

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

1                                          HEC-1 INPUT                                          PAGE  1

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

    1           ID    LAVEEN ADMP INVESTIGATION BY HDR ENGINEERING
    2           ID    MODIFICATIONS IN MAY 1998 BY FCD
    3           ID    LAVEEN ADMS (FINAL HEC-1) 100-,25-,10-YR FUTURE 24-HR STORM  CBA FILE
    4           ID    HIDDEN VALLEY WATERSHED/CHAMPION DRAIN WATERSHED
    5           ID    INPUT FILE NAME  43FutP2M.DAT
    6           ID    3 BASIN ALTERNATIVE, FUTURE   DEVELOPMENT
    7           ID    BASIN AT NW COR 43RD AVE & BASELINE RD
    8           ID    24-HOUR SCS TYPE II RAINFALL - 100, 25, 10-yr frequency
                *DIAGRAM
    9           IT       5                    500
   10           IO       5
                *
   11           JP       2
   12           JR    PREC   .6296   .7857    1.00

   13           KK    SM1C
   14           KM   SUB-BASIN SM1C-LAND USE- NATURAL DESERT(MOUNTAIN)
   15           KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
   16           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
   17           IN      30
   18           BA   1.840
   19           PB    3.78
   20           KM   RAINFALL DEPTH OF 4.20 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
   21           PC    .000    .005    .011    .016    .022    .028    .035    .041    .048    .056
   22           PC    .068    .071    .080    .089    .098    .109    .120    .133    .147    .163
   23           PC    .181    .204    .235    .283    .663    .735    .772    .799    .820    .838
   24           PC    .854    .868    .880    .891    .902    .912    .921    .929    .937    .945
   25           PC    .952    .959    .965    .972    .978    .984    .989    .995   1.000
   26           KM   THE FOLLOWING PC RECORD USED A 24-HOUR SCS TYPE II STORM
   27           LG    .150    .346   3.800    .623  50.000
   28           UC    .450    .220
   29           UA       0       3       5       8      12      20      43      75      90      96
   30           UA     100
                *

   31           KK   SM1AC
   32           KM   SUB-BASIN SM1AC-LAND USE- NATURAL DESERT(MOUNTAIN)
   33           KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
   34           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
   35           BA    .280
   36           LG    .150    .343   4.050    .528  10.000
   37           UC    .367    .288
   38           UA       0       3       5       8      12      20      43      75      90      96
   39           UA     100
                *

   40           KK    CSM1
   41           KM   COMBINE FLOW FROM SUB-BASIN SM1C WITH SM1AC AT COMPUTATOIN
   42           KM   POINT CSM1
   43           HC       2
                *
1                                          HEC-1 INPUT                                          PAGE  2

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

   44           KK    RSM1
```

```
 45          KM   ROUTE FLOW FROM COMPUTATION POINT CSM1  TO COMPUTATION POINT CSM2
 46          RS       2    ELEV  1375.5
 47          RC   0.035   0.035   0.035    4300   0.017
 48          RX       0      90     160     230     310     380     490     590
 49          RY    1390    1380    1377  1375.5    1377    1380    1383    1390
             *

 50          KK    SM2C
 51          KM   SUB-BASIN SM2C-LAND USE- NATURAL DESERT(MOUNTAIN)
 52          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 53          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
             *       1       2
 54          BA   2.190
 55          LG    .150    .350   3.310    .820  86.000
 56          UC    .383    .134
 57          UA       0       3       5       8      12      20      43      75      90      96
 58          UA     100
             *

 59          KK    CSM2
 60          KM   COMBINE RUNOFF FROM SUB-BASIN SM2C TO ROUTED FLOW FROM COMPUTATION
 61          KM   POINT CSM1
 62          HC       2
             *

 63          KK   RDENT
 64          KM   ROUTE INFLOW HYDROGRAPH THROUGH SOUTH MOUNTAIN DETENTION BASIN
 65          RS       1    ELEV    1292
 66          SA    2.30    7.80   15.91   19.96   24.08   28.27   30.45   31.91
 67          SE    1292    1294    1300    1305    1310    1315    1318    1320
 68          SL    1298    7.06    0.58     0.5
 69          SS    1318     200     2.7     1.5
             *

 70          KK    RSM2
 71          KM   ROUTE FLOW FROM COMPUTATOIN POINT CSM2 TO COMPUTATOIN POINT CSM3
 72          RS      12    ELEV    1226
 73          RC   0.040   0.040   0.040    6600   0.019    1228
 74          RX       0      70     100     140     160     190     240     320
 75          RY    1228  1227.5    1227    1226    1228  1228.5    1229    1230
             *
             *  REVISIONS DUE TO PROPOSED IMPROVEMENTS.

 76          KK   SM3CE
 77          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 78          BA     .17
 79          LG     .16    .348    3.85    .607     1.5
 80          UC   0.227   0.158
 81          UA       0       3       5       8      12      20      43      75      90      96
 82          UA     100
             *
```



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

 83          KK    C3CE
 84          KM   COMBINE HYDROGRAPHS
 85          HC       2
             *

 86          KK  RSM3CE
 87          KM   ROUTE RUNOFF FROM SM3CE TO 7th AVE & DOBBINS
 88          RD    1980  0.0066   0.014            CIRC     4.5
             *

 89          KK   SM4CE
 90          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 91          BA     .05
 92          LG    0.26    0.35     4.6    .592    14.4
 93          UC   0.087   0.081
 94          UA       0       5      16      30      65      77      84      90      94      97
 95          UA     100
             *

 96          KK    SM5C
 97          KM   SUB-BASIN SM5C-LAND USE-URBAN
 98          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 99          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
100          BA    .200
101          LG    .200    .349   4.300    .555  18.000
102          UC    .383    .355
103          UA       0       5      16      30      65      77      84      90      94      97
104          UA     100
             *

105          KK   CSM5C
106          KM   COMBINE HYDROGRAPHS FROM SM3CE, SM4CE, & SM5C
107          HC       3
             *

108          KK  DIVM5C
109          KM        Divert flow in excess of 250 cfs - Storm Drain Capacity
110          DT  DCSM5C
111          DI       0     250     500
```

```
112          DQ       0       0     250
             *
             * FLOW FROM SM5C ROUTED THROUGH PIPE NORTH ALONG 7th AVE.

113          KK  RCSM5C
114          KM   ROUTE FLOW THROUGH PIPE TO BOTTOM OF SMA15E
115          RD    1200   .0066    .014            CIRC       6
             *

116          KK  SMA15E
117          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
118          BA     .07
119          LG      .3     .25    4.35     0.4       5
120          UC    .081   0.057
121          UA       0       3       9      18      28      42      59      73      87      92
1                                          HEC-1 INPUT                                          PAGE  4

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

122          UA     100
             *

123          KK    C15E
124          KM   COMBINE HYDROGRAPHS FROM SMA15E & RCSM5C
125          HC       2
             *

126          KK  DIV15E
127          KM        Divert flow in excess of 270 cfs  - Storm Drain Capacity
128          DT   DC15E
129          DI       0     270     540
130          DQ       0       0     270
             *
             * SMA15C SPLIT INTO SMA15E & SMA15W DUE TO PROPOSED IMPROVEMENTS

131          KK   RC15E
132          KM   ROUTE HYDROGRAPH FROM C15E TO BOTTOM OF CBDE
133          RD    4710   .0055    .014            CIRC       7
             *

134          KK    CBDE
135          KM   BASIN EAST OF CENTRAL 7th AVE FROM BASELINE TO NORTH OF DOBBINS
136          BA    0.17
137          LG     .35     .25     4.3     .33       9
138          UC     .65     .65
139          UA       0       3       9      18      28      42      59      73      87      92
140          UA     100
             *

141          KK   CCBDE
142          KM   COMBINE HYDROGRAPHS
143          HC       2
             *

144          KK  DIVbde
145          KM        Divert flow in excerss of 300 cfs - Storm Drain Capacity
146          DT  DCCBDE
147          DI       0     300     900
148          DQ       0       0     600
             *

149          KK  RCCBDE
150          KM   ROUTE HYDROGRAPH THROUGH PIPE TO BOTTOM OF BR19C
151          RD    5750   .0032    .014            CIRC       8
             *

152          KK  RETCBD
153          KM        Retrieve Diverted Hydrograph DCCBDE
154          DR  DCCBDE
             *
1                                          HEC-1 INPUT                                          PAGE  5

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

155          KK   RCDIV
156          KM        Route combined divertee hydrographs to BR19C
157          RD    5200   0.008   0.030            TRAP    10.0    20.0
             *

158          KK   BR19C
159          KM   SUB-BASIN BR19C-LAND USE - 180 SCRES OF FUTURE DEVELOPMENT
160          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
161          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
162          BA    .390
163          LG      .3     .25     4.4     .39       5
164          UC      .5      .3
165          UA       0       5      16      30      65      77      84      90      94      97
166          UA     100
             *

167          KK  RETAIN
168          KM   RETAIN 100-YR 2-HR VOLUME FROM BASIN BR19C
169          DT  RETAIN      20
170          DI       0     500    3000
```

```
171          DQ       0     500    3000
             *

172          KK  CBR19C
173          KM   COMBINE HYDROGRAPHS FROM BR19C & ROUTED FLOW
174          HC       3
             *

175          KK  RBR19C
176          KM   ROUTE HYDROGRAPH THROUGH PIPE TO DETENTION BASIN @ 27th & BASELINE
177          KM   USE DIVERT ROUTINE TO PASS 156 CFS TO CPB27C
178          RD    4800   .0032    .014            CIRC      10
             *

179          KK  DIV19C
180          KM   DIVERT 156 CFS TO CPB27C
181          DT   D1927              156
182          DI       0     156    5000
183          DQ       0     156     156
             *

184          KK  RETM5C
185          KM       Retrieve Diverted Hydrgraph DCSM5C
186          DR  DCSM5C
             *

187          KK  RET15E
188          KM       Retrieve Diverted Hydrgraph DC15E
189          DR   DC15E
             *
1                                    HEC-1 INPUT                                          PAGE  6

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

190          KK  COMDIV
191          KM       Combine diverted hydrographs north of Dobbins and 7th Ave.
192          HC       2
             *

193          KK   RCDIV
194          KM       Route combined diverted hydrographs to SMA15W
195          RD    3600   0.015   0.030            TRAP    10.0    20.0
             *

196          KK  SMA15W
197          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
198          BA    0.29
199          LG      .3     .25    4.65     .33       5
200          UC     .31     .15
201          UA       0       5      16      30      65      77      84      90      94      97
202          UA     100
             *

203          KK  RETAIN
204          KM   RETAIN 100-YR 2-HR VOLUME FROM BASIN SMA15W
205          DT  RETAIN       6
206          DI       0     500    3000
207          DQ       0     500    3000
             *

208          KK  CSMA15W
209          KM       Combine flows at SMA15W
210          HC       2
             *

211          KK  RSM19C
212          KM   ROUTE FLOW FROM SUB-BASIN SA15C TO COMPUTATION POINT CPS19C
213          RS       4    ELEV  1139.2
214          RC   0.070   0.070   0.070    2030    0.01  1140.5
215          RX      50     150     210     260     310     360     450     580
216          RY  1140.5  1139.5  1139.2  1139.2  1139.2  1139.2  1139.5  1140.5
             *

217          KK  SMA19C
218          KM   SUB-BASIN SMA19C-LAND USE - ENTIRE BASIN FULLEY DEVELOPED
219          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
220          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
221          BA    .156
222          LG      .3     .25    4.15     .45       5
223          UC     .83    1.21
224          UA       0       5      16      30      65      77      84      90      94      97
225          UA     100
             *
1                                    HEC-1 INPUT                                          PAGE  7

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

226          KK  RETAIN
227          KM   RETAIN 100-YR 2-HR VOLUME FROM BASIN SMA19C
228          DT  RETAIN       7
229          DI       0     500    3000
230          DQ       0     500    3000
             *
```

```
231          KK  CPS19C
232          KM   COMBINE ROUTED FLOW FROM SUB-BASIN SMA15C TO RUNOFF FROM SUB-BASIN SMA19C
233          HC       2
             *

234          KK  RRB27C
235          KM   ROUTE FLOW FROM COMPUTATION POINT CPS19C TO COMPUTATION POINT CPB27C
236          RS      22    ELEV  1107.8
237          RC   0.070   0.070   0.070    7400  0.0090    1110
238          RX       0     260     550     770     920    1170    1320    1500
239          RY    1110    1109    1109    1108    1108  1107.8    1108    1110
             *
             * SM3C SPLIT INTO SM3CE & SM3CW DUE TO PROPOSED IMPROVEMENTS

240          KK   SM3CW
241          BA     .31
242          LG     .16   0.348    3.85   0.607     1.5
243          UC   0.415   0.289
244          UA       0       3       5       8      12      20      43      75      90      96
245          UA     100
             *

246          KK    RSM3
247          KM   ROUTE FLOW FROM COMPUTATION POINT CSM3 TO COMPUTATION POINT CSM4
248          RS       4    ELEV    1176
249          RC   0.040   0.040   0.040    3000  0.0095
250          RX       0     120     190     270     330     400     470     530
251          RY    1178  1177.5    1177    1176    1176    1177  1177.5    1178
             *
             * SM4C SPLIT INTO SM4CE & SM4CW DUE TO PROPOSED IMPROVEMENTS

252          KK   SM4CW
253          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
254          BA     .19
255          LG     .26     .35    3.85   0.592    14.4
256          UC     .33    .306
257          UA       0       5      16      30      65      77      84      90      94      97
258          UA     100
             *

259          KK    RSM4
260          KM   ROUTE FLOW FROM SUB-BASIN SM4C TO COMPUTATION POINT CSM4
261          RS       2    ELEV    1168
262          RC   0.035   0.035   0.035    1200   0.012
263          RX       0      50      80     110     130     160     180     200
264          RY    1170  1169.5    1169  1168.5    1168  1168.5    1169    1170
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

265          KK   DRW2C
266          KM   SUB-BASIN DRW2C-LAND USE- NATURAL DESERT(HILLSLOPE,MOUNTAIN)
267          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
268          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
269          BA    .530
270          LG    .150    .340   3.250    .859  30.000
271          UC    .517    .377
272          UA       0       3       5       8      12      20      43      75      90      96
273          UA     100
             *

274          KK  DRWC1C
275          KM   SUB-BASIN DRWC1C-LAND USE-ENTIRE BASIN FULLY DEVELOPED
276          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
277          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
278          BA   .120
279          LG      .3     .25       4     .48       0
280          UC      .6     .73
281          UA       0       5      16      30      65      77      84      90      94      97
282          UA     100
             *

283          KK  RETAIN
284          KM   RETAIN 100-YR 2-HR VOLUME FROM BASIN DRWC1C
285          DT  RETAIN     4.5
286          DI       0     500    3000
287          DQ       0     500    3000
             *

288          KK    CSM4
289          KM   COMBINE RUNOFF FROM SUB-BASINS DRW2C AND DRWC1C WITH ROUTED FLOW FROM SM4C
290          KM   AND COMPUTATION POINT CSM3
291          HC       4
             *

292          KK    RSM5
293          KM   ROUTE FLOW FROM COMPUTATION POINT CSM4 TO COMPUTATION POINT CSM5
294          RS       1    ELEV    1156
295          RC   0.045   0.045   0.045    1800  0.0078
296          RX       0      80     130     160     180     190     220     260
297          RY    1160    1159  1158.5    1158    1156    1156    1158    1160
             *
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```
298          KK    DR1C
299          KM   SUB-BASIN DR1C-LAND USE-NATURAL DESERT(HILLSLOPE)
300          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
301          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
302          BA    .160
303          LG    .150    .265   5.300    .198    .000
304          UC    .417    .442
305          UA       0       3       5       8      12      20      43      75      90      96
306          UA     100
             *
1                                        HEC-1 INPUT                                          PAGE  9

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


307          KK    WC1A
308          KM   SUB-BASIN WC1A-LAND USE- NATURAL DESERT(HILLSLOPE)
309          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
310          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
311          BA    .250
312          LG    .150    .264   4.680    .217    40.0
313          UC    .400    .404
314          UA       0       3       5       8      12      20      43      75      90      96
315          UA     100
             *

316          KK    RSM6
317          KM   ROUTE FLOW FROM SUB-BASIN WC1A TO COMPUTATION POINT CPDR2C
318          RS       1    ELEV    1146
319          RC   0.045   0.045   0.045    1150   0.012    1150
320          RX       0      30      50      70      90     110     130     170
321          RY    1152    1151    1150    1148    1146    1146    1148    1150
             *

322          KK    DR2C
323          KM   SUB-BASIN DR2C-LAND USE- NATURAL DESERT(HILLSLOPE),AGRICULTURAL
324          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
325          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
326          BA    .050
327          LG    .150    .325   4.255    .423    .000
328          UC    .350    .318
329          UA       0       3       5       8      12      20      43      75      90      96
330          UA     100
             *

331          KK  CPDR2C
332          KM   COMBINE FLOW FROM SUB-BASINS DR2C AND DR1C TO ROUTED FLOW FROM SUB-BASIN WC1A
333          KM   AND COMPUTATION POINT CSM4
334          HC       4
             *

335          KK  RRB27C
336          KM   ROUTE FLOW FROM COMPUTATION POINT CPDR2C TO COMPUTATION POINT CPB27C
337          RS      15    ELEV  1107.8
338          RC   0.070   0.070   0.070    7400   0.009    1110
339          RX       0     260     550     770     920    1170    1320    1500
340          RY    1110    1109    1109    1108    1108  1107.8    1108    1110
             *

341          KK   BR27C
342          KM   SUB-BASIN BR27C-LAND USE - ENTIRE BASIN FULLY DEVELOPED
343          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
344          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
345          BA    .780
346          LG      .3     .25     4.1     .46       5
347          UC     .75     .59
348          UA       0       5      16      30      65      77      84      90      94      97
349          UA     100
             *
1                                        HEC-1 INPUT                                          PAGE 10

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


350          KK  RETAIN
351          KM   RETAIN 100-YR 2-HR VOLUME FROM BASIN BR27C
352          DT  RETAIN      34
353          DI       0     500    3000
354          DQ       0     500    3000
             *

355          KK    C27C
356          KM   COMBINE HYDROGRAPHS FLOWING INTO DETENTION BASIN
357          HC       4
             *

358          KK    WC2A
359          KM   SUB-BASIN WC2A -LAND USE- NATURAL DESERT HILLSLOPES; MINOR DEVELOPMENT
360          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
361          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
362          BA    .080
363          LG    .150    .251   8.600    .070    .000
364          UC    .383    .530
365          UA       0       3       5       8      12      20      43      75      90      96
```

```
 366          UA     100
              *

 367          KK  RD27.1
 368          KM   ROUTE FLOW FROM SUB-BASIN WC2A  TO COMPUTATION POINT CD27.1
 369          RS       1    ELEV    1147
 370          RC   0.035   0.035   0.035     960   0.016    1150
 371          RX       0      30      40      55      70      85     105     130
 372          RY    1150    1150    1148    1147    1148    1149    1150    1151
              *

 373          KK  WC2.1A
 374          KM   SUB-BASIN WC2.1A-LAND USE- NATURAL DESERT HILLSLOPES; MINOR DEVELOPMENT
 375          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 376          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
 377          BA    .080
 378          LG    .150    .290   4.000    .520    .000
 379          UC    .350    .310
 380          UA       0       3       5       8      12      20      43      75      90      96
 381          UA     100
              *

 382          KK  RD27.2
 383          KM   ROUTE FLOW FROM SUB-BASIN WC2.1A TO COMPUTATION POINT CD27.1
 384          RS       1    ELEV    1148
 385          RC   0.035   0.035   0.035    1000   0.015    1153
 386          RX       0      35      75     100     135     145     165     195
 387          RY    1153    1152    1150    1149    1148    1150    1152    1154
              *
1                                          HEC-1 INPUT                                                PAGE 11

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

 388          KK  CD27.1
 389          KM   COMBINE ROUTED FLOW FROM SUB-BASINS WC2A AND WC2.1A
 390          HC       2
              *

 391          KK  RD27.3
 392          KM   ROUTE FLOW FROM COMPUTATION POINT CP27.1 TO COMPUTATION POINT CP27.2
 393          RS       1    ELEV    1141
 394          RC   0.035   0.035   0.035     450   0.011    1144
 395          RX       0      50     115     125     140     150     160     180
 396          RY    1144    1143    1142    1141    1142    1144    1146    1148
              *

 397          KK    WC3A
 398          KM   SUB-BASIN WC3A--LAND USE- NATURAL DESERT HILLSLOPES; MINOR DEVELOPMENT
 399          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 400          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
 401          BA    .014
 402          LG    .150    .250   8.600    .066    .000
 403          UC    .300    .467
 404          UA       0       3       5       8      12      20      43      75      90      96
 405          UA     100
              *

 406          KK  RD27.4
 407          KM   ROUTE FLOW FROM SUB-BASIN WC3A TO COMPUTATION POINT CD27.2
 408          RS       1    ELEV  1141.8
 409          RC   0.035   0.040   0.035     640   0.022
 410          RX       0      40      80     100     110     120     150     200
 411          RY    1145    1144    1143    1142  1141.8    1142    1144    1145
              *

 412          KK  CD27.2
 413          KM   COMBINE ROUTED FLOWS FROM SUB-BASIN WC3A AND COMPUTATION POINT CD27.1
 414          HC       2
              *

 415          KK  RD27.5
 416          KM   ROUTE FLOW FROM COMPUTATION POINT CD27.2 TO COMPUTATION POINT CD27.3
 417          RS       1    ELEV    1121
 418          RC   0.035   0.035   0.035    1400   0.014
 419          RX       0      40     100     160     175     190     240     260
 420          RY    1126    1124    1123    1122    1121    1122    1124    1126
              *

 421          KK    WC4A
 422          KM   SUB-BASIN WC4A -LAND USE- DESERT MOUNTAIN, DESERT HILLS;  MINOR DEVELOPMENT
 423          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 424          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
 425          BA    .360
 426          LG    .150    .297   3.950    .546  25.000
 427          UC    .383    .273
 428          UA       0       3       5       8      12      20      43      75      90      96
 429          UA     100
              *
1                                          HEC-1 INPUT                                                PAGE 12

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

 430          KK  RD27.6
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431          KM   ROUTE FLOW FROM SUB-BASIN WC4A TO COMPUTATION POINT CD27.3
432          RS       3    ELEV    1140
433          RC   0.035   0.035   0.035    2200   0.016
434          RX       0      60     100     180     225     300     435     500
435          RY    1142    1141  1140.5    1140    1140  1140.5    1141    1142
             *

436          KK  CD27.3
437          KM   COMBINE ROUTED FLOWS FROM COMPUTATION POINT CD27.2 AND SUB-BASIN WC4A
438          HC       2
             *

439          KK  RD27.7
440          KM   ROUTE FLOW FROM COMPUTATION POINT CD27.3 TO COMPUTATION POINT CD27.4
441          RS       2    ELEV    1115
442          RC   0.040   0.050   0.035     950   0.006
443          RX       0      20     135     170     220     280     400     460
444          RY  1116.5    1116  1115.5    1115  1115.5  1115.8    1116  1116.5
             *

445          KK   DR27C
446          KM   SUB-BASIN DR27C-LAND USE- AGRICULTURE, DESERT HILLS; MINOR DEVELOMENT
447          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
448          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
449          BA    .230
450          LG    .210    .345   3.996    .609    .000
451          UC    .467    .352
452          UA       0       3       5       8      12      20      43      75      90      96
453          UA     100
             *

454          KK    WC5A
455          KM   SUB-BASIN WC5A -LAND USE- DESERT HILLS; MINOR DEVELOMENT
456          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
457          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
             *      1       2
458          BA    .420
459          LG    .150    .346   2.880   1.050  28.000
460          UC    .500    .359
461          UA       0       3       5       8      12      20      43      75      90      96
462          UA     100
             *

463          KK  CD27.4
464          KM   COMBINE RUNOFF FROM SUB-BASIN DR27C WITH ROUTED FLOW FROM COMPUTATION POINT
465          KM   CD27.3 & WC5A
466          HC       3
             *
             * PROPOSED DETENTION BASIN
1                                          HEC-1 INPUT                                          PAGE 13

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

467          KK  ST27.4
468          KM   PROPOSED DETENTION BASIN AT 27th & DOBBINS, 36" RCP OUTLET
469          RS       1    STOR
470          SV       0    56.6   115.4
471          SQ       0      38      80
472          SE       0       3       6
             *

473          KK  RST274
474          KM   ROUTE DISCHARGE FROM DETENTION BASIN TO BR35CE
475          RD    2520   .0051    .012            CIRC       3
             *
             *  BASIN BR35C2 SPLIT DUE TO PROPOSED IMPROVEMENT

476          KK  BR35CE
477          KM   ENTIRE BASIN FULLY DEVELOPED
478          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FO RTHIS BASIN
479          BA     .23
480          LG      .3     .25    4.15     .45       5
481          UC      .5     .36
482          UA       0       5      16      30      65      77      84  '   90      94      97
483          UA     100
             *

484          KK  RETAIN
485          KM   RETAIN 100-YR 2-HR VOLUME FROM BASIN BR35CE
486          DT  RETAIN      11
487          DI       0     500    3000
488          DQ       0     500    3000
             *

489          KK   C35CE
490          KM   COMBINE HYDROGRAPHS FROM C35CE & ST27C
491          HC       2
             *

492          KK   R35CE
493          KM   ROUTE HYDROGRAPH THROUGH PIPE TO CPB27C (27th & BASELINE)
494          RD    2450  0.0051    .014            CIRC     4.5
             *
```

```
495          KK   D35CE
496          KM   DIVERT 43 CFS TO 27th & BASELINE, REST INTO BASIN
497          DT   D35CE              156
498          DI       0      43    5000
499          DQ       0      43      43
             *

500          KK  C27BAS
501          KM   COMBINE HYDROGRAPH FOR ROUTING THROUGH DETENTION BASIN @ 27th & BASELINE
502          HC       2
             *  PROPOSED DETENTION BASE @ 27th & BASELINE
1                                          HEC-1 INPUT                                          PAGE 14

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

503          KK   ST27C
504          KM   DETENTION BASIN 27th & BASELINE W/ 36" RCP OUTLET
505          RS       1    STOR
506          SV       0   116.3   274.9
507          SQ       0      38      90
508          SE       0       3       7
             *

509          KK   D1927
510          KM   RETREIVE 156 CFS FROM DIV1927
511          DR   D1927
             *

512          KK   D35CE
513          KM   RETREIVE 43 CFS FROM D35CE
514          DR   D35CE
             *

515          KK  CPB27C
516          KM   COMBINE HYDROGRAPHS FOR ROUTING TO 35TH & BASELINE
517          HC       3
             *

518          KK  RPB27C
519          KM   ROUTE HYDROGRAPH FROM 27th & BASELINE THROUGH PIPE TO 35TH & BASELINE
520          RD    5280  0.0049   0.012            CIRC     5.5
             *

521          KK  BR35CW
522          KM   75 ACRES OF FUTURE DEVELOPMENT
523          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
524          BA      .5
525          LG     .28     .25    4.55     .42      22
526          UC     .67     .47
527          UA       0       5      16      30      65      77      84      90      94      97
528          UA     100
             *

529          KK  RETAIN
530          KM   RETAIN 100-YR 2-HR VOLUME FROM BASIN BR35CW
531          DT  RETAIN      10
532          DI       0     500    3000
533          DQ       0     500    3000
             *

534          KK  BR35C1
535          KM    SUB-BASIN BR35C1-LAND USE- 200 ACRES OF FUTURE DEVELOPMENT
536          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
537          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
538          BA    .550
539          LG     .23     .25     4.5     .44       0
540          UC    0.81     .57
541          UA       0       5      16      30      65      77      84      90      94      97
542          UA     100
             *
1                                          HEC-1 INPUT                                          PAGE 15

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

543          KK  RETAIN
544          KM   RETAIN 100-YR 2-HR VOLUME FROM BASIN BR35C1
545          DT  RETAIN      21
546          DI       0     500    3000
547          DQ       0     500    3000
             *

548          KK  CPB352
549          KM    COMBINE RUNOFF FROM RPB27C, BR35CW, BR35C1
550          HC       3
             *

551          KK  RPB352
552          KM   ROUTE COMBINED HYDROGRAPH TO 39TH & BASELINE
553          RD    2640   .0049    .012            CIRC       9
             *

554          KK    WC6A
555          KM   SUB-BASIN WC6A -LAND USE- NATURAL DESERT HILLSLOPES; MINOR DEVELOPMENT
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556          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
557          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
558          BA    .014
559          LG    .150    .270   3.750    .293    .000
560          UC    .233    .259
561          UA       0       3       5       8      12      20      43      75      90      96
562          UA     100
             *

563          KK  RD35.2
564          KM   ROUTE RUNOFF FROM SUB-BASIN WC6A TO COMPUTATION POINT CD35.1
565          RS      13    ELEV  1117.8
566          RC   0.070   0.070   0.070    3800   0.015
567          RX       0     130     240     280     340     440     530     655
568          RY    1122    1120    1118  1117.8    1118    1119    1120    1122
             * CD35.1
             *  COMBINE ROUTED FLOW FROM SUB-BASINS WC5A AND WC6A
             *      2

569          KK  RD35.3
570          KM   ROUTE FLOW FROM COMPUTATION POINT CD35.1 TO COMPUTATION POINT CD35.2
571          RS       6    ELEV  1089.6
572          RC   0.035   0.035   0.035    2480   0.005  1090.5
573          RX       0     100     200     350     435     480     500     525
574          RY    1092    1091    1090  1089.8  1089.7  1089.6    1090  1090.5
             *

575          KK    WC7A
576          KM   SUB-BASIN WC7A -LAND USE- NATURAL DESERT HILLSLOPES; MINOR DEVELOPMENT
577          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
578          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
579          BA    .050
580          LG    .150    .270   7.000    .141    .000
581          UC    .317    .332
582          UA       0       3       5       8      12      20      43      75      90      96
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

583          UA     100
             *

584          KK  RD35.4
585          KM   ROUTE RUNOFF FROM SUB-BASIN WC7A TO COMPUTATION POINT CD35.3
586          RS       4    ELEV  1125.8
587          RC   0.035   0.035   0.035    2800   0.018  1128.5
588          RX       0     100     170     240     250     260     330     360
589          RY    1129    1128    1127    1126  1125.8    1126    1128  1128.5
             *

590          KK    WC8A
591          KM   SUB-BASIN WC8A -LAND USE- DESERT MOUNTAIN, DESERT HILLS; MINOR DEVELOMENT
592          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
593          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
594          BA    .350
595          LG    .150    .321   3.700    .651  30.000
596          UC    .433    .366
597          UA       0       3       5       8      12      20      43      75      90      96
598          UA     100
             *

599          KK  RD35.5
600          KM   ROUTE FLOW FROM SUB-BASIN WC8A TO COMPUTATION POINT CD35.3
601          RS       2    ELEV    1137
602          RC   0.030   0.030   0.030    2200   0.022    1139
603          RX       0      50     125     190     240     370     400     450
604          RY    1139    1138  1137.5    1137  1137.5    1138    1140    1141
             *

605          KK  CD35.3
606          KM   COMBINE ROUTED FLOW FROM SUB-BASINS WC7A AND WC8A
607          HC       2
             *

608          KK  RD35.6
609          KM   ROUTE FLOW FROM COMPUTATION POINT CD35.3 TO COMPUTATION POINT CD35.4
610          RS       1    ELEV    1101
611          RC   0.030   0.035   0.035     700   0.011
612          RX       0      30      60     110     140     180     240     350
613          RY    1103  1101.8  1101.6  1101.4    1101  1101.4  1101.7    1103
             *

614          KK    WC9A
615          KM   SUB-BASIN WC9A -LAND USE- NATURAL DESERT HILLSLOPES; MINOR DEVELOPMENT
616          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
617          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
618          BA    .025
619          LG    .150    .250   8.600    .066    .000
620          UC    .300    .420
621          UA       0       3       5       8      12      20      43      75      90      96
622          UA     100
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
623          KK  RD35.7
624          KM   ROUTE RUNOFF FROM SUB-BASIN WC9A TO COMPUTATION POINT CD35.5
625          RS       1    ELEV    1128
626          RC   0.035   0.035   0.035    1000   0.025    1130
627          RX       0      30      40      60      70      90     120     140
628          RY    1130    1130    1129    1128  1128.5    1129    1130  1130.5
             *

629          KK   WC10A
630          KM   SUB-BASIN WC10A -LAND USE- NATURAL DESERT HILLSLOPES; MINOR DEVELOPMENT
631          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
632          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
633          BA    .020
634          LG    .150    .260   5.800    .059    .000
635          UC    .233    .289
636          UA       0       3       5       8      12      20      43      75      90      96
637          UA     100
             *

638          KK  RD35.8
639          KM   ROUTE RUNOFF FROM SUB-BASIN WC10A TO COMPUTATION POINT CD35.5
640          RS       1    ELEV    1132
641          RC   0.035   0.035   0.035    1000   0.025
642          RX       0      30      50      70     100     140     210     260
643          RY    1134    1134    1133    1132    1132    1133  1133.5    1134
             *

644          KK  CD35.5
645          KM   COMBINE ROUTED FLOW FROM SUB-BASINS WC9A AND WC10A
646          HC       2
             *

647          KK  RD35.9
648          KM   ROUTE FLOW FROM COMPUTATION POINT CD35.5 TO COMPUTATION POINT CD35.6
649          RS       2    ELEV  1114.8
650          RC   0.030   0.030   0.030    1200   0.015
651          RX       0      60     110     170     210     240     330     370
652          RY    1116  1115.8  1115.5    1115  1114.8    1115  1115.8    1116
             *

653          KK   WC11A
654          KM   SUB-BASIN WC11A -LAND USE- DESERT MOUNTAINS, DESERT HILLS; MINOR DEVELOPMENT
655          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
656          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
657          BA    .290
658          LG    .150    .335   3.600    .703  53.000
659          UC    .367    .357
660          UA       0       3       5       8      12      20      43      75      90      96
661          UA     100
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

662          KK  RD3510
663          KM   ROUTE RUNOFF FROM SUB-BASIN WC11A TO COMPUTATION POINT CD35.7
664          RS       1    ELEV    1131
665          RC   0.050   0.050   0.050    1100   0.024
666          RX       0      50     170     180     225     260     380     460
667          RY    1132  1131.8  1131.6  1131.5    1131  1131.5  1131.8    1132
             *

668          KK   WC12A
669          KM   SUB-BASIN WC12A -LAND USE- DESERT MOUNTAIN, DESERT HILLS; MINOR DEVELOPMENT
670          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
671          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
672          BA    .260
673          LG    .150    .320   3.800    .632  28.000
674          UC    .333    .217
675          UA       0       3       5       8      12      20      43      75      90      96
676          UA     100
             *

677          KK  RD3511
678          KM   ROUTE RUNOFF FROM SUB-BASIN WC12A TO COMPUTATION POINT CD35.7
679          RS       1    ELEV    1143
680          RC   0.040   0.040   0.040    1200   0.022    1144
681          RX       0      10      25      45      70     120     235     290
682          RY  1144.5    1144  1143.5    1143  1143.5  1143.7  1143.8    1144
             *

683          KK  CD35.7
684          KM   COMBINE ROUTED FLOWS FROM SUB-BASINS WC11A AND WC12A
685          HC       2
             *

686          KK  RD3512
687          KM   ROUTE FLOW FROM COMPUTATION POINT CD35.7 TO COMPUTATION POINT CD35.6
688          RS       2    ELEV  1120.5
689          RC   0.055   0.055   0.055    1080   0.006
690          RX       0      20      50      70     130     180     400     460
691          RY  1122.5    1122    1121  1120.5    1121  1121.5    1122  1122.5
```

```
                *
692             KK  CD35.6
693             KM   COMBINE ROUTED FLOW FROM COMPUTATION POINTS CD35.5 AND CD35.7
694             HC       2

695             KK  RD3513
696             KM   ROUTE FLOW FROM COMPUTATION POINT CD35.6 TO COMPUTATION POINT CD35.4
697             RS       1    ELEV    1101
698             RC   0.040   0.035   0.030    1000   0.012
699             RX       0      40     130     210     280     340     570     615
700             RY  1102.5    1102  1101.8  1101.5    1101  1101.5    1102  1102.5
                *
1                                          HEC-1 INPUT                                                    PAGE 19

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

701             KK  CD35.4
702             KM   COMBINE ROUTED FLOW FROM COMPUTATION POINTS CD35.3 AND CD35.6
703             HC       2
                *

704             KK  RD3514
705             KM   ROUTE FLOW FROM COMPUTATION POINT CD35.4 TO COMPUTATION POINT CD35.2
706             RS       3    ELEV  1192.5
707             RC   0.070   0.070   0.070    1400   0.006    1194
708             RX       0     120     200     300     400     470     560     660
709             RY    1194  1193.0  1192.8  1192.5  1192.5  1192.8    1193    1194
                *

710             KK   WC15A
711             KM   SUB-BASIN WC15A -LAND USE- DESERT MOUNTAIN, DESERT HILLS; MINOR DEVELOMENT
712             KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
713             KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
                *      1       2
714             BA    .360
715             LG    .150    .320   3.350    .784  50.000
716             UC    .317    .245
717             UA       0       3       5       8      12      20      43      75      90      96
718             UA     100
                *

719             KK  RD3515
720             KM   ROUTE RUNOFF FROM SUB-BASIN WC15A TO COMPUTATION POINT CD35.8
721             RS       1    ELEV    1132
722             RC   0.030   0.035   0.030    1250   0.014    1136
723             RX       0      30      50      70      85     100     140     200
724             RY    1140    1138    1136    1134    1132    1134    1135    1136
                *

725             KK    PM2A
726             KM   SUB-BASIN PM2A -LAND USE- DESERT MOUNTAIN, DESERT HILLS; MINOR DEVELOMENT
727             KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
728             KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
729             BA    .070
730             LG    .150    .332   4.100    .502  15.000
731             UC    .300    .282
732             UA       0       3       5       8      12      20      43      75      90      96
733             UA     100
                *

734             KK  CD35.8
735             KM   COMBINE ROUTED FLOW FROM SUB-BASIN WC15A TO SUB-BASIN PM2A
736             HC       2
                *
1                                          HEC-1 INPUT                                                    PAGE 20

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

737             KK  RD3516
738             KM   ROUTE FLOW FROM COMPUTATION POINT CD35.8 TO COMPUTATION POINT CD35.9
739             RS       1    ELEV    1122
740             RC   0.035   0.040   0.030    1400   0.008    1126
741             RX       0      25      35      50     130     150     200     260
742             RY    1130    1126    1124    1122    1122    1124    1125    1126
                *

743             KK   WC13A
744             KM   SUB-BASIN WC13A -LAND USE- NATURAL DESERT HILLSLOPES; MINOR DEVELOPMENT
745             KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
746             KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
747             BA    .013
748             LG    .150    .250   8.600    .066    .000
749             UC    .250    .341
750             UA       0       3       5       8      12      20      43      75      90      96
751             UA     100
                *

752             KK  RD3517
753             KM   ROUTE RUNOFF FROM SUB-BASIN WC13A TO COMPUTATION POINT CD35.9
754             RS       3    ELEV    1131
755             RC   0.035   0.035   0.035    1280   0.023
756             RX       0     115     180     225     270     350     435     530
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 757          RY    1132  1131.5  1131.2    1131  1131.2  1131.5  1131.8    1132
              *

 758          KK   WC14A
 759          KM   SUB-BASIN WC14A -LAND USE- NATURAL DESERT HILLSLOPES; MINOR DEVELOPMENT
 760          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 761          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
 762          BA    .050
 763          LG    .150    .290   4.000    .520    .000
 764          UC    .367    .427
 765          UA       0       3       5       8      12      20      43      75      90      96
 766          UA     100
              *

 767          KK  RD3518
 768          KM   ROUTE RUNOFF FROM SUB-BASIN WC14A TO COMPUTATION POINT CD35.9
 769          RS       6    ELEV  1133.4
 770          RC   0.040   0.045   0.040    2000   0.013
 771          RX       0      60     150     220     250     280     310     360
 772          RY    1134  1133.9  1133.7  1133.4  1133.7  1133.8  1133.9    1134
              *

 773          KK    PM1A
 774          KM   SUB-BASIN PM1A -LAND USE- AGRICULTURE, DESERT HILLS; MINOR DEVELOPMENT
 775          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 776          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
 777          BA    .070
 778          LG    .380    .097   4.210    .697    2.00
 779          UC    .383    .279
 780          UA       0       3       5       8      12      20      43      75      90      96
1                                          HEC-1 INPUT                                          PAGE 21

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

 781          UA     100
              *

 782          KK  CD35.9
 783          KM   COMBINE ROUTED FLOWS FROM SUB-BASINS WC13A AND WC14A, COMPUTATION POINT
 784          KM   CD35.8 WITH RUNOFF FROM SUB-BASIN PM1A
 785          HC       4
              *

 786          KK  RD3519
 787          KM   ROUTE FLOW FROM COMPUTATION POINT CD35.9 TO COMPUTATION POINT CD35.2
 788          RS       1    ELEV    1101
 789          RC   0.040   0.045   0.040    3360   0.012
 790          RX       0      80     190     270     310     335     440     480
 791          RY  1102.5    1102  1101.7  1101.5    1101  1101.5    1102  1102.5
              *

 792          KK   DR35C
 793          KM   SUB-BASIN DR35C -LAND USE- AGRICULTURE; MINOR DEVELOPMENT
 794          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 795          KM   THIS BASIN USED RAINFALL REDUCTION FATOR OF .90
 796          BA    .600
 797          LG    .360    .221   4.200    .454    .000
 798          UC    .717    .443
 799          UA       0       3       5       8      12      20      43      75      90      96
 800          UA     100
              *

 801          KK  CD35.2
 802          KM   COMBINE ROUTED FLOWS FROM COMPUTATION POINTS CD35.1, CD35.4 AND CD35.9 WITH
 803          KM   RUNOFF FROM SUB-BASIN DR35C
 804          HC       4
              *
              *  DUMMY BASIN TO SIMULATE FUTURE GOLF COURSE STORAGE

 805          KK     STG
 806          KM   DUMMY BASIN SIMULATING FUTURE GOLF COURSE
 807          RS       1    STOR
 808          SV       0     100    5000
 809          SQ       0      50      50
              *

 810          KK  RSTG39
 811          KM   ROUTE DISCHARGE FROM STG TO 39TH & BASELINE
 812          RD    7920   0.004    .014            CIRC       5
              *

 813          KK    CG39
 814          KM   COMBINE HYDROGRAPHS FROM GOLF COURSE & RPB352
 815          HC       2
              *
1                                          HEC-1 INPUT                                          PAGE 22

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

 816          KK  RSTG43
 817          KM   ROUTE COMBINED HYDRGRAPH TO 43RD & BASELINE
 818          RD    2640   0.028    .012            CIRC      10
              *
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819          KK  SMA43C
820          KM   SUB-BASIN SMA43C-LAND USE - ENTIRE BASIN FULLY DEVELOPED
821          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
822          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
823          BA    .130
824          LG      .3     .25     4.2     .52      15
825          UC     .42     .27
826          UA       0       5      16      30      65      77      84      90      94      97
827          UA     100
             *

828          KK  RETAIN
829          KM   RETAIN 100-YR 2-HR VOLUME FROM BASIN SMA43C
830          DT  RETAIN       7
831          DI       0     500    3000
832          DQ       0     500    3000
             *

833          KK  RB43C2
834          KM   ROUTE RUNOFF FROM SUB-BASIN SMA43C TO CBR43C
835          RS       3    ELEV  1043.3
836          RC    0.02    0.07    0.07    2600   0.003  1044.2
837          RX       0       1      55      56      65      70      90     120
838          RY  1044.2  1043.2  1043.2  1044.1  1043.5  1043.7  1043.8  1044.2
             *
             * BR43C Modified May 1998

839          KK   BR43C
840          KM   SUB-BASIN BR43C-LAND USE - ENTIRE BASIN FULLE DEVELOPED
841          KM   24-HOUR TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
842          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF .90
843          BA     .35
844          LG     .24     .25     4.6     .43      28
845          UC   0.967   0.985
846          UA       0       5      16      30      65      77      84      90      94      97
847          UA     100
             *
             * RETAIN MODIFIED MAY 1998

848          KK  RETAIN
849          KM   RETAIN 75% of 100-YR 24-HR VOLUME FROM BASIN BR43C
850          DT  RETAIN      25
851          DI       0     500    3000
852          DQ       0     500    3000
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

853          KK  CBR43C
854          KM   COMBINE ROUTED FLOWS AT 43RD & BASELINE
855          HC       3
             *
             *
             * PROPOSED DETENTION BASIN @ BASELINE & 43RD AVE

856          KK  STR43M
857          KM   PROPOSED BASIN AT THE NW CORNER OF 43RD AVE AND BASELINE
858          KM   DATA REFLECTS INLET CONTROL OUTFALL - 54" PIPE
859          KO       3
860          RS       1    STOR
861          SQ       0      26      80     115     175     210     240     265
862          SV       0      12    25.2    39.6    55.3    72.3    90.6   110.4
863          SE    1022    1024    1026    1028    1030    1032    1034    1036
864          KP       2
865          RN
             *

866          KK  RBR43C
867          KM   ROUTE HYDROGRAPH FROM CBR43C TO 43RD & SOUTHERN
868          RD    5280   .0028    .012            CIRC      15
             *
             * BREAKDOWN OF SUBBASINS 35, 37 AND 43 TO DETERMINE THE INLET DESIGN FOR THE
             * DETENTION BASIN AT 43RD AVE AND SOUTHERN AVE.
             * FLOWS INTO THE EAST SPILLWAY FOR DETENTION BASIN
             * DDM   ***** Updated *****

869          KK     35C
870          KM   SUB-BASIN 35C
871          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
872          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
873          KM     L = 1.29  Kb = .034  Adj. Slope =   15.0
874          BA    1.89
875          LG    .270    .250   5.400    .270  24.000
876          UC     .75     .23
877          UA       0       5      16      30      65      77      84      90      94      97
878          UA     100
             *
             * DDM   ***** Preserved *****

879          KK  RET35C
880          KM   RETAIN THE FUTURE RETENTION VOLUME
881          DT  VOL35C     110
882          DI       0     500   10000
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883          DQ       0     500   10000
             *
             * DDM   ***** Preserved *****
1                                   HEC-1 INPUT                                                    PAGE 24

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

884          KK    R35C
885          KM   ROUTE FLOWS FROM SUBBASIN 35C ALONG MARICOPA DRAIN TO 43C-3
886          KM   FLOWS WOULD FLOW IN A CHANNEL NEXT TO THE MARICOPA DRAIN
887          KM   LENGTH OF CHANNEL ADJUSTED TO SIMULATE A VELOCITY OF  5 FT/SEC.
888          KM   CHANNEL ROUGHNESS CONSIDERS RIP RAP LINING
889          KM   MUSKINGUM ROUTING IS USED TO AVOID EXCESSIVE PEAK FLOW ATTENUATION.
890          RM       2     .14     .45
             * RS     2    FLOW      -1
             * RC   .35    0.35    0.35     500   .0025
             * RX     0      50     100     132     152     184     234     284
             * RY  1030    1028    1026    1018    1018    1026    1028    1030
             *
             * DDM   ***** Updated *****

891          KK   43C-3
892          KM   SUB-BASIN 43C-3
893          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
894          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
895          KM     L =  .73  Kb = .047  Adj. Slope =   34.0
896          BA    .292
897          LG    .280    .250   5.000    .330  22.000
898          UC    .425    .224
899          UA       0       5      16      30      65      77      84      90      94      97
900          UA     100
             *
             * DDM   ***** Preserved *****

901          KK   RET-3
902          KM   RETAIN THE FUTURE VOLUME FROM SUBBASIN 43C-3
903          DT   VOL-3      19
904          DI       0     500   10000
905          DQ       0     500   10000
             *
             * DDM   ***** Preserved *****

906          KK  C43C-3
907          KM   COMBINE FLOWS FROM 35C AND 43C-3 JUST SOUTH OF SOUTHERN AVE ON 37TH AVE.
908          HC       2
             *
             * DDM   ***** Preserved *****

909          KK  RC43-3
910          KM   ROUTE FLOWS FROM 37TH AVE TO DETENTION BASIN JUST SOUTH OF SOUTHERN AVE.
911          RM       1     .09     .40
             * RS     1    FLOW      -1
             * RC  .025    .020    .025    1600   .0025
             * RX     0       4       8       9      29      30      34      38
             * RY  1022  1021.5    1021    1015    1015    1021  1021.5    1022
             *
             * DDM   ***** Updated *****
1                                   HEC-1 INPUT                                                    PAGE 25

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

912          KK   43C-5
913          KM   SUB-BASIN 43C-5
914          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
915          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
916          KM     L =  .61  Kb = .053  Adj. Slope =    8.0
917          BA    .138
918          LG    .300    .250   4.900    .350  16.000
919          UC    .800    .601
920          UA       0       5      16      30      65      77      84      90      94      97
921          UA     100
             *
             * DDM   ***** Preserved *****

922          KK   RET-5
923          KM   RETAIN THE FUTURE DEVELOPMENT VOLUME
924          DT   VOL-5       6
925          DI       0     500   10000
926          DQ       0     500   10000
             *
             * DDM   ***** Preserved *****

927          KK  ESPILL
928          KM   THE INFLOW TO THE EAST SPILLWAY INTO THE DETENTION BASIN
929          HC       2
             *
             * FLOWS FOR THE SOUTH INLET INTO THE DETENTION BASIN
             * DDM   ***** Updated *****

930          KK   43C-1
931          KM   SUB-BASIN 43C-1
932          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
933          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
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934          KM     L = 1.50  Kb = .045  Adj. Slope =   25.0
935          BA    .488
936          LG    .280    .250   5.300    .290  24.000
937          UC   1.558   1.260
938          UA       0       5      16      30      65      77      84      90      94      97
939          UA     100
             *
             * DDM   ***** Preserved *****

940          KK  RETC-1
941          KM    RETAIN THE VOLUME FOR THE FUTURE DEVELOPMENT
942          DT   VOL-1      27
943          DI       0     500   10000
944          DQ       0     500   10000
             *
             * DDM   ***** Preserved *****
```



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

945          KK    RC-1
946          KM   ROUTED FLOWS FROM 43C-1 AT .5 MILES NORTH OF BASELINE TO ALTA VIST DR.
947          KM   FUTURE STORMDRAIN
948          RD    1250   .0016    .015            CIRC       3
             *
             * DDM   ***** Updated *****

949          KK   43C-2
950          KM   SUB-BASIN 43C-2
951          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
952          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
953          KM     L =  .66  Kb = .056  Adj. Slope =   36.0
954          BA    .093
955          LG    .300    .250   4.650    .390  16.000
956          UC    .446    .419
957          UA       0       5      16      30      65      77      84      90      94      97
958          UA     100
             *
             * DDM   ***** Preserved *****

959          KK  RETC-2
960          KM   RETAIN THE FUTURE VOLUME
961          DT   VOL-2       4
962          DI       0     500   10000
963          DQ       0     500   10000
             *
             * DDM   ***** Preserved *****

964          KK    C1&2
965          KM   COMBINE FLOWS FROM SUB 43C-1 AND 43C-2 AT ALTA VISTA RD AND ACCESS RD.
966          HC       2
             *
             * DDM   ***** Preserved *****

967          KK   RC1&2
968          KM   ROUTE FLOWS FROM ALTA VISTA RD TO NANCY LN ALONE ACCESS RD IN A PIPE
969          RD     450   .0016    .015            CIRC       3
             *
             * DDM   ***** Updated *****

970          KK   43C-4
971          KM   SUB-BASIN 43C-4
972          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
973          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
974          KM     L =  .32  Kb = .065  Adj. Slope =   53.0
975          BA    .020
976          LG    .300    .250   4.800    .360  16.000
977          UC    .262    .313
978          UA       0       5      16      30      65      77      84      90      94      97
979          UA     100
             *
             * SUBBASIN 43C-4 IS COMPLETELY BUILT OUT IN THE EXISTING THEREFORE THERE IS NO
             *  RETENTION
             *
             * DDM   ***** Preserved *****
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

980          KK  SSPILL
981          KM   COMBINE FLOWS FROM ROUTED HYDROGRAPH 1&2 AND SUBBASIN 4 AT NANCY LN.
982          KM   INFLOWS FOR SOUTH SPILLS INTO THE DETENTION BASIN
983          HC       2
             *
             * FLOWS FOR THE NORTH SPILLWAY INTO THE DETENTION BASIN
             *
             * DDM   ***** Updated *****

984          KK   43C-8
985          KM   SUB-BASIN 43C-8
986          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
987          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
988          KM     L = 1.13  Kb = .060  Adj. Slope =   12.0
```

				TIME	.00	13.00	12.42
2 COMBINED AT							
+	C1&2	.58	1	FLOW	0.	27.	104.
				TIME	.00	15.67	14.00
			2	FLOW	0.	27.	104.
				TIME	.00	15.67	14.00
ROUTED TO							
+	RC1&2	.58	1	FLOW	0.	26.	101.
				TIME	.00	15.75	14.00
			2	FLOW	0.	26.	101.
				TIME	.00	15.75	14.00
HYDROGRAPH AT							
+	43C-4	.02	1	FLOW	9.	14.	21.
				TIME	12.08	12.08	12.08
			2	FLOW	9.	14.	21.
				TIME	12.08	12.08	12.08
2 COMBINED AT							
+	SSPILL	.60	1	FLOW	9.	26.	101.
				TIME	12.08	15.75	14.00
			2	FLOW	9.	26.	101.
				TIME	12.08	15.75	14.00
HYDROGRAPH AT							
+	43C-8	.24	1	FLOW	77.	104.	141.
				TIME	12.42	12.50	12.50
			2	FLOW	77.	104.	141.
				TIME	12.50	12.50	12.50
DIVERSION TO							
+	VOL-8	.24	1	FLOW	77.	89.	91.
				TIME	12.42	12.25	12.17
			2	FLOW	77.	89.	91.
				TIME	12.42	12.25	12.17
HYDROGRAPH AT							
+	RET-8	.24	1	FLOW	75.	104.	141.
				TIME	12.58	12.50	12.50
			2	FLOW	75.	104.	141.
				TIME	12.58	12.50	12.50
HYDROGRAPH AT							
+	43C-7	.07	1	FLOW	24.	36.	51.
				TIME	12.25	12.25	12.25
			2	FLOW	24.	36.	51.
				TIME	12.25	12.25	12.25
2 COMBINED AT							
+	C7&8	.31	1	FLOW	93.	135.	185.
				TIME	12.58	12.42	12.42
			2	FLOW	93.	135.	185.
				TIME	12.58	12.42	12.42
ROUTED TO							
+	R7&8	.31	1	FLOW	85.	125.	178.
				TIME	12.75	12.58	12.50
			2	FLOW	85.	125.	178.
				TIME	12.75	12.58	12.50
HYDROGRAPH AT							
+	43C-6	.25	1	FLOW	68.	91.	123.
				TIME	12.67	12.75	12.75
			2	FLOW	68.	91.	123.
				TIME	12.75	12.75	12.75
DIVERSION TO							
+	VOL-6	.25	1	FLOW	68.	91.	113.
				TIME	12.67	12.67	12.50
			2	FLOW	68.	91.	113.
				TIME	12.67	12.67	12.50
HYDROGRAPH AT							
+	RET-6	.25	1	FLOW	61.	91.	123.
				TIME	13.17	12.83	12.75
			2	FLOW	61.	91.	123.
				TIME	13.17	12.83	12.75
2 COMBINED AT							
+	NSPILL	.56	1	FLOW	123.	205.	294.
				TIME	13.17	12.83	12.67
			2	FLOW	123.	205.	294.
				TIME	13.17	12.83	12.67
3 COMBINED AT							
+	TOTAL	3.48	1	FLOW	124.	246.	1601.
				TIME	13.17	13.50	12.75
			2	FLOW	124.	246.	1601.
				TIME	13.17	13.50	12.75
ROUTED TO							
+	STOR43	3.48	1	FLOW	0.	0.	36.
				TIME	.00	.00	19.00

```
 989          BA    .240
 990          LG    .260    .150   8.000    .110  17.000
 991          UC   1.038    .959
 992          UA       0       5      16      30      65      77      84      90      94      97
 993          UA     100
              *
              * DDM   ***** Preserved *****

 994          KK   RET-8
 995          KM   RETAIN THE FUTURE RETENTION VOLUME FOR SUBBASIN 8
 996          DT   VOL-8       4
 997          DI       0     500   10000
 998          DQ       0     500   10000
              *
              * DDM   ***** Updated *****

 999          KK   43C-7
1000          KM   SUB-BASIN 43C-7
1001          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1002          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
1003          KM     L =  .49  Kb = .057  Adj. Slope =   10.0
1004          BA    .068
1005          LG    .300    .250   5.600    .260  16.000
1006          UC    .625    .574
1007          UA       0       5      16      30      65      77      84      90      94      97
1008          UA     100
              *
              * NO RETENTION SINCE THE AREA IS COMPLETETLY BUILT IN THE EXISTING
              *
              * DDM   ***** Preserved *****

1009          KK    C7&8
1010          KM   COMBINE FLOWS FROM 43C-8 AND 43C-8 AT HUNTINGTON DR. AND 41ST AVE.
1011          HC       2
              *
              * DDM   ***** Preserved *****
```



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

1012          KK    R7&8
1013          KM   ROUTE FLOWS FROM 41ST AVE. ALONE HUNTINGTON DR.
1014          KM   PIPE TO BE DESIGNED
1015          RD    1550   .0019    .015            CIRC       3
              *
              * DDM   ***** Updated *****

1016          KK   43C-6
1017          KM   SUB-BASIN 43C-6
1018          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1019          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
1020          KM     L =  .87  Kb = .050  Adj. Slope =   10.0
1021          BA    .254
1022          LG    .250    .150   7.300    .130  30.000
1023          UC   1.558   1.183
1024          UA       0       5      16      30      65      77      84      90      94      97
1025          UA     100
              *
              * DDM   ***** Preserved *****

1026          KK   RET-6
1027          KM   RETAIN THE FUTURE RETENTION VOLUME FOR SUBBASIN 8
1028          DT   VOL-6       7
1029          DI       0     500   10000
1030          DQ       0     500   10000
              *
              * DDM   ***** Preserved *****

1031          KK  NSPILL
1032          KM   COMBINE FLOWS FROM ROUTED 7&8 AND SUBBASIN 43C-6 AT 42ND AVE AND SOUTHERN AVE
1033          KM   SPILLWAY FLOWS INTO THE DETENTION BASIN.
1034          HC       2
              *
              * DDM   ***** Preserved *****

1035          KK   TOTAL
1036          KM
1037          KO       3
1038          HC       3
              *
              * PROPOSED DETENTION BASIN

1039          KK  STOR43
1040          KM   PROPOSED BASIN AT THE CORNER OF 43RD AVE AND SOUTHERN
1041          KM   DATA REFLECTS TW @ 1018 3-36" OPENINGS
1042          KO       3
1043          RS       1    STOR
1044          SV       0     0.1    12.1    45.6    65.6    88.4   111.1   133.9   146.5
1045          SQ       0       0       0       0       0       0       0    56.3     340
1046          SE    1002    1003    1006    1012    1014    1016    1018    1020    1021
              *
```



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

```
1047          KK   CST43
1048          KM   COMBINE OUTFLOW OF DETENTION BASIN (STOR43) & PIPE FLOW (RBR43C
1049          HC       2
              *

1050          KK  RAV43B
1051          KM   ROUTE COMBINED DISCHARGE TO SALT RIVER
1052          RD    5400  0.0028    .012            CIRC      15
              *
1053          ZZ
```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

   13        SM1C
                .
                .
   31           .       SM1AC
                .           .
                .           .
   40        CSM1............
                V
                V
   44        RSM1
                .
                .
   50           .        SM2C
                .           .
                .           .
   59        CSM2............
                V
                V
   63       RDENT
                V
                V
   70        RSM2
                .
                .
   76           .       SM3CE
                .           .
                .           .
   83        C3CE............
                V
                V
   86      RSM3CE
                .
                .
   89           .       SM4CE
                .           .
                .           .
   96           .           .        SM5C
                .           .           .
                .           .           .
  105       CSM5C........................
                .
                .
  110           .-------> DCSM5C
  108      DIVM5C
                V
                V
  113      RCSM5C
                .
                .
  116           .      SMA15E
                .           .
                .           .
  123        C15E............
                .
                .
  128           .------->   DC15E
  126      DIV15E
                V
                V
  131       RC15E
                .
                .
  134           .        CBDE
                .           .
                .           .
  141       CCBDE............
                .
                .
  146           .-------> DCCBDE
  144      DIVbde
                V
                V
  149      RCCBDE
                .
                .
  154           .           .<-------  DCCBDE
```

```
152          .      RETCBD
             .          V
             .          V
155          .       RCDIV
             .          .
             .          .
158          .          .       BR19C
             .          .           .
             .          .           .
169          .          .           .-------> RETAIN
167          .          .      RETAIN
             .          .           .
             .          .           .
172     CBR19C.......................
             V
             V
175     RBR19C
             .
             .
181          .------->  D1927
179     DIV19C
             .
             .
186          .          .<-------  DCSM5C
184          .      RETM5C
             .          .
             .          .
189          .          .           .<-------  DC15E
187          .          .      RET15E
             .          .           .
             .          .           .
190          .      COMDIV............
             .          V
             .          V
193          .       RCDIV
             .          .
             .          .
196          .          .      SMA15W
             .          .           .
             .          .           .
205          .          .           .-------> RETAIN
203          .          .      RETAIN
             .          .           .
             .          .           .
208          .      CSMA15............
             .          V
             .          V
211          .      RSM19C
             .          .
             .          .
217          .          .      SMA19C
             .          .           .
             .          .           .
228          .          .           .-------> RETAIN
226          .          .      RETAIN
             .          .           .
             .          .           .
231          .      CPS19C............
             .          V
             .          V
234          .      RRB27C
             .          .
             .          .
240          .          .       SM3CW
             .          .          V
             .          .          V
246          .          .       RSM3
             .          .          .
             .          .          .
252          .          .          .       SM4CW
             .          .          .          V
             .          .          .          V
259          .          .          .       RSM4
             .          .          .          .
             .          .          .          .
265          .          .          .          .       DRW2C
             .          .          .          .          .
             .          .          .          .          .
274          .          .          .          .          .      DRWC1C
             .          .          .          .          .          .
             .          .          .          .          .          .
285          .          .          .          .          .          .-------> RETAIN
283          .          .          .          .          .      RETAIN
             .          .          .          .          .          .
             .          .          .          .          .          .
288          .          .       CSM4.................................
             .          .          V
             .          .          V
292          .          .       RSM5
             .          .          .
             .          .          .
298          .          .          .       DR1C
             .          .          .          .
             .          .          .          .
307          .          .          .          .       WC1A
```

```
                .         .         .         .         V
                .         .         .         .         V
316             .         .         .         .       RSM6
                .         .         .         .         .
                .         .         .         .         .
322             .         .         .         .         .       DR2C
                .         .         .         .         .         .
                .         .         .         .         .         .
331             .         .     CPDR2C.................................
                .         .         V
                .         .         V
335             .         .     RRB27C
                .         .         .
                .         .         .
341             .         .         .      BR27C
                .         .         .         .
                .         .         .         .
352             .         .         .         .-------> RETAIN
350             .         .         .     RETAIN
                .         .         .         .
                .         .         .         .
355         C27C...................................
                .
                .
358             .       WC2A
                .         V
                .         V
367             .     RD27.1
                .         .
                .         .
373             .         .     WC2.1A
                .         .         V
                .         .         V
382             .         .     RD27.2
                .         .         .
                .         .         .
388             .     CD27.1............
                .         V
                .         V
391             .     RD27.3
                .         .
                .         .
397             .         .       WC3A
                .         .         V
                .         .         V
406             .         .     RD27.4
                .         .         .
                .         .         .
412             .     CD27.2............
                .         V
                .         V
415             .     RD27.5
                .         .
                .         .
421             .         .       WC4A
                .         .         V
                .         .         V
430             .         .     RD27.6
                .         .         .
                .         .         .
436             .     CD27.3............
                .         V
                .         V
439             .     RD27.7
                .         .
                .         .
445             .         .      DR27C
                .         .         .
                .         .         .
454             .         .         .       WC5A
                .         .         .         .
                .         .         .         .
463             .     CD27.4........................
                .         V
                .         V
467             .     ST27.4
                .         V
                .         V
473             .     RST274
                .         .
                .         .
476             .         .     BR35CE
                .         .         .
                .         .         .
486             .         .         .-------> RETAIN
484             .         .     RETAIN
                .         .         .
                .         .         .
489             .      C35CE............
                .         V
                .         V
492             .      R35CE
                .         .
                .         .
497             .         .-------> D35CE
```

```
495          .       D35CE
             .           .
             .           .
500     C27BAS............
             V
             V
503      ST27C
             .
             .
511          .           .<-------   D1927
509          .       D1927
             .           .
             .           .
514          .           .           .<-------   D35CE
512          .           .       D35CE
             .           .           .
             .           .           .
515     CPB27C........................
             V
             V
518     RPB27C
             .
             .
521          .      BR35CW
             .           .
             .           .
531          .           .------->  RETAIN
529          .      RETAIN
             .           .
             .           .
534          .           .      BR35C1
             .           .           .
             .           .           .
545          .           .           .------->  RETAIN
543          .           .      RETAIN
             .           .           .
             .           .           .
548     CPB352........................
             V
             V
551     RPB352
             .
             .
554          .        WC6A
             .           V
             .           V
563          .      RD35.2
             .           V
             .           V
569          .      RD35.3
             .           .
             .           .
575          .           .       WC7A
             .           .          V
             .           .          V
584          .           .      RD35.4
             .           .           .
             .           .           .
590          .           .           .       WC8A
             .           .           .          V
             .           .           .          V
599          .           .           .     RD35.5
             .           .           .           .
             .           .           .           .
605          .           .      CD35.3............
             .           .           V
             .           .           V
608          .           .      RD35.6
             .           .           .
             .           .           .
614          .           .           .       WC9A
             .           .           .          V
             .           .           .          V
623          .           .           .     RD35.7
             .           .           .           .
             .           .           .           .
629          .           .           .           .       WC10A
             .           .           .           .           V
             .           .           .           .           V
638          .           .           .           .      RD35.8
             .           .           .           .           .
             .           .           .           .           .
644          .           .           .     CD35.5............
             .           .           .           V
             .           .           .           V
647          .           .           .     RD35.9
             .           .           .           .
             .           .           .           .
653          .           .           .           .       WC11A
             .           .           .           .           V
             .           .           .           .           V
662          .           .           .           .      RD3510
             .           .           .           .           .
             .           .           .           .           .
668          .           .           .           .           .      WC12A
```

```
                                                                                V
                                                                                V
677                                                                        RD3511
                                                                                .
                                                                                .
683                                                            CD35.7............
                                                                            V
                                                                            V
686                                                            RD3512
                                                                            .
                                                                            .
692                                                        CD35.6............
                                                                        V
                                                                        V
695                                                        RD3513
                                                                        .
                                                                        .
701                                            CD35.4............
                                                           V
                                                           V
704                                            RD3514
                                                           .
                                                           .
710                                                         WC15A
                                                                V
                                                                V
719                                                        RD3515
                                                                .
                                                                .
725                                                                    PM2A
                                                                        .
                                                                        .
734                                                        CD35.8............
                                                                V
                                                                V
737                                                        RD3516
                                                                .
                                                                .
743                                                                 WC13A
                                                                        V
                                                                        V
752                                                            RD3517
                                                                        .
                                                                        .
758                                                                        WC14A
                                                                                V
                                                                                V
767                                                                    RD3518
                                                                                .
                                                                                .
773                                                                                        PM1A
                                                                                          .
                                                                                          .
782                                                        CD35.9.................................
                                                                V
                                                                V
786                                                        RD3519
                                                                .
                                                                .
792                                                                 DR35C
                                                                        .
                                                                        .
801                                    CD35.2...................................
                                               V
                                               V
805                                          STG
                                               V
                                               V
810                                    RSTG39
                                               .
                                               .
813                        CG39............
                                V
                                V
816                    RSTG43
                                .
                                .
819                                    SMA43C
                                               .
                                               .
830                                            .-------> RETAIN
828                                    RETAIN
                                               V
                                               V
833                                    RB43C2
                                               .
                                               .
839                                            .      BR43C
                                                          .
                                                          .
850                                                       .-------> RETAIN
848                                            .      RETAIN
                                                          .
                                                          .
853                    CBR43C......................
```

```
863 SE          ELEVATION     1022.00   1024.00   1026.00   1028.00   1030.00   1032.00   1034.00   1036.00

861 SQ          DISCHARGE          0.        26.        80.       115.       175.       210.       240.       265.

                                                                   ***

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

                        HYDROGRAPH AT STATION   STR43M
                          FOR PLAN 1, RATIO =  .63

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                            (CFS)
+     169.     23.00                168.        150.         99.         99.
                         (INCHES)   .117        .419        .480        .480
                          (AC-FT)    83.        298.        340.        340.

 PEAK STORAGE  TIME                         MAXIMUM AVERAGE STORAGE
                                    6-HR       24-HR       72-HR     41.58-HR
+  (AC-FT)      (HR)
      54.     22.92                 53.         49.         32.         32.

 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                    6-HR       24-HR       72-HR     41.58-HR
+   (FEET)      (HR)
   1029.81     23.00              1029.77     1029.17     1026.81     1026.81

                        CUMULATIVE AREA =   13.31 SQ MI

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

                        HYDROGRAPH AT STATION   STR43M
                          FOR PLAN 1, RATIO =  .79

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                            (CFS)
+     212.     24.33                210.        196.        131.        131.
                         (INCHES)   .147        .548        .635        .635
                          (AC-FT)   104.        389.        451.        451.

 PEAK STORAGE  TIME                         MAXIMUM AVERAGE STORAGE
                                    6-HR       24-HR       72-HR     41.58-HR
+  (AC-FT)      (HR)
      73.     24.33                 73.         66.         44.         44.

 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                    6-HR       24-HR       72-HR     41.58-HR
+   (FEET)      (HR)
   1032.10     24.33              1032.04     1031.21     1028.22     1028.22

                        CUMULATIVE AREA =   13.31 SQ MI

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

                        HYDROGRAPH AT STATION   STR43M
                          FOR PLAN 1, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                            (CFS)
+     264.     25.42                264.        253.        173.        173.
                         (INCHES)   .184        .707        .836        .836
                          (AC-FT)   131.        502.        593.        593.

 PEAK STORAGE  TIME                         MAXIMUM AVERAGE STORAGE
                                    6-HR       24-HR       72-HR     41.58-HR
+  (AC-FT)      (HR)
     110.     25.33                 109.        101.         68.         68.

 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                    6-HR       24-HR       72-HR     41.58-HR
+   (FEET)      (HR)
   1035.95     25.33              1035.88     1035.06     1030.86     1030.86

                        CUMULATIVE AREA =   13.31 SQ MI

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

 864 KP         PLAN  2 FOR STATION   STR43M

                HYDROGRAPH ROUTING DATA

 865 RN          NO ROUTING

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

                        HYDROGRAPH AT STATION   STR43M
                          FOR PLAN 2, RATIO =  .63

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                          (CFS)
+     297.     12.58                197.        163.        110.         110.
                        (INCHES)    .137        .456        .534         .534
                         (AC-FT)     98.        324.        379.         379.

                       CUMULATIVE AREA =   13.31 SQ MI


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

                        HYDROGRAPH AT STATION   STR43M
                          FOR PLAN 2, RATIO =  .79

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                          (CFS)
+     419.     12.33                260.        213.        145.         145.
                        (INCHES)    .182        .595        .704         .704
                         (AC-FT)    129.        422.        500.         500.

                       CUMULATIVE AREA =   13.31 SQ MI


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

                        HYDROGRAPH AT STATION   STR43M
                          FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                          (CFS)
+     559.     12.25                360.        284.        196.         196.
                        (INCHES)    .251        .793        .949         .949
                         (AC-FT)    178.        563.        674.         674.

                       CUMULATIVE AREA =   13.31 SQ MI

***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH    R35C.
      REDUCE NSTPS OR DECREASE YOUR COMPUTATION INTERVAL (FIRST FIELD OF THE IT RECORD).
***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH    R35C.
      REDUCE NSTPS OR DECREASE YOUR COMPUTATION INTERVAL (FIRST FIELD OF THE IT RECORD).
***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH    R35C.
      REDUCE NSTPS OR DECREASE YOUR COMPUTATION INTERVAL (FIRST FIELD OF THE IT RECORD).
***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH    R35C.
      REDUCE NSTPS OR DECREASE YOUR COMPUTATION INTERVAL (FIRST FIELD OF THE IT RECORD).
***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH    R35C.
      REDUCE NSTPS OR DECREASE YOUR COMPUTATION INTERVAL (FIRST FIELD OF THE IT RECORD).
***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH    R35C.
      REDUCE NSTPS OR DECREASE YOUR COMPUTATION INTERVAL (FIRST FIELD OF THE IT RECORD).


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


            **************
            *            *
1035 KK     *     TOTAL  *
            *            *
            **************

1037 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE

1038 HC          HYDROGRAPH COMBINATION
                      ICOMP          3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

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

                        HYDROGRAPH AT STATION    TOTAL
                          FOR PLAN 1, RATIO =  .63

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                          (CFS)
+     124.     13.17                 39.         11.          6.           6.
                        (INCHES)    .104        .117        .117         .117
                         (AC-FT)     19.         22.         22.          22.

                       CUMULATIVE AREA =    3.48 SQ MI
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     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION    TOTAL
                          FOR PLAN 1, RATIO =  .79

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                            (CFS)
+     246.     13.50                95.         30.         18.          18.
                         (INCHES)  .255        .325        .325         .325
                          (AC-FT)   47.         60.         60.          60.

                        CUMULATIVE AREA =    3.48 SQ MI


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

                        HYDROGRAPH AT STATION    TOTAL
                          FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                            (CFS)
+    1601.     12.75               261.         74.         43.          43.
                         (INCHES)  .697        .793        .793         .793
                          (AC-FT)  129.        147.        147.         147.

                        CUMULATIVE AREA =    3.48 SQ MI


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

                        HYDROGRAPH AT STATION    TOTAL
                          FOR PLAN 2, RATIO =  .63

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                            (CFS)
+     124.     13.17                39.         11.          6.           6.
                         (INCHES)  .104        .117        .117         .117
                          (AC-FT)   19.         22.         22.          22.

                        CUMULATIVE AREA =    3.48 SQ MI


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

                        HYDROGRAPH AT STATION    TOTAL
                          FOR PLAN 2, RATIO =  .79

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                            (CFS)
+     246.     13.50                95.         30.         18.          18.
                         (INCHES)  .255        .325        .325         .325
                          (AC-FT)   47.         60.         60.          60.

                        CUMULATIVE AREA =    3.48 SQ MI


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

                        HYDROGRAPH AT STATION    TOTAL
                          FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                            (CFS)
+    1601.     12.75               261.         74.         43.          43.
                         (INCHES)  .697        .793        .793         .793
                          (AC-FT)  129.        147.        147.         147.

                        CUMULATIVE AREA =    3.48 SQ MI


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


            *************
            *           *
1039 KK     *    STOR43 *
            *           *
            *************

1042 KO          OUTPUT CONTROL VARIABLES
                       IPRNT          3  PRINT CONTROL
```

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                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

              HYDROGRAPH ROUTING DATA

1043 RS         STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       STOR  TYPE OF INITIAL CONDITION
                    RSVRIC        .00  INITIAL CONDITION
                         X        .00 WORKING R AND D COEFFICIENT

1044 SV           STORAGE         .0        .1      12.1      45.6      65.6      88.4     111.1     133.9     146.5

1045 SQ         DISCHARGE         0.        0.        0.        0.        0.        0.        0.       56.      340.

1046 SE         ELEVATION     1002.00   1003.00   1006.00   1012.00   1014.00   1016.00   1018.00   1020.00   1021.00
                                                                          ***

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

                        HYDROGRAPH AT STATION   STOR43
                          FOR PLAN 1, RATIO =  .63

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                  0.          0.          0.          0.
                        (INCHES)     .000        .000        .000        .000
                         (AC-FT)       0.          0.          0.          0.

 PEAK STORAGE  TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     41.58-HR
+  (AC-FT)      (HR)
      22.     29.50                  22.         21.         14.         14.

 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     41.58-HR
+   (FEET)      (HR)
   1007.72     30.17              1007.73     1007.67     1006.03     1006.03

                       CUMULATIVE AREA =    3.48 SQ MI

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

                        HYDROGRAPH AT STATION   STOR43
                          FOR PLAN 1, RATIO =  .79

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                          (CFS)
+       0.       .00                  0.          0.          0.          0.
                        (INCHES)     .000        .000        .000        .000
                         (AC-FT)       0.          0.          0.          0.

 PEAK STORAGE  TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     41.58-HR
+  (AC-FT)      (HR)
      60.     30.50                  60.         59.         38.         38.

 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     41.58-HR
+   (FEET)      (HR)
   1013.48     30.92              1013.48     1013.30     1009.67     1009.67

                       CUMULATIVE AREA =    3.48 SQ MI

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

                        HYDROGRAPH AT STATION   STOR43
                          FOR PLAN 1, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                          (CFS)
+      36.     19.00                  34.         18.         10.         10.
                        (INCHES)     .091        .192        .193        .193
                         (AC-FT)      17.         36.         36.         36.

 PEAK STORAGE  TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     41.58-HR
+  (AC-FT)      (HR)
     126.     19.00                 125.        118.         80.         80.

 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     41.58-HR
+   (FEET)      (HR)
   1019.28     19.00              1019.21     1018.64     1013.63     1013.63

                       CUMULATIVE AREA =    3.48 SQ MI
```

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

                PLAN  2 INPUT DATA FOR STATION   STOR43 ARE SAME AS FOR PLAN  1

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

                          HYDROGRAPH AT STATION   STOR43
                            FOR PLAN 2, RATIO =  .63

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                              (CFS)
+       0.       .00                 0.          0.          0.           0.
                          (INCHES)      .000        .000        .000         .000
                           (AC-FT)       0.          0.          0.           0.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     41.58-HR
+  (AC-FT)      (HR)
      22.      29.50                 22.         21.         14.          14.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     41.58-HR
+   (FEET)      (HR)
   1007.72     30.17              1007.73     1007.67     1006.03      1006.03

                         CUMULATIVE AREA =    3.48 SQ MI

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

                          HYDROGRAPH AT STATION   STOR43
                            FOR PLAN 2, RATIO =  .79

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                              (CFS)
+       0.       .00                 0.          0.          0.           0.
                          (INCHES)      .000        .000        .000         .000
                           (AC-FT)       0.          0.          0.           0.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     41.58-HR
+  (AC-FT)      (HR)
      60.      30.50                 60.         59.         38.          38.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     41.58-HR
+   (FEET)      (HR)
   1013.48     30.92              1013.48     1013.30     1009.67      1009.67

                         CUMULATIVE AREA =    3.48 SQ MI

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

                          HYDROGRAPH AT STATION   STOR43
                            FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     41.58-HR
+   (CFS)       (HR)
                              (CFS)
+      36.      19.00                34.         18.         10.          10.
                          (INCHES)      .091        .192        .193         .193
                           (AC-FT)      17.         36.         36.          36.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     41.58-HR
+  (AC-FT)      (HR)
     126.      19.00                125.        118.         80.          80.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     41.58-HR
+   (FEET)      (HR)
   1019.28     19.00              1019.21     1018.64     1013.63      1013.63

                         CUMULATIVE AREA =    3.48 SQ MI

1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                          TIME TO PEAK IN HOURS

                                                          RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN            RATIO 1  RATIO 2  RATIO 3
                                                        .63      .79     1.00
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 HYDROGRAPH AT
+                 SM1C      1.84    1   FLOW        1046.    1519.    2160.
                                       TIME        12.25    12.25    12.25
                                    2  FLOW        1046.    1519.    2160.
                                       TIME        12.25    12.25    12.25

 HYDROGRAPH AT
+                 SM1AC      .28    1   FLOW          82.     156.     253.
                                       TIME        12.17    12.17    12.17
                                    2  FLOW          82.     156.     253.
                                       TIME        12.17    12.17    12.17

  2 COMBINED AT
+                 CSM1      2.12    1   FLOW        1127.    1669.    2401.
                                       TIME        12.25    12.25    12.17
                                    2  FLOW        1127.    1669.    2401.
                                       TIME        12.25    12.25    12.17

 ROUTED TO
+                 RSM1      2.12    1   FLOW        1057.    1584.    2321.
                                       TIME        12.33    12.33    12.33
                                    2  FLOW        1057.    1584.    2321.
                                       TIME        12.33    12.33    12.33

                                    ** PEAK STAGES IN FEET **
                                    1  STAGE     1377.37  1377.72  1378.07
                                       TIME        12.33    12.33    12.33
                                    2  STAGE     1377.37  1377.72  1378.07
                                       TIME        12.33    12.33    12.33

 HYDROGRAPH AT
+                 SM2C      2.19    1   FLOW        2040.    2635.    3451.
                                       TIME        12.17    12.17    12.17
                                    2  FLOW        2040.    2635.    3451.
                                       TIME        12.17    12.17    12.17

  2 COMBINED AT
+                 CSM2      4.31    1   FLOW        2865.    3954.    5481.
                                       TIME        12.17    12.17    12.17
                                    2  FLOW        2865.    3954.    5481.
                                       TIME        12.17    12.17    12.17

 ROUTED TO
+                 RDENT     4.31    1   FLOW         114.     128.     146.
                                       TIME        16.00    16.42    17.33
                                    2  FLOW         114.     128.     146.
                                       TIME        16.00    16.42    17.33

                                    ** PEAK STAGES IN FEET **
                                    1  STAGE     1309.99  1313.39  1317.80
                                       TIME        16.00    16.42    17.42
                                    2  STAGE     1309.99  1313.39  1317.80
                                       TIME        16.00    16.42    17.42

 ROUTED TO
+                 RSM2      4.31    1   FLOW         114.     128.     146.
                                       TIME        16.33    16.75    17.67
                                    2  FLOW         114.     128.     146.
                                       TIME        16.33    16.75    17.67

                                    ** PEAK STAGES IN FEET **
                                    1  STAGE     1227.12  1227.16  1227.21
                                       TIME        16.25    16.42    17.25
                                    2  STAGE     1227.12  1227.16  1227.21
                                       TIME        16.25    16.42    17.25

 HYDROGRAPH AT
+                 SM3CE      .17    1   FLOW          41.      95.     168.
                                       TIME        12.08    12.08    12.08
                                    2  FLOW          41.      95.     168.
                                       TIME        12.08    12.08    12.08

  2 COMBINED AT
+                 C3CE      4.48    1   FLOW         114.     157.     242.
                                       TIME        16.33    12.08    12.08
                                    2  FLOW         114.     157.     242.
                                       TIME        16.33    12.08    12.08

 ROUTED TO
+                 RSM3CE    4.48    1   FLOW         114.     152.     237.
                                       TIME        16.33    12.08    12.08
                                    2  FLOW         114.     152.     237.
                                       TIME        16.33    12.08    12.08

 HYDROGRAPH AT
+                 SM4CE      .05    1   FLOW          17.      34.      57.
                                       TIME        12.00    12.00    12.00
                                    2  FLOW          17.      34.      57.
                                       TIME        12.00    12.00    12.00

 HYDROGRAPH AT
+                 SM5C       .20    1   FLOW          53.     100.     164.
                                       TIME        12.17    12.08    12.08
                                    2  FLOW          53.     100.     164.
                                       TIME        12.08    12.08    12.08
```

3 COMBINED AT							
+	CSM5C	4.73	1	FLOW	150.	276.	440.
				TIME	12.08	12.08	12.08
			2	FLOW	150.	276.	440.
				TIME	12.08	12.08	12.08
DIVERSION TO							
+	DCSM5C	4.73	1	FLOW	0.	26.	190.
				TIME	.00	12.08	12.08
			2	FLOW	0.	26.	190.
				TIME	.00	12.08	12.08
HYDROGRAPH AT							
+	DIVM5C	4.73	1	FLOW	150.	250.	250.
				TIME	12.08	12.00	11.83
			2	FLOW	150.	250.	250.
				TIME	12.08	12.00	11.83
ROUTED TO							
+	RCSM5C	4.73	1	FLOW	149.	250.	250.
				TIME	12.17	12.08	12.00
			2	FLOW	149.	250.	250.
				TIME	12.17	12.08	12.00
HYDROGRAPH AT							
+	SMA15E	.07	1	FLOW	42.	65.	96.
				TIME	12.00	12.00	12.00
			2	FLOW	42.	65.	96.
				TIME	12.00	12.00	12.00
2 COMBINED AT							
+	C15E	4.80	1	FLOW	171.	308.	346.
				TIME	12.08	12.00	12.00
			2	FLOW	171.	308.	346.
				TIME	12.08	12.00	12.00
DIVERSION TO							
+	DC15E	4.80	1	FLOW	0.	38.	76.
				TIME	.00	12.00	12.00
			2	FLOW	0.	38.	76.
				TIME	.00	12.00	12.00
HYDROGRAPH AT							
+	DIV15E	4.80	1	FLOW	171.	270.	270.
				TIME	12.08	11.92	11.75
			2	FLOW	171.	270.	270.
				TIME	12.08	11.92	11.75
ROUTED TO							
+	RC15E	4.80	1	FLOW	173.	274.	274.
				TIME	12.17	12.08	11.92
			2	FLOW	173.	274.	274.
				TIME	12.17	12.08	11.92
HYDROGRAPH AT							
+	CBDE	.17	1	FLOW	46.	73.	108.
				TIME	12.42	12.42	12.42
			2	FLOW	46.	73.	108.
				TIME	12.42	12.42	12.42
2 COMBINED AT							
+	CCBDE	4.97	1	FLOW	208.	325.	361.
				TIME	12.17	12.25	12.25
			2	FLOW	208.	325.	361.
				TIME	12.17	12.25	12.25
DIVERSION TO							
+	DCCBDE	4.97	1	FLOW	0.	25.	61.
				TIME	.00	12.25	12.25
			2	FLOW	0.	25.	61.
				TIME	.00	12.25	12.25
HYDROGRAPH AT							
+	DIVbde	4.97	1	FLOW	208.	300.	300.
				TIME	12.17	12.00	11.92
			2	FLOW	208.	300.	300.
				TIME	12.17	12.00	11.92
ROUTED TO							
+	RCCBDE	4.97	1	FLOW	205.	302.	302.
				TIME	12.33	12.25	12.08
			2	FLOW	205.	302.	302.
				TIME	12.33	12.25	12.08
HYDROGRAPH AT							
+	RETCBD	.00	1	FLOW	0.	25.	61.
				TIME	.00	12.25	12.25
			2	FLOW	0.	25.	61.
				TIME	.00	12.25	12.25
ROUTED TO							
+	RCDIV	.00	1	FLOW	0.	21.	60.
				TIME	.00	12.75	12.67
			2	FLOW	0.	21.	60.

				TIME	.00	12.75	12.67
HYDROGRAPH AT							
+	BR19C	.39	1	FLOW	146.	243.	370.
				TIME	12.17	12.17	12.17
			2	FLOW	146.	243.	370.
				TIME	12.17	12.17	12.17
DIVERSION TO							
+	RETAIN	.39	1	FLOW	146.	243.	370.
				TIME	12.17	12.17	12.17
			2	FLOW	146.	243.	370.
				TIME	12.17	12.17	12.17
HYDROGRAPH AT							
+	RETAIN	.39	1	FLOW	0.	0.	101.
				TIME	.00	.00	12.67
			2	FLOW	0.	0.	101.
				TIME	.00	.00	12.67
3 COMBINED AT							
+	CBR19C	5.36	1	FLOW	205.	302.	460.
				TIME	12.33	12.25	12.67
			2	FLOW	205.	302.	460.
				TIME	12.33	12.25	12.67
ROUTED TO							
+	RBR19C	5.36	1	FLOW	204.	304.	439.
				TIME	12.42	12.33	12.83
			2	FLOW	204.	304.	439.
				TIME	12.42	12.33	12.83
DIVERSION TO							
+	D1927	5.36	1	FLOW	156.	156.	156.
				TIME	12.25	12.08	12.00
			2	FLOW	156.	156.	156.
				TIME	12.25	12.08	12.00
HYDROGRAPH AT							
+	DIV19C	5.36	1	FLOW	48.	148.	283.
				TIME	12.42	12.33	12.83
			2	FLOW	48.	148.	283.
				TIME	12.42	12.33	12.83
HYDROGRAPH AT							
+	RETM5C	.00	1	FLOW	0.	26.	190.
				TIME	.00	12.08	12.08
			2	FLOW	0.	26.	190.
				TIME	.00	12.08	12.08
HYDROGRAPH AT							
+	RET15E	.00	1	FLOW	0.	38.	76.
				TIME	.00	12.00	12.00
			2	FLOW	0.	38.	76.
				TIME	.00	12.00	12.00
2 COMBINED AT							
+	COMDIV	.00	1	FLOW	0.	50.	253.
				TIME	.00	12.00	12.00
			2	FLOW	0.	50.	253.
				TIME	.00	12.00	12.00
ROUTED TO							
+	RCDIV	.00	1	FLOW	0.	59.	249.
				TIME	.00	12.25	12.17
			2	FLOW	0.	59.	249.
				TIME	.00	12.25	12.17
HYDROGRAPH AT							
+	SMA15W	.29	1	FLOW	161.	250.	372.
				TIME	12.08	12.08	12.00
			2	FLOW	161.	250.	372.
				TIME	12.00	12.00	12.00
DIVERSION TO							
+	RETAIN	.29	1	FLOW	161.	226.	289.
				TIME	12.08	11.92	11.83
			2	FLOW	161.	226.	289.
				TIME	12.08	11.92	11.83
HYDROGRAPH AT							
+	RETAIN	.29	1	FLOW	87.	250.	372.
				TIME	12.25	12.08	12.00
			2	FLOW	87.	250.	372.
				TIME	12.25	12.08	12.00
2 COMBINED AT							
+	CSMA15	.29	1	FLOW	87.	250.	577.
				TIME	12.25	12.08	12.08
			2	FLOW	87.	250.	577.
				TIME	12.25	12.08	12.08
ROUTED TO							
+	RSM19C	.29	1	FLOW	17.	125.	426.
				TIME	13.00	12.58	12.42

```
                                    2   FLOW          17.     125.     426.
                                        TIME        13.00    12.58    12.42

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1139.35  1139.65  1140.04
                                        TIME        13.00    12.58    12.42
                                    2   STAGE     1139.35  1139.65  1140.04
                                        TIME        13.00    12.58    12.42

 HYDROGRAPH AT
+                  SMA19C      .16   1   FLOW          21.      37.      58.
                                        TIME        12.42    12.42    12.42
                                    2   FLOW          21.      37.      58.
                                        TIME        12.42    12.42    12.42

 DIVERSION TO
+                  RETAIN      .16   1   FLOW          21.      37.      58.
                                        TIME        12.42    12.42    12.42
                                    2   FLOW          21.      37.      58.
                                        TIME        12.42    12.42    12.42

 HYDROGRAPH AT
+                  RETAIN      .16   1   FLOW           0.       0.      19.
                                        TIME          .00      .00    14.00
                                    2   FLOW           0.       0.      19.
                                        TIME          .00      .00    14.00

  2 COMBINED AT
+                  CPS19C      .45   1   FLOW          17.     125.     426.
                                        TIME        13.00    12.58    12.42
                                    2   FLOW          17.     125.     426.
                                        TIME        13.00    12.58    12.42

 ROUTED TO
+                  RRB27C      .45   1   FLOW           5.      29.     151.
                                        TIME        18.42    15.67    14.25
                                    2   FLOW           5.      29.     151.
                                        TIME        18.42    15.67    14.25

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1107.92  1108.04  1108.23
                                        TIME        18.42    15.67    14.25
                                    2   STAGE     1107.92  1108.04  1108.23
                                        TIME        18.42    15.67    14.25

 HYDROGRAPH AT
+                   SM3CW      .31   1   FLOW          55.     134.     240.
                                        TIME        12.25    12.25    12.25
                                    2   FLOW          55.     134.     240.
                                        TIME        12.25    12.25    12.25

 ROUTED TO
+                   RSM3       .31   1   FLOW          35.     107.     209.
                                        TIME        12.75    12.50    12.50
                                    2   FLOW          35.     107.     209.
                                        TIME        12.75    12.50    12.50

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1176.30  1176.55  1176.76
                                        TIME        12.75    12.50    12.50
                                    2   STAGE     1176.30  1176.55  1176.76
                                        TIME        12.75    12.50    12.50

 HYDROGRAPH AT
+                   SM4CW      .19   1   FLOW          47.      96.     162.
                                        TIME        12.08    12.08    12.08
                                    2   FLOW          47.      96.     162.
                                        TIME        12.08    12.08    12.08

 ROUTED TO
+                   RSM4       .19   1   FLOW          44.      91.     158.
                                        TIME        12.25    12.17    12.17
                                    2   FLOW          44.      91.     158.
                                        TIME        12.25    12.17    12.17

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1168.63  1168.82  1169.01
                                        TIME        12.25    12.17    12.17
                                    2   STAGE     1168.63  1168.82  1169.01
                                        TIME        12.25    12.17    12.17

 HYDROGRAPH AT
+                   DRW2C      .53   1   FLOW         140.     246.     401.
                                        TIME        12.33    12.33    12.33
                                    2   FLOW         140.     246.     401.
                                        TIME        12.33    12.33    12.33

 HYDROGRAPH AT
+                  DRWC1C      .12   1   FLOW          20.      39.      63.
                                        TIME        12.25    12.25    12.25
                                    2   FLOW          20.      39.      63.
                                        TIME        12.25    12.25    12.25

 DIVERSION TO
+                  RETAIN      .12   1   FLOW          20.      39.      63.
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```
                                        TIME        12.25    12.25    12.25
                                    2   FLOW         20.      39.      63.
                                        TIME        12.25    12.25    12.25

 HYDROGRAPH AT
+                RETAIN       .12    1   FLOW          0.       0.      24.
                                        TIME         .00      .00    13.08
                                    2   FLOW          0.       0.      24.
                                        TIME         .00      .00    13.08

  4 COMBINED AT
+                 CSM4      1.15    1   FLOW        186.     394.     702.
                                        TIME        12.33    12.33    12.33
                                    2   FLOW        186.     394.     702.
                                        TIME        12.33    12.33    12.33

 ROUTED TO
+                 RSM5      1.15    1   FLOW        174.     359.     653.
                                        TIME        12.42    12.50    12.42
                                    2   FLOW        174.     359.     653.
                                        TIME        12.42    12.50    12.42

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1157.77  1158.53  1159.03
                                        TIME        12.42    12.50    12.42
                                    2   STAGE     1157.77  1158.53  1159.03
                                        TIME        12.42    12.50    12.42

 HYDROGRAPH AT
+                  DR1C       .16    1   FLOW         76.     109.     152.
                                        TIME        12.25    12.25    12.25
                                    2   FLOW         76.     109.     152.
                                        TIME        12.25    12.25    12.25

 HYDROGRAPH AT
+                  WC1A       .25    1   FLOW        153.     205.     274.
                                        TIME        12.25    12.25    12.25
                                    2   FLOW        153.     205.     274.
                                        TIME        12.25    12.25    12.25

 ROUTED TO
+                  RSM6       .25    1   FLOW        148.     199.     268.
                                        TIME        12.25    12.25    12.25
                                    2   FLOW        148.     199.     268.
                                        TIME        12.25    12.25    12.25

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1147.28  1147.49  1147.73
                                        TIME        12.25    12.25    12.25
                                    2   STAGE     1147.28  1147.49  1147.73
                                        TIME        12.25    12.25    12.25

 HYDROGRAPH AT
+                  DR2C       .05    1   FLOW         16.      29.      46.
                                        TIME        12.17    12.17    12.17
                                    2   FLOW         16.      29.      46.
                                        TIME        12.17    12.17    12.17

  4 COMBINED AT
+                CPDR2C      1.61    1   FLOW        395.     638.    1054.
                                        TIME        12.33    12.33    12.33
                                    2   FLOW        395.     638.    1054.
                                        TIME        12.33    12.33    12.33

 ROUTED TO
+                RRB27C      1.61    1   FLOW        262.     481.     825.
                                        TIME        13.83    13.58    13.33
                                    2   FLOW        262.     481.     825.
                                        TIME        13.83    13.58    13.33

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1108.34  1108.52  1108.74
                                        TIME        13.83    13.58    13.33
                                    2   STAGE     1108.34  1108.52  1108.74
                                        TIME        13.83    13.58    13.33

 HYDROGRAPH AT
+                 BR27C       .78    1   FLOW        165.     296.     466.
                                        TIME        12.33    12.33    12.25
                                    2   FLOW        165.     296.     466.
                                        TIME        12.25    12.25    12.25

 DIVERSION TO
+                RETAIN       .78    1   FLOW        165.     296.     466.
                                        TIME        12.33    12.33    12.25
                                    2   FLOW        165.     296.     466.
                                        TIME        12.33    12.33    12.25

 HYDROGRAPH AT
+                RETAIN       .78    1   FLOW          0.       0.     190.
                                        TIME         .00      .00    13.00
                                    2   FLOW          0.       0.     190.
                                        TIME         .00      .00    13.00

  4 COMBINED AT
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+                    C27C       8.20     1   FLOW          262.     482.    1015.
                                             TIME        13.83    13.58    13.33
                                         2   FLOW          262.     482.    1015.
                                             TIME        13.83    13.58    13.33

 HYDROGRAPH AT
+                    WC2A        .08     1   FLOW           43.      57.      78.
                                             TIME        12.25    12.25    12.25
                                         2   FLOW           43.      57.      78.
                                             TIME        12.25    12.25    12.25

 ROUTED TO
+                  RD27.1        .08     1   FLOW           41.      56.      76.
                                             TIME        12.33    12.25    12.25
                                         2   FLOW           41.      56.      76.
                                             TIME        12.33    12.25    12.25

                                         ** PEAK STAGES IN FEET **
                                         1   STAGE     1147.92  1148.02  1148.15
                                             TIME        12.33    12.25    12.25
                                         2   STAGE     1147.92  1148.02  1148.15
                                             TIME        12.33    12.25    12.25

 HYDROGRAPH AT
+                  WC2.1A        .08     1   FLOW           22.      43.      70.
                                             TIME        12.17    12.17    12.17
                                         2   FLOW           22.      43.      70.
                                             TIME        12.17    12.17    12.17

 ROUTED TO
+                  RD27.2        .08     1   FLOW           21.      41.      67.
                                             TIME        12.25    12.25    12.25
                                         2   FLOW           21.      41.      67.
                                             TIME        12.25    12.25    12.25

                                         ** PEAK STAGES IN FEET **
                                         1   STAGE     1148.63  1148.83  1149.00
                                             TIME        12.25    12.25    12.25
                                         2   STAGE     1148.63  1148.83  1149.00
                                             TIME        12.25    12.25    12.25

  2 COMBINED AT
+                  CD27.1        .16     1   FLOW           62.      97.     143.
                                             TIME        12.25    12.25    12.25
                                         2   FLOW           62.      97.     143.
                                             TIME        12.25    12.25    12.25

 ROUTED TO
+                  RD27.3        .16     1   FLOW           62.      95.     141.
                                             TIME        12.33    12.33    12.25
                                         2   FLOW           62.      95.     141.
                                             TIME        12.33    12.33    12.25

                                         ** PEAK STAGES IN FEET **
                                         1   STAGE     1142.19  1142.38  1142.56
                                             TIME        12.33    12.33    12.25
                                         2   STAGE     1142.19  1142.38  1142.56
                                             TIME        12.33    12.33    12.25

 HYDROGRAPH AT
+                    WC3A        .01     1   FLOW            8.      11.      15.
                                             TIME        12.17    12.17    12.17
                                         2   FLOW            8.      11.      15.
                                             TIME        12.17    12.17    12.17

 ROUTED TO
+                  RD27.4        .01     1   FLOW            8.      11.      15.
                                             TIME        12.25    12.25    12.25
                                         2   FLOW            8.      11.      15.
                                             TIME        12.25    12.25    12.25

                                         ** PEAK STAGES IN FEET **
                                         1   STAGE     1142.10  1142.14  1142.19
                                             TIME        12.25    12.25    12.25
                                         2   STAGE     1142.10  1142.14  1142.19
                                             TIME        12.25    12.25    12.25

  2 COMBINED AT
+                  CD27.2        .17     1   FLOW           69.     105.     155.
                                             TIME        12.33    12.25    12.25
                                         2   FLOW           69.     105.     155.
                                             TIME        12.33    12.25    12.25

 ROUTED TO
+                  RD27.5        .17     1   FLOW           64.      99.     146.
                                             TIME        12.42    12.42    12.33
                                         2   FLOW           64.      99.     146.
                                             TIME        12.42    12.42    12.33

                                         ** PEAK STAGES IN FEET **
                                         1   STAGE     1122.12  1122.33  1122.49
                                             TIME        12.42    12.42    12.33
                                         2   STAGE     1122.12  1122.33  1122.49
                                             TIME        12.42    12.42    12.33
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 HYDROGRAPH AT
+                WC4A       .36    1   FLOW        152.     245.     369.
                                       TIME       12.17    12.17    12.17
                                   2   FLOW        152.     245.     369.
                                       TIME       12.17    12.17    12.17

 ROUTED TO
+               RD27.6      .36    1   FLOW        139.     233.     351.
                                       TIME       12.42    12.33    12.33
                                   2   FLOW        139.     233.     351.
                                       TIME       12.42    12.33    12.33

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE    1140.48  1140.59  1140.69
                                       TIME       12.42    12.33    12.33
                                   2   STAGE    1140.48  1140.59  1140.69
                                       TIME       12.42    12.33    12.33

  2 COMBINED AT
+               CD27.3      .53    1   FLOW        203.     329.     498.
                                       TIME       12.42    12.33    12.33
                                   2   FLOW        203.     329.     498.
                                       TIME       12.42    12.33    12.33

 ROUTED TO
+               RD27.7      .53    1   FLOW        188.     312.     484.
                                       TIME       12.50    12.50    12.42
                                   2   FLOW        188.     312.     484.
                                       TIME       12.50    12.50    12.42

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE    1116.01  1116.15  1116.30
                                       TIME       12.50    12.50    12.42
                                   2   STAGE    1116.01  1116.15  1116.30
                                       TIME       12.50    12.50    12.42

 HYDROGRAPH AT
+                DR27C      .23    1   FLOW         28.      82.     157.
                                       TIME       12.33    12.25    12.25
                                   2   FLOW         28.      82.     157.
                                       TIME       12.25    12.25    12.25

 HYDROGRAPH AT
+                 WC5A      .42    1   FLOW         96.     164.     290.
                                       TIME       12.25    12.33    12.25
                                   2   FLOW         96.     164.     290.
                                       TIME       12.25    12.25    12.25

  3 COMBINED AT
+               CD27.4     1.18    1   FLOW        282.     525.     891.
                                       TIME       12.50    12.42    12.33
                                   2   FLOW        282.     525.     891.
                                       TIME       12.50    12.42    12.33

 ROUTED TO
+               ST27.4     1.18    1   FLOW         18.      29.      45.
                                       TIME       14.50    14.25    14.08
                                   2   FLOW         18.      29.      45.
                                       TIME       14.50    14.25    14.08

                                   ** PEAK STAGES IN FEET **
                                   1   STAGE       1.42     2.25     3.50
                                       TIME       14.50    14.25    14.08
                                   2   STAGE       1.42     2.25     3.50
                                       TIME       14.50    14.25    14.08

 ROUTED TO
+               RST274     1.18    1   FLOW         18.      29.      45.
                                       TIME       14.58    14.33    14.17
                                   2   FLOW         18.      29.      45.
                                       TIME       14.58    14.33    14.17

 HYDROGRAPH AT
+               BR35CE      .23    1   FLOW         71.     125.     194.
                                       TIME       12.17    12.17    12.17
                                   2   FLOW         71.     125.     194.
                                       TIME       12.17    12.17    12.17

 DIVERSION TO
+               RETAIN      .23    1   FLOW         71.     125.     194.
                                       TIME       12.17    12.17    12.17
                                   2   FLOW         71.     125.     194.
                                       TIME       12.17    12.17    12.17

 HYDROGRAPH AT
+               RETAIN      .23    1   FLOW          0.       0.      54.
                                       TIME        .00      .00    12.75
                                   2   FLOW          0.       0.      54.
                                       TIME        .00      .00    12.75

  2 COMBINED AT
+                C35CE     1.41    1   FLOW         18.      29.      87.
                                       TIME       14.58    14.33    12.75
                                   2   FLOW         18.      29.      87.
                                       TIME       14.58    14.33    12.75
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 ROUTED TO
+                R35CE      1.41     1   FLOW          18.      29.      85.
                                         TIME       14.67    14.42    12.83
                                     2   FLOW          18.      29.      85.
                                         TIME       14.67    14.42    12.83

 DIVERSION TO
+                D35CE      1.41     1   FLOW          18.      29.      43.
                                         TIME       14.67    14.42    12.75
                                     2   FLOW          18.      29.      43.
                                         TIME       14.67    14.42    12.75

 HYDROGRAPH AT
+                D35CE      1.41     1   FLOW           0.       0.      42.
                                         TIME         .00      .00    12.83
                                     2   FLOW           0.       0.      42.
                                         TIME         .00      .00    12.83

  2 COMBINED AT
+                C27BAS     9.61     1   FLOW         262.     482.    1028.
                                         TIME       13.83    13.58    13.33
                                     2   FLOW         262.     482.    1028.
                                         TIME       13.83    13.58    13.33

 ROUTED TO
+                ST27C      9.61     1   FLOW          13.      24.      45.
                                         TIME       21.33    19.58    18.25
                                     2   FLOW          13.      24.      45.
                                         TIME       21.33    19.58    18.25

                                     ** PEAK STAGES IN FEET **
                                     1   STAGE        1.06     1.88     3.55
                                         TIME       21.50    19.67    18.33
                                     2   STAGE        1.06     1.88     3.55
                                         TIME       21.50    19.67    18.33

 HYDROGRAPH AT
+                D1927       .00     1   FLOW         156.     156.     156.
                                         TIME       12.25    12.08    12.00
                                     2   FLOW         156.     156.     156.
                                         TIME       12.25    12.08    12.00

 HYDROGRAPH AT
+                D35CE       .00     1   FLOW          18.      29.      43.
                                         TIME       14.67    14.42    12.75
                                     2   FLOW          18.      29.      43.
                                         TIME       14.67    14.42    12.75

  3 COMBINED AT
+                CPB27C     9.61     1   FLOW         168.     192.     239.
                                         TIME       12.75    13.58    15.42
                                     2   FLOW         168.     192.     239.
                                         TIME       12.75    13.58    15.42

 ROUTED TO
+                RPB27C     9.61     1   FLOW         168.     192.     239.
                                         TIME       12.83    13.67    15.50
                                     2   FLOW         168.     192.     239.
                                         TIME       12.83    13.67    15.50

 HYDROGRAPH AT
+                BR35CW      .50     1   FLOW         170.     265.     391.
                                         TIME       12.25    12.25    12.25
                                     2   FLOW         170.     265.     391.
                                         TIME       12.25    12.25    12.25

 DIVERSION TO
+                RETAIN      .50     1   FLOW         170.     227.     222.
                                         TIME       12.25    12.08    12.00
                                     2   FLOW         170.     227.     222.
                                         TIME       12.25    12.08    12.00

 HYDROGRAPH AT
+                RETAIN      .50     1   FLOW         135.     265.     391.
                                         TIME       12.50    12.25    12.25
                                     2   FLOW         135.     265.     391.
                                         TIME       12.50    12.25    12.25

 HYDROGRAPH AT
+                BR35C1      .55     1   FLOW         113.     205.     324.
                                         TIME       12.33    12.33    12.33
                                     2   FLOW         113.     205.     324.
                                         TIME       12.33    12.33    12.33

 DIVERSION TO
+                RETAIN      .55     1   FLOW         113.     205.     324.
                                         TIME       12.33    12.33    12.33
                                     2   FLOW         113.     205.     324.
                                         TIME       12.33    12.33    12.33

 HYDROGRAPH AT
+                RETAIN      .55     1   FLOW           0.       0.     151.
                                         TIME         .00      .00    12.92
                                     2   FLOW           0.       0.     151.
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                                        TIME          .00       .00     12.92

 3 COMBINED AT
+                CPB352     10.66    1  FLOW         298.      432.      554.
                                        TIME        12.50     12.25     12.25
                                     2  FLOW         298.      432.      554.
                                        TIME        12.50     12.25     12.25

 ROUTED TO
+                RPB352     10.66    1  FLOW         290.      425.      553.
                                        TIME        12.50     12.33     12.25
                                     2  FLOW         290.      425.      553.
                                        TIME        12.50     12.33     12.25

 HYDROGRAPH AT
+                  WC6A       .01    1  FLOW           8.       12.       17.
                                        TIME        12.08     12.08     12.08
                                     2  FLOW           8.       12.       17.
                                        TIME        12.08     12.08     12.08

 ROUTED TO
+                RD35.2       .01    1  FLOW           4.        5.        7.
                                        TIME        13.67     13.67     13.42
                                     2  FLOW           4.        5.        7.
                                        TIME        13.67     13.67     13.42

                                     ** PEAK STAGES IN FEET **
                                     1  STAGE     1117.91   1117.96   1118.01
                                        TIME        13.67     13.67     13.42
                                     2  STAGE     1117.91   1117.96   1118.01
                                        TIME        13.67     13.67     13.42

 ROUTED TO
+                RD35.3       .01    1  FLOW           3.        4.        6.
                                        TIME        14.92     14.75     14.58
                                     2  FLOW           3.        4.        6.
                                        TIME        14.92     14.75     14.58

                                     ** PEAK STAGES IN FEET **
                                     1  STAGE     1089.74   1089.76   1089.79
                                        TIME        14.92     14.75     14.58
                                     2  STAGE     1089.74   1089.76   1089.79
                                        TIME        14.92     14.75     14.58

 HYDROGRAPH AT
+                  WC7A       .05    1  FLOW          29.       41.       57.
                                        TIME        12.17     12.17     12.17
                                     2  FLOW          29.       41.       57.
                                        TIME        12.17     12.17     12.17

 ROUTED TO
+                RD35.4       .05    1  FLOW          25.       36.       51.
                                        TIME        12.42     12.42     12.42
                                     2  FLOW          25.       36.       51.
                                        TIME        12.42     12.42     12.42

                                     ** PEAK STAGES IN FEET **
                                     1  STAGE     1126.27   1126.34   1126.41
                                        TIME        12.42     12.42     12.42
                                     2  STAGE     1126.27   1126.34   1126.41
                                        TIME        12.42     12.42     12.42

 HYDROGRAPH AT
+                  WC8A       .35    1  FLOW         122.      201.      307.
                                        TIME        12.25     12.25     12.25
                                     2  FLOW         122.      201.      307.
                                        TIME        12.25     12.25     12.25

 ROUTED TO
+                RD35.5       .35    1  FLOW         112.      185.      287.
                                        TIME        12.42     12.42     12.33
                                     2  FLOW         112.      185.      287.
                                        TIME        12.42     12.42     12.33

                                     ** PEAK STAGES IN FEET **
                                     1  STAGE     1137.55   1137.67   1137.78
                                        TIME        12.42     12.42     12.33
                                     2  STAGE     1137.55   1137.67   1137.78
                                        TIME        12.42     12.42     12.33

 2 COMBINED AT
+                CD35.3       .40    1  FLOW         137.      222.      338.
                                        TIME        12.42     12.42     12.33
                                     2  FLOW         137.      222.      338.
                                        TIME        12.42     12.42     12.33

 ROUTED TO
+                RD35.6       .40    1  FLOW         133.      217.      336.
                                        TIME        12.50     12.42     12.42
                                     2  FLOW         133.      217.      336.
                                        TIME        12.50     12.42     12.42

                                     ** PEAK STAGES IN FEET **
                                     1  STAGE     1101.73   1101.84   1101.97
                                        TIME        12.50     12.42     12.42
```

```
                                    2   STAGE     1101.73  1101.84  1101.97
                                        TIME        12.50    12.42    12.42

 HYDROGRAPH AT
+                   WC9A       .03   1   FLOW          16.      21.      28.
                                        TIME        12.17    12.17    12.17
                                    2   FLOW          16.      21.      28.
                                        TIME        12.17    12.17    12.17

 ROUTED TO
+                  RD35.7      .03   1   FLOW          15.      20.      27.
                                        TIME        12.25    12.25    12.25
                                    2   FLOW          15.      20.      27.
                                        TIME        12.25    12.25    12.25

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1128.52  1128.58  1128.65
                                        TIME        12.25    12.25    12.25
                                    2   STAGE     1128.52  1128.58  1128.65
                                        TIME        12.25    12.25    12.25

 HYDROGRAPH AT
+                  WC10A       .02   1   FLOW          16.      21.      28.
                                        TIME        12.08    12.08    12.08
                                    2   FLOW          16.      21.      28.
                                        TIME        12.08    12.08    12.08

 ROUTED TO
+                  RD35.8      .02   1   FLOW          15.      20.      26.
                                        TIME        12.17    12.17    12.17
                                    2   FLOW          15.      20.      26.
                                        TIME        12.17    12.17    12.17

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1132.20  1132.23  1132.27
                                        TIME        12.17    12.17    12.17
                                    2   STAGE     1132.20  1132.23  1132.27
                                        TIME        12.17    12.17    12.17

  2 COMBINED AT
+                  CD35.5      .05   1   FLOW          29.      39.      52.
                                        TIME        12.25    12.17    12.17
                                    2   FLOW          29.      39.      52.
                                        TIME        12.25    12.17    12.17

 ROUTED TO
+                  RD35.9      .05   1   FLOW          27.      37.      50.
                                        TIME        12.33    12.33    12.33
                                    2   FLOW          27.      37.      50.
                                        TIME        12.33    12.33    12.33

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1115.09  1115.13  1115.17
                                        TIME        12.33    12.33    12.33
                                    2   STAGE     1115.09  1115.13  1115.17
                                        TIME        12.33    12.33    12.33

 HYDROGRAPH AT
+                  WC11A       .29   1   FLOW         143.     207.     295.
                                        TIME        12.17    12.17    12.17
                                    2   FLOW         143.     207.     295.
                                        TIME        12.17    12.17    12.17

 ROUTED TO
+                 RD3510       .29   1   FLOW         131.     190.     274.
                                        TIME        12.33    12.33    12.25
                                    2   FLOW         131.     190.     274.
                                        TIME        12.33    12.33    12.25

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1131.74  1131.82  1131.90
                                        TIME        12.33    12.33    12.25
                                    2   STAGE     1131.74  1131.82  1131.90
                                        TIME        12.33    12.33    12.25

 HYDROGRAPH AT
+                  WC12A       .26   1   FLOW         111.     183.     280.
                                        TIME        12.17    12.17    12.17
                                    2   FLOW         111.     183.     280.
                                        TIME        12.17    12.17    12.17

 ROUTED TO
+                 RD3511       .26   1   FLOW         100.     169.     262.
                                        TIME        12.25    12.25    12.25
                                    2   FLOW         100.     169.     262.
                                        TIME        12.25    12.25    12.25

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1143.79  1143.89  1143.99
                                        TIME        12.25    12.25    12.25
                                    2   STAGE     1143.79  1143.89  1143.99
                                        TIME        12.25    12.25    12.25

  2 COMBINED AT
+                  CD35.7       .55   1   FLOW         229.     358.     536.
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                                        TIME        12.25    12.25    12.25
                                    2   FLOW         229.     358.     536.
                                        TIME        12.25    12.25    12.25

 ROUTED TO
+                RD3512       .55    1   FLOW         214.     332.     499.
                                        TIME        12.42    12.42    12.33
                                    2   FLOW         214.     332.     499.
                                        TIME        12.42    12.42    12.33

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1121.76  1121.95  1122.15
                                        TIME        12.42    12.42    12.33
                                    2   STAGE     1121.76  1121.95  1122.15
                                        TIME        12.42    12.42    12.33

  2 COMBINED AT
+                CD35.6       .59    1   FLOW         241.     368.     549.
                                        TIME        12.42    12.42    12.33
                                    2   FLOW         241.     368.     549.
                                        TIME        12.42    12.42    12.33

 ROUTED TO
+                RD3513       .59    1   FLOW         228.     354.     530.
                                        TIME        12.50    12.50    12.42
                                    2   FLOW         228.     354.     530.
                                        TIME        12.50    12.50    12.42

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1101.78  1101.88  1101.99
                                        TIME        12.50    12.50    12.42
                                    2   STAGE     1101.78  1101.88  1101.99
                                        TIME        12.50    12.50    12.42

  2 COMBINED AT
+                CD35.4      1.00    1   FLOW         361.     569.     867.
                                        TIME        12.50    12.50    12.42
                                    2   FLOW         361.     569.     867.
                                        TIME        12.50    12.50    12.42

 ROUTED TO
+                RD3514      1.00    1   FLOW         330.     530.     808.
                                        TIME        12.75    12.67    12.67
                                    2   FLOW         330.     530.     808.
                                        TIME        12.75    12.67    12.67

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1193.32  1193.52  1193.75
                                        TIME        12.75    12.67    12.67
                                    2   STAGE     1193.32  1193.52  1193.75
                                        TIME        12.75    12.67    12.67

 HYDROGRAPH AT
+                 WC15A       .36    1   FLOW         193.     285.     411.
                                        TIME        12.17    12.17    12.17
                                    2   FLOW         193.     285.     411.
                                        TIME        12.17    12.17    12.17

 ROUTED TO
+                RD3515       .36    1   FLOW         187.     277.     403.
                                        TIME        12.17    12.17    12.17
                                    2   FLOW         187.     277.     403.
                                        TIME        12.17    12.17    12.17

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1134.15  1134.46  1134.77
                                        TIME        12.17    12.17    12.17
                                    2   STAGE     1134.15  1134.46  1134.77
                                        TIME        12.17    12.17    12.17

 HYDROGRAPH AT
+                  PM2A       .07    1   FLOW          26.      44.      68.
                                        TIME        12.17    12.17    12.17
                                    2   FLOW          26.      44.      68.
                                        TIME        12.17    12.17    12.17

  2 COMBINED AT
+                CD35.8       .43    1   FLOW         212.     321.     471.
                                        TIME        12.17    12.17    12.17
                                    2   FLOW         212.     321.     471.
                                        TIME        12.17    12.17    12.17

 ROUTED TO
+                RD3516       .43    1   FLOW         199.     307.     455.
                                        TIME        12.25    12.25    12.25
                                    2   FLOW         199.     307.     455.
                                        TIME        12.25    12.25    12.25

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1122.82  1123.06  1123.33
                                        TIME        12.25    12.25    12.25
                                    2   STAGE     1122.82  1123.06  1123.33
                                        TIME        12.25    12.25    12.25

 HYDROGRAPH AT
```

```
+                 WC13A       .01     1   FLOW          9.      12.      16.
                                          TIME       12.08    12.08    12.08
                                      2   FLOW          9.      12.      16.
                                          TIME       12.08    12.08    12.08

 ROUTED TO
+                 RD3517      .01     1   FLOW          8.      11.      15.
                                          TIME       12.33    12.33    12.33
                                      2   FLOW          8.      11.      15.
                                          TIME       12.33    12.33    12.33

                                     ** PEAK STAGES IN FEET **
                                      1   STAGE    1131.17  1131.19  1131.21
                                          TIME       12.33    12.33    12.33
                                      2   STAGE    1131.17  1131.19  1131.21
                                          TIME       12.33    12.33    12.33

 HYDROGRAPH AT
+                 WC14A       .05     1   FLOW         12.      22.      37.
                                          TIME       12.25    12.25    12.17
                                      2   FLOW         12.      22.      37.
                                          TIME       12.17    12.17    12.17

 ROUTED TO
+                 RD3518      .05     1   FLOW          9.      19.      32.
                                          TIME       12.75    12.58    12.58
                                      2   FLOW          9.      19.      32.
                                          TIME       12.75    12.58    12.58

                                     ** PEAK STAGES IN FEET **
                                      1   STAGE    1133.64  1133.72  1133.78
                                          TIME       12.75    12.58    12.58
                                      2   STAGE    1133.64  1133.72  1133.78
                                          TIME       12.75    12.58    12.58

 HYDROGRAPH AT
+                 PM1A        .07     1   FLOW         22.      41.      64.
                                          TIME       12.17    12.17    12.17
                                      2   FLOW         22.      41.      64.
                                          TIME       12.17    12.17    12.17

  4 COMBINED AT
+                 CD35.9      .56     1   FLOW        230.     361.     542.
                                          TIME       12.25    12.25    12.25
                                      2   FLOW        230.     361.     542.
                                          TIME       12.25    12.25    12.25

 ROUTED TO
+                 RD3519      .56     1   FLOW        150.     246.     387.
                                          TIME       12.58    12.50    12.50
                                      2   FLOW        150.     246.     387.
                                          TIME       12.58    12.50    12.50

                                     ** PEAK STAGES IN FEET **
                                      1   STAGE    1101.87  1101.98  1102.11
                                          TIME       12.58    12.50    12.50
                                      2   STAGE    1101.87  1101.98  1102.11
                                          TIME       12.58    12.50    12.50

 HYDROGRAPH AT
+                 DR35C       .60     1   FLOW        146.     273.     435.
                                          TIME       12.42    12.42    12.42
                                      2   FLOW        146.     273.     435.
                                          TIME       12.42    12.42    12.42

  4 COMBINED AT
+                 CD35.2     2.17     1   FLOW        573.     976.    1551.
                                          TIME       12.67    12.58    12.58
                                      2   FLOW        573.     976.    1551.
                                          TIME       12.67    12.58    12.58

 ROUTED TO
+                 STG        2.17     1   FLOW         33.      50.      50.
                                          TIME       15.83    15.42    12.92
                                      2   FLOW         33.      50.      50.
                                          TIME       15.83    15.42    12.92

 ROUTED TO
+                 RSTG39     2.17     1   FLOW         33.      50.      50.
                                          TIME       16.08    15.67    13.25
                                      2   FLOW         33.      50.      50.
                                          TIME       16.08    15.67    13.25

  2 COMBINED AT
+                 CG39      12.83     1   FLOW        297.     432.     562.
                                          TIME       12.58    12.33    12.25
                                      2   FLOW        297.     432.     562.
                                          TIME       12.58    12.33    12.25

 ROUTED TO
+                 RSTG43    12.83     1   FLOW        297.     419.     559.
                                          TIME       12.58    12.33    12.25
                                      2   FLOW        297.     419.     559.
                                          TIME       12.58    12.33    12.25
```

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 HYDROGRAPH AT
+                SMA43C       .13     1   FLOW          46.      81.     127.
                                         TIME        12.08    12.08    12.08
                                      2  FLOW          46.      81.     127.
                                         TIME        12.08    12.08    12.08

 DIVERSION TO
+                RETAIN       .13     1   FLOW          46.      81.     127.
                                         TIME        12.08    12.08    12.08
                                      2  FLOW          46.      81.     127.
                                         TIME        12.08    12.08    12.08

 HYDROGRAPH AT
+                RETAIN       .13     1   FLOW           0.       0.      37.
                                         TIME         .00      .00    12.58
                                      2  FLOW           0.       0.      37.
                                         TIME         .00      .00    12.58

 ROUTED TO
+                RB43C2       .13     1   FLOW           7.       7.      20.
                                         TIME         .08      .08    12.92
                                      2  FLOW           7.       7.      20.
                                         TIME         .08      .08    12.92

                                      ** PEAK STAGES IN FEET **
                                      1  STAGE     1043.33  1043.33  1043.44
                                         TIME         .08      .08    12.92
                                      2  STAGE     1043.33  1043.33  1043.44
                                         TIME         .08      .08    12.92

 HYDROGRAPH AT
+                 BR43C       .35     1   FLOW          79.     119.     171.
                                         TIME        12.42    12.42    12.42
                                      2  FLOW          79.     119.     171.
                                         TIME        12.42    12.42    12.42

 DIVERSION TO
+                RETAIN       .35     1   FLOW          79.     119.     171.
                                         TIME        12.42    12.42    12.42
                                      2  FLOW          79.     119.     171.
                                         TIME        12.42    12.42    12.42

 HYDROGRAPH AT
+                RETAIN       .35     1   FLOW           0.       0.      48.
                                         TIME         .00      .00    14.17
                                      2  FLOW           0.       0.      48.
                                         TIME         .00      .00    14.17

  3 COMBINED AT
+                CBR43C     13.31     1   FLOW         297.     419.     559.
                                         TIME        12.58    12.33    12.25
                                      2  FLOW         297.     419.     559.
                                         TIME        12.58    12.33    12.25

 ROUTED TO
+                STR43M     13.31     1   FLOW         169.     212.     264.
                                         TIME        23.00    24.33    25.42
                                      2  FLOW         297.     419.     559.
                                         TIME        12.58    12.33    12.25

                                      ** PEAK STAGES IN FEET **
                                      1  STAGE     1029.81  1032.10  1035.95
                                         TIME        23.00    24.33    25.33
                                      2  STAGE         .00      .00      .00
                                         TIME         .00      .00      .00

 ROUTED TO
+                RBR43C     13.31     1   FLOW         169.     212.     264.
                                         TIME        23.08    24.42    25.50
                                      2  FLOW         300.     424.     566.
                                         TIME        12.67    12.50    12.33

 HYDROGRAPH AT
+                  35C       1.89     1   FLOW        1015.    1465.    2063.
                                         TIME        12.25    12.17    12.17
                                      2  FLOW        1015.    1465.    2063.
                                         TIME        12.17    12.17    12.17

 DIVERSION TO
+                VOL35C      1.89     1   FLOW        1015.    1465.    2063.
                                         TIME        12.25    12.17    12.17
                                      2  FLOW        1015.    1465.    2063.
                                         TIME        12.25    12.17    12.17

 HYDROGRAPH AT
+                RET35C      1.89     1   FLOW           0.     103.    1246.
                                         TIME         .00    13.25    12.50
                                      2  FLOW           0.     103.    1246.
                                         TIME         .00    13.25    12.50

 ROUTED TO
+                  R35C      1.89     1   FLOW           0.     103.    1188.
                                         TIME         .00    13.42    12.67
                                      2  FLOW           0.     103.    1188.
                                         TIME         .00    13.42    12.67
```

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 HYDROGRAPH AT
+                43C-3       .29     1   FLOW        164.     245.     352.
                                         TIME       12.08    12.08    12.08
                                     2   FLOW        164.     245.     352.
                                         TIME       12.08    12.08    12.08

 DIVERSION TO
+                VOL-3       .29     1   FLOW        164.     245.     352.
                                         TIME       12.08    12.08    12.08
                                     2   FLOW        164.     245.     352.
                                         TIME       12.08    12.08    12.08

 HYDROGRAPH AT
+                RET-3       .29     1   FLOW          0.       0.     113.
                                         TIME        .00      .00    12.50
                                     2   FLOW          0.       0.     113.
                                         TIME        .00      .00    12.50

  2 COMBINED AT
+               C43C-3      2.18     1   FLOW          0.     103.    1251.
                                         TIME        .00    13.42    12.67
                                     2   FLOW          0.     103.    1251.
                                         TIME        .00    13.42    12.67

 ROUTED TO
+               RC43-3      2.18     1   FLOW          0.      95.    1220.
                                         TIME        .00    13.50    12.75
                                     2   FLOW          0.      95.    1220.
                                         TIME        .00    13.50    12.75

 HYDROGRAPH AT
+                43C-5       .14     1   FLOW         40.      62.      91.
                                         TIME       12.33    12.33    12.33
                                     2   FLOW         40.      62.      91.
                                         TIME       12.33    12.33    12.33

 DIVERSION TO
+                VOL-5       .14     1   FLOW         40.      62.      91.
                                         TIME       12.33    12.33    12.33
                                     2   FLOW         40.      62.      91.
                                         TIME       12.33    12.33    12.33

 HYDROGRAPH AT
+                RET-5       .14     1   FLOW          0.      16.      61.
                                         TIME        .00    13.42    12.75
                                     2   FLOW          0.      16.      61.
                                         TIME        .00    13.42    12.75

  2 COMBINED AT
+               ESPILL      2.32     1   FLOW          0.     109.    1281.
                                         TIME        .00    13.50    12.75
                                     2   FLOW          0.     109.    1281.
                                         TIME        .00    13.50    12.75

 HYDROGRAPH AT
+                43C-1       .49     1   FLOW         93.     135.     190.
                                         TIME       12.75    12.75    12.67
                                     2   FLOW         93.     135.     190.
                                         TIME       12.67    12.67    12.67

 DIVERSION TO
+                VOL-1       .49     1   FLOW         93.     135.     190.
                                         TIME       12.75    12.75    12.67
                                     2   FLOW         93.     135.     190.
                                         TIME       12.75    12.75    12.67

 HYDROGRAPH AT
+               RETC-1       .49     1   FLOW          0.      28.     115.
                                         TIME        .00    15.50    13.83
                                     2   FLOW          0.      28.     115.
                                         TIME        .00    15.50    13.83

 ROUTED TO
+                 RC-1       .49     1   FLOW          0.      26.     101.
                                         TIME        .00    15.67    14.00
                                     2   FLOW          0.      26.     101.
                                         TIME        .00    15.67    14.00

 HYDROGRAPH AT
+                43C-2       .09     1   FLOW         34.      54.      80.
                                         TIME       12.17    12.17    12.17
                                     2   FLOW         34.      54.      80.
                                         TIME       12.17    12.17    12.17

 DIVERSION TO
+                VOL-2       .09     1   FLOW         34.      54.      80.
                                         TIME       12.17    12.17    12.17
                                     2   FLOW         34.      54.      80.
                                         TIME       12.17    12.17    12.17

 HYDROGRAPH AT
+               RETC-2       .09     1   FLOW          0.      11.      55.
                                         TIME        .00    13.00    12.42
                                     2   FLOW          0.      11.      55.
```

```
                                        2   FLOW          0.       0.      36.
                                            TIME         .00      .00   19.00

                                        ** PEAK STAGES IN FEET **
                                        1   STAGE     1007.72  1013.48  1019.28
                                            TIME        30.17    30.92    19.00
                                        2   STAGE     1007.72  1013.48  1019.28
                                            TIME        30.17    30.92    19.00

  2 COMBINED AT
+                   CST43      16.80    1   FLOW        169.     212.     293.
                                            TIME       23.08    24.42    23.08
                                        2   FLOW        300.     424.     566.
                                            TIME       12.67    12.50    12.33

 ROUTED TO
+                  RAV43B      16.80    1   FLOW        169.     212.     293.
                                            TIME       23.17    24.50    23.25
                                        2   FLOW        300.     432.     568.
                                            TIME       12.83    12.58    12.42
1


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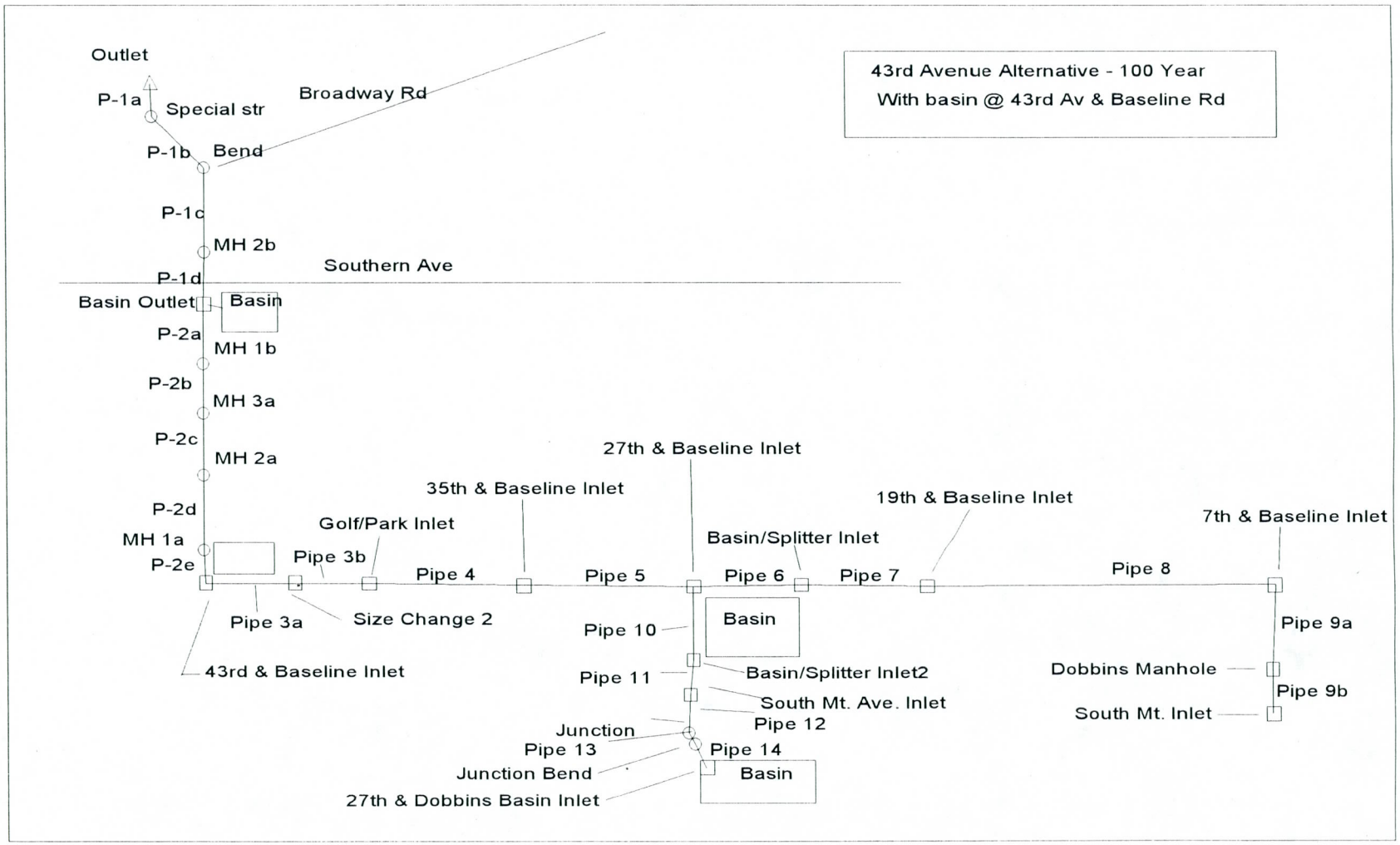
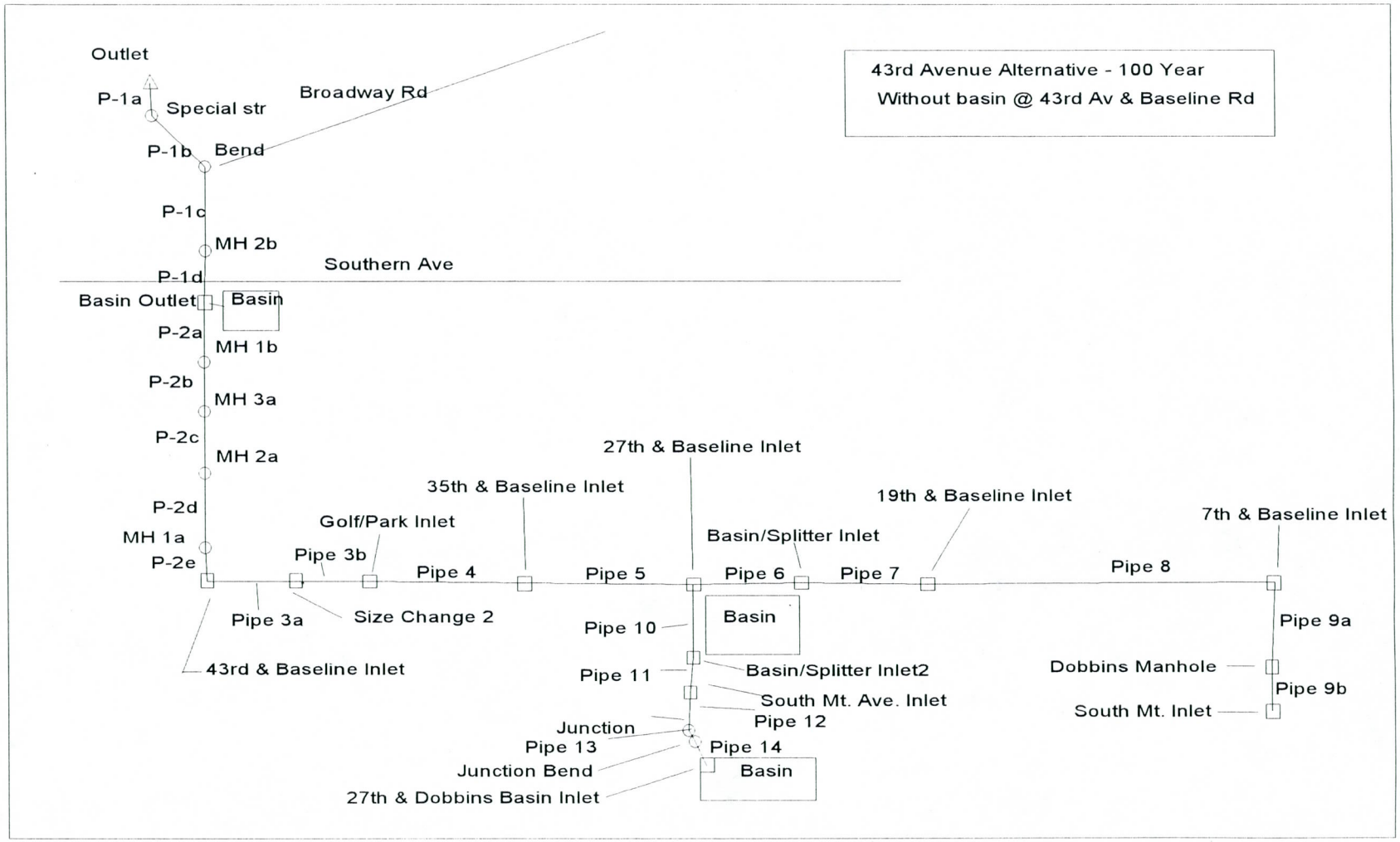

43rd Avenue Alternative - 100 Year
With basin @ 43rd Av & Baseline Rd
Outlet
P-1a
Special str
Broadway Rd
P-1b
Bend
P-1c
MH 2b
Southern Ave
P-1d
Basin Outlet
Basin
P-2a
MH 1b
P-2b
MH 3a
P-2c
MH 2a
P-2d
MH 1a
P-2e
Golf/Park Inlet
Pipe 3b
35th & Baseline Inlet
27th & Baseline Inlet
19th & Baseline Inlet
7th & Baseline Inlet
Basin/Splitter Inlet
Pipe 4
Pipe 5
Pipe 6
Pipe 7
Pipe 8
Pipe 3a
Size Change 2
Pipe 10
Basin
Pipe 9a
43rd & Baseline Inlet
Pipe 11
Basin/Splitter Inlet2
Dobbins Manhole
Pipe 9b
South Mt. Ave. Inlet
Pipe 12
South Mt. Inlet
Junction
Pipe 13
Pipe 14
Junction Bend
Basin
27th & Dobbins Basin Inlet

43rd Ave Detention Basin Outlet

Pipe	Discharge (cfs)	Vel (ft/s)	Upstream Node	Downstream Node	Section Size	Length (ft)	Upstream HGL (ft)	Upstream Ground Elevation (ft)	Upstream Invert Elevation (ft)	Downstream HGL (ft)
P-1a	294.00	7.35	Special str	Outlet	10 x 4 ft	100.00	1,018.26	1,023.00	1,014.20	1,018.00
P-1b	294.00	4.15	Bend	Special str	114 inch	120.00	1,018.73	1,025.00	993.95	1,018.68
P-1c	294.00	4.15	MH 2b	Bend	114 inch	4,200.00	1,020.55	1,022.00	995.00	1,018.81
P-1d	294.00	4.15	Basin Outlet	MH 2b	114 inch	570.00	1,020.82	1,022.00	998.99	1,020.58
P-2a	264.00	3.72	MH 1b	Basin Outlet	114 inch	430.00	1,020.96	1,021.50	1,002.00	1,020.82
P-2b	264.00	3.72	MH 3a	MH 1b	114 inch	1,900.00	1,021.62	1,024.00	1,005.80	1,020.98
P-2c	264.00	3.72	MH 2a	MH 3a	114 inch	900.00	1,021.98	1,027.00	1,011.00	1,021.68
P-2d	264.00	4.15	MH 1a	MH 2a	108 inch	1,100.00	1,022.50	1,034.00	1,012.50	1,022.01
P-2e	264.00	9.83	43rd & Baseline Inlet	MH 1a	108 inch	300.00	1,025.32	1,036.00	1,021.00	1,024.35
Pipe 3a	562.00	14.70	Size Change 2	43rd & Baseline Inle	108 inch	1,175.00	1,032.36	1,040.00	1,026.50	1,026.72
Pipe 3b	562.00	16.11	Golf/Park Inlet	Size Change 2	96 inch	1,175.00	1,040.04	1,048.50	1,034.00	1,032.74
Pipe 4	553.00	11.28	35th & Baseline Inlet	Golf/Park Inlet	96 inch	2,600.00	1,051.99	1,058.00	1,046.00	1,041.52
Pipe 5	239.00	11.94	27th & Baseline Inlet	35th & Baseline Inle	66 inch	5,632.00	1,078.65	1,086.06	1,062.27	1,053.82
Pipe 6	156.00	8.51	Basin/Splitter Inlet	27th & Baseline Inle	60 inch	776.90	1,085.08	1,092.00	1,081.50	1,079.91
Pipe 7	460.00	15.01	19th & Baseline Inlet	Basin/Splitter Inlet	78 inch	4,400.00	1,113.21	1,118.00	1,107.50	1,087.15
Pipe 8	300.00	12.63	7th & Baseline Inlet	19th & Baseline Inle	66 inch	4,931.43	1,148.77	1,156.00	1,144.00	1,114.94
Pipe 9a	250.00	12.73	Dobbins Manhole	7th & Baseline Inlet	60 inch	5,375.00	1,213.82	1,220.40	1,209.40	1,150.23
Pipe 9b	242.00	12.33	South Mt. Inlet	Dobbins Manhole	60 inch	2,166.00	1,230.33	1,236.00	1,225.00	1,214.40

43rd Ave Detention Basin Outlet

Pipe	Discharge (cfs)	Vel (ft/s)	Upstream Node	Downstream Node	Section Size	Length (ft)	Upstream HGL (ft)	Upstream Ground Elevation (ft)	Upstream Invert Elevation (ft)	Downstream HGL (ft)
Pipe 10	45.00	6.37	Basin/Splitter Inlet2	27th & Baseline Inle	36 inch	1,310.00	1,085.87	1,089.43	1,080.00	1,079.91
Pipe 11	87.00	3.66	South Mt. Ave. Inlet	Basin/Splitter Inlet2	66 inch	1,300.00	1,088.07	1,094.69	1,085.50	1,086.19
Pipe 12	43.00	7.98	Junction	South Mt. Ave. Inlet	36 inch	2,112.00	1,098.36	1,104.00	1,096.00	1,088.64
Pipe 13	43.00	6.78	Junction Bend	Junction	36 inch	1,304.61	1,112.54	1,121.73	1,110.40	1,098.52
Pipe 14	43.00	6.75	27th & Dobbins Basin Inle	Junction Bend	36 inch	104.75	1,113.64	1,122.00	1,111.50	1,112.93


43rd Avenue Alternative - 100 Year
Without basin @ 43rd Av & Baseline Rd
Outlet
P-1a
Special str
Broadway Rd
P-1b
Bend
P-1c
MH 2b
Southern Ave
P-1d
Basin Outlet
Basin
P-2a
MH 1b
P-2b
MH 3a
P-2c
MH 2a
P-2d
MH 1a
P-2e
27th & Baseline Inlet
35th & Baseline Inlet
19th & Baseline Inlet
7th & Baseline Inlet
Golf/Park Inlet
Basin/Splitter Inlet
Pipe 3b
Pipe 4
Pipe 5
Pipe 6
Pipe 7
Pipe 8
Pipe 3a
Size Change 2
Pipe 10
Basin
Pipe 9a
43rd & Baseline Inlet
Pipe 11
Basin/Splitter Inlet2
Dobbins Manhole
Pipe 9b
South Mt. Ave. Inlet
Pipe 12
South Mt. Inlet
Junction
Pipe 13
Pipe 14
Junction Bend
Basin
27th & Dobbins Basin Inlet

43rd Ave Detention Basin Outlet

Pipe	Discharge (cfs)	Vel (ft/s)	Upstream Node	Downstream Node	Section Size	Length (ft)	Upstream HGL (ft)	Upstream Ground Elevation (ft)	Upstream Invert Elevation (ft)	Downstream HGL (ft)
P-1a	568.00	4.73	Special str	Outlet	10 x 7 ft	100.00	1,018.03	1,023.00	1,014.20	1,018.00
P-1b	568.00	2.70	Bend	Special str	10 x 7 ft	120.00	1,018.25	1,025.00	993.95	1,018.22
P-1c	568.00	2.70	MH 2b	Bend	10 x 7 ft	4,200.00	1,019.18	1,022.00	995.00	1,018.28
P-1d	568.00	2.70	Basin Outlet	MH 2b	10 x 7 ft	570.00	1,019.31	1,022.00	998.99	1,019.19
P-2a	566.00	2.70	MH 1b	Basin Outlet	10 x 7 ft	430.00	1,019.40	1,021.50	1,002.00	1,019.31
P-2b	566.00	2.70	MH 3a	MH 1b	10 x 7 ft	1,900.00	1,019.82	1,024.00	1,005.80	1,019.41
P-2c	566.00	7.99	MH 2a	MH 3a	114 inch	900.00	1,021.24	1,027.00	1,011.00	1,019.85
P-2d	566.00	7.99	MH 1a	MH 2a	114 inch	1,100.00	1,023.03	1,034.00	1,012.50	1,021.34
P-2e	566.00	12.52	43rd & Baseline Inlet	MH 1a	114 inch	300.00	1,027.54	1,036.00	1,021.00	1,026.18
Pipe 3a	562.00	9.91	Size Change 2	43rd & Baseline Inle	108 inch	1,175.00	1,032.36	1,040.00	1,026.50	1,029.01
Pipe 3b	562.00	16.11	Golf/Park Inlet	Size Change 2	96 inch	1,175.00	1,040.04	1,048.50	1,034.00	1,032.74
Pipe 4	553.00	11.28	35th & Baseline Inlet	Golf/Park Inlet	96 inch	2,600.00	1,051.99	1,058.00	1,046.00	1,041.52
Pipe 5	239.00	11.94	27th & Baseline Inlet	35th & Baseline Inle	66 inch	5,632.00	1,078.65	1,086.06	1,062.27	1,053.82
Pipe 6	156.00	8.51	Basin/Splitter Inlet	27th & Baseline Inle	60 inch	776.90	1,085.08	1,092.00	1,081.50	1,079.91
Pipe 7	460.00	15.01	19th & Baseline Inlet	Basin/Splitter Inlet	78 inch	4,400.00	1,113.21	1,118.00	1,107.50	1,087.15
Pipe 8	300.00	12.63	7th & Baseline Inlet	19th & Baseline Inle	66 inch	4,931.43	1,148.77	1,156.00	1,144.00	1,114.94
Pipe 9b	242.00	12.33	South Mt. Inlet	Dobbins Manhole	60 inch	2,166.00	1,230.33	1,236.00	1,225.00	1,214.40
Pipe 9a	250.00	12.73	Dobbins Manhole	7th & Baseline Inlet	60 inch	5,375.00	1,213.82	1,220.40	1,209.40	1,150.23

43rd Ave Detention Basin Outlet

Pipe	Discharge (cfs)	Vel (ft/s)	Upstream Node	Downstream Node	Section Size	Length (ft)	Upstream HGL (ft)	Upstream Ground Elevation (ft)	Upstream Invert Elevation (ft)	Downstream HGL (ft)
Pipe 10	45.00	6.37	Basin/Splitter Inlet2	27th & Baseline Inle	36 inch	1,310.00	1,085.87	1,089.43	1,080.00	1,079.91
Pipe 11	87.00	4.43	South Mt. Ave. Inlet	Basin/Splitter Inlet2	60 inch	1,300.00	1,088.15	1,094.69	1,085.50	1,086.19
Pipe 12	43.00	7.83	Junction	South Mt. Ave. Inlet	36 inch	2,112.00	1,098.36	1,104.00	1,096.00	1,088.67
Pipe 13	43.00	6.78	Junction Bend	Junction	36 inch	1,304.61	1,112.54	1,121.73	1,110.40	1,098.52
Pipe 14	43.00	6.75	27th & Dobbins Basin Inle	Junction Bend	36 inch	104.75	1,113.64	1,122.00	1,111.50	1,112.93

SOUTH PHOENIX/LAVEEN DRAINAGE IMPROVEMENT PROJECT
PRELIMINARY DESIGN COST COMPARISON

Return Frequency	Sub-Basin	Pipe #	Length (ft)	100-yr FUTURE Discharge w/o Basin	Pipe Dia	Cost	Discharge * w/BASIN	Pipe Dia	Cost
7th Ave									
South Mtn - Dobbins Rd	C3CE	9b	2166	242	60	$ 433,200	242	60	$ 433,200
Dobbins Rd - Baseline	DIVM5C	9a	5375	250	60	$ 1,075,000	250	60	$ 1,075,000
Subtotal						**$ 1,508,200**			**$ 1,508,200**
Baseline Rd									
7th Ave - 19th Ave	DIVbde	8	4931	300	66	$ 1,084,820	300	66	$ 1,084,820
19th Ave - Basin	CBR19C	7	4400	460	78	$ 1,430,000	460	78	$ 1,430,000
27th Ave Basin Bypass Flows	D1927	6	777	156	60	$ 155,400	156	60	$ 155,400
27th Ave -35th Ave	CPB27C	5	5632	239	66	$ 1,239,040	239	66	$ 1,239,040
35th Ave - 39th Ave	RPB352	4	2600	553	96	$ 1,118,000	553	96	$ 1,118,000
		3b	1175	562	96	$ 505,250	562	96	$ 505,250
39th Ave - 43rd Ave	CG39	3a	1175	562	108	$ 546,375	562	108	$ 546,375
Subtotal						**$ 6,078,885**			**$ 6,078,885**
43rd Ave									
Baseline -Southern		1a	100	566	3-10x7	$ 120,000	294	10x4	$ 35,000
Baseline -Southern		1b	120	566	3-10x7	$ 144,000	294	114	$ 64,800
Baseline -Southern		1c	4200	566	3-10x7	$ 5,040,000	294	114	$ 2,268,000
Baseline -Southern	RBR43C	1d	570	566	3-10x7	$ 684,000	294	114	$ 307,800
Southern - Salt River		2a	430	568	3-10x7	$ 516,000	264	114	$ 232,200
Southern - Salt River		2b	1900	568	3-10x7	$ 2,280,000	264	114	$ 1,026,000
Southern - Salt River		2c	900	568	114	$ 486,000	264	114	$ 486,000
Southern - Salt River		2d	1100	568	114	$ 594,000	264	108	$ 511,500
Southern - Salt River	RAV43B	2e	300	568	114	$ 162,000	264	108	$ 139,500
Subtotal						**$ 10,026,000**			**$ 5,070,800**
27th Ave									
25th Ave & Dobbins Rd	ST27.2	14	105	45	36	$ 8,925	45	36	$ 8,925
26th Ave & Dobbins Rd	ST27.3	13	1305	45	36	$ 110,925	45	36	$ 110,925
27th Ave & Dobbins Rd	ST27.4	12	2112	45	36	$ 179,520	45	36	$ 179,520
27th Ave south of Baseline Rd	C35CE	11	1300	87	60	$ 260,000	87	60	$ 260,000
27th Ave Basin Bypass Flows	D35CE	10	1310	43	36	$ 111,350	43	36	$ 111,350
Subtotal						**$ 670,720**			**$ 670,720**
Storm Drain Cost						$ 18,283,805			$ 13,328,605
* Basin @ Baseline Rd & 43rd Av						$ -			$ 1,491,646
TOTAL STORM DRAIN & BASIN COST						**$ 18,283,805**			**$ 14,820,251**

Detention Basin at 43rd Ave & Baseline
Stage Storage Relationship

Side Slope 6

Elevation	Width(ft)	Length (ft)	Area (ac)	Volume(ac-ft)	Cumm Vol (ac-ft)
1022	500	500	5.7	0.0	0.0
1024	524	524	6.3	12.0	12.0
1026	548	548	6.9	13.2	25.2
1028	572	572	7.5	14.4	39.6
1030	596	596	8.2	15.7	55.3
1032	620	620	8.8	17.0	72.3
1034	644	644	9.5	18.3	90.6
1036	668	668	10.2	19.8	110.4
1038	692	692	11.0	21.2	131.6

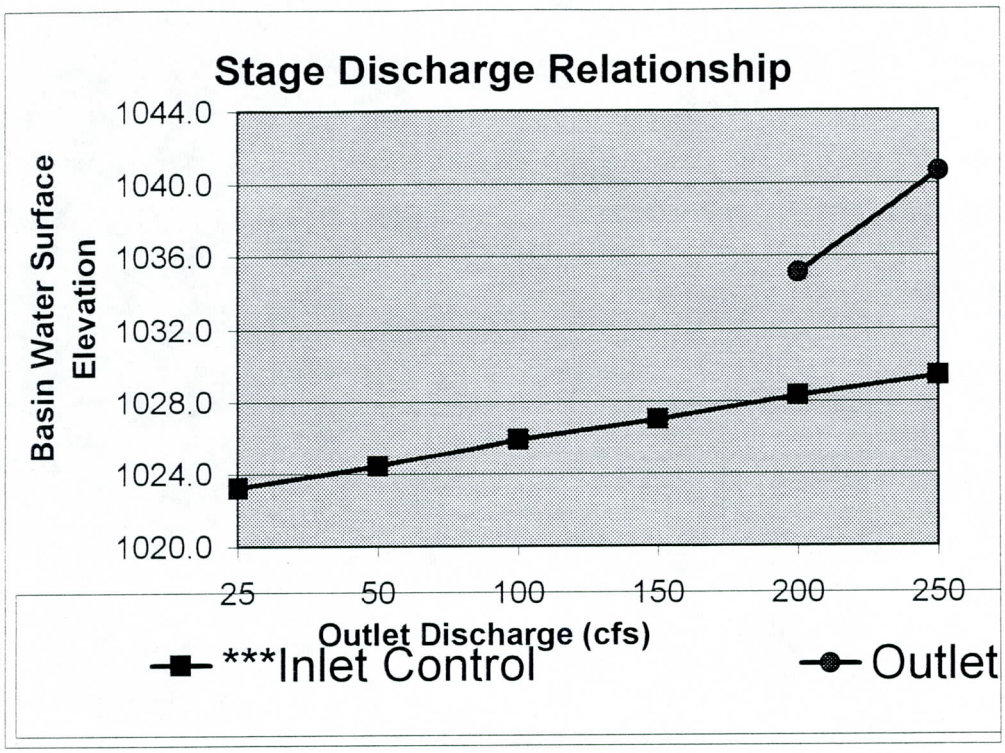
Basin Outlet Invert = 1022
Pipe Diameter (in) = 72

	Q	* TW	HW/D	***Inlet Control	Outlet Control
	25	1018.21	0.2	1023.2	
	50	1018.65	0.4	1024.4	
	100	1020.33	0.7	1025.9	
	150	1023.05	0.8	1027.0	
**	200	1026.82	1.1	1028.3	1035.1
**	250	1031.73	1.2	1029.4	1040.6

* See HGL from Storm Cadd Output, Beginning TW = 1018
Connector Pipe Outlet Invert = 1012.5

Q	TW	HWE	H	V	*Qsub
25	1018.2	1020	0.0	0.00	'N/A'
50	1018.7	1024	0.0	0.00	'N/A'
100	1020.3	1026	0.0	0.00	'N/A'
150	1023.1	1028	0.0	0.00	'N/A'
200	1028.0	1035.1	7.1	7.1	200
250	1031.7	1040.63	8.9	8.9	250.2

* Connector pipe outlet is submerged at both ends when TW of 1018 (Q10 in Salt River) exists.


Stage Discharge Relationship
Basin Water Surface Elevation
1044.0
1040.0
1036.0
1032.0
1028.0
1024.0
1020.0
25
50
100
150
200
250
Outlet Discharge (cfs)
***Inlet Control
Outlet

SOUTH PHOENIX/LAVEEN DRAINAGE IMPROVEMENT PROJECT EVENT COMPARISON

Return Frequency	Sub-Basin	100-yr FUTURE	
		w/o Basin	w/BASIN
7th Ave			
South Mtn - Dobbins Rd	C3CE	242	242
Dobbins Rd - Baseline	DIVM5C	250	250
Baseline Rd			
7th Ave - 19th Ave	DIVbde	300	300
19th Ave - Basin	CBR19C	460	460
27th Ave Basin Bypass Flows	D1927	156	156
27th Ave -35th Ave	CPB27C	239	239
35th Ave - 39th Ave	RPB352	553	553
39th Ave - 43rd Ave	CG39	562	562
43rd Ave			
Baseline -Southern	RBR43C	566	294
Southern - Salt River	RAV43B	568	264
27th Ave			
27th Ave & Dobbins Rd	ST27.4	45	45
27th Ave south of Baseline Rd	C35CE	87	87
27th Ave Basin Bypass Flows	D35CE	43	43

BIDDING SCHEDULE

Engineer's Estimate

PROJECT: 43rd Avenue Detention Basin @ Baseline Road

ITEM NO.	DESCRIPTION	UNIT	APPROX QTY.	UNIT COST NUMBERS	EXTENDED AMOUNT
	Land	Acres	20	$16,000.00	$320,000.00
105 - 1	Partnering	LS	1	$4,000.00	$4,000.00
107 - 1	NPDES/ SWPPP Permits	LS	1	$5,000.00	$5,000.00
107 - 2	Project Sign Allowance	LS	1	$3,000.00	$3,000.00
107 - 3	Public Information and Notification Allowance	LS	1	$25,000.00	$25,000.00
201 - 1	Clearing and Grubbing	LS	1	$8,000.00	$8,000.00
202 - 1	Mobilization	LS	1	$7,900.00	$7,900.00
215 - 1	Detention Basin Excavation	CY	193,600	$3.50	$677,600.00
225 - 1	Watering	100u-Ft	8,500	$1.19	$10,115.00
430 - 1	Landscaping	Acre	20	$18,000.00	$360,000.00
505 3	Contingency	%	1	5%	$71,030.75
				TOTAL	**$1,491,645.75**